The barriers and facilitators to stopping inappropriate medicines ('deprescribing') for older people living in care homes

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The candidate confirms that the work submitted is his own and that appropriate credit has been given where reference has been made to the work of others.

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Abstract

Background

UK care home residents are prescribed an average of 8-10 medicines daily with evidence that inappropriate prescribing is prevalent leading to problematic polypharmacy. This increases the risk of adverse drug events that negatively affect resident outcomes, quality-of-life and have financial costs to the NHS. Deprescribing (the cessation of inappropriate medicines) can reduce inappropriate prescribing, however, there are significant barriers to its implementation in this setting. Identifying and understanding barriers and facilitators of stopping inappropriate medicines is necessary to improve the implementation of deprescribing in care homes.

Method

A literature review was conducted to synthesise existing evidence. Semi-structured interviews were conducted with residents, relatives, care home staff, GPs and pharmacists. Themes and explanations were developed using Framework Analysis. Theoretical models of behaviour change were applied to identify candidate components for a novel intervention for deprescribing in care homes.

Findings

The literature review highlighted a lack of evidence regarding residents' and relatives' attitudes to deprescribing, and a lack of depth regarding barriers and facilitators to deprescribing. Three themes were identified from the empirical data: 1) individuals involved in the deprescribing process; 2) social barriers; 3) logistical barriers. Theme 1 highlighted the complexity of the deprescribing process and themes 2&3 identified and explained systematic barriers and facilitators to deprescribing. Social barriers included a reluctance to discuss life expectancy and healthcare professionals' perceptions of residents and relatives. Logistical barriers included the unavailability of key stakeholders and navigating health and social care systems.

Potential intervention components included; demonstrating the behaviour of deprescribing, providing feedback on its outcomes plus provision of prompts.

Conclusions

This thesis has provided novel, in-depth explanation and insight of the barriers and facilitators to deprescribing from the perspective of key stakeholders. This was utilised to identify potential components of a deprescribing behaviour change intervention for implementation and evaluation in care homes.

Abbreviations

Abbreviation	Definition
BCW	Behaviour Change Wheel
CASP	The Critical Appraisals Skills Programme
CEBM	Centre for Evidence Based Medicine
CHS	Care Home Staff member, a participant identifier utilised in Chapter 4
COM-B	Capability, Opportunity, Motivation, Behaviour: 3 factors which influence behaviour
CQC	Care Quality Commission
DES	Direct Enhanced Service
ENRICH	Enabling Research in Care Homes
GP	General practitioner, also used as part of the participant identifier for GPs
GPhC	General Pharmaceutical Council
MDS	Monitored dosage system, a way medicines are often provided to care homes
MDT	Multi-disciplinary team
NHS	National Health Service
NICE	The National Institute for Health and Care Excellence
NIHR	National Institute for Health Research
PCN	Primary Care Network
Pharm	Pharmacist, a participant identifier utilised in Chapter 4
QOF	Quality Outcome Framework
Rel	Relative, a participant identifier utilised in Chapter 4

Abbreviation	Definition
Res	Resident, a participant identifier utilised in Chapter 4
RPS	Royal Pharmaceutical Society
SCIE	Social Care Institute for Excellence
STOPP/START	Screening Tool Of Older People's Prescriptions (STOPP)
	Screening Tool to Alert to Right Treatment (START)
TDF	Theoretical Domains Framework
U.S	The United States of America
UK	United Kingdom
WHO	World Health Organisation

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Chapter 1 Introduction

There are approximately 400,000 people aged 65 years old or older living in nursing or residential homes in the United Kingdom (UK) (Age UK, 2019). Nursing homes provide 24-hour nursing care from registered nurses, and residential homes are staffed by carers who provide personal care only to residents. Both of these come under the umbrella term "care homes", and are considered when the term care home is used throughout this thesis. Care homes may be a single, privately owned home, part of a privately owned chain, or owned by a local council or a charitable organisation.

Globally, the number of older people is increasing and thus the population of care homes is likely to increase. By 2050, it is predicted that the proportion of people aged over 60 in the world will double to reach 22% from 900 to 2,100 million people (World Health Organisation, 2016). In Europe 34% of the population will be over 60 years old (World Health Organisation, 2016). The population of those over 60 is also set to rise rapidly in countries with a younger population, with an increase of 100 million in this population of Africa by 2050 (World Health Organisation, 2016). Consequently, there is likely to be an increased demand for long-term care facilities for older people. Care of older people differs around the world, and the World Health Organisation (WHO) is undertaking comprehensive research that aims to improve the health of older people worldwide. This includes an investigation of the settings and providers of long term care for older people, which can range from family members in a home environment to qualified nurses in a specialised facility (World Health Organisation, 2016).

Of particular relevance to this thesis are the provision of care to older people in countries in which deprescribing research has been undertaken. This includes the UK, Australia, the United States, New Zealand and Belgium, a country in Europe and a member of European Union. Most of these countries have adopted a variation of residential and nursing homes as terminology, however Australia and New Zealand both refer to care homes with different terms. In Australia, residential aged care homes is the preferred terminology, while in New Zealand, residential homes are referred to as rest homes, and nursing homes are called long stay hospitals (Australian Government Department of Health, 2020; New Zealand Government, 2020a). 241,723 people received care in a residential aged care facility in Australia in the year 2017-2018 (Australian Government Department of Health, 2020). Care homes also operate similarly across the US, Canada, New Zealand, Australia and Europe, with care homes being owned and operated by a mixture of government bodies, private companies and not-for-profit organisations (Australian Government Department of Health, 2020; New Zealand Government, 2020b, Government of Canada, 2020; Eurofund, 2017; U. S Department of Health and Human Services, 2019). Most care homes in the US and Europe are operated for profit by private

companies, with 69% of nursing homes and 81% of care homes in the US being operated in this way (Eurofund, 2017;U.S Department of Health and Human Services, 2019) . However, in Australia the majority of care is provided by not-for-profit organisations and there are more not-for-profit care homes being opened in Belgium than there are ones that are run-for-profit (Australian Government Department of Health, 2020; Eurofund, 2017). The extent to which the Governments of various countries are involved in care homes differs, too. In the UK, Australia and the US some aspects of care, such as regulation, are determined centrally by the Government with other responsibilities devolved to localised bodies (Care Quality Commission, 2017; Australian Government Department of Health, 2020; U.S Department of Health and Human Services, 2019). In Canada, the central Government has no responsibility for care homes and each territory is responsible for the operation of care homes in their area (Government of Canada, 2020). As a result, the terminology utilised to refer to care homes differs from region to region and therefore, comparing Canadian care homes to other countries is challenging (Government of Canada, 2020).

People living in this setting often have more complicated medical histories than other patients, as the complexity of their illnesses can lead to care home admission when their conditions can no longer be managed at home (Baylis and Perks-Baker, 2017). Care home residents typically have multiple health conditions and complications such as cognitive impairment; it is estimated that 70% of care home residents in the UK live with dementia or other cognitive impairment (Age UK, 2019). In the UK, Gordon et al (2014) reported that care home residents lived with an average of six medical diagnoses, which included conditions such as dementia, hypertension, Type 2 diabetes and renal failure. To treat or prevent illness, care home residents are prescribed an average of 8-10 medicines every day (Barber et al., 2009). Taking multiple medicines (polypharmacy) can increase a resident's risk of adverse drug reactions, drug interactions, falls and hospital admissions, all of which can affect their quality-of-life (Alldred et al, 2016; Barber et al, 2009; Age UK, 2019)

This introductory chapter provides the context for this thesis. The concepts of polypharmacy and deprescribing are introduced, which includes characterisation of deprescribing as a behaviour. Deprescribing is characterised as a behaviour throughout this thesis, and behaviour change psychology was applied to provide an understanding of deprescribing. This chapter also describes the setting for this study: care homes in England, which includes a description of care homes and their position in the health and social care system. Finally, the policies which are informing practice in England regarding care homes and inappropriate prescribing are introduced to provide the wider context of this empirical research.

1.1 Polypharmacy and suboptimal prescribing care homes: background to the thesis

1.1.1 Defining polypharmacy

Polypharmacy means "multiple medicines", and it has been demonstrated that polypharmacy can cause harm, as will be described in detail below. It is a concept for which there are many definitions. Masnoon et al (2017) conducted a systematic review examining the multiple definitions of polypharmacy and collated 138 definitions of polypharmacy, with the majority of these (81%) being numerical definitions. Of these, almost half (46%) referred to polypharmacy as being more than five medicines with the others ranging from two to eleven medicines. The remaining definitions were numerical, but specific to a setting or condition (11%), or descriptive (8%). Masnoon et al (2017) noted that numerical definitions of polypharmacy were not always relevant in a clinical setting, because polypharmacy may sometimes be necessary to treat multiple co-morbidities. Instead, there has been a shift towards defining polypharmacy as "appropriate" and "inappropriate", or "problematic". However, only 6.4% of definitions included in Masnoon et al's (2017) study made such distinctions.

The King's Fund report on polypharmacy and medicines optimisation also made the distinction between appropriate and problematic polypharmacy (Duerden et al, 2013). It was acknowledged that polypharmacy may be beneficial, provided that the medicines were optimised and the treatment aimed to maintain quality of life and improve longevity (Duerden et al, 2013). The definition of problematic polypharmacy included the inappropriate prescription of multiple medicines, as well as instances where the potential benefit of a medicine was not realised. The King's Fund also assigned meaning to problematic medicines by describing when a medicine may be inappropriate described in Figure 1:

- - The treatments are not evidence-based
- - The risk of harm from treatments is likely to outweigh benefit,
- - A drug combination is hazardous because of interactions
- - The overall demands of medicine-taking, or 'pill burden', are unacceptable to the patient, which may affect adherence
- - Medicines are being prescribed to treat the adverse effects of other medicines where alternative solutions are available to reduce the number of medicines (this may include medicines prescribed to treat the adverse effects of a medicine where the initial medicine has been stopped)

Figure 1: Inappropriate polypharmacy as defined by the King's Fund (Duerden et al, 2013)

Inappropriate prescribing is prevalent in older people, especially those who live in care homes, and so it is highly likely that there are people living in care homes with problematic

polypharmacy (Shah et al, 2013; Stafford et al, 2011). Stafford et al (2011) reported that inappropriate prescribing, defined by application of the Beers and McLeod criteria (lists of medicines which may be inappropriate to prescribe to older people) to resident's medicines, was widespread in Australian care homes (Poudel et al, 2013). In the UK, Barber et al (2009) reported that there was a high rate of prescribing and monitoring errors in care homes: 39% of residents were subject to a prescribing error, and 24% of these were deemed to be prescribed an unnecessary medicine. Furthermore, 18% of residents prescribed a medicine with monitoring requirements were not being met (Barber et al, 2009). Such prescribing errors led to care home residents receiving inappropriate medicines and being exposed to harm from these medicines.

Polypharmacy in older people has been associated with adverse drug reactions, falls, mortality, and an increased length of hospital admission (Masnoon et al, 2017; Milton et al, 2008). However, it is difficult to determine whether these outcomes are caused by polypharmacy or the patient's pre-existing condition(s) (Wastesson et al, 2018). The impact of polypharmacy on such clinical outcomes is also difficult to determine due to the observational design of studies. Wastesson et al (2018) noted that the effect of a participant's illness on the outcome of a trial of a medicine, "confounding by indication", was usually accounted for through study design and statistical analysis (Kyriacou and Lewis, 2016). However, people taking multiple medicines typically have more than one condition, which increases the challenge of accounting for bias caused by confounding by indication. Wastesson et al (2018) suggested that "confounding by multimorbidity" may be more appropriate for polypharmacy studies, and that existing studies did not sufficiently account for this bias. Studies of polypharmacy also displayed a preference towards a numerical definition of polypharmacy, which lacked the nuance of a more descriptive definition which accounted for appropriate polypharmacy. This made it difficult to determine the effect of polypharmacy alone on a trial participant's outcomes, and to determine the negative effects which polypharmacy was responsible for. Nevertheless, stopping inappropriate medicines may reduce the risk of a patient experiencing harm from a medicine that they did not need to take.

1.1.2 Causes of polypharmacy

A common cause of polypharmacy, especially in older people, is multimorbidity with studies suggesting that greater than 50% of older people live with at least two long-term conditions (Jokanovic et al, 2015). Treatment for each long-term condition is typically by single-disease guidance which recommend medicines to treat each condition (Wastesson et al, 2018). However, there is little guidance available to aid clinicians treating those with more than one condition. Consequently, for example, an older person who had experienced a myocardial infarction and lived with Type 2 diabetes and dementia would be treated according to three different guidelines. This can lead to problematic polypharmacy, as medicines prescribed for

the different conditions interact with each other, the patient's conditions and the patient's physiological status (drug-drug interactions and drug-disease interactions) (Wastesson et al, 2018). Randomised controlled trials do not typically involve people who have been diagnosed with, and are being treated, for other conditions and so there is a lack of evidence about how to treat multimorbid patients (Wastesson et al, 2018).

The issues that can be caused by following guidelines for multiple conditions in multimorbid patients were highlighted by Dumbreck et al (2015). Dumbreck et al (2015) conducted a systematic examination of the potential drug-drug and drug-disease interactions which may occur when medicines are prescribed according to the UK guidance for 12 common conditions. The medicines recommended as first- or second-line treatment by the National Institute for Health and Care Excellence (NICE) in the UK for conditions including Type 2 diabetes, depression and heart failure. Prescribing medicines for Type 2 diabetes, according to the guideline, and the 11 other conditions included in the study gave rise to 32 potentially serious drug disease interactions (Dumbreck et al, 2015). The majority (84%) of these interactions referred to interactions between medicines and poor kidney function. Furthermore, 133 drug-drug interactions were identified between medicines prescribed for type 2 diabetes and the 11 other conditions included in the study, of which 19% were potentially serious (Dumbreck et al, 2015). The NICE guidelines rarely alerted clinicians to the potential of drug interactions (Dumbreck et al, 2015).

Poor management of medicines can lead to polypharmacy, especially as a person becomes older (Masnoon et al, 2017). Older people taking multiple medicines are susceptible to both pharmacokinetic and pharmacodynamic drug interactions and advanced age impacts upon these in several ways. For example, changes in renal function may affect the elimination of a medicine and changes in hepatic function may affect the way a medicine is metabolised (Klotz, 2009). Older people also have less muscle mass and more fat tissue than younger people, which affects the distribution of medicines in the body (Petrovic et al, 2003; Klotz, 2009). This can increase the half-life of medicines such as benzodiazepines leading to prolonged effects compared with younger people.

1.1.3 Polypharmacy policies and guidance in the UK

There are several policies, reports and reviews in the UK which inform the use of medicines in care homes, as well as several policies to inform the management of polypharmacy. In 2018, the UK government announced the National Overprescribing Review to examine the factors contributing to the large amount of medicines prescribed in the UK, including the problematic polypharmacy experienced by individuals. The remit of the Review is presented in Figure 2 below: (Department of Health and Social Care, 2018):

- Problematic polypharmacy
- The transfer of information between primary and secondary care
- The management of non-reviewed repeat prescriptions
- The role of technology
- Alternatives to medicines, such as social prescribing

Figure 2: Remit of the National Overprescribing Review (Department of Health and Social Care, 2018)

This review will address multiple issues related to problematic pharmacy raised throughout this chapter, and the thesis as a whole. The commissioning of this review provides support to the central tenet of this thesis: problematic polypharmacy is a national issue, and that research is required in order to determine how it should be reduced.

Whilst there is no current UK policy on deprescribing, there is policy relating to polypharmacy and medicines optimisation through medicine review. However, medicines optimisation has a wider remit than deprescribing. As well as stopping medicines, medicines optimisation also includes the initiation of appropriate medicines, the reduction and increasing of doses and the monitoring of medicines (Scottish Government Polypharmacy Model of Care Group, 2018). The Scottish government produced guidance which is also utilised by healthcare professionals in England (Scottish Government Polypharmacy Model of Care Group, 2018). This guidance presents the seven steps to appropriate polypharmacy: steps which should be considered during a medicine review and could lead to deprescribing. These are presented in Figure 3:

Step 1.	Identify what matters to the patient
Step 2.	Identify essential drug therapy
Step 3.	Does the patient take unnecessary drug therapy?
Step 4.	Are therapeutic objectives being achieved?
Step 5.	Is the patient at risk of adverse drug reactions (ADRs) or suffers actual ADRs?
Step 6.	Is drug therapy cost effective?
Step 7.	Is the patient willing and able to take drug therapy as intended?

Figure 3: NHS Scotland's 7 steps to appropriate polypharmacy (Scottish Government Polypharmacy Model of Care Group, 2018)

The Royal Pharmaceutical Society (RPS) have also produced guidance on medicines optimisation which could inform the process in care homes, and lead to a reduction in inappropriate prescribing in this setting (Royal Pharmaceutical Society, 2020). The RPS' and Scottish Government's polypharmacy guidance both place the patient at the heart of decision-making and encourage healthcare professionals to try to understand the patient's experience,

priorities and ability to use medicines as a part of their review. England's National Health Service (NHS) reflects that the patient should be at the centre at, and involved in, decision-making. By 2023/24, the NHS aims to implement a comprehensive model for personalised care, and shared decision-making is a part of this. The NHS defines shared decision-making as requiring two experts to share responsibility for decisions (NHS England, 2020):

- The healthcare professional, who understands treatment risks and benefits
- The patient, who is an expert in their beliefs, priorities and social circumstances.

As the NHS aims to deliver the comprehensive model, healthcare professionals are being directed to provide shared decision-making and to encourage patients to contribute to the decision as an equal (NHS England, 2020).

Both sets of guidance also aim to ensure that medicines use is safe. The Scottish Government's polypharmacy guidance breaks down the steps of a medicines review and aids the healthcare professional in the undertaking of individual reviews. The RPS guidance encourages the healthcare professional to reflect on their practice, and to consider what is important when doing a medicines review. When viewed together, they provide a structure to facilitate healthcare professionals performing medicines optimisation. This could include those who are working in care homes, attempting to reduce inappropriate prescribing.

1.2 Deprescribing: one potential solution

Recently, there has been an increasing amount of interest and research into optimising medicine regimens and "deprescribing" in care homes. This is likely due to the prevalence of problematic polypharmacy in this setting and the associated adverse outcomes, as described above. Deprescribing is a relatively new term which, according to Reeve et al. (2015) and Alldred (2014), was first used in 2003 by (Woodward, 2003). Since then, the term has been defined as variations of "drug discontinuation" (Scott et al., 2013). The following definition was the result of a systematic review which was conducted in order to define the word deprescribing:

> *"the process of a trial of withdrawal of inappropriate medications supervised by a healthcare professional with the goal of managing polypharmacy and improving outcomes"* (Reeve et al, 2015, pp1262).

This "process" part of the definition includes identifying medicines which should be stopped, devising a deprescribing regime and offering ongoing support to the patient (Reeve et al, 2015; Woodward, 2003).

Page et al (2018) went further than producing a definition, and described deprescribing as a concept with seven critical attributes, which are presented in Figure 4:

1. Withdrawing medications: specifically, the withdrawal of regular (not short term) medicines.

2. De-escalation of polypharmacy: healthcare professionals may want to deprescribe to minimise the perceived negative effects of polypharmacy; medicine users may want to reduce the number of medicines they take to increase adherence or to counter negative attitudes to medicines.

3. Intended outcomes: this highlights that deprescribing is an intentional act, undertaken to improve outcomes.

4. Structured and iterative process: deprescribing is a methodical process, which was highlighted as early as 2003 by Woodward. Numerous acronyms and tools have been developed to facilitate this process, such as the Screening Tool Of Older People's Prescriptions (STOPP) criteria (O'Mahony et al, 2014).

5. Intervention: deprescribing should be an active intervention to ensure appropriate prescribing, it is not the result of a patient choosing to stop their medicine, or a prescribing mistake.

6. Risk to benefit: ensures that the appropriateness of each medicine is considered, including their risk to benefit ratio.

7. Patient-centred care: ensures that the requirements of each individual patient is considered when deprescribing, and that it is not a process focussed on healthcare professionals. This is a factor which is lacking from the definition proposed by Reeve et al (2014).

Figure 4: The seven critical attributes of deprescribing as defined by Page et al (2018)

Whilst Page et al (2018) did not propose a simple definition of deprescribing, they did provide a full and accurate description of the process as intended when the term "deprescribing" was utilised in this thesis. Therefore, these attributes should be considered as the process of deprescribing which was the focus of the empirical work.

1.2.1 Potential benefits of deprescribing

There are many examples in the literature of deprescribing reducing the number of potentially inappropriate medicines and therefore reducing the burden of medicines a patient must take (Potter et al, 2016; Mckean et al 2015). Potentially inappropriate medicines may, by definition, cause harm to a patient and so stopping them reduce the harm caused (Reeve et al, 2014). It is also possible that reducing polypharmacy could reduce the potentially harmful effects of

polypharmacy, including: pharmacokinetic and pharmacodynamic drug interactions, adverse effects and the adverse events, such as falls and hospital admissions, which arise from these.

There is evidence that stopping inappropriate medicines from certain medication classes results in clinically meaningful outcomes. It has been demonstrated that cessation of benzodiazepines resulted in improved cognitive function, falls could be reduced by stopping medicines which can contribute to falling (for example: diuretic, antidepressant and antihypertensive drugs), and hypertension can be improved by stopping non-steroidal anti-inflammatory medicines (Reeve et al, 2014; de Jong et al, 2013). Specifically in care home residents, reduced mortality was demonstrated when antipsychotic medicines were stopped in residents with Alzheimer's disease. Ballard et al (2009) conducted a randomised, placebo controlled, parallel, two-group treatment discontinuation trial and reported that the cumulative probability of survival in the group who continued treatment with antipsychotic medicines was 70% (95%CI 58%-80%), and 77% (95%CI 64-85) in those who stopped treatment.

Iyer et al (2008) conducted a systematic review of medication withdrawal trials in people aged 65 years old and older. The review comprised the findings of 31 studies, including trials of stopping diuretic, antihypertensive, antidepressant and antipsychotic medicines. Few adverse or withdrawal effects were reported across the review, and there was evidence of benefits. For example stopping benzodiazepines was reported to improve cognitive function with no difference in sleep parameters between those who stopped benzodiazepines and those who did not (Iyer et al, 2008).

There are also potential cost savings to deprescribing in care homes. The RPS calculated that £135 million could be saved by having a pharmacist work in every care home (Royal Pharmaceutical Society, 2016). Of this, £60 million was estimated to be saved through medicines optimisation, with the remaining £75 million saved through reduced hospital admissions. At a time when the NHS is under pressure to reduce costs, savings made through medicines optimisation including deprescribing in care homes have the potential to offer significant individual, organisational and societal benefits.

1.2.2 Potential risks of deprescribing

As well as the potential benefits of deprescribing, there are also associated risks. Not all trials of deprescribing in older people have shown benefits, and cessation of a potentially inappropriate medicine does not always result in a reversal of harm. For example, it was shown that cessation of anticholinergic medicines did not significantly improve or worsen cognitive function. Kersten et al (2013) conducted a randomised, controlled, single blinded trial of care home residents and investigated the relationship between their cognitive function and their anticholinergic drug score (ADS). Participants were asked at baseline, four weeks and eight weeks to recall ten words immediately. After eight weeks, the difference in immediate word

recall between the control group and the group which had their ADS score reduced by a median of two was 0.54 words (95%CI 0.91-2.05) (Kersten et al, 2013).

Further risks of deprescribing include the fact that patients may experience withdrawal effects or a recurrence of the condition the medicine was prescribed for (Reeve et al, 2014). There are few studies which investigate the effect of withdrawing medicines in care home residents. Cerety et al (1993) conducted a retrospective review of the medical records of 175 nursing home residents and found that 34% of these residents experienced a total of 94 adverse reaction after medicines were stopped. Iyer et al (2008) reported in their review of medication withdrawal trials in people aged 65 years old and older that some adverse effects were seen in some trials; for example, stopping antipsychotic treatment led to poor sleep and worsened nocturnal symptoms of the condition the for which the medicine was prescribed. Reeve et al (2014) suggested that adverse effects caused by withdrawal of medicines can be minimised by tapering the medicine, rather than abruptly stopping it.

A recurrence of the condition being treated is also a possibility, as demonstrated by a study of the effects of stopping antihypertensive medicines (Nelson et al, 2003). It was found that whilst 36% of 503 older people whose antihypertensive medicines were stopped were normotensive after one year, a further 54% of people required their antihypertensives restarting for the original indication (Nelson et al, 2003). Restarting the medicine resolved the recurrence of the condition being treated, which is likely to be a solution to this problem.

A concern may arise whereby conditions may not be improved by restarting a medicine, and dementia is a potential example of this which is likely to affect care home residents. There is limited evidence available to guide the use of acetylcholinesterase inhibitors and memantine used for the treatment of dementia, and it is unclear when these should be deprescribed (Parsons et al, 2010). Trials of these medicines typically last for a maximum of 12 months, and so their benefit beyond this time is uncertain (Parsons et al, 2010). There is evidence to suggest that stopping these medicines can result in a decline in the patient's condition, and it is unclear whether restarting the medicine results in an improvement (Parsons et al, 2010). The lack of evidence of the benefit of these medicines beyond 12 months, coupled with the risk that stopping them may cause an irreversible decline in the patient's condition, can deter healthcare professionals from deprescribing these medicines.

There is also uncertainty regarding medicines which have a long "time to benefit", as these may not be beneficial for older people (Holmes et al, 2013). For example, statins prescribed for the prevention of myocardial infarction have a time to benefit of 2 to 5 years (Holmes et al, 2013). Therefore, older people who are unlikely to live for longer than two years, due to their advanced age or a terminal diagnosis, may not live long enough to realise the benefit of the medicine. They may still, however, experience harm from the medicine caused by adverse effects, or

pharmacokinetic or pharmacodynamic drug interactions. Lack of guidance concerning such uncertainties may also deter healthcare professionals from deprescribing.

1.2.3 Other solutions to inappropriate medicines use in care homes

It is important to note that deprescribing is one potential solution to inappropriate polypharmacy and other potential solutions include those in Figure 5 below (Molokhia and Majeed, 2017):

- More and improved guidance for treating multimorbid patients who require multiple medicines, including risk prediction tools to quantify the risks associated with taking certain medicines.

- Enhanced systems for monitoring patients and their medicines: this may be facilitated by electronic records, prescribing and systems. It may also be facilitated by incorporating other healthcare professionals into the process of medicines management, such as pharmacists and nurses.
- Focussing on high risk groups, such as those with co-morbidities, older people and care home residents.
- Rapid identification of patients taking multiple medicines, facilitated by electronic systems
- Medicines reconciliation: rapid transfer of patient information between care settings, ensuring that changes to medicines are maintained when the patient moves to a different care setting
- Artificial intelligence and other digital innovations

Figure 5: Alternative solutions to inappropriate polypharmacy, as proposed by Molokhia and Majeed (2017)

Despite these alternative solutions to the important problem of inappropriate polypharmacy, deprescribing was selected as the focus for this thesis as it is an emerging area in which there is a lack of research, particularly in care homes in the UK. Whilst there are risks, there are also many potential benefits. The primary care landscape in the UK is changing, and more initiatives are being announced to improve the health of those in care homes in care homes (see section 1.3.4). This includes involving more of the multi-disciplinary team in reviewing the medicines of care home residents, and increasing the presence of healthcare professionals in care homes. As these initiatives are introduced, and more people start reviewing the medicines of care home residents more regularly, deprescribing is an approach which should be investigated to determine its potential use and benefit in care homes in the UK. This includes investigation of its feasibility, including attitudes towards the concept and barriers and facilitators to the process. These will be addressed by this thesis in order to determine whether deprescribing in care homes is beneficial, and how it could be facilitated. Behaviour change psychology will be utilised to characterise deprescribing as a behaviour and determine how it may be improved

1.3 Care homes in the UK

In addition to the complications caused by the residents' conditions, living in a care home adds extra layers of communication and complexity to the deprescribing process. This is because residents may be unable to partake in shared decision- making or knowledge exchange due to cognitive impairment, and their relatives may need, or wish, to be involved as an advocate. Care home staff are also involved where they would not be for a community dwelling patient. Pharmacists working in care homes may have to liaise with the GP to enact deprescribing, and hospital specialists may also need to be contacted before a decision is made. Consequently, the involvement of multiple stakeholders is one example of why deprescribing is more complex in a care home. It is also complicated by the structure of the health and social care system in the UK.

1.3.1 Medicines management in care homes

The medicines of care home residents are typically managed by care home staff, from the ordering to the administration of a medicine (Barber et al, 2009). Care home staff manage the ordering of medicines, usually in collaboration with a local community pharmacy (Barber et al, 2009). The medicines are then dispensed by a community pharmacy, either in their original manufacturer's packaging or as monitored dosage systems (MDS) (Barber et al, 2009). MDS are dispensed by pharmacy staff and consist of a weekly tray for each resident (Barber et al, 2009). Care home staff typically administer medicines to residents ,multiple times a day, similar to a "medicines round" in a hospital. However, residents with the capacity to administer their own medicines should be allowed and enabled to do this (National Institute for Health and Care Excellence, 2014). Not being responsible for managing their medicines means that care home residents usually have little responsibility for their own medicines.

Similarly, care home staff are often responsible for liaising with GP practices to arrange GP appointments for residents (Social Care Institute for Excellence, 2013). As a result of this, care home residents lack agency over their own care as they are reliant on others to arrange GP care for them. In addition to this, there is no single way of providing primary care to care home residents. When a resident moves into a care home, they may stay registered with their own GP. Alternatively, they may be encouraged to re-register with a local practice or with a practice which provides a service to the care home.   As a result, care home staff may correspond with a number of GP practices on behalf of their residents; there is evidence to suggest that care homes in the UK have residents registered to a mean of 3.8 (range 1-14) GP practices per care home (Barber et al, 2009). As GP practices often have different systems of operating, care home staff have multiple systems to navigate which may present different barriers to accessing primary care for a resident.

1.3.2 Policies informing the use of medicines in care homes

Policies informing the use of medicines in care homes include:

- NICE: Quality standard QS85 and NICE guidance SC1, both entitled "managing medicines in care homes (National Institute for Health and Care Excellence, 2014; National Institute for Health and Care Excellence, 2015)
- RPS: The right medicine: Improving care in care homes (Royal Pharmaceutical Society, 2016)
- General Pharmaceutical Council (GPhC): Pharmacy and care homes (Webber, 2015)
- Social Care Institute for Excellence (SCIE) Guide 52: GP services for older people: a guide for care home managers (Social Care Institute for Excellence, 2013)

The NICE guidance and quality standard cover all aspects of medicine use in care homes, from the ordering to the review and administration, and is aimed at anyone involved in medicines in care homes, including care home staff, GPs and community pharmacists (National Institute for Health and Care Excellence, 2014; National Institute for Health and Care Excellence, 2015). The NICE Quality Statement states that residents should have their medicines reviewed at least annually. The NICE guidance goes further, stating that medication reviews should be conducted by a named healthcare professional, and that they should involve the resident and a multidisciplinary team. The guidance also describes what a medicines review should include; however, deprescribing is not explicitly mentioned in these stages.

The RPS and GPhC guidance are specific to pharmacists and pharmacy practice and provide information about the role of pharmacists in care homes and guidance for pharmacists working in these settings (Royal Pharmaceutical Society, 2016; Webber. 2015). Finally, the SCIE guidance provides guidance for care home staff liaising with GP practices to obtain GP services for residents in their care. This includes outlining the care that residents are entitled to, including medicine reviews (Social Care Institute for Excellence, 2013).

1.3.2.1 The roles of Care Quality Commission and Quality Outcomes Framework

The Care Quality Commission (CQC) is a regulatory body responsible for monitoring, inspecting and regulating health and care providers, including care homes, in the UK to ensure they are safe and of a high quality (Care Quality Commission, 2020). Each care home in the UK must be registered with the CQC and have a named responsible person as a condition of their registration (Care Quality Commission, 2020). The CQC inspects care homes and issues a report and rating detailing the strengths and areas of improvement for care homes (Care Quality Commission, 2020). Care homes may be rated either inadequate, requires improvement, good or excellent. Those rated inadequate are subject to extra inspections and targets aimed to increase the quality and safety of care they provide (Care Quality Commission, 2020).

The Quality Outcomes Framework (QOF) is a voluntary reward scheme for GP surgeries in England that aims to reward and encourage good practice (NHS Digital, 2020). GP practices

are rewarded for their performance against 77 indicators: 65 indicators from 19 clinical areas such as heart failure, seven public health indicators such as adult obesity and five indicators from two additional public health services (cervical screening and contraception) (NHS Digital, 2020). The higher the score across the indicators, the larger a financial reward the practice will receive (NHS Digital, 2020).

1.3.3 Roles of healthcare professionals in the care of care home residents

There are multiple people involved in the care of care home residents. As well as the resident themselves, there is also care home staff, GPs, primary care pharmacists and relatives. Hospital specialists may also be involved in a resident's care, as well as other professionals such as physiotherapists, speech and language therapists, dieticians, social workers, community pharmacists, opticians and dentists. These people must co-ordinate in order to ensure that the resident is receiving the best possible care. The key stakeholders identified in the deprescribing process were the resident, relatives, GPs, care home staff and primary care pharmacists. Their roles in care homes in England are described below and were investigated further by the empirical research.

Whilst care home staff are responsible for the routine care of care home residents, GPs are responsible for their medical care: diagnosing and treating acute issues, the medical management of long-term conditions and the prescribing of medicines (Social Care Institute for Excellence, 2013). They may be responsible for one, some or all the residents in a care home. If responsible for all the residents, they typically visit the care home routinely through a funded scheme (Social Care Institute for Excellence, 2013). If they are responsible for fewer residents, this may not be in place. NICE have stated that all care home residents should have their medicines reviewed at least annually and at present GPs and primary care pharmacists, where employed for this purpose, are responsible for conducting these (National Institute for Health and Care Excellence, 2015).

There are emerging roles for pharmacists in primary care and in care homes. In 2015, NHS England launched the Clinical Pharmacists in General Practice Programme which has seen the full time equivalent of 1000 pharmacists working in general practice (Baqir and Joshua, 2018). Pharmacists also work for Clinical Commissioning Groups (CCGs), or for other providers subcontracted to provide NHS medicines services, and the roles of both groups of pharmacists includes conducting medicine reviews. Some pharmacists are employed by CCGs specifically to review the medicines of care home residents (Baqir and Joshua, 2018).

Pharmacists working in primary care work closely with GPs, and those who are not qualified as independent prescribers will refer their prescribing or deprescribing recommendations to a GP to be implemented (Baqir and Joshua, 2018). Pharmacists who are independent prescribers may prescribe or deprescribe medicines during a review autonomously.

Care home residents may also receive secondary care, either during a hospital admission or through care from a specialist team based in secondary care. Secondary care adds another group of healthcare professionals who may review the resident's medicines and make, and/or enact, prescribing and deprescribing decisions. This adds another potential layer of complexity to the deprescribing process.

1.3.4 Primary care initiatives

Currently, several changes are being implemented in the NHS which reflect the increased interest in medicines optimisation and reducing problematic pharmacy. Both the NHS Long Term Plan and the GP Five Year Forward View include aims to medicines optimisation and care home residents in order to improve the care provided to residents and minimise inappropriate prescribing (NHS, 2019).

The NHS Long Term Plan, which will shape the next ten years of healthcare provision in the UK, includes changes to how care home residents will receive primary care provision. A key part of the NHS Long Term Plan is the creation of Primary Care Networks (PCNs) which are the affiliation of local providers, including GP surgeries and community pharmacies, which will work together to serve their local area (Primary Care Strategy and NHS Contracts Team, 2019). Each PCN must deliver five Direct Enhanced Services (DES) as part of the GP contract. Two of these DES include care home residents and are applicable to this thesis (Primary Care Strategy and NHS Contracts Team, 2019):
- Structured medication review and medicines optimisation
- Enhanced health in care homes

These DES will be provided through changes to the way primary care is provided to care homes. Some of these changes are continuations or expansion of services which are currently available, such as pharmacist-led medicine reviews, whilst others are novel, such as the provision of weekly visits to care homes by a named healthcare professional (Primary Care Strategy and NHS Contracts Team, 2019).

The Medicines Optimisation in Care Homes (MOCH) programme was an example of the expansion and continuation of a service already available in some areas to care homes (Baqir and Joshua, 2018). Pharmacists and pharmacy technicians were employed and trained through this programme to optimise medicines in care homes, which included a reduction in problematic polypharmacy and the deprescribing of inappropriate medicines. This was provided amongst other activities designed to optimise medicines use in care homes, for example the training of care home staff by pharmacy professionals and improving medicine systems in care homes. NHS England funded 600 places on the training pathway which facilitated the MOCH programme, which turn addressed problematic polypharmacy in care homes (Baqir and Joshua, 2018).

The Enhanced Health in Care Homes DES aims to ensure that people living in care homes experience the same access to healthcare as those who reside in the community (Primary Care Strategy and NHS Contracts Team, 2019). This includes improving the quality and safety of care provided by care homes and improving suboptimal prescribing. This will be provided through the identification of a clinical lead who will ensure, amongst other factors, that the improvements displayed in Figure 6 below are implemented (Primary Care Strategy and NHS Contracts Team, 2019):

- Every care home resident has a named clinical team for provision of community services,
- A multidisciplinary team (MDT) is established who will develop and monitor personalised care plans for care home residents
- Establish protocols for information sharing and the use of shared care records,
- Each care home will experience a weekly MDT "home round" led by an appropriate clinician, which fortnightly must be a GP or geriatrician.
- Each care home resident has a personalised care plan within seven days of admission to the home, which will be reviewed annually.
- Structured medicine reviews are provided for each care home resident.

Figure 6: Improvements to primary care provision in care homes as outlined in the Enhanced Health in Care Homes DES (Primary Care Strategy and NHS Contracts Team, 2019)

The DES which aims to improve medicines optimisation and ensure structured medication reviews includes various strategies aimed at improving the access of patients to regular, structured medication reviews (Primary Care Strategy and NHS Contracts Team, 2019). This includes supporting other healthcare professionals to assist with the medicines optimisation process, and identifying patients such as care home residents who would benefit from a structured medicines review (Primary Care Strategy and NHS Contracts Team, 2019). The provision of these two DES should ensure that care home residents experience improved provision of primary care services, and that problematic polypharmacy and suboptimal prescribing in care homes is reduced.

1.4 Deprescribing: a behaviour

This thesis aims to investigate deprescribing as a behaviour, and to identify behaviour change techniques which may improve deprescribing in care homes. In the context of behaviour change, a behaviour has been defined as:

> *"Anything a person does in response to internal or external events. Actions may be overt (motor or verbal) and directly measurable, or covert (activities not viewable e.g., physiological responses) and indirectly measurable; behaviours are physical events that occur in the body and are controlled by the brain"* (Michie et al, 2013)

This definition was agreed by a multidisciplinary group during a Delphi process in relation to psychology, sociology, anthropology and economics. It may not be immediately obvious why

this definition is relevant to this healthcare study; however, it can be applied to deprescribing in the following ways:

- Deprescribing is something that a healthcare professional does in response to internal events, such as their thought processes during a medicine review, or an external event, such as a change in the resident's condition.
- Overt deprescribing actions are the actions of stopping inappropriate medicines; this is a measurable outcome of deprescribing behaviour.
- Covert deprescribing actions are emotions or influences felt during the deprescribing process.
- Deprescribing is a physical event controlled by the brain.

There is precedent for the conceptualisation of deprescribing as a behaviour. Ailabouni et al (2016) and Scott et al (2019) employed behaviour change psychology and the Theoretical Domains Framework (TDF) to investigate the phenomenon of deprescribing. Cadogan et al (2015) also employed behaviour change techniques as a method of addressing inappropriate polypharmacy in primary care (Cadogan et al., 2015). In addition to this prescribing, the opposite of deprescribing, is widely regarded as a behaviour and behaviour change psychology, including the TDF, have been utilised to investigate this (Anderson et al, 2014; Cockburn and Pit, 1997).

Furthermore, an international symposium on deprescribing guidelines identified behaviour change as a necessary part of the implementation of deprescribing guidelines (Farrell et al., 2019). It was stated that behaviour change psychology would provide insights into deprescribing behaviour and would assist with the successful implementation of deprescribing intervention (Farrell et al., 2019). This thesis aims to address this, and will utilise the Theoretical Domains Framework to explore deprescribing as a behaviour.

The Theoretical Domains Framework was selected as a theoretical basis for this study as it is a composite framework of multiple behaviour change theories (Cane et al, 2012). A detailed description of the TDF is beyond the remit of this chapter; this can be found in Chapter 3 section 3.2 and Chapter 5 section 5.2. However, the Theoretical Domains Framework was applied to the findings of the literature review (Chapter 2, sections 2.4.6 and 2.6.3) and the findings of the empirical work (Chapter 5). The TDF was then utilised to identify possible components of a behaviour change intervention which may improve deprescribing behaviours in care homes.

1.5 Overview of this thesis

This thesis aimed to use qualitative methods to gain an in-depth understanding into why care home residents in the UK are experiencing problematic polypharmacy and how deprescribing, one potential solution, in care homes can be facilitated. Behaviour change psychology was employed to identify techniques which may be implemented to change the deprescribing behaviours of healthcare professionals. Though it is beyond the scope of this thesis, it is intended that the identified techniques will form the foundation of a resident-centred behaviour

change intervention for use in care homes. The intervention would be co-designed with residents, relatives, GPs, pharmacists and care home staff.

The thesis will address the following aim and objectives in six chapters:

Aim

To investigate the barriers and facilitators to deprescribing for older people living in care homes.

Objectives

- To examine the existing evidence of barriers and facilitators to deprescribing unnecessary medicines for older people living in care homes
- To investigate how the deprescribing process happens in care homes, including the roles and responsibilities of those involved
- To explore how older people living in care homes, and their relatives, perceive their medicines (or medicines taken by the resident) and their attitudes to deprescribing
- To explore the attitudes of healthcare professionals towards deprescribing in care homes, including identification of perceived barriers and facilitators to deprescribing.
- To use the evidence and findings to identify behaviour change techniques that may inform the development of a novel intervention.

This chapter has provided the background to the thesis including details about how care homes are structured and how medicines are managed in UK care homes and why deprescribing has been defined as a behaviour.

The second chapter is the literature review, which consists of a systematic literature search followed by a narrative synthesis of the findings. The Theoretical Domains Framework (TDF) is introduced in this chapter and is applied to the findings of the literature review.

The third chapter, methodology and methods, provides the rationale for the methods employed to conduct the empirical study before explaining how the study was conducted. This includes detail about the pragmatic approach taken to the study and the theoretical underpinnings, followed by presentation of and discussion around the sampling, data and quality assurance processes. This chapter also incorporates the ethical approval processes that were undertaken before data collection began.

Chapter 4 is the findings chapter, where the qualitative findings of the qualitative study are presented narratively. This is followed by Chapter 5, where the TDF is applied to the qualitative findings. These findings are then incorporated with the barriers described in the literature review and mapped to the Behaviour Change Wheel (BCW) in Chapter 5 to select behaviour change techniques which may be used to develop a novel deprescribing intervention.

The final chapter, Chapter 6, brings together the whole thesis to discuss deprescribing in care homes, contextualising the findings in the wider literature and explaining how they could inform policy and practice.

1.6 Summary

There is a wealth of evidence that suggests that older people, and particularly those in care homes, are susceptible to inappropriate prescribing which may consequently be causing harm. Whilst there are some initiatives that have recently been announced to address this, there is a paucity of research into one of the solutions: deprescribing, especially set in care homes, in the UK. This thesis aimed to address this, through an investigation of the attitudes to, and barriers and facilitators of, deprescribing in this setting. This chapter provided the background to this thesis: definitions of key the key terms deprescribing and polypharmacy, a description of the structure of care homes and medicines management within UK care homes and insight into why deprescribing is important in care homes. Deprescribing was then characterised as a behaviour, which provided a rationale for the use of behaviour change psychology and techniques throughout the study. The policy and guidance that informs current practice regarding medicines use in the UK was also outlined, followed by the aims and objectives of the study and the thesis structure. The following chapter is the literature review that explores and synthesises the current evidence around deprescribing in care homes.

Chapter 2 Literature review with narrative synthesis of barriers and facilitators to deprescribing in care homes

2.1 Introduction

This chapter presents the literature review: a narrative synthesis of barriers and facilitators to deprescribing in care homes. This chapter will address the following objective of the overall thesis:

- To examine the existing evidence of barriers and facilitators to deprescribing for older people living in care homes.

Firstly, the research question and aim of the literature review will be presented, followed by the methodology employed. This includes the rationale for why narrative synthesis was undertaken, as well as how the Theoretical Domains Framework (TDF) was incorporated into the review. The methods section (2.2) explains how Popay et al's (2006) guidance on conducting narrative synthesis was followed to conduct the review. This is followed by the results section (2.5), which outlines the studies included in the review and their critical appraisal. The findings are presented following Popay et al's (2006) guidance, and this section includes how the findings were extracted and mapped to the TDF. Finally, the findings and their TDF mapping are examined and explained in the discussion.

2.2 Research question and aim of the literature review

Research question

What barriers and facilitators to deprescribing for older people living in care homes have been identified and described in the existing literature?

Aim

To describe the barriers and facilitators to deprescribing in care homes, as perceived by care home residents, relatives, healthcare professionals and care home staff.

To map the barriers to deprescribing in care homes identified by healthcare professionals and care home staff to the TDF.

2.3 Methodology

In order to conduct a rigorous literature review, a clear, transparent and replicable method should be followed to ensure that all eligible papers are identified, included and critically appraised, and that their findings are appropriately reported (Higgins and Green, 2011). Once the studies for inclusion have been identified following a systematic process, their findings must

be synthesised in order for them to be reported. There are multiple approaches to synthesising findings, and selection of the most appropriate approach involves consideration of the type of data that was being sought. In order to gain insight into the existing literature and to guide the choice of approach for this literature review, a scoping and mapping exercise was conducted. This exercise piloted the search strategy and inclusion and exclusion criteria that were used for the finalised literature review.

The mapping exercise identified that both qualitative and quantitative studies had been conducted to investigate barriers and facilitators to deprescribing in care homes. It was therefore decided that a range of study designs would be considered eligible for inclusion in the review, including quantitative, qualitative and mixed methods studies. The inclusion of multiple study types made the findings unsuitable for presenting as a quantitative review, such as a meta-analysis (Higgins and Green, 2011). However, it was not appropriate to use a purely qualitative method of synthesis such as meta-synthesis, meta-ethnography or thematic synthesis to present the findings either (Barnett-Page and Thomas, 2009).

Consequently, it was decided that a narrative synthesis would be the most appropriate method. Narrative synthesis employs words as the main method of presenting the findings, although numerical or statistical analysis may be utilised if necessary (Popay et al, 2006). This allows for the inclusion of heterogeneous and mixed methods study designs and the summarising of qualitative and quantitative findings, which was deemed necessary for this review (Ryan and Cochrane Consumers and Communication Review Group, 2013)

The guidance on the conduct of narrative synthesis in systematic reviews (Popay et al., 2006) was developed in response to the need for methodological guidance for undertaking literature reviews with narrative syntheses, and was used to guide the conduct of this literature review. Use of the guidance lends rigour to the narrative synthesis process and is recommended by the Cochrane Collaboration (Ryan and Cochrane Consumers and Communication Review Group, 2013). While the guidance focuses on the use of narrative synthesis in evaluating the effects and implementation of interventions, Popay et al (2006) acknowledged that it can be used for a wide range of research questions, such as the question posed by this literature review.

To ensure a consistent and rigorous approach, each study included in the review was appraised using an appropriate critical appraisal tool. This ensured studies of similar designs were subjected to the same appraisal methods, which minimised variation in the appraisal and presentation of studies and allowed fair conclusions to be drawn. Due to the paucity of literature identified in the mapping exercise, it was decided not to exclude studies based on this quality assessment (see section 2.5.3), however the critical appraisal was used to analyse, evaluate and guide the findings and conclusion.

2.3.1 Theoretical Domains Framework

The findings from the literature review were also synthesised using the Theoretical Domains Framework (TDF). Employing the TDF in the literature review allowed the findings of the literature review to be integrated with the findings of the empirical research with the work undertaken to identify potential intervention components (Chapter 5). It also ensured that the TDF was embedded into the study, from the initial informative phase (the literature review) to the design and reporting of the empirical work. Furthermore, Atkins et al (2017) stated that the TDF may be incorporated into systematic reviews, although the methods for this were not described.

For more information regarding the Theoretical Domains Framework and the rationale for applying it to this study, please see Chapter 3 section 3.2.3 and Chapter 5, section 5.2.

2.4 Methods

The guidance on the conduct of narrative synthesis in systematic reviews (Popay et al, 2006) refers to six stages which were followed in order to complete this review, as shown in Figure 7:

1. Identifying the review focus, searching for and mapping the available evidence
2. Specifying the review question
3. Identifying studies to include in the review
4. Data extraction and study quality appraisal
5. The synthesis (in this review, this included mapping the findings to the TDF)
6. Reporting of the results and dissemination (not included in this review)

Figure 7: The six stages in conducting a narrative synthesis, as defined by Popay et al (2006)

2.4.1 Identifying the review focus, searching for and mapping the available evidence

The first stage refers to the identification of the review focus and to search for and map the available evidence to refine the research question and identify study designs. This stage was undertaken as the mapping and scoping exercise, prior to the literature search that informed this review. It revealed a small number of studies examining the barriers and facilitators to deprescribing in care homes – three were identified at the time of the mapping exercise (Ellis et al 2014, Kalogianis et al 2016, Harriman et al 2014), with Azermai et al (2013) identified as a potentially eligible study, amongst others. The study designs were varied, including surveys, mixed methods studies and qualitative methodologies. This confirmed that narrative synthesis was an appropriate choice for this review, as findings from at least three different study designs required synthesis.

The initial mapping exercise allowed for inclusion of papers relating to barriers and facilitators to deprescribing, as well as papers concerning interventions designed to test deprescribing in care homes. However, it became apparent that the results were not focussed enough. This was because there were numerous papers detailing deprescribing interventions that had been trialled in care homes, but these papers did not discuss the barriers and facilitators to deprescribing and were therefore irrelevant to the focus of this review. Consequently, the inclusion and exclusion criteria were refined, and it was decided that articles evaluating and testing deprescribing interventions in care homes would not be included in this review.

2.4.2 Specifying the review question: What barriers and facilitators to deprescribing for older people living in care homes have been identified and described in the existing literature?"

The SPIDER (sample, phenomenon of interest, design, evaluation, research type) tool was utilised to design the research question and inclusion and exclusion criteria for this literature review (Cooke et al, 2012). SPIDER facilitates searches for qualitative and mixed methods studies in healthcare research.

The "design" and "research type" aspects of the SPIDER acronym did not lend themselves to constructing the research question, as all study designs were considered for inclusion. Therefore, the "sample", "phenomenon of interest", and "evaluation" parts were used:

- Sample: older people living in care homes
- Phenomenon of interest: deprescribing
- Evaluation: barriers and facilitators

This created the question, "What barriers and facilitators to deprescribing for older people living in care homes have been identified and described in the existing literature?" This question was specific, answerable and included all the information being sought by the review.

2.4.3 Inclusion and exclusion criteria

The inclusion and exclusion criteria were set using the SPIDER acronym, as described above (Cooke et al., 2012).

2.4.3.1 Inclusion criteria

Sample:
a) Older people who were prescribed medicines and were residents of care homes, and their relatives
b) Care home staff, doctors and other healthcare professionals involved in the prescribing and/or administration of medicines to these patients.

Phenomenon of interest:
a) The process of deprescribing inappropriate medicines in care homes

Design:

    a) Interviews, focus groups, questionnaires, surveys or observational studies

Evaluation:

    a) Views, experiences, attitudes, beliefs, perceptions, barriers, facilitators

Research type:

    a) Qualitative, quantitative or mixed methods.

In addition to the above criteria, in order to be included the articles must have been:

- Available in English
- Accessible as a full text article.

2.4.3.2 Exclusion criteria:

    a) Articles that did not focus on older people living in care homes (e.g. articles concerning younger people or hospices).

    b) Articles that did not focus on deprescribing, the cessation of medicines (e.g. articles about medicines optimisation, which has a wider definition)

The following databases were searched on the 5th January 2017: Embase, Medline, CINAHL, PsychInfo and International Pharmaceutical Abstracts (IPA). These databases were selected as they contain information regarding articles published that are related to medicine, health and allied health professionals so are likely to include studies related to stopping medicines and care home residents. PsychInfo was selected as it includes health behaviour studies, which are of particular interest for this thesis. The searches were limited to results in the English language, and those published after the year 2000. This was because the mapping exercise did not identify any relevant studies from before 2000, and deprescribing is a term that has only been in use since 2003 (Reeve et al, 2015). There has also been an increase in interest in polypharmacy in care homes over the past two decades, and an increase in polypharmacy itself over this time (Reeve et al, 2015). Hand searching the references of included articles was undertaken.

The search strategy (Appendix A) included synonyms for the terms "care home" (for example, nursing home, long term care facility) and "deprescribing" (for example, cessation/withdrawal/stopping of medicines). Truncations (*), relevant words close to one another (nX, adjX) and other Boolean operators were used to ensure the search included as many variations of the search terms as possible.

The findings from systematic reviews were not included in this review. Instead, the reference lists of systematic reviews were hand searched to identify primary studies suitable for inclusion. The full texts of primary studies identified in the reference lists that were deemed potentially relevant to the review being conducted were sought, read and included if they met the inclusion

criteria. Primary studies were sought as opposed to the reviews which incorporated their results to ensure that the primary data, free of the influences, opinions and biases of review authors, was utilised in the narrative synthesis. In addition to hand searching the references of systematic reviews, hand searching of the reference lists of all included studies was undertaken to identify eligible studies.

2.4.4 Title, abstract and full text screening

Endnote version 8, later updated to version 9, was used to collate articles. This allowed for the search results to be organised, and facilitated the title, abstract and full text screening of the search results. After duplicates were removed, the titles of the search results were read and assessed for potential inclusion into the literature review. Many articles were discounted at this stage due to clear irrelevance to the topic. The abstracts were then compared against the inclusion and exclusion criteria and if it appeared that the article could be eligible, or if there was insufficient information in the abstract to determine eligibility, then the full text was sought. The full text was then read by the author and compared against the inclusion and exclusion criteria before determining whether it was suitable for inclusion. If it was unclear whether an article should be included, this was discussed with the supervisory team and a decision was made. Details of papers which were not included after discussion are in Appendix B.

2.4.5 Data extraction and study quality appraisal

The author designed and utilised a data extraction table which was utilised to systemically extract data from the included studies (Table 1). The data extraction table allowed for collection of key information from the study, and included factors identified by the critical appraisal tools as important for determining study quality, such as details regarding the sample, data collection methods and study design. The table allowed for the same information to be extracted from each included article, which aided comparison of the articles and increased transparency and rigour.

Critical appraisal of each paper was undertaken using a critical appraisal tool appropriate for the study design. The studies included in the review were either qualitative, surveys, or mixed methods studies comprising both a qualitative and a survey aspect. Therefore, the Critical Appraisal Skills Programme (CASP) tool for qualitative research (Critical Appraisal Skills Programme, 2014) and/or the Centre for Evidence Based Management's (CEBM) tool for appraising survey quality (Centre for Evidence Based Management, 2014) were utilised when undertaking the critical appraisal of included studies. Mixed methods studies were appraised using both tools.

Critical appraisal tools are recommended by the Cochrane collaboration (Cochrane UK, online, 2019). Such tools are especially recommended for novice researchers to aid them in exploring

all aspects study quality. The CASP and CEBM tools were selected because they allowed for assessment of the key points required when assessing the quality of studies. For example, the CASP tool prompts researchers to assess the credibility, transferability, dependability and confirmability of the study in question, whilst the CEBM tool encourages consideration of how statistics, sample size and recruitment methods may have introduced bias to the sample (Critical Appraisal Skills Programme, 2014; Centre for Evidence Based Management, 2014). For the findings of the critical appraisals included in this literature reviews, see section 2.5.3.

2.4.6 Synthesis of results

Results were synthesised using recommendations from Popay et al's (2006) guidance. Textual descriptions of the findings and data to be included, as well as Table 1, assisted in visualising the data. Discussion with the supervisory team and colleagues also shaped the synthesis. Following this process, the findings were extracted from the studies and synthesised as follows.

2.4.6.1 Use of the Theoretical Domains Framework

The barriers to deprescribing as described by healthcare professionals were extracted from the findings to be synthesised and mapped to the Theoretical Domains Framework. As described in Chapter 1.4, deprescribing was characterised as a behaviour in order to gain a deeper understanding of it. This allowed for the application of frameworks which provide insight into factors of behaviour, such as the Theoretical Domains Framework (TDF). A full description of the TDF is beyond the remit of this chapter and this can be found in Chapter 3.2.3 and Chapter 5.2. In summary, the TDF is a composite of health behaviour frameworks, the use of which provides a more detailed understanding of the behaviour in question. The TDF consists of 14 domains, each representing an factor theorised to influence behaviour. Once the barriers to deprescribing presented by the articles included in the literature review had been identified, they were then mapped to the TDF thus providing insight into why the barriers occurred. This information was then utilised to understand how behaviour might be improved. The healthcare professional barriers identified in the literature (not the systematic reviews) were synthesised and mapped to the Theoretical Domains Framework (TDF), as described transparently below. The results of this mapping are presented in section 2.6.3.

1. Synthesised barriers to deprescribing were then created, by extracting barriers from the literature and grouping similar ones together. Examples of these synthesised barriers were influence of the resident's health, systemic barriers to communication and emotions felt towards deprescribing.
2. The synthesised barriers were mapped to the TDF through discussion between the author and the member of the supervisory team. The author mapped the barriers, and then discussed the mapping with the member of the supervisory team who suggested

alternative domains where appropriate. Disagreements were resolved through discussion.

As the TDF was applied to both the literature review and empirical findings, details of the TDF mapping quality assurance procedures offered by a member of the supervisory team with expertise in the TDF use (CE) are detailed in section 5.2.2.2 which covers the mapping of the empirical findings to the TDF. The same quality assurances procedures were used at this stage also.

The validated version of the TDF, as presented by Cane et al (2012), was utilised throughout this thesis. The validated version of the TDF can be found in Appendix C. Appendix C also presents Table 53, which links the TDF to deprescribing.

2.4.6.2 Narrative synthesis of other findings

Once the barriers to deprescribing as perceived by healthcare professionals had been extracted from the articles included in the literature review, the remaining findings were presented as follows. These findings consisted of factors important to residents, relatives, healthcare professionals and care home staff when deprescribing in care homes, and facilitators to the process. The findings were then tabulated and separated into two groups to be described and presented narratively (section 2.6.1 and 2.6.2):

- Deprescribing factors identified by residents and relatives
- Deprescribing factors identified by healthcare professionals and care home staff

2.4.7 Repeat of the search

The saved searches from January 2017 were repeated on each database on 25th July 2019 to ensure that relevant articles published since the last search were included in the review.

2.5 Results

The searches from the 5th January 2017 yielded a total of 2123 results, which were narrowed down to 25 articles for full text review (see Figure 8). Articles identified through hand searching came from journal alerts (subscription to BMC geriatrics) and reviewing the references of included articles. Three further articles were identified for inclusion when the search was re-run on 25th July 2019. The PRISMA guidelines (Moher et al, 2009) were used to produce the PRISMA diagram in Figure 8, detailing how included articles were selected.
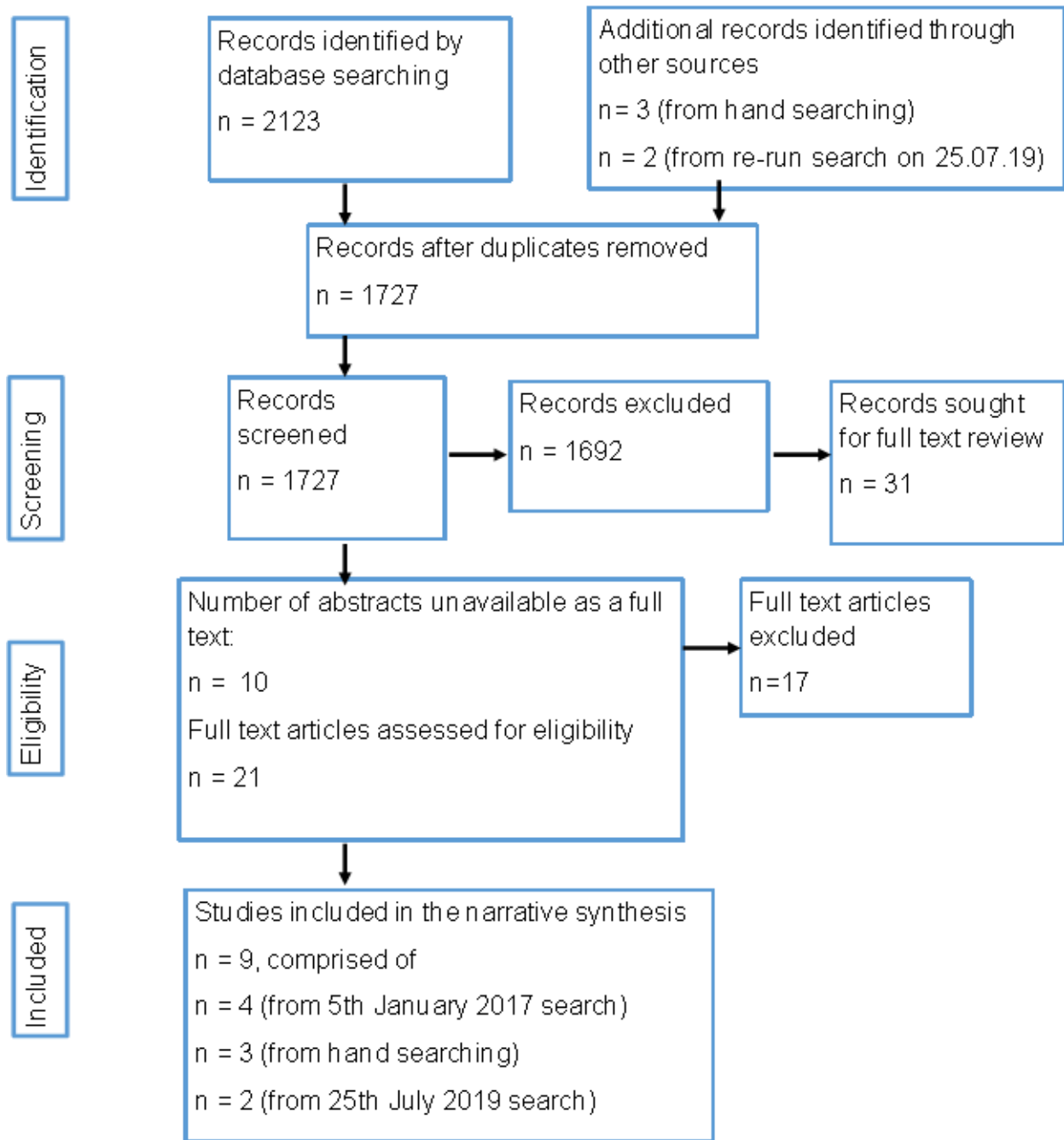
Figure 8: PRISMA diagram presenting inclusion and exclusion of studies for literature review of barriers and facilitators to deprescribing

Ten articles which were sought for full text review were not obtainable. Seven of these articles existed as an abstract only, and searches for full texts based on the abstracts were not successful. Three articles could not be obtained after emailing the authors or via searches and requests made via ResearchGate. 17 articles were discarded after full text review:

- 14 articles did not include any barriers or facilitators to deprescribing in care homes. Six of these were intervention assessments, the other eight consisted of review articles, retrospective studies other study designs which did not explore barriers and facilitators to deprescribing in care homes.
- One article was a study protocol with no findings.

- Two articles did not discuss deprescribing in care homes.

Table 51, Appendix B provides details of papers which were not included after discussion between the author and the supervisory team.

Four systematic reviews were also identified as being relevant to the study. Anderson et al (2014) reviewed the barriers and facilitators to deprescribing as perceived by healthcare professionals, and Reeve et al (2013) published a review of the barriers and facilitators to deprescribing as perceived by patients. Neither of these reviews were specific to the care home setting and the challenges that are faced by those living in care homes, and those caring for residents.

Bokhof and Junius-Walker (2016) and Lundby et al (2019) conducted systematic reviews of qualitative studies investigating GP and patient attitudes to reducing polypharmacy, and the views of healthcare professionals towards deprescribing in older adults with a limited life expectancy respectively. However, neither Lundby et al (2019) or Bokhof and Junius Walker (2016) focused specifically on care homes, and they only consider the views of GPs and patients. This excludes other health and social care staff and does not allow for the views of residents and their relatives to be presented either. For these reasons, whilst relevant primary studies from the reviews by Anderson et al (2014), Reeve et al (2013), Bokhof and Junius Walker (2016) and Lundby et al (2019) were included in the review being conducted, the reviews themselves were utilised only in the contextualisation of the literature review findings in section 2.7.

2.5.1 Written summary of included articles

Nine articles were identified and eligible to include in the literature review. Of these nine, four studies concerned the deprescribing of antipsychotic medicines only (Azermai et al, 2013; Ellis et al, 2014; Mavrodaris et al, 2013; Simmons et al, 2017). The other five studies included did not limit their study to a class of medicines (Ailabouni et al, 2016; Palagyi et al, 2016; Harriman et al, 2014; Turner et al, 2016; Kalogianis et al, 2015). Only one study, by Mavrodaris et al (2013), was conducted in the UK. The other included studies were conducted in the US (Ellis et al, 2014; Simmons et al, 2017), Belgium (Azermai et al, 2013), Canada (Harriman et al, 2014), New Zealand (Ailabouni et al, 2016) and Australia (Turner et al, 2016; Palagyi et al, 2016; Kalogianis et al, 2017).

Four of the studies included were described by the authors as qualitative studies (Ailabouni et al, 2016; Turner et al, 2016; Simmons et al, 2017; Palagyi et al, 2016). Ailabouni et al (2016) conducted semi-structured interviews with GPs, Turner et al (2016) utilised the nominal group technique method, Simmons et al (2017) employed focus groups and Palagyi et al (2016) incorporated both interviews and focus groups into their study design. The remaining studies were survey studies, or mixed methods studies incorporating a survey (Kalogianis et al, 2015; Azermai et al, 2013; Ellis et al, 2014; Harriman et al, 2014; Mavrodaris et al, 2013). Mavrodaris

et al (2013) and Ellis et al (2014) incorporated qualitative methods into their research by including open-ended questions in their surveys, which were analysed qualitatively. The quantitative aspects of these studies, and of the other survey studies included in the review, were descriptively analysed.

Only three studies (Kalogianis et al, 2015; Palagyi et al, 2016; Turner et al, 2016) incorporated the views of care home residents into their studies. Palagyi et al (2016) and Turner et al (2016) also included the relatives of care home residents, pharmacists, care home staff and GPs in their studies. Simmons et al (2017) and Ellis et al (2014) recruited only care home staff, and Azermai et al (2013) and Mavrodaris et al (2013) recruited both care home staff and GPs. Ailabouni et al (2016) and Harriman et al (2014) examined only the views of GPs. GPs were the most group included in the most studies. All studies focused on deprescribing in care homes, except for Mavrodaris et al (2013) who also considered deprescribing antipsychotic medicines in community dwelling patients. Mavrodaris et al (2013) was included as it was the only study which considered deprescribing in care homes that was conducted in the UK; only the findings that were clearly applicable to the care home setting were included in the review.

Table 1 summarises the articles included in the literature review. The key findings stated in Table 1 are taken from the abstract of each study, which summarises the findings the authors thought were most important.

2.5.2 Overview and key findings of included studies

Table 1: Overview and key findings of included studies

Lead author	Year published	Country	Study design	Objectives	Medicine type	Participants and setting	Analysis method	Key findings
Azermai	2013	Belgium	Mixed methods: expert group meeting which informed the development of a quantitative survey	Explore the willingness of GPs and nurses to discontinue antipsychotics, and the barriers encountered	Antipsychotic	Survey: GPs and nurses caring for 51 care home residents who took antipsychotic medicines	Survey: Mean scores for barriers were calculated with some statistical analysis.	Barriers to deprescribing: fear of the resident causing harm to themselves or others, increased workload for staff.
Ellis	2014	USA	Mixed methods: survey	Investigate the barriers and facilitators to reducing the use of antipsychotic drugs for older people living in	Antipsychotic	276 nursing home staff recruited from a conference delegation.	Quantitative and qualitative (theme-based content analysis) methods used.	Themes: "Changes in practice" and "relevant to needed assistance"

Lead author	Year published	Country	Study design	Objectives	Medicine type	Participants and setting	Analysis method	Key findings
				care homes in Florida.				
Mavrodaris	2013	UK	Mixed methods: survey	Investigate antipsychotic prescribing practices and patient review in primary care and care homes.	Antipsychotic	60 GPs from a pool of 144 GP practices and 28 care home staff	Open question responses analysed with thematic analysis.	75% GPs "occasionally" stop antipsychotic medicines due to concerns about stopping medicines without secondary care input and resistance from care home staff.
Harriman	2014	Canada	Quantitative: survey	Investigate the attitudes of doctors towards deprescribing	All	30 family physicians caring for 10 or more frail, elderly patients	Descriptive analysis. The results were "combined and analysed for	Barriers to deprescribing reported: medicines prescribed by

Lead author	Year published	Country	Study design	Objectives	Medicine type	Participants and setting	Analysis method	Key findings
				for older people living in care homes.		living in care homes	frequency of response".	another prescriber, organisational factors and fear of adverse effects
Kalogianis	2015	Australia	Quantitative survey	Investigate whether care home residents in Australia were willing to have their medications deprescribed.	All	236 care home residents	Descriptive analysis.	40.5% residents reported a desire to stop taking one or more of their medicines, 78.9% would be willing to stop medicines if their doctor suggested it
Palagyi	2016	Australia	Qualitative: Focus groups and semi-	To investigate perceptions of medicine use	All	25 residents, 16 relatives, 19 care home staff	Not specified	Participants displayed passivity

Lead author	Year published	Country	Study design	Objectives	Medicine type	Participants and setting	Analysis method	Key findings
			structured interviews	and deprescribing in care homes.		from three care homes, 8 GPs and 4 pharmacists		towards deprescribing. GPs preferred the "path of least resistance" reporting barriers such as time constraints, organisation of care and system barriers.
Turner	2016	Australia	Qualitative: Nominal group technique. Each group ranked the deprescribing	Determine the most important deprescribing factors for GPs, nurses, pharmacists, residents and	All	19 GPs, 12 nurses, 14 pharmacists and 11 care home residents and their representatives.	Nominal group technique.	No groups had the same priorities. Top priorities were: wellbeing of the resident, clinical

Lead author	Year published	Country	Study design	Objectives	Medicine type	Participants and setting	Analysis method	Key findings
			factors they thought were important.	their representativ-es				appropriatenes s of therapy, GP receptivity to deprescribing, evidence for deprescribing
Ailabouni	2016	New Zealand	Qualitative: semi-structured interviews	Investigate GP perceived challenges to deprescribing in residential care and the possible enablers that support GPs to implement deprescribing.	All	10 GPs	Themes identified with iterative building of coding list. TDF and constant comparison techniques involved.	Four themes: The recognition of the problem; behaviour change factors; prescribing factors: social influences and policy and processes; enablers.
Simmons	2017	USA	Qualitative: focus groups	To explore nursing home staff	Antipsychotic	29 care home staff	Coding of each statement using a hierarchical	Facilitators: improvement in quality of life

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Lead author	Year published	Country	Study design	Objectives	Medicine type	Participants and setting	Analysis method	Key findings
				perceptions of antipsychotic medication use and identify barriers and facilitators to deprescribing.			coding system. Coded data used to summarise the quotes and identify significant themes	and family satisfaction, reduction in falls. Barriers: family resistance, fear of adverse effects, issues with non-pharmacologic al alternatives, risk aversion and safety concerns.

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2.5.3 Critical appraisal of included articles

The quality of the included studies was assessed using the CASP tool for qualitative research (Critical Appraisal Skills Programme, 2014) and the CEBM survey appraisal tool (Centre for Evidence Based Management, 2014). A written narrative is presented below.

The qualitative studies (Palagyi et al 2016, Turner et al 2016, Ailabouni et al 2016) were well conducted in that the data collection methods were well reasoned and explained. Palagyi et al (2016) and Ailabouni et al (2016) described their process of analysis clearly, while this was less well explained by Turner et al (2016). Palagyi et al (2016) and Ailabouni et al (2016) provided meaningful findings, which were supported by evidence in the form of quotes. The description of the analysis process Palagyi et al (2016) and Ailabouni et al (2016) employed, coupled with the supporting evidence, improved the credibility of their findings. The findings presented by Turner et al (2016) lacked depth and supporting evidence, though this was largely due to the methodology utilised, which produced a list of findings rather than an in-depth exploration of the issues identified by participants. Both Turner et al (2016) and Palagyi et al (2016) did not report the relationships between the researcher and the participants and the researcher's place in the study, which may reduce confidence in the credibility of their findings. Ailabouni et al (2016) had, however, briefly explained the researcher's background which allowed the reader to consider how this may have affected their interpretation of the data. Ailabouni et al (2016) also presented a completed COREQ 32 checklist (Tong et al., 2007) which improved the credibility and dependability of the research. These papers were judged to provide valuable data for the review.

Simmons et al (2018) also presented the results of a qualitative study, an investigation into nursing staff's views on reducing the use of antipsychotic medicines in care homes. Focus groups were utilised to investigate the topic; however, their use was not justified so it was not clear whether this was the most appropriate data collection method (Simmons et al, 2018). In addition, there was no description for the inclusion of homes or participants, and so transferability of the findings was limited (Simmons et al, 2018; Hannes et al, 2011). The method of data analysis was also unclear, which limited the credibility, and the lack of reflexivity impacted upon the confirmability of the study (Simmons et al, 2018; Hannes et al, 2011). Overall, this study was judged to be of a lower quality than other studies included in this review, though the findings were included in order to gain a breadth of understanding of the topic. The findings were, however, given less emphasis in the findings and discussion sections of this chapter.

Azermai et al (2013) conducted a survey investigating the barriers and facilitators to deprescribing antipsychotic medicines in care homes, as perceived by GPs and care home staff. An initial qualitative phase was used to inform the development of the survey, which then

formed the main focus of the study. Perhaps because it formed only the initial part of the study, the qualitative phase of the study was not as well described or reasoned. Again, the relationship between the researcher and participants was not considered, and it was not clear how rigorously the data collection process was conducted and whether this was appropriate. This reduced the value of the findings of the survey phase of the study. The survey was, however, validated by a sample of nurses, GPs and pharmacists which did increase the content validity of the survey. There was little detail provided concerning how the survey was conducted, for example context was lacking in relation to the sample and whether it was representative and there was only descriptive analysis. The study still contributed to a little studied field, but there was insufficient detail regarding the methods to decide upon its quality.

Ellis et al (2015) conducted a survey, but collected data through open ended questions which were analysed using qualitative methods. The survey was not validated prior to use, and it was unclear whether the sample was representative of the population. The surveys were distributed at a conference session, and there were more managerial participants than general care staff participants which limited the findings towards the opinions of managers which may differ from other care staff. Surveys which appeared to have been completed by participants from the same care home were discarded. It was noted, though, that the authors could not be sure that the discarded surveys were duplicates which could have resulted in a loss of data. However, the analysis methods were clearly explained and triangulation took place, both of which increase the credibility of the results. While there are methodological flaws with the study which may affect its validity, the findings appear to have been analysed appropriately and it provides a useful contribution to the literature review, despite its limitations.

Mavrodaris et al (2013) and Harriman et al (2014) also conducted survey-based studies. Only Harriman et al (2014) addressed the context of their sample, acknowledging that it was too small and lacked power for statistical analysis. Other details relating to sample size and context were missing from the two papers which limited the generalisability of the findings (Mavrodaris et al, 2013; Harriman et al, 2014). The methods of the papers were described clearly, which increased reliability. Mavrodaris et al (2013) presented their results both quantitatively and qualitatively, with the analysis methods explained clearly with evidence of triangulation, which enhanced credibility. However, both studies had methodological issues and their sample sizes were too small for inferential tests which would have determined whether the results were significant. Harriman et al (2014) was included in the literature review as it provided further insight into GPs' views on deprescribing. Mavrodaris et al (2013) was included in the literature review as it was the only study identified that was conducted in the UK, which meant the findings were more applicable to the UK setting.

The final survey study included in the literature review was Kalogianis et al (2016). There were methodological inconsistencies in this study, for example the data collection methods were

unclear, and the survey was not validated for use in this participant group (Kalogianis et al, 2016). Kalogianis et al (2016) was the only paper to conduct statistical analysis of their findings, but the confidence intervals and P values presented were large which signified that the results were uncertain and imprecise. This was the poorest quality survey study included in this literature review, but it was included to provide context for the findings of other studies included in this review. In this way, less weight was ascribed to the findings of this study than of the other studies included.

2.6 Literature review findings: narrative synthesis

As highlighted in Table 1, only three of the seven included articles featured the views and opinions of residents and relatives, compared with six studies in which healthcare professionals and care home staff partook. Therefore, the findings were weighted towards the views of healthcare professionals and care home staff, with limited information available relating to the views of residents and relatives. The findings were therefore separated in order to gain a clear picture of the factors that were important to residents and relatives, and those important to healthcare professionals. This allowed the views of residents and relatives to be clearly displayed, understood and utilised to design interview schedules for the empirical research. The views of healthcare professionals and care home staff could then be considered with the findings of the TDF mapping exercise throughout this thesis, both during the design of interview schedules and the selection of potential intervention components.

Despite the fact that three papers were solely about the discontinuation of antipsychotics, unless otherwise stated they have been analysed and synthesised with the other five studies. This was because all the papers reported similar barriers and facilitators to deprescribing.

2.6.1 Deprescribing factors identified by residents and relatives

While there were limited findings related to residents and relatives provided by the included studies, one finding reported by multiple studies was that the residents' attitude to healthcare professionals was likely to impact their beliefs about their medicines and deprescribing (Palagyi et al 2016, Kalogianis et al 2016, Turner et al 2016) With regard to care home staff, residents and relatives feared that irregular (for example, new or temporary nursing staff) did not know the resident's history, and that this may affect their ability to advocate for the resident (Turner et al 2016).

However, the most significant influence impact that any health or social care staff member had on the resident or relative was the doctor, and it was the doctor who was most likely to influence a resident's feelings about deprescribing. This was highlighted by Palagyi et al (2016), who reported a theme named "respect the GP and do as I am told". Palagyi et al (2016) suggested that this deference to the GP's opinion, also reported by Turner et al (2016), led to the residents

displaying little interest toward their medicines, described by Palagyi et al (2016) as "apathy". Kalogianis et al (2016) also reported that residents were willing to put their trust in the GP and agree with their suggestions, displaying little resistance to change.

> *"The doctor has got the training and knowledge so we have to go with their recommendation".* Relative, Palagyi et al (2016) pp7.

Palagyi et al (2016) attributed this to the resident not experiencing any perceived harm or detrimental effects from their medicines, and so they did not think to question them. It was also reported that residents and relatives often believed that medicines were "keeping the resident alive", which may also meant they were reluctant to consider stopping them (Palagyi et al, 2016).

Healthcare professionals perceived barriers to communicating with residents, and residents and relatives participating in Turner et al's (2016) study appeared aware of this. Turner et al (2016) reported the finding that residents and relatives worried that their voice was not heard during the deprescribing process. This implied that residents and relatives wish to be involved in the deprescribing process. However, residents did not view themselves as a barrier in Kalogianis et al's (2016) study: 40.5% of residents reported being willing to stop a medicine, rising to 78.9% if the doctor thought it was necessary. In addition to this, 56% of residents were willing to take more medicines if needed. This suggested little resistance from residents to deprescribing suggestions and, as Palagyi et al (2016) and Turner et al (2016) also discovered, that residents were content to agree with the doctor's recommendations.

Residents and relatives were keen to avoid deprescribing having a negative impact on the resident's quality of life, with residents participating in Turner et al (2016) especially keen for the resident's wellbeing to be recognised as a key factor in deprescribing (Azermai et al 2014, Palagyi et al 2016).

There was also tension reported in the included articles between the resident/relative and healthcare professional goals of care for the resident. Healthcare professionals focused on quality of life, whilst residents and relatives perceived medicines to be prescribed for longevity (Palagyi et al 2016). It was also reported that GPs viewed care home residents as in the last stage of their lives and therefore sometimes unsuitable for major interventions, whereas relatives were perceived to view the home as a 24-hour healthcare facility that should work like a hospital. These differences of opinion are likely to have influenced the residents' and relatives' views of deprescribing.

The final barrier to deprescribing focussed on care home residents' knowledge of their medicines. Turner et al (2016), Ellis et al (2015) and Palagyi et al (2016) reported that healthcare professionals and care home staff believed that residents lacked knowledge of their medicines and that this was a barrier to deprescribing. Conversely, residents responding to Kalogianis et al's (2016) survey disagreed that residents lacked knowledge of medicines, as

67% of participants stated that they had good knowledge of their medicines. However, Kalogianis et al (2016) did not define what constituted a "good" knowledge of medicines, which limited the application of this finding to the wider literature.

2.6.2 Deprescribing factors identified by healthcare professionals and care home staff

The barriers and facilitators to deprescribing in care homes as described by healthcare professionals were extracted from the included articles and displayed in Table 2. They were then synthesised and mapped to the TDF. Other deprescribing factors reported by healthcare professionals are described below.

Firstly, there appeared to be a difference in the way healthcare professionals perceived and enacted their behaviour. Ellis et al (2015), Mavrodaris et al (2013), Harriman et al (2014) and Azermai et al (2014) all discovered that GPs reported being willing to deprescribe, however Azermai et al (2014) reported that deprescribing was only happening "occasionally" and discontinuation of anti-psychotic medicines was considered in more residents than was actually attempted. GPs were also more likely to reduce doses than to stop a medicine altogether. Furthermore, Harriman et al (2014) found that while the majority (75%) of surveyed GPs stated that they were "not reluctant" to deprescribe, local data suggested that GPs were not deprescribing. These results demonstrated a dissonance between the perceptions of GPs and their behaviour, and despite believing that they did, and were willing to, deprescribe, they were not enacting this behaviour. The reasons for the difference between the GPs perceptions of and actual deprescribing activity are not explored by any of the articles, though the multiple barriers to deprescribing reported across all articles and collated in this review provide explanation for why deprescribing is not occurring.

As well as individuals perceiving their own thoughts and actions differently, healthcare professionals and care home staff had different perceptions of each other's willingness to deprescribe (Turner et al 2016, Mavrodaris et al 2013). Mavrodaris et al (2013) discussed the perceptions GPs and care home staff held of each other. It was found that GPs and care home staff perceived each other to be unwilling to stop antipsychotic medicines (Mavrodaris et al, 2013). This was uniquely described as "a culture of blaming", which may provide insight into how GPs and care home staff perceive each other in the UK (Mavrodaris et al, 2013). Nurses participating in Turner et al's (2016) study reported that the GP being receptive of their suggestions was a key factor in deprescribing, and feared their role in deprescribing may be dismissed by GPs. This suggests that the attitude of GPs towards nurses affects the nurses' willingness to be involved in deprescribing.

A facilitator to deprescribing identified by healthcare professionals, care home staff and residents and relatives was the burden of administration of medicines, highlighted by Turner et

al (2016) and Palagyi et al (2016). Residents with complex or high numbers of medicines were considered, and reported by themselves, to be more willing to stop medicines (Turner et al, 2016). Palagyi et al (2016) described how medication burden can be a facilitator from the care staff's point of view, as administering and managing medicines was time consuming, and thus provided an impetus to initiate the deprescribing process.

2.6.3 Extraction and mapping of literature-identified healthcare professional barriers to deprescribing to the TDF

Firstly, the barriers to deprescribing identified in the nine studies included in the literature review were extracted. Similar barriers were grouped and synthesised to produce a list of synthesised barriers to deprescribing. These synthesised barriers were then mapped to the TDF. Table 2 shows the results of this process, and the rationale for these mapping decisions is provided below Table 2.

Table 2: Extraction, synthesis and mapping to the TDF of barriers extracted from primary studies in the literature review

Barriers extracted from studies	Synthesised barrier	Description	Studies citing this barrier	TDF domains mapped to
Previous unsuccessful deprescribing attempt (Azermai et al, 2014),) Cognitive impairment prohibits patient involvement in deprescribing decision, (Ailabouni et al, 2016; Harriman) Difficulty balancing the resident's health conditions with deprescribing (Ailabouni et al, 2016)	**Influence of the resident's health**	Barriers related to the health conditions the resident lives with.	Azermai et al (2014), Ailabouni et al (2016), Harriman et al (2014)	**Environmental context and resources**
Family is resistant (Azermai et al, 2014; Simmons et al, 2018; Palagyi et al, 2016) Residents may resist change (Ailabouni et al, 2016) Care home staff resist deprescribing (Mavrodaris et al, 2013)	**Opposition of others to deprescribing**	Perceiving that others, particularly residents and relatives, may be opposed to deprescribing acts as a barrier to stopping medicines.	Azermai et al (2014), Ailabouni et al (2016), Mavrodaris et al (2013), Simmons et al (2018), Palagyi et al (2016)	**Social influences**

Barriers extracted from studies	Synthesised barrier	Description	Studies citing this barrier	TDF domains mapped to
Reduction to the resident's quality of life (Azermai et al, 2014) Return/worsening of symptoms, or occurrence of adverse reactions (Simmons et al, 2018; Azermai et al, 2014)	**Negative beliefs about consequences for the resident**	Concern about various negative consequences for the resident, including deterioration.	Azermai et al (2014), Harriman et al (2014), Simmons et al (2018), Turner et al (2016)	**Beliefs about consequences**
Potential for legal consequences (Palagyi et al, 2016) Higher workload (Azermai et al, 2014)	**Negative beliefs about consequences for health and social care staff**	Concern regarding negative consequences which would impact health and social care staff.	Palagyi et al (2016), Azermai et al (2014),	**Beliefs about consequences**
Fear of the resident's health deteriorating after deprescribing (Ailabouni et al, 2016; Turner et al, 2016) Fear of how the resident and relatives would view deprescribing (Ailabouni et al, 2016)	**Emotions felt towards deprescribing**	Consequences described as "fears" by article authors	Ailabouni et al (2016), Turner et al (2016)	**Emotions**

Barriers extracted from studies	Synthesised barrier	Description	Studies citing this barrier	TDF domains mapped to
GPs unwilling to increase frustrating communications with care homes (Palagyi et al, 2016)				
Shortage of skilled staff in CH (Palagyi, et al, 2016; Ellis et al, 2015) Shortage of GPs willing to work in care homes (Palagyi et al, 2016)	**Staffing issues**	Barriers attributed to a lack of skilled people able to participate in the work.	Ellis et al (2015), Palagyi, et al (2016)	**Environmental context and resources Skills**
Education needed for care home staff, doctors and relatives (Ellis et al, 2015; Simmons et al, 2018; Mavrodaris et al, 2013; Palagyi et al, 2016; Ailabouni et al, 2016)	**Lack of education and training**		Ellis et al (2015), Simmons et al (2018), Palagyi, et al (2016), Ailabouni et al (2016)	**Knowledge**
Need for reimbursement (Ellis et al, 2015) Lack of funding (Ailabouni et al, 2016)	**Lack of funding**		Ellis et al (2015), Ailabouni et al (2016)	**Environmental consequence and resources**

Barriers extracted from studies	Synthesised barrier	Description	Studies citing this barrier	TDF domains mapped to
Family unavailability and time constraints (Harriman et al, 2014; Ellis et al, 2015) Paperwork is inefficient, inadequate and increases scope for error (Ailabouni et al, 2016) GPs unwilling to increase frustrating communications with care homes (Palagyi et al, 2016) Poor co-ordination between specialist and general care providers (Palagyi et al, 2016; Turner et al, 2016)	**Systemic barriers to communication**	Barriers to communication attributed to healthcare systems rather than interpersonal factors.	Harriman et al (2014), Ailabouni et al (2016), Palagyi et al (2016), Ellis et al (2015)	**Environmental consequence and resources**
Difficulty in balancing multiple factors involved in deprescribing, such as the risk/benefit of a medicine and the resident's existing health conditions (Ailabouni et al, 2016)	**Skill deficiencies**	Issues with applying knowledge.	Ailabouni et al (2016)	**Skills**

Barriers extracted from studies	Synthesised barrier	Description	Studies citing this barrier	TDF domains mapped to
Lack of ability to apply evidence to residents (Ailabouni et al, 2016)				
Lack of access to user friendly, evidence based deprescribing guidelines and protocols (Ailabouni et al, 2016; Palagyi et al, 2016)	**Lack of evidence and guidance**		Ailabouni et al (2016), Palagyi et al (2016)	**Knowledge Environmental context and resources**
Lack of standard medication charts/electronic system for care homes (Palagyi et al, 2016) Inadequate system of providing medicine reviews (Palagyi et al, 2016) Care home work is costly, time consuming and frustrating (Palagyi et al, 2016)	**Systemic barriers to deprescribing**	Barriers to deprescribing caused by healthcare systems and ways of working imposed on participants.	Palagyi et al (2016)	**Environmental context and resources**
GPs varied in their confidence to make deprescribing decisions (Palagyi et al, 2016)	**Confidence to deprescribe**		Palagyi et al (2016)	**Beliefs about capabilities**

Barriers extracted from studies	Synthesised barrier	Description	Studies citing this barrier	TDF domains mapped to
Differences in expectations and goals of care between GPs and relatives (Palagyi et al, 2016)	**Goals of care**		Palagyi et al (2016)	**Social influences**
Lack of time to deprescribe due to competing tasks and time constraints (Ailabouni et al, 2016; Ellis et al, 2015) Care home work is costly, time consuming and frustrating (Palagyi et al, 2016) GP services are provided to care homes on a part time basis (Palagyi et al, 2016) High workload of careers (Palagyi et al, 2016) Doctor unable to discuss deprescribing due to time constraints (Harriman et al, 2014)	**Lack of time**	Lack of time to engage in care home work and deprescribing was frequently cited as a barrier to deprescribing.	Ailabouni et al (2016), Ellis et al (2015), Palagyi et al (2016)	**Environmental context and resources**

Barriers extracted from studies	Synthesised barrier	Description	Studies citing this barrier	TDF domains mapped to
GPs and care home staff lack deprescribing knowledge (Ailabouni et al, 2016) Residents' and relatives' lack knowledge of medicines (Palagyi et al, 2016; Turner et al. 2016)	**Knowledge deficiencies of GPs, care home staff, residents and relatives**		Ailabouni et al (2016), Palagyi et al (2016)	**Knowledge**
Uncertainty of roles (Mavrodaris et al, 2013)	**Uncertainty of roles**	Uncertainty regarding who was responsible for the management of medicines started in hospital.	Mavrodaris et al (2013)	**Social/professional role and identity**
GPs reluctant to stop medicines started by other prescribers (Ailabouni et al, 2016; Harriman et al, 2014)	**Influence of other prescribers**	The influence of the other prescriber rather than an uncertainty of roles which prevented deprescribing	Harriman et al (2014), Ailabouni et al (2016)	**Social influences**

Table 3: Mapping of barriers related to antipsychotic medicines only

Barriers extracted from studies	Synthesised barrier	Description	Studies citing this barrier	TDF domains mapped to
• Inadequate non pharmacological alternatives (Azermai et al, 2014; Simmons et al, 2018) • Lack of resource (staff, funding) for non-pharmacological alternatives (Mavrodaris et al, 2013)	**Lack of viable non-pharmacological alternatives**	A lack of viable non-pharmacological alternatives to antipsychotic medicines, including the staff and funding required, is a barrier to stopping this class of medicines.	Azermai et al (2014), Mavrodaris et al (2013), Simmons et al (2018)	**Environmental context and resources**
• Resident risk of harm to themselves, staff, other residents (Azermai et al (2014)	**Risk of harm**	Specific risk of resident causing harm due to recurrence of psychosis after stopping antipsychotic medicines	Azermai et al (2014),	**Beliefs about consequences**

2.6.3.1 Rationale for the mapping of the synthesised barriers in Table 2

This section provides the rationale for the mapping decisions presented in Table 2.

2.6.3.1.1 Environmental context and resources

The most common domain that literature-identified barriers were mapped to was *Environmental Context and Resources.* Cane et al (2012) defined this domain as:

> *"any circumstances of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence and adaptive behaviour"* (Cane et al, 2012, pp14).

In terms of deprescribing, as shown in Appendix C table 53, this domain was defined to mean contextual, resource and material limitations which impeded deprescribing. The following synthesised barriers were assigned to this domain:

- Influence of the resident's health
- Staffing issues
- Lack of evidence and guidance
- Lack of funding
- Systemic barriers to communication
- Systemic barriers to deprescribing
- Lack of time

Influence of the resident's health referred to barriers to deprescribing that were related to the resident's health conditions, for example cognitive impairment limiting their involvement in decision-making or a previous unsuccessful deprescribing attempt that resulted in a negative consequence. This barrier was assigned to this domain after discussion. It was first assigned to *Social Influences*, as it refers to the influence that another, in this case the resident, had on the prescriber's behaviour. However, it was felt that *Environmental Context and Resources* was a more appropriate domain. This was because the domain *Social Influences* refers to interpersonal factors, or how one person's behaviour affects another's, rather than how a patient factor may influence a behaviour. Assigning the barrier to *Environmental Context and Resources* acknowledges that the health of the resident is a context within which prescribers work; a resident who cannot communicate is a more challenging context for the prescriber to work with than a resident who can communicate.

Staffing issues was one of only three synthesised barriers which was assigned to two domains of the TDF. This was because there were two closely linked factors that were reported and synthesised as staffing issues: a shortage of staff in general, and more specifically a shortage of skilled staff, for example registered nurses. These two factors were too closely entwined to separate, so this barrier was assigned to both the *Environmental Context and Resources* and *Skills* domains. The *Environmental Context and Resources* domain reflects the shortage of staff as a resource, and the *Skills* domain reflects the lack of skilled staff.

The synthesised barrier lack of evidence and guidance was also assigned to two domains of the TDF. The *Knowledge* domain was appropriate because evidence and guidance provides knowledge to prescribers which aids them with deprescribing in care homes. The *Environmental Context and Resources* domain was appropriate because healthcare professionals may have difficulties accessing evidence, or the evidence may not exist. This is an example of the environment not being conducive to deprescribing behaviour, as it is beyond the scope of the individual healthcare professional to create the evidence base they require.

The final synthesised barriers assigned to the *Environmental Context and Resources domain* are more obviously associated with this domain. Lack of funding and time refers to lack of resources, and systemic barriers to communication and deprescribing are barriers related to the environment within which the healthcare professionals work. Examples of systemic barriers are insufficient communications or medicine reviews, unavailability of people whose opinion is sought and a lack of standardised medical record keeping in care homes.

It is worth considering that "lack of time" as a barrier, frequently cited by participants in the studies, may be masking other deficiencies which may be more appropriately mapped to other domains. For example, rather than a lack of time, the issue might be insufficient time management skills, which would fall under the S*kills* domain. It could also be that healthcare professionals prioritise other work over deprescribing, which suggests a goal conflict. This would then fall under the *Goals* domain. However, the original studies presented that the barrier was simply a lack of time rather than anything else, and as time is a resource, this barrier was assigned to the *Environmental Context and Resources* domain.

2.6.3.1.2 Knowledge and skills

The *Knowledge* and *Skills* domains are separate domains of the TDF, but are closely related and were therefore considered together (Fleming et al, 2014). Whilst the *Knowledge* domain is concerned with what the participant knows, the *Skills* domain refers to the application of what the participant knows. The literature-identified barriers that were mapped to the *Knowledge* and *Skills* domains were:
- Lack of evidence and guidance
- Lack of education and training
- Knowledge deficiencies

The *Knowledge* domain was defined for the purpose of this study to incorporate all aspects of knowing how to deprescribe. The rationale for including the barrier "lack of evidence and guidance" in the *Knowledge* domain is described above (evidence informs knowledge), and the barrier "knowledge deficiencies" clearly fits into this domain. "Lack of education and training" was assigned to both the *Knowledge* and *Skills* domains. This was because some of the education required referred to gaining knowledge, such as knowledge of the risks of medicines, and some was more related to skills, for example managing the behaviour of agitated residents.

The *Skills* domain was also assigned to three barriers. The "skills deficiency" barrier demonstrates the difference between knowledge and skill. An identified skill deficiency was that prescribers lacked the ability to apply their deprescribing knowledge to residents, which was a problem with their skill rather than their knowledge. The rationale for including the barrier "staffing issues" in the *Skills* domain was described above, as it was also assigned to *Environmental Context and Resources.* It was assigned to the *Skills* domain as a lack of skilled staff in particular was a barrier to deprescribing.

2.6.3.1.3 Social influences

The *Social Influences* domain was defined by Cane et al (2012) to refer to the:

> *"interpersonal processes that can cause individuals to change their thoughts, feelings and behaviours".* (Cane et al, 2012, pp14)

In this study, it includes how the influence of patients, carers and others involved in the resident's care affect the deprescribing behaviours of healthcare professionals. Three barriers were assigned to this domain:

- Opposition of others to deprescribing
- Influence of other prescribers
- Goals of care

The first two barriers listed above refer directly to the influence of others, be it a relative who is opposed to deprescribing or a hospital doctor the healthcare professional does not want to disagree with. It is this influence of the other person on the prescriber which changes their behaviour and forms the barrier to deprescribing. This is a social, interpersonal barrier.

The final barrier assigned to the S*ocial Influences* domain was the "goals of care" barrier. At first, this was assigned to the *Goals* domain of the TDF as it referred to how GPs and relatives perceived the *Goals* of the resident's care. However, it was moved to the *Social Influences* domain because the actual barrier to deprescribing was the perception that GPs held of the relatives. GPs believed that relatives had conflicting views concerning the role of the care home and the residents' goals of care, and it was this which affected their behaviour and prevented deprescribing. Therefore, the barrier goals of care was assigned to the *Social Influences* barrier.

2.6.3.1.4 Other domains

Two barriers, both regarding the perceived negative consequences of deprescribing, were assigned to the *Beliefs About Consequences* domain. The *Beliefs About Consequences* domain in this study refers to what prescribers believe the outcomes of their actions will be, and several potential negative consequences were identified by the included studies. Examples of potential negative consequences of deprescribing include causing harm to the resident or the

healthcare professional facing litigation due to deprescribing. Consideration of the negative consequences of deprescribing clearly falls into the *Beliefs About Consequences* domain.

After discussion, barriers regarding the fear of consequences were separated from the general beliefs about consequences and assigned to the *Emotions* domain of the TDF. This was because one study stated that participants were fearful of the consequences of deprescribing, rather than just aware of the consequences of deprescribing (Ailabouni et al, 2016). Therefore, it can be interpreted that it was an emotion, fear, which was preventing them from deprescribing. One study also noted that GPs were "frustrated" by care home work (Palagyi et al, 2016), another emotion suitable for assigning to this domain.

Two domains of the TDF were used only once. Palagyi et al (2016) reported the varying degrees of confidence prescribers had to deprescribe, which refers to their beliefs about their own capabilities. It was therefore assigned to this domain. Finally, Mavrodaris et al (2013) identified that uncertainty of roles, and who was responsible for a medicine prescribed by secondary care, was a barrier to deprescribing. This was assigned to the *Social/Professional Role and Identity* domain of the TDF, because it relates to how the prescriber's behaviour is affected by what they understand their role in the resident's care to be.

2.6.3.1.5 Antipsychotic medicines

Two synthesised barriers were raised only in relation to antipsychotic medicines, and these are presented in a separate table (Table 3). This was because they may not be applicable to all medicines. A lack of non-pharmacological alternatives to antipsychotics was frequently cited as a barrier to stopping them. This was attributed to a lack of efficacy, funding and staff to manage the non-pharmacological alternatives. For this reason, this barrier was assigned to *Environmental Context and Resources*. There were also specific beliefs about the consequences of stopping antipsychotic medicines, which related to a belief that stopping the medicine could enable the resident to cause harm to themselves or others. This belief about consequences prevented deprescribing of antipsychotic medicines, and was assigned to the belief about consequences domain.

2.7 Discussion of the findings of the literature review

2.7.1 Introduction

This literature review aimed to investigate the barriers and facilitators to deprescribing in care homes. Nine articles were identified as eligible to include in the review. Of these, four were described as qualitative and the remaining were survey studies, or mixed methods studies which included surveys. Four of the included studies discussed the deprescribing of antipsychotic medicines only, while the remaining studies were not limited to a single class of medicines.

The studies included focussed on the views and opinions of healthcare professionals, with only one study providing qualitative insight into the views of residents and relatives. Two more studies provided limited quantitative insight into the deprescribing beliefs of residents and relatives. The findings were therefore synthesised in two groups: factors residents and relatives believe are important when deprescribing, and those considered important by healthcare professionals and care home staff. The barriers were then extracted from the healthcare professional and care home staff findings, synthesised and mapped to the domains of the TDF. The healthcare professional barriers were mapped to the TDF as they will be the users of any intervention. There was also a lack of resident and relative findings to map at this stage.

This discussion will contextualise the findings of this review with the findings of four existing systematic reviews, which are described below. The mapping of the barriers to the TDF is discussed in Chapter 5.4, following the mapping of the empirical findings to the TDF and Behaviour Change Wheel (BCW).

2.7.2 Systematic reviews incorporated into the discussion

Reeve et al (2013) summarised the barriers and facilitators to deprescribing from the perspective of patients, combining the results of twenty-one papers to generate five themes. The first three themes are barriers and facilitators to deprescribing, while the fourth theme is a facilitator and the fifth a barrier to the process (Reeve et al, 2013, pp798):

- Disagreement/agreement with "appropriateness" of deprescribing
- Absence/presence of a "process" for deprescribing
- Negative/positive "influences" to deprescribing
- Dislike of medicines
- Fear of deprescribing

Anderson et al (2014) conducted a similar review, though they examined prescriber barriers and facilitators. This included 22 papers, whose results were described in four themes (Anderson et al 2014):

- Awareness: level of insight a prescriber has into the appropriateness of their prescribing
- Inertia: failure to act, despite awareness that there is evidence of inappropriate prescribing
- Self-efficacy: how factors such as a prescriber's knowledge level, attitudes and influences affect their beliefs or confidence to deprescribe
- Feasibility: factors external to the prescriber, such as patients and other healthcare professionals, which are perceived to affect a prescriber's ability to deprescribe.

Lundby et al (2019) conducted a systematic review into the attitude of healthcare professionals towards deprescribing for older people with limited life expectancy. Eight studies were included, and the findings were presented in four themes:

- Patient and relative involvement, including the barriers to involvement of these groups such as cognitive impairment and the avoidance of discussing end of life issues.

- The importance of teamwork, including the relationships between different healthcare professionals and factors involving specialist prescribers.
- Healthcare professional's self-assurance and skills, including knowledge, evidence, confidence to deprescribe and concerns regarding deprescribing.
- The impact of organisational factors, such as continuity of care, workload, time and guidance.

Bokhof and Junius-Walker's (2016) qualitative synthesis investigated reducing polypharmacy from the perspectives of GPs and older people. 14 qualitative studies were included, and 11 key concepts were described in the study:

Patient views:

- Experimenting with multiple medicines to get to know them: patients reported stopping some or all of their medicines to test their efficacy or investigate side effects
- Attitudes and beliefs about medicines, such as like or dislike of medicines or fear of dependency
- Personal experiences with medicines, such as the cost or perceived efficacy or harm of medicines
- Necessity of priority-based treatment decisions in the face of multimorbidity: some patients described prioritising their medicines when they had multiple medical conditions.
- Relationship GP affecting reasonable medication management: this key concept included the trust the patient had in the GP, and that GPs rarely knew of the changes patients made to their medicines.
- System-related contributors to polypharmacy, including issues around consultations, the pharmaceutical industry and past healthcare experiences.

GP views:

- Assumptions of elderly patients, such as a perception that patients do not understand their medicines or beliefs regarding what patients thought of their medicines
- Interface prescribing problems contribute to polypharmacy, including issues around ensuring continuity of care.
- Evidence-based guidelines contribute to polypharmacy. This key concept examined the conflict GPs described between following guidance and individualising medical care.
- Failure to meet the challenge of complex decision-making: GPs felt they did not have the resources they required to deprescribe, such as time or evidence.
- Proposals for solutions: describes the solutions GPs had considered to reduce medicines use, such as prioritising medicines and amending targets.

There were numerous similarities between the findings of Anderson et al (2014), Reeve et al (2013), Lundby et al (2019) and Bokhof and Junius Walker (2016), and the findings of the nine papers included in this review. This suggests that prescribers face similar barriers to deprescribing for all patients all settings, not just to deprescribing for older people in care homes.

2.7.3 Deprescribing factors identified by residents and relatives

A similarity between the findings of Reeve et al's (2013) study and the findings reported in section 2.6 was that patients believe medicines are beneficial. Reeve et al (2016) reported that

medicines were usually described as beneficial by the patients interviewed, and they were therefore reluctant to stop them. This was similar to the findings of Palagyi et al (2016), who reported that residents and relatives believed that medicines were beneficial in that they were "keeping the resident alive". Reeve et al (2016) and Bokhof and Junius-Walker (2016) also reported that the continuation of medicines by a doctor was proof that the medicine was necessary, which may also be a reason that care home residents and their relatives believe in the necessity of medicines.

Whilst Bokhof and Junius-Walker (2016) described a similar attitude to medicines, they also described that some older patients are sceptical and unsure of their medicines benefits. This opposing view was described by Reeve et al (2013) to act as a facilitator to deprescribing. Patients were more willing to consider stopping medicines if they did not believe them to be beneficial any more or they had experience of side effects (Reeve et al, 2013). This reflects the necessity-concerns framework, which is a conceptual model that can be utilised to understand patient adherence to medicine (Horne et al, 2013). It suggests that a patient's decision regarding whether to adhere to their medicines is influenced by their judgements of the medicine's benefits, and the potential harms of the medicines (Horne et al, 2013).

Palagyi et al (2016), Turner et al (2016) and Azermai et al (2014) all reported that the resident's wellbeing was important when deprescribing, and that residents and relatives did not wish for deprescribing to cause harm. This was mirrored by Reeve et al (2013), especially with regard to medicines for cognitive impairment such as Alzheimer's disease. These medicines were believed to be beneficial, even if the patient was not showing signs of improvement (Reeve et al, 2013). Relatives of those with cognitive impairment were fearful of a medicine for cognitive impairment being stopped in case the patient would fail to benefit from the medicine in the future (Reeve et al, 2013). When it is considered that a large proportion of care home residents in the UK live with cognitive impairment, this finding may be applicable a care home setting and prevent the deprescribing of medicines for cognitive impairment.

A finding of the literature review being conducted was that care home residents respect the doctor, and as such are unlikely to disagree with them. They therefore displayed little resistance to change. Bokhof and Junius-Walker (2016) reported similar findings, and described that older people often trusted their doctor to make decisions concerning their care. This suggests that older people in general are trusting of the decisions made by their doctor. A final similarity between the findings of the literature review described in section 2.6 and the findings of Bokhof and Junius Walker (2016) was that older people were perceived by healthcare professionals and care home staff to lack knowledge of their medicines. However, this was disputed by residents participating in Kalogianis et al's (2016) study, and so requires further in-depth investigation.

The other findings from the literature review being conducted, reported in section 2.6, were not reported by Reeve et al (2013) or Bokhof and Junius-Walker (2016). This suggests that they are unique to the care home setting, rather than a more widespread barrier to deprescribing. One finding reported by Turner et al (2016) that was unique to the care home setting was that new or temporary nursing staff are a barrier to deprescribing, as they do not know a resident's history. This was clearly unique to the care home setting, because it involves care home staff. It was unclear, however, how the final finding was unique to the care home setting, as it may also be applicable to the treatment of other patients, particularly older ones, who do not live in care homes. Reeve et al's (2016) finding that there was a conflict over goals of care, where relatives and GPs were found to have different beliefs regarding the role of the care home and the goals of the resident's care. This was not found in the wider literature, although Lundby et al (2019) reported that healthcare professionals found it difficult to discuss end of life issues.

2.7.4 Deprescribing factors identified by healthcare professionals and care home staff

There were many more healthcare professional and care home staff barriers to deprescribing identified than resident and relative ones. This was because more of the articles included in the literature review investigated the views of healthcare professionals than residents and relatives.

Three deprescribing factors were identified in the findings of the literature review (section 2.6) which were not mapped to the TDF. Only one of these findings was reported in the wider literature, as Anderson et al (2014) also reported a difference in the way healthcare professionals perceive and enact their behaviour. Under the theme "awareness", Anderson et al (2014) discuss that prescribers have a poor insight into their prescribing practices, and while they understood the benefits of deprescribing they were not practising it for individual patients. This finding was only reported in papers where the behaviour of prescribers was observed or audited, which means that the prescribers did not report this behaviour themselves. This provides further insight into the lack of awareness prescribers have of their own behaviour. These differences in the beliefs that prescribers state they have regarding deprescribing, compared with how they conduct deprescribing in practice is suitable for examining using behaviour change psychology. This provides rationale for the use of behaviour change psychology in this thesis.

Two deprescribing factors were identified in the literature review but not the wider literature. Of these, one was clearly unique to care homes as it involves care home staff. As reported by Turner et al (2016) and Mavrodaris et al (2013), GPs and care home staff blamed each other for a lack of deprescribing and care home staff feared their opinions were dismissed by GPs. This finding was clearly specific to care homes and would not be found in a more general setting as it explicitly involves care home staff. The final deprescribing factor that appears to be specific to

care homes was reported by Turner et al (2016) and Palagyi et al (2016). This finding was that residents taking more medicines were more willing to have medicines deprescribed. While this finding was not reported in the reviews conducted by Anderson et al (2014), Reeve et al (2013), Lundby et al (2019) or Bokhof and Junius-Wilson(2016), it could apply to a more general population and it was not clear whether it was only applicable to care home residents.

2.7.4.1 Barriers mapped to the *Environmental Context and Resources* domain of the TDF

Current prescribing practices were reported to be a barrier to deprescribing both inside and outside the care home setting. These systemic barriers to deprescribing were mapped to the *Environmental Context and Resources* domain. Alongside the need for regular medicines review highlighted in the literature review being conducted, Anderson et al (2014) also reported that signing repeat prescriptions on behalf of colleagues and the absence of treatment plans were barriers to the deprescribing process, as prescribers did not know the patient or their history well enough to consider deprescribing. This is also likely to be an issue in the UK, where prescribers regularly sign prescriptions on behalf of another prescriber (Cantrill et al, 2000). Similarly to Harriman et al (2014), Anderson et al (2014) reported that opportunity to conduct medicines review, such as when the patient left hospital or changed primary prescriber, acted as a potential facilitator to the process as it prompted the prescriber to conduct a medicines review.

Lack of time was another *Environmental Context and Resources* barrier identified to deprescribing in general as well as in care homes. Anderson et al (2014) highlighted that the most prevalent resource barrier to deprescribing was the lack of time available to prescribers to conduct thorough medicine reviews, when the amount of effort that this entails is considered. This finding was also reported by Lundby et al (2019) and Bokhof and Junius-Wilson (2016), with the latter reporting that patients felt that there was a lack of time in GP consultations. Other resources which were identified as lacking in the current review and by Anderson et al (2014) were healthcare professionals, such as mental health workers and pharmacists, and financial reimbursement and support.

2.7.4.2 Barriers mapped to the *Knowledge* domain of the TDF

The lack of evidence for deprescribing was cited as a barrier to deprescribing generally, as well as in care homes specifically. This barrier was mapped to both the *Environmental Context and Resources* domain and the *Knowledge* domain of the TDF. Like Turner et al (2016), Anderson et al (2014), Lundby et al (2019) and Bokhof and Junius-Wilson (2016) reported a lack of evidence of the benefits and harms of stopping preventative medicines in older people with multiple health conditions. This lack of evidence acted as a barrier to deprescribing medicines in older people.

Anderson et al (2014) and Bokhof and Junius-Wilson (2016) presented a different perspective of the impact of clinical guidance on deprescribing decision-making. Unlike Mavrodaris et al (2013) and Harriman et al (2014), Anderson et al (2014) and Bokhof and Junius-Wilson (2016) reported that prescribers felt obliged to comply with guidelines despite the patients' co-morbidities and complexities which may make the patient ineligible for guideline-based treatment. Prescribers following the guidance for a particular condition may, therefore, continue prescribing a potentially inappropriate medicine in order to adhere to a guideline.

A prominent barrier to deprescribing across all settings was knowledge deficiencies of GPs, care home staff, residents and relatives, which was mapped to the *Knowledge* and *Skills* domains. Like Turner et al (2016), Palagyi et al (2016) and Ailabouni et al (2016), Anderson et al (2014) and Lundby et al (2019) described numerous barriers related to a lack of information. Prescribers may lack the knowledge required to make a decision, for example they may lack the ability to recognise side effects or balance the risks and benefits of stopping a medicine (Anderson et al, 2014).

2.7.4.3 Barriers mapped to the *Social Influences* domain of the TDF

Social Influences on the deprescribing process were also acknowledged by Anderson et al's (2014) systematic review. The findings of the review being conducted states that prescribers were unwilling to challenge prescribing decisions made by other prescribers, though there was not a clear explanation as to why this was (Turner et al 2016, Harriman et al 2014, Mavrodaris et al 2013). Anderson et al (2014) reported similar findings, and they attribute this unwillingness to the respect prescribers have for each other and perceived professional hierarchy. Hierarchy was noted between specialist prescribers and GPs, with GPs perceiving the decisions of specialists to take precedence over their own opinions (Anderson et al, 2014).

Lundby et al (2019) also reported social factors involving relationships between healthcare professionals, including specialists, and perceptions of older people of their beliefs about medicines. Bokhof and Junius-Wilson (2016) also described the assumptions that GPs have of older people, including that they lack knowledge about their medicines. Care home residents were reported by Palagyi et al (2016) to be "apathetic" with regard to their medicines, a perception healthcare professionals had of residents. While multiple social barriers to deprescribing have been described in the literature, there was a lack of depth and understanding of these barriers. Research into the social barriers, and how these could be overcome, is required.

2.7.4.4 Barriers mapped to the consequences domain of the TDF

Mapped to the consequences domain were two synthesised barriers which were also reported by Anderson et al (2014), Lundby et al (2019) and Reeve et al (2013): negative beliefs about consequences for the resident, and negative beliefs about consequences for health and social

care staff. The emotions felt towards deprescribing were also linked to the consequences of deprescribing, as avoidance of negative consequences was sometimes linked with "fear". Some of these fears were similar for both patients and prescribers, such as a fear of the worsening of the patient's condition, while prescribers were also preoccupied with worries of damaging relationships with colleagues and patients and an increase in their workload (Reeve et al, 2013; Anderson et al, 2014). Prescribers were also unsure of the potential legal consequences of deprescribing, which suggests they need educating on this aspect (Anderson et al, 2014; Palagyi et al, 2016).

However, some prescribers reported being fearful of the potential negative consequences of continuing a medicine as these may be unknown (Anderson et al, 2014; Lundby et al, 2019). Whilst this was not reported in the care home setting, this finding may be transferable to older people living in care homes as the benefits of continuing medicines in this population have not often been determined. This was supported by Anderson et al's (2014) finding that prescribers struggle to weigh up the benefits and risks of prophylactic medicines in older people (Anderson et al, 2014).

2.7.4.5 Other barriers to deprescribing reported in care homes

Finally, Anderson et al (2014) included two studies in their review which took place in care homes and reported a barrier to deprescribing that was unique to care homes. Flick et al (2012) and Iden et al (2011) discussed that prescribers felt pressured by care home staff to prescribe sedative and antidepressant medicines respectively as they assisted the care home staff in managing the residents and maintaining order in the care home. This was similar to care home staff participating in Azermai et al (2014), who reported being reluctant to stop antipsychotic medicines if it could cause the resident to harm another person or increase the workload of care home staff.

Several synthesised barriers to deprescribing in care homes were not reported in the existing systematic reviews of barriers and facilitators to deprescribing in care homes. This suggests that these barriers are specific to the care home setting. For some of these barriers, it was clear that they are specific to care homes because, for example, they refer to care home staff. An example of this was the synthesised barrier "staffing issues", which refers to the perceived lack of skilled care home staff and GPs willing to work in care homes which were identified in this review. Other barriers that had clear links to care homes were:

- Opposition of others to deprescribing, which referred to the views of relatives and care home staff. The views of relatives are not generally considered in the wider literature around deprescribing, but are important in the care home setting.
- Relatives and GPs having differing opinions concerning the resident's goals of care and the role of the care home
- Lack of funding to provide deprescribing services to care homes

- Systemic barriers to communication were largely due to the care home setting, such as dislike of the paperwork involved with care home work and unavailability of people whose opinions were desired, such as relatives. However, it was possible that other systemic barriers such as poor coordination between primary and secondary care settings could exist outside of care homes.

2.7.5 Strengths and limitations of the literature review

The purely qualitative studies conducted by Turner et al (2016), Palagyi et al (2016) and Ailabouni et al (2016) were of an enhanced quality than the other studies included in the review. This means that only a third of the studies included in the review were judged to be of good quality, which has implications for the quality of the findings of the review. In addition to this, the two of the three aforementioned studies had limitations that affected their use in the review. The study conducted by Turner et al (2016) lacked the depth required for mapping of the findings to the TDF. This meant that only three of Turner et al's (2016) findings were mapped to the TDF, despite many more findings being reported. It was not possible to map more of the findings to the TDF because there was insufficient information presented by Turner et al (2016) to determine exactly what caused the barrier and therefore which domain it should be assigned to. This was likely due to the methodology applied to this study (nominal group technique) which generated a list of findings rather than more traditional, in depth qualitative findings.

Ailabouni et al (2016) was methodologically rigorous with regard to the data collection methods employed, and contributed valuable findings to be mapped to the TDF. However, Ailabouni et al (2016) mapped their own findings to the TDF as a part of their study and this was not rigorously conducted. The methods employed by Ailabouni et al (2016) to conduct this stage are lacking; and the mapping presented in the study appears to have been done superficially, without adequate consideration of the meanings of the domains. Chapter 5, section 5.4, discusses the TDF mapping conducted by Ailabouni et al (2016) in more depth.

The remaining studies included in the review were of a poorer quality, and had methodological issues which limit their application to the study. Simmons et al (2018) conducted a qualitative study, however the methods employed for data collection and analysis were not clearly described or justified which limits the credibility and transferability of the findings. Ellis et al (2015) conducted a survey with a large sample size which was appropriately analysed, but the data collection methods limited the generalisability of the study. The surveys conducted by Mavrodaris et al (2013) and Harriman et al (2014) lacked power for statistical analysis and generalisability, and the survey conducted by Kalogianis had several methodological irregularities and the statistical analysis provided indicated uncertain and imprecise results.

Whilst the quality of the included papers is a limitation of this literature review being conducted, there are multiple strengths. The literature search was conducted rigorously and systematically, and the included papers were transparently critically appraised using appropriate critical

appraisal tools. The findings were synthesised transparently and presented with a clear audit trail and an accompanying explanatory narrative. A further strength is that the findings of the included papers were mapped to the TDF, a theoretical framework which links barriers to behaviours. This means the findings can be applied throughout the thesis, including during the identification of behaviours which could be targeted with a novel deprescribing intervention (Chapter 5).

Not all the findings of the included papers were suitable for mapping to the TDF, which could be viewed as a limitation of this review. However, findings that were not suitable for mapping to the TDF were synthesised and presented narratively (section 2.6.1 and 2.6.2). This means that important perceptions and beliefs relating to deprescribing that were not suitable for mapping to the TDF, especially those voiced by residents and relatives, were not excluded from the findings. This provides a more complete description of the available evidence in relation to deprescribing in care homes, and is a further strength of this literature review.

2.7.6 Conclusion

This literature review identified that there is a lack of high quality, qualitative research into deprescribing in care homes. In particular, there is a lack of this research in the UK, highlighting a need for the empirical work undertaken in this thesis. An insufficient quantity of quality information was gained regarding the feelings of residents and relatives towards deprescribing, though it was noted that the residents did not perceive themselves to be a barrier to the process. The empirical research aimed to investigate the feelings of residents and relatives towards deprescribing further.

With regard to healthcare professionals, multiple barriers to deprescribing in care homes were extracted including logistical barriers such as relative unavailability and systemic barriers such as lack of resource. In addition to this, the following domains of the TDF were identified as most important when considering deprescribing in care homes: *Environmental Context and Resources*, *Knowledge* and *Social Influences*.

The findings of this literature review will be utilised throughout this study. The resident and relative findings will be used to inform the interview schedules for these groups, in order that the existing evidence may be built upon. The findings will also inform the development of the healthcare professional and care home staff interview schedules. However, the interview schedules for this part of the empirical work will primarily be informed by the TDF, which will be utilised to inform the components of a deprescribing intervention for use in care home. The findings of this review will then be used to contextualise the findings of the study being conducted. The TDF mapping, conducted in section 2.6.3, will be taken forward to Chapter 5, where it will be considered with the findings of the study to inform the development of a deprescribing intervention for use in care homes.

Chapter 3 Methodology and methods

3.1 Introduction

There are a range of barriers and facilitators to deprescribing in care homes, as addressed in Chapter 2. It was identified that there is a lack of evidence regarding the feelings of residents and relatives towards deprescribing in care homes, and regarding the barriers and facilitators to deprescribing in care homes in the UK. This required exploratory work, and therefore using qualitative methods is appropriate. This chapter will describe the qualitative methodology and methods utilised to address the following research objectives:

- To investigate how the deprescribing process happens in care homes, including the roles and responsibilities of those involved
- To explore how older people living in care homes, and their relatives, perceive their medicines (or medicines taken by the resident) and their attitudes to deprescribing
- To explore the attitudes of healthcare professionals and care home staff towards deprescribing in care homes, including identification of perceived barriers and facilitators to deprescribing.

3.2 Methodology

3.2.1 Qualitative research

Qualitative research is an umbrella term for multiple techniques and practices utilised to collect and analyse data in the form of words rather than numbers (Carter and Little, 2007; Van Maanen, 1979). At the heart of qualitative research is a desire by researchers to gain a depth of understanding of how their research participants see, construct and interpret their world (Merriam, 2009; Mason, 2002; Carter and Little 2007). The word "interpret" is key when describing qualitative research, as the data generated is about the way the participants interpret their experiences. The data is then further interpreted by the researcher, as they assemble their own meanings of the breadth of individual participants' accounts (Merriam, 2009).

3.2.2 Approach to the study

Traditionally, qualitative researchers have structured their research around a philosophical framework that informs their research design, data collection and analysis (Ritchie and Lewis, 2014; Seale 2004). These approaches aid researchers in exploring a phenomenon with an aim of gaining and exploring knowledge (Ritchie and Lewis, 2014; Seale 2004). However, it has been acknowledged that it is not always necessary for a researcher to align themselves with a particular philosophical theory, especially where qualitative data is required for practical application (Robson, 2011).

Multiple philosophical frameworks can be utilised to provide a lens for the qualitative research being undertaken. Following a framework or tradition of qualitative research can guide the research process and lend rigour to a study (Ritchie and Lewis, 2014). Underpinning these frameworks are debates about epistemology and ontology, the researcher's beliefs about these concepts and how these affect their understanding of the social world (Ritchie and Lewis, 2014). Ontology refers to the philosophical beliefs about the nature of social reality, such as whether an external reality exists or whether there is no external reality and reality is, therefore, what each individual interprets it to be (Hesse-Biber and Levy, 2011; Ritchie and Lewis, 2014). Epistemology refers to the theory of knowledge, and concerns concepts such as what an individual believes can be known, and how they might learn more about the world and reality (Ritchie and Lewis, 2014). Differing beliefs about these concepts have given rise to multiple philosophical frameworks and schools of thought which can be used to guide qualitative research.

A pragmatic approach is more flexible, and allows the researcher to use methods most appropriate to address the research question. Seale (2004) argues that this is not a less rigorous approach, but rather encourages researchers to exercise caution and select the methods most appropriate for their research question. The aim of this study is to address a practical problem; to explore the barriers and facilitators to deprescribing in care homes with a view to identify potential components for a behaviour change intervention. The barriers and facilitators, and associated attitudes and feelings about medicines, are most appropriately explored qualitatively in order to gain a depth of understanding of the phenomena in the participants' own words. Therefore, a pragmatic approach was employed for this study rather than a philosophical framework.

3.2.3 Theoretical underpinnings

The research was informed by the Theoretical Domains Framework (TDF), which provided a lens for this study. The TDF is a composite framework of behaviour change theories (Cane et al, 2012; Francis et al, 2012), and it was applied to the findings of the literature review, to frame the GP, pharmacist and care home staff interviews and applied to the overall findings to inform intervention development. There are a vast number of models and theories which seek to predict and explain human behaviour, and it can be difficult for those who do not have a background in psychology to choose a model to apply to their study (Francis et al, 2012). Choice of a less suitable model could result in the inclusion of irrelevant concepts and the exclusion of relevant ones (Cane et al, 2012).

An example of the discounted models was the theory of planned behaviour, an extension of the theory of reasoned action (Sniehotta et al, 2014; Glanz et al, 2015). The theory of planned behaviour was first published in 1985, and it was a commonly utilised theory for investigating health behaviours. However, it has been superseded by more sophisticated models, such as

the TDF. It has also been criticised because it lacks validation and some of the predictions within the theory have been proven false (Sniehotta et al. 2014, Glanz et al, 2015). The transtheoretical model of behaviour change is similar to the theories of planned behaviour and reasoned action, in that intention to perform behaviour is at the centre of all three theories. These theories are more useful for situations where behaviour change relies on a subject's willpower, or desire to change their behaviour (Glanz et al, 2015). The literature review revealed that there were many potential barriers to deprescribing, including motivation, but also social and systemic barriers which required further understanding. In addition to these issues, the three theories are not linked to a process to inform intervention development. Therefore, their use in informing the development of a behaviour change intervention in the context of this thesis were limited.

The TDF was initially proposed by Michie et al (2005) to enhance the accessibility and utility of behaviour change theory for a wider range of researchers and to promote applicability to intervention development and evaluation. A group of behaviour scientists and implementation researchers synthesised 128 theoretical constructs from 33 theories to produce the TDF (Michie et al, 2005; Cane et al, 2012; Francis et al, 2012). The TDF can also be used in conjunction with other methods and frameworks such as the Behaviour Change Wheel to aid researchers in designing behaviour change interventions (Michie et al, 2011).

The first TDF published by Michie et al (2005) consisted of 12 domains, factors believed to influence how an individual behaves. This TDF then underwent a validation exercise seven years later, where a further group of behavioural experts aimed to optimise the framework. This involved adjusting the wording and domains of the TDF to ensure that its structure and content was optimised, and that the domains represented the key determinants of behaviours. This validated version of the TDF (Appendix C) was used in this study, to ensure that the most methodologically robust framework available was used (Cane et al, 2012). The validated version of the TDF was also utilised to create a table showing the TDF domains specified to deprescribing in care homes which was used to guide the mapping work. This can also be found in Appendix C.

Despite first being developed to aid researchers in investigating and optimising intervention implementation, it is in this study being used to investigate deprescribing as a behaviour. It will then be utilised to identify candidate intervention components for an intervention aimed at increasing deprescribing in care homes. As described in Chapter 1.4, prescribing is widely regarded as a behaviour and deprescribing can also be characterised in this way (Anderson et al, 2014). Deprescribing was considered a behaviour as it fit the definition of behaviour as defined by Michie and Johnson, 2013:

> *"Anything a person does in response to internal or external events. Actions may be overt (motor or verbal) and directly measurable, or covert (activities not viewable e.g., physiological responses) and indirectly measurable; behaviours are physical*

events that occur in the body and are controlled by the brain" (Michie and Jonson, 2013)

Deprescribing has been considered a behaviour, and the TDF has been utilised to investigate behaviour change as a method of addressing inappropriate polypharmacy in primary care and hospitals in the UK (Cadogan et al, 2015, Scott et al, 2019; Ailabouni et al, 2016). The TDF has also been used in several contexts and methodologies as described by Atkins et al (2017) including to explore influences on behaviour, to investigate barriers and facilitators to intervention development, to aid in intervention design and to identify behaviour change techniques.

Its use is often closely aligned with qualitative techniques such as semi-structured interviews and it has also been used to develop questionnaires, design interventions, and as part of randomised controlled trials and systematic reviews (Brotherton et al, 2010; McCluskey and Middleton, 2010; Jacobs et al, 2011; Godin et al., 2008). In this study, it was applied to develop semi-structured interview schedules and to inform the components of a future behaviour change intervention. If its strengths and limitations are taken into consideration, it can be flexibly applied to multiple study types.

The limitations of the TDF should be noted. The TDF has been criticised for being too shallow (Francis et al, 2012). This is because it appears straightforward and easy to use, but it requires a degree of in-depth knowledge of the domains and their meanings to be utilised appropriately (Francis et al, 2012). Therefore, it is at risk of being used incorrectly by novice researchers (Francis et al, 2012). Francis et al (2012) suggest that in order to overcome this, the research team should include a health psychologist, or someone who has experience of using the TDF that can assist with its incorporation into the study. One of the supervisors of this study has such experience and expertise in the field, and has used the TDF extensively in collaboration with health psychologists (Easthall et al, 2019).

Another limitation to be considered is that, as a framework not a theory, it does not generate a testable hypothesis. However, this study was designed to explore behaviour rather than generate a hypothesis. There is also no description of the relationship between domains and how these interact together to influence behaviour. This would be a useful addition to the framework, as this aspect currently relies on each researcher's interpretation of the framework. Prestwich et al (2015) warned that the TDF can be used superficially, and that casual or inappropriate references to it were a limitation in its utilisation. In order to overcome this, the TDF was applied to each stage of the study; to ensure that it was embedded in the study; the literature review, data collection and analysis methods and intervention development all feature elements of the TDF.

A final limitation of the TDF in relation to this study is that it was designed for application to studies into the behaviour of healthcare professionals, and not patients (Cane et al, 2012). For

this reason, it was not applied to the resident and relative interview schedules as the domains were not felt to be relevant to the type of data being sought. This is because the TDF was being used to investigate the current behaviour of healthcare professionals, building upon the findings of the literature review, in order to determine how it may be changed. The aim of the resident and relative interview schedules was to explore the feelings and beliefs of residents and relatives, as there were insufficient findings regarding this in the literature. It was, however, used to develop the healthcare professional and care home staff interview schedules and was applied throughout the study as shown in Table 4 below.

3.2.3.1 Benefits of using the TDF: the behaviour change wheel and

The strengths of the TDF in relation to this study are that it provides an accessible, methodologically robust framework which combines the most relevant parts of a number of behaviour change theories for application to studies such as this: a qualitative interview study designed to investigate the behaviour of healthcare professionals with an aim of identifying components of a useable change intervention (Atkins et al, 2017). The TDF has been widely applied to research similar in design to this study and therefore there is a wealth of literature to inform study design.

A key benefit of the TDF in relation to this study is that it can be used to inform intervention development. This is described in detail in Chapter 5, section 5.2. In order to assist researchers in applying the TDF to their study, Atkins et al (2017) published a guide to using the TDF to design research studies. Whilst Atkins et al (2017) focus on implementation problems, they provide detailed and useful guidance about how the TDF can inform all stages of the study from study design to reporting of findings. The steps recommended by Atkins et al (2017) to utilise the TDF to inform study design are presented in Table 4 with a description of how, retrospectively, the study fit the steps.

Table 4: How the recommendations made by Atkins et al (2017) for designing a study incorporating the TDF were reflected in the study design

Stage of research as advised by Atkins et al (2017)	How the stage was incorporated into the study design
Select and specify the target behaviour	Deprescribing is the behaviour, and healthcare professionals/care home staff were selected as the groups to be targeted with the TDF elements of the study.
Select the study design	Semi structured interviews, a method suggested by Atkins et al (2017)
Develop study materials	Interview schedules were developed iteratively, informed by literature and theory, and tailored to be appropriate for each group, similar to Atkins et al's (2017) recommendations.
Decide the sampling strategy	The sampling strategies undertaken in this research (purposive homogenous stratified sampling, with elements of snowball and convenience sampling) will gain a diverse range of views
Collect the data	Completed using audio-recorders to record the interviews, as recommended by Atkins et al (2017)
Analyse the data	No specific recommendations are made with regard to analysis methods that could be applied to this study.
Report the findings	To be reported on completion of the thesis.

Whilst the guidance was published after this study was designed, it was found that the steps outlined by Atkins et al (2017) had been incorporated into the study design. The fact that this study incorporated the recommendations of Atkins et al (2017) suggests that the TDF has been suitably incorporated into the study design.

The next section discusses reflexivity, which is an important consideration in qualitative research.

3.2.4 Reflexivity

It is important that a researcher conducting a qualitative study examines their own place in the research to aid the quality appraisal of the research (Berger, 2013) Each researcher will bring their own attitudes, beliefs and opinions to the study which will affect why they selected the topic, the way they view the topic, the approach the study and how the data is analysed and interpreted. Reflexivity also increases the dependability (see section 3.7 for a description of this term) of the research, by increasing the transparency of the processes taken by the researcher. Below is a reflexive account which describes the author's pre-existing beliefs and attitudes to deprescribing and care home residents. This will aid the reader in understanding the researcher's standpoint and enable them to consider this when they are reading and understanding the study.

I, the researcher, am a pharmacist with experience working in community pharmacy and hospital settings with older people and care home residents. In my professional life, I have worked to ensure the safe and effective use of medicines and have been involved in the deprescribing process. I believe that many older people are taking potentially inappropriate medicines and, especially whilst working on the care of the elderly wards, I took time to review patients' medicines and identify and recommend medicines that may need to be stopped. I have preconceptions about why older people and care home residents might be taking inappropriate medicines, having experienced difficulties in gaining the information required to deprescribe and viewed how disjointed healthcare systems in the UK appear to be. Upon viewing information about the PhD before applying, I felt very strongly that this research had to be conducted in this population as I felt care home residents were "forgotten" – under prioritised, with no-one taking overall responsibility for their care.

In addition to this, I have always been a pragmatic person, hence the approach to this study. It felt natural to follow a clear, practical approach. It was important to me to conduct qualitative research, as the main question to be addressed appeared to be "why is deprescribing not happening in care homes?" and I felt that this question could not be sufficiently answered with quantitative methods. An in-depth approach was required, in order that I could interrogate the issue and to gain an understanding of the topic and associated issues for deprescribing in this context and for this population. I also wanted to explore the potential for designing an intervention to support (and potentially influence) deprescribing practice in this area.

Finally, experiences in my personal and professional life made me aware of both the downsides of old age, and the problems raised when a person can no longer consent to their treatment. It appeared to me that too often, the patient's wishes were unknown or not honoured and it was unclear whether decisions were being made in the best interests of the patient. I believe that deprescribing decisions with older people are often linked with their limited life expectancy, and that improved planning and open conversations about life expectancy, goals of care and the

benefit of medicines are key to normalising deprescribing. In providing this account I aim to offer transparency and acknowledge the importance of my personal attitudes and beliefs in relation to a topic that is the subject of my study. Acknowledging this is important to promote quality in the conduct and reporting of my work and I have explained elsewhere (sections 3.7 and 5.2.2.2) the ways in which this has been addressed in my work.

Several reflective accounts were also written during the research, please see Appendix D for an example of these.

3.3 Sampling methodology

3.3.1 Sampling strategy

There are different approaches to sampling for qualitative studies. A qualitative sample aims to investigate the views of the chosen population, so participants are recruited to provide insight into the phenomenon being explored (Ritchie and Lewis, 2014). Unlike a sample for a quantitative study it does not seek to be statistically representative of a larger group (Ritchie and Lewis, 2014). There are three common approaches to qualitative data sampling (Ritchie and Lewis 2014, Merriam 2009): purposive sampling, convenience sampling and theoretical sampling.

Stratified purposive sampling was employed for this study – this takes a largely homogenous approach, in that participants shared similar traits such as their job, but participants are also selected to show variation in cases (Palinkas et al, 2015; Ritchie and Lewis, 2014). This was demonstrated by seeking residents, relatives and care home staff from different types of care homes, and from different GP surgeries and pharmacy services to explore the variation in their experiences. This allowed for the general experience of deprescribing in care homes to be investigated, from a range of different participants relevant for the study. Purposive sampling is the most common type of sampling employed to conduct qualitative research and its aim is to sample from the population most likely to provide rich data and provide the most meaningful insight into the phenomena being investigated (Merriam, 2009; Ritchie and Lewis, 2014). A broad sampling strategy such as this also increases transferability.

Snowball sampling, another type of purposive sampling, was employed as a secondary sampling technique for the recruitment of GPs and pharmacists to this study (Merriam, 2009). GPs and pharmacists were asked if they had any colleagues that they thought would be interested in taking part, and were asked to contact them about the study. This allowed the researcher to collect data from participants in similar settings with similar roles (Merriam, 2009; Palinkas et al 2015). It can be a useful way to recruit participants, but it can limit the breadth of the sample to an individual's network. People who network together might work in the same or

similar settings, thus leading to a lack of diversity of views and unintentionally excluding potential participants (Browne, 2005).

While the aim was for the sample to be purposive, elements of convenience sampling were also present. The sample gained was convenient in that recruitment of GPs and pharmacists was limited to West Yorkshire, and the recruitment of care home residents was limited to care homes within a reasonable travelling distance for the lone researcher. It was also limited by the availability of participants at the time the study was conducted. Convenience sampling is defined by Ritchie and Lewis (2014) as a sample based on who is available to take part. If convenience is the only factor considered when sampling, the sample is unlikely to be robust and it would limit the transferability and credibility of the study (Merriam, 2009; Ritchie and Lewis, 2014). However, Merriam argued that there is likely some element of convenience in all qualitative samples, as it is based on who is available and consents to take part within the time frame and confines of the study. The risks of incorporating convenience sampling into the study design were minimised by aiming for a purposive sample first and not choosing participants solely for their convenience.

3.3.2 Sample size

It is difficult to pre-determine a sample size for qualitative research. The aim of a qualitative sample should be to generate a reasonable quantity of data rich in words and meanings to be analysed (Fusch, 2015; Dibley 2011), which will be different for each study. Therefore, researchers should be guided by the quality of the data they are generating, and should be aiming to ensure that all views on the topic have been represented. It can therefore be difficult to determine a sample size before embarking on data collection and analysis.

Guest (2006) suggested that a sample size of 6-12 is usually suitable for in-depth interviews where the researcher is aiming to understand common experiences in a group. Guest (2006) found during data analysis that 88% of the codes generated had been discovered after twelve interviews, and that the majority of the most common ones had been created after six interviews.

It is also important to consider the concept of data saturation, a term associated with sampling in qualitative research. It is preferable to be transparent about what saturation means in the context of the study being conducted, as there are various definitions (Bowen, 2008; O'Reilly and Parker, 2012). One definition of data saturation states is that it is achieved when no new themes are being generated and every view on the topic has been represented (Fusch, 2015; Bowen, 2008). There is no pre-determined sample size which can guarantee this – one study may achieve this with a small sample size, while another may need a much larger sample size (Fusch, 2015). Saturation is a concept most closely related to grounded theory, a methodology where the researcher continues to collect data guided by the analysis process, which aims to

fully describe and account for all similarities and differences in the themes identified (O'Reilly and Parker, 2012; Green and Thorogood, 2014). Saturation is well defined in grounded theory and is a central part of the methodology (O'Reilly and Parker, 2012). This definition of saturation may not be appropriate for all qualitative study designs and is distinct from alternative definitions such as that used by Guest (2006), who aimed to ensure that any new data collected was not generating new themes.

While aiming to reach saturation can improve the rigour of qualitative research, conducting a transparent and well-defined study is an essential element of improving the rigour of a study. With this in mind, data collection for this study was iterative and guided by the familiarisation of the researcher with the data. Data collection, transcription of the data and early analysis stages were to be undertaken simultaneously, and more data was sought where it was deemed necessary until the researcher felt that themes were well accounted for and the same points were being repeated by different participants. In this sense, data saturation was aimed for.

Considering the number of groups which were being sampled and the pragmatic considerations of this study, the initial aim of this study was to interview 10-15 care home residents and relatives, and 15-20 care home staff, GPs and pharmacists. It was reasoned that this would generate a workable amount of data that would provide a sufficiently in-depth understanding of the phenomena of deprescribing in care homes. However, the approach to the sample size was flexible and subject to change depending on the data being collected and analysed, plus the feasibility and ongoing analysis of the study. Indeed, as will be discussed, the sample size for residents and relatives was increased during the study to 15-20. Details of the final samples can be found in section 3.4.

3.4 Sampling methods

3.4.1 Sampling care homes

As described in Chapter 1.3, there are several different types of care homes in the UK. These include purely residential homes, which provide personal care, and nursing homes, which provide 24-hour care from registered nurses. In order to achieve a purposive sample it was important not to recruit too many participants from too few types of care home. The sample frame below (Table 5) outlines how the type of care home and gender of participants was considered when sampling for the study. Aiming to fulfil the sample frame ensured a diverse range of participants, likely to cover a wide range of views and attitudes to deprescribing.

Table 5: Sample frame for sampling of care homes

	Residents	Relatives
Local authority owned care homes	2-3	2-3
Privately/charitably owned care homes	2-3	2-3
Large chains of care homes	2-3	2-3
Homes providing nursing care	3-4	3-4
Homes providing residential care	3-4	3-4
Gender	A 50/50 gender split may not have been possible, as there are a greater proportion of women living in care homes than there are men. The aim was to interview a minimum of 3 male residents, but [1]	A more even gender split should be possible with the relatives, so a 50/50 gender split was aimed for and achieved.

In addition to the sampling frame, inclusion and exclusion criteria were created to guide the sampling of care homes (Table 6). Care homes were excluded if they were rated inadequate by the CQC, as they may be under further investigation due to poor practice and it may not be appropriate to visit these homes. In addition to this, relatively few care homes are rated inadequate and so including these may have limited the transferability of the study. The CQC lists 10,793 care homes providing care for adults aged 65 years and older, of which 182 (1.69%) are rated inadequate. Within the search area, 25 of 1141 care homes (2.37%) were rated inadequate.

It is a requirement of the CQC that care homes must have a named responsible person in order to register with the CQC to provide care. It is not always necessary to name a registered manager when registering a care home with the CQC. However, it was decided that to remove ambiguity, only care homes with a named registered manager were considered suitable for inclusion in this study (Care Quality Commission, 2019).

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[1]

https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/ageing/articles/changesintheolderresidentcarehomepopulationbetween2001and2011/2014-08-01

Table 6: Inclusion and exclusion criteria for care homes included in the study

Inclusion criteria	Exclusion criteria
Provide care to adults aged 65 and over	Care homes rated "inadequate" by the CQC
Care homes located in West Yorkshire. This was expanded after seeking advice from the ethical committee, and care homes were eventually included from West, North and South Yorkshire	
Must have a registered manager and responsible person named on the CQC website	

3.4.1.1 Care home recruitment methods

In order to recruit 10-15 care home residents and relatives in total, the aim was to recruit 3-5 care homes. The Care Quality Commission's (CQC) website was used to identify care homes with the potential to participate. All care homes in the UK must be registered with the CQC, and are listed on this website (http://www.cqc.co.uk), along with contact details and details about the care they provide (Care Quality Commission, 2017).

The CQC website was first searched for care homes within a 15-mile radius of a city in West Yorkshire. The results were then filtered using the CQC's search tools to care homes catering for those over 65 years old as per the inclusion criteria. This yielded a list of 310 providers who provide a care service in Leeds, and each one was checked to determine their eligibility for the study against the inclusion and exclusion criteria. This often involved accessing the care provider's website. If the care provider did not have a website, or the website did not provide the details required, www.carehomes.co.uk was utilised. This is a website containing basic details for care homes in the UK, such as type of care provided and number of beds alongside contact details.

To ensure that all types of homes were considered (including local authority owned, owned by a charitable organisation or privately owned, large chains, residential and nursing homes) were represented at this stage, the homes eligible to participate were split into two lists: homes providing nursing care, and homes providing residential care only. Homes that provided both were placed on the nursing home list, with an indication that they also provided residential care. The two lists also contained details about the ownership of the home and the home's CQC rating. Twenty homes, ten from each list, were then taken from the list. The twenty homes

chosen represented a geographical spread of the area, and the mix of homes rated "good "and "requires improvement" by the CQC reflected the area. There were no homes rated "outstanding" within the sample area.

The twenty homes were then sent a letter by post (Appendix G), as well as the participant information sheet for residents, relatives and care home staff (Appendix F). The letter was printed on University of Leeds headed yellow paper, to aid identification of the letter when communicating with the home. The care home manager was telephoned two weeks after the letter was sent to discuss the project and determine whether they were interested in participating. Homes were called up to five times over a period of two weeks, if the researcher was unable to speak to the manager after this time the home was not contacted again.

Due to a lack of engagement from the initial homes approached, a further five homes were selected from the list and contacted. Another approach included contacting local pharmacists known to the supervisory team who work in care homes for recommendations of care home managers to approach. Members of the supervisory team also recommended care homes to contact. While this provided care homes for inclusion in the study, there are implications to recruiting care homes in this way. It could bias the sample towards care homes active in research or those felt likely to take part by the supervisory team, and care home managers may also feel obliged to take part depending on their relationship with the member of the supervisory team. The recommended care homes were approached in the same way, by letter and then with a telephone call. Some care home managers were initially approached via email, if the local contact provided an email address for a care home manager. The email contained the same content as the letter, and the participant information sheets were attached.

The local contacts for NIHR Enabling Research in Care Home network (ENRICH) were also approached. ENRICH is a clinical research network set up by the National Institute for Health Research (NIHR) to enable research in care homes (ENRICH, 2017). This includes a list of care homes deemed "research ready", and a network of research nurses and staff across the country who aim to facilitate care home research (ENRICH, 2017). Research ready homes in the study area were contacted, and the local contacts for ENRICH recommended care homes which might be interested in taking part. Nurses working for ENRICH also gave information about the study at events they attended. While this increased awareness of the study, only care homes taking part in the events attended by ENRICH were exposed to information about the study. Figure 9 below illustrates how care homes were recruited to the study.
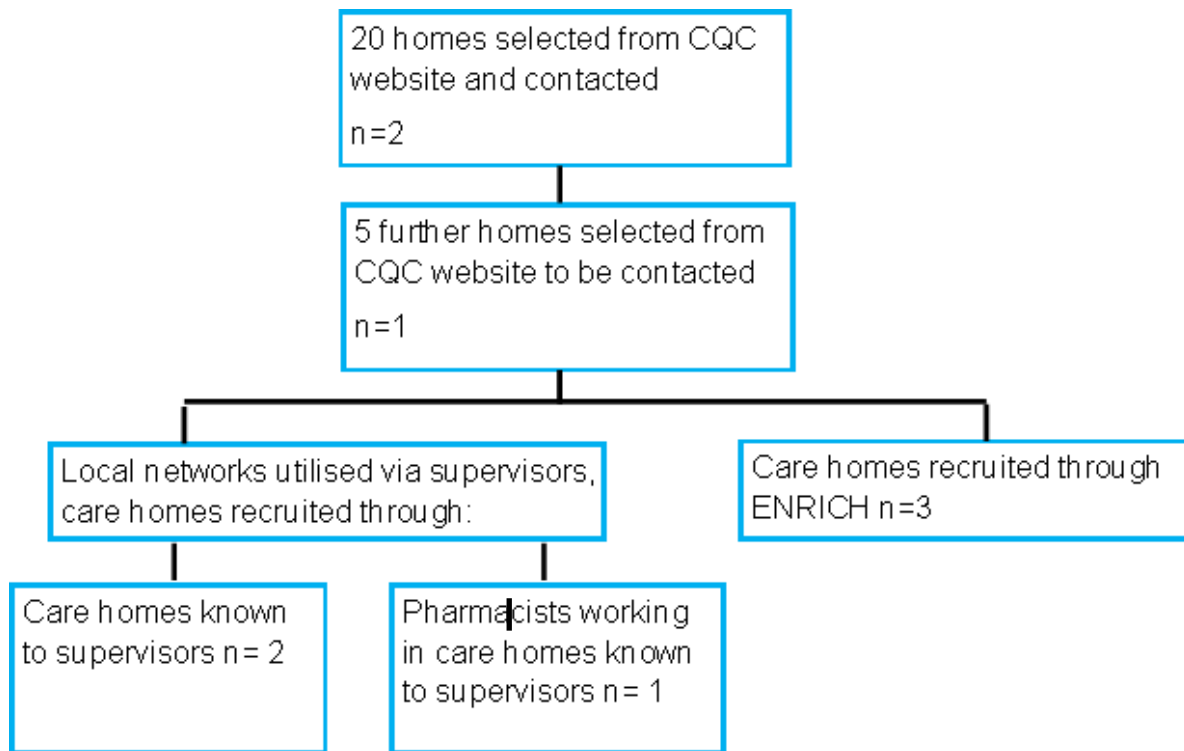
Figure 9: Flowchart demonstrating how care homes were recruited to the study

3.4.1.2 Care homes recruited for inclusion the study

Table 7 shows details of the care homes which were recruited. Residents, relatives and care home staff were recruited from nine care homes, of which three provided residential care only, four provided nursing care only and three provided both residential and nursing care. Six homes were privately owned, with one of those being part of a privately-owned chain; a further home was owned by a local authority and another by a charitable trust. Five homes included in the study had a CQC rating of good; two required improvement and one had not been rated at the time of the visit. The ownership details and CQC status of the final home, CH7, is not known. This is because only one relative of a resident living in that home was interviewed by telephone, and they were recruited through contact with the ENRICH network and referred to the researcher directly without involving the care home. The relative did not know these details about the care home, only that the home provided nursing care.

Table 7: Care homes recruited for inclusion in the study

Care home	Nursing or residential care provided	Care home ownership	CQC rating
CH1	Residential	Privately owned	Requires improvement
CH2	Residential	Council owned	Good
CH3	Nursing	Privately owned, part of a chain	Requires improvement
CH4	Nursing	Privately owned	Good
CH5	Nursing	Privately owned	Good
CH6	Both	Charitable trust	Good
CH7	Nursing	Unknown	Unknown
CH8	Residential	Privately owned	Good
CH9	Both	Privately owned	Unrated at the time of visit

3.4.2 Sampling residents and relatives

Residents, relatives and later care home staff were recruited from the care homes shown in Table 8. Inclusion and exclusion criteria were developed to guide the recruitment of residents and relatives. If participants met any of the exclusion criteria, they were not eligible to contribute to the study. The inclusion and exclusion criteria applied to residents and relatives is detailed below in Tables 8 and 9. Participants of different genders or ethnic backgrounds were included, where possible.

Table 8: Inclusion and exclusion criteria for care home residents

Inclusion criteria	Exclusion criteria
Aged 65 years old or over	Residents of care homes who have been diagnosed with a terminal illness
Have capacity to consent to be interviewed to take part in the study	Residents of care homes who do not take any medicines
Able to converse in English	Residents who lack capacity to consent to partake.

Table 9: Inclusion and exclusion criteria for relatives of care home residents included in the study

Inclusion criteria	Exclusion criteria
Relatives of care home residents whereby the care home resident is aged 65 years old or over but lacks capacity to consent to interview	Relatives of care home residents whereby the residents have been diagnosed with a terminal illness
Have capacity to consent to be interviewed to take part in the study	Relatives of care home residents who do not take any medicines
Aged 18 years old or over	Relatives who lack capacity to consent to partake.
Able to converse in English	

Care home residents who were diagnosed with a terminal illness, and their relatives, were excluded from the study. There are different definitions of terminally ill, and Hui et al (2014) sought to define the term via a systematic review. The definition Hui et al (2014) described for terminally ill was:

"life limiting disease with irreversible decline and expected survival in terms of months or less"
(Hui et al, 2014, pp1)

Residents diagnosed as being terminally ill were excluded from the study, as were their relatives, as the awareness of limited life expectancy might impact how they feel about the medicines taken by the care home resident. Their views may differ to the general care home population as a terminal diagnosis often prompts a review of medicines, and people may change their views on medicines when a terminal illness is diagnosed (Harriman et al, 2014). Deprescribing in this context is therefore different to deprescribing in the general care home population. Asking terminally ill residents and/or their relatives to partake in the study was also considered to be an unnecessary burden for them at a distressing time. When speaking with the care home manager about residents and relatives to approach, the lead researcher requested that residents, and relatives of residents with a life expectancy of months or less were not included.

Relatives of care home residents whereby the resident would have capacity to be interviewed themselves were excluded as the aim was to interview only relatives of residents who would be unable to partake themselves. This approach allowed the relatives to provide insight into how the resident may feel about the topic if they were able to take part; however, it also importantly allowed exploration of the views and influence of relatives of care home residents on the decision-making process. Interviewing relatives of care home residents unable to take part

themselves also facilitated some representation of the large proportion of care home residents who live with dementia or other cognitive impairment that would not be able to take part themselves.

3.4.2.1 Resident and relative recruitment methods

Once a manager had agreed for their care home to take part in the study, the researcher met face-to-face with the manager to discuss the optimal way to recruit residents and their relatives. The manager also signed a letter stating they were aware of the research activities being conducted on the premises (see Appendix H), and a copy of this was supplied to the University sponsor.

To recruit residents, care home staff identified residents with capacity to provide informed consent and provided a verbal summary of the study to these residents before the lead researcher spoke with them. The care home manager also provided residents eligible to take part with a participant information sheet (Appendix F). If the resident was content to proceed, the researcher spoke with the resident in a quiet place at the care home, either in their room or other appropriate area, at a convenient time to explain the study, answer questions and obtain written, informed consent. They were also reminded before and during the interview about how they could withdraw from the study. All residents were offered 48 hours to decide whether to partake, however if the resident was content to go ahead with the interview straight away this was permitted. Some residents had also received a participant information sheet via the care home manager in advance of the interview and had decided in advance of the researcher's visit that they wanted to participate.

Relatives of residents were recruited with the assistance of the care home manager. Posters were put up in the care home advertising the project, and participant information sheets were also provided for care home managers to give to relatives eligible to take part. Proactive care home managers (see Appendix D for a reflective account of the recruitment process) were also asked if a member of administration staff could call relatives and introduce the project to them, but this was declined. This was because all relatives of care home residents with cognitive impairment had been approached, and those who were interested had already been interviewed. The lead researcher also requested attendance at resident and relative meetings to speak with relatives and hand out participant information sheets, however only one home invited the researcher to such a meeting, and no relatives were recruited in this way.

After six residents had been interviewed, the sample size was increased to include 15-20 residents and relatives. The pragmatic, flexible approach taken allowed the sample size to be adjusted as data were collected, to ensure the aims and objectives of the study were met. The residents were providing rich and varied data, but interviews were relatively short and some had not been as in depth as was hoped (see Appendix D for a reflective account of the first

interviews conducted). Increasing the sample size allowed for more data regarding the resident's perspectives to be gathered, without impacting upon the number of relatives who could be interviewed.

To increase the sample size, a substantial amendment to the ethics committee was submitted. The substantial amendment also requested changes to the consent process for relatives, GPs and pharmacists, with approval granted to gain verbal consent from telephone interviewees, as well as changes to the recruitment of relatives. Once granted, recruitment of relatives was permitted through Twitter and the following groups, as well as through methods already identified and utilised:

- The Relative and Resident association: http://www.relres.org/
- My Home Life organisation: http://myhomelife.org.uk/
- Memory cafes: http://www.memorycafes.org.uk/#!/search

Contacts from these groups were identified and emailed to see if they were able to assist, however no relatives were recruited through these groups. Multiple tweets were posted which generated interest, however again no relatives were recruited in this way. For details of the substantial amendment submitted to the ethics committee, see section 3.6.2.3

3.4.2.2 Residents and relatives recruited for inclusion in the study

The following Tables 10 and 11 display the demographic details of residents and relatives collected during the interview process, either from the residents themselves or, with their permission, from a member of care home staff. As care home staff were not informed of relative participation, they could not be approached to provide to the researcher the number of medicines taken by the resident. The display of these demographic details increases the transferability of the research, as readers of the research will be able to determine whether the population interviewed, and therefore the data collected, is transferable to their setting.

Table 10: Demographic information of residents included in the study

Identifier	Gender	Age	Residential or nursing care	Number of medicines prescribed daily	Care home identifier
Res1	Male	80	Residential	15	CH1
Res2	Male	86	Residential	12	CH1
Res3	Female	91	Residential	15	CH2
Res4	Female	83	Residential	8	CH2
Res5	Male	79	Nursing	6	CH3
Res6	Male	74	Nursing	7	CH4
Res7	Female	84	Nursing	9	CH5
Res8	Female	82	Nursing	7	CH5
Res9	Female	90	Residential	2	CH6
Res10	Female	96	Nursing	15	CH6
Res11	Female	98	Nursing	10	CH6

Table 11: Demographic information of relatives recruited to the study

Identifier	Gender	Resident: residential or nursing care	Care home recruited from
Rel1	Male	Nursing	CH7
Rel2	Male	Nursing	CH6
Rel3	Female	Nursing	CH6
Rel4	Female	Residential	CH8

3.4.3 Sampling of GPs, pharmacists and care home staff

Two sampling frames were developed to guide the sampling of GPs, pharmacists and care home staff, demonstrated in Tables 12 and 13 below. The sampling frames were designed to provide a purposive sample and to encourage recruitment of a diverse range of people likely to provide a wide range of views about the topic.

Table 12: Sample frame for the recruitment of GPs and pharmacists

	Number of GPs sought	**Number of pharmacists sought**
<10 years of experience in their current role	2-4	2-4
>10 years of experience in their current role	2-4	2-4
Providing a service for CCGs	N/A	3-4
Employed by a GP practice	N/A	2-3
Independent prescriber	N/A	2-4
Not an independent prescriber	N/A	2-4
Gender	A 50/50 gender split may not be possible, as there are more female GPs than there are male GPs.	A 50/50 gender split may not be possible, as there are more female pharmacists than there are male pharmacists.

Table 13:Sample frame for the recruitment of care home staff

	Number of care home staff sought
Registered nurses	2-4
Carers – not registered nurses	2-4
Council owned care homes	1-2
Privately owned care homes	3-4
Large chain care homes	2-3
<10 years of experience working in care homes	2-3
>10 years of experience working in care homes	3-4
Gender	A 50/50 gender split may not be possible, as there are a greater proportion of women working in care homes than there are men. Men are not excluded from being interviewed and will be interviewed if they are available and fit the inclusion criteria.

In addition to the sampling frame, inclusion criteria were created to guide the sampling of GPs, pharmacists and care home staff. Whilst there were no specific exclusion criteria, care home staff, GPs and pharmacists were only included if they met all the inclusion criteria (Table 14).

Table 14: Inclusion criteria for GPs, pharmacists and care homes staff included in the study

Inclusion criteria
GPs must routinely care for care home residents
Pharmacists must routinely care for care home residents
Care home staff must be involved with medicines activities in a care home (this may include the administration of medicines, as well as ordering and managing medicines in the home)

3.4.3.1 GP and pharmacist recruitment methods

Pharmacists and GPs could only be recruited from West Yorkshire. This was decided following advice from the local research governance team. The involvement of the local research governance team is required for each area from which the researcher wishes to recruit healthcare professionals. It was felt that there were sufficient GPs and pharmacists to approach in West Yorkshire without needing to co-ordinate with other research governance teams, and if recruitment was difficult this could be re-visited and expanded as required.

Local networks were initially used to recruit pharmacists. This is because there is no register of pharmacists working in care homes, and primary care pharmacists work in a number of different locations, such as GP surgeries, CCG offices and for private companies, and therefore are not as easy to locate and identify as other groups involved in the study. In the first instance, a member of the supervisory team emailed several contacts, introducing them to the study and inviting them to contact the researcher. The head of medicines management at a local CCG was also contacted. Further participants were recruited via snowball sampling: any pharmacists recruited were asked if they had any colleagues in West Yorkshire who may be interested in taking part, and were encouraged to ask them to contact the researcher. Finally, pharmacists that had assisted with the identification of care homes were contacted again and asked if they would like to be interviewed. All pharmacists were recruited through email conversations and were sent copies of the participant information sheet (Appendix F) and consent form (Appendix E).

To recruit GPs, the Royal College of General Practitioners' list of research ready GP surgeries was utilised (Royal College of General Practitioners, 2020). 48 research ready GP surgeries were identified in West Yorkshire, and all were sent a participant information sheet and a letter on yellow University of Leeds headed paper (Appendix G), to aid identification when speaking to the surgery. GP surgeries that did not reply were then called two weeks later to see if they were willing to participate. Surgeries were called up to five times over the following two weeks; if the researcher could not contact the appropriate person after that then the surgery was not called again. Further participants were recruited via snowball sampling: any GPs or pharmacists recruited were asked if they had any colleagues in West Yorkshire who may be interested in taking part, and were encouraged to ask them to contact the researcher. The supervisory team also contacted eligible colleagues and asked them to contact the researcher if they were interested in taking part. GPs who were recruited via email were sent copies of the consent form and participant information sheet (Appendices E and F).

3.4.3.2 GPs and pharmacists recruited for inclusion in the study

Six GPs were recruited from six different GP practices, and six primary care pharmacists were recruited from five employers. The sample of GPs and pharmacists was overwhelmingly female, and five of the GPs interviewed were very experienced in the role. The pharmacists sampled had been working as pharmacists for many years but had varying degrees of experience in the role as primary care pharmacists. Only two of the pharmacists interviewed were independent prescribers. Two pharmacists interviewed were directly employed by CCGs, and the remainder were employed by private companies contracted by CCGs to provide medicines management services. Tables 15 and 16 summarise the demographic information of the GPs and pharmacists recruited to partake in the study.

Table 15: Demographic information of GPs included in the study

Identifier	Gender	Years of experience (as a GP)
GP1	Female	29
GP2	Female	29
GP3	Female	21
GP4	Female	28
GP5	Female	13
GP6	Male	3

Table 16: Demographic information of pharmacists included in the study

Identifier	Gender	Years of experience	Independent prescriber status	Role
Pharm1	Male	31 as a pharmacist, 20 in this role	Independent prescriber	Employed by a company to provide a service to CCGs
Pharm2	Female	2 in this role	Non-prescriber	Employed by a CCG
Pharm3	Female	16 as a pharmacist, 11 in this role	Non-prescriber	Employed by a CCG
Pharm4	Female	22 as a pharmacist, 1 in this role	Non-prescriber	Employed by a company to provide a service to CCGs
Pharm5	Female	18 as a pharmacist, 5 in this role	Independent prescriber	Employed by a company to provide a service to CCGs
Pharm6	Female	21 as a pharmacist, 8 in this role	Non-prescriber	Employed by a company to provide a service to CCGs

3.4.3.3 Care home staff recruitment methods

Care home staff were recruited from the same care homes as the residents and relatives, four months after the residents were recruited and while recruitment of relatives, GPs and pharmacists was ongoing. Care home managers were approached and asked if the researcher could visit and interview a member of staff that dealt with medicines. The manager then approached staff to ask if they were interested in taking part and gave out participant information sheets. The researcher then met with the staff member in a quiet place in the care home to explain the study to them, provide a participant information sheet if necessary and consent them to take part in the study. Only staff involved in the administration or ordering of medicines were eligible to participate which limited the staff able to take part, hence the involvement of the manager in identifying eligible staff.

3.4.3.4 Care home staff recruited for inclusion in the study

Seven care home staff were recruited from a total of five care homes. All care homes which took part in the resident and relative interviews were approached to take part in the care home staff interviews, however only four of the homes facilitated the interviewing of staff members. The additional participant was recruited from CH9, which was not previously involved in the study, via the supervisory team. All care home staff recruited were female, and all had significant experience of working in care homes. Table 17 summarises the demographic information of the care home staff recruited to partake in the study.

Table 17: Demographic information of care home staff included in the study

Identifier	Gender	Job title	Role in the care home	Years of experience	Care home recruited from	Nursing or residential care provided
CHS1	Female	Carer	Deputy manager	28	CH2	Residential
CHS2	Female	Carer	Team Leader	20	CH2	Residential
CHS3	Female	Nurse	Team Leader	14 in care homes, more as a nurse	CH6	Both
CHS4	Female	Nurse	Team Leader	14 in care homes, more as a nurse	CH6	Both
CHS5	Female	Carer	Senior carer	20	CH1	Residential
CHS6	Female	Nurse	Senior nurse	23	CH4	Nursing
CHS7	Female	Nurse	General manager	23	CH7	Both

3.5 Data collection

Face-to-face interviews were offered to all participants, and telephone interviews were offered to all relatives, care home staff, GPs and pharmacists who wished to participate. Telephone interviews were not offered to care home residents, as they may not have had access to a private telephone or had the stamina to complete an interview over the telephone. Telephone interviews were offered for the convenience of respondents, for example relatives who may not be able to travel to the care home or the University to be interviewed, or for healthcare professionals who did not have the time to participate during working hours.

3.5.1 Developing the interview schedules

Semi-structured interviews were conducted with each participant. Interview schedules were used for all interviews in order to ensure that the same topics were explored in each interview. Semi-structured interviews are a popular method of data collection, especially in healthcare research, as it allows a flexible discussion of set topics (Kallio et al, 2016). Ritchie and Lewis (2014) warn that interview schedules consisting of a series of questions can be restrictive, and prevent the researcher from partaking in a responsive and flexible conversation. However, the schedule was not used as a script and instead the semi-structured interviews were conducted as described below, as Knox and Burkard (2009) and Kallio et al (2016) recommend.

Interesting points raised by the participants were explored by the researcher even if they did not appear on the schedule, and especially as the researcher gained experience and confidence in interviewing it became a more general guide to the interview process (Knox and Burkard, 2009). The prompts beneath each question on the schedule were a mix of open and closed prompts, presented as bullet points rather than further questions. These acted as a more general memory aid for the researcher, reminding them of topics they could ask about or directions in which the conversation could be steered. In this way the interview schedule was a useful tool, especially for a novice researcher.

No interview schedule was piloted, but all were developed iteratively. After each interview, the researcher reflected on which parts of the interview had been successful and which parts had not been so successful. Reflective pieces were written to help the researcher understand how their interviewing technique and schedules could be improved. These reflections were discussed with the supervisory team and colleagues, and suggestions to improve the interview schedules were made and implemented. See Appendix D for an example of a reflective account.

Interview schedules (Appendix I) for the resident and relative interviews were developed from the literature described in Chapter 2, as recommended by Kallio et al (2016). A semi-structured interview is based upon the available knowledge, and therefore other methods of data collection would be more suitable to employ if there is no previous knowledge on the topic (Kallio et al, 2016). The evidence base suggested areas the interview schedules should explore, such as resident and relative knowledge about medicines, how decisions are made about their medicines and attitudes to deprescribing. The interview schedule was therefore designed to explore themes and ideas from the literature.

The TDF was used to create the healthcare professional and care home staff interviews (Appendix I). This is a use of the TDF that was suggested by Cane et al (2012) when they validated the TDF, and the interview questions suggested by Cane et al (2012) were used as inspiration for the first iteration of the interview schedule. Furthermore, the TDF is proven to be useful for developing interview schedules for qualitative healthcare research (Duncan et al,

2012; Lawton et al, 2016). This ensured that the interview schedule was rooted in the theoretical determinants of deprescribing behaviours and the questions reflected the domains of the framework. This allowed for exploration of the participants' deprescribing behaviours in relation to the TDF, in order that any intervention developed could be tailored to the domains which presented the most significant barrier(s). All domains were included in the interview schedules apart from *Goals*, as it was not felt a relevant question could be written around this domain. Cane et al (2012) define the domain *Goals* as:

> *"Mental representations of outcomes or end states that an individual wants to achieve"* (Cane et al, 2012, pp114*).*

This includes factors such as goal setting and intention of implementation. It was unclear how deprescribing goals may be set by healthcare professionals and whether these could be relevant. With hindsight and experience of utilising the TDF, this may have formed an interview question. However, it did not hinder exploration of goals as a domain as during the mapping process data regarding goals of care was mapped to this domain. The interview schedule covered attitudes to deprescribing and medicines taken by care home residents, as well as barriers and facilitators encountered to the process.

Francis et al (2012) disputed claims that interview schedules based on the TDF may be too restrictive or shallow for semi-structured interviews. It has been shown that interview schedules based on the TDF have generated data about more beliefs than schedules not based on the TDF, especially in relation to the "emotion" domain which may be forgotten by researchers not using the TDF (Francis et al, 2012). In addition to this, the researcher was not restricted by the interview schedule and was able to follow interesting leads provided by the interviewee. This often produced discussion of barriers that could be mapped to the TDF despite the fact that, at face value, they may seem unconnected to the framework.

The TDF was not incorporated into the resident and relative interviews for multiple reasons. Firstly, the TDF was designed as a tool to investigate and understand the behaviour of healthcare professionals. In addition, any behaviour change intervention developed as a result of this work would be designed to change the behaviour of healthcare professionals, and while it is anticipated that residents and relatives would be involved in this process, it is the healthcare professionals who do the deprescribing who would be using the intervention.

The literature shed light on why healthcare professionals were not deprescribing in care homes, and that a behaviour change intervention may help them to deprescribing. However, there was not enough literature to determine how residents and relatives could be involved in this process. This lack of literature about resident and relative attitudes to deprescribing meant that before investigating how their behaviour may be changed or how they may use an intervention it was necessary to explore more basic concepts. These more basic concepts include their knowledge about medicines, how they experience deprescribing now and their attitudes towards those

involved. Though they would undoubtedly be involved in the implementation of an intervention, and in its design, they would not be the people using the intervention to deprescribe.

Future work may look at how residents and relatives may be involved in intervention design and implementation, and this study provides the groundwork for such future research. Collecting the views of residents and relatives was also necessary to investigate whether the perceptions of residents and relatives held by healthcare professionals, as explored in the literature review (Chapter 2), were accurate. Therefore, this study focuses on understanding how residents and relatives feel about deprescribing and their involvement in the care of the resident, and investigating the behaviours displayed by healthcare professionals with regard to deprescribing to consider how these could be improved.

3.5.1.1 Telephone interviews

Telephone interviews were offered to all study participants except residents who may not have access to a private phone or have the stamina to complete a telephone interview. Telephone interviews have been criticised for lacking the depth of face to face interviews, with speculation that participants may be withholding of information when speaking over the phone (Novick, 2008; Trier-Bienick, 2012). There is also a fear that the lack of body language interaction between the interviewer and interviewee could be harmful to establishing rapport and a smooth conversation (Novick, 2008; Trier-Bienick, 2012). However, it has also been reported that telephone interviews provide the interviewee with a greater degree of anonymity than face to face interviews, which empowers them to discuss sensitive topics more freely (Novick, 2008; Sturges and Hanrahan 2004). In addition to this, telephone interviews do not appear to result in harm to the quality or quantity of data being collected (Sturges and Hanrahan, 2004). Telephone interviews are also often more convenient than face-to-face interviews, for both interviewer and interviewee, and may be safer for the researcher to undertake as they do not involve travel to unsafe environments (Sturges and Hanrahan, 2004). While the potential downsides of telephone interviews were considered, it was not believed that their use would be detrimental to the study and would be more acceptable to busy practitioners.

Residents and relatives interviewed were not informed that I was a pharmacist, though it was not denied if questioned. This was to avoid any confusion around the resident thinking that I might change their medicines, and I hoped it would facilitate them to speak freely and not withhold information as they may do if they knew they were speaking with a healthcare professional. I also did not want to potentially invite them to ask for help or advice about their medicines and health, as I was not visiting in that capacity.

Healthcare professionals and care home staff were not explicitly informed that I was a pharmacist. It was possible, however, that those contacted via the supervisory team assumed my background. I did not feel it was as important that healthcare professionals did not know my

background, as my insight into the issues likely came across in the interviews and it facilitated an easy, in-depth discussion based on shared understanding.

3.5.2 Interview transcription

Transcription of all resident interviews and two of the relative interviews were undertaken by the author. A member of the supervisory team transcribed the remaining two relative interviews. The transcription of all GP, pharmacist and care home staff interviews was completed by a transcription company the supervisory team had experience of using. The interviews were uploaded to a secure area, accessible by only the researcher and the transcription company. Once the interviews had been transcribed, the transcripts were uploaded to the same secure area and the audio deleted. The company employed to transcribe the interviews abided by General Data Protection Regulations (GDPR), were subscribed to the Data Protection Act and ensured their staff signed confidentiality agreements.

All transcripts were checked against the audio recording twice by the author, and any potentially identifying information (for example, place or people's names) were deleted to anonymise the transcripts

3.6 Ethical and research governance approval

Ethical approval was required for this study, as it involved the participation of older people who live in care homes. These people are classed as vulnerable, as they are cared for by others and may live with health conditions which increase their vulnerability. This raised issues around ensuring that participants were able to provide informed consent and that they were sufficiently resilient to partake. Safeguarding processes also had to be developed in case any participant raised safeguarding concerns that required escalating, and participants also needed to be aware of how to withdraw from the study and how their data would be managed.

3.6.1 Summary of main ethical issues

Below is a summary of the main ethical issues of the project, which were identified during study design and considered by the ethics committee during the ethical approval process. The study was reviewed by the NHS HRA Social Care Research Ethics Committee, who review studies in England that are set in the social care setting such as care homes. The documents that were submitted to the ethics committee are in Appendices D-H.

3.6.1.1 Inclusion of vulnerable adults

Inclusion of vulnerable adults, such as those who live in care homes, was an ethical issue as they may have a degree of cognitive impairment which would impact on their ability to consent to take part. To address this, care home staff that knew the residents were asked to use their knowledge of the residents to suggest those who would be able to take part in the study.

Residents were then only included if they had capacity to provide their informed consent to be included. All residents who participated were judged to have capacity and were able to make an informed choice to participate in the study, and there were no issues around participants' capacity to consent.

In the event of care home residents becoming fatigued, and unable to complete the interview, the following was planned. The interview would have been stopped and support offered. The resident's carer may have been invited in to comfort them, if the resident wished. They did not have to continue with the interview if they did not want to, or the interview may have continued at a later date. This did not occur during the interviews.

3.6.1.1.1 Emotional support

Plans were also put in place to help residents or relatives if they became upset when talking about medicines or health conditions, or found the concept of stopping medicines distressing. If this happened, the interview would have been stopped and verbal support offered.   If the resident wished, their carer would have been invited in to comfort them.   They did not have to continue with the interview if they did not want to, or the interview may have continued at a later date. If support was required after the interview, the resident was asked for consent for the researcher to speak with care home staff on their behalf to provide support and refer them to the GP if necessary.

If a relative became upset, the interview would have been stopped and verbal support offered. They would have been informed that speaking to care home staff or the GP would be the best way to receive further advice.

There were no issues which required such escalation during the interviews.

3.6.1.1.2 Informed consent

Once a participant had been recruited, they were asked to sign a consent form (Appendix E). Participants involved in face-to-face interviews signed the consent form in the presence of the lead researcher. Participants taking part in a telephone interview were sent a participant information sheet and consent form either by post or email, and could either return the signed consent form to the lead researcher or provide verbal consent which was recorded at the start of the interview. Consent forms were returned via email, or a stamped, addressed envelope provided by the researcher. If verbal consent was gained, the lead researcher filled in the consent form on behalf of the participant, noting the time that verbal consent was given for the interview. The consent from was referred to whilst gaining verbal consent to ensure that all participants were consenting to the same conditions.

Participants unable to give informed consent to participate were excluded from the study.   Care home residents with the capacity to consent to participate were identified by care home staff.

The researcher also assessed capacity as per training received according to the Mental Capacity Act (MCA) 2005, which involved assessing the interviewee's ability to understand, retain and use information to make a decision and communicate their decision.

This was done using the two-stage functional capacity test, as outlined by the MCA 2005 and presented below in Figure 10 (Social Care Institute for Excellence, 2020):

Stage 1. Is there an impairment of or disturbance in the functioning of a person's mind or brain? If so,

Stage 2. Is the impairment or disturbance sufficient that the person lacks the capacity to make a particular decision?

The MCA says that a person is unable to make their own decision if they cannot do one or more of the following four things:

1. understand information given to them
2. retain that information long enough to be able to make the decision
3. weigh up the information available to make the decision
4. communicate their decision – this could be by talking, using sign language or even simple muscle movements such as blinking an eye or squeezing a hand.

Figure 10: The two-stage mental capacity test, as defined by the Social Care Institute for Excellence (2020)

As care home residents who participated must have been able to communicate verbally in order to partake in an interview, capacity was assessed through conversation with the resident. They were asked to explain what they were being asked to participate in, what the benefits and risks were and demonstrate an understanding of what they were being asked to do. If the researcher felt a resident passed the two-stage functional capacity test, they were able to participate in the study

Despite the opinion of the care home staff, the interview only took place if the researcher was confident the interviewee was able to provide informed consent. In order to ensure participants understood the study and their role in it, participant information sheets (participant information sheets) were provided to potential participants (Appendix F). Participants were given at least 48 hours to read the information and contact the researcher to discuss the study and ask questions. However, if the participant wished to partake in the interview immediately, this was permitted. In order to take part, participants were required to sign a consent form (Appendix E) and then verbally consented to take part before the interview took place. The study did not include residents with dementia or other cognitive impairment, or anyone who was unable to give informed consent to take part. There were no issues regarding the ability to consent of any participant who took part.

3.6.1.1.3 Safeguarding concerns

In the event of a participant raising a safeguarding concern, the interviewer would have discussed this with the participant and then consulted with the supervisory team. Participants were informed of this process in writing, on the participant information sheet and consent form, and verbally before the interview started. No safeguarding concerns were raised during the interview process.

3.6.1.2 Withdrawal from the study

Participants were able to withdraw from the study at any point from receiving the participant information sheet up until two weeks after the interview. If they withdrew after the interview, any data collected was destroyed. They could also withdraw during the interview, if they wished, and again collected data was destroyed. Participants were also able to use the two weeks after the interview to consider their responses and contact the interviewer to change or withdraw individual responses. No participants withdrew from the study, although one participant contacted the researcher to review one of their responses but did not change their response.

3.6.2 Data protection considerations

3.6.2.1 Confidentiality

In order to take part, participants were required to sign a consent form (Appendix E) which gave permission for anonymous quotes from the interview to be used in publications. It was acknowledged that instances may have arisen which required information to be shared with a third party such as the local safeguarding team.   If this was deemed necessary, it would be discussed with the participant first and no action would be taken until this had been done. It was not necessary to break the confidentiality of any participant for any reason during the study.

3.6.2.2 Anonymity

All interviewees were assigned an ID number, which was securely stored with their real names on a master document.   Only the lead researcher had access to the master document, which was stored on a password protected Excel spreadsheet on the secure University of Leeds server. The participant's ID number was used on all subsequent paperwork.

Table 18 highlights the varying data protection issues for different aspects of the study, and how data was handled throughout the study.

Table 18: Summary of data protection issues accounted for during the study design

Consent forms	Signed consent forms were scanned onto the secure, password protected, University of Leeds drive accessible only by the lead researcher and the physical copies were destroyed. Participants were assigned an identifier, which was used on all subsequent paperwork and documentation.
Demographic data collection forms	The forms were anonymised, and the data from them transferred to the master spreadsheet detailed below. They were then destroyed.
Master spreadsheet	The master spreadsheet, containing details of the participants and their identifiers, were kept on a password protected Microsoft Excel spreadsheet on a secure University of Leeds drive accessible only by the lead researcher. This will be destroyed after the PhD has been awarded.
Interview recordings	The interview recordings were transferred from the recorder to a secure, password protected University of Leeds drive accessible only by the lead researcher, and then they were deleted off the recorder. The recordings will be kept until the PhD has been awarded.
Interview transcripts	Transcripts were anonymised, and were then kept securely at the University of Leeds, either electronically on a secure, password protected University of Leeds drive accessible only by the lead researcher or in a locked filing cabinet. Transcripts will be kept for two years after the results have been published, and then they will be destroyed.

The storage of the all the above complied with the Data Protection Act 1998, the Human Rights Act and the University of Leeds Code of Practice on Data Protection.

3.6.2.3 Details of ethical approval gained

The research team were first advised that ethical approval from the University of Leeds School of Healthcare Ethics Committee (SHREC) would suffice, and this was granted. However, the advice the research team was given was updated and it was determined that alongside Health Research Authority (HRA) approval that ethical approval was required from the NHS. Ethical Approval from the NHS HRA Social Care Ethics Committee and HRA approval was granted on the 2nd May 2017, reference number 17/IEC08/0017 and IRAS Project ID 215674.

A substantial amendment was submitted to the NHS HRA Social Care Ethics Committee and the HRA to allow recruitment of more residents and relatives to the study, and to recruit relatives through different methods (detailed in section 3.4.2.1). This was granted on the 3rd October 2017

3.7 Ensuring quality

Qualitative research is undoubtedly useful for generating and analysing the words, thoughts and feelings of its participants, and it can also be utilised to help researchers and practitioners understand why interventions are not used by the target audience and why patients behave the way they do. This is relevant to this thesis, which aims to understand why healthcare professionals are not partaking in deprescribing and how residents and relatives feel about deprescribing.

In order to make a valuable contribution to the field being investigated, qualitative research must be rigorously conducted and its methods explained transparently. Triangulation is a method which may be employed to achieve this. There are different methods of triangulation, a common one being the utilisation of different methods to investigate the topic (Flick et al, 2004). Whilst this was not a method employed during the empirical research, the involvement of the supervisory team throughout the entire research process but especially during the analysis and TDF work is a form of investigator triangulation (Flick et al, 2004). The concepts of credibility, transferability dependability and conformability can aid in guiding the researcher to produce high quality research, and in the assessment of the quality of qualitative research articles (Hannes et al, 2011). Table 19 shows a description of these terms, alongside how they were addressed in this thesis.

Table 19: How quality of the study was ensured using the concepts of credibility, transferability, dependability and confirmability

Quality assessment criteria (Hannes et al, 2011)	Definition of the criteria (Hannes et al, 2011)	How the quality assessment criteria were fulfilled
Credibility	The findings should reflect the data generated. Methods by which to achieve this include involving multiple researchers in the analysis process, the use of verbatim quotes and the reporting of contradictory cases	Multiple people were involved in the analysis process. Inclusion of the supervisory team in this process helped to ensure that the findings were credible, as the thoughts of the researcher were verified by those external to the main analysis process.
		The researcher's work was regularly discussed and checked, both by the supervisory team and with other colleagues. The transfer report process at the end of the first year of the research involved two independent assessors who ensured that the research was appropriate and achievable, and each year an independent assessor ensured the research was progressing and that it was being conducted properly. Supervision meetings took place every month, with further meetings with supervisors and colleagues taking place as required.

Quality assessment criteria (Hannes et al, 2011)	Definition of the criteria (Hannes et al, 2011)	How the quality assessment criteria were fulfilled
		The research was presented multiple times during the PhD process, both internally to colleagues in the department and externally at other universities and conferences. This allowed for the researcher to be questioned, and for any potential issues with the research to be noticed and rectified or defended. Further details of these presentations can be found in Chapter 6, section 6.12.
		Verbatim quotes are presented in the findings chapter (Chapter 4), and contradictory cases are also highlighted and presented.
Transferability	To help the reader assess the transferability of the findings of a qualitative study to a similar setting, the author of a qualitative study should be transparent about participants and provide as much detail as possible about them. The author should also provide detailed background on the setting of the study.	A broad sample from different areas was aimed for, and largely achieved. While there were constraints to the sample, as discussed in Chapter 6 section 6.7, the sample aimed to be inclusive of a large range of people whose views on the topic of deprescribing in care homes are important.
		Demographic details of the participants and background details of the care homes recruited from were recorded and presented.

Quality assessment criteria (Hannes et al, 2011)	Definition of the criteria (Hannes et al, 2011)	How the quality assessment criteria were fulfilled
Dependability	Dependability refers to the transparency of reporting. The author should provide a clear audit trail to allow the reader to understand how the conclusions were met	In addition to the factors listed under credibility, which also ensure dependability, framework analysis was employed which is a transparent methodology and a clear audit trail of the analysis process was produced. As a result, as the final themes and subthemes can clearly be traced back to the data through a series of tables, coding and annotations.
		Research journals and reflective pieces were written throughout the research process which allowed the researcher to keep a critical account of the processes undertaken.
		In addition to the study, the researcher undertook a number or training courses to enhance their research skills. Details of courses taken can be found in the training plan in Appendix K..
Confirmability	The confirmability refers to how accurate the findings are likely to be. This can be assessed through reflexivity and the author being transparent about their views and history that may have affected the findings	In addition to the research journals and reflective pieces written and the audit trails detailed, the researcher's background and core beliefs in relation to the topic were presented so the reader understands how the researchers background may affect the findings described.

3.8 Data analysis

There are many approaches to analysing qualitative data, and the most appropriate method depends on factors such as the theoretical frameworks applied and whether language and social factors are important to the study (Smith and Firth, 2011).

Framework analysis, as described by Ritchie and Lewis (2014) and Smith and Firth (2011), was employed to analyse the data in this study. Framework analysis has a strong foundation in applied health research, and there are numerous examples of it being used in this discipline. This provided a strong foundation for its use in this study (Gale et al, 2013; Smith and Firth, 2011; Thórarinsdóttir and Kristjánsson, 2013). Framework analysis is a form of thematic analysis, whereby the data is systematically coded into themes in order to uncover patterns and meaning in the data. It has been argued that thematic analysis is a generic method, as systematically coding data to discover themes is part of other qualitative analysis techniques such as qualitative content analysis, but framework analysis introduces structure to aid with the organisation of the data (Ritchie and Lewis, 2014). The structure comes from the matrix the analyser produces which contains the "cases" in rows and the "thematic framework" in columns (Gale et al, 2013; Pope and Mays, 2006). In this study, each participant was presented as a case in the matrix. The thematic framework presented in columns was formed of the subthemes defined during the analysis stage. Below, Table 20, is an example of a framework matrix, see Figure 11 for an image of the framework developed during the data analysis process.

Table 20: Example of a framework matrix

	Subtheme 1 (thematic framework)	Subtheme 2 (thematic framework)
Participant 1 (case)	Summary of participant 1's views coded to subtheme 1	Summary of participant 1's views coded to subtheme 2
Participant 2 (case)	Summary of participant 2's views coded to subtheme 1	Not discussed

For this study, framework analysis offered numerous advantages over other analytic methods. The strengths of this method in relation to this study were that it was useful for managing and organising large datasets, and it allowed clear identification of patterns, differences and similarities in the data (Ritchie and Lewis, 2014; Gale et al, 2013). In addition to this, qualitative data analysis techniques can be criticised for being unclear and difficult to follow for readers of qualitative studies (Gale et al, 2013). Framework analysis is a clear and transparent way to

manage data and provides an audit trail which demonstrates the researcher's thought processes. This increases the dependability of the research, and addresses some of the concerns that have been raised about the rigour of qualitative data analysis (Ward et al, 2013).

While framework analysis appears to be a straightforward way of managing the data, it has been criticised for reducing data analysis to a sorting exercise, whereby the researcher sorts data into a table without properly analysing it. Gale et al (2013) state that the researcher still needs good data analysis techniques and must be able to interpret and draw explanations from the data. It is recommended that the researcher takes notes of thoughts and interpretations that occur to them throughout the analysis stage to ensure that the researcher is always actively analysing and not simply sorting data (Gale et al, 2013). Whilst filling the framework with data summaries is a form of data interpretation, it is important that the data is also fully interrogated and interpreted after this stage (Ritchie and Lewis, 2014; Bazeley, 2013)

Analysis can be conducted inductively or deductively. This study adopted an inductive approach, as no pre-determined framework was imposed on the data. The frameworks were composed of the subthemes, which were in turn developed from the data. A deductive approach would impose a pre-determined framework upon the data, and the data would be categorised into this framework.

Deductive analysis was considered for the healthcare professional and care home staff interviews, as the TDF could have been used as a framework in which to categorise the data. However, after completing the interviews, which provided a good quantity of rich data, it was felt that inductive analysis was preferable as it allowed the words of the participants to be properly represented. The risk with using deductive analysis would be that the data would be forced to fit into pre-determined themes, and valuable meanings and insights could be lost in favour of making the data fit the framework. The TDF was instead applied when contextualising the findings and moving from description to interpretation.

Data analysis was conducted using Ritchie and Lewis' (2014) five steps of framework analysis, outlined above, and was further informed by Smith and Firth (2011). NVivo® 10, and later 11, was used to manage the data and construct the frameworks. The familiarisation process described was conducted on Microsoft Word®. In addition to this, to aid visualisation of the data exercises were undertaken on paper with Post-it® notes used to sort initial categories themes and subthemes and notes made in a research journal throughout the process. The use of a research journal improves the dependability of the research. Ritchie and Lewis recommend the use of Post-it® notes, and this recommendation was followed as it was found to be easier to move, group and amend Post-it® notes than it was themes in NVivo®.

Framework analysis, as described by Ritchie and Lewis (2014), involves five stages:

Stage 1.   Familiarisation
Stage 2.   Constructing an initial framework
Stage 3.   Indexing and sorting
Stage 4.   Reviewing data extracts
Stage 5.   Data display and summary, using the framework

The first four stages are the same as the stages in thematic analysis, but the fifth stage, displaying data summaries in a framework, is what distinguishes framework from general thematic analysis. The data were analysed in two sets: resident and relative transcripts were analysed together, followed by analysis of the GP, pharmacist and care home staff transcripts. This was because the interviews had different aims, and so there were differences in the data being collected. Therefore, important nuances in the data could be lost if the five groups were analysed together.

3.8.1 Stage one: Familiarisation

The first stage which was conducted was familiarisation. This involved immersion in the data and generation of a list of initial categories (Ritchie and Lewis, 2014). To analyse the resident and relative transcripts, the researcher transcribed and read all the transcripts to gain an overview of the data. Four transcripts were selected for the next stage of familiarisation. Ritchie and Lewis (2014) suggest that, depending on the amount of data, the familiarisation process may involve all the data, or a portion of it. Due to the large amount of data that had been generated by the resident and relative interviews, two resident interviews and two relative interviews were selected for initial categorisation. The interviews which generated the most data were selected, as these covered a wide range of views and it was felt that an initial framework produced from the categorisation of the four selected interviews would be applicable to the remaining data.

The four interviews were categorised using a method described by Smith and Firth (2011). This method for categorisation was selected as it is a transparent method of categorising data – each initial category can be traced back to a quote from the interview, and there is space for the researcher to explain how the category was determined. This stage was completed using Microsoft Word®. Table 21 below is an excerpt of the initial categorisation table for Relative 2, designed using Smith's method (Smith and Firth, 2011). Data was copied verbatim from the transcript into the transcription column and key quotes were extracted in the description column. The researcher's initial thoughts were noted next, with interpretative thoughts separated by brackets to be revisited later. Finally, an initial category was assigned to the piece.

Table 21: An excerpt from relative two's initial categorisation table

Transcript	Description (in-vivo codes)	Preliminary thoughts (what is this about?)	Initial categories
What I have heard subsequently from my father's GP is that he doesn't think that donepezil is making a difference,	"…My father's GP…doesn't think that donepezil is making a difference"	Relative perceives GP to also doubt the efficacy of the medicine (but GP is not willing to stop it – why?)	Doubts about medicines
He expressed concern, excuse me, the GP expressed concern that my father was discharged from the memory loss clinic and he's on donepezil indefinitely.	"…the GP expressed concern that my father was discharged from the memory loss clinic and he's on donepezil indefinitely"	Perceived lack of communication between primary and secondary care leading to a potentially inappropriate medicine being continued unnecessarily.	Primary and secondary care

Tables were created for each of the four care home resident and relative transcripts selected for inclusion in this stage. The transcripts were copied and pasted into the transcript column in full, with a separate row for each question or new idea. The initial categories were then collected from each table, which resulted in the generation of over 70 initial categories for the resident and relative interviews to be utilised in stage two of the process.

A similar method was used for the care home staff, GP and pharmacist interviews. These interviews were transcribed externally (as described in section 3.5.2), rather than by the researcher, which meant there was a risk that the researcher would not be as familiar with the data as they would be had they transcribed it themselves. However, familiarisation and immersion in the data still took place as the researcher listened to each interview and checked the transcripts at least twice to ensure they were familiar with the data. Two interviews from each group were selected to undergo the categorisation method described by Smith and Firth (2011), again those interviews which generated large amounts of data and represented diverse

views were selected for this stage. This ensured a broad range of categories and made it more likely that the initial framework was relevant to the rest of the interviews.

3.8.2 Stage two: Constructing an initial thematic framework

Two initial frameworks were constructed: one for the resident and relative interviews, and another for the GP, pharmacist and care home staff interviews. The same process was followed to create both frameworks.

Firstly, the initial categories defined in the first stage were revisited and some were combined, reworded or deleted. Any changes made were only executed after revisiting the transcript and making sure that the changes reflected the content of the transcript. It was important that this was also undertaken transparently, and the changes made to the initial categories could be traced through a series of documents. A series of preliminary themes were decided based upon the initial categories. This process is summarised in table 22 below, which is an excerpt of a table detailing how initial categories generated by the resident and relative interviews changed and where the themes originated from.

Table 22: An excerpt from a table detailing how initial categories and themes developed

Initial category	Description	New category	Preliminary theme
Doubt about medicines	Any doubt or question about medicines	Doubt about medicines	Beliefs about medicines or illness perceptions and health beliefs
Primary and secondary care	Any reference to differences or issues with primary and secondary care.	Primary and secondary care	Perceptions of healthcare systems

A member of the supervisory team also checked the initial categories and offered insight and suggested changes, thus enhancing credibility. Each of the new categories was written on a Post-It® note, all of which were then sorted into the new preliminary themes. Preliminary themes were amended as necessary, and subthemes were also created. This process yielded an initial framework. An example of an initial framework can be seen below in table 23, which is an excerpt of the initial framework generated for the GP, pharmacist and care home staff interviews.

Table 23: An excerpt of the initial framework generated for the GP, pharmacist and care home staff interviews

Preliminary themes	Preliminary subthemes
Environmental consequences and resources	Training
	Tools and resources (training fit into this?)
	Care home factors
	Financial implications
	Healthcare systems
	Gathering views and information
Social professional role and identity	Skills
	Professional judgement
	Personal practice

In summary, the initial frameworks were comprised of the initial categories defined in stage one, reorganised and redefined to create two workable frameworks, each for use on the data on which it was based.

3.8.3 Stage three: Indexing and sorting

The remaining data was then indexed according to the initial framework. Each transcript was read, and data assigned a subtheme from the initial framework. Any data which did not fit into the framework were set aside. The data coded to each subtheme was then re-read, and checked that it had been indexed appropriately and that the name of each subtheme was reflective of its content. This stage was conducted using NVivo®.

3.8.4 Stage four: Reviewing data extracts

The initial framework was adjusted at this stage, with some subthemes re-worded, combined or otherwise amended to make sure the themes reflected the data contained within them. The data which had not been indexed in stage three was also sorted, being assigned to newly created or amended subthemes. This was again done carefully, with careful consideration given to each change and notes made in a research journal to monitor the process. The finalised themes and subthemes were then displayed in two frameworks for use in stage five.

3.8.5 Stage five: Data summary and display, using the framework

Once the frameworks had been finalised, the data was summarised in the matrix. The subthemes formed the columns of the matrix, with the participants forming the rows of the matrix. The matrix was completed by subtheme, i.e. each column was filled in turn. This provided an overview of each subtheme and its relevance and meaning. The matrix was also read across the rows as a part of the analysis process, which helped to build the story of each participant. An example of the final framework constructed in NVivo for the resident and relative interviews is shown below in Figure 11. The frameworks into which the data were sorted are displayed in Appendix J.

Medicines and health ✕				
	A : Concerns about medicines	B : Making sense of medicines	C : Navigating ill health	D : Response to medicine change
1 : Rel1	Has quite a few concerns about the medicines taken by the resident: - Side effects, constipation mentioned - Taking a lot of medicines is **"sort of poisoning her system"** - Concerns about taking more medicine - Regret that she has to take so much pain relief - Medicines perceived to have caused confusion in the past - Disagreement about medicines, leading to conflict - Withdrawal effects from stopping medicines - anxiety and headaches	Knows what conditions medicines are taken for, but not all their names. Rationalises a couple of them as **"her insulin keeps her alive"** and **"oramorph stops her having severe pain in her hip"**	Discusses health problems experienced by the resident.	Supportive of medicines being stopped if they are not needed, but believes some of them are necessary. Believes that medicines are stopped frequently without consultation, and the relative is not aware of this as they don't see the GP.
2 : Rel2	The relative is concerned the resident is taking a medicine he may not need: - He is not sure whether it is making a difference, or preventing his father's health deteriorating. - It was started by a hospital clinic who discharged his father, and now there is **"no**	Is aware of the medicines taken by his father and what they are for. Has a lot of questions about donepezil in particular - a memory test showed it was working after 6 months, so it was continued, but the relative thinks that it may only be efficaceous for 12-18 months, so may no longer be working.	Discusses medical history of the resident, explaining how some medicines were started. Discusses the difficulty of gaining an accurate diagnosis, as his father's symptoms could be caused by two conditions with different treatments. *Concerns about medicines?* As his father is frail, he can't	Relative believes resident would respond well to change if they had capacity, as they have questioned their medicines in the past. When a change was suggested by the GP that they didn't agree with, he thought **"leave them to it"**, and the resident did suffer the consequences the

Figure 11: Excerpt of a framework matrix produced while analysing the resident and relative interviews. The theme is the name of the framework. The subthemes are presented as columns and the rows are filled with a description of each participant's data. See Appendix J for the frameworks constructed during framework analysis.

3.8.6 Data abstraction and interpretation

After the framework had been constructed, the final stage was to interpret the data (Ritchie and Lewis, 2014). Producing the framework starts the interpretation process, as the researcher becomes fully immersed in the data and, through the process of organising the themes and subthemes and summarising, starts to interpret the data. However, the framework is primarily an organisation tool, which makes the data manageable and useable. The interpretation phase comes next, and is used to mould the findings into a cohesive story and useable findings.

Resident and relative interviews were analysed together using the same frameworks, and GP, pharmacist and care home staff interviews were analysed together using separate frameworks (displayed in Appendix J). This was because the groups were deemed to be too diverse and different to be analysed together, and doing so could have meant losing important detail and nuances.

All the frameworks produced for both groups (see Appendix J) were then viewed together to produce a narrative of the barriers and facilitators to deprescribing in care homes. The transcripts and summaries contained within the frameworks were revisited and the barriers and facilitators to deprescribing in care homes were identified and listed. Through a process of writing and sorting concepts, three themes were identified: one which described barriers and facilitators related to the individual's beliefs about deprescribing and medicines, another which explored the interaction of the individual with other people and a final which described the interaction between key stakeholders and health and social care systems. This gave rise to the themes presented in Table 24, which form the findings chapter (Chapter 4).

Table 24: Themes and subthemes identified and presented as the findings of this study

Theme	Subthemes
"There's more stakeholders than you might have with a regular, average patient": the roles, knowledge and beliefs of the individuals involved in deprescribing in care homes.	"The GP has ultimate responsibility 'cause we're the ones who sign that prescription": Perceived roles and responsibilities in the deprescribing process "Well, it's for my own benefit love": Knowledge of medicines taken by care home residents "If the doctor stops them, I'm not worried about it really, I'm in his hands": Beliefs about consequences
Perceptions of others and difficult conversations: social barriers and facilitators to deprescribing in care homes	"I'd probably feel secretly, well there must be some reason, but I respect him so I would take what he said": Care home residents and their relationships with those caring for them "This is a, sort of, awkward one, but I haven't actually spoken to [the relatives]: Involving the relatives: a complex relationship "I find, if I'm very complimentary of the doctor when he comes in, that seems to change the doctor's mood, they can be happier": Attitudes towards pharmacists and "They feel that I'm giving up on their relative because I'm stopping meds": Talking about the future benefit of medicines
Working together, navigating systems: Logistical barriers and facilitators to deprescribing in care homes	"If that funding goes, then, I [GP] won't be going in on a regular basis and I think that will be a shame": Healthcare systems: a barrier to deprescribing? "There just aren't enough hours in the day, really": Access to deprescribing resources 4.4.3 "Most of the care homes that I do, they all have quite a lot of dementia, so they're not really able to discuss the medication as such with me": Physical barriers and facilitators to communication

3.9 Summary

This chapter has outlined the methodology and methods applied to the design of this study. Firstly, the methodologies employed were explained, including details of the qualitative, pragmatic approach which was selected to conduct the research. A qualitative, pragmatic approach allowed for exploration of a practical problem, deprescribing in care homes, in the participants' own words. The theoretical underpinning of the study through use of the TDF was then described, followed by pertinent information about the researcher's background which may influence the findings of the study. This included information about the researcher's professional background as a pharmacist, and preconceptions that were bought to the study as a result of this.

The second part of the chapter addressed the methods utilised to conduct the study, as well as relevant methodological information relating to these methods. Considerations about sample, including size, were discussed, and the specific details utilised to recruit care homes, residents, relatives, GPs, pharmacists and care home staff were then outlined. This section also included demographic details of the care homes, residents, relatives, GPs, pharmacists and care home staff who were recruited to participate in the study.

The chapter continued to detail the methods. The data protection and ethical considerations were also reported, as well as the steps taken to safeguard participants' data. Finally, the methodology behind the chosen data analysis technique, framework analysis, was described, followed by a detailed explanation of the analysis process. This led to development of the themes which were developed as a part of the analysis process:

- "There's more stakeholders than you might have with a regular, average patient": the roles, knowledge and beliefs of the individuals involved in deprescribing in care homes.
- Perceptions of others and difficult conversations: social barriers and facilitators to deprescribing in care homes
- Working together, navigating systems: Logistical barriers and facilitators to deprescribing in care homes

These themes will be discussed in detail in the next chapter, and then applied to the TDF to inform the development of components of an intervention to facilitate deprescribing in care homes.

Chapter 4 Findings

4.1 Introduction

The qualitative methods undertaken for this study were described in the last chapter, and this chapter presents the findings of the empirical research.

Eleven residents and four residents from a total of eight care homes were interviewed over a nine-month period. The care home residents sampled ranged in age from 74 to 98 years old, and were prescribed a mean of 9.7 medicines each (range 2-15). Six GPs, six pharmacists and seven care home staff were interviewed over an overlapping six-month period. The healthcare professionals and care home staff had varying experience of care home work, and varying job titles. Tables 25-30 show a summary of the participants and the identifiers that will be utilised throughout this chapter. Further details of the sample are described in Chapter 3, sections 3.3 and 3.4.

Table 25: Care homes recruited for inclusion in the study

Care home	Nursing or residential care provided	Care home ownership	CQC rating
CH1	Residential	Privately owned	Requires improvement
CH2	Residential	Council owned	Good
CH3	Nursing	Privately owned, part of a chain	Requires improvement
CH4	Nursing	Privately owned	Good
CH5	Nursing	Privately owned	Good
CH6	Both	Charitable trust	Good
CH7	Nursing	Unknown	Unknown
CH8	Residential	Privately owned	Good
CH9	Both	Privately owned	Unrated at the time of visit

Table 26: Demographic information of residents included in the study

Identifier	Gender	Age	Residential or nursing care	Number of medicines prescribed daily	Care home identifier
Res1	Male	80	Residential	15	CH1
Res2	Male	86	Residential	12	CH1
Res3	Female	91	Residential	15	CH2
Res4	Female	83	Residential	8	CH2
Res5	Male	79	Nursing	6	CH3
Res6	Male	74	Nursing	7	CH4
Res7	Female	84	Nursing	9	CH5
Res8	Female	82	Nursing	7	CH5
Res9	Female	90	Residential	2	CH6
Res10	Female	96	Nursing	15	CH6
Res11	Female	98	Nursing	10	CH6

Table 27: Demographic information of relatives recruited to the study

Identifier	Gender	Resident: residential or nursing care	Care home recruited from
Rel1	Male	Nursing	CH7
Rel2	Male	Nursing	CH6
Rel3	Female	Nursing	CH6
Rel4	Female	Residential	CH8

Table 28: Demographic information of GPs included in the study

Identifier	Gender	Years of experience (as a GP)
GP1	Female	29
GP2	Female	29
GP3	Female	21
GP4	Female	28
GP5	Female	13
GP6	Male	3

Table 29: Demographic information of pharmacists included in the study

Identifier	Gender	Years of experience	Independent prescriber status	Role
Pharm1	Male	31 as a pharmacist, 20 in this role	Independent prescriber	Employed by a company to provide a service to CCGs
Pharm2	Female	2 in this role	Non-prescriber	Employed by a CCG
Pharm3	Female	16 as a pharmacist, 11 in this role	Non-prescriber	Employed by a CCG
Pharm4	Female	22 as a pharmacist, 1 in this role	Non-prescriber	Employed by a company to provide a service to CCGs
Pharm5	Female	18 as a pharmacist, 5 in this role	Independent prescriber	Employed by a company to provide a service to CCGs
Pharm6	Female	21 as a pharmacist, 8 in this role	Non-prescriber	Employed by a company to provide a service to CCGs

Table 30: Demographic information of care home staff included in the study

Identifier	Gender	Job title	Role in the care home	Years of experience	Care home recruited from	Nursing or residential care provided
CHS1	Female	Carer	Deputy manager	28	CH2	Residential
CHS2	Female	Carer	Team Leader	20	CH2	Residential
CHS3	Female	Nurse	Team Leader	14 in care homes, more as a nurse	CH6	Both
CHS4	Female	Nurse	Team Leader	14 in care homes, more as a nurse	CH6	Both
CHS5	Female	Carer	Senior carer	20	CH1	Residential
CHS6	Female	Nurse	Senior nurse	23	CH4	Nursing
CHS7	Female	Nurse	General manager	23	CH7	Both

The findings are presented in this chapter, addressing the following objectives of the research:

- To investigate how the deprescribing process happens in care homes, including the roles and responsibilities of those involved
- To explore how older people living in care homes, and their relatives, perceive their medicines (or medicines taken by the resident) and their attitudes to deprescribing
- To explore the attitudes of healthcare professionals towards deprescribing in care homes, including identification of perceived barriers and facilitators to deprescribing.

Three main themes were identified which explore the complexity of deprescribing in care homes. There are several people involved in the deprescribing process in care homes, including health care professionals, care home staff, residents and their relatives and friends. The complex interplay of interactions between these stakeholders magnifies the challenge of deprescribing in care homes.

The complexities involved in deprescribing in care homes are outlined below. As detailed in Chapter 1, an older person residing in their own home may make an appointment with their GP, attend and discuss their medicines and come to a decision about deprescribing. The process for a care home resident is different. Firstly, residents were (in the main) unable to make their own GP appointments: care home staff advocate to liaise with the GP surgery and to arrange consultations for residents. The GP may wish to speak to the resident, their

family and care home staff before making a decision. In addition to this, other healthcare professionals, mainly pharmacists but sometimes nurses, are being employed to conduct medicine reviews in care homes and they may also need to liaise with GPs, care home staff, residents and relatives before a decision is made. Each new person involved presents another logistical challenge, as they must be contacted and consulted, and each individual will bring their beliefs, attitudes and perceptions to the deprescribing process. GPs and pharmacists interviewed reported that this made the deprescribing of medicines for care home residents comparatively more challenging than stopping the medicines of someone who does not live in a care home.

The first theme exploring the complexities of deprescribing in care homes examines the individuals involved in the deprescribing process, and is entitled: "There's more stakeholders than you might have with a regular, average patient" the roles, beliefs and knowledge of the individuals involved in deprescribing in care homes. This theme demonstrates that there are multiple individuals are involved in deprescribing in care homes, each of whom have their own beliefs, knowledge and attitudes about deprescribing that they bring to the process.

The second and third themes explore the complex social context in which deprescribing takes place: the care home. Individual stakeholders must work together and within health and care systems to implement deprescribing in care homes. Broadly, system barriers and facilitators for involving people in deprescribing can be considered in two areas: social barriers and logistical barriers. These two areas are explored in the final themes:

- Perceptions of others and difficult conversations: social barriers and facilitators to deprescribing in care homes.
- Working together, navigating systems: Logistical barriers and facilitators to deprescribing in care homes

The names of the themes and subthemes include quotes from the interviews, where appropriate. These quotes encapsulate the theme or subtheme and reflect its contents. To begin with, the first theme will be explored. This examines the individuals involved in deprescribing and how their own knowledge and beliefs influence deprescribing behaviour. Figure 12 below is a flowchart of the themes and subthemes which comprise the findings.
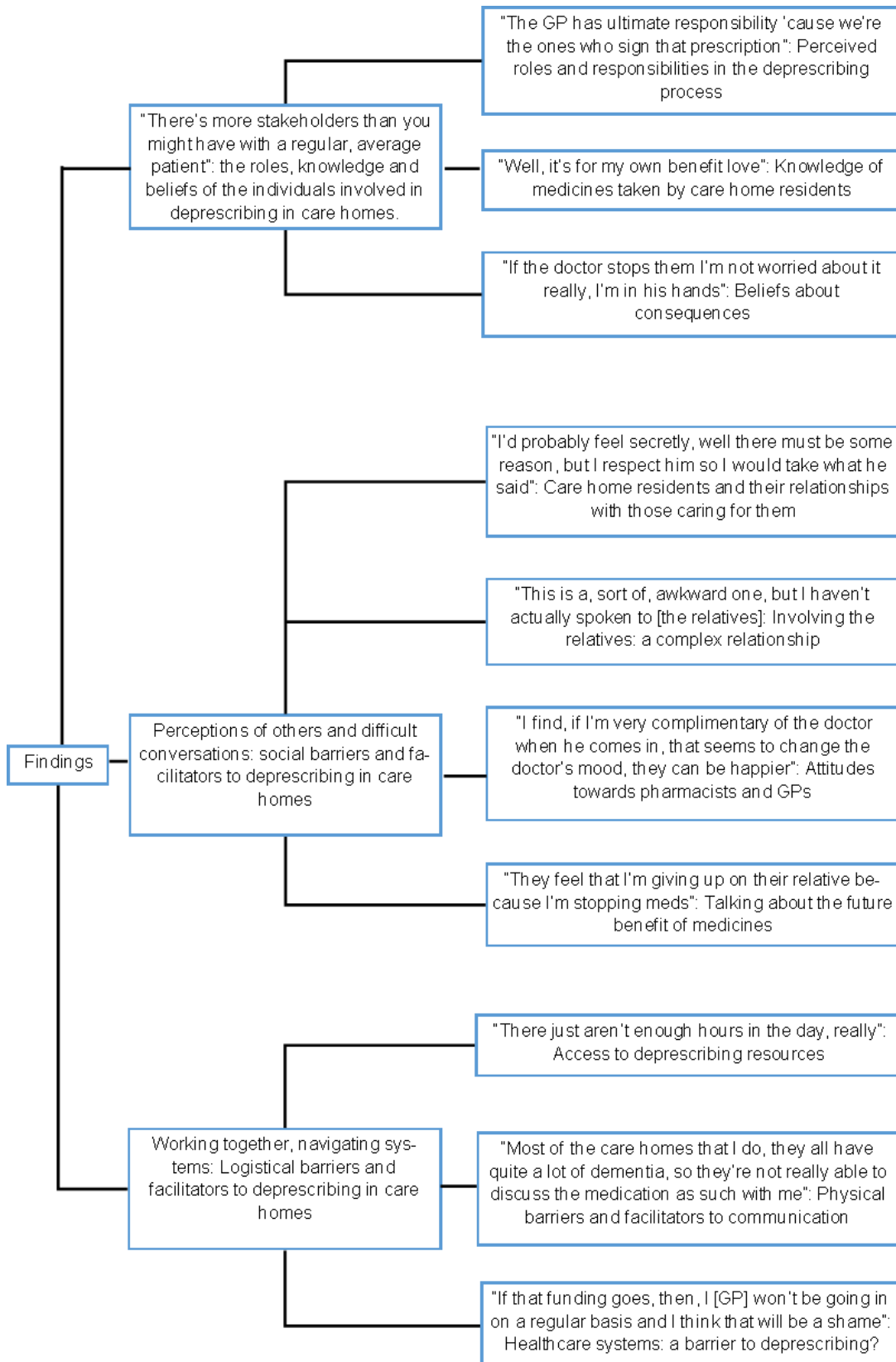
Figure 12: Diagram of the themes and subthemes which comprise the findings chapter (Chapter 4)

4.2 "There's more stakeholders than you might have with a regular, average patient": the roles, knowledge and beliefs of the individuals involved in deprescribing in care homes.

This theme examines the individuals, including residents, relatives, GPs, pharmacists and care home staff, involved in deprescribing in care homes. These are explored over three subthemes:

- "The GP has ultimate responsibility 'cause we're the ones who sign that prescription": Perceived roles and responsibilities in the deprescribing process
- "Well, it's for my own benefit love": Knowledge of medicines taken by care home residents
- "If the doctor stops them I'm not worried about it really, I'm in his hands": Beliefs about consequences

4.2.1 "The GP has ultimate responsibility 'cause we're the ones who sign that prescription": Perceived roles and responsibilities in the deprescribing process

The perceived roles and responsibilities of those involved in deprescribing (including GPs, pharmacists, care homes staff, residents and their relatives) are outlined in this subtheme. This provides an understanding of the approaches and perspectives of the different stakeholders involved in deprescribing, and also enables the later exploration of the relationships and interactions between these groups and the systems in which they operate.

The perception that the GP assumed ultimate responsibility for the resident's medicines was reported ubiquitously across all groups interviewed. When prompted, GPs, pharmacists and care home staff named others such as pharmacists, care home staff and mental health professionals to also have a role in deprescribing, referring to it as a team activity or something that "everyone" was responsible for. Relatives and residents were only occasionally referred to as having a role in the deprescribing process, as demonstrated by GP5 below.

> *Interviewer: Who do you think is responsible for de-prescribing in care homes?*
>
> *GP5: I think…well, the GP has ultimate responsibility 'cause we're the ones who sign that prescription. But I think everyone has a role to identify these things and so, you know, care home staff, the patient, relatives, they all have a role, but I think the ultimate responsibility lies with the person doing the prescription.*

The potential role that pharmacists can perform in the care of the resident was not well understood by residents and relatives. Half of the relatives interviewed were in favour of increasing the role of the pharmacist in care homes, as they believed the workload of GPs

was too high and they required assistance to provide healthcare services. The other relatives and some residents were unsure of the role of the pharmacists in deprescribing in care homes. The reasons for this are discussed in section 4.3.3.

> *Interviewer: And how would you feel if it was a pharmacist or a nurse that had reviewed the medicines and they suggested stopping some that weren't appropriate anymore?*
>
> *Relative 2: Fine. Yeah, no these are very highly professional…I'm very happy, in my personal life I go to a pharmacist and I say: "I need something for that" and he says: "no you don't, actually, just do this". I'm very comfortable with pharmacists and nurses. They need a bigger role in this, doctors can't do it all.*

GPs and care home staff reported appreciation of pharmacists who often relied on their knowledge and skills to stop medicines. There were, however, differences of opinion about how being trained as an independent prescriber impacted on the pharmacist's role in deprescribing. GPs generally believed that it would be beneficial if the pharmacist were able to deprescribe and enact their recommendations without involving the GP, as it would save the GP time and could increase number of medicines appropriately deprescribed. Three of the pharmacists interviewed also believed it would be beneficial to the deprescribing process if they were prescribers, and were in the process of gaining the qualification. From the point of view of these healthcare professionals, pharmacists becoming independent prescribers could relieve the GP burden of deprescribing. However, this assumes that pharmacists are effective deprescribers, and that they can carry out deprescribing knowledgeably and confidently.

> *Interviewer: Does it help if they're [pharmacist] a prescriber and they're able to do the actual physical de-prescribing themselves or would you still prefer to do that?*
>
> *GP6: Yeah, no I think it's really useful to have pharmacists as prescribers. Because clearly they'll do whatever they're doing within their competence and if there's any particular issues that then they can be discussed with the individual GP. Otherwise every query then needs to come back to the GP, whereas if they're a prescriber that can be done without that contact, which helps and so it saves a bit of time really.*

However, pharmacists did not unilaterally agree that becoming prescribers was key to improving deprescribing in care homes, and one GP expressed a wish to be involved in deprescribing even if the pharmacist making the recommendations was a prescriber. While it was acknowledged that it would be more efficient for pharmacists to be prescribers, the two pharmacist prescribers interviewed did not use their qualification routinely, and did not feel the qualification was essential to their role. One explained that they preferred deprescribing to be a team activity, while the other worked within a service designed for non-prescribers and so did not need to use it. One pharmacist interviewed (Pharm6) did not believe the prescribing qualification would be beneficial to their practice as it would remove

the teamwork aspect of deprescribing and eliminate people and their knowledge from the process, for example the GP's knowledge of the resident would not be considered.

> *Interviewer: Do you think, how do you find doing the de-prescribing without being a prescriber or do you think it would help you if you were a prescriber?*
>
> *Pharm6: I think that de-prescribing is a form of prescribing and I think we do well to remember that. So if I come up with some recommendations in terms of changing medication or stopping something I would communicate that to the GP so that the decision to actually stop is made by a prescriber and I think that's really important. If I was a prescriber I would not involve the GP. So, from an NHS productivity or smoothing the system it would make more sense. My personal opinion is, who am I to stop this medication in some ways? I like the fact that I involve the GP.*

The role of care home staff in deprescribing was less clearly defined than that of the pharmacist. Care home staff believed they did not have a role in deciding which medicines were stopped, as they believed that they lacked the knowledge for this role. While some care home staff expressed an interest in being involved in deprescribing, most believed that such involvement with medicines was beyond the scope of their role and was instead the responsibility of the GP. Instead, their role in the deprescribing process was identified by themselves and others as messengers, relaying information about the resident to healthcare professionals and relatives, and vice versa. They were also advocates for the resident, who may be unable to take part in discussions or be overlooked by healthcare professionals. Care home staff were not acknowledged as having a clinical role by healthcare professionals, although some acknowledged the role that care home staff do currently play as demonstrated by Pharmacist 1 below.

> *Interviewer: And do you think that care home staff have a role to play in de-prescribing?*
>
> *Pharm1: They have a role in giving us information and a view on whether it's appropriate to continue a medicine. So they do give valuable advice on how that patient's getting on. So they're the ones who'll tell us, that medicine's making them drowsy…or they're very constipated on that. They're not really highly involved in making clinical decisions or advising us on stopping stuff.*

The role of relatives and residents in the deprescribing process were the least well defined. Relatives that did wish to be involved in the deprescribing process perceived their role as being challenging to perform, both morally and logistically. These participants were relatives of residents with cognitive impairment, and so they were making decisions in the best interest of their relative living in a care home. This involved considering their own views, the resident's wishes and the views of those around them, such as healthcare professionals, care home staff and other family members. They had to co-ordinate the information received from others, seek views and opinions and come to a decision that they felt represented these varied views and what was best for the resident. This process and the responsibility were described as burdensome by relatives, who spent time gathering views

and deliberating how to best progress with treatment decisions. The complications experienced by relatives undertaking this role was not acknowledged by the other participants.

> *Interviewer: And how do you find being the main decision maker since your dad's not able to make these decisions anymore?*
>
> *Relative 2: Y'know, I am comfortable, I never take a decision alone, I've got two brothers and our health and wellbeing local [sic] power of attorney requires us to be of one mind. So, although I'm here on the ground, y'know it's me who delivers the decision to [manager], or the nurse or the GP, it's triangulated, so y'know the brothers are of different minds so we argue it. I find the GP knowledgeable and we can— I feel confident to disagree with him.*
>
> *Interviewer: But you're having to liaise between the doctor and the staff here and your brothers as well, and trying to bring that all together into what's in the best interests for your dad?*
>
> *Relative 2: Yeah, and a close family friend of my father who has medical training so y'know I go round all of them to make sure we come up with a decision that's not partial to any one of us but is in his best interests. But I accept the healthcare professional's lead.*

In contrast, despite it being the resident and their medicines at the centre of deprescribing decisions, the resident was generally perceived as having little involvement and unclear, if any, roles and responsibilities in the deprescribing process, by a range of stakeholders. Even though many participants acknowledged that residents should be involved in deprescribing, their role was not defined. It was recognised by most participants that, in reality, residents had very little involvement in the process. Residents themselves were unsure of their role in deprescribing, either actual or desired. While most residents stated they would like to be involved, they were unable to expand on this and explain how they may be involved.

> *Interviewer: Would you want to be involved in that decision if they wanted to stop some of your medicines?*
>
> *Resident 6: Oh yes, yes, oh yes. It's me, y'know what I mean, whether it'll do me any good or not I don't know.*

As demonstrated by this subtheme, according to participants GPs have the clearest role in deprescribing in care homes and the roles of other key stakeholders are poorly defined. The next subtheme examines the knowledge and beliefs about medicines of those involved in deprescribing.

4.2.2 "Well, it's for my own benefit love": Knowledge of medicines taken by care home residents

Residents generally lacked knowledge of the medicines they were taking, and were largely unaware of the concept of inappropriate medicines. Relatives were usually more knowledgeable, and more challenging about the use and necessity of medicines. GPs and

pharmacists believed themselves to be knowledgeable about medicines, although they identified some gaps in their knowledge. However, they did not always believe that they would benefit from deprescribing training. Finally, care home staff usually gained their knowledge from experience, though some registered nurses acknowledged that their nursing training had provided them with some knowledge that carers may not have. Care home staff were generally willing to learn more about medicines, though some carers believed this to be beyond the scope of their role. These perceptions of self-reported knowledge of medicines are explored further below.

The majority of residents lacked knowledge of the medicines they were taking. Residents generally knew the amount of medicines they took during each medicines round, but only knew the names of some of their medicines and often had partial understanding of why they were taking medicines. Relatives generally displayed more knowledge of the resident's medicines, and all but one relative were able to provide information about the resident's diagnoses and medicines. Few relatives were able to name all the medicines taken by the resident. Resident 2, below, provides an example of the knowledge held by residents about their medicines:

> *Interviewer: So firstly, don't worry if you don't, but do you know how many medicines you take in a day?*
>
> *Resident 2: Oh let's see — I take two on a morning, and two at teatime, and one when I'm in bed at night…the warfarin.*
>
> *Interviewer: So do you know why you taking them?*
>
> *Resident 2: Well I think it's something to do with blood.*
>
> *Interviewer: And what about your other tablets, do you know why you're taking those?*
>
> *Resident 2: I think one's for my heart.*

The number of medicines that residents reported they took often differed from the number of medicines listed on their medicine administration record (MAR) chart, which further supports the finding that residents lacked knowledge of their medicines. Despite this lack of knowledge, residents, generally believed that the resident's medicines were beneficial. Most residents did not demonstrate an understanding of the concept of inappropriate medicines as something which may affect them, believing instead that their medicines were beneficial, appropriate and necessary. They were, however, supportive of the idea of deprescribing if this were suggested by a healthcare professional.

> *Interviewer: Do you know why you're taking them?*
>
> *Resident 3: Well, it's for my own benefit love [laughs].*
>
> *Interviewer: I just wondered whether you knew what they were treating, whether they were for—?*
>
> *Resident 3: No. They help me love, so I know that like y'know*

However, some residents and most relatives were well informed and opinionated about medicines. These participants also had more doubts about medicines than other respondents, and were aware of the concept of inappropriate medicines and how it might affect them. However, raising doubts about medicines did not seem to be a priority for residents and relatives, unless the resident was experiencing harm from their medicines.

> *Interviewer: Do you feel happy about the number of medicines that you take?*

> *Resident 11: Well, I've got to the point where, although I'm not really keen on seeing him, of saying to the doctor "do I really need to take this one that's supposed to prevent me from having urine problems, because it doesn't?" and "can I try without bothering about the other one at teatime, and see if my acid stomach comes back, I'll go back on it but at the moment, I'll come off both of them." But I haven't got round to it yet, have I? Just think about it!*

Whilst residents generally believed their medicines to be appropriate and beneficial, pharmacists and GPs believed otherwise. GPs and pharmacists all believed that there were care home residents in their care who were taking inappropriate medicines:

> *Interviewer: Do you think all the medicines taken by care home residents in your care are useful to them?*

> *GP1:   No, I'm ashamed to say they're probably not.*

> *Interviewer: And how do you feel about the medicines taken by care home residents?*

> *Pharm5: It's a load of crap that they're on, aren't they? A load of sedatives, a load of horrible stuff.*

This demonstrates a difference in beliefs about medicines between residents and GPs and pharmacists. Deprescribing was considered a useful method by both GPs and pharmacists to reduce the number of inappropriate medicines taken by residents. Various explanations were provided to as to why GPs and pharmacists believe residents were taking inappropriate medicines, and these will be explored throughout this chapter.

Pharmacists and GPs reported a good knowledge of medicines, and all felt that there were few areas where their knowledge of deprescribing could be improved. However, medicines for mental health conditions, such as dementia and depression, were identified as medicines which present a challenge when deprescribing. Pharmacists felt deprescribing these medicines fell outside their competence, and admitted that they would not deprescribe them if they were in doubt. Lacking knowledge of a medicine appeared to affect the healthcare professional's confidence to deprescribe that medicine, and in turn lead to medicines that may be deprescribed being continued. GPs were more comfortable with these medicines, though GP4 did report that a lack of knowledge about medicines for dementia was a barrier to them stopping such medicines.

> *GP4: With all the donepezil and the dementia meds, I don't know how long we should be even…if we should be stopping them if it's appropriate. I really don't*

know what the guidelines are or what the evidence is for these medications. In severely demented, unwell, frail people, I don't know whether we should be carrying on or not. So, it's just the knowledge really, I don't have the knowledge as to whether they should keep going. The easiest thing is just to keep them on it.

Care home staff were reported by some participants in all groups (GPs, care home staff, pharmacists, residents and relatives) to have insufficient knowledge to advise on medicines. This included answering the questions of residents and relatives about medicines, and suggesting medicine changes to healthcare professionals. Care home staff interact with the resident the most out of any group interviewed and, as reported by healthcare professionals, relatives and care home staff, are relied upon to notice and report changes in the resident's condition and behaviour which may be due to their medicines. A few care home staff suggested they would be interested in receiving training about medicines to enable them to assist with the deprescribing process.

Interviewer: Is there anything that you feel that you would need to help you suggest medicines would be stopped?

CHS1: I am all for stopping medication. So, I'd probably want more knowledge about side-effects and things and I suppose it would be good then, because they're probably more likely to speak to us about how they feel than a doctor because a doctor doesn't see them every day.

Some healthcare professionals expressed frustration that care home staff were not more knowledgeable about medicines, speculating that if they were, they would be able to facilitate deprescribing. GPs reported the impact of the high turnover of care home staff, and that this prevented training being conducted and disseminated.

Interviewer: Do you feel you have any other barriers that we haven't spoken about?

GP2:I do think the ongoing support and training on a whole host of matters to the care staff is hugely helpful, because they have quite a high…they often have a high turnover and education is supplied, doesn't always get disseminated as widely as it can do, and that's a shame.

Despite acknowledging their knowledge deficits, GPs and pharmacists did not always feel they would benefit from training. Whilst GPs and pharmacists commented variations of "there are always areas where knowledge can be improved", it was not always felt that training would be the best way to meet these knowledge deficits. Those GPs and pharmacists who discussed training fell into three groups which are summarised in Table 31. The first group did not express a strong view about how training may assist them to deprescribe. They may have identified some training needs, but would prefer to work with others to complement their skills rather than attend training to improve their own skills. The second group identified training needs and stated that training in these areas would help them, while the final group explicitly stated that they did not think they would benefit from training even if they identified knowledge or skill deficiencies.

Table 31: GPs' and pharmacists' beliefs about their training needs and the benefits of training

Opinion on training	How this was demonstrated
Neutral about training	These participants spoke about where their training lacked, but did not explicitly state that they would benefit from training in the identified area. They stated that instead, they would work within their competencies and involve others to complement their skills.
Identified training	Training needs identified were training around risks and benefits of medicines (GP5), therapeutics, medicines that are safe to stop and consultation skills (Pharm1), mental health and dementia (Pharm2)
Did not think they would benefit from training	Some GPs and pharmacists stated explicitly that they would not benefit from training. Reasons provided for this include that it would not be a good use of their time (GP3), that they are the trainer at deprescribing sessions rather than the trainee (Pharm5) and that they did not learn anything new at training sessions (Pharm6).

Time and staffing were barriers to training highlighted by GPs and pharmacists. Care home staff, GPs and pharmacists reported that their knowledge about medicines and deprescribing came from experience, rather than from dedicated education or training. Some care home staff, such as those who were registered nurses or those who had many years of experience, reported being more knowledgeable about medicines, and more able to assist with medicine queries.

Interviewer: You are comfortable answering their questions with the knowledge of the drugs and stuff and things they want to know?

CHS3: Yeah, yes. To be fair, if I haven't got that knowledge after forty years I shouldn't be here.

Interviewer: And do you feel that you need anything to help you with the process of stopping medicines in care homes? So, I don't know, any extra skills or knowledge or anything that would help you out?

CHS3: I don't think so. I think a lot of it is knowledge that you have got over the years and, you know, if like we are here, giving drugs all the time, it's, you know, you know what they are for, you know why you are giving them and you can see why your patient may or may not need to continue with them all the time.

GPs and pharmacists identified difficulties and knowledge deficits when stopping medicines and understanding the consequences of this. Healthcare professionals were clear that more guidance and evidence for deprescribing in complex, multi-morbid older people would support them in this area of practice. As demonstrated by the quote below, the lack of this guidance can lead to difficulties when deprescribing. Healthcare professionals reported that it is not clear what medicines can be deprescribed or how deprescribing should occur, for example whether medicines need withdrawing slowly or can be stopped abruptly. However, this was not identified as a personal knowledge deficit, but rather a systematic problem related to a lack of available information which was outside the control of the healthcare professional.

> *Interviewer: Would it help if there was more research?*

> *GP5: I think if there was more guidelines for GPs to follow, that would be useful. 'Cause at the moment…that's not very common. Most guidelines seem to be very single disease. Or individual rather than combinations of disease which a lot of care home residents have, so knowing which [medicines] are likely to be causing harm and getting less benefit from becomes a little more complicated, I think in those situations.*

In addition to the lack of guidance, participants also reported a lack of evidence about the benefit of medicines in this population. This was especially evident with preventative medicines, for example statins which lower cholesterol. The evidence base required to assist healthcare professionals with deprescribing decision-making in this population often does not exist. Participants described having to weigh up multiple unclear factors when stopping a medicine, such as the resident's life expectancy, the goals of treatment, the resident's beliefs and the limited evidence for continuing the medicines. This lack of evidence impacted on a prescriber's confidence to deprescribe.

> *Interviewer: Are there any other concerns that people have when you suggest stopping some medicines?*

> *GP6: If you take sort of preventative medicine for example, there's concerns…if I stop a statin does this mean [the patient is] going to have a stroke. It's in some ways trying to explain [to residents and relatives] that even people on statins have strokes and it's weighing up those benefits of being on it long-term with the potential side effects or adverse effects versus the benefits in the longer term. When you've got patients who are much older, then there's not so much evidence about the effects and benefits in those patients.*

There were also several beliefs reported about the consequences of stopping medicines, both positive and negative. These were beliefs held by participants and which were considered to affect deprescribing decisions. This is explored further below.

4.2.3 "If the doctor stops them I'm not worried about it really, I'm in his hands": Beliefs about consequences

GPs, pharmacists and care home staff were aware of positive and negative consequences of deprescribing. Though GPs and pharmacists expressed fear about some of these consequences, they often believed that they were potentially less harmful than continuing the medicine. Positive consequences of deprescribing were described by GPs and pharmacists as the resident becoming "brighter", in part due to the reduction of medicines with a sedative effect. In this way, deprescribing may improve the quality of life of the resident. The reduced medicines burden was also noted to benefit care home staff, who manage the resident's medicines.

> *Interviewer:*
>
> *Is there any sort of positive consequences that you could…?*
>
> *Pharm1: Yeah, people wake up sometimes when you stop all that stuff. They have a better quality of life, if you can reduce the sedatives, reduce the drugs that are constipating them et cetera, then you do see people perk up. But there's definite positive benefits of stopping stuff, in terms of quality of life for some of these individuals.*

The most common negative consequences raised amongst participants (GPs, pharmacists, care home staff, relatives and residents) were concern of the resident deteriorating, experiencing withdrawal effects or recurrence of the condition the medicine was prescribed for. For some healthcare professionals, a fear of litigation resulting from a deprescribing decision was raised. Concern about the negative consequences of deprescribing could be mitigated for some, by involving multiple people in the decision to stop a medicine.

> *Interviewer: What do you think the potential consequences of deprescribing for a care home resident might be?*
>
> *Pharm1: Well, harm, I guess. That they could end up having an event that might have not happened if they'd stayed on the medicine. So some of those could be serious, couldn't they. So you stop the statin and they have a stroke, which probably would be a coincidence but would be attributed to you stopping the statin. That's why I would definitely want to involve as many people as possible in the decision.*

On the other hand, residents were unconcerned about the potential consequences of stopping medicines, even when prompted to consider what those consequences might be, for example side effects. While some wished to avoid negative consequences, fear of them did not make residents resistant to the idea of deprescribing. Indeed, residents relied on those caring for them to make decisions in their best interest.

> *Interviewer: If your doctor suggested stopping some medicines, is there anything you'd be worried about?*
>
> *Resident 1: No not really. If the doctor stops them I'm not worried about it really I'm in his hands, if he stops them he stops them. I'm not worried about it.*

Relatives, however, reported more concerns about stopping medicines, including consequences for the resident and for themselves. This meant relatives were more challenging of the prescriber's suggestions than residents were, and they may act as more of a barrier to deprescribing than residents. Relative 1 rationalised that, because deprescribing decisions can impact the relative as well as the resident, the relative should be involved in making these decisions.

> *Interviewer: Would you need any support if it was suggested that your mum stopped taking a medicine?*
>
> *Relative 1: As she has stopped some medication recently, the amitriptyline, she now requires more intensive support in the home. She's got care staff that are watching her more closely 'cause she's saying things like she wishes she was dead and she's tried on occasions, she's quite disabled, and she's tried on occasions to get out of her chair recently. The effect that has on me is obviously distressing for me too.*

Generally, however, relatives were supportive of stopping inappropriate medicines if they were consulted, and they were satisfied with the prescriber's reasoning and approach.

> *Interviewer: OK, so if the Dr suggested stopping some of her medicines that they felt weren't useful to her anymore, how would that make you feel?*
>
> *Relative 3: Well I suppose I'd want to talk about it and make sure, you know that I knew what the risks were but, you know I tend to think that, as I say I have a good relationship with the GP that she sees. Provided I'd had a conversation and I was confident that he was recommending things with the right kind of motivation, I'd be fine with that.*

4.2.4 Theme summary

In summary, this theme examines the roles and responsibilities, knowledge and beliefs of the individuals involved in the deprescribing process. The GP was acknowledged as the person who is responsible for deprescribing, with pharmacists having an emerging role that is not always understood by residents and relatives. Residents have the least clearly defined role in deprescribing, and often the least involvement into the cessation of their own medicines. Residents generally lacked knowledge of their medicines but believed that all their medicines were necessary. However, pharmacists and GPs acknowledged that this was not always the case and that some medicines were inappropriate. GPs and pharmacists did not place great emphasis on their knowledge deficits being a barrier to deprescribing, which suggests that they believe other factors act as larger barriers to the process. Finally, beliefs about negative consequences held by all individuals involved in the process can act as a barrier to deprescribing.

These findings provide an important foundation for the second theme, which will bring these individuals together and examine how they work together when deprescribing.

4.3 Perceptions of others and difficult conversations: social barriers and facilitators to deprescribing in care homes

Many of the reported barriers to deprescribing were social in their nature. These social barriers were based on perceptions and attitudes held by and towards those involved, which affected their relationships and ultimately impacted their prescribing and deprescribing behaviours. Relationships exist between each individual involved in deprescribing and are influenced by experiences, perceptions and attitudes that people have about each other. This theme explores these barriers and facilitators under four subthemes:

1. "I'd probably feel secretly, well there must be some reason, but I respect him so I would take what he said": Care home residents and their relationships with those caring for them
2. "This is a, sort of, awkward one, but I haven't actually spoken to [the relatives]: Involving the relatives: a complex relationship
3. "I find, if I'm very complimentary of the doctor when he comes in, that seems to change the doctor's mood, they can be happier": Attitudes towards pharmacists and GPs
4. "They feel that I'm giving up on their relative because I'm stopping meds": Talking about the future benefit of medicines

Relationships between key stakeholders in deprescribing are crucial when trying to understand this process. The first social barrier to deprescribing to be explored will be the relationships that residents form with those caring for them, including GPs and care home staff.

4.3.1 "I'd probably feel secretly, well there must be some reason, but I respect him so I would take what he said": Care home residents and their relationships with those caring for them

Residents and, to a lesser extent, relatives displayed a large amount of faith in the actions of the GP and trusted them to manage the resident's medicines, often with little involvement of the residents and relatives.

The amount of trust placed in GPs by residents, and by some relatives, with regard to medicines and the review of these is important. While relatives had more concerns about the medicines taken by the resident and were more willing to challenge the prescriber about their decisions, they still trusted the GP to act in the best interests of the resident. With residents, their trust of the GP ran deeper as they did not tend to challenge healthcare professionals, nor did they have a good knowledge of their medicines. They believed that the GP knew the medicines they took, and that the GP had ensured they were all

appropriate and suitable for the resident to take. However, as identified in section 4.2.2, GPs and pharmacists acknowledged an awareness that many medicines prescribed for Care Home residents are inappropriate. It was generally acknowledged that residents believed that healthcare professionals were acting in their best interests, and would therefore agree with their suggestions.

> *Interviewer: So if the doctor suggested it would you be worried about your condition getting worse?*
>
> *Resident 4: I'd have faith in my doctor.*

> *Interviewer: how do you think your mum would feel if one of the doctors suggested stopping one of her medicines?*
>
> *Relative 3: I think she'd be completely fine with that, so I think she assumes that they're doing their best. Though she thinks a lot of it is a bit pointless because she thinks that she's 87 and she's not really, by her way of thinking, having a useful life. So I think she would just go along with whatever anybody suggested*

This trust could be a facilitator to deprescribing, as residents and relatives were likely to accept whatever the GP suggested without question, allowing for changes to their medicines to be made. However, healthcare professionals viewed this level of trust by residents and relatives as lacking interest in medicines, which in turn meant they may not be interested in the deprescribing process.

> *Interviewer: Do you feel that the residents themselves or their relatives have a part in deprescribing?*
>
> *GP3: Yes, I think that would be great, if they did show interest. I'm not sure that there is…the cohort that we look after, I'm not sure that there is enough awareness within that group and our population aren't hugely self-empowered.*

Another factor in the relationship between residents and their GP was that the GP was often viewed as an authority figure to be obeyed, rather than someone with whom to engage in decision-making. Residents also perceived the same relationship with care home staff. This may be a reason why residents took their medicine without questioning it, as it was prescribed and provided for them by people they viewed as authority figures that they were unwilling to challenge. It also may explain why some residents were unlikely to challenge deprescribing decisions even if they did not agree with them. For example, Resident 9 spoke knowledgably and confidently about her medicines, but she was uncomfortable with criticising GPs and would not challenge their decisions, even if she disagreed with them. While this lack of resistance may be a facilitator to deprescribing, residents may be unsure or disappointed by a deprescribing decision, despite reporting otherwise.

> *Interviewer: Would you feel anything about stopping a medicine? Would you feel happy, or sad or anything?*
>
> *Resident 9: I would feel resigned.*
>
> *Interviewer: OK, that's a good word.*

Resident 9: I mean these Fultium [vitamin D supplement] they— if my sister had been on this sort of thing she wouldn't be as bad as— I think I've been kept on the edge of bone problems so I would feel resigned, but- and I'd probably feel secretly, well there must be some reason, but I respect him so I would take what he said.

However, not all residents displayed this trust in their GPs decisions or in their medicines. Resident 11 disagreed with some decisions made by her doctor, and therefore did not readily trust their opinion. She had also lost some trust in him due to an incident she experienced while living in the care home. Resident 11 had seen some information about blood tests for depression on the television, and mentioned it to a nurse who in turn told the doctor who came to talk to her about it. This quote highlights the importance of good relationships between the GP and the resident - where the resident trusts that the GP is acting in their best interests and is comfortable to raise concerns and challenge decisions - as key to the deprescribing process.

Resident 11: I'm not very happy with the doctor that comes here every [week].

Interviewer: Oh, are you not? Why is that?

Resident 11: [The doctor came] and he stood in the doorway, he let me in and I hadn't even sat down, he said [imitates a man's voice]: "there's no such thing as a blood test for depression". And then he sits over there and I said: "well, I saw it on the television". And he said: "well I'm a busy doctor, I haven't got time to watch the television."

Interviewer: So have you ever talked to the doctor about your medicines?

Resident 11: Not this doctor. I say, I've mentioned it when it's been on the telly and he pooh-poohs it so…I haven't been bothered with him.

A further barrier to deprescribing was that residents were perceived by one GP as unwilling to change, and one relative thought that change was unsuitable for the resident. This deterred some relatives and healthcare professionals from embarking upon the deprescribing process. While some residents did indeed display a degree of resistance to change, all residents portrayed a willingness to agree with the doctor if medicine changes were suggested. This demonstrates an incongruity in the perceptions held of residents, and how the residents feel in reality.

Interviewer: So just thinking maybe about her antidepressant, in the future [if] you thought she could maybe do without it, what would you do about that?

Relative 3: I don't really know. I mean, given her age I don't know if I'd want to interfere at this stage because as I say, she's 87, so I think in some ways, having routine is better for her than having a lot of changes to manage.

This perception of a resident being unwilling to change was the only perception of residents discussed by relatives, with regard to deprescribing. Relatives were otherwise largely keen for the resident and themselves to be consulted as part of the deprescribing process. The next subtheme examines the complex relationship between relatives and those caring for the resident, including GPs, pharmacists and care home staff.

4.3.2 "This is a, sort of, awkward one, but I haven't actually spoken to [the relatives]: Involving the relatives: a complex relationship

When considering the relationship between the relative and healthcare professionals and care home staff, it is necessary to understand how some relatives were perceived by these stakeholders. The complicated relationship between relatives and the GPs, pharmacists and care home staff caring for the resident meant that relatives were not routinely involved in deprescribing decisions. The involvement of relatives was often viewed as a barrier to deprescribing by GPs, pharmacists and care home staff, and not just for logistical reasons such as their relative lack of unavailability. GPs, pharmacists and care home staff preferred relatives to be supportive of deprescribing, and content to let staff act in the best interests of the resident. Relatives who question decisions or request more information were described as "actively involved" which was a negative description of a relative's involvement.

"Actively involved" relatives were described as unreceptive to the idea of deprescribing, instead perhaps being challenging of the prescriber's decisions or wanting full, active care for the resident, which may not be appropriate given the resident's condition and stage of life. It is not clear whether the label of "actively involved" would extend to the other relatives interviewed for this study, who understood the limits of the care that was appropriate for the resident but were not afraid to challenge the GP's prescribing decisions and wanted active involvement in the resident's care. It was perceived that "actively involved" relatives led to difficult discussions for the healthcare professionals, and meant that they sometimes avoided speaking to the relatives, or deprescribing for the resident at all. This suggests that healthcare professionals wish for relatives to be compliant with their decisions, which is not demonstrative of a balanced relationship.

> Interviewer: Is it the same with the relatives [that they agree with deprescribing], if you do get a chance to speak to those, do you think?
>
> Pharm2: Again, I've been…this is a, sort of, awkward one, but I haven't actually spoken to [them]…just feedback from the care home staff with particular patients where they would really, benefit from de-prescribing, some of the relatives are really actively involved that they want the patient to have this, and they think the patient should be on that, when it's probably not particularly right for the patient. But because they cause that much of a fuss that the care home…and again with the GPs, as well, you know; so sometimes they tend to…we tend to, maybe, just back off a bit when maybe we should just get involved.

Healthcare professionals had differing opinions on whether relatives acted as a facilitator to deprescribing. Some indicated that they could facilitate the process and described being approached by relatives asking for medicines to be deprescribed. However, some GPs and pharmacists were cautious of deprescribing requests from relatives as they were suspicious of the relative's motives, sometimes suspecting the potential for sinister intent. This turns a potential facilitator to deprescribing into a barrier, depending on the people involved and the

healthcare professional's perceptions, and adds a layer of complexity to the relative/healthcare professional relationship.

> *Interviewer: Are there any scenarios where you might decide not to proceed with de-prescribing for a resident?*
>
> *GP5: I've had conversations with some relatives who – for a patient who wasn't able to have that conversation themselves, where the relatives just want everything stopping – and I've been a little bit uncertain about the motive to just stop everything. I mean, I would certainly review things and see if there was anything not needed, but I've had a couple where I've been rather concerned, and quite often that concern comes from the care home staff…'cause they often see what's happening to resident and relatives coming to visit and things.*

Conversely, other GPs stated that relatives were barriers, as they had experienced more resistance from relatives about deprescribing than they had requests to deprescribe. For example, they may have to dispel accusations of deprescribing being a cost saving exercise or that they were "giving up" on the resident. Indeed, relative 2 explained that he was initially sceptical of deprescribing, but the ongoing investment of the GP into his father's care had reassured him that this was not the case.

> *Interviewer: how would you feel if the doctor suggested stopping some medicines that they felt weren't useful to them anymore?*
>
> *Relative 2: I was nervous when he wanted to stop the Madopar. 'Cause I thought: "this guy just wants to save his drug budget". I thought that this must be some CCG campaign and nursing homes are an easy target. So I didn't say no, but I was wary. But I don't believe that was the case. I believe my GP had the best interests of my dad.*

The relationship between GPs and relatives could also be damaged by perceptions such as those held by Relative 1, who perceived that care home residents were not often a priority for GPs, due to their advanced age and living situation. Relative 1 praised the resident's new GP as they appeared to be making more of an effort to treat the resident than past GPs had. This view may arise as a result of not being involved in decision-making by the GP, or be due to the way that GPs act towards residents and relatives. It could cause further rifts in the relationship and deepen the barriers to deprescribing that already exist.

> *Interviewer: Yeah, and it would have been good for you to [voice your opinion about stopping a medicine] for her as well.*
>
> *Relative 1: The problem is that, in the care setting, on an elderly ward and a 70 year old [the age of his mother] goes into a care home, and a lot of people around her are, say, the average age of 90, then people all get treated the same and doctors and nurses and specialists sometimes just make decisions for people rather than involving them.*

The perceptions and relationships explored under this subtheme demonstrate that the relationship between relatives and healthcare professionals is multifaceted, and complicated by the attitudes and perceptions that each group held of each other. These attitudes and perceptions were based upon the actions and behaviours of a small subset of each group,

which were then generalised to the rest of the population. As a result, relatives are prone to being excluded from deprescribing decisions by healthcare professionals. Whilst it must be stated that relatives were not always excluded, and their views were considered by healthcare professionals, they were not often involved by healthcare professionals.

4.3.3 "I find, if I'm very complimentary of the doctor when he comes in, that seems to change the doctor's mood, they can be happier": Attitudes towards pharmacists and GPs

The attitudes held by some residents and relatives towards pharmacists require exploration, especially if pharmacists are to become more involved in the deprescribing process. Some residents and one relative believed that pharmacists lacked the knowledge and skills to be involved in deprescribing, perhaps because they were not familiar with the abilities and roles of pharmacists outside of a community pharmacy. For some interviewed, this extended to a belief that pharmacists would lack the knowledge needed about the resident to make deprescribing recommendations. This could be a barrier to pharmacists being involved in deprescribing, as some residents may not wish to work with the pharmacist and the pharmacist may need time to earn the resident's trust.

> *Interviewer: So we have different people working in nursing homes now with the medicines, so pharmacists and nurses are often reviewing medicines and things as well now, so how would you feel if they suggested stopping a medicine that they felt weren't useful to you anymore?*

> *Resident 9: No, I don't think with the medicines I take, I don't think the pharmacist would really have the authority, or the knowledge, the information about me to suggest not taking them. Unless there was something he thought was better.*

Some pharmacists interviewed described experiencing such attitudes, but stated that once they had explained their role to the resident or relative and reassured them that the medicines review was being done in partnership with the doctor that they were usually happy to proceed.

> *Interviewer: have you ever had any issues, particularly with the resident or the relative sort of because you're a pharmacist and not a doctor?*

> *Pharm6: I think that you do get people saying the doctor has told me I've got to be on this forever. The doctor reviews my medicines. So, there's definitely some conversations sometimes needed around that in terms of doctor so and so asked me to come and I'm working with them and anything I talk about will be discussed with them.*

However, pharmacists instead often did background work, conducting medicine reviews and making recommendations to the GP. They did not routinely interact with residents and relatives, and so did not have an opportunity to explain their role. This is also problematic because residents and relatives wish to at least be informed of deprescribing decisions, and

pharmacists do not appear to be doing this routinely. This could further distance pharmacists from residents and relatives, and contribute to poor understanding of their role.

A final relationship to be examined is the relationship between GPs and care home staff. Some care home staff described problems with the attitude of the GP, in addition to logistical challenges with accessing them. While it was clear that the majority of GPs were helpful and respected, some GPs were reported by care home staff to be difficult to work with. The tactics employed by CHS1, described below, may be surprising, as it seems illogical to have to go to such lengths in order to engage the GP in the care of their own patient. Such GPs and experiences with GPs may act as a barrier to deprescribing, because care home staff might be reluctant to contact a GP who is perceived as difficult. The GP may also be dismissive of care home staff and unwilling to engage in the deprescribing process, further affecting the relationship between the two groups.

> *Interviewer: Yes, I think that's something I'm finding, is that care home residents, they want to be involved in these decisions but they're not being involved.*
>
> *CHS1: So, while [residents are living at the home], we can use three GP services round here. So, when they come, one doctor can be really nice and be involved with the client and chat to them, other doctors are not as involved. I encourage them to be involved because that's the patient, it's not me.*
>
> *I always ask the client if I can go in with them, but I would encourage the doctor to talk to them and often you have to do that. Some you've got to direct them, they might say to me, "how's she sleeping?" I'll say, "shall we ask her? She's sat here. Are you sleeping well?" Or I find, if I'm very complimentary of the doctor when he comes in, if I say to the client, this is Doctor so and so, he's a really nice doctor and he'll do all he can for you, that seems to change the doctor's mood, they can be happier. Or Doctor, you're looking very nice today, this is so and so, looking forward to seeing you and then he probably thinks, oh god, they're saying I'm right nice, so I best be nice. It does work.*
>
> *Interviewer: You're really having to…?*
>
> *CHS1: Yes, but all I want is for that person to think, oh I've seen the doctor, I feel reassured, I feel better, because that's what I want if I ever go.*

The final subtheme examines the future of the resident's medicines. The future benefit of a resident's medicines is linked with the resident's life expectancy, which is a difficult topic for residents, relatives and those involved in their care to discuss.

4.3.4 "They feel that I'm giving up on their relative because I'm stopping meds": Talking about the future benefit of medicines

A reason that participants in all groups found it difficult to discuss stopping medicines for care home residents was that it involves discussion of the future, and acknowledgment of the fact that, due to the resident's advanced age, they were entering the last stage of their life. This may last for months or years, and could include declining health and further difficulties that the resident and their family would have to face. While healthcare

professionals believed that consideration of the resident's limited life expectancy was entwined in deprescribing decision-making, residents and relatives were reluctant to consider this. This demonstrates a further social factor in addition to the already layered and complex relationships that exist, and lead to difficult discussions that both parties wished to avoid.

Healthcare professionals perceived residents to be in the later stages of their lives, and understood that this meant that some medicines may be of limited benefit and suitable for deprescribing. This does not mean that healthcare professionals thought that residents' medicines should be stopped because they have a limited life expectancy, but rather that life expectancy and quality versus quantity of life were factors when considering the future risk and benefit of medicines in these patients.   This means that healthcare professionals and residents and relatives may have different goals of care, and the reluctance to discuss this may lead to misunderstandings between the GP and residents/relatives and reinforce the perceptions that each group has of each other.   The quote below from a GP interview highlights this:

> *Interviewer: What makes the decision [to deprescribe] hard to make?*
>
> *GP4: Other things that may stop me, or make me think about it…oh, not fear of litigation, but you know…[I] think will the families complain or will there be some problem if I stop this? In the past I've had discussions with families about stopping medication and it can be quite difficult if they don't really understand the reasons why I'm stopping the medication. They feel that I'm giving up on their relative because I'm stopping meds, so it can be quite a long discussion to explain why I'm stopping them. So, sometimes that actually is a barrier to me stopping the medication.*

While healthcare professionals spoke of life expectancy without prompt when discussing deprescribing in care homes, residents did not acknowledge or understand the link between the two. When prompted, all residents but one were unable or unwilling to consider a future where they might be more unwell and how this may affect their views about their medicines. Relatives generally had a pragmatic approach, understanding that the resident was elderly and frail and that this may affect prescribing decisions, but only one, Relative 3, had considered how this may impact the resident's treatment in the future. Relative 3 spoke of the living will that the resident had made a number of years ago, which guided the relative's decision-making at difficult times.

> *Interviewer: And is it difficult having to make those decisions [about stopping medicines] and considering her wishes and your wishes and things like that?*
>
> *Relative 3: One if the things that happened when she was taken ill was that we discovered she'd made a living will…but I think we're both very committed to make sure that she is comfortable as she can be and we certainly don't want her to suffer any kind of discomfort if she doesn't have to suffer…I think the medication is part of that.*

However, many healthcare professionals and some care home staff felt discussing life expectancy was an intrinsic part of the deprescribing process in care homes. Of these, some participants believed that improved end of life planning and more confident communication about goals of care would facilitate the deprescribing process.

> *Interviewer: Do you feel it [your nursing training] gives you anymore of an edge over people who might not have that qualification?*

> *CHS3: Possibly, but I think also it's a confidence thing. Some people find it difficult to have conversations about things that are a little bit difficult, end of life type decisions, do not resuscitate decisions. [But] my take is the more everybody knows, the better treatment people get. If things are hidden and you can't talk about them, then, you know, you don't always get the best treatment.*

4.3.5 Theme summary

In summary, this theme brings together the individuals whose roles, knowledge and beliefs were explored in the first theme. This allows for exploration of the social barriers to deprescribing, which exist due to interactions between individuals. There are numerous social barriers and facilitators to deprescribing which are built on perceptions, beliefs and unspoken thoughts about other individuals involved in the process. The avoidance of difficult conversations, the negative perception of relatives who wish to be involved in the resident's care and the trust that residents in particular place in their GP are examples of these social barriers.

The final theme, presented below, provides the setting for these interactions and examines the barriers and facilitators presented by the health and social care systems in which care homes operate.

4.4 Working together, navigating systems: Logistical barriers and facilitators to deprescribing in care homes

This theme examines the logistical barriers to deprescribing. These are barriers to deprescribing attributed to challenges navigating healthcare systems, lack of resources and physical barriers to communication such as the resident being unable to communicate. These are explored under the following three subthemes:

1. "If that funding goes, then, I [GP] won't be going in on a regular basis and I think that will be a shame": Healthcare systems: a barrier to deprescribing?
2. "There just aren't enough hours in the day, really": Access to deprescribing resources
3. "Most of the care homes that I do, they all have quite a lot of dementia, so they're not really able to discuss the medication as such with me": Physical barriers and facilitators to communication

4.4.1 "If that funding goes, then, I [GP] won't be going in on a regular basis and I think that will be a shame": Healthcare systems: a barrier to deprescribing?

The organisational structure and systems of health and social care can present barriers to deprescribing for care home residents. To understand this further a consideration of how GP services are provided to care homes is required. This includes the fulfilment of QOF (which contributes to the payments made to GP practices) and the impact of the CQC, a regulatory inspection body, as described in section 1.3.2.1 of the introductory chapter to this thesis. QOF, (Quality and Outcomes Framework) is utilised when remunerating GP practices for the services they provide. The CQC, or Care Quality Commission, is the regulator of health and social care providers in England.

QOF was highlighted by GPs, as unhelpful in this population as it was believed to encourage treating to target and prescribing, rather than deprescribing, of medicines. Many frail, elderly people with multiple co-morbidities, such as those who live in care homes, were identified by healthcare professionals as unsuitable for treating to the targets stipulated in QOF. In addition to irrelevance, the administration work involved with QOF as also considered time consuming by healthcare professionals. Therefore, it was suggested by GPs that this particular population (care home residents) should be exempt from QOF. There was clear frustration among GPs of the way QOF works in this population and queries about whether it was appropriate.

> Interviewer: Do things like that [incentivised prescribing] open up a barrier then for deprescribing as well?

> GP5: I think because it just means that you automatically think about prescribing rather than de-prescribing, there's nothing on the QOF that says, "do they still need this medication?" "Are they going to get any benefit from it?" It's, "are they prescribed this?" But it never prompts you to think about whether or not someone's getting benefit there, it's always to prescribe more of various things or to record a reason why not. Which actually is more work in some ways. I don't think they help.

The CQC was also identified by GPs as making deprescribing in care homes more difficult. The inspectors for this regulatory body were criticised for asking care homes to record paperwork, such as written confirmation of a medicine being stopped in addition to updated prescriptions, which was identified by GPs as an unnecessary increase to their workload. GPs understood where the requests originated, and therefore directed frustration at the CQC rather than the care homes.

> Interviewer: And how do you find dealing with care home staff about that? Do you find that they facilitate this process or do they have any issues with it?

> GP2: I think there's a lot of process and I think it's important that we are mindful of…in the way that we have guidance and regulations and things that we have to

follow, so the care homes do, and sometimes that can be challenging over them wanting new prescriptions and handwritten letters over things, but it's having an understanding that this is what their perception of what they're being asked to do by CQC or by their regulating authorities and so that can be a little bit challenging. But I think if you turn it round and recognise the challenges that they're facing then we have to do our best to be respectful of their concerns.

A major barrier, perceived by a range of stakeholders including GPs, pharmacists and care home staff, was the organisation and provision of GP services to care home residents. Multiple GPs often provided care to each care home, rather than one GP covering all residents in a single care home. Participants described three approaches of primary care provision to care homes, as summarised in Table 32 (below). Most care homes did not have a consistent GP presence. Instead, residents within the same care home received care from different GPs and this was then considered to complicate the communications between care home staff, pharmacists and GPs. This was then reported to limit opportunities for deprescribing.

Table 32: Description of approaches to providing GP/pharmacist care to care homes

Approach to providing GP/pharmacist care to care homes	Description of approaches to providing GP/pharmacist care to care homes
1. Care home residents keep the GP they had before they moved into the home	This was a common, but unpopular way amongst care home staff and pharmacists of providing GP services to care homes because it involves care home staff and pharmacists liaising with multiple GP surgeries and GPs in order to ensure the resident is seen by a GP or that deprescribing recommendations are implemented. This created barriers, as it was difficult to identify, contact and involve the appropriate person to ensure the resident received the best care.
2. The care home may be serviced by more than one GP surgery, but a named GP from each surgery took responsibility for several residents in the care home	This was preferred to the system described above as it made it easier to contact the correct person and provide GP services to the resident.
3. One GP per care home	This model sees all residents registered to the same GP surgery, where a named GP takes responsibility for the care home provision.

The first model shown in Table 32 was considered by participants to be the most common way that GP services were provided to care homes. However, it was criticised by those who worked within this system, and especially by care home staff. Dealing with multiple GP surgeries was perceived as time consuming, and different surgeries had different methods for tasks such as making appointments and requesting medicines. Therefore, care home staff found it difficult and frustrating to locate and speak with the relevant health care professional to provide timely and responsive care for residents. This is summarised by Care Home Staff member 7, who liaised with five GP surgeries providing care for the residents in their home. Logistical issues with the resident attending a GP appointment, such as those caused by the practice not being able to offer a home visit, also affected the residents' ability to access and consult with a GP.

> *Interviewer: So, does everybody here have different GPs?*
>
> *CHS7: We've got five surgeries.*
>
> *Interviewer: Is it quite difficult getting them here in the first place?*
>
> *CHS7: It can be. Again it's dependent on the practice: how many GPs are doing visits that day. They won't let us pre-book appointments so if we've got somebody who has requested a GP we can't ring and book an appointment like you would if you were at home. We've got to ring on the day and put them on the list to do the acute visits. Something else that's started is if we ring, they're asking if they can go to the surgery but logistically for us to have somebody to escort somebody to a surgery to sit and wait in an appointment queue isn't possible.*

The third model (Table 32) was reported to be the most desirable way for GP services to be provided to a care home, by several health and social care staff   This model saw the same GP visit the care home regularly. Those who worked, or had worked, under similar models reported that it made seeking medical advice easier, and improved relationships between care home staff, residents, relatives, pharmacists and the GP. However, it also appeared to be unavailable to most participants. GP4, who provided a weekly service to a single care home, explained that it was funded, and should the funding be lost then the service would not continue. Therefore, lack of funding for such services was also a barrier to improving provision of GP services, including deprescribing, to care homes.

> *Interviewer: Do you have the resources available to help you reduce the number of medicines that care home residents take?*
>
> *GP4: think so. I think it's quite good. We're funded on the care home scheme for one session a week with a GP or a nurse, but I'm doing it, because the nurses can't make these medication changes. So, at the moment we're well resourced. How long that funding is going to carry on, I don't know. The risk is, if that funding goes, then that…you know, I won't be going in on a regular basis and I think that will be a shame.*

4.4.2 "There just aren't enough hours in the day, really": Access to deprescribing resources

Understanding how individuals can access resources for deprescribing, including time and staff, is essential to the process and the deprescribing behaviours of individuals. In general, pharmacists and GPs believed that deprescribing was not occurring due to factors outside their control. In their opinion, the main barrier to deprescribing was not, for example, a skill deficiency but rather the size of their workload and lack of resource, including time and staff. Time and staffing resource were the most frequently cited barriers to deprescribing cited by GPs and pharmacists.

GPs often stated that they would be more effective deprescribers if they had more or dedicated time to do this work, support from appropriate colleagues and other resources such as evidence-based guidance. They believed that the daily running of their GP practice, including holding consultations with patients in person and over the phone and completing necessary paperwork, took the majority of their time leaving little or no time for deprescribing in care homes.

> *Interviewer: What sort of things do you prioritise above going to do the reviews?*
>
> *GP1: Well most GP's have two surgeries a day to do, which can take five to six hours. We then have acute visits, like for instance today, our practice has five acute visits to do. We have lab results, other tasks fly in, out of hours stuff to look at, other admin referrals, there just aren't enough hours in the day, really.*

The process of undertaking medicine reviews alongside the other tasks associated with deprescribing, such as liaising with other stakeholders, was described by GPs and pharmacists as time consuming. This meant that GPs simply felt they did not have time to conduct medicine reviews, and pharmacists did not have the time to review the medicines of all the care home residents in their care.

> *Interviewer: Are there any other barriers that we haven't covered that you can think of or...?*
>
> *Pharm4: I think the number of people doing it. There's no way I can do the amount of reviews I'm meant to get done in a year, and that almost feels like a pressure sometimes that ideally every resident must have a medication review every six months. And there's no way I'm going to get round every resident in [region].*

Rather than being identified as 'proactive' or 'routine' activity, healthcare professionals identified that deprescribing often took place at specific times in a resident's care. These "deprescribing moments" were examples of reactive deprescribing, where changes in the resident's life prompted a review of their medicines. Prescribers generally prioritised this type of deprescribing over proactive deprescribing, which can be defined as the prescriber reviewing medicines and deprescribing without being prompted to by a change in the

resident's condition. The following table (Table 33) details the deprescribing moments identified by GPs and pharmacists.

Table 33: Deprescribing moments identified by participants in this study

Deprescribing moment	Participants who identified the deprescribing moment
Resident receives a terminal diagnosis	Pharm6
Change in the resident's condition, for example newly identified swallowing difficulties	GP4, GP5, Pharm2, Pharm6
Resident is discharged from hospital	GP4
Resident is refusing medicines	GP5
Annual review of the resident's medicines	GP4, GP5

To facilitate deprescribing in care homes, pharmacists and GPs reported that more human resource was required, for example appropriately skilled pharmacists and pharmacy technicians. These staff would relieve the burden of the current workload and increase the amount of care home residents being reviewed. However, there was perceived to be a lack of funding for this and healthcare professionals felt that deprescribing would not improve without a fundamental change to healthcare systems, including more staff and a redistribution of roles.

> *Interviewer: Do you have the resources available to you, to help reduce the number of medicines that care home residents take?*
>
> *GP1: Well yes, we do because we've got [pharmacist]. Without [pharmacist] we wouldn't be doing it.*
>
> *Interviewer: Do you think you wouldn't be doing it as much or at all without [pharmacist]'s help?*
>
> *GP1: It really wouldn't happen, no. It might happen to a certain extent but not to the systematic way that it happens now.*

GPs and pharmacists also expressed a desire for more continuity in care home staff, as this would facilitate monitoring of residents increase awareness of deprescribing. A high turnover of care home staff was viewed as a barrier to deprescribing as it hindered long term efforts to monitor residents whose medicines had been stopped or who required a structured approach to deprescribing multiple medicines. It also diminished the effects of educational efforts and awareness of deprescribing.

> *Interviewer: Is there anything that interferes with the process for you that we haven't already covered?*

GP3: I think sometimes it's the lack of continuity in the care home staff themselves, that can be an issue. So, I guess if there was somebody perhaps within the care homes who was dedicated as well for it so that they understood it better and they could have some training maybe then that would make some sense I think. Because if they understood the principles of it within the care home so then they could be thinking about it themselves, and I don't think that they do.

Healthcare professionals also struggled to access the physical resources they needed to undertake a medicine review, such as the resident's medical records. The resident's medical records were described as essential for the deprescribing process, however participants experienced difficulties in accessing the records, especially if the resident joined the GP surgery as a new patient when they moved into the care home. With residents viewed as poor historians the information required to deprescribe, such as indications for medicines, may only be present in the records.

Interviewer: Is that [the resident's medical history] something that's quite hard to find out then?

GP4: Yes, very hard. Because you don't actually get the patient's records for several months after they've been at the home. One time I emailed the past practice to find out how long they'd been on this and why were they on various things, but I never got anything back. With the way that different computer systems are, patients can be in the home for several months with [no] past history. Then they're just on the medications and they just stay on them.

Some participants could not access the records while in the care home either, with resources such as Wi-Fi internet connections being unreliable or non-existent. This led to difficulties deprescribing while in the home, leading to a duplication of work and a reduction in the opportunity for residents to be involved. It was believed that improved access to such vital resources was necessary to increase the probability of deprescribing occurring.

Interviewer: Is there anything else you'd like to add?

Pharm5: The Wi-Fi in care homes is horrendous, and so is the 3G. But I really do think it's essential to have access to the records, so you need to be documenting it there and then, because it's just not efficient to do it any other way. But the problem is, when you've got a really, really slow or non-existent connection, and you, kind of, then have to work around it.

While access to time, staff and other resources were barriers to deprescribing identified by GPs and pharmacists, participants from all groups (GPs, care home staff, pharmacists, residents and relatives) identified communication barriers which impacted upon deprescribing behaviour. Communication barriers fell into two groups: social barriers to communication, which were discussed in the last theme, and physical barriers, which will be discussed in the next theme.

4.4.3 "Most of the care homes that I do, they all have quite a lot of dementia, so they're not really able to discuss the medication as such with me": Physical barriers and facilitators to communication

Residents and relatives expressed, to some degree, a desire to be involved in the deprescribing process. However, this opportunity was not always provided by healthcare professionals and communication difficulties led to delays in the deprescribing process. The physical barriers and facilitators to communication with care home residents and relatives are described in this subtheme below.

It was perceived by GPs and pharmacists that most residents lived with cognitive impairment or other communication difficulties which affected their ability to be involved in decision-making. For this reason, residents were often not approached when deprescribing was occurring, especially by pharmacists. GPs believed they attempted to involve residents, and that it was important to do so even if it was unlikely the resident would be able to be involved. Pharmacists, on the other hand, did not prioritise involving residents as they generalised residents as being unable to be involved.

> *Interviewer: Do you ever talk to the care home residents or their relatives about their medicines?*
>
> *Pharm3: Most of the care homes that I do, they all have quite a lot of dementia, so they're not really able to discuss the medication as such with me. So I don't really have much to do with the residents themselves.*

However, residents and relatives expressed a wish for residents to at least be informed of prescribing decisions, even if the resident may not be able to take part in the conversation. Despite Relative 1 wishing for his mother to be involved in deprescribing decisions, he acknowledged that this would be difficult due to her health conditions.

> *Interviewer: How do you think your mum would feel about that [stopping a medicine], do you think she'd want to be involved in those decision if she could be?*
>
> *Relative 1: I do, I don't think she would input a great deal into the conversation, but I think she would listen, and she certainly would understand to a point.*

Conversely, care home residents were described by some GPs as a "captive audience", and in this way the care home environment was a facilitator to deprescribing. Residents were perceived to be almost always in the home and therefore available to potentially partake in discussions about deprescribing. In theory, this means it would be easier to involve them in deprescribing decisions. This suggests that the communication barriers described to involving residents in deprescribing were not being overcome by the availability of the resident, and that other strategies are needed if residents are to be involved in deprescribing.

> *Interviewer: So, how do you usually go about reviewing the patients?*

> *GP3: And for care homes that's a lot easier because they're there; they're a captive audience. For the housebound patients that can be a little bit more awkward because although in theory they ought to be housebound they can be at the hospital or even [somewhere else].*

Unlike residents, relatives were seldom at the care home at the same time as the person reviewing the medicines and may not be easily contactable by telephone. This was a barrier to their involvement in deprescribing decisions. A GP interviewed also noted that relatives could make appointments to discuss the resident, although it is not known whether relatives were aware or took advantage of this. GPs and pharmacists often prioritised the decisions that they would involve the relatives in as well, for example they would always involve the relative in end of life care decisions but not necessarily in more routine deprescribing decisions.

> *Interviewer: …would you ever go to them [the relatives] before you were going to stop anything…*
>
> *GP4: I think if it was just stopping something like maybe a statin or something along those lines, probably not, however if I was making the decision to stop most of the medications 'cause this is someone reaching end of life, then I would be speaking to the family anyway to let them know the change in circumstances. So it really depends if it's something fairly straightforward like a statin in a 99-year-old or a [inaudible] a bit more stopping everything.*

Similarly, the lack of availability of hospital prescribers, including specialists, and GPs also hindered communications necessary to facilitate deprescribing A member of care home staff interviewed believed that it was necessary to be assertive to communicate with GPs, as they were frequently unavailable. For GPs, the barrier to deprescribing specialist medicines was difficulty communicating with the prescriber, rather than their own lack of knowledge of the medicine. GPs reported that they had difficulty gaining advice from hospital prescribers because their communications were unanswered. One GP noted that the prescriber may have to be contacted multiple times to receive an answer, and felt that you had to be "bolshie" to receive answers to the questions being asked.

> *Interviewer: How do you find accessing specialists, if a medicine's been started in the hospital or by a specialist?*
>
> *GP2:   If we were particularly concerned about something or other, we would write to the specialist and say, you've put this on, what was your plan, if it wasn't clear in the letters. That's usually the most effective way of doing it, is to write to them.*
>
> *Interviewer: And do you tend to get the results that you need by doing that?*
>
> *GP2:   Most of the time, and if we don't we write back again. We're a bit bolshie.*

4.4.4 Theme summary

This theme examined the logistical barriers faced by those involved in deprescribing in care homes. The fact that there is no simplified, standard model of providing primary care

services to care homes meant that care home staff in particular experienced challenges when coordinating the medical care of the resident. GPs then faced barriers posed by the CQC, a regulatory body, and QOF, an incentive-based system involved in the payment of GP practices, for the services they provide. The requirements of these organisations were perceived to be time consuming and inappropriate for the care home population. The most frequently cited barrier to deprescribing in care homes was, however, time and staffing deficiencies. GPs required more dedicated care home time, or more pharmacists to manage the care home workload. Pharmacists acknowledged they had the dedicated time to do the work, but that their workloads were too large for them to effectively manage; they could not review everyone that they needed to review. Finally, the physical barriers to communication between groups involved in deprescribing in care homes were explored, including the mental capacity of residents and the unavailability of people whose opinions were required.

4.5 Summary

The aim of this chapter was to explain the findings of this study, which were displayed in three themes:

- "There's more stakeholders than you might have with a regular, average patient": the roles, knowledge and beliefs of the individuals involved in deprescribing in care homes
- Working together, navigating systems: Logistical barriers and facilitators to deprescribing in care homes
- Perceptions of others and difficult conversations: Social barriers and facilitators to deprescribing in care homes.

The first theme first explained that roles and responsibilities of those involved in deprescribing, as defined by participants. It then examined the barriers and facilitators attributed to issues at an individual level, such as knowledge deficiencies and how they might be overcome and beliefs about the consequences of deprescribing. However, GPs and pharmacists in particular perceived these barriers to be less important than the systemic barriers which were discussed in the third theme.

The second theme bought together the individuals whose roles, knowledge and beliefs were explored in the first theme and described how they interact with each other and healthcare systems. A higher priority was assigned by healthcare professionals and care home staff to systemic barriers to deprescribing, such as a lack of time and resources and those posed by the method of the provision of GP care. However, perhaps more difficult to overcome will be the barriers resulting from the complicated relationships between the individuals involved. These relationships, often based on perceptions and assumptions disputed by other

interviewees, layer further complications onto a background of accounts of disjointed and under-resourced care.

At the centre of care and treatment decision-making is the care home resident, who is unsure about the concept of deprescribing, trusts those caring for them and does not have much knowledge about their medicines. They seem unaware of the issues faced by their relatives, GPs, pharmacists and care home staff who are striving to ensure that all their medicines are safe and effective.

The next chapter takes these findings and maps them to the Theoretical Domains Framework (TDF) and Behaviour Change Wheel (BCW) in order to identify potential components of a deprescribing behaviour intervention for use in care homes.

Chapter 5 Identifying behaviour change techniques to inform components of a deprescribing intervention

5.1 Introduction

A narrative of the qualitative findings was presented in Chapter 4, and in this chapter the findings are taken and mapped to the Theoretical Domains Framework (TDF) and Behaviour Change Wheel (BCW) (Cane et al, 2012; Michie et al, 2011). This allowed identification of behaviour change techniques which may comprise a future behaviour change intervention for use in care homes. Firstly, the methods employed are described, including the rationale for the mapping process. This is followed by the mapping, which follows the steps outlined by Michie et al (2014). The barriers extracted from the empirical work were firstly mapped to the Theoretical Domains Framework, as were the findings of the literature review were in Chapter 2.6.3. These mapped barriers, from both the findings of the empirical interview data and the empirical literature review, were then mapped to the Behaviour Change Wheel to identify intervention functions, policy categories and behaviour change techniques which could be employed as part of a novel intervention to facilitate deprescribing in care homes.

5.2 Methodology and methods

Before embarking on the study, it may have seemed self-evident what would facilitate deprescribing in care homes: more time, training, more resources, more staff. This raises the question: why was it necessary to conduct this study, and to investigate behaviour change techniques?

Whilst it is true that these findings were reflected in both the findings of the empirical interview data and the literature review, a key strength of this study was that more barriers to deprescribing, plus more unique barriers to the care home context were also identified. An example of these were the social influences, such as the perceptions participants held of each other, which were found to have a strong influence on deprescribing behaviour. These social influences would still be present and would influence deprescribing behaviour even if prescribers had more funding and staff. Training may also seem an obvious potential solution to deprescribing in care homes, but the findings of the empirical study revealed that not all healthcare professionals believed this to be true.

Without the insight and detail described in the findings of this study (Chapter 4), any intervention based upon initial preconceptions of the barriers to deprescribing in care homes may be less likely to succeed. This is because deprescribing is a complex behaviour, which will not be changed with a simple intervention. The findings of the empirical work provided

the depth required to design a meaningful, useful deprescribing intervention, and the use of the TDF, COM-B and BCW will ensure that the intervention is rooted in theory.

Behaviour change interventions rooted in theory which are systematically designed have been found to be likely to be successful (Medical Research Council, 2006). Interrogating the aspects of a behaviour to determine what needs to change, and how this may be achieved, produces interventions which directly target the behaviour (Michie et al, 2014). There are many frameworks available to guide intervention development (for example, the theory of planned behaviour, described in Chapter 3 section 3.2.3), but the TDF, COM-B and BCW were selected because they are the product of the synthesis of multiple frameworks. While individual frameworks may be selective about the behaviour change techniques they incorporate, the TDF, COM-B and BCW include multiple potential behaviour change techniques (BCTs). This ensures that the use of these intervention development tools comprehensively incorporates behaviour change techniques into complex intervention design. There is also extensive experience of the use of the TDF in investigating deprescribing and other healthcare associated behaviours (Scott et al, 2019; Ailabouni et al, 2016; Cadogan et al; 2015; Atkins et al, 2017). This provides support for the use of the TDF, COM-B and BCW to investigate deprescribing.

5.2.1 The COM-B model, Theoretical Domains Framework, Behaviour Change Wheel and the APEASE criteria

Four models or frameworks were utilised to deepen understanding of deprescribing behaviour. These are summarised, and their relationships described, below.

5.2.1.1 COM-B

The COM-B (Capability, Opportunity, Motivation, Behaviour) model of behaviour change was developed by Michie et al (2011) as a method of defining the three components which are essential for any behaviour to be undertaken. If any of the three is missing, a behaviour is unlikely to occur (Michie et al, 2011). In turn, this provides insight into how a behaviour may be changed by targeting one of the three components. These components are presented below in Figure 13 and Table 34, which also presents the components in the context of deprescribing (Michie et al, 2011).

Table 34: COM-B components, their definition and how they are applied to deprescribing

COM-B component	Definition (Michie et al, 2011)	The COM-B component in the context of deprescribing
Capability (Psychological and physical)	The capability to change behaviour. This refers to a person's mental and physical capacity to change their behaviour.	A prescriber having the knowledge and/or skills necessary to identify inappropriate medicines to stop and be able to safely and effectively stop them.
Opportunity (social and physical)	The opportunity to change behaviour. This refers to factors outside the individual's control that affect their ability to change their behaviour	A prescriber having the resources, such as the staffing, time, and other tools, to conduct deprescribing
Motivation (Automatic and reflective)	The motivation to change behaviour.	A prescriber having the desire to change their behaviour and/or a desire to stop inappropriate medicines, which can be supported by goal setting and decision making tools.
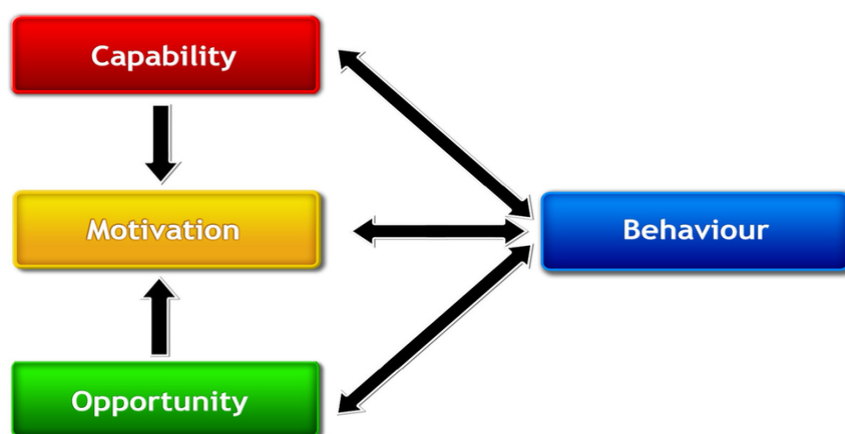
Figure 13: The COM-B model of behaviour change (Michie et al, 2011)

The COM-B is the most broad and basic model utilised to understand behaviour in this thesis. It is, however, an important component of the behaviour change wheel and it is also linked to the Theoretical Domains Framework (TDF), which is described below.

5.2.1.2 The Theoretical Domains Framework (TDF)

The TDF provides further detail and insight into behaviours, and the reasons the TDF was selected for application to this thesis are outlined in Chapter 3 (section 3.2.3). As described in section 3.2.3, the Theoretical Domains Framework (TDF) is a composite framework of factors which influence behaviour. 128 theoretical constructs from 33 theories were synthesised to produce the 12 domains of the original TDF, which underwent a validation exercise seven years later (Michie et al, 2005; Cane et al, 2012). This validated version of the TDF, consisting of 14 optimised domains was utilised in this thesis (Appendix C, Cane et al, 2012). Whilst mapping a behaviour to the COM-B would assign each behaviour component to one of three categories, mapping a behaviour to the 14 domains of the TDF allows the behaviour component to be mapped more specifically. This provides more insight about the behaviour. However, the 14 domains in the validated TDF can also be mapped to the COM-B model, which demonstrates that the COM-B model and TDF are linked. Table 35 below shows how the TDF can be mapped to the COM-B model. See Appendix C for a presentation of the COM-B and TDF respectively in the context of deprescribing.

Table 35: How the domains of the TDF are mapped to the COM-B model as defined by Michie et al (2014)

COM-B component		TDF domains
Capability	Psychological	Memory, attention and decision processes
		Knowledge
		Behavioural regulation
	Physical	(Physical) skills
Opportunity	Social	Social influences
	Physical	Environmental context and resources
Motivation	Reflective	Social/professional role and identity
		Beliefs about capabilities
		Optimism
		Intentions
		Goals
		Beliefs about consequences
	Automatic	Reinforcement
		Emotions

5.2.1.3 The Behaviour Change Wheel (BCW)

The Behaviour Change Wheel (BCW) guides intervention development by linking behaviour components, which have been mapped to the COM-B or TDF, to intervention functions. Intervention functions are the "building blocks" of an intervention, and identify what the basis of a successful intervention may be.

The BCW is built around the COM-B model, which in turn provides the link to the TDF. See Table 35 above which shows how the TDF is mapped to the COM-B. The BCW is a framework developed following a systematic review of 19 behaviour change intervention frameworks (Michie et al, 2011). It consists of nine intervention functions, which are potential bases of a behaviour change intervention. For example, identification of education as an intervention function means that an educational intervention, such as a training package, may be appropriate to produce the desired behaviour change. The BCW also contains seven policy functions which would support the implementation of an intervention. For example, an educational intervention would be supported by the development of guidelines, communication/marketing, regulation, legislation or service provision (Michie at al, 2011). It aims to aid with the design of behaviour change interventions by linking analysis of behaviour to intervention design (Michie et al, 2011). The Behaviour Change Wheel is presented below in Figure 14:
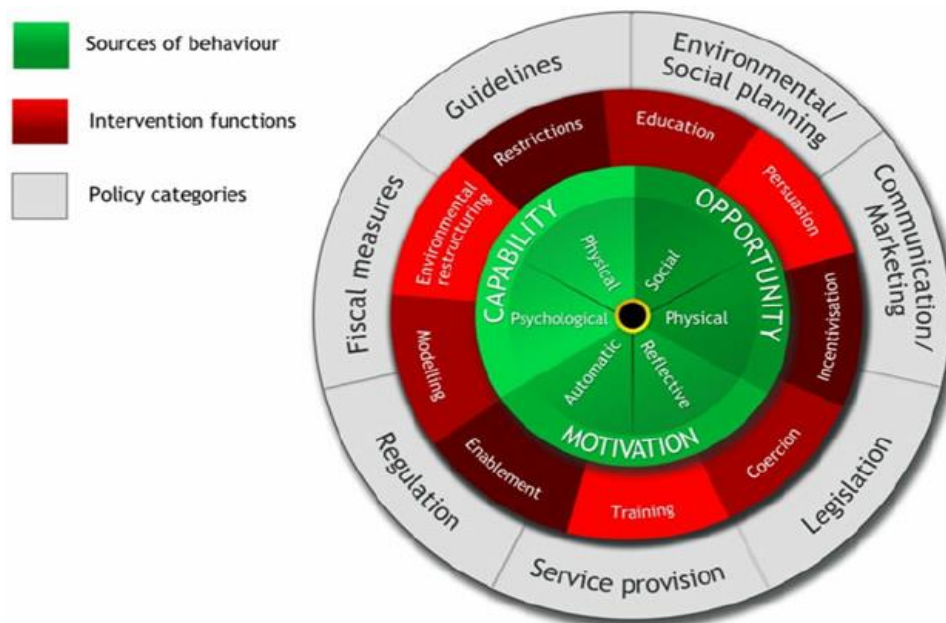
Figure 14: The Behaviour Change Wheel (Michie et al, 2011)

5.2.1.4 The APEASE criteria

The APEASE criteria were applied throughout this chapter to aid the selection of appropriate intervention functions, behaviour change techniques, policy categories and modes of

delivery. The application of the APEASE criteria in this way is suggested in the guidance by Michie et al (2014).

The APEASE acronym represents:

- Affordability
- Practicability
- Effectiveness and cost-effectiveness
- Acceptability
- Side-effects/safety
- Equity

In order for an intervention to be successful, its components should meet these criteria. Efficacy is often focused upon; however, the other factors are also important and contribute to the uptake and usability of an intervention. For example, an intervention that is effective but prohibitively expensive is unlikely to be utilised widely, and an effective intervention that is time consuming and impractical to use is also unlikely to be utilised. Application of the APEASE criteria enhanced the likelihood that any intervention developed as a result of this work would be successfully adopted. See Table X (was 43) for an example of the application of the APEASE criteria to the data collected in this thesis.

5.2.2 Methods

Firstly, the barriers to deprescribing identified in the empirical work were mapped to the TDF. Mapping barriers to the TDF is the first step in eight steps described by Michie et al (2014) which aim to identify behaviour change intervention functions from the barriers identified in the study being conducted. Once the eight steps have been completed, the following will have been identified:

- The target behaviour to be targeted by a behaviour change intervention
- The domains of the TDF (and the components of the COM-B) which would be the most appropriate to target with a behaviour change intervention
- Candidate intervention functions, which are broad indications of which components might be appropriate to incorporate into a targeted behaviour change intervention
- Behaviour change techniques, which are defined by Michie et al (2014) as "an active component of an intervention designed to change behaviour"
- Policy categories, which are policies which may be developed to support the delivery of a targeted behaviour change intervention
- The delivery mechanisms which may be utilised to deliver a targeted behaviour change intervention

Once these have been identified, they can be utilised to inform the development of a targeted behaviour change intervention. Following the eight steps does not create a

behaviour change intervention. Instead, it informs what a behaviour change intervention may be comprised of, how it may be delivered and the policies which could support its delivery (Michie et al, 2014). The steps were as follows (Figure 15):Stage one: Understand the behaviour

Step 1.   Define the problem in behavioural terms

Step 2.   Select target behaviour

Step 3.   Specify the target behaviour

Step 4.   Identify what needs to change

Stage two: Identify intervention options

Step 5.   Identify intervention functions

Step 6.   Identify policy categories

Stage three: identify content and implementation options

Step 7.   Identify behaviour change techniques

Step 8.   Identify mode of delivery

Figure 15: The stages and steps of defining an intervention as defined by Michie et al (2014) pp25

Whilst figure 15 (above) is how Michie et al (2014) presented the stages of intervention development, the steps were presented slightly differently throughout this chapter. The structure presented in figure 16 below, with stages six and seven swapped, provided a logical narrative structure that was easier to follow:
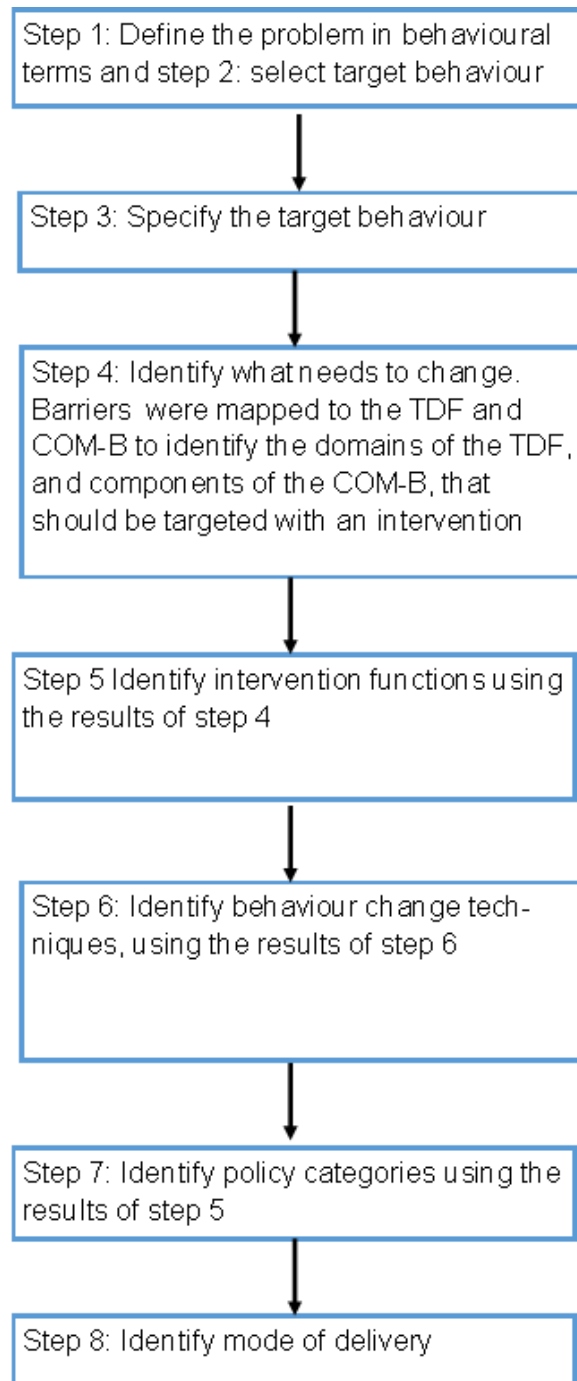
Figure 16: The process of identifying potential components of a deprescribing behaviour change intervention that was undertaken in this thesis, informed by Michie et al (2014)

5.2.2.1 Application of the steps outlined by Michie et al (2014) to inform the development of a deprescribing behaviour change intervention

Steps 1-2, definition and selection of the target behaviour were carried out after due consideration of the phenomenon of interest, deprescribing. This involved consideration of the literature and discussion with the supervisory team. Deprescribing was identified as the target behaviour at the very start of the research. Step three, specification of the behaviour, was completed as an exercise suggested by Michie et al (2014) and can be found in section 5.3.1.

Step four was more involved than steps 1-3 and involved identifying exactly which part of the behaviour would be the most appropriate to target with an intervention. This step introduced the COM-B and the TDF. Michie et al (2014) recommend that the COM-B is mapped to first, and then the TDF can be introduced in order to provide further depth and detail. However, as the TDF had already been incorporated into the literature review and the interview schedules the barriers were mapped to the TDF first and then to COM-B for completeness. Information about the COM-B and the TDF can be found in section 5.2.1.

Firstly, the barriers to deprescribing in care homes identified in the empirical research were extracted from the findings and mapped to the TDF. The barriers identified in the literature review were then mapped to the COM-B components, and the domains of the TDF which should be targeted by a deprescribing intervention were identified. The flowchart below shows how the barriers from the literature review and empirical research were synthesised and combined. This is demonstrated in Figure 17,
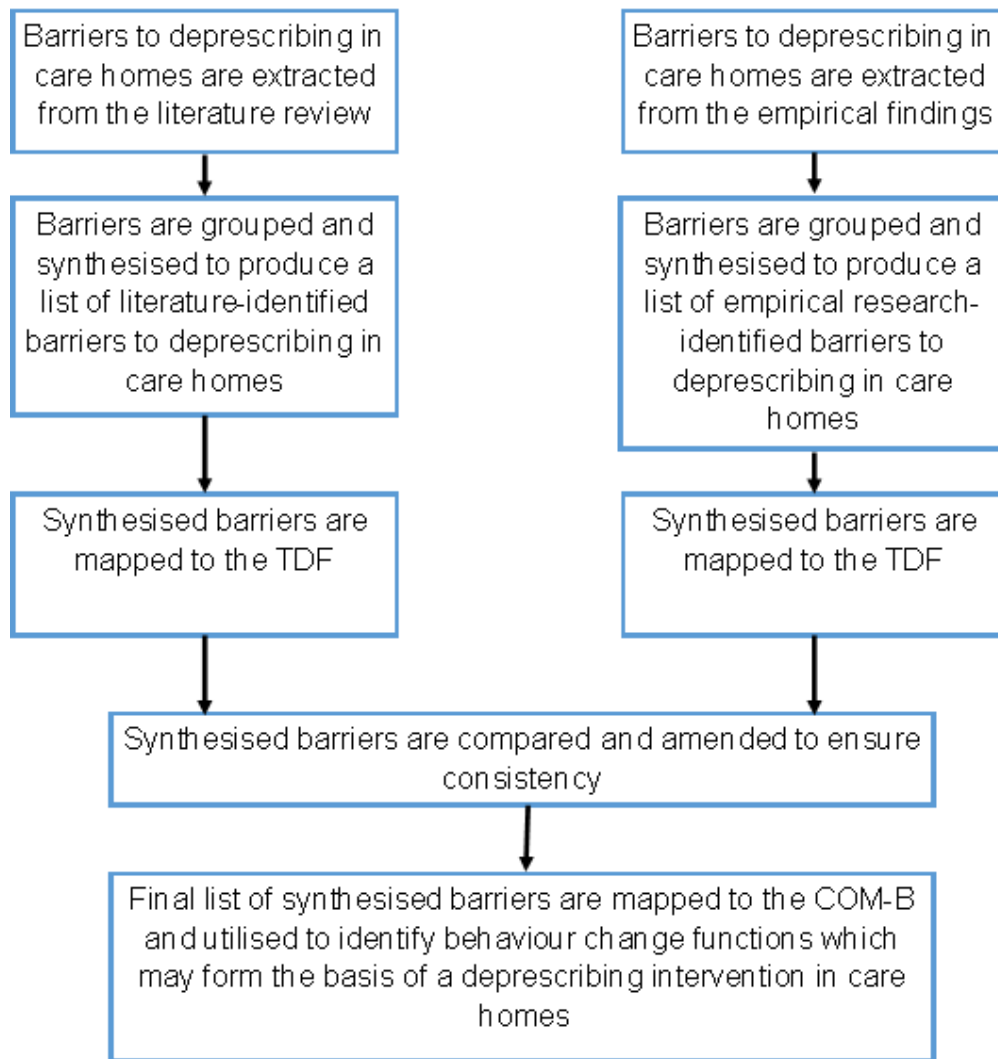
Figure 17: Step 4: The process of synthesising and mapping the barriers identified in the literature review and the empirical findings

Step five was the first step towards identifying the behaviour change techniques that would comprise a useful intervention. In step five, the domains of the TDF were mapped to intervention functions provided by Michie et al (2014). Intervention functions are broad indications of which components might be appropriate to incorporate into a behaviour change intervention to improve the target behaviour. For example, the intervention function "education" simply identifies that an educational intervention may be effective. Behaviour Change Techniques, as described below, provide the specific components which may comprise an effective intervention. The APEASE criteria were used to identify the intervention functions which were likely to be effective. The effective intervention functions identified were utilised in steps six and seven.

Step six takes the intervention functions identified in step five and maps them to Behaviour Change Techniques. Michie et al (2014) have identified 93 BCTs, which are defined as "an active component of an intervention designed to change behaviour". An intervention may consist of one, or multiple, BCTs. In order to identify the BCTs which are likely to be

effective, Michie et al (2014) provide a table which demonstrates the links between candidate intervention functions and BCTs. Each intervention function has multiple BCTs associated with it, and these are separated into two groups: most frequently used BCTs, and less frequently used BCTs. Michie et al (2014) recommend using the most frequently identified BCTs, alongside the APEASE criteria, to determine which BCTs are likely to be effective.

Once the BCTs had been identified, it was necessary to investigate how an intervention may be delivered. Step seven takes the intervention functions identified in step five and maps them to policy categories identified by Michie et al (2014). Policy categories are the types of policies which would support an intervention in its delivery, for example communication and marketing, guidelines and environmental planning. The final step, step 8, examines how an intervention may be delivered. Michie et al (2014) stated that interventions were usually identified in one of two ways: face-to-face, or distantly. Each of these are then further categorised into ways that an intervention may be delivered, for example individual training or by posters, phone apps or television. The APEASE criteria were applied throughout steps seven and eight to identify the policy categories and modes of delivery most likely to be effective.

5.2.2.2 Ensuring rigor through the mapping processes

Throughout the processes undertaken to map the barriers to the TDF, and the subsequent mapping of the identified TDF domains to the BCW, steps were taken to ensure rigor. The mapping work was carried out in collaboration with a member of the supervisory team (CE), who has extensive experience in utilising the TDF and behaviour change psychology (Easthall et al, 2019). Each stage of the mapping process was discussed by the author and CE before the mapping was undertaken. Both the author and CE independently mapped the barriers identified in the literature review and the empirical research to the TDF, and then compared their findings. A high level of agreement was found between the mapping decisions, and any disagreement was resolved through discussion. The subsequent mapping processes were undertaken by the author, and then discussed with CE to ensure their accuracy. Furthermore, the methods for intervention development presented by Michie et al (2014) were followed and each stage of the process is presented clearly, and all mapping decisions and processes are presented for transparency (Chapter 2, section 2.6.3.1; Chapter 5 section 5.4).

5.3 Findings

5.3.1 Step 3: Specify the target behaviour

In order to specify the behaviour, Michie et al (2014) recommended that the researcher should identify the following factors, as displayed in table 36 below. This stage allowed consolidation of key information about the deprescribing behaviour, for example, that it is performed by HCPs such as GPs and primary care pharmacists and that is most commonly undertaken during medication reviews. This allowed for an improved assessment of the behaviour and a more targeted, intervention.

Table 36: Step 3: specifying the target behaviour

Factor of the behaviour (taken from Michie et al, 2014, pp48)	The behaviour factor described with regard to deprescribing
Who needs to perform the behaviour?	Healthcare professionals, particularly GPs and pharmacists working in primary care
What does the person need to do differently to achieve the desired change?	Review the medicines of older people in care homes to ensure they are all appropriate, stop any that are not
When will they do it?	During reviews of medicines or when the resident is experiencing an acute issue which requires treatment
Where will they do it?	Preferably while visiting the resident in the home, although remote reviews may be possible if the resident/relative is appropriately involved
How often will they do it?	Routinely – at least annually, when a resident's condition changes and when a review is requested by a resident, relative or care home staff member
With whom will they do it?	Residents, relatives, care home staff and other healthcare professionals

5.3.2 Step 4: Identifying what needs to change: mapping of the barriers identified in the empirical interview data to the TDF

The first part of step four was the synthesis and mapping of barriers identified in the empirical interview data study. The barriers were extracted from the findings, grouped and synthesised, and mapped to the TDF as shown in table 37 below. This is the same process as was undertaken in the literature review (described in Chapter 2, section 2.4.6.1). The rationale for the mapping is then provided in section 5.3.2.2

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Table 37: How barriers extracted from the findings of the empirical work were synthesised and mapped to the TDF

Barriers extracted from findings	Synthesised barrier	Description	TDF domain
- Logistical challenges presented when a resident requires a GP appointment. - The organisation and provision of GP services to care homes. - Care homes have to deal with multiple GP surgeries.	**Navigating primary care systems**	Incorporates the difficulties care home staff experience when arranging GP care for residents.	**Environmental context and resources**
- Residents perceived as unwilling to change. - Healthcare professionals perceive residents to lack interest in their medicines. - Relatives perceived to be challenging of deprescribing decisions. - Healthcare professionals are suspicious of the motives of relatives for deprescribing.	**Healthcare professionals' perceptions of residents and relatives**	Perceptions held by healthcare professionals of residents and relatives which may affect a healthcare professional's willingness to deprescribe.	**Social influences**

Barriers extracted from findings	Synthesised barrier	Description	TDF domain
- Relatives or residents resist deprescribing	**Opposition of others to deprescribing**	This barrier incorporated instances in which healthcare professionals described experiencing resistance to deprescribing from residents and relatives.	**Social influences**
- Difficulty accessing specialist opinion. - Logistical barriers to communicating with relatives.	**Logistical barriers to communication**	Includes logistical barriers to communication such as the unavailability of the person with whom communication is sought.	**Environmental context and resources**
- Healthcare professionals less comfortable deprescribing medicines of which they lack knowledge.	**Confidence to deprescribe**	Incorporates lack of knowledge, which was reported to affect a healthcare professional's confidence to deprescribe.	**Knowledge**
- Lack of evidence to assist with deprescribing. - Lack of guidance to assist with deprescribing.	**Lack of evidence and guidance**	Healthcare professionals believed a lack of deprescribing evidence and guidance, especially for this population, was a barrier to deprescribing.	**Knowledge** **Environmental context and resources**
- Barriers posed by regulatory and payment systems.	**Barriers posed by regulatory and payment systems**	Incorporates how the requirements of the CQC, a regulatory system,	**Environmental context and resources**

Barriers extracted from findings	Synthesised barrier	Description	TDF domain
		and QOF, a payment system, affect the deprescribing process.	**Reinforcement**
- Residents and relatives believe pharmacists lack knowledge to deprescribe. - Role of the pharmacist not understood by residents and relatives.	**Perceptions of pharmacists**	Includes how the perceptions that residents and relatives had of the potential role that pharmacists could have in deprescribing in care homes impacts the deprescribing process.	**Social influences**
- Care home staff were perceived by themselves and others to lack knowledge about medicines. - Lack of medicines training available to care home staff.	**Knowledge deficiencies of care home staff**	Some care home staff and healthcare professionals perceived care home staff to lack knowledge about medicines, and believed that this impacted upon their ability to be involved in deprescribing.	**Knowledge**
- Perceived high workload of GPs means it is difficult to prioritise deprescribing above other tasks	**Prioritising deprescribing**	GPs believed their high workload, of both deprescribing and other routine tasks, prevented them from undertaking as much deprescribing work as they would like to do.	**Intentions**

Barriers extracted from findings	Synthesised barrier	Description	TDF domain
- Lack of skilled pharmacy staff. - High turnover of care home staff.	**Staffing issues**	How a lack of regular, skilled staff affects deprescribing.	**Environmental context and resources**
- Goals of care are poorly planned.	**Setting goals of care**	Incorporates the beliefs around setting goals of care and how these impact the deprescribing process.	**Goals**
- GPs who are difficult for care home staff to work with.	**The attitude of the GP towards care home work**	Care home staff reported that some GPs displayed a poor attitude towards care home residents which may affect their attitude to deprescribing for this population.	**Social influences**
- Uncertainties related to the resident's condition. - High number of residents perceived by healthcare professionals as being unable to communicate.	**Influence of the resident's health**	Includes how the aspects of the resident's health impacts on deprescribing decisions and the deprescribing process.	**Environmental context and resources**
- Difficulty balancing both known and unknown risks/benefits of a	**Skill deficiencies**	This barrier incorporates instances of healthcare professionals describing the difficulties of	**Skills**

Barriers extracted from findings	Synthesised barrier	Description	TDF domain
medicines with the resident's condition		reconciling the properties of a medicine with the resident's presenting condition.	
- Unwillingness of some healthcare professionals to discuss life expectancy with residents and relatives when considering deprescribing in care homes. - Poor communication about goals of care	**Avoidance of difficult discussions**	Includes how communication about goals of care and end of life affect the deprescribing process.	**Social influences**
- Lack of Wi-Fi in care homes. - Lack of timely access to a resident's medical records. - Perceived lack of time available to healthcare professionals to deprescribe.	**Lack of resources**	This barrier includes the issues caused by restricted access to resources which facilitate the deprescribing process.	**Environmental context and resources**
- Beliefs about negative consequences of deprescribing, for example the resident's condition worsening or litigation.	**Negative beliefs about consequences**	The potential negative consequences of deprescribing faced by residents, relatives and healthcare professionals which were discussed without emotive language.	**Beliefs about consequences**

Barriers extracted from findings	Synthesised barrier	Description	TDF domain
- Concern about litigation arising from a deprescribing decision. - Fear of negative consequences.	**Emotions felt towards deprescribing**	This barrier is linked with the beliefs about consequences barrier, but emotions such as fear and concern were attached by some healthcare professionals to the potential consequences of deprescribing.	**Emotions**
- Role of residents and relatives is not clearly defined. - Role of care home staff is not clearly defined. Disagreement about the role and skillset required of the pharmacist.	**Uncertainty of roles**	How a lack of clarity about the roles of residents, relatives and care home staff in the deprescribing process affected the involvement of these groups in the decision-making process.	**Social and professional role and identity**
- Lack of funding for dedicated services providing primary care to care homes. - Lack of funding for more skilled staff to undertake deprescribing.	**Lack of funding**	Healthcare professionals believed that more funding was required to enable deprescribing in care homes.	**Environmental context and resources**

5.3.2.1 Rationale for the mapping of the barriers identified in the empirical interview data to the TDF

Firstly, the barriers were mapped to domains of the TDF as displayed in Table 37. This was then discussed with a member of the supervisory team who is experienced in the utilisation of the TDF (Easthall et al, 2019). Disagreements were resolved through discussion. The mapping was then compared to the synthesis and mapping of barriers identified in the literature review (Chapter 2, section 2.6.3) to ensure consistency. Table 38 presents the synthesised barriers that were identified in both the findings and the literature review that were then mapped to the same TDF domain. The rationale for mapping these barriers to their respective domains can be found in Chapter 2, section 2.6.3.

Table 38: Synthesised barriers identified in both the literature review findings and in the findings of the study being conducted

Synthesised barrier	TDF mapping of the synthesised barrier
Influence of the resident's health	Environmental context and resources
Staffing issues	Environmental context and resources
Lack of funding	Environmental context and resources
Lack of evidence and guidance	Environmental context and resources Knowledge
Emotions felt towards deprescribing	Emotions
Opposition of others to deprescribing	Social influences
Skill deficiencies	Skills
Uncertainty of roles	Social/professional role and identity
Negative beliefs about consequences	Beliefs about consequences

The following sections outline the rationale for mapping decisions made where there was a divergence from the decisions made in the literature review, or where the barrier was not identified in the literature review

5.3.2.1.1 Points of divergence: barriers that were also identified in the literature review (Chapter 2)

Tables 39 and 40 (below) present points of divergence in the synthesis or mapping process. Table 39 shows synthesised barriers and mapping decisions made during the literature review. Table 40 shows the similar barriers found in the empirical research, and the

mapping decisions that were made for those. The rationale for the mapping decisions are discussed below the table.

Table 39: Barriers synthesised and mapped in the literature review (Chapter 2, section 2.6.3)

Synthesised barrier identified from the literature review	TDF mapping of synthesised barrier from the literature review
Systemic barriers to communication	Environmental context and resources
Confidence to deprescribe	Beliefs about capabilities
Goals of care	Social influences
Knowledge deficiencies of GPs, care home staff, residents and relatives	Knowledge
Lack of time	Environmental context and resources

Table 40: Barriers synthesised and mapped in the empirical research that are similar to those displayed in table 39

Synthesised barrier identified from the empirical interview data	TDF mapping of the synthesised barrier from the empirical interview data
Logistical barriers to communication	Environmental context and resources
Navigating primary care systems	Environmental context and resources
Barriers posed by regulatory and payment systems	Environmental context and resources Reinforcement
Confidence to deprescribe	Knowledge
Setting goals of care	Goals
Avoidance of difficult discussions	Social influences
Knowledge deficiencies of care home staff	Knowledge
Lack of resources	Environmental context and resources

In the literature review, the barrier "systemic barriers to communication" was identified and mapped to the *Environmental Context and Resources* domain (Chapter 2, section 2.6.3). This barrier incorporated barriers to communication caused by healthcare systems, for example the administrative work required of prescribers. It also included the barrier created

when healthcare professionals were unable to contact relatives to involve them in decision-making. The findings of the empirical interview data provided in-depth insight of the systemic barriers to deprescribing, which allowed the barriers to be separated to provide a more comprehensive and detailed reflection of the issues. Barriers relating to unavailability of people whose input was sought, for example specialist prescribers or relatives, were synthesised to the barrier "logistical barriers to deprescribing" which was then mapped to the *Environmental Context and Resources* domain. The only systemic barriers identified in the literature review were the burden of paperwork. However, multiple systemic barriers to deprescribing were identified in the empirical interview data, and it was deemed that these did not fit in the same synthesised barrier as the logistical barriers to communication.

The main systemic barriers to deprescribing explored in the findings of the empirical interview data were the issues care home staff experienced navigating primary care systems on behalf of the resident. These barriers were synthesised to the barrier "navigating primary care systems", which was mapped to the *Environmental Context and Resources* domain. There was a burden of paperwork identified in the empirical interview data, but this was described as a problem with the regulatory and payment systems (the CQC and QOF) that care homes and GP practices must adhere to. Therefore, it was mapped to the *Environmental Context and Resources* domain but also to the *Reinforcement* domain.

Cane et al (2012) defined reinforcement as:

> *"increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimulus".* Cane et al, 2012

While the paperwork generated by the CQC and QOF did not act as a deterrent to deprescribing, it did not act as a reinforcement or reward either. Cane et al's (2012) definition of the domain only refers to factors which reinforce a behaviour, and not those which may discourage behaviour such as CQC or QOF requirements. However, it was mapped to this domain because it was decided that this domain best reflected how CQC or QOF could reinforce deprescribing behaviours but were instead reported to discourage them.

The barrier "confidence to deprescribe" was synthesised from the findings of both the literature review and the empirical interview data, however it was mapped to different domains of the TDF in each case. There was a lack of detail in the studies included in the literature review to determine what affected a prescriber's confidence to deprescribe, and therefore it was mapped to the *Beliefs about Capabilities* domain. However, the data analysis from the empirical interview data allowed an improved understanding of the factors that influenced a healthcare professional's confidence to deprescribe. It was determined that a lack of confidence to deprescribe certain medicines stemmed from a lack of knowledge about them, and so consequently it was mapped to the *Knowledge* domain.

Improving knowledge via an intervention would also improve confidence to deprescribe, and would thus change behaviour. This finding was particularly prominent in the pharmacist interviews, as pharmacists often reported a lack of confidence deprescribing medicines they were less knowledgeable of, such as medicines for mental health issues or cognitive decline.

Knowledge deficiencies were synthesised and mapped differently from the findings of the empirical interview data. In the literature review, there was a lack of depth about knowledge deficiencies and therefore one barrier, "lack of knowledge" was created and was applicable to all stakeholders. In the empirical interview data, it was clear that some care home staff and healthcare professionals felt that if care home staff had more knowledge of medicines, they could be more involved in the deprescribing process. Therefore, the barrier "knowledge deficiencies of care home staff" was synthesised and mapped to the *Knowledge* domain. Healthcare professionals partaking in the empirical interviews did not report that care home residents lacking knowledge about their medicines was a barrier to deprescribing, but did report that they perceived care home residents to lack interest in their medicines. Therefore, no barrier was synthesised referring to the knowledge of care home residents and the perceived disinterest in medicines displayed by residents was synthesised to "healthcare professionals' perceptions of residents and relatives" and mapped to the *Social Influences* domain.

Another barrier that was evident in both the literature review and the empirical interview data was the issues around the resident's goals of care. The barrier synthesised from the literature review, simply called "goals of care", was mapped to the *Social Influences* domain as it represented the finding that healthcare professionals and relatives disagreed about the resident's care. Again, the analysis and interpretation from the qualitative interviews in this thesis provided more in-depth insight about these issues and so the findings were synthesised to two barriers. "Setting goals of care" referred to the finding that goals of care for the resident were not often set. As it described the process of setting goals, it was mapped to the *Goals* domain. The second barrier identified around this topic was more influenced by social factors, and referred to the finding that difficult discussions about the resident's life expectancy were sometimes avoided by healthcare professionals. Healthcare professionals explained that it was sometimes difficult to talk about topics such as life expectancy of the resident with the resident or their relatives. There was, however, insufficient depth to the data in this area to determine the reasons that these discussions were sometimes avoided and so it was mapped to the *Social Influences* domain.

The barrier "lack of time" was identified as the only resource barrier in the literature review, other than the resources synthesised and mapped elsewhere such as staffing issues and the lack of evidence and guidance. Therefore, it was defined as a barrier alone, and mapped to the *Environmental Context and Resources* domain. In the empirical interview data, lack of

time was one of three resource barriers, with the others being the lack of internet access in care homes and difficulty accessing the resident's medical notes. These resource issues were synthesised to the barrier "lack of resources", which was also mapped to the *Environmental Context and Resources* domain.

5.3.2.1.2 Rationale for the mapping of the barriers identified in the empirical interview data to the TDF: barriers that were unique to the empirical findings

The remaining barriers identified from the empirical interview data were not directly comparable to the barriers identified in the literature review. They are displayed in Table 41 below, followed by the rationale for the mapping decisions and discussion of the overall mapping process.

Table 41: Barriers unique to the empirical findings mapped to the TDF

Synthesised barrier from the empirical interview	TDF mapping of the synthesised barrier
Healthcare professionals' perceptions of residents and relatives	Social influences
Perceptions of pharmacists	Social influences
The attitude of the GP towards care home work	Social influences
Prioritising deprescribing	Intentions

Three of the four barriers which were not comparable to the barriers synthesised from the literature review were mapped to the *Social Influences* domain. This demonstrates the importance of perceptions of people and relationships to the deprescribing process, and how the empirical interview data allowed for exploration of these issues.

It was determined that, in some instances, it was the perceptions that healthcare professionals held of residents and relatives that was the barrier to deprescribing, rather than the resident or relative themselves. While there were some instances of residents or relatives resisting deprescribing (instances which were synthesised to the "opposition to deprescribing" domain), most residents and relatives reported being content to agree with the decision of the healthcare professional. They also reported being willing to learn about their medicines. However, healthcare professionals believed that residents were uninterested in their medicines and relatives were challenging of their decisions and described occasions where such issues had prevented them from deprescribing

The final two barriers, "perceptions of pharmacists" and "the attitude of the GP towards care home work" also reflect how perceptions can affect the deprescribing process. Some

residents and relatives were reported as perceiving pharmacists to lack the knowledge and skills to deprescribe medicines, which could create a barrier for pharmacists working in care homes. GPs perceived as having a poor attitude towards care home work, such as those who required prompting to communicate with residents, were reported to be more difficult to work with. This may have deterred others from engaging with them to deprescribe.

The final barrier, "prioritising deprescribing", was mapped to the *Intentions* domain. This barrier addressed the finding that GPs reported their workload was too high to be involved in deprescribing. The findings revealed that their high workload was a result of holding surgeries, completing home visits and completing paperwork. These were tasks which were took priority over deprescribing. The "intentions" domain was defined by Cane et al (2012) as:

> *"a conscious decision to perform a behaviour or a resolve to act in a certain way".* Cane et al (2012)

GPs were therefore not making a conscious decision to deprescribe, unless they were given the time to complete care home work, and they did not intend to deprescribe as part of their routine. Therefore, this barrier was mapped to the *Intentions* domain.

Finally, two barriers were identified in the literature review which were not identified in the findings of the empirical interview data. These were "lack of education and training" and "influence of other prescribers". Healthcare professionals partaking in the empirical interview data did not generally feel that there was a lack of education and training preventing them from deprescribing. They did not report feeling influenced by other prescribers, only that other prescribers may be difficult to contact for their input. GPs in particular, were confident to make deprescribing decisions that they believed were in the best interest of the resident, regardless of who initially started the medicine. Pharmacists worked with the resident's GP to make deprescribing decisions, and did not report being influenced by the initial prescriber.

5.3.2.1.3 Summary of the synthesis and mapping processes

Similarly to the literature review, most of the synthesised barriers from the findings of the empirical interview data were mapped to the *Environmental Context and Resources* domain. This suggested that the environment in which healthcare professionals were working, and the resources available to help them, were a major barrier to deprescribing. The empirical interview data and literature review also identified *Social Influences* and *Knowledge* as the next domains with the most barriers mapped to them. Social influences were more prevalent in the empirical interview data, while *Knowledge* was the most prevalent in the literature review. This suggested that these three domains may be the most appropriate to target with an intervention.

While there were multiple similarities between the barriers identified in the literature review and the empirical interview data, there were several important differences as well. These differences demonstrated the benefit of conducting the empirical research, as the extra depth and richness of the data collected, analysed and interpreted allowed for clearer synthesised barriers which provided a more comprehensive reflection of the findings. This means that the barriers could be confidently mapped to the TDF, which provides a stronger basis for intervention development than if the literature review findings had been utilised alone.

5.3.2.2 Mapping of the synthesised barriers to the COM-B system

Once the synthesised barriers from the empirical interview data had been identified and mapped to the TDF, they were mapped to the COM-B system with the barriers identified during the literature review (Chapter 2). The COM-B system is described in detail in section 5.2.1. In summary, the abbreviation COM stand for capability, opportunity and motivation which are three factors which influence how a person behaves. The B stands for behaviour.

Mapping the barriers to the COM-B system was not strictly necessary in this situation. Michie et al (2014) recommend mapping identified barriers to the COM-B first for an overarching view, and then to the TDF for a more in-depth analysis. However, as the TDF had already been utilised in the literature review (Chapter 2) and in the design of the interview schedules, the barriers identified in the empirical findings were mapped to the TDF first and then to the COM-B for completeness, and to provide further insight.

Table 42, below, combines the synthesised barriers identified in both the literature review and in the findings of the empirical interview data. The components of the COM-B system are stated, followed by the TDF domain to which they were mapped.

Key: (L) synthesised barrier identified in the literature review,

(E) synthesised barrier identified in the findings of the empirical interview data

Table 42: Barriers identified in the literature review and empirical findings and the TDF domains and COM-B components they are mapped to

	COM-B component	TDF Domain	Barriers to deprescribing mapped to this domain
CAPABILITY	Physical capability	Skills (physical)	No barriers mapped to this domain.
	Psychological capability	Knowledge	Lack of evidence and guidance (L) (E) Confidence to deprescribe (E) Knowledge deficiencies of GPs, care home staff, residents and relatives (L) Knowledge deficiencies of care home staff (E) Lack of education and training (L)
		Skills (cognitive & interpersonal)	Skill deficiencies (L) (E)
		Memory, attention & decision processes	No barriers mapped to this domain.
		Behavioural regulation	No barriers mapped to this domain.
OPPORTUNITY	Physical opportunity	Environmental context & resources	Influence of the resident's health (L) (E) Staffing issues (L) (E) Lack of funding (L) (E) Lack of evidence and guidance (L) (E) Systemic barriers to communication (L)

	COM-B component	TDF Domain	Barriers to deprescribing mapped to this domain
			Logistical barriers to communication (E)
			Navigating primary care systems (E)
			Barriers posed by regulatory and payment systems (E)
			Lack of time (L)
			Lack of resources (E)
	Social opportunity	Social influences	Opposition of others to deprescribing (L) (E)
			Goals of care (L)
			Influence of other prescribers (L)
			Avoidance of difficult discussions (E)
			Healthcare professionals' perceptions of residents and relatives (E)
			Perceptions of pharmacists (E)
			The attitude of the GP towards care home work (E)
MOTIVATION	Reflective motivation	Professional/ social role & identity	Uncertainty of roles (L) (E)
		Beliefs about capabilities	Confidence to deprescribe (L)
		Optimism	No barriers mapped to this domain.

	COM-B component	TDF Domain	Barriers to deprescribing mapped to this domain
		Beliefs about consequences	Negative beliefs about consequences (L) (E)
		Intentions	Prioritising deprescribing (E)
		Goals	Setting goals of care (E)
	Automatic motivation	Reinforcement	Barriers posed by regulatory and payment systems (E)
		Emotion	Emotions felt towards deprescribing (L) (E)

5.3.2.3 Selection of the TDF domains and COM-B components to target with a behaviour change intervention

All components of the COM-B model were identified as potential areas for change except for physical capability. Physical capability is defined by Michie et al (2014) as "physical skill, strength or stamina". No such physical skill, strength or stamina was identified as necessary for deprescribing. The majority of the barriers fell into the opportunity component, especially physical opportunity but also social opportunity. The domain of the TDF which is matched with physical opportunity is *Environmental Context and Resources*. The domain of the TDF which is matched with social opportunity is *Social Influences*. These domains, *Environmental Context and Resource*s, and *Social Influences*, were prioritised for intervention development. Key findings of the empirical research identified that healthcare professionals believed that external factors, such as lack of resource, were the major barrier to deprescribing in care homes. Several social factors which influenced their behaviour were also identified as important.

The *Knowledge* domain of the TDF, mapped to the psychological capability component of the COM-B, was the next domain prioritised for intervention development. This domain also had multiple barriers mapped to it, more than the other domains, which was the reason it was prioritised. Healthcare professionals identified multiple areas in which improved knowledge, through evidence, guidance and the education of those around them could facilitate deprescribing.

Whilst the other domains had fewer barriers mapped to them and were not prioritised for intervention development at this stage, it does not mean that they were not important. For example, setting goals of care and negative beliefs about consequences, which fall in reflective motivation, were of particular importance in this study. However, as a starting point the three domains identified above were selected for initial investigation. The other barriers should be considered during intervention development, for example an intervention could still proved information about consequences.

In summary, the TDF domains and their corresponding COM-B components selected for the next stages of the process were:

- *Knowledge* (TDF domain), psychological capability (COM-B component)
- *Environmental Context and Resources* (TDF domain), physical opportunity (COM-B component)
- *Social Influences* (TDF domain), social opportunity (COM-B component)

5.3.3 Step 5: Identify candidate intervention functions using the BCW utilising the TDF domains identified in step 4

The prioritised domains of the TDF (*Knowledge*, *Environmental Context and Resources*, *Social Influences*) were matched with potentially useful intervention functions as detailed in the guiding literature (Michie et al, 2014). Intervention functions are broad categories which indicate a wide area in which an intervention may be developed. Table 43 details the candidate intervention functions for each of the prioritised TDF domains and whether each function fits the APEASE (affordability, practicability, effectiveness and cost-effectiveness, acceptability, side-effects/safety and equity) criteria, and thus it's likely utility in further exploration for this study. The shaded cells indicate that the candidate intervention function will not be carried forward to the further stages of this process.

Table 43 shows that multiple intervention functions were eliminated from consideration at this stage, either because they did not fit the APEASE criteria or they were not applicable to the behaviour or setting. Use of the APEASE criteria highlighted, for example, that whilst large scale environmental changes were likely to be effective and acceptable to healthcare professionals, they were not deemed to be affordable or practical. On the other hand, whist training was likely to be affordable and practical with no likely side effects or equity concerns, additional training may not be acceptable to all healthcare professionals and the effectiveness of this approach is also unclear. It was determined that, through co-design, improving the acceptability of a training intervention was likely to be more feasible than overcoming the large cost and practical difficulties of large-scale changes to the health and social care system.

Table 43: TDF domains prioritised in step 4. their candidate intervention functions and detail of whether the intervention function fits the APEASE criteria

TDF Domain prioritised in step 4	Candidate intervention functions (taken from Michie et al, 2014, pp 111-112)	The intervention function in the context of the domain and deprescribing in care homes	Does the intervention function fit the APEASE criteria with regard to deprescribing in care homes?	Comments
Environmental context and resources	Training	Train healthcare professionals in deprescribing to reduce competing time demands for deprescribing	Yes	Likely to be affordable and practical with no side effects or equity concerns. May not be acceptable to some healthcare professionals, and the effectiveness would need to be determined.
	Restriction	Restricting undesired behaviours, such as not conducting annual reviews with a view to deprescribing.	No	Likely to be impractical, ineffective and unacceptable to healthcare professionals.
	Environmental restructuring	Large scale: improving access to primary care for care home residents, improving access to medical records.	Small scale interventions: yes Large scale interventions: no	Small scale interventions: likely to be effective, affordable, practical and acceptable. Large scale changes likely to be effective

TDF Domain prioritised in step 4	Candidate intervention functions (taken from Michie et al, 2014, pp 111-112)	The intervention function in the context of the domain and deprescribing in care homes	Does the intervention function fit the APEASE criteria with regard to deprescribing in care homes?	Comments
		Small scale: create deprescribing prompts, improve access to resources such as Wi-Fi in care homes.		and acceptable, but impractical and unaffordable.
Social influences	Enablement	Increasing means/reducing barriers to increase opportunity beyond education or environmental restructuring (Michie et al, 2014). None identified in this setting.	Not applicable in this context.	
	Modelling	Provision of an example for people to aspire to or imitate (Michie et al, 2014). None identified in this setting.	Not applicable in this context.	
	Restriction	Restricting undesired behaviours, such as not	No	Likely to be impractical, ineffective and unacceptable to healthcare professionals.

TDF Domain prioritised in step 4	Candidate intervention functions (taken from Michie et al, 2014, pp 111-112)	The intervention function in the context of the domain and deprescribing in care homes	Does the intervention function fit the APEASE criteria with regard to deprescribing in care homes?	Comments
		conducting annual reviews with a view to deprescribing.		
	Environmental restructuring	Changes to the approach to the resident's medicines, for example a named healthcare professional to conduct reviews, increased awareness of the concept of deprescribing, improved planning for the future of medicines incorporated into consultations	Yes	Likely to be effective and acceptable, but there may be practical and affordability barriers to overcome.
	Enablement	A cultural change towards deprescribing; changing attitudes to medicines	No	Likely to be effective, but impractical to implement in the context of this thesis.
Knowledge	Education	Provision of educational materials to stakeholders in deprescribing in care homes	Yes	Likely to be affordable and practical with no side effects or equity concerns. May not

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TDF Domain prioritised in step 4	Candidate intervention functions (taken from Michie et al, 2014, pp 111-112)	The intervention function in the context of the domain and deprescribing in care homes	Does the intervention function fit the APEASE criteria with regard to deprescribing in care homes?	Comments
				be acceptable to some healthcare professionals, and the effectiveness would need to be determined.

Table 43 shows that the following candidate intervention functions were identified as the functions most likely to provide the foundation of a successful deprescribing intervention in care homes:

- Environmental restructuring (with smaller scale changes to health and social care systems)
- Training
- Education

In step six, the candidate intervention functions identified in Table 43 were used to identify the Behaviour Change Techniques (BCTs) that are most likely to be effective to engender behaviour change and thus increase deprescribing in care homes. BCTs are more specific than intervention functions, and are "active components" of a behaviour change intervention (Michie et al, 2014)

5.3.4 Step 6: Behaviour change techniques: identified utilising the intervention functions defined in step 5

Table 44 details the most frequently used BCTs associated with the candidate intervention functions training, environmental restructuring and education, as reported in guiding literature (Michie et al, 2014). The APEASE criteria was also applied to the candidate BCTs, as it was in step 5.

Table 44 shows that many of the BCTs identified as potential intervention components were identified as likely to be successful. Many more BCTs are identified for each intervention function by Michie et al (2014), but it is recommended to begin with the most frequently successfully used BCTs. Therefore, the most frequently used BCTs for each intervention function are displayed in the table, and during future intervention development the less frequently utilised BCTs could be considered if necessary.

Table 44: Identification of potentially useful BCTs from candidate intervention functions

Candidate intervention function	COM-B components	Frequently used BCTs	Whether or not the BCT fits the APEASE criteria	Comments
Training	Psychological capability Physical opportunity	Demonstration of the behaviour	Yes	For example, role play of a consultation or a demonstration of how to conduct a medicine review with a view to deprescribing.
		Instruction on how to perform the behaviour	Yes	
		Feedback on the behaviour	No	Monitoring evaluative feedback on behaviour was considered to be impractical.
		Feedback on outcomes of the behaviour	Yes	Healthcare professionals wished for input on outcomes of deprescribing from care home staff. This could also help to improve perceptions of consequences of deprescribing, and communication between care home staff and healthcare professionals.
		Self-monitoring of behaviour	No	Designing a method for a person to monitor their own behaviour was not felt to be applicable to this process.

Candidate intervention function	COM-B components	Frequently used BCTs	Whether or not the BCT fits the APEASE criteria	Comments
		Behavioural practice/rehearsal	No	Practicing deprescribing was not felt to be applicable to this process.
Environmental restructuring	Physical opportunity Social opportunity	Adding objects to the environment	No	The definition of this BCT states that this does not include the provision of written materials such as guidance, and so it was not felt to be applicable in this context.
		Prompts/cues	Yes	This could include computer prompts or prompts provided to be used whilst conducting a medicine review for a care home resident
		Restructuring the physical environment	No	Changing the physical environment was not felt to be applicable to this context.
Education	Psychological capability	Information about social and environmental consequences	Yes	Providing information about the potential benefits of deprescribing for residents, the NHS and care home staff could facilitate deprescribing in care homes.
		Information about health consequences	Yes	Providing information about the potential positive consequences of deprescribing, and

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Candidate intervention function	COM-B components	Frequently used BCTs	Whether or not the BCT fits the APEASE criteria	Comments
				how to mitigate potential negative consequences of deprescribing, could facilitate the process.
		Feedback on behaviour	No	As above.
		Feedback on outcomes of the behaviour	Yes	As above.
		Prompts/cues	Yes	As above.
		Self-monitoring of behaviour	No	As above.

Table 44 shows that the BCTs likely to be the most appropriate to target with an intervention to improve the deprescribing behaviour of healthcare professionals in care homes are:

- Demonstration of the behaviour
- Instruction on how to perform the behaviour
- Feedback on outcomes of the behaviour
- Prompts/cues
- Information about social and environmental consequences
- Information about health consequences

Steps seven and eight focus on how an intervention may be delivered through policy categories and delivery mechanisms.

5.3.5 Step 7: Identification of policy categories: utilising the behaviour change functions identified in step 5

In step seven, the intervention functions identified in step five (training, environmental restructuring and education) were utilised to identify the policy categories which may be used to support and deliver the intervention. Policy categories are

> *"decisions made by authorities that help to support and enact the interventions"*
> (Michie et al, 2014 pp 134)

Table 45 summarises the candidate intervention functions (education, training and environmental restructuring, obtained in step 5), the candidate policy categories aligned to these, as per guiding literature, an explanation of what this policy category could mean in the context of deprescribing in care homes and then a summary of how the APEASE criteria could apply to this policy category. It highlights that several the policy categories were identified multiple times for different intervention functions, and that legislation and fiscal measures were discounted for being unacceptable and impractical in this setting. It also identified that environmental restructuring and service provision were likely to be effective and acceptable, but beyond the scope of this thesis. However, environmental restructuring and service provision are being implemented as part of the enhanced health in care homes Direct Enhanced Service (DES), as outlined in Chapter 1 section 1.3.4. This suggests that the process of identifying policy categories was successful, as categories identified as likely successful but beyond the scope of this thesis are being implemented at a higher level.

Table 45: Identification of the policy categories which could support a deprescribing behaviour change intervention in care homes

Intervention function	Candidate policy categories (taken from Michie et al, 2014, pp 135)	The policy category in the context of the domain and deprescribing in care homes	Does the policy category fit the APEASE criteria with regard to deprescribing in care homes?	Comments, including how the APEASE criteria
Training	Guidelines (creating documents that recommend or mandate practice. This includes all changes to service provision)	The production of deprescribing guidelines to aid with deprescribing decisions	Yes	Likely to be affordable, practical, acceptable with no equity concerns or side effects. Effectiveness would need assessing.
	Fiscal measures (using the tax system to reduce or increase the financial cost)	Amendment to the GP contract to include fiscal measures related to deprescribing in care homes	No	Likely to be effective, but may be impractical and unacceptable depending on the methods used. Side effects and equity would need to be determined
	Regulation (establishing rules or principles of behaviour or practice)	Establishing deprescribing good practice principles as	Yes	Likely to be affordable, practical, acceptable with no equity

Intervention function	Candidate policy categories (taken from Michie et al, 2014, pp 135)	The policy category in the context of the domain and deprescribing in care homes	Does the policy category fit the APEASE criteria with regard to deprescribing in care homes?	Comments, including how the APEASE criteria
		part of deprescribing guidance.		concerns or side effects. Effectiveness would need assessing.
	Legislation (making or changing laws)	Not applicable in this context.	Not applicable in this context.	
	Service provision (delivering a service)	Delivering a funded, specialised deprescribing/medicine review service	No	Likely to be effective and acceptable, but unaffordable and beyond the scope of this thesis.
Environmental restructuring	Guidelines	As above	As above	
	Fiscal measures	As above	As above	
	Regulation	As above	As above	
	Legislation	Not applicable in this context.	Not applicable in this context.	

Intervention function	Candidate policy categories (taken from Michie et al, 2014, pp 135)	The policy category in the context of the domain and deprescribing in care homes	Does the policy category fit the APEASE criteria with regard to deprescribing in care homes?	Comments, including how the APEASE criteria
	Environmental/social planning (designing and/or controlling the physical or social environment)	Changing the health and social care structure to improve the primary care provision to care homes	No	Likely to be effective and acceptable, but unaffordable and beyond the scope of this thesis.
Education	Communication/marketing (using print, electronic, telephonic or broadcast media)	The production of materials promoting deprescribing	Yes	Likely to be affordable, practical, acceptable with no equity concerns or side effects. Effectiveness would need assessing.
	Guidelines	As above	As above	
	Regulation	As above	As above	
	Legislation	As above	As above	
	Service provision	As above	As above	

Table 45 shows that the following policy categories were identified as the policies most likely to support the delivery of a successful deprescribing intervention in care homes:

- Guidelines (including regulation)
- Communication/marketing

In the final step, step 8, the ways in which an intervention may be delivered were identified. These were identified by Michie et al (2014), and the APEASE criteria was applied to these to determine those which would be most appropriate. These are displayed below in table 46.

5.3.6 Step 8: Mode of delivery

Table 46: Modes of delivery for interventions as described by Michie et al (2014) and whether they fit the APEASE criteria in the context of deprescribing in care homes

Mode of delivery				Does the mode of delivery meet the APEASE criteria in the context of deprescribing in care homes?	Comments
Face to face	Individual			Yes	Likely to practical and acceptable with no equity or side effect concerns. May be designed to be affordable, effectiveness would need to be assessed.
	Group			Yes	Likely to practical and acceptable with no equity or side effect concerns. May be designed to be affordable, effectiveness would need to be assessed.
Distance	Population level	Broadcast media	TV	No	Not applicable in this context.
			Film	No	Not applicable in this context.
		Outdoor media	Billboard	No	Not applicable in this context.
			Poster	Yes[2]	Likely to affordable, practical and acceptable with no equity or side effect concerns. Effectiveness would need to be assessed.

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[2] If placed in an appropriate location, for example a GP practice, a care home

Mode of delivery				Does the mode of delivery meet the APEASE criteria in the context of deprescribing in care homes?	Comments
		Print media	Newspaper	No	Not applicable in this context.
			Leaflet	Yes[1]	Likely to affordable, practical and acceptable with no equity or side effect concerns. Effectiveness would need to be assessed.
		Digital media	Internet	Yes, if on an appropriate website	Likely to affordable, practical and acceptable with no equity or side effect concerns. Effectiveness would need to be assessed.
			Phone app	Yes	Likely to affordable, practical and acceptable with no equity or side effect concerns. Effectiveness would need to be assessed.
	Individual level	Phone	Phone helpline	No	Not applicable in this context.
			Mobile phone text	No	Not applicable in this context.
		Individually accessed computer program		Yes	Likely to affordable, practical and acceptable with no equity or side effect concerns. Effectiveness would need to be assessed.

5.3.7 Summary of the results

This process has identified the following:

- The COM-B components which were prioritised for the development of a deprescribing intervention were physical and social opportunity and psychological capability.
- The TDF components which were prioritised for the development of a deprescribing intervention were; *Environmental Context and Resource*; *Social Influences* and *Knowledge*.
- The intervention functions that were prioritised for the development of a deprescribing intervention were:
    - Training
    - Environmental restructure
    - Education
- The behaviour change techniques which were identified as potential components of a behaviour change intervention were:
    - Demonstration of the behaviour
    - Instruction on how to perform the behaviour
    - Feedback on outcomes of the behaviour
    - Prompts/cues
    - Information about social and environmental consequences
    - Information about health consequences
- The policies which would potentially support the development of an intervention were identified to be:
    - Guidance, including regulation
    - Communication/marketing
- The intervention may be best delivered:
    - Face to face, either individually or in a group
    - Appropriately situated posters or leaflets
    - Appropriate websites
    - A phone app
    - An individually accessed computer programme

5.4 Discussion of the process of identifying potential intervention components for a deprescribing intervention for use in care homes

This section discusses the above findings and provides context for the mapping decisions made throughout this thesis.

Environmental Context and Resources was the domain of the TDF which had the most barriers mapped to it. This suggests that healthcare professionals believe that environmental and resource deficiencies are a major barrier to deprescribing in care homes. However, the scope of a large-scale behaviour change intervention to change the wider health and social care environment in the UK to facilitate communication and resident care is limited. Nevertheless, there are some smaller scale changes to the environment that could be made to improve deprescribing behaviour. This could include computer prompts to assist those reviewing the medicines of care home residents, and/or a worksheet to assist with the review process to prompt change. At least one healthcare professional identified the utility of computer prompts.

Changes could be made to influence social change, for example discussing when a medicine should be stopped at the prescribing and review stages. Plans for the resident's medicines could also be discussed on admission to the care home. Finally, allowing healthcare professionals to access Wi-Fi in care homes could facilitate the review process and allow them to access the resources they require.

Most of the behaviour change techniques which were identified as potential intervention components related to education and training, which suggests that this is the area in which to develop an intervention. Education and training interventions were a more appropriate fit for the APEASE criteria than large scale environmental restructuring, as they are more affordable and practical. Education or training interventions could include workshops or distance learning programmes, and incorporate the BCTs demonstration of the behaviour, instruction on how to perform the behaviour and information about social, environmental and health consequences.

However, healthcare professionals partaking in the empirical research indicated that they did not always believe that training was necessary. Therefore, any training or education problem would have to be developed with healthcare professionals to ensure its acceptability. To improve acceptability, the training could incorporate areas in which healthcare professionals indicated that their knowledge could be lacking, for example medicines for dementia or mental health. They could also be employed to increase confidence with regard to the consequences of deprescribing or the future benefit of

medicines. Healthcare professionals also indicated that they preferred to learn from colleagues, so a mentoring or "buddy" programme could provide healthcare professionals with acceptable learning, and feedback on their behaviour. Any intervention designed as a result of this would be co-designed with healthcare professionals, care home staff and residents and relatives in order to increase acceptability. This is discussed further in Chapter 6, section 6.6.2.

It was identified in step seven that the policies that could be developed to support the delivery of a deprescribing behaviour change intervention in care homes were guidance and communications. This was reflected by the healthcare professionals who partook in the empirical research, who stated that they wanted more deprescribing guidance and evidence. Communications and marketing about deprescribing. addressing its consequences and opening the dialogue between the key stakeholders in deprescribing, may also facilitate deprescribing. A behaviour change technique that was identified as an intervention component was "feedback on outcomes". This could be facilitated by communication between care home staff and GPs, including ensuing that GPs and care home staff maintain a positive relationship with each other. Communicating the social influences on deprescribing could also raise awareness of how perceptions affect deprescribing behaviour, and encourage self-reflection and improvement of behaviour. Finally, residents and relatives should also be involved in intervention development to ensure that their views are included and respected. This is discussed further in Chapter 6.6.2.

5.4.1 Comparison of TDF mapping with other deprescribing studies which incorporated the TDF

The mapping exercises completed in this thesis were compared to the mapping decisions made in two articles which mapped barriers to deprescribing to the TDF. This was undertaken in order to ensure consistency in mapping decisions and to validate the mapping decisions made in this thesis.

Ailabouni et al (2016) investigated the challenges and enablers of deprescribing as perceived by GPs in New Zealand. Semi-structured interviews were conducted with ten GPs, and the findings were analysed using the TDF and constant comparison techniques. Their reasons for mapping the barriers to the TDF are not evident, for example there is no mention of how these findings may be used or why it was important to utilise the TDF. The deprescribing beliefs that were mapped to the TDF lacked detail, and were ambiguous in their meaning. Ailabouni et al (2016) also used the original version of the TDF (Michie et al, 2005) rather than the later, validated version by Cane et al (2012). There is no rationale provided for the decision to use the original TDF. When these methodological inadequacies are considered, the TDF appears to have been superficially applied to this study.

The TDF was more rigorously and transparently incorporated into the study by Scott et al (2019). Scott et al (2019) conducted eight focus groups with 54 doctors specialising in medicine for older people and pharmacists to provide understanding of their perceived barriers and facilitators to deprescribing in a hospital setting in the UK. Content analysis was utilised to analyse the qualitative findings. The TDF was considered throughout the study, and the reasons for the use of the TDF were justified. The TDF domains identified were then prioritised, in order to demonstrate which domains the researchers believed were to be targeted by future interventions aiming to change deprescribing behaviours. While there is a lack of justification provided to explain why the themes and subthemes were mapped to the domains of the TDF that they were mapped to, the findings are presented clearly with relevant quotes provided to support the analysis. Justification is provided to rationalise the prioritisation of the TDF domains. However, mapping the themes and subthemes to the TDF rather than the specific barriers considered within the subthemes means that the mapping may be too general and lack accuracy.

5.4.2 Comparison of TDF mapping for the literature review and similar studies

Firstly, the instances in which there was agreement about which domains barriers to deprescribing should be mapped to will be discussed. Barriers to deprescribing centred around the concept of an influential person (be it a healthcare provider, patient, or relative) being opposed deprescribing, were mapped to the *Social Influences* domain of the TDF in all four studies. The findings of the literature review identified a lack of education and training as a knowledge barrier, as did Scott et al (2019). Ailabouni et al (2016) mapped "difficulty determining medicines to deprescribe" to the *Skills* domain, which is similar to the factors covered by the "skill deficiencies" barrier in this review; also mapped to the *Skills* domain.

The literature review, empirical findings, Scott et al (2020) and Ailabouni et al (2016) identified the lack of several resources as barriers to deprescribing, including time, access to medical records and decision support systems. All these were mapped to the environmental domain[3]. The findings of the empirical interviews and Ailabouni et al (2016) identified logistical barriers to communication, such as the accessibility of residents and relatives. In both cases, these barriers were mapped to the environmental domain[3]. Ailabouni et al (2016) mapped the influence of the beliefs, ideas or concerns of patients to the *Social Influences* domain. As Ailabouni et al (2016) interviewed GPs to obtain this finding, this barrier refers to the GP's perceptions of patients. This is similar to the barrier identified by

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[3] Ailabouni et al, 2016, utilised the original version of the TDF which included the domain environmental constraints. In the validated version used in the other cases, the domain is called *Environmental Context and Resources*

the empirical interview data, "healthcare professionals' perceptions of residents and relatives" which was also mapped to the *Social Influences* domain.

Finally, the *Knowledge* domain was utilised in the empirical literature review and findings, and by Ailabouni et al (2016) when referring to the knowledge that study participants had about deprescribing. These findings suggest that some barriers are easily mapped to the TDF, especially where the barrier explicitly mirrors the definitions of the TDF domains provided by Cane et al (2012). An example of this is "knowledge" being identified as a barrier, which is also a domain of the TDF. It is possible to map these barriers with little context.

There were several barriers which were identified through the collection, analysis and interpretation of the empirical interview data that were not identified in the empirical literature review, or by Scott et al (2020) or Ailabouni et al (2016). This highlights the necessity for this research, and the in-depth details captured by the empirical research which have not previously been described.

Some barriers were more difficult to map, and as a result there were disagreements between the four sources in how to map the barriers. In the empirical literature review and the empirical findings, factors about the resident which affected deprescribing (such as their health affecting their ability to communicate) were mapped to the *Environmental Context and Resources* domain, as such patients are a part of the environment of working in care homes. Scott et al (2019) had a similar barrier which was mapped to the same domain. However, Ailabouni et al (2016) mapped their barrier about the resident's lack of ability to communicate to the *Social Influences* domain. This was considered when mapping barriers in this literature review, but it was decided that because the resident was not influencing the prescriber through interpersonal processes that the *Social Influences* domain was not appropriate. This was an example of a barrier that is more difficult to map, and mapping such a barrier requires careful consideration of the definitions of the domains as provided by Cane et al (2012) and discussion with people experienced in using the TDF.

Ailabouni et al (2016) also mapped other barriers to the *Social Influences* domain, where *Environmental Context and Resources* were deemed more appropriate when mapping the findings from the empirical literature review and interviews. The *Environmental Context and Resources* domain refers to "any circumstance of a person's situation or environment" that affects their behaviour, while the *Social Influences* domain refers to interpersonal factors which affect behaviour (Cane et al, 2012). Ailabouni et al (2016) mapped their barrier "lack of adequate reimbursement, communication at points of healthcare transfer" to the *Social Influences* domain. These two factors, lack of reimbursement and communication at points of healthcare transfer, may be more suited to being separated. If separated, consideration should be given to whether reimbursement is a resource barrier, and therefore it would be

more appropriate to map it to the *Environmental Constraints* barrier. Reimbursement may refer simply to funding to provide a service, or recognition and reward for providing a service which may be more of a social barrier than a resource barrier. Communication at points of healthcare transfer may be a social influence, but there is insufficient context to justify it being mapped to this domain. In empirical research, such logistical barriers were included in the synthesised barrier "systemic barriers to communication" and mapped to the *Environmental Context and Resources* domain as the barrier was a result of the environment.

Beliefs about Consequences was an example of a domain which can be ambiguous in the context of deprescribing. For example, it is clear that a belief that deprescribing will result in adverse consequences is linked to the beliefs about Consequences domain. However, the word "fear" was often assigned to *Beliefs about Consequences*, which means the barrier would fit more suitably into the *Emotions* domain. In the empirical research, both domains were utilised – the *Emotions* domain for barriers which explicitly mentioned fear, and the *Beliefs about Consequences* domain for ones which did not. This was reflected by Scott et al (2019), who also utilised both domains in the same way. Ailabouni et al (2016) characterised all beliefs about negative consequences as a fear, and mapped this barrier to the *Emotions* domain. However, it is not clear whether prescribers were actually fearful of the consequences or whether this descriptor was attached by Ailabouni et al (2016). In addition to this, the original version of the TDF employed by Ailabouni et al (2016) does not include a *Beliefs about Consequences* domain which may have influenced their choice of words and mapping decisions.

Confidence is another barrier which can be ambiguous in the context of deprescribing. In the empirical literature review, confidence was mapped to *Beliefs about Capabilities*. *Beliefs about Capabilities* is referred to by Cane et al (2012) as

> *"acceptance of the truth, reality or validity about an ability, talent or facility that a person can put to constructive use".* (Cane et al, 2012)

This reflects a prescribers confidence and belief in their ability to deprescribe. This decision was also made by Scott et al (2020) and Ailabouni et al (2016). However, the depth of the findings provided by the empirical interviews showed that, in the empirical research, lack of confidence stemmed from a lack of knowledge. For this reason, the confidence barrier was mapped to the *Knowledge* domain.

Lack of evidence and guidance as a barrier to deprescribing was also treated differently. In the empirical research, both the literature review and findings, it was mapped to both the *Knowledge* and *Environmental Context and Resources* domain. This was because the availability of such evidence impacts upon the knowledge the healthcare professionals have of deprescribing, but its lack of availability is a systemic barrier rather than an individual

issue. This is because individuals are not responsible for producing systemic guidance. Ailabouni et al (2016) mapped the barrier to the *Knowledge* domain, whilst Scott et al (2019) mapped their barrier "treatment guidelines" to the social influence domain. There is a lack of context to explain why this barrier was mapped to the *Social Influences* domain which is defined by Cane et al (2012) as regarding interpersonal processes. It is unclear whether it is the most appropriate domain for this barrier.

The final barrier to be discussed is the influence of other prescribers, which in the empirical literature review was mapped to the *Social Influences* domain. This is because the influence of other prescribers was perceived to be due to the interpersonal factors that exist between prescribers. Ailabouni et al (2016) characterised "the reluctance to change medicines prescribed by a specialist" as an emotion and mapped it to the *Emotions* domain. Again, there is a lack of detail provided to determine whether this was an appropriate choice, as while reluctance could be classified as an emotion it would be useful to know why participants were reluctant to stop medicines started by a specialist. This may provide more insight into why GPs participating in Ailabouni et al's (2016) study were not willing to deprescribe medicines started by a specialist.

Table 47 is summarises the similarities and differences in how Scott et al (2019) and Ailabouni et al (2016) mapped barriers similar to those found in the empirical research and the literature review to the TDF.

Key: (L) synthesised barrier identified in the literature review

(E) synthesised barrier identified in the findings of the empirical interview data

Table 47: Comparison of TDF mapping for literature review and similar studies

Synthesised barrier identified in this thesis and the domain it was mapped to	Comparable Barrier identified by Scott et al (2019) and the domain it was mapped to	Comparable Barrier identified by Ailabouni et al (2016) and the domain it was mapped to
L+E Influence of the resident's health: *Environmental Context and Resources*	Artificial patient status (factors such as the patient having set mealtimes and their medicines managed by staff): *Environmental Context and Resources*	Patient's ability to communicate: *Social Influences*
L+E Opposition of others to deprescribing: *Social Influences*	Patient and carer attachment to medicines: *Social Influences*	Patient beliefs, ideas, concerns or preferences Involving family members or relatives Influence of nurses' suggestions: all mapped to *Social Influences*
L+E Negative beliefs about consequences: *Beliefs about Consequences*	Adverse outcomes for patients, practitioners and hospitals: *Beliefs about Consequences*	Fear of potential negative consequences of deprescribing: *Emotions*
L+E Emotions felt towards deprescribing: *Emotions*	Fear of consequences and assuming responsibility: E*motion*	Fear of potential negative consequences of deprescribing: *Emotions*
L+E Lack of funding: *Environmental Context and Resources*	Not covered	Lack of adequate reimbursement, communication at points of health care transfer: *Social Influences*

L+E Skill deficiencies: *Skills*	Not covered	Difficulty determining medicines to deprescribing, and appropriate timing of deprescribing: *Skills*
L+E Lack of evidence and guidance: knowledge, *Environmental Context and Resources*	Treatment guidelines: social influence	Uncertainty about the relevance of evidence-based guidelines to older people with multimorbidity Lack of guidelines relevant to deprescribing in older people with multimorbidity: both mapped to knowledge
L Confidence to deprescribe: *Beliefs about Capabilities* **E** Confidence to deprescribe: knowledge	Pharmacists lack confidence to make decisions: *Beliefs about Capabilities*	Not covered
L Lack of education and training: knowledge	Deprescribing education is poor: knowledge	Not covered
L Systemic barriers to communication: *Environmental Context and Resources*	Not covered	Lack of adequate reimbursement, communication at points of health care transfer: *Social Influences*
L Knowledge deficiencies of GPs, care home staff, residents and relatives: *Knowledge*	Not covered	GPs' knowledge about deprescribing: *Knowledge*
L Influence of other prescribers: *Social Influences*	Not covered	Reluctance to change medicines prescribed by a specialist: *Emotions*

E Healthcare professionals' perceptions of residents and relatives: *Social Influences*	Not covered	Patient beliefs, ideas, concerns or preferences: *Social Influences*
E Logistical barriers to communication: *Environmental Context and Resources*	Not covered	Accessibility of the residents or patients: *Environmental Constraints[4]*
E Prioritising deprescribing: intentions	Hospital's primary role is acute care: S*ocial/Professional Role and Identity* Deprescribing is not a hospital's priority: *Goals*	Competing factors and (time, rest home practices, other prescribers) decrease motivation to deprescribe: *Motivation and goals* Multiple competing demands of professional role: *Environmental Constraints*
E Lack of resources: *Environmental Context and Resources*	Incomplete medication history: *Environmental Context and Resources*	Access to clinical notes: *Environmental Constraints* Lack of decision support systems: *Environmental Constraints*
E Staffing issues: *Environmental Context and Resources*	Not covered	Not covered
E Setting goals of care: *Goals*	Not covered	Not covered
E The attitude of the GP towards care home work: *Social Influences*	Not covered	Not covered

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[4] Environmental Constraints and Motivation and Goals were domains in the original version of the TDF *(Michie et al, 2005)* and were replaced in the validated version *(Cane et a, 2012)*

E Avoidance of difficult discussions: *Social Influences*	Not covered	Not covered
E Uncertainty of roles: *Social/Professional Role and Identity*	Not covered	Not covered
E Navigating primary care systems: *Environmental Context and Resources*	Not covered	Not covered
E Barriers posed by regulatory and payment systems: *Environmental Context and Resources*	Not covered	Not covered
E Perceptions of pharmacists: *Social Influences*	Not covered	Not covered
E Knowledge deficiencies of care home staff: *Knowledge*	Not covered	Not covered

A further study which investigated behaviour change techniques and improving appropriate polypharmacy must be noted. Cadogan et al (2015) interviewed GPs and community pharmacists in the UK, utilising interview schedules informed by the TDF, regarding their perceptions of barriers and facilitators to prescribing and dispensing appropriate polypharmacy for older people in the UK (Michie et al, 2005; Cadogan et al, 2015). The qualitative findings were analysed deductively using the TDF, and then domains of the TDF were prioritised and mapped to Behaviour Change Techniques (Cadogan et al, 2015).

Whilst elements of Cadogan et al's (2015) study seem similar to the empirical work undertaken in this thesis, the findings are incomparable to the empirical findings. Firstly, Cadogan et al (2015) were investigating improving appropriate polypharmacy. This is not defined by the authors, but it is likely that improving appropriate polypharmacy may also include starting appropriate medicines, increasing and decreasing doses and monitoring medicines. Unlike Scott et al (2019) and Ailabouni et al (2016), whose findings were compared to the findings of the empirical research, Cadogan et al (2015) did not analyse their findings inductively and then map them to the TDF. The findings were analysed deductively using the TDF, and the findings were presented as domains of the TDF with a brief description of the factors assigned to that domain during the analysis. It was not appropriate to relate all these factors to deprescribing, as the study did not explicitly address this. Furthermore, there were some methodological inaccuracies. The original version of the TDF was utilised, and whilst justification was provided for this it was not compatible with the BCT mapping process. This is because the source utilised for mapping the TDF domains to BCTs was based on the validated version of the TDF. This means the results lack validity and are unsuitable for direct comparison with the findings of the empirical research.

5.4.3 Advantages and disadvantages of applying the TDF to this research

Mapping the findings of the empirical study to the TDF, and subsequent mapping exercises, was completed successfully. There were a few disagreements between the author and the member of the supervisory team that reviewed the work that required resolving through discussion. As the author was immersed in the data, the context required to make mapping decisions was present and all mapping decisions could be supported by reference to the empirical data. As such, it was easier to map the empirical findings to the TDF and subsequent frameworks than it was to map the findings of the literature review. This is because the depth and detail of the empirical findings allowed for the nuances of the data to be understood and accurately mapped.

There are multiple strengths associated with this method for identifying components of a behaviour change intervention. Utilising the systematic methodology described by Michie et al (2014) ensured that the behaviour was considered holistically, and that as many aspects of the behaviour possible were included. Any intervention developed as a result of this work will also be targeted at the barriers, and therefore behaviours, identified as future users of the intervention as key barriers to deprescribing in care homes. This has provided a complete, strong foundation for a behaviour change intervention, rooted in theory, which means that it is more likely to be successful (Medical Research Council, 2006; Michie et al, 2014).

However, whilst a behaviour change intervention may assist individual healthcare professionals to improve their deprescribing behaviour in care homes, it may not improve the communication difficulties which participants in the empirical interviews reported. The intervention functions which were identified using the prioritised domains of the TDF and which also fit the APEASE criteria – education, training and environmental restructuring - may not improve the social barriers to deprescribing as much as they may affect the knowledge related barriers to deprescribing. These intervention functions could be tailored to the social influences, for example through educating and training healthcare professionals about the needs and expectations of residents and relatives. Some healthcare professionals partaking in the empirical interviews also indicated that they did not believe they would benefit from education or training, and so they may not benefit from such an intervention. Whilst the APEASE criteria, applied throughout this chapter, accounted for the acceptability of the intervention, the intervention would need to be co-designed with residents, relatives, GPs, care home staff and pharmacists in order to ensure it was acceptable to all groups.

A further limitation is that this method of intervention development has focused on healthcare professionals, as the users of any potential intervention. However, it is important that residents, relatives and care home staff are also considered throughout the intervention development process. They would be involved in the design of any intervention, and they were involved in the preliminary work for this chapter by being interviewed for the empirical research. Perceptions healthcare professionals held of residents and relatives, and the validation or rejection of these perceptions by the residents and relatives interviewed, would also be considered during intervention design. The co-design of the intervention with residents, relatives and care home staff as well as healthcare professionals would be imperative to the intervention development process. The potential involvement of these groups is described in Chapter 6, section 6.6.2.

There are also criticisms of this method for designing an intervention. It is possible that Michie et al's (2014) design is incomplete, and did not include all relevant behaviour change frameworks. However, they describe a robust methodology and conducted a rigorous

systematic review in order to minimise the possibility of this (Michie et al 2014). Michie et al (2013) described the behaviour change technique taxonomy, the list of 93 behaviour change techniques utilised in step six (section 5.3.4), as a basic list which it was intended would be improved over time. However, no such improvement has been published. They also noted the lack of diversity in the Delphi group (Michie et al, 2013). This may mean that the behaviour change taxonomy utilised lacks depth and is not sufficiently sophisticated to inform the development of a behaviour change intervention. However, the process undertaken in this thesis represents only the beginning of the development of a behaviour change intervention, and any intervention would be developed in the wider context of the setting, in conjunction with the people who would be using it and the people who would be affected by it.

5.4.4 Summary

This chapter utilised the BCW, TDF and COM-B models to identify candidate components of a behaviour change intervention to facilitate deprescribing in care homes. It was identified that a behaviour change intervention should target training, education and smaller scale physical and social environment changes. The BCTs which would comprise the intervention should include demonstration and instruction on how to perform the behaviour, feedback on outcomes of the behaviour, prompts and information about social, environmental and health consequences. The intervention could be delivered face-to-face or by distance, and would be supported by guidance, communication and marketing.

The final chapter is the discussion, which brings all aspects of the thesis together and describes its findings, impact and importance.

Chapter 6 Discussion and Conclusions

6.1 Introduction

This final chapter, discussion and conclusions, brings together the previous chapters to contextualise the findings in the literature, policy and current practice. The chapter includes a summary of the thesis, followed by contextualisation of the findings of the empirical work undertaken. These are presented under four headings:

- Disjointed structures and systems of working across health and care contexts
- The unique context of care homes
- Ensuring shared decision-making
- Promoting medicine optimisation by addressing behaviour change

Finally, the strengths and limitations of the work undertaken, implications for policy and practice, how the research adds to the body of knowledge and a reflective account of the personal impact of the work are presented.

This thesis was undertaken to address the following aim and objectives:

Aim

To investigate the barriers and facilitators to deprescribing for older people living in care homes.

Objectives

- To examine the existing evidence of barriers and facilitators to deprescribing unnecessary medicines for older people living in care homes
- To investigate how the deprescribing process happens in care homes, including the roles and responsibilities of those involved
- To explore how older people living in care homes, and their relatives, perceive their medicines (or medicines taken by the resident) and their attitudes to deprescribing
- To explore the attitudes of healthcare professionals and care home staff towards deprescribing in care homes, including identification of perceived barriers and facilitators to deprescribing.
- To use the evidence and findings to identify behaviour change techniques that may inform the development of a novel intervention.

6.1.1 Overview of the thesis

There is evidence that older people in care homes are prescribed inappropriate medicines (Shah et al, 2013; Stafford et al, 2011). Taking inappropriate medicines can lead to an

increased risk of a care home resident experiencing side effects, falls, hospital admissions and drug interactions, all of which can negatively affect a resident's quality of life (Masnoon et al, 2017). This thesis sought to address this important problem, investigate why older people in care homes are prescribed inappropriate medicines, and what the barriers are to stopping these medicines. This is important, as reducing the inappropriate medicines prescribed for care home residents may improve their care, outcomes and quality of life and potentially save the NHS millions of pounds (Royal Pharmaceutical Society, 2016).

Firstly, it was necessary to understand the work already undertaken in this area, which was addressed by the literature review (Chapter 2). The literature review revealed nine studies had been conducted investigating deprescribing in care homes, and four systematic reviews which were relevant to the topic (Ailabouni et al, 2016; Turner et al, 2016; Azermai et al, 2013; Ellis et al, 2014; Mavrodaris et al, 2013; Harriman et al, 2014; Kalogianis et al, 2015; Palagyi et al, 2016; Simmons et al, 2017; Reeve et al, 2013; Anderson et al, 2014; Lundby et al, 2019; Bokhof and Junius-Walker, 2016). The systematic reviews were utilised to contextualise the findings, but none were specific to the care home setting and instead focussed on patients, prescribers and older people. The literature review revealed numerous barriers to deprescribing in care homes, for example lack of evidence and guidance, knowledge deficiencies and lack of resources such as staff and time. However, the findings of the literature review lacked the depth and detail for truly accurate mapping to the TDF, and only one study was conducted in the UK. These deficiencies provided the focus for the work conducted for this thesis, which sought to gain an in depth understanding of the barriers and facilitators to deprescribing in care homes in the UK. This understanding would be utilised define the components, such as behaviour change techniques and delivery mechanisms, that could be incorporated into a novel behaviour change intervention to facilitate deprescribing in the care home setting.

The theoretical underpinning for the thesis was the TDF, which provided a "lens" for the study. The TDF was utilised because it is a composite framework of factors which influence behaviour (Cane et al, 2012; Francis et al, 2012). It can be utilised in combination with other frameworks and mapping devices, such as the COM-B and Behaviour Change Wheel, to identify behaviours that require change and ways in which they may be changed. There is also extensive experience with using the TDF to investigate behaviours in healthcare, including prescribing and deprescribing. This provided a foundation of support for using the TDF in the work conducted for this thesis.

To conduct the study, a range of stakeholders were interviewed. Care home residents and their relatives were interviewed, alongside GPs, care home staff and primary care pharmacists. The findings were analysed using framework analysis and interpreted through three themes:

- "There's more stakeholders than you might have with a regular, average patient" the roles, beliefs and knowledge of the individuals involved in deprescribing in care homes.
- Perceptions of others and difficult conversations: social barriers and facilitators to deprescribing in care homes.
- Working together, navigating systems: logistical barriers and facilitators to deprescribing in care homes

These themes reflect those factors related to the individuals involved in deprescribing, and those related to the interaction between these individuals and the individuals and their environment. This included barriers such as knowledge deficiencies, beliefs about consequences, navigating healthcare systems and social barriers. The findings of this thesis provided an in-depth understanding of the barriers present in the UK, such as those presented by navigating primary care systems. It also provided more insight of the social influences which affect deprescribing behaviour, such as perceptions that healthcare professionals have of residents and relatives and their avoidance of conversations they perceive to be difficult.

The findings were then used to identify the potential components of a deprescribing behaviour change intervention for use in care homes. This identified that, broadly, education, training and environmental restructuring are key areas for intervention development in this field. Furthermore, it identified that Behaviour Change Techniques such as demonstrating the behaviour, the provision of prompts and feedback may be successful, as would supporting these Techniques through guidance. This final chapter summarises the work presented in this thesis, comparing the findings with existing literature and placing it in the current contexts of policy and practice.

6.1.2 Key findings from the empirical work

When investigating the roles of the key stakeholders interviewed for the empirical interviews, it was clear that GPs had the most clearly defined and well understood role as the prescriber with responsibility for the resident's medicines. There was uncertainty about what the role of pharmacists was and whether they needed to be in independent prescribers, and some residents and relatives were unsure that pharmacists had the knowledge to perform a role in deprescribing. The role of care home staff in deprescribing was limited to being a messenger, as some they were perceived by themselves and others to lack the clinical knowledge to have more responsibility in the deprescribing process. Relatives understood their role as the resident's advocate and perceived it as difficult to enact; difficulties which were not appreciated by other participants. Residents were not acknowledged by themselves or others to have a clear role in the deprescribing process, despite it being their medicines at the centre of the deprescribing conversation.

When discussing the barriers to deprescribing, GPs and pharmacists did not perceive their own lack of knowledge to be a major barrier. Instead, any knowledge deficiency was believed to be due to the lack of evidence and guidance available to assist and support deprescribing decision-making. This was perceived as a systemic barrier to deprescribing rather than an individual barrier arising from a personal lack of knowledge. Emphasis was also placed on systemic barriers such as a lack of time, staff and their high workload. The current provision of GP and primary care services to the majority of care homes was not believed to be conducive to deprescribing. Instead, health and social care systems were perceived as difficult to navigate, with GPs, pharmacists and pharmacists reporting difficulties in locating and communicating with the person they wished to speak to. This extended further to hospital specialists and relatives.

Care home residents and their relatives generally lacked knowledge about medicines and were content to agree with the healthcare professional when deprescribing decisions were being made. Those with more knowledge of their medicines were more challenging of deprescribing decisions. A major difference between GPs and pharmacists and residents were that residents generally believed all their medicines were beneficial. GPs and pharmacists, however, acknowledged that the opposite was true and that there were residents in their care taking inappropriate medicines.

It was important for all stakeholders to maintain effective working relationships between each other. However, the relationships between the resident and the healthcare professional and the relative and healthcare professional were of particular importance. The resident often displayed a great deal of trust in the GP and relied on them to make the correct decisions about their medicines. GPs and care home staff were often viewed as an authority figure to be obeyed, rather than someone with whom to engage in decision-making. Meanwhile, relatives who wished to be involved in the resident's care and were challenging of prescribing decisions were viewed negatively by healthcare professionals.

There was evidence that beliefs about the potential negative consequences of deprescribing may deter participants from deprescribing. However, healthcare professionals often noted positive consequences of deprescribing which led them to believe that deprescribing can be beneficial for residents. Residents and relatives were, on the other hand, generally unaware of the potential positive consequences of deprescribing, and many residents were unconcerned about any consequences of deprescribing at all.

Healthcare professionals acknowledged the importance of discussing life expectancy and quality versus quantity of life when deprescribing for older people, such as those living in care homes. However, this link was not apparent to residents and relatives and most were unwilling to think about a future where the resident may be unwell and need changes to their medicines. This gave rise to conversations perceived by healthcare professionals as

"difficult" which were consequently avoided; however, these conversations are potentially important facilitators of deprescribing.

The following sections (6.2-6.6) contextualise the findings with existing literature, policies and practices in the UK.

6.2 Disjointed structures and systems of working across health and care contexts

A predominance of barriers to deprescribing in care homes identified in both the empirical research and the literature review were focussed on the structure of health and social care systems. The findings of the literature review described how health and social care systems in other countries such as Australia acted as a barrier to deprescribing, for example GPs in Australia perceive care home work to be inadequately reimbursed to be desirable (Palagyi et al, 2016). The empirical work identified that the way that health and social care systems are structured in the UK affects the ability of GPs and pharmacists to deprescribe in care homes. This also complicated communication between care homes, GPs and other healthcare professionals. Few GPs reported protected time to visit or review care home residents, meaning that they believed they were unable to prioritise deprescribing for residents.

6.2.1 Reactive vs proactive care

Many of the barriers to deprescribing identified in Chapter 4 related to the structure of the health and social care system in the UK. Despite there being more beds in care homes than there are in the NHS (Age UK, 2019, Anandaciva et al, 2020), care homes are currently on the periphery of the health and social care system. Many of the 400,000 people who live in care homes in the UK have complex medical histories, and yet there is no structured way to provide routine GP care to the residents who live there (Gordon et al, 2014; Barber et al, 2009). This empirical research and the literature review identified that GP care is often provided to residents on a reactive, rather than proactive, basis (Harriman et al, 2014). This was also identified in the Care home staff and GPs partaking in this study reported that they mainly saw care home residents when the resident was experiencing an acute issue. Once the issue had been dealt with, it was unlikely the GP would consult with the resident again unless they were to experience another problem. This is an example of reactive care, which is a barrier to proactive deprescribing (Wright et al, 2015). Proactive deprescribing would involve the healthcare professional reviewing a resident's medicine before any problems occurred and stopping any potentially inappropriate medicines before they cause the resident harm (Wright et al, 2015).

Providing care reactively rather than proactively can be problematic, as dealing with problems as they arise rather than preventing them through proactive care can cause harm

to the patient and be more costly (Royal Pharmaceutical Society, 2016). The medical intervention required when a resident experiences a fall or adverse drug reaction is also potentially more costly to the NHS than a medicines review; the RPS estimated that £75 million could be saved through reduced hospital admissions as a result of medicines optimisation (Royal Pharmaceutical Society, 2016). Over recent years, one of the goals of the NHS has been to focus on prevention of illness through, for example, supporting people to live healthier lifestyles and screening programmes aimed at identifying at risk groups (NHS 2019). Proactive deprescribing is an example of preventative care, as stopping unnecessary medicines can reduce the risk of future harm to a resident (Royal Pharmaceutical Society, 2016).

There is evidence that it is not only in care homes in the UK where deprescribing occurs reactively instead of proactively. Scott et al (2018) showed that 16 % of deprescribing conducted in a UK hospital was proactive, and 84% was reactive. While there are no similar statistics for care homes, Scott et al's findings are evidence of a larger problem and one faced by healthcare professionals across settings. A possible reason for this is that GPs and hospital doctors do not prioritise deprescribing. This could be due to perceived limited opportunity to deprescribe, or a lack of motivation to deprescribe; the evidence suggests that the former is the primary reason for a lack of deprescribing (Palagyi et al, 2016; Scott et al; 2018, Turner et al, 2016).

Whilst there have been multiple resources produced outlining the risks of polypharmacy and the benefits of medicines optimisation, the findings from the empirical work provided evidence that GPs believed they were not currently able to proactively deprescribe and that medicines reviews were lacking (Scottish Government Polypharmacy Model of Care Group, 2018; Royal Pharmaceutical Society, 2020). Steps have been taken to address this recently, with pharmacists being employed by GP practices and CCGs to undertake medicine reviews and recommend how medicines may be optimised. However, healthcare professionals who participated in this study believed that there were still many care home residents whose medicines were not reviewed, and who may be taking inappropriate medicines.

The findings of the empirical work presented in Chapter 4 suggested that routine, proactive deprescribing was not a priority for GPs who did not have protected time to conduct this activity. The literature review did not identify prioritisation specifically as a barrier to deprescribing, but time was a frequently identified barrier to deprescribing. Indeed, the participants interviewed for this thesis did not explicitly state that they did not prioritise deprescribing. Instead, this was identified from data where GPs described their high workload and lack of time. In this way, GPs identified that other tasks were more important or urgent than proactive deprescribing for care home residents. Time was a barrier to

deprescribing that was referred to by every healthcare professional who participated in the empirical work, and it was identified by healthcare professionals in the literature review (Ailabouni et al, 2016; Ellis et al, 2014; Palagyi et al, 2016).

It is hard to determine what the barrier "lack of time" means in reality. It has been identified that people often believe that external factors affect their behaviour more than intrinsic factors (Duncan et al, 2012). In this way, stating that a lack of time is influencing behaviour is convenient, socially acceptable and supported by the description of other tasks which require completing. However, an internal factor that may explain why lack of time is a barrier is that prescribers may not feel comfortable admitting that they do not prioritise deprescribing. This may be because they believe they should be deprescribing to reduce the prevalence of inappropriate prescribing, but they are not enacting this behaviour. The empirical research demonstrated that all healthcare professionals believed there were residents in their care taking unnecessary medicines and attached feelings such as shame to this fact. They also acknowledged that deprescribing was a useful way to reduce the inappropriate medicines taken by care home residents. However, it was the perception of healthcare professionals that this was due to external factors influencing their behaviour, rather than anything they could change themselves.

6.2.2 The provision of GP services to care homes

A common, shared issue for care home staff, GPs and pharmacists was that the GP care provided to care homes was uncoordinated and complex. One member of care home staff described having to deal with five GP surgeries to provide care to her residents, each of which had different systems to navigate. This was a problem for care home staff who found it difficult to communicate with the GP they wanted to, and it was also a problem for pharmacists employed by the CCG to provide medicine services to care homes. CCG-employed pharmacists reported visiting care homes to review the medicines of all residents, and then having to liaise with multiple GP practices to implement their deprescribing recommendations. Both pharmacists and care home staff found this time consuming, and reported that it prevented them from building relationships with GPs which they believed would facilitate deprescribing.

GPs who did not have the protected, and/or funded, time to provide this service were unable to prioritise the routine review of care home residents, instead reporting that this was most likely to happen annually. In this way, they felt they were only able to offer reactive care to care homes rather than the potentially more beneficial proactive care. Given the limited life expectancy of care home residents and the complexity of their medical history, annual reviews may not be sufficiently frequent. It is possible that the change in primary care provision to care homes, facilitated by PCNs and outlined above, could facilitate deprescribing in care homes.

In contrast, care home staff, pharmacists and GPs who had worked in care homes where a single, named GP took responsibility for all care home residents reported satisfaction with this system. The GP visited on a set day each week, and non-urgent tasks were saved by care home staff for the GP's visit. The GP knew the care home residents and staff well and had the opportunity to review medicines regularly. Both care home residents and staff believed that this facilitated consultations with the GP, and there was a lot of praise for the system. However, this care home was in the minority because residents currently choose their care home and their GP. This system will be introduced in 2020 as part of the enhanced health in care homes Direct Enhanced Service by Primary Care Networks across England, as described in Chapter 1 section 1.3.4 (Primary Care Strategy and NHS Contracts Team, 2019).

There are also potential disadvantages to this system. In order for the system to work, residents would have to move from their current GP practice to a new one. However, healthcare professionals participating in the interviews reported in Chapter 4 stated that medical records could be inaccessible for the new care team when a resident moved to a new practice, and that this was a barrier to deprescribing. Residents may not want to move to a different GP practice, as moving to a new care home may also end long-standing doctor-resident/relative relationships, and require residents and relatives to build new relationships with healthcare professionals. New relationships may take time to establish, and successful relationships between the resident, relative and healthcare professionals were identified as key to the deprescribing process by the empirical research. The time taken to build a new relationship could act as a further barrier to deprescribing.

Pharmacists employed by CCGs to provide medicine reviews to care homes had more time than GPs to conduct reviews, as reviewing care home residents was the main part of their workload. However, they felt they did not have the resources to review the required number of residents due to their large workload and reported only being able to review a small proportion of care home residents. Pharmacists called for more resource, such as pharmacy technicians and additional pharmacists, to assist them. This was, in part, addressed by the NHS England Medicines Optimisation in Care Homes initiative that provided funding for 350 new pharmacy roles in care homes, to relieve the burden on current staff and potentially aid the deprescribing process in care homes (Baqir and Joshua, 2018/). It will also be addressed by the multi-disciplinary team allocated by the PCN who will be providing care to care homes.

6.2.3 1.1.1 A standard approach to deprescribing

In addition to there being no standard approach to the provision of GP care to care homes, there was reported to be no standard approach to deprescribing. Each pharmacist and GP

interviewed described how they would review the medicines of care home residents with a view to deprescribing. However, they rarely reported using a specific framework, guidance or evidence to deprescribe and the approach described was variable across the participants. This may risk important parts of the process being omitted or not considered by some practitioners.

One GP described how doctors are taught how to prescribe, and there were significant resources available to support prescribing. However, there was not the same support available to assist with deprescribing decisions and deprescribing was reported not to be a skill that was taught in the same way as prescribing. Several interventions aimed at optimising medicines, including deprescribing, in care homes have been developed and tested (Kua et al, 2018). Whilst deprescribing is most often enacted through medicine review, there is no standardised way of providing medicine reviews to care homes. This finding was reported by the empirical findings, which also supports the fact that none of the tools or interventions developed have experienced systemic uptake into practice supported by frequent and widespread use by healthcare professionals.

The STOPP criteria has experienced some uptake into practice, as it has been incorporated into the GP Electronic Health Record as reported by a pharmacist participant in the interviews. However, knowledge of it was not widespread and some participants claimed it was too time consuming to use. Therefore, participants preferred to utilise their experience and knowledge of medicines to deprescribe, rather than assistive tools such as STOPP/START. The STOPP criteria is an explicit tool consisting of a list of medicines that may be inappropriate for older people, and that can therefore assist healthcare professionals to deprescribe for this cohort (Curtin et al, 2019; O'Mahony et al, 2014). It is accompanied by the START tool, which is a list of medicines which it may be appropriate to start in older people. Multiple studies have applied the STOPP criteria to the medicines of care home residents, and all of them reported that it resulted in a reduction in the number of medicines deemed inappropriate by the criteria medicines prescribed in this setting. (Curtin et al, 2019, original paper 2015). Other tools were rarely mentioned by participants in the empirical research.

The Beers criteria is a similar tool to STOPP/START, in that it is a list of medicines that healthcare professionals may consider deprescribing in older people (Poudel et al, 2013). However, it has been criticised for being less applicable in the UK than it is in the US, where the tool originated, as it features multiple medicines which are not licensed for use in the UK. This may be why it was not reported as a widely used tool by participants in the empirical research. Several deprescribing frameworks have also been developed that aim to guide healthcare professionals through the deprescribing process (Woodward, 2003, Scott et al,

2015; Todd et al, 2018). Whilst none of these are specific to care homes, many facets of the process are the same and Todd et al's (2018) focuses on older people.

The first deprescribing framework was published by Woodward in 2003 (Woodward, 2003; Alldred 2014) and proposed deprescribing as a process that could improve the poor outcomes related to polypharmacy in older people, such as adverse events and hospital admissions. It was suggested deprescribing was a five part process, and that the patient and their relatives/carers should be consulted throughout (Woodward et al 2003):

1. Review all current medicines

2. Identify medicines to be targeted for deprescribing

3. Plan a deprescribing regimen

4. Plan in partnership with patient and carers

5. Frequent review and support

As evidence for deprescribing has increased in volume and quality since 2003, further deprescribing guidelines have been developed and published such as that published by Scott et al (2015). Their five step process is more comprehensive than the one proposed by Woodward (2003), although its focus is not older people or the care home population. The five step process included by Scott et al (2015) included:

1. Ascertain all medicines the patient is taking, and the indications for each one

2. Consider factors such as number of medicines, number of high risk medicines, the patient's age co-morbidities and adherence to medicines

3. Assess each medicine for its eligibility to be discontinued, considering multiple medicine and patient factors some of which are present in flow chart in Figure 18 below.

4. Prioritise medicines for discontinuation, also using the flow chart in Figure 18 below.

5. Implement and monitor deprescribing regimen.
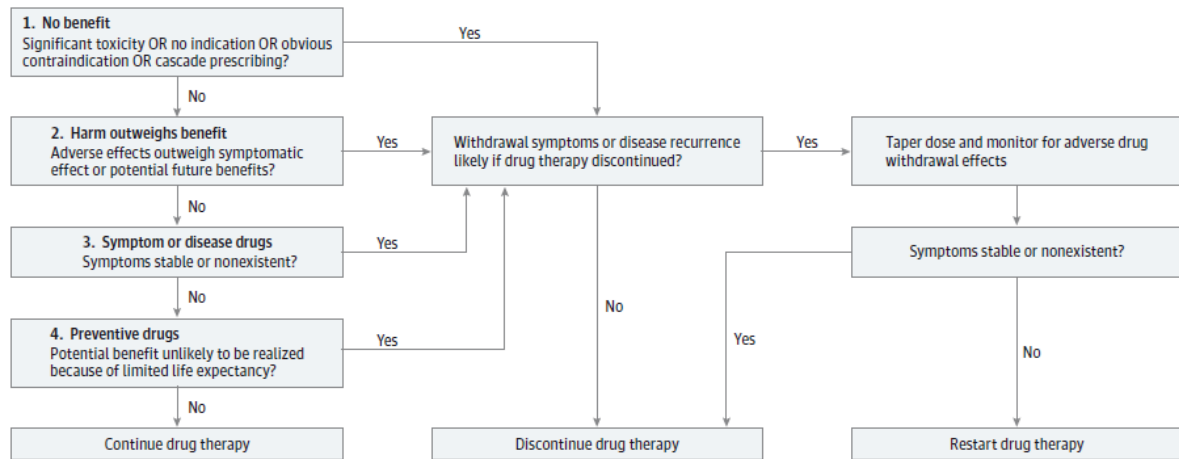
Figure 18: The deprescribing framework proposed by Scott et al (2015)

Scott et al (2015) highlighted the importance of considering both the medicine and the patient at each stage in the deprescribing process.

A further framework designed to ensure that the deprescribing process is patient-centred was published by Todd et al (2018), and this framework focuses on older people. The "deprescribing rainbow" highlights five key points that healthcare professionals should consider during the deprescribing process to ensure that the older patient's beliefs, values and concerns are accounted for.

Todd et al (2018) indicated a range of aspects that fall under each of the factors present in the rainbow with consideration of these factors ensuring a holistic approach to deprescribing, and that the patient is involved to the extent that they wish to be involved. The deprescribing rainbow reflects many of the factors of deprescribing considered important by the participants of the empirical research, for example: the impact of social influence on deprescribing behaviour, the importance of considering the patient's health beliefs and attitudes and the necessity for consideration of the benefits and harms of medicines. Some examples of the factors identified by Todd et al (2018) are presented in Table 48 below:

Table 48: Examples of factors to be considered by utilising the deprescribing rainbow (Todd et al, 2018)

Factors identified as important by the deprescribing rainbow (Todd et al, 2018)	Examples of aspects to be considered within these factors (Todd et al, 2018)
Clinical	Benefits and harms of medicines, available evidence, knowledge of the healthcare professional
Psychological	Health beliefs and attitudes, personal preferences for health outcomes and level of involvement, health literacy
Social	Influence of family and friends, medicine burden
Financial	Cost of medicines/health insurance
Physical	Management of medicines, swallowing difficulties, overall health

Many of the aspects present in these frameworks were referred to by participants, who each described their own deprescribing process. A standardised process of deprescribing for care home residents, followed by healthcare professionals when considering deprescribing in care homes, would help to ensure that all important patient and medicine factors involved in deprescribing had been considered. This could perhaps be developed as part of an intervention, and/or issued as guidance to healthcare professionals. This would ensure a consistent approach to deprescribing, that the resident and relative were appropriately involved in the process, and that no important factors were omitted.

6.3 The unique context of care homes

The fact that provision of GP care to care homes is inconsistent is problematic because care home residents are complex and vulnerable due to their age, medical conditions and medicines (Barber et al, 2009). Caring for residents involves balancing multiple health conditions and their treatments with the advanced age of the resident, as well as the wishes of the resident and their relatives. With respect to deprescribing, care home staff are also often involved as a messenger and patient advocate creating a complex and unique context to the deprescribing process compared with community dwelling patients. Therefore, there

are additional barriers to deprescribing in care homes that are not present for patients who live in their own homes. The barriers that will be explored in this section are:

- Care home residents are generally complex, multimorbid patients, who are prescribed multiple medicines (polypharmacy)
- Discussing deprescribing and the future of medicines use involves confronting the resident's relatively limited life span, which residents, their relatives and healthcare professionals may be reluctant to do.
- Deprescribing in care homes requires effective communication between multiple people, including relatives and care home staff, which adds extra layers of communication that complicates the process. The involvement of multiple people in the deprescribing process is not only complicated by the logistics of communicating with so many people, but by the feelings and attitudes of those involved

6.3.1 Complex patients

Care home residents in the UK are prescribed an average of 8-10 medicines daily, usually for multiple health conditions (Barber et al, 2009). In the empirical research, residents participating were prescribed a mean of 9.7 medicines daily (range 2-15). They are also generally very elderly, with participants in Barber et al's (2009) study and the study in this thesis having a mean age of 85 years old (the empirical work: a mean of 85 years old, range 74-98 years old, SD 7). As noted earlier, this means that they are more prone to experiencing adverse effects from their medicines, including adverse drug reactions, effects from drug interactions, falls and hospitalisation (Barber et al 2009, Fried et al 2011). It was reported by Shah et al (2013) that the number of medicine classes a resident was prescribed impacted their mortality with an adjusted hazard ratio of one year mortality for residents prescribed 11 or more medicines compared to 0-2 medicines of 1.59 (95%CI 1.26-2.00), indicating that mortality may be improved by reducing the number of medicines prescribed. However, this is confounded by the fact that people who take more medicines are more ill, and care home residents are in the last years of their life and may have died regardless of the intervention.

As described in Chapter 1, these patients provide a unique challenge for prescribers, as in addition to their multimorbidities there are age-related changes which affect the medicines they are prescribed (Klotz, 2009). For example, declines in renal function may affect the elimination of medicines and changes in hepatic function may affect the way medicines are metabolised (Koltz, 2009). However, there is a lack of evidence about medicine use in older people, as older people are usually excluded from clinical trials, and guidelines do not generally cater for multimorbid patients (Mooijart et al, 2015). Therefore, as reported in the literature review, prescribers can find it challenging to determine the merit of a medicine which may dissuade them from deprescribing it (Anderson et al 2014). This finding was also

described in the interviews conducted in Chapter 4, as uncertainties about the clinical consequences of stopping or continuing medicines contributed to reluctance to deprescribe for some GPs and pharmacists. Many GPs and pharmacists also wished for more evidence and guidance to assist with deprescribing in older people, which was a feature in the empirical research and in the wider literature.

In the UK, patients are treated using disease-specific clinical guidance, and the more diseases they have, the more guidance-based treatments they may be prescribed (Okeowo et al, 2018). Some prescribers feel compelled to continue to follow this guidance, even when the patient may not be suitable for guideline-based treatment (Okeowo et al, 2018). Okeowo et al (2018) suggested that prescribers may follow potentially inappropriate guidance due to a fear of litigation, or to ensure that guideline-related payment targets were met. This can lead to patients accumulating medicines which may no longer be appropriate for them, and there is evidence that prescribers have difficulty in identifying which medicines are inappropriate (Ramaswamy et al, 2011, Anderson et al, 2014). There is little guidance for multimorbid patients, and guidance does not include how to optimise medicines when the patient is older and approaching end of life (Fried et al, 2011, Todd and Holmes 2016). These issues were also identified in this thesis, as it was found that prescribers were uncertain about which medicines were appropriate to stop. This reluctance to stop medicines with an uncertain risk-benefit profile was coined by Harriman et al (2014) as "if it ain't broke, don't fix it".

The lack of evidence and guidance as a barrier to deprescribing in care homes was also identified in the literature review (Chapter 2). This suggested that it was a prominent barrier to deprescribing in care homes, experienced by healthcare professionals across the world. It was felt by participants in the interviews conducted that deficiencies in their knowledge was a systematic problem due to a lack of evidence and guidance, and not a personal deficiency. This was reflected in the finding that some healthcare participants who participated in the empirical research did not think that they would benefit from deprescribing training. In order to investigate this, an in-depth investigation into the knowledge and skills required to deprescribe and how they are gained would need to be undertaken.

In the literature review, Palagyi et al (2016) also identified that healthcare professional's confidence was a factor for deprescribing in care homes, although there was little detail provided about how healthcare professionals gained confidence to deprescribe. Anderson et al (2014) identified confidence was a factor in deprescribing generally, reporting that prescribers required confidence to deviate from guidance and to identify medicines to stop. The findings from the empirical work in this thesis demonstrated that lack of confidence to deprescribe a medicine was caused by a lack of knowledge of the medicine in question. When mapping this to the TDF, a lack of confidence at first appeared to be a belief about a

prescriber's capability. However, this empirical work showed it was in fact an issue around knowledge, and a lack of knowledge was at the root of a lack of confidence. This was an example of the value of the empirical work in this thesis, and the extra insight it provided.

Improving the knowledge or access to knowledge of healthcare professionals about medicines could therefore increase their confidence to deprescribe. Healthcare professionals interviewed for the empirical research indicated that their knowledge of the risks and benefits of medicines, or how and when to stop some medicines such as those for dementia, would facilitate deprescribing in care homes. The alternative to the systemic production of evidence and guidance is improving the skills and knowledge of healthcare professionals, thus enabling them to make improved use of the available information. Improving the knowledge of healthcare professionals about the potential consequences of deprescribing, both positive and negative, and how to minimise the negative consequences may facilitate deprescribing. However, it may also dissuade them from deprescribing if it confirms their fears about negative consequences. Similarly, training healthcare professionals to consider the indication and impact of each medicine taken by a resident and increasing awareness of the potential benefits of deprescribing may also help. Healthcare professionals also reported that they preferred to learn through conversation with colleagues. Facilitating the sharing of information and experience between healthcare professionals may also increase confidence to deprescribe.

Residents were reported in the empirical findings and in the literature review to lack knowledge of their medicines; however, the empirical findings also identified that residents were willing to learn about their medicines. This was not perceived by healthcare professionals, who believed that residents were not interested in their medicines, a finding corroborated by the literature (Palagyi et al, 2016). Engaging residents in their medicines may encourage them to engage in conversations about deprescribing with healthcare professionals and care home staff, and also reverse the perceptions of healthcare professionals. This could be achieved through the training of care home staff to enable them to provide some information to residents about their medicines, or through healthcare professionals visiting the home to talk about medicines

6.3.2 The implications of a limited life expectancy

A further complexity with care home residents is that they have a limited life expectancy, as they are entering the last stage of their life (Davies and Nolan, 2005). In 2011, it was reported that care home residents live an average of 26 months in a care home before dying (Forder and Fernandez, 2011). This stage may last years – care home residents are not necessarily living with a life limiting disease, but their advanced age means that they have a limited life expectancy. This must be taken account of by prescribers who are considering deprescribing and assessing the risks and benefits of medicines, particularly medicines

prescribed to prevent future illnesses. However, there is evidence that although prescribers acknowledge that care home residents are entering the last stage of their life, they are reluctant to approach this topic with care home residents and their relatives (Travis et al 2002, Schuling et al 2012). The poor planning of end of life care, as well as difficulties associated with discussing a resident's limited life expectancy with the resident and their relatives with regard to medicines was identified as a barrier to deprescribing in care homes in the empirical research (Chapter 4).

The findings of the empirical study presented in Chapter 4 demonstrated that healthcare professionals believed considering the remaining length and quality of a resident's life was part of considering the risks and benefits of continuing a medicine. However, healthcare professionals perceived this as a difficult conversation to have with residents and relatives. This is because residents and relatives were not perceived to understand that medicines may have a limited benefit in older people and would instead consider the healthcare professional to be "giving up" on the resident. This would make a conversation about deprescribing time consuming, due to a need to address the topic sensitively, explain the risks and benefits of medicines in older people and provide adequate reassurance. The healthcare professional also risks upsetting the resident or relative, and they may wish to avoid this. Some healthcare professionals partaking in the empirical research also spoke of a concern of complaints and litigation resulting from deprescribing decisions and discussion.

Indeed, residents and relatives who participated in the interviews had rarely considered how they might feel about medicines as the resident got older, and some were reluctant to consider this at all. It was perhaps unsurprising that residents and relatives did not want to think about a time when the resident was more unwell or had died. However, the reluctance to discuss this was perceived by healthcare professionals to make deprescribing in this setting more difficult than with other patients. Palagyi et al (2016) et al discovered similar findings to this study, with their finding that relatives and GPs had different goals of care and ideas about the care home setting (Chapter 2, section 2.7).

Schuling et al (2012) provided more insight into the views of Dutch GPs on discussing life expectancy with older people and their relatives, reporting that some GPs avoided discussing life expectancy with older patients. They avoided such conversations, although they considered that this was a part of the deprescribing process (Schuling et al, 2012). Some of the GPs interviewed by Schuling et al (2012) even went as far as describing discussing life expectancy "unethical", although it was acknowledged that some patients were aware of their relatively limited life expectancy and were comfortable discussing it. Despite the fact that it was described as a sensitive topic to approach, some GPs noted that speaking about life expectancy strengthened their relationship with the patient (Schuling et al, 2012). Travis et al (2002) noted similar communication problems, suggesting that doctors

may not want to deliver bad news, especially over the telephone which is how many doctors and relatives of care home residents communicate. Unwillingness to discuss this sensitive topic acts as a barrier to the deprescribing process.

Despite a limited life expectancy being described as a barrier to deprescribing, it can also be a facilitator to the process. In the literature review, Anderson et al (2014) mirrored the findings of the empirical work presented in Chapter 4 and reported that a diagnosis of a terminal illness made the goals of a patient's care clearer, and thus meant that it was easier to make deprescribing decisions. For example, a diagnosis of a terminal illness meant that medicines prescribed to prevent disease in the future are more likely to be identified as inappropriate, while medicines which provide symptom relief to the patient are likely to be continued. This is an example of reactive deprescribing, already discussed in section 6.2.1. The fact that healthcare professionals are more comfortable with reactive deprescribing in response to a terminal diagnosis suggests that it is a lack of certainty about the resident's future quality and quantity of life that is a barrier to deprescribing. Once a terminal diagnosis is received the deprescribing process is more approachable (Todd and Holmes, 2016).

In order to overcome this barrier, a culture change is needed. As a society, there is a perception that we are generally not comfortable with speaking about death or our remaining life expectancy (Kirshbaum et al, 2011). This was reflected in the findings of the empirical work, as participants were reluctant to discuss this topic. However, in order to have a good remaining quality of life, a degree of planning is required. Some care home staff and healthcare professionals expressed frustration that this was not often considered and there are few plans in place for if a resident becomes more unwell. Only one of the residents and relatives interviewed spoke about plans made for a resident's future through the form of a living will, which they found helpful. If this barrier is to be overcome, sensitive planning for end of life and the use of medicines in those with a limited life expectancy would need to become more commonplace, and healthcare professionals and care home staff would need to be comfortable in discussing this sensitively and professionally.

6.3.3 Involving relatives in deprescribing

While relatives generally wanted to be involved in decisions about the resident's care, this study provided evidence that they were sometimes excluded from this by care home staff, and therefore by GPs as well. Despite wishing to be involved in the deprescribing process, relatives of older people reported finding it challenging to make decisions for others, and found being involved in the deprescribing process on behalf of the resident to be a burden – a finding which was corroborated by Reeve et al (2016). These difficulties involved the logistics involved in collating the views of multiple people and the weight of responsibility in making the best decision for the resident. In order to facilitate a more open dialogue and to improve relationships between healthcare staff, improved planning of the resident's care

would be required. For example, a meeting between the resident, relatives, care home staff and healthcare professionals to discuss goals of care, how residents wanted to be involved, how relatives wanted to be involved and contacted and discussion of the resident's medicines could facilitate this process.

Similar findings were also reported by Davies and Nolan (2006) in their study of the role of family caregivers in the life of a care home resident Davies and Nolan (2006) explored how relatives of care home residents perceived their role in the resident's care, and reported that the role that relatives played in the resident's care was not often negotiated between care home staff and the relative which left the relative unsure of their role. One of the themes reported by Davies and Nolan (2006) was entitled "keeping an eye", which referred to the role of the relative once the resident was settled in the care home. Relatives saw their role as monitoring care, which extended to noticing problems with medicines and reporting them to care home staff. This finding was also reflected by empirical research undertaken (Chapter 4). The role of the relatives interviewed could also be described as keeping an eye as they described holding healthcare professionals accountable to their decisions and ensuring they were content with the care received by the resident. This role could be affected if the resident moved to a new GP practice, where the relative did not know the GP. Furthermore, in findings similar to those presented as a result of the empirical work undertaken (Chapter 4), Davies and Nolan (2006) reported that the relative's input was not always welcomed by care home staff.

There is also evidence that relatives were have found doctors inaccessible and care home staff withholding of information, especially when the resident was receiving end of life care (Shield et al, 2005). While in theory this could make it even harder for relatives to attain information they need, the opposite was found by the empirical research. Where it was mentioned, healthcare professionals reported that an instance in which they would always speak to the relatives about deprescribing was end of life care.

Residents and relatives may benefit from relatives being more routinely involved in deprescribing decisions by healthcare professionals and care home staff. However, whilst some relatives were keen, and took steps, to be involved in the resident's care, others were reported in the empirical findings as being more difficult to engage. There were logistical issues to involving the relatives in deprescribing, for example they were unlikely to be in the care home when a healthcare professional visited unless it was a planned, well communicated visit which were not common. Relatives were likely to be of working age, and so may work similar hours to healthcare professionals which would leave them unable to visit the care home at the same time as a healthcare professional. Logistical issues may be overcome by relatives being made aware of scheduled healthcare professional visits and being invited to attend, or improved communication between the two groups. This could be

facilitated through telephone conversations or videocall consultations. A GP who participated in the empirical study stated that relatives could make GP appointments to discuss the relative, and so ensuring that relatives were aware of this could also ease communication.

Poor communication between relatives and care home staff was also reported by Edge (2007) who described how relatives wished for more forthcoming communication from care home staff after the resident had been admitted to the home. Whilst this finding was reflected by three of the relatives interviewed, it did not account for the relatives who care home staff described as more passive. It appears relatives, similar to residents, fall into two groups: those who are keen to be involved in the resident's care, and those who are content to follow the advice of healthcare professionals. While most of the available literature included the former, little is known about the latter group (Davies and Nolan, 2006; Barry and Davies, 2006; Edge, 2007). Due to the difficulties experienced in recruiting relatives to the empirical study conducted (Appendix D), the latter group may comprise the majority of care home relatives and their views are not well documented. Further work needs to be undertaken to investigate the views of all relatives, and understand the beliefs of this under-represented group if relatives are to be more involved in deprescribing (where appropriate and desired by the resident).

Involving residents and relatives in medicines optimisation in care homes was an approach that was investigated by the SHINE project, which evaluated models of providing multi-disciplinary medicine reviews for care home residents (The Health Foundation, 2014). The reviews improved quality, measured by the number of interventions, the number of the medicines stopped and cost-savings gained from changing, stopping and starting medicines. The project was a success, in that it 1346 interventions for 422 residents were made and 9.5% of the medicines prescribed for these residents were deprescribed. £184 was saved per person reviewed, assuming the resident would have taken a deprescribed medicine for at least a further year. It was also estimated that for every one pound invested in the project, £2.38 was released from the medicines budget. It was also demonstrated that medicine reviews that did not involve the GP were the most cost-effective, which provides an argument for upskilling pharmacists to become prescribers to work in this setting. This project was successful in identifying that the most efficient way to run medicine reviews in care homes in the UK, and also in attempting to engage the resident and/or relative in medicine reviews. However, clinical outcomes were not measured so the impact of the medicine changes on the resident are not known.

6.3.4 Implications of involving care home staff in the deprescribing process

Issues relating to care home staff and knowledge about medicines could also be a barrier to deprescribing, as discussed in the literature review. There was evidence that staff required more training to manage medicines in care homes, which suggested they may not be confident in dealing with issues associated with medicines (Barber et al, 2009). However, it has been reported that it is challenging to provide training to care home staff, in part due to the high turnover of staff in this sector (Castle and Enberg 2005 and 2007, Donoghue 2010) as it is expensive to train staff when they are regularly leaving and joining the workforce (Castle and Enberg 2005 and 2007, Donoghue 2010). These concerns were mirrored by GPs participating in the empirical work. In addition, there may be funding constraints that affect the ability of care home managers to provide training to their staff contributing to a deficit in knowledge and skills about medicines.

Care home staff also described problems communicating with doctors, reporting them to be unprofessional and to appear uncaring or disinterested in the resident's or the nurse's opinion (Tija et al, 2009). This attitude was also alluded to by some care home staff and relatives who participated in the interviews in Chapter 4 whereby care home staff described having to encourage GPs to involve the resident in their consultation. Care home staff were also reluctant to communicate with GPs who had a reputation of being difficult to work with. Such social barriers to communication are not easily solved, as it requires open communication between the two groups, GPs to be engaged in their role and the resolution of the negative perceptions of care home staff.

Care home staff partaking in the empirical research reported that it was challenging to contact the resident's GP and arrange care for them. Logistical barriers to communication included issues such as GPs being unable to visit the care home and having to contact multiple GP surgeries to arrange care for different residents. This was also reported by Tija et al (2009), who also found that care home staff have also reported that it can be challenging for them to contact the doctor and vice versa, with staff additionally lacking the quiet space and time needed to telephone the doctor (Tija et al 2009). Such communication problems could deter staff from contacting the doctor to discuss deprescribing, and thus lead to the resident continuing to take inappropriate medicines. These logistical barriers to communication may be addressed by the changes to the provision of primary care to care homes proposed by the Enhanced Health in Care Homes Direct Enhanced Service that will be implemented by Primary Care Networks as described in Chapter 1.3.4.

6.4 Ensuring shared decision-making

Patients, with their families and carers, where appropriate, will be involved in and consulted on all decisions about their care and treatment. (The NHS Constitution, Department of Health, 2015. pp4)

It was identified by the empirical work conducted (Chapter 4) that the ability of care home residents to be involved in shared decision-making was impaired. This was due to multiple factors, including the perceptions healthcare professionals had of residents, the attitude of residents towards their medicines and the fact that many residents lived with cognitive impairment. These issues will be explored below.

6.4.1 A "passive" attitude to medicines

In the literature review, Palagyi et al (2016) and Turner et al (2016) suggested care home residents were generally "passive" in the deprescribing process. This was because residents were found to lack the knowledge about their medicines that they would need to partake in deprescribing, and were content to defer to the doctor's judgement (Palagyi et al, 2016). This finding resonated with the findings of Reeve et al (2013) who alluded to apathy outside of the care home setting when they discussed that some patients were reluctant to partake in deprescribing because their medicines were a "habit" and because "I am old so why change things". This was also reported by Hughes et al (2009) in their study of adherence and resident involvement in medicines decision making. Anderson et al (2014) described this apathy as problematic, stating that prescribers would find deprescribing would be facilitated by patients being more willing to be involved in shared decision-making, more receptive to change and were more knowledgeable about their medicines.

This "passivity" displayed by residents towards deprescribing was also described in the empirical research whereby residents generally reported a lack of knowledge about their medicines, and a preference towards healthcare professionals making decisions about their medicines. In the empirical work, residents rarely questioned their medicines unless they were experiencing side effects, which suggested that they were are unaware that medicines may cause future harm. While they wished to be informed about these decisions, they did not appear to understand how they may be involved in the process.

Healthcare professionals and some relatives perceived this attitude as the resident being uninterested in their medicines, or lacking the willingness to change. However, in the findings of the empirical study residents reported that they were willing to change their medicines if it was suggested by their doctor, and that they were interested in learning more about their medicines. This was also reported in the literature review (Chapter 2; Kalogianis et al, 2016; Palagyi et al, 2016; Reeve et al, 2016, Turner et al) and suggests that while residents may not have a great knowledge of their medicines, they are curious about them

and are not averse to change despite how others perceive their attitude and behaviour. In this case, there is incongruity between the perceptions of healthcare professionals and how residents feel in reality.

Residents were also unlikely to question their medicines or suggest deprescribing themselves, unless they were experiencing harm from their medicines or were querying their efficacy. This could be due to the fact that they lacked knowledge about their medicines, including their names, indications or potential side effects, or that they were unaware of the concept of inappropriate medicines. Indeed, nearly all residents who partook in the empirical work believed their medicines were beneficial and that their doctor had ensured their medicines were appropriate. However, every healthcare professional interviewed believed that there were care home residents in their care who were receiving inappropriate medicines. This dissonance in beliefs provided insight into the trust that residents displayed in healthcare professionals. Residents were generally disconnected from their medicines, as they did not manage their medicines themselves and had little knowledge of them. They relied on those caring for them to manage their medicines for them, and believed their medicines were correct and appropriate without their input. Healthcare professionals may not be aware of how the residents perceived them, and awareness of this may help them to manage the expectations of care home residents. Through improved communication with residents, from the point of prescribing, GPs may be able to explain the concept of inappropriate medicines and encourage residents to be more involved in deprescribing decisions. It also highlighted the need for improved communication between healthcare professionals and residents, so that residents are aware that medicines may not always be beneficial and are encouraged to question the ongoing necessity of their medicines.

The reasons that a resident may appear uninterested in their medicines are unclear and complex. One reason may be that they are generally no longer responsible for managing their own medicines, and so may be detached from them. As described in Chapter 1, the medicines of care home residents in the UK are generally ordered, managed and provided to the resident by care home staff (Barber et al, 2009), removing the resident from the medicine management process and reducing their concept of medicines to a number of tablets that are provided to be taken daily. This is an example of institutionalisation, whereby the care home resident becomes accustomed to living in a care home and having their daily routines managed on their behalf. Factors of care home living such as following a routine set by management and having limited decisions to make result in care home residents being at risk of losing aspects of their independence, which can affect their quality of life (Cooney, 2010). It is possible to see how this may affect their perception of their medicines, and how they may not be provided with the opportunity to be engaged in the medicines they are prescribed.

In order to overcome institutionalisation and maintain a good quality of life, Wilson et al, (2009) identified that residents needed to maintain a sense of individuality, involvement in decision-making and being in a partnership with those providing their care. These factors could also help care home residents maintain interest and reduce apathy towards their medicines, and empower them to be involved in deprescribing decisions. However, as demonstrated by Cooney's (2010) research, residents often felt like their views were not important when it came to establishing themselves in a care home. There was evidence this spread to their view of medicines in the way they deferred to the doctor's opinion, as demonstrated in the literature review and the empirical research (Palagyi et al, 2016).

6.4.2 Involving residents in deprescribing

Shared decision-making has become a central tenet of patient care in the NHS (NHS, 2019), Traditionally, patients followed the directions of healthcare professionals in a compliant relationship (Dickinson et al, 1999). However, there has been a move towards a more concordant relationship, a relationship that is exemplified by the concept of shared decision-making. Shared decision-making in the context of medicines can be defined as:

> *"One where the person, their prescriber and those supplying the medicines are equal partners in supporting decisions that are agreed upon as acceptable by all parties"* (Royal Pharmaceutical Society, 2020. Last accessed 26.03.2020).

Shared decision-making requires the patient to understand the options for their care and to feel comfortable to ask questions of, and disagree with, the healthcare professional. It also requires the healthcare professional to be understanding and sensitive to the patient's priorities and healthcare beliefs. However, the evidence from the literature review and the empirical work undertaken suggested that care home residents were not often given the opportunity to be involved in decisions about their care. In this way, residents were a passive receptors of care.

While GPs who participated in the study reported that they often at least informed the resident of the changes being made to their medicines, pharmacists reported that they rarely spoke with residents. This could contribute to the poor understanding that residents and relatives had of the pharmacists' role. It was possible that the model within which pharmacists worked, where they worked remotely or visited a home were required to review all residents, did not lend itself to consulting with residents. In addition to this, and pharmacists may lack the time to involve residents as well as conducting the detailed, often time consuming, medicine review. It was also worth noting that this reflected the experiences of those pharmacists interviewed who were overwhelmingly employed by CCGs and it was possible that pharmacists conducting medicine reviews in care homes employed in different capacity, such as directly by a GP practice, may work differently. Pharmacists working remotely, while efficient, can also be problematic. Some residents and relatives

interviewed were unsure of the skillset of the pharmacist and did not believe they were suitable to be involved in deprescribing. If pharmacists were more present in the care home and took time to consult with residents, this may increase their profile and improve the relationship and trust between the two groups.

A frequently cited reason for not involving the resident in deprescribing decisions in the findings of the empirical work (Chapter 4) was that many care home residents were perceived to live with cognitive impairment. While it is true that around 70% of care home residents in the UK live with dementia or another form of cognitive impairment, this means that the remaining 30% do not (Age UK, 2019). Therefore, by the reasoning of healthcare professionals who participated, these residents would be able to participate in discussions about their care but may not be being given the opportunity to. However, a diagnosis of dementia does not mean that the resident would be unable to participate in deprescribing decisions. There are different levels of cognitive impairment and the ability of a resident to discuss their medicines with a healthcare professional may change on a day to day basis. Therefore, the assumption that care home residents have dementia and therefore are unable to partake in deprescribing decisions is not necessarily true. This suggests that efforts should be made to ensure deprescribing is individualised, and that all residents are given a fair opportunity to be involved. Indeed, this was a wish of the relatives interviewed who acknowledged that while the resident may not be able to partake in discussions about their medicines, they should at least be informed by the healthcare professional and given the opportunity to hear about the decisions being made about them.

In addition to this, residents who participated in the empirical work undertaken generally displayed a belief that healthcare professionals and care home staff were authority figures to be obeyed. This harked back to the "paternalism" age of medicine that healthcare professionals are being encouraged to move away from (Dickinson et al, 1999(. Care home residents may need to be encouraged more to be involved in decisions about their care than other patients by, for example, being prompted during consultations for their input or being provided with choices to make.

6.5 Promoting medicine optimisation by addressing behaviour change

6.6 Existing deprescribing interventions in care homes

It was identified in Chapter 5 that a deprescribing behaviour change intervention for use by healthcare professionals in care homes should broadly consist of training, environmental restructuring, and/or education. A detailed breakdown of the behaviour change techniques, policies and delivery methods of a potential behaviour change intervention for deprescribing

in care homes is presented in Chapter 5, section 5.3. This section focusses on existing deprescribing interventions that have been trialled in care homes, and considers their use and efficacy alongside the findings presented in this thesis.

6.6.1 Existing deprescribing interventions in care homes

Although few specific deprescribing interventions in care homes have been trialled, several trials have been conducted to test interventions designed to improve prescribing or medicines optimisation in care homes (Alldred et al, 2016). Medicines optimisation is wider than deprescribing, as it involves activities such as reducing and increasing the doses of medicines, monitoring therapy and starting medicines if necessary, as well as stopping them (Scottish Government Polypharmacy Model of Care Group, 2018). Therefore, the interventions trialled to specifically improve deprescribing in care homes were the focus of this section.

Kua et al (2018) conducted a systematic review and meta-analysis to investigate the health outcomes of deprescribing interventions amongst older people in nursing homes. The outcomes reported were mortality, number of people experiencing a fall, hospitalisation rate and the number of potentially inappropriate medicines prescribed before and after the intervention was trialled. The authors defined deprescribing as

> *"the discontinuation, reduction or substitution of inappropriate or unnecessary medicines" (Kua et al 2018 pp 2)*

This is an expansion on most agreed definitions of deprescribing (discussed in Chapter 1, section 1.2) as it includes the reduction or substitution of potentially inappropriate medicines as opposed to solely the cessation of such medicines. This should be considered when contextualising the results of this review in the context of this thesis.

Forty-one randomised controlled trials were included in the review and, and 30 in a meta-analysis. Fourteen studies investigated medicine cessation by healthcare professionals including doctors, nurses and pharmacists and these studies focussed on specific classes of medicines such as antipsychotic, antidepressant and hypnotic medicines. Eleven studies examined the use of medication reviews by pharmacists, doctors and nurses informed by the STOPP/START criteria or the Beers criteria, focussing on multiple medicines or antipsychotic medicines. Six studies evaluated the effect of educational interventions provided to nursing home staff and doctors. The remainder of the included studies investigated interventions such as case conferences, alternative therapies, technological interventions, outreach visits, comprehensive assessment of the resident and profiling of adverse drug reactions (Kua et al, 2018).

The main analysis showed that deprescribing interventions did not have a significant effect on the measured outcomes. Sub-group analyses revealed that medicine review

interventions reduced the odds of a resident dying by 26% (OR 0.74, 95% CI 0.65-0.84), and reduce the number of residents suffering a fall by 24% (OR 0.76, 95%CI 0.62-0.93) (Kua et al, 2018). Medicine review interventions were also shown to reduce the number of residents prescribed a potentially inappropriate medicine, as defined by the author of the primary studies (OR 0.41, 95%CI 0.19-0.89).

This systematic review suggested that deprescribing interventions in care homes, particularly interventions centred around a medicine review process, were successful in reducing the number of medicines taken by care home residents and may have an effect on mortality and falls. There was limited evidence that other types of intervention were similarly efficacious. Education, a broad intervention function that could form the foundation of a deprescribing intervention, was identified in the empirical findings (Chapter 5, section 5.3.3) as an intervention function which could improve deprescribing behaviour in care homes, and education was investigated by six trials included in Kua et al's (2018) review. Of these six education trials, two of the educational interventions focussed on nursing home staff only (Fossey et al, 2006; Rapp et al, 2013; Pitkälä et al, 2014), one intervention concerned only the use of quinolones for the treatment of urinary tract infections (Pettersson et al, 2011), one concerned only non-steroidal anti-inflammatory medicines (Stein et al, 2001) and three focussed on medicines taken for behavioural issues in dementia patients (Fossey et al, 2006; Rapp et al, 2013; Pieper et al, 2016). In addition to this, none of the interventions utilised behaviour change theory. Although the educational interventions were not reported to significantly improve the outcomes presented by Kua et al (2018), the interventions investigated were not comparable to the type of intervention which may be developed as a result of this thesis. This is because the incorporation of behaviour change psychology in this thesis aims to inform a behaviour change intervention to reduce problematic polypharmacy in care homes.

As noted above, medication review was identified as the most effective deprescribing intervention from the studies included in Kua et al (2018). However, medication review is not a behaviour change function or technique in itself. Nevertheless, behaviour change functions and techniques could be incorporated into medicine reviews and education and training around how to conduct medicine reviews could form the basis of an intervention. The findings of Kua et al's (2018) study combined with the findings of the empirical work could be the foundation of a of a novel deprescribing intervention for use in care homes. Table 49 shows how a deprescribing medicines review may be incorporated into the behaviour change techniques identified as intervention components in Chapter 5.

Table 49: How behaviour change techniques, functions, policy and delivery techniques identified in Chapter 5 could be incorporated into the medicine review process

Identified behaviour change functions and techniques	How a deprescribing medicine review may be incorporated into the Identified behaviour change functions/techniques	The identified policies and delivery techniques which could support the intervention
Training (behaviour change function)	Training about how to conduct medicine reviews with a view to deprescribing, which may involve utilising tools such as STOPP or the BEERs criteria	Delivery mechanisms: face to face, appropriate websites, a phone app, an individually accessed computer programme Policies: guidance, communication/marketing
Education (behaviour change function)	Educating healthcare professionals about how to conduct medicines reviews with a view to deprescribing, which may involve utilising tools such as STOPP or the BEERs criteria	Delivery mechanisms: Face to face, appropriately situated posters or leaflets, appropriate websites, a phone app, an individually accessed computer programme Policies: guidance, communication/marketing
Demonstration of the behaviour (behaviour change technique)	Demonstration of how to conduct medicine reviews with a view to deprescribing, as above under training and education	Delivery mechanisms: face to face, appropriate websites, a phone app, an individually accessed computer programme Policies: guidance, communication/marketing
Instruction on how to perform the behaviour (behaviour change technique)	Instruction on how to conduct medicine reviews with a view to deprescribing, as above under training and education	Delivery mechanisms: face to face, appropriately situated posters or leaflets, appropriate websites, a phone app, an individually accessed computer programme

Identified behaviour change functions and techniques	How a deprescribing medicine review may be incorporated into the Identified behaviour change functions/techniques	The identified policies and delivery techniques which could support the intervention
		Policies: guidance, communication/marketing
Feedback on outcomes of the behaviour (behaviour change technique)	Feedback on outcomes of the deprescribing medicine review – positive to reinforce deprescribing, and negative to provide learning materials for future reviews	Delivery mechanisms: face to face, an individually accessed computer programme Policies: guidance
Prompts/cues (behaviour change technique)	Prompts and cues, either on computer systems or as a physical accompaniment to deprescribing medicine reviews	Delivery mechanisms: appropriately situated posters or leaflets, appropriate websites, a phone app, an individually accessed computer programme Policies: communication/marketing

Hansen et al (2018) conducted a systematic review and meta-analysis to identify the behaviour change techniques in deprescribing interventions. 25 randomised controlled trials of deprescribing were included in the review, and the Behaviour Change Techniques for each intervention were identified and coded by the researchers. It was reported that interventions lowered the number of medicines taken per patient (MD -0.74, 95%CI -1.26-0.22), which was widely variable across studies and not significantly affected by the type of intervention. However, of interest to this thesis is the clusters (groups of Behaviour Change Techniques) that were coded the most frequently in successful interventions. These can be found below in Figure 19:

- - Goals and planning
- - Social support
- - Shaping knowledge
- - Natural consequences
- - Comparison of behaviour
- - Comparison of outcomes
- - Regulation
- - Antecedents
- - Identity

Figure 19: The clusters of Behaviour Change Techniques which were found to be the most frequently identified BCTs in successful deprescribing interventions (Hansen et al, 2018, pp2722)

There are some similarities between the findings of Hansen et al (2018) and the empirical research. The following BCTs identified as potential intervention components in the empirical research fall under the BCT clusters identified by Hansen et al (2018) (Figure 19) as likely to be effective: demonstration of the behaviour, instruction on how to perform the behaviour, information about health consequences and information about social and environmental consequences. These were covered by three of the BCT clusters in (Figure 19). The empirical research also identified two BCTs which were not included in the BCT clusters identified by Hansen et al (2018): feedback on outcomes of the behaviour and prompts and clues. Five BCT clusters Hansen et al (2018) identified as components of successful deprescribing interventions were not identified in the empirical research as potentially beneficial components of a deprescribing intervention for use in care homes. However, this is not a concern because the empirical research was focussed on care homes and informed through extensive in-depth qualitative study rooted in the TDF. The deprescribing interventions included in Hansen et al's (2018) study were not set in care homes or a similar population such as older people, and therefore could have included participants of any age or living situation. Therefore, they were likely to identify more BCT clusters as potentially successful than the empirical research. The empirical research also

identified two potential BCTs that Hansen et al (2018) did not, again likely due to the specific nature of the empirical work.

6.6.2 A patient centred approach

Whilst the intervention components, and any final intervention that is developed as a result of this work, will be aimed at and used by healthcare professionals, care home staff, residents and relatives must also be involved. The Theoretical Domains Framework and associated models and components, such as the COM-B and Behaviour Change Wheel, were designed for use to modify the behaviour of healthcare professionals (Michie et al, 2014). Therefore, the patient, whose care will be affected by the changed behaviour of healthcare professionals, is not considered in these frameworks and models. In this study, it was also important to consider how care home staff may be involved in a deprescribing intervention and the resources they might need to enable their involvement.

Patient/person centred care is now a key cornerstone of the NHS. Plans to improve the relationships between healthcare professionals and their patients were outlined in the Five Year Forward view, which produced guidance for staff to encourage person-centred care (NHS, 2019). In addition to this, there are a number of interventions being proposed that are described as patient-centred, including deprescribing interventions (Reeve et al, 2014; Vasilevskis et al, 2019). Whilst neither of these interventions were designed for use in care homes, they do provide insight into the necessary components of a patient-centred deprescribing intervention. In the context of care homes, resident-centred care is an alternative to patient or person-centred care in that care decisions are made with the resident and with consideration of their values, beliefs and priorities (Nord, 2018).

It is important that any intervention designed as a result of this work is resident-centred, as the findings of the empirical study (Chapter 4) indicated that residents and their relatives were keen to be involved in deprescribing decisions. The findings of the empirical study also showed that this often did not take place, and that healthcare professionals, particularly pharmacists, were not routinely involving residents or their relatives in discussions about medicines and deprescribing decisions. Intervention development and implementation should include these key stakeholders in order to encourage resident-centred care. Most importantly, this will also ensure that the values, beliefs and concerns of residents and their relatives are considered when deprescribing. The findings of the empirical study highlighted numerous beliefs of residents and relatives that should be considered by healthcare professionals when deprescribing, such as their concerns about consequences, beliefs that medicines were beneficial and uncertainties about the roles and abilities of healthcare professionals. The patient should be involved by healthcare professionals to ascertain their beliefs and values at the point of prescribing, at regular interviews while the medicine is prescribed and during the deprescribing process.

Patient-centred interventions focus on clinically meaningful outcomes that are important to the patient, as well as other targets. Vasilevskis et al's (2019) study protocol outlined a randomised controlled trial designed to test a patient-centred deprescribing intervention for older hospitalised patient with polypharmacy. They aim to ensure their intervention is patient-centred by interviewing patients as a part of the deprescribing process in order to gain understanding of their priorities, values and beliefs. This includes the healthcare professional conducting the review asking the patient, about each medicine identified as a target for deprescribing: adherence, experience of side effects, perceived benefit or harm of the medicine, cost and level of interest in deprescribing the medicine (Vasilevskis et al 2019). The patient will also be asked if they would like to stop any medicine that the healthcare professional has not identified as a target for deprescribing (Vasilevskis et al 2019).

The secondary outcomes of the study also focus on patient-centred factors (Vasilevskis et al 2019). While the primary outcome for the study will be measured using a calculated Drug Burden Index, the secondary outcomes are factors that are likely to be important or measurable to the patient. These include their confusion level, cognitive impairment, presence or absence of symptoms of depression, anxiety pain, pressure ulcers, falls or incontinence and weight loss or gain (Vasilevskis et al 2019). Adherence to medicines will also be measured, as well as unplanned hospital admissions Vasilevskis et al (2019).

Reeve et al (2014) suggested a five step deprescribing intervention that focussed on discussion of the medicines between the healthcare professional conducting the deprescribing and the patient at each stage. This has not been tested to determine efficacy. Figure 20 details the intervention:
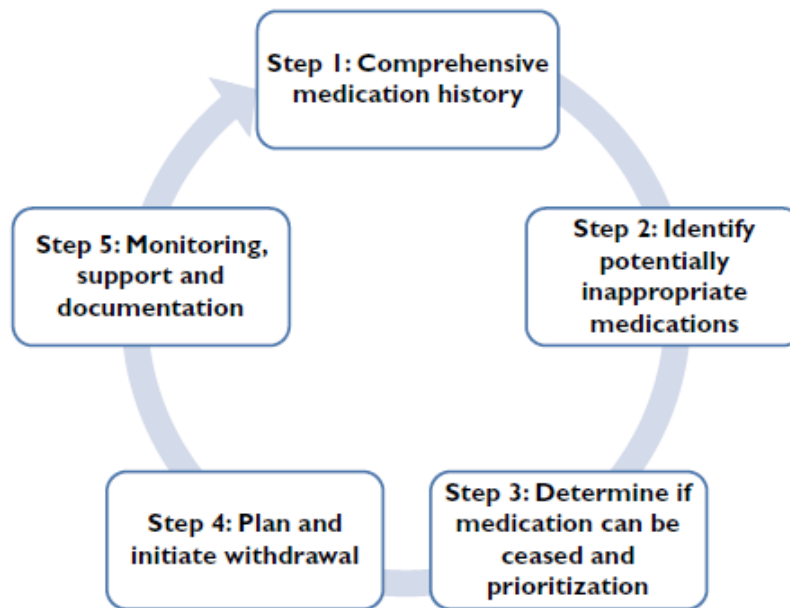
Figure 20: The five-step patient-centred deprescribing intervention suggested by Reeve et al, 2014, pp740.

This model could be considered alongside the findings of this thesis and patient-centred outcomes as suggested by Vasilevskiy et al (2019) when developing a novel behaviour change intervention to ensure a resident-centred deprescribing approach.

The residents and relatives should also be involved in intervention development to ensure it is an intervention that they would be satisfied for a healthcare professional to use when reviewing the resident's medicines. They could also be involved to ensure that they are satisfied with the level of resident and relative involvement proposed by the planned intervention. Care home staff are also crucial to the future success of any intervention, and their potential role requires further research. The would also be involved in any intervention development.

6.7 Strengths and limitations

This thesis has multiple strengths. It provides in-depth insight into deprescribing in care homes in the UK that was obtained through semi-structured interviews with all the key stakeholders involved in the process: residents, relatives, GPs, pharmacists and care home staff. This has provided novel data about understanding and knowledge of deprescribing, opportunities and challenges for deprescribing in this context, and consideration of how these behaviours could be improved. It is also the only study of deprescribing to have employed the TDF to explore deprescribing as a behaviour enacted by GPs, pharmacists and care home staff. As such, it provides a valuable contribution to an emerging evidence base in the following ways. The use of the TDF throughout the study grounds the findings in

health behaviour psychology theory, and consequently the findings can be used to contribute a solution to the problem of deprescribing in care homes. The findings themselves provide depth of insight into the topic, and may be transferable to other similar health and social care settings in the UK, for example other care homes. The TDF was used specifically for the purpose of understanding the interviews with health and care professionals, and not the resident and relative interviews. The TDF was designed to influence the behaviour of healthcare professionals who would be the recipients of any intervention aimed at influencing their deprescribing behaviours. Whilst residents (as the ultimate recipients of the care decisions made by health and care professionals) and relatives ought to be involved in the deprescribing process, they would not be using the intervention to stop medicines taken by the resident. However, any proposed intervention should be co-designed with residents, relatives, care home staff, GPs and pharmacists.

A further strength of the research is that, despite there being challenges to recruiting in the care home setting, strategies were found to undertake the research. In the first instance, it was difficult to engage care homes. In the first rounds of recruitment, letters were sent to multiple care homes, none of which were replied to. Upon calling the care homes to follow up the letter, it was difficult to speak to the manager who was often busy and had not read the letter. Once the manager of the care home had been spoken to, recruiting the care home and speaking to residents and staff was relatively straightforward. Despite these difficulties, nine care homes were recruited to partake in the study. A further strength of the study was that the care home staff sample was limited to managers and team leaders. This decision was made because staff members involved in the management and administration of medicines were sought and these tasks were allocated to more senior staff.

There were some methodological limitations of this study which must be considered when appraising this work, its quality and relevance for the sector and policy. Recruiting the relatives of care home residents was very challenging. The relatives were rarely in the care home at the time of the researcher's visit, the researcher was not able to contact them directly via telephone or letter, and posters placed in the care home did not generate any participants. Recruitment of relatives relied on the motivation of the care home manager to identify and aid in recruitment of relatives, and most care home managers were not motivated to assist with relative recruitment. See Appendix D for a reflective account of the recruitment process.

A further recruitment limitation was that one GP, three pharmacists and two care homes were recruited via the supervisory team, which may have affected the characteristics of the participants. Healthcare professionals recruited in this way may be particularly active and prominent in their field and therefore, the data collected may not have captured all views and working practices of health and care professionals, as those who were less active may not

have been represented. There was a similar issue with those care homes recruited via the NIHR ENRICH programme which targets 'research ready' care homes. These homes may have been approached because they were more likely to participate or that they had a good relationship with ENRICH.

Five of the nine care homes included in the study had a CQC rating of "good". However, in the study area, most homes were rated "requires improvement". This introduces sampling bias, which potentially limits the transferability of the findings. The transferability of the findings was also potentially affected by the gender imbalance of the samples, particularly the GP and pharmacist samples which were overwhelmingly female. The GPs who participated had similar amounts of experience, and the pharmacists were generally experienced too. This meant that views of less experienced practitioners were not obtained. However, the views of more experienced practitioners such as those obtained were likely to provide a broad overview of the topic from people familiar with the work and practice of deprescribing. In addition to this, many participants were asked about the approach of their colleagues to deprescribing, including those with less experience, and whether it was felt that less experienced colleagues would approach deprescribing in a different way. However, the sample frames GPs and pharmacists were not fulfilled, and so the data may not have captured the views of these populations.

A final point is the background of the author of this thesis. I am a pharmacist, with experience of working in a hospital and community setting. I had pre-existing thoughts on the topic of deprescribing in care homes, which may have influenced my interpretation of the findings. I am also a novice researcher and had not utilised qualitative research techniques before or the TDF. This meant that there was a risk that these techniques were not utilised to their full potential. However, I was supported by several experienced researchers, both inside and outside the supervisory team, and I undertook reflective writing throughout the research process. This reflexivity allowed me to identify parts of the research that had been conducted well or which could be improved, and informed the development of my research techniques. The reflexivity section, Chapter 3 section 3.2.4, provides more background about the researcher for fuller consideration of this issue, as does Appendix D.

6.8 Contributions of this work to the body of knowledge

This is one of very few qualitative studies to have been conducted on this subject worldwide. Some of the key findings had been found by others, for example that residents lack knowledge about their medicines (Turner et al, 2016; Ellis et al, 2015; Palagyi et al, 2016) and prescribers believe that a lack of evidence is a barrier to deprescribing (Ailabouni et al, 2016; Palagyi et al, 2016). However, the unique barriers provided by the structure of health and social care systems in the UK had not been described in such depth in the context of deprescribing before. In addition to this, this thesis provides improved understanding of the previously poorly described social influences that affect deprescribing decisions.

This confirmed that deprescribing is a complex behaviour, influenced by numerous factors including social influences, environmental factors and knowledge deficiencies. Mapping these to the Theoretical Domains Framework (TDF) and Behaviour Change Wheel (BCW) to inform intervention development was a novel aspect of this study. Whilst other studies (Ailabouni et al 2016; Scott et al, 2019) have incorporated the TDF into their methodologies (as discussed in section 5.4.1), this is the first study to also incorporate the Behaviour Change Wheel to inform the content of a deprescribing intervention. This has provided information that can be used to develop a targeted deprescribing intervention that has the potential to change the deprescribing behaviour of healthcare professionals in care homes. The chances of the intervention being successful is improved because the factors most likely to affect deprescribing in care homes (environmental and social influences, and knowledge) have been identified, as well as how these factors may best be addressed (through education, training and environmental restructuring). This increases the likelihood that any intervention developed as a result of this research will be implemented and successful. The likelihood of success would also be increased through co-design of the research with key stakeholders.

6.9 Implications for policy and practice

This study has significant implications for policy and practice. There is increasing interest in both deprescribing and care homes in the UK from the UK Government and the NHS (Department of Health and Social Care, 2018). In addition to this, bodies such as NICE, the RPS, NHS Scotland and the GPhC have produced guidance and reports relating to medicines use and optimisation in care homes, including deprescribing as discussed in Chapter 1.3.2 (National Institute for Health and Care Excellence, 2014; Royal Pharmaceutical Society, 2016; Scottish Government Polypharmacy Model of Care Group, 2018; Webber, 2015). This study provides depth of understanding about why deprescribing may not be occurring as often or as effectively as it could be within care home contexts, despite policy recommendations, and suggests how the behaviour of healthcare

professionals could be targeted to address this issue and potentially improve deprescribing practices in care homes.

The study may be utilised to inform the work of the PCNs as they aim to reduce inappropriate prescribing in all settings, including care homes, which involves a multi-disciplinary team working together in care homes. However, the empirical work found that some residents and relatives were unsure of the skillset and ability of pharmacists to be involved in deprescribing. Therefore, work to increase the awareness of pharmacists, their knowledge and their skills to care home residents and relatives may be beneficial to improve the acceptance of pharmacists by residents and relatives. This may be done by adjusting the workload of working practices of pharmacists so they are able to visit care homes more often. This study found that residents and relatives wanted to be involved or at least informed of deprescribing decisions; however, pharmacists did not always involve these groups in their decision-making. These findings may be used to encourage pharmacists to involve residents and relatives in deprescribing decisions, and to raise the profile of pharmacists working in care homes. Examples of ways this could be done are through alerting pharmacists to these findings, which may encourage them to reflect on their working practices and attempt to involve care home residents more in deprescribing decisions. As a result, the understanding of roles between pharmacists, care home residents, and relatives would improve. The findings about the perceptions of GPs towards residents and relatives should be shared with GPs, in order to encourage them be more open to involving residents and their values, beliefs and priorities.

The findings about the complexities of providing GP care to care homes may be utilised inform improvements to health and social care systems which would enable healthcare professionals to be able to assign a higher priority to deprescribing in care homes. The National Overprescribing Review is yet to be published, but this review into problematic overprescribing aims to investigate large scale facilitators to minimising inappropriate pharmacy (Department of Health and Social Care, 2018). This includes improving the interface between primary and secondary care and investigating how improved technology could be used to minimise inappropriate medicines use. These barriers were described in the findings of the empirical work, and so the findings reflect the current barriers to deprescribing that are being investigated on a large scale. This study may, therefore, be utilised in this review.

An example of the technological changes that were required by participants in the empirical research was improved communication between care homes and primary care. These improvements are proposed as part of the enhanced health in care homes DES which will be provided by each PCN from late 2020, as each care home will have an NHS email address to facilitate the sending and receiving of confidential information across settings. Again, this

verifies the findings of this thesis as strategies are already in place to overcome some of the barriers to deprescribing in this setting. The creation of this particular DES also addresses some of the environmental factors that were acting as a barrier to deprescribing, for example difficulty in contacting a GP and navigating primary care systems.

The empirical work may also be utilised alongside the work of the enhanced health in care homes DES. A planned increase in the formal provision of primary care to care homes is planned through this initiative, and so more practitioners will require training and will be considering how to deprescribe in care homes The knowledge that it is the opportunity and psychological capability components of the COM-B which require targeting through education, training and environmental restructure can usefully inform the PCNs as they increase the primary care provided to care homes. The findings of this thesis are ideally placed to help with the development of an intervention to address the knowledge deficits of healthcare professionals in ways that are likely to be successful, such as guidelines or computer prompts. The development of an intervention to be utilised in this setting requires further research, in conjunction with residents, relatives, care home staff, GPs and pharmacists.

Finally, key findings were that the residents and relatives interviewed were open to the idea of deprescribing, being educated about their medicines and being involved in deprescribing decisions. Healthcare professionals were uncertain of the willingness and ability of residents and relatives to be involved in the deprescribing process, and this study suggests that more effort should be made to involve them. Increased presence of healthcare professionals in the care home, who attempt to involve the resident and/or their relative in every decision, would be a way that this could be achieved. The initiation of a weekly round of the care home, proposed by the enhanced health in care homes DES, is likely to facilitate this. Involving residents and their relatives in their care has the potential improve the relationship between residents, relatives and healthcare professionals and improve shared decision-making with regard to deprescribing in care homes.

6.10 Future research

The development of a behaviour change intervention to improve deprescribing behaviour in care homes is a key area for future research. Intervention development should be co-designed with residents, relatives and care homes, as well as the healthcare professionals who will be using the intervention. Further work would focus on the recommendations for intervention development laid out in Chapter 5, and investigate the type of intervention that healthcare professionals desire and what would be most useful to them. Based on the findings of this thesis, a medicine review process co-designed with key stakeholders that

would address the knowledge and skill deficiencies of healthcare professionals is likely to be an intervention strategy that should be further developed and tested.

Healthcare professionals expressed a desire for more deprescribing guidance and evidence, but it was unclear what form this may take. Future research should investigate this, with a view to developing relevant evidence and guidance. Further research is also required into the social barriers to deprescribing, such as how much of an influence other people are to the deprescribing process and how difficult discussions may be facilitated. There is also more research into the role of residents, relatives and care home staff in deprescribing required, in order to gain a deeper understanding of the roles that these groups desire and how this may be enabled.

6.11 Reflective account

During the process of this PhD, I have learnt a great deal – about deprescribing, care homes, qualitative research, behaviour change psychology and myself. It has been a steep learning curve in the art of qualitative research, a discipline I had always been interested and felt drawn to. The skills learnt throughout this study, such as how to conduct a literature review, how to conduct qualitative interviews and the analysis of qualitative data will be applicable throughout my career as I continue to attempt to find out why people act in the way they do. The numerous training courses attended (Appendix K) have provided a solid foundation in research skills. The skills I have learnt in behaviour change psychology, and how to use the TDF, COM-B and Behaviour Change Wheel, will also assist with this mission wherever I choose to work.

Professionally, I have a deeper understanding of the barriers to deprescribing and why it is not as straightforward as I may have thought. I have learnt that GPs and pharmacists are keen to learn from my and each other's experience, and that GPs require evidence and confidence in my skills to implement my recommendations which I will strive to provide. I have also been inspired and reminded to always involve my patients in decisions, and if I ever work in care homes I will not remain behind a computer but will involve the people who matter in my decisions – residents and relatives.

Finally, the PhD process has had a huge impact on me personally. I have learnt resilience, and how resilient I am, but also when to step back, rest and ask for help. It has tested me mentally and emotionally, and I feel I have changed as a person throughout this process. I am more aware of my limits, more patient, and ultimately surer of myself now than I was at the start of the project.

6.12 Dissemination of the findings

Preliminary findings of this thesis have been disseminated via a poster presentation at the Prescribing and Research in Medicines Management (PRIMM) annual scientific meeting 2017, and via oral presentation at the FIP international pharmacy conference in 2018 (Bolton et al, 2017). The abstracts for the FIP conference can be found in Appendix L. Further poster and oral presentations have been presented internally at the University of Leeds and regionally at the Great North Pharmacy Conferences 2016 and 2017. The findings have also been presented at Royal Pharmaceutical Society Local Pharmacy Forums to other academics conducting research in pharmacy as well as to practising pharmacists. This in particular encouraged practising pharmacists present to reflect upon their practice. The findings will be further disseminated through publication in healthcare and pharmacy journals and publicised in order that the findings reach as many people involved in deprescribing in care homes as possible.

6.13 Conclusion

This thesis provides the findings of a novel qualitative study informed by behaviour change psychology into deprescribing in care homes in the UK. More depth is provided by this thesis to previously reported findings, and it has also provided some findings which have not been reported before. A key finding which demonstrates the difference in the views of residents and relatives and healthcare professionals is that nearly all residents and relatives expressed a belief that the resident's medicines were beneficial. In contrast, every pharmacist and GP acknowledged that there were residents in their care who were taking inappropriate medicines. This demonstrates that there is a key difference in the way that healthcare professionals and residents and relatives perceive medicines, which requires intervention from the moment a medicine is prescribed. This thesis also highlighted the social influences on deprescribing, and described them in more detail than has been done previously. This includes the hesitance of residents, relatives and healthcare professionals to discuss the limited life expectancy of the resident with regard to deprescribing, as well as the negative perceptions held by healthcare professionals of some relatives and residents. These social barriers can have an impact on deprescribing, and are not as easy to overcome as physical barriers.

The behaviour change work which runs through this thesis from the literature review to the discussion is another unique feature of this PhD. While previous studies have utilised the Theoretical Domains Framework to identify factors likely to influence deprescribing behaviour, this is the first study conducted to have applied this theory to the care home setting. (Scott et al, 2019; Ailabouni et al, 2016; Cadogan et al, 2015). Taking the extra step to map these factors to the Behaviour Change Wheel has provided meaningful information

about the behaviour change techniques, policies and delivery mechanisms which can usefully inform the development of a behaviour change intervention for use in care homes. Basing the development of an intervention in theory, including empirical work and the findings of a systematic literature review, increases its likelihood of success and implementation (Michie et al, 2014; Medical Research Council, 2006).

As well as the research having impact through publications, the findings have the potential to inform practice especially at a time of rapid change in primary care. The provision of primary care to care homes is changing, via the funding of 350 new pharmacy professionals to work in care homes and the introduction of PCNs who must deliver a service designed to enhance health in care homes. The findings of this thesis may be utilised to inform the education and training of these individuals, and inform the work of the PCNs as they increase the presence of healthcare professionals in care homes and improve the provision of primary care to care homes. It may also inform the National Overprescribing Review, a government-led nationwide review into why overprescribing is occurring and what the solutions might be.

This research comes at a critical time, as there are hundreds of thousands of older people living in care homes who are prescribed potentially inappropriate medicines. There is significant potential for deprescribing to minimise poor health-related outcomes for these residents and to save money for the NHS. The introduction of PCNs and the work they will be doing to enhance health in care homes reflects the importance of this thesis, and the necessity of its findings. The older people who live in care homes rely on healthcare professionals to manage their medicines effectively and involve them in decision-making, however this thesis provides evidence that this is not always happening. However, this thesis also provides solutions that can ultimately facilitate older people living in care homes to be able to live a good quality of remaining life on as few medicines as possible.

References

Age UK 2019. Later Life in the United Kingdom 2019. Age UK.

Ailabouni, N., Nishtala, P., Mangin, D. and Tordoff, J. 2016. Challenges and Enablers of Deprescribing: A General Practitioner Perspective. PLOS ONE. 11(4),pp.e0151066 (1-20).

Alldred, D., Kennedy, M., Hughes, C., Chen, T. and Miller, P. 2016. Interventions to optimise prescribing for older people in care homes. Cochrane Database of Systematic Reviews. 12(2),pp.1-62.

Alldred, D. 2014. Deprescribing: a brave new word?. International Journal of Pharmacy Practice. 22(1),pp.2-3.

Alzheimer's Society 2017. Find support near you. Alzheimer's Society. [Online]. [Accessed 4 October 2017]. Available from: http://www.memorycafes.org.uk.

Anandaciva, S., Ewbank, L., Thompson, J. and McKenna, H. 2020. NHS hospital bed numbers. The King's Fund. [Online]. [Accessed 29 March 2020]. Available from: https://www.kingsfund.org.uk/publications/nhs-hospital-bed-numbers?gclid=Cj0KCQjwjoH0BRD6ARIsAEWO9DtcfbcifpzEt0ynDcaDd9t2MPPpwInfkGFT 0-yoqsJGqYd5erVepz4aAptkEALw_wcB.

Anderson, K., Stowasser, D., Freeman, C. and Scott, I. 2014. Prescriber barriers and enablers to minimising potentially inappropriate medications in adults: a systematic review and thematic synthesis. BMJ Open. 4(12),p.e006544.

Anon 2017. Care homes for older Europeans: Public, for-profit and non-profit providers. Luxembourg: Publications Office of the European Union.

Anon 2020. Choose your residential care. New Zealand Government. [Online]. [Accessed 26 June 2020]. Available from: https://www.govt.nz/browse/health/rest-homes-and-residential-care/choose-your-residential-care/.

Anon 2020. Choose your residential care. New Zealand Government. [Online]. [Accessed 26 June 2020]. Available from: https://www.govt.nz/browse/health/rest-homes-and-residential-care/choose-your-residential-care/.

Anon 2019. Long-term Care Providers and Services Users in the United States, 2015–2016. National Center for Health Statistics: Vital and Health Statistics. 3(43),pp.1-10.

Anon 2020. Long-term facilities-based care - Canada.ca. Canada.ca. [Online]. [Accessed 26 June 2020]. Available from: https://www.canada.ca/en/health-canada/services/home-continuing-care/long-term-facilities-based-care.html.

Anon 2016. Multisectoral action for a life course approach to healthy ageing: draft global strategy and plan of action on ageing and health. The World Health Organisation.

Anon 2017. My Home Life. Myhomelife.org.uk. [Online]. [Accessed 4 October 2017]. Available from: http://www.myhomelife.org.uk.

Anon 2017. The Relative and Resident Association. Relres.org. [Online]. [Accessed 4 October 2017]. Available from: http://www.relres.org.

Anon 2020. Types of residential care. New Zealand Government. [Online]. [Accessed 26 June 2020]. Available from: https://www.govt.nz/browse/health/rest-homes-and-residential-care/types-of-residential-care/.

Anon 2020. What is aged care?. Australian Government Department of Health. [Online]. [Accessed 26 June 2020]. Available from: https://www.health.gov.au/health-topics/aged-care/about-aged-care/what-is-aged-care.

Atkins, L., Francis, J., Islam, R., O'Connor, D., Patey, A., Ivers, N., Foy, R., Duncan, E., Colquhoun, H., Grimshaw, J., Lawton, R. and Michie, S. 2017. A guide to using the Theoretical Domains Framework of behaviour change to investigate implementation problems. Implementation Science. 12(1),pp.1-18.

Azermai, M., Vander Stichele, R., Van Bortel, L. and Elseviers, M. 2013. Barriers to antipsychotic discontinuation in nursing homes: an exploratory study. Aging & Mental Health. 18(3),pp.346-353.

Ballard, C., Hanney, M., Theodoulou, M., Douglas, S., McShane, R., Kossakowski, K., Gill, R., Juszczak, E., Yu, L. and Jacoby, R. 2009. The dementia antipsychotic withdrawal trial (DART-AD): long-term follow-up of a randomised placebo-controlled trial. The Lancet Neurology. 8(2),pp.151-157.

Baqir, W. and Joshua, A. 2018. Medicines optimisation in care homes 1st ed. NHS England.

Barber, N., Alldred, D., Raynor, D., Dickinson, R., Garfield, S., Jesson, B., Lim, R., Savage, I., Standage, C., Buckle, P., Carpenter, J., Franklin, B., Woloshynowych, M. and Zermansky, A. 2009. Care homes' use of medicines study: prevalence, causes and potential harm of medication errors in care homes for older people. Quality and Safety in Health Care. 18(5),pp.341-346.

Barnett-Page, E. and Thomas, J. 2009. Methods for the synthesis of qualitative research: a critical review. BMC Medical Research Methodology. 9(1),p.59.

Baylis, A. and Perks-Baker, S. 2017. Enhanced health in care homes: Learning from experiences so far.

BAZELEY, P. 2013. Qualitative Data Analysis: Practical Strategies. Sage Publications.

Berger, R. 2013. Now I see it, now I don't: researcher's position and reflexivity in qualitative research. Qualitative Research. 15(2),pp.219-234.

Bokhof, B. and Junius-Walker, U. 2016. Reducing Polypharmacy from the Perspectives of General Practitioners and Older Patients: A Synthesis of Qualitative Studies. Drugs & Aging. 33(4),pp.249-266.

Bolton, E., Easthall, C., Steels, S. and Alldred, D. 2017. An investigation into the barriers and facilitators to deprescribing in care homes. Pharmacoepidemiology & Drug Safety. 26(S1).

Booth, A. and Brice, A. 2004. Evidence-based practice for information professionals. London: Facet.

Bowen, G. 2008. Naturalistic inquiry and the saturation concept: a research note. Qualitative Research. 8(1),pp.137-152.

Brotherton, J., Leask, J., Jackson, C., McCaffery, K. and Trevena, L. 2010. National survey of general practitioners' experience of delivering the National Human Papillomavirus Vaccination Program. Sexual Health. 7(3),p.291.

Browne, K. 2005. Snowball sampling: using social networks to research non-heterosexual women. International Journal of Social Research Methodology. 8(1),pp.47-60.

Cadogan, C., Ryan, C., Francis, J., Gormley, G., Passmore, P., Kerse, N. and Hughes, C. 2015. Improving appropriate polypharmacy for older people in primary care: selecting components of an evidence-based intervention to target prescribing and dispensing. Implementation Science. 10(1),p.161.

Cane, J., O'Connor, D. and Michie, S. 2012. Validation of the theoretical domains framework for use in behaviour change and implementation research. Implementation Science. 7(1),pp.2-17.

CANTRILL, J., DOWELL, J. and ROLAND, M. 2000. Qualitative insights into general practitioners' views on the appropriateness of their long-term prescribing. International Journal of Pharmacy Practice. 8(1),pp.20-26.

Care Quality Commission 2017. Care Quality Commission. Cqc.org.uk. [Online]. [Accessed 17 May 2017]. Available from: https://www.cqc.org.uk/.

Care Quality Commission 2019. What is registration? | Care Quality Commission. Cqc.org.uk. [Online]. [Accessed 10 October 2019]. Available from: https://www.cqc.org.uk/guidance-providers/registration/what-registration.

Care Quality Commission 2020. What we do | Care Quality Commission. Cqc.org.uk. [Online]. [Accessed 29 March 2020]. Available from: https://www.cqc.org.uk/what-we-do.

Carter, S. and Little, M. 2007. Justifying Knowledge, Justifying Method, Taking Action: Epistemologies, Methodologies, and Methods in Qualitative Research. Qualitative Health Research. 17(10),pp.1316-1328.

Centre for Evidence Based Management 2014. Critical Appraisal Checklist for Cross-Sectional Study [Online]. [Accessed 20 December 2015]. Available from: https://www.cebma.org/resources-and-tools/what-is-critical-appraisal/.

Cerety, M., Cornell, J., Plichta, D. and Eimer, M. 1993. Adverse Events Related to Drugs and Drug Withdrawal in Nursing Home Residents. Journal of the American Geriatrics Society. 41(12),pp.1326-1332.

Cochrane UK 2019. About Us. Uk.cochrane.org. [Online]. [Accessed 3 September 2019]. Available from: https://uk.cochrane.org/about-us.

Cockburn, J. and Pit, S. 1997. Prescribing behaviour in clinical practice: patients' expectations and doctors' perceptions of patients' expectations a questionnaire study. BMJ. 315(7107),pp.520-523.

Cooke, A., Smith, D. and Booth, A. 2012. Beyond PICO: the SPIDER tool for qualitative evidence synthesis. Qualitative Health Research. 22(10),pp.1435-1443.

Cooney, A. 2011. 'Finding home': a grounded theory on how older people 'find home' in long-term care settings. International Journal of Older People Nursing. 7(3),pp.188-199.

Critical Appraisal Skills Programme 2014. CASP Qualitative Checklist [Online]. [Accessed 20 December 2015]. Available from: https://casp-uk.net/casp-tools-checklists/.

Curtin, D., Gallagher, P. and O'Mahony, D. 2019. Explicit criteria as clinical tools to minimize inappropriate medication use and its consequences. Therapeutic Advances in Drug Safety. 10,pp.1-10.

de Jong, M., Van der Elst, M. and Hartholt, K. 2013. Drug-related falls in older patients: implicated drugs, consequences, and possible prevention strategies. Therapeutic Advances in Drug Safety. 4(4),pp.147-154.

Department of Health and Social Care 2018. Matt Hancock orders review into overprescribing in the NHS. GOV.UK. [Online]. [Accessed 27 March 2020]. Available from: https://www.gov.uk/government/news/matt-hancock-orders-review-into-over-prescribing-in-the-nhs.

Department of Health 2012. Liberating the NHS: No decision about me, without me [Online]. Department of Health. [Accessed 29 March 2020]. Available from: https://consultations.dh.gov.uk/choice/choice-future-proposals/supporting_documents/Choice%20consultation%20%20No%20decison%20about%20me%20without%20me.pdf.

Department of Health 2015. The NHS Constitution. Department of Health.

Dibley, L. 2011. Analysing narrative data using McCormack's Lenses. Nurse Researcher. 18(3),pp.13-19.

Dickinson, D., Wilkie, P. and Harris, M. 1999. Taking medicines: concordance is not compliance. BMJ. 319(7212),pp.787-787.

Duerden, M., Avery, T. and Payne, R. 2013. Polypharmacy and medicines optimisation: Making it safe and sound. London: The King's Fund.

Dumbreck, S., Flynn, A., Nairn, M., Wilson, M., Treweek, S., Mercer, S., Alderson, P., Thompson, A., Payne, K. and Guthrie, B. 2015. Drug-disease and drug-drug interactions: systematic examination of recommendations in 12 UK national clinical guidelines. BMJ. 350(mar11 2),pp.1-8.

Duncan, E., Francis, J., Johnston, M., Davey, P., Maxwell, S., McKay, G., McLay, J., Ross, S., Ryan, C., Webb, D. and Bond, C. 2012. Learning curves, taking instructions, and patient safety: using a theoretical domains framework in an interview study to investigate prescribing errors among trainee doctors. Implementation Science. 7(1),pp.1-13.

Duncan, E., Francis, J., Johnston, M., Davey, P., Maxwell, S., McKay, G., McLay, J., Ross, S., Ryan, C., Webb, D. and Bond, C. 2012. Learning curves, taking instructions, and patient safety: using a theoretical domains framework in an interview study to investigate prescribing errors among trainee doctors. Implementation Science. 7(1),pp.1-13.

Easthall, C., Taylor, N. and Bhattacharya, D. 2018. Barriers to medication adherence in patients prescribed medicines for the prevention of cardiovascular disease: a conceptual framework. International Journal of Pharmacy Practice. 27(3),pp.223-231.

Ellis, M., Molinari, V., Dobbs, D., Smith, K. and Hyer, K. 2014. Assessing approaches and barriers to reduce antipsychotic drug use in Florida nursing homes. Aging & Mental Health. 19(6),pp.507-516.

ENRICH 2017. A Toolkit For Care Home Research | ENRICH. Enrich.nihr.ac.uk. [Online]. [Accessed 15 June 2017]. Available from: https://enrich.nihr.ac.uk/.

Farrell, B., Conklin, J., Dolovich, L., Irving, H., Maclure, M., McCarthy, L., Moriarty, F., Pottie, K., Raman-Wilms, L., Reeve, E. and Thompson, W. 2019. Deprescribing guidelines: An international symposium on development, implementation, research and health professional education. Research in Social and Administrative Pharmacy. 15(6),pp.780-789.

Fleming, A., Bradley, C., Cullinan, S. and Byrne, S. 2014. Antibiotic prescribing in long-term care facilities: a qualitative, multidisciplinary investigation. BMJ Open. 4(11),pp.1-13.

Flick, U., Garms-Homolová, V. and Röhnsch, G. 2012. "And mostly they have a need for sleeping pills": Physicians' views on treatment of sleep disorders with drugs in nursing homes. Journal of Aging Studies. 26(4),pp.484-494.

Flick, U., von Kardoff, E. and Steinke, I. 2004. A Companion to Qualitative Research. SAGE Publications.

Forder, J. and Fernandez, J. 2011. Length of stay in care homes. Report commissioned by Bupa Care Services PSSRU Discussion Paper 2769, Canterbury: PSSRU.

Fossey, J., Ballard, C., Juszczak, E., James, I., Alder, N., Jacoby, R. and Howard, R. 2006. Effect of enhanced psychosocial care on antipsychotic use in nursing home residents with severe dementia: cluster randomised trial. BMJ. 332(7544),pp.756-761.

Francis, J., O'Connor, D. and Curran, J. 2012. Theories of behaviour change synthesised into a set of theoretical groupings: introducing a thematic series on the theoretical domains framework. Implementation Science. 7(1),pp.1-9.

Fusch, P. and Ness, L. 2015. Are We There Yet? Data Saturation in Qualitative Research. The Qualitative Report. 20(9),pp.1408-1416.

Gale, N., Heath, G., Cameron, E., Rashid, S. and Redwood, S. 2013. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. BMC Medical Research Methodology. 13(1),pp.1-8.

Gerrish, K. and Lathlean, J. 2015. The Research Process in Nursing. Chichester: John Wiley & Sons, Ltd.

Glanz, K., Viswanath, K. and Rimer, B. 2015. Health behavior: theory, research, and practice, 5th ed.. San Francisco, Calif.: Jossey-Bass.

Godin, G., Bélanger-Gravel, A., Eccles, M. and Grimshaw, J. 2008. Healthcare professionals' intentions and behaviours: A systematic review of studies based on social cognitive theories. Implementation Science. 3(1).

Gordon, A., Franklin, M., Bradshaw, L., Logan, P., Elliott, R. and Gladman, J. 2014. Health status of UK care home residents: a cohort study. Age and Ageing. 43(1),pp.97-103.

Green, J. and Thorogood, N. 2014. Qualitative methods for health research 3rd ed. London: Sage Publications.

Greenhalgh, T., Annandale, E., Ashcroft, R., Barlow, J., Black, N., Bleakley, A., Boaden, R., Braithwaite, J., Britten, N., Carnevale, F., Checkland, K., Cheek, J., Clark, A., Cohn, S., Coulehan, J., Crabtree, B., Cummins, S., Davidoff, F., Davies, H., Dingwall, R., Dixon-Woods, M., Elwyn, G., Engebretsen, E., Ferlie, E., Fulop, N., Gabbay, J., Galasinski, D., Garside, R., Gilson, L., Griffiths, P., Hawe, P., Helderman, J., Hodges, B., Hunter, D.,

Kearney, M., Kitzinger, C., Kitzinger, J., Kuper, A., Kushner, S., Le May, A., Legare, F., Lingard, L., Locock, L., Maben, J., Macdonald, M., Mair, F., Mannion, R., Marshall, M., May, C., Mays, N., McKee, L., Miraldo, M., Morgan, D., Morse, J., Nettleton, S., Pearce, S., Pluye, P., Pope, C., Robert, G., Roberts, C., Rodella, S., Rycroft-Malone, J., Sandelowski, M., Shekelle, P., Stevenson, F., Straus, S., Swinglehurst, D., Thorne, S., Tomson, G., Westert, G., Wilkinson, S., Williams, B., Young, T. and Ziebland, S. 2016. An open letter toThe BMJeditors on qualitative research. BMJ. 352(i563),p.i957.

Guest, G., Bunce, A. and Johnson, L. 2006. How Many Interviews Are Enough?. Field Methods. 18(1),pp.59-82.

Hannes, K., Noyes, J., Booth, A., Harden, A., Harris, J., Lewin, S. and Lockwood, C. 2011. Supplementary Guidance for Inclusion of Qualitative Research in Cochrane Systematic Reviews of Interventions 1st ed. Cochrane Collaboration Qualitative Methods Group.

Hansen, C., O'Mahony, D., Kearney, P., Sahm, L., Cullinan, S., Huibers, C., Thevelin, S., Rutjes, A., Knol, W., Streit, S. and Byrne, S. 2018. Identification of behaviour change techniques in deprescribing interventions: a systematic review and meta-analysis. British Journal of Clinical Pharmacology. 84(12),pp.2716-2728.

Harriman, K., Howard, L. and McCracken, R. 2014. Deprescribing medication for frail elderly patients in nursing homes: A survey of Vancouver family physicians. British Columbia Medical Journal. 56(9),pp.436-441.

Hesse-Biber, S. and Levy, P. 2011. The Practice of Qualitative Research. California: Sage.

Higgins, J. and Green, S. 2011. Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 [updated March 2011] [Online]. The Cochrane Collaboration. [Accessed 22 August 2019]. Available from: http://Available from www.handbook.cochrane.org.

Holmes, H., Min, L., Yee, M., Varadhan, R., Basran, J., Dale, W. and Boyd, C. 2013. Rationalizing Prescribing for Older Patients with Multimorbidity: Considering Time to Benefit. Drugs & Aging. 30(9),pp.655-666.

Horne, R., Chapman, S., Parham, R., Freemantle, N., Forbes, A. and Cooper, V. 2013. Understanding Patients' Adherence-Related Beliefs about Medicines Prescribed for Long-Term Conditions: A Meta-Analytic Review of the Necessity-Concerns Framework. PLoS ONE. 8(12),pp.1-24.

Hughes, C. and Goldie, R. 2009. "I Just Take What I Am Given". Drugs & Aging. 26(6),pp.505-517.

Hui, D., Nooruddin, Z., Didwaniya, N., Dev, R., De La Cruz, M., Kim, S., Kwon, J., Hutchins, R., Liem, C. and Bruera, E. 2014. Concepts and Definitions for "Actively Dying," "End of

Life," "Terminally Ill," "Terminal Care," and "Transition of Care": A Systematic Review. Journal of Pain and Symptom Management. 47(1),pp.77-89.

Iden, K., Hjørleifsson, S. and Ruths, S. 2011. Treatment decisions on antidepressants in nursing homes: A qualitative study. Scandinavian Journal of Primary Health Care. 29(4),pp.252-256.

Iyer, S., Naganathan, V., McLachlan, A. and Le Couteur, D. 2008. Medication Withdrawal Trials in People Aged 65 Years and Older. Drugs & Aging. 25(12),pp.1021-1031.

Jacobs, N., De Bourdeaudhuij, I., Thijs, H., Dendale, P. and Claes, N. 2011. Effect of a cardiovascular prevention program on health behavior and BMI in highly educated adults: A randomized controlled trial. Patient Education and Counseling. 85(1),pp.122-126.

Jokanovic, N., Tan, E., Dooley, M., Kirkpatrick, C. and Bell, J. 2015. Prevalence and Factors Associated With Polypharmacy in Long-Term Care Facilities: A Systematic Review. Journal of the American Medical Directors Association. 16(6),pp.1-12.

Kallio, H., Pietilä, A., Johnson, M. and Kangasniemi, M. 2016. Systematic methodological review: developing a framework for a qualitative semi-structured interview guide. Journal of Advanced Nursing. 72(12),pp.2954-2965.

Kalogianis, M., Wimmer, B., Turner, J., Tan, E., Emery, T., Robson, L., Reeve, E., Hilmer, S. and Bell, J. 2016. Are residents of aged care facilities willing to have their medications deprescribed?. Research in Social and Administrative Pharmacy. 12(5),pp.784-788.

Kersten, H., Molden, E., Tolo, I., Skovlund, E., Engedal, K. and Wyller, T. 2012. Cognitive Effects of Reducing Anticholinergic Drug Burden in a Frail Elderly Population: A Randomized Controlled Trial. The Journals of Gerontology Series A: Biological Sciences and Medical Sciences. 68(3),pp.271-278.

Kirshbaum, M., Carey, I., Purcell, B. and Nash, S. 2011. Talking about dying and death: a focus group study to explore a local community perspective. Nursing Reports. 1(8),pp.29-34.

Klotz, U. 2009. Pharmacokinetics and drug metabolism in the elderly. Drug Metabolism Reviews. 41(2),pp.67-76.

Knox, S. and Burkard, A. 2009. Qualitative research interviews. Psychotherapy Research. 19(4-5),pp.566-575.

Kua, C., Mak, V. and Huey Lee, S. 2019. Health Outcomes of Deprescribing Interventions Among Older Residents in Nursing Homes: A Systematic Review and Meta-analysis. Journal of the American Medical Directors Association. 20(3),pp.362-372.

Kuper, A., Reeves, S. and Levinson, W. 2008. An introduction to reading and appraising qualitative research. BMJ. 337(aug07 3),pp.a288-a288.

Kyriacou, D. and Lewis, R. 2016. Confounding by Indication in Clinical Research. Journal of the American Medical Association. 316(17),p.1818.

Lawton, R., Heyhoe, J., Louch, G., Ingleson, E., Glidewell, L., Willis, T., McEachan, R. and Foy, R. 2015. Using the Theoretical Domains Framework (TDF) to understand adherence to multiple evidence-based indicators in primary care: a qualitative study. Implementation Science. 11(113),pp.1-16.

Loder, E., Groves, T., Schroter, S., Merino J, W. and W. Godlee, F. 2016. Qualitative Research and The BMJ. BMJ. 352,p.i641.

Lundby, C., Graabaek, T., Ryg, J., Søndergaard, J., Pottegård, A. and Nielsen, D. 2019. Health care professionals' attitudes towards deprescribing in older patients with limited life expectancy: A systematic review. British Journal of Clinical Pharmacology. 85(5),pp.868-892.

Maanen, J. 1979. Reclaiming Qualitative Methods for Organizational Research: A Preface. Administrative Science Quarterly. 24(4),p.520.

Masnoon, N., Shakib, S., Kalisch-Ellett, L. and Caughey, G. 2017. What is polypharmacy? A systematic review of definitions. BMC Geriatrics. 17(1),pp.1-10.

Mason, J. 2002. Qualitative Researching. London: Sage.

Mavrodaris, A. and Philp, I. 2013. Reducing antipsychotic prescriptions in primary care: a healthcare perspective. Journal of Public Mental Health. 12(1),pp.32-42.

Mays, N. and Pope, C. 1995. Qualitative Research: Rigour and qualitative research. BMJ. 311(6997),pp.109-112.

McCluskey, A. and Middleton, S. 2010. Delivering an evidence-based outdoor journey intervention to people with stroke: Barriers and enablers experienced by community rehabilitation teams. BMC Health Services Research. 10(1).

McKean, M., Pillans, P. and Scott, I. 2016. A medication review and deprescribing method for hospitalised older patients receiving multiple medications. Internal Medicine Journal. 46(1),pp.35-42.

Medical Research Council 2006. Developing and evaluating complex interventions [Online]. [Accessed 27 March 2020]. Available from: https://mrc.ukri.org/documents/pdf/complex-interventions-guidance/.

Merriam, S. and Tisdell, E. 2009. Qualitative research: A Guide to Design and Implementation. San Francisco: Jossey-Bass.

Methley, A., Campbell, S., Chew-Graham, C., McNally, R. and Cheraghi-Sohi, S. 2014. PICO, PICOS and SPIDER: a comparison study of specificity and sensitivity in three search tools for qualitative systematic reviews. BMC Health Services Research. 14(1),p.579.

Michael Stein, C., Griffin, M., Taylor, J., Pichert, J., Brandt, K. and Ray, W. 2001. Educational Program for Nursing Home Physicians and Staff to Reduce Use of Non-Steroidal Anti-Inflammatory Drugs Among Nursing Home Residents. Medical Care. 39(5),pp.436-445.

Michie, S., Atkins, L. and West, R. 2014. The behaviour change wheel: A Guide To Designing Interventions. London: Silverback Publishing.

Michie, S., Johnston, M., Abraham, C., Lawton, R., Parker, D., Walker, A. and Psychological Theory Group 2005. Making psychological theory useful for implementing evidence based practice: a consensus approach. Quality and Safety in Health Care. 14(1),pp.26-33.

Michie, S., Johnston, M., Gellman, M. and Turner, J. 2013. Behavior Change Techniques. Encyclopedia of Behavioural Medicine.,p.12.

Michie, S., van Stralen, M. and West, R. 2011. The behaviour change wheel: A new method for characterising and designing behaviour change interventions. Implementation Science. 6(1),pp.1-11.

Milton, J., Hill-Smith, I. and Jackson, S. 2008. Prescribing for older people. British Medical Journal. 336,pp.606-609.

Moher, D., Liberati, A., Tetzlaff, J. and Altman, D. 2009. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. BMJ. 339(b2535),pp.1-8.

Molokhia, M. and Majeed, A. 2017. Current and future perspectives on the management of polypharmacy. BMC Family Practice. 18(1),pp.1-9.

National Institute for Health and Care Excellence 2014. Developing NICE guidelines: the manual [Online]. National Institute for Health and Care Excellence. [Accessed 22 August 2019]. Available from: https://www.nice.org.uk/process/pmg20/chapter/introduction-and-overview#information-about-this-manual.

National Institute for Health and Care Excellence 2015. Medicines management in care homes [Online]. NICE. [Accessed 27 March 2020]. Available from: https://www.nice.org.uk/guidance/qs85/resources/medicines-management-in-care-homes-pdf-2098910254021.

National Institute for Health and Clinical Excellence 2014. Managing medicines in care homes. NICE.

Nelson, M., Reid, C., McNeil, J., Ryan, P., Wing, L. and Krum, H. 2003. Short-term predictors of maintenance of normotension post withdrawal of antihypertensive drugs in the second Australian national blood pressure study (ANBP2). Heart, Lung and Circulation. 12(2),p.A77.

NHS Digital 2020. QOF 2018/19 | NHS Digital. Qof.digital.nhs.uk. [Online]. [Accessed 29 March 2020]. Available from: https://qof.digital.nhs.uk/.

NHS England 2020. NHS England » About shared decision making. England.nhs.uk. [Online]. [Accessed 27 March 2020]. Available from: https://www.england.nhs.uk/shared-decision-making/about/.

NHS 2019. The NHS Long Term Plan [Online]. [Accessed 27 March 2020]. Available from: https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf.

Nord, C. 2018. Resident-centred care and architecture of two different types of caring residences: a comparative study. International Journal of Qualitative Studies on Health and Well-being. 13(1),pp.1-13.

Novick, G. 2008. Is there a bias against telephone interviews in qualitative research?. Research in Nursing & Health. 31(4),pp.391-398.

O'Reilly, M. and Parker, N. 2012. 'Unsatisfactory Saturation': a critical exploration of the notion of saturated sample sizes in qualitative research. Qualitative Research. 13(2),pp.190-197.

O'Mahony, D., O'Sullivan, D., Byrne, S., O'Connor, M., Ryan, C. and Gallagher, P. 2014. STOPP/START criteria for potentially inappropriate prescribing in older people: version 2. Age and Ageing. 44(2),pp.213-218.

Palagyi, A., Keay, L., Harper, J., Potter, J. and Lindley, R. 2016. Barricades and brickwalls – a qualitative study exploring perceptions of medication use and deprescribing in long-term care. BMC Geriatrics. 16(1),pp.1-11.

Palinkas, L., Horwitz, S., Green, C., Wisdom, J., Duan, N. and Hoagwood, K. 2013. Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. Administration and Policy in Mental Health and Mental Health Services Research. 42(5),pp.533-544.

Parsons, C., Danysz, W., Dekundy, A. and Pulte, I. 2013. Memantine and Cholinesterase Inhibitors: Complementary Mechanisms in the Treatment of Alzheimer's Disease. Neurotoxicity Research. 24(3),pp.358-369.

Petrovic, M., Mariman, A., Warie, H., Afschrift, M. and Pevernagie, D. 2003. Is there a rationale for prescription of benzodiazepines in the elderly? A review of the literature. Acta Clinica Belgica. 58(1),pp.27-36.

Pettersson, E., Vernby, A., Molstad, S. and Lundborg, C. 2011. Can a multifaceted educational intervention targeting both nurses and physicians change the prescribing of antibiotics to nursing home residents? A cluster randomized controlled trial. Journal of Antimicrobial Chemotherapy. 66(11),pp.2659-2666.

Pieper, M., Francke, A., van der Steen, J., Scherder, E., Twisk, J., Kovach, C. and Achterberg, W. 2016. Effects of a Stepwise Multidisciplinary Intervention for Challenging Behavior in Advanced Dementia: A Cluster Randomized Controlled Trial. Journal of the American Geriatrics Society. 64(2),pp.261-269.

Pitkälä, K., Juola, A., Kautiainen, H., Soini, H., Finne-Soveri, U., Bell, J. and Björkman, M. 2014. Education to Reduce Potentially Harmful Medication Use Among Residents of Assisted Living Facilities: A Randomized Controlled Trial. Journal of the American Medical Directors Association. 15(12),pp.892-898.

Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M. and Britten, N. 2006. Guidance on the Conduct of Narrative Synthesis in Systematic Reviews.

Pope, C. and Mays, N. 2006. Qualitative research in healthcare. Oxford: Blackwell Publishing Ltd, BMJ Publishing Group.

Pope, C. and Mays, N. 1995. Qualitative Research: Reaching the parts other methods cannot reach: an introduction to qualitative methods in health and health services research. BMJ. 311(6996),pp.42-45.

Potter, K., Flicker, L., Page, A. and Etherton-Beer, C. 2016. Deprescribing in Frail Older People: A Randomised Controlled Trial. PLOS ONE. 11(3),pp.1-21.

Poudel, A., Hubbard, R., Nissen, L. and Mitchell, C. 2013. Frailty: a key indicator to minimize inappropriate medication in older people. QJM. 106(10),pp.969-975.

Prestwich, A., Webb, T. and Conner, M. 2015. Using theory to develop and test interventions to promote changes in health behaviour: evidence, issues, and recommendations. Current Opinion in Psychology. 5,pp.1-5.

Primary Care Strategy and NHS Contracts Team 2019. Network Contract Direct Enhanced Service Draft Outline Service Specifications [Online]. NHS England and NHS Improvement. [Accessed 27 March 2020]. Available from: https://www.engage.england.nhs.uk/survey/primary-care-networks-service-specifications/supporting_documents/Draft%20PCN%20Service%20Specifications%20December%202019.pdf.

Pruskowski, J., Zarowitz, B. and Handler, S. 2018. Perceptions of Nursing Facility Providers on the Utility of Deprescribing. The Consultant Pharmacist. 33(7),pp.386-402.

Rapp, M., Mell, T., Majic, T., Treusch, Y., Nordheim, J., Niemann-Mirmehdi, M., Gutzmann, H. and Heinz, A. 2013. Agitation in Nursing Home Residents With Dementia (VIDEANT Trial): Effects of a Cluster-Randomized, Controlled, Guideline Implementation Trial. Journal of the American Medical Directors Association. 14(9),pp.690-695.

Reeve, E., Gnjidic, D., Long, J. and Hilmer, S. 2015. A systematic review of the emerging definition of 'deprescribing' with network analysis: implications for future research and clinical practice. British Journal of Clinical Pharmacology. 80(6),pp.1254-1268.

Reeve, E., Shakib, S., Hendrix, I., Roberts, M. and Wiese, M. 2014. The benefits and harms of deprescribing. Medical Journal of Australia. 201(7),pp.386-389.

Reeve, E., Shakib, S., Hendrix, I., Roberts, M. and Wiese, M. 2014. Review of deprescribing processes and development of an evidence-based, patient-centred deprescribing process. British Journal of Clinical Pharmacology. 78(4),pp.738-747.

Reeve, E., To, J., Hendrix, I., Shakib, S., Roberts, M. and Wiese, M. 2013. Patient Barriers to and Enablers of Deprescribing: a Systematic Review. Drugs & Aging. 30(10),pp.793-807.

Ritchie, J., Lewis, J., McNaughton Nicholls, C. and Ormston, R. 2013. Qualitative Research Practice. London: Sage.

Robson, C. and McCartan, K. 2011. Real world research. Chichester: John Wiley and Sons Ltd.

Rockville, MD: Agency for Healthcare Research and Quality 2013. Avoiding Bias in Selecting Studies. Methods Guide for Comparative Effectiveness Reviews.. Prepared by the Oregon Health & Science University, McMaster University, and Southern California Evidence based Practice Centers under Contract No. 290-2007-10057-I. AHRQ Publication No. 13EHC045-EF.

Royal College of General Practitioners 2020. Research Ready®. Rcgp.org.uk. [Online]. [Accessed 27 March 2020]. Available from: https://www.rcgp.org.uk/researchready.

Royal Pharmaceutical Society 2020. Polypharmacy: Getting our medicines right. Rpharms.com. [Online]. [Accessed 27 March 2020]. Available from: https://www.rpharms.com/recognition/setting-professional-standards/polypharmacy-getting-our-medicines-right#people.

Royal Pharmaceutical Society 2016. The Right Medicine: Improving Care in Care Homes. Royal Pharmaceutical Society.

Ryan, R. and Cochrane Consumers and Communication Review Group 2013. 'Cochrane Consumers and Communication Review Group: data synthesis and analysis [Online]. [Accessed 22 August 2019]. Available from: http://cccrg.cochrane.org,.

Scott, I. and Le Couteur, D. 2015. Physicians need to take the lead in deprescribing. Internal Medicine Journal. 45(3),pp.352-356.

Scott, I., Hilmer, S., Reeve, E., Potter, K., Le Couteur, D., Rigby, D., Gnjidic, D., Del Mar, C., Roughead, E., Page, A., Jansen, J. and Martin, J. 2015. Reducing Inappropriate Polypharmacy. JAMA Internal Medicine. 175(5),pp.827-834.

Scott, S., Clark, A., Farrow, C., May, H., Patel, M., Twigg, M., Wright, D. and Bhattacharya, D. 2018. Deprescribing admission medication at a UK teaching hospital; a report on quantity and nature of activity. International Journal of Clinical Pharmacy. 40(5),pp.991-996.

Scott, S., Twigg, M., Clark, A., Farrow, C., May, H., Patel, M., Taylor, J., Wright, D. and Bhattacharya, D. 2019. Development of a hospital deprescribing implementation framework: A focus group study with geriatricians and pharmacists. Age and Ageing. 49(1),pp.102-110.

Scottish Government Polypharmacy Model of Care Group 2018. Polypharmacy Guidance, Realistic Prescribing [Online] 3rd ed. Scottish Government. [Accessed 27 March 2020]. Available from: https://www.therapeutics.scot.nhs.uk/wp-content/uploads/2018/09/Polypharmacy-Guidance-2018.pdf.

Seale, C. 2004. Qualitative research practice. Los Angeles: SAGE.

Shah, S., Carey, I., Harris, T., DeWilde, S. and Cook, D. 2013. Mortality in older care home residents in England and Wales. Age and Ageing. 42(2),pp.209-215.

Silverman, D. 2017. Doing qualitative research. Los Angeles: Sage.

Simmons, S., Bonnett, K., Hollingsworth, E., Kim, J., Powers, J., Habermann, R., Newhouse, P. and Schlundt, D. 2017. Reducing Antipsychotic Medication Use in Nursing Homes: A Qualitative Study of Nursing Staff Perceptions. The Gerontologist. 58(4),pp.e239-e250.

Smith, J. and Firth, J. 2011. Qualitative data analysis: the framework approach. Nurse Researcher. 18(2),pp.52-62.

Sniehotta, F., Presseau, J. and Araújo-Soares, V. 2014. Time to retire the theory of planned behaviour. Health Psychology Review. 8(1),pp.1-7.

Social Care Institute for Excellence 2013. GP services for older people: a guide for care home managers. London: Social Care Institute for Excellence.

Social Care Institute for Excellence 2020. MCA assessing capacity. Social Care Institute for Excellence (SCIE). [Online]. [Accessed 27 March 2020]. Available from: https://www.scie.org.uk/mca/practice/assessing-capacity.

Stafford, A., Alswayan, M. and Tenni, P. 2011. Inappropriate prescribing in older residents of Australian care homes. Journal of Clinical Pharmacy and Therapeutics. 36(1),pp.33-44.

Sturges, J. and Hanrahan, K. 2004. Comparing Telephone and Face-to-Face Qualitative Interviewing: a Research Note. Qualitative Research. 4(1),pp.107-118.

The Health Foundation 2014. Shine 2012 final report. The Health Foundation.

Thórarinsdóttir, K. and Kristjánsson, K. 2013. Patients' perspectives on person-centred participation in healthcare. Nursing Ethics. 21(2),pp.129-147.

Tjia, J., Velten, S., Parsons, C., Valluri, S. and Briesacher, B. 2013. Studies to Reduce Unnecessary Medication Use in Frail Older Adults: A Systematic Review. Drugs & Aging. 30(5),pp.285-307.

Tomorrow's Guides Ltd 2017. Carehome.co.uk. [Online]. [Accessed 17 May 2017]. Available from: https://www.carehome.co.uk/.

Tong, A., Sainsbury, P. and Craig, J. 2007. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. International Journal for Quality in Health Care. 19(6),pp.349-357.

Trier-Bieniek, A. 2012. Framing the telephone interview as a participant-centred tool for qualitative research: a methodological discussion. Qualitative Research. 12(6),pp.630-644.

Turner, J., Edwards, S., Stanners, M., Shakib, S. and Bell, J. 2016. What factors are important for deprescribing in Australian long-term care facilities? Perspectives of residents and health professionals. BMJ Open. 6(3),p.e009781.

Vasilevskis, E., Shah, A., Hollingsworth, E., Shotwell, M., Mixon, A., Bell, S., Kripalani, S., Schnelle, J. and Simmons, S. 2019. A patient-centered deprescribing intervention for hospitalized older patients with polypharmacy: rationale and design of the Shed-MEDS randomized controlled trial. BMC Health Services Research. 19(1),pp.1-13.

Ward, D., Furber, C., Tierney, S. and Swallow, V. 2013. Using Framework Analysis in nursing research: a worked example. Journal of Advanced Nursing. 69(11),pp.2423-31.

Wastesson, J., Morin, L., Tan, E. and Johnell, K. 2018. An update on the clinical consequences of polypharmacy in older adults: a narrative review. Expert Opinion on Drug Safety. 17(12),pp.1185-1196.

Webber, J. 2015. Pharmacy and Care Homes [Online]. General Pharmaceutical Council. [Accessed 27 March 2020]. Available from: https://www.pharmacyregulation.org/sites/default/files/pharmacy_and_care_homes_report_by_jo_webber_december_2015.pdf.

WILSON, C., DAVIES, S. and NOLAN, M. 2009. Developing personal relationships in care homes: realising the contributions of staff, residents and family members. Ageing and Society. 29(7),pp.1041-1063.

Appendix A: Literature review search strategy

Table 50: The search strategy utilised for the literature review undertaken in Chapter 2

Search string	Search terms
1	exp nursing home/ or exp nursing home patient/ or exp nursing home personnel/
2	((nursing or "aged care" or "aged nursing" or "aged residential" or care or convalescent or residential or "long term" or "long-term") adj (home* or centre or center or facilit*)).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
3	assisted living facilit*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
4	assisted living facilit* for the elderly.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
5	(("life care" or "continued care" or "respite care" or "extended care") adj (center or centre or facilit*)).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
6	((geriatric or elderly) adj2 (home* or centre or center or facilit*)).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
7	residential aged care facilit*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
8	home for the aged.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
9	home for the elderly.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
10	(deprescribe or deprescribing or deprescribed or "de-prescribe" or "de-prescribing" or "de-prescribed").mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
11	((stop or stopped or stopping) adj2 (medicine* or medication* or drug* or prescription* or treatment*)).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
12	((withdrawal or withdraw or withdrawn or withdrawing) adj2 (medicine* or medication* or drug* or prescription* or treatment*)).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
13	((cease or ceased or cessation or ceasing) adj2 (medicine* or medication* or drug* or prescription* or treatment*)).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]

Search string	Search terms
14	((discontinuation or discontinued or discontinuing or discontinue) adj2 (medicine* or medication* or drug* or prescription* or treatment*)).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
15	((polypharmacy or medication* or medicine* or prescription*) adj2 (reduce or reducing or reduction or reduced or minimise or minimising or minimised or minimisation or minimize or minimizing or minimized or minimization)).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]
16	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9
17	10 or 11 or 12 or 13 or 14 or 15
18	16 nd 17

Appendix B: Papers not included in the literature review

Table 51, below, contains the details of papers which were considered for inclusion in the literature review, but were ultimately not included. The reasons for their exclusion are described below.

Table 51: Papers which were not included in the literature review chapter after discussion with the supervisory team, with reasons for their exclusion

Reference	Why the article was not included in the literature review in Chapter 2
Bolmsjö, BB; Palagyi, A; Keay, L; Potter, J; Lindley, RI (2016) F*actors influencing deprescribing for residents in advanced care facilities: insights from general practitioners in Australia and Sweden.* BMC Fam Practice 17:152	A review article consisting of two papers. The two primary studies included in the review were read and assessed for inclusion into Chapter 2 separately. Palagyi et al (2016) was included in the review in chapter 2, whilst Bolmsjö et al (2015) was excluded for reasons outlined below.
Bolmsjö, BB; Strandberg, EL; Midlov, P; Brorsson, A (2015) "*It is meaningful, I feel I can make a difference" – A qualitative study about GPs' experiences of work at nursing homes in Sweden.* BMC Family Practice. 16:111	Bolmsjö et al (2015) was not about deprescribing in care homes and was about the general experiences GPs had with care home work. While many of the barriers and facilitators to care home work described by Bolmsjö et al (2015) mirrored barriers and facilitators to deprescribing in care homes, they were not presented with the specific focus and angle of deprescribing. Palagyi et al 2016 was the other paper included in the aforementioned two paper review article, and this was included in the , which was included in the literature review,
Ailabouni, N; Tordoff, J; Mangin, D; Nishtala, PS (2017) *Do residents need all their medications? A cross-sectional survey of RNs' views on deprescribing and the role of clinical pharmacists.* Journal of Gerontological Nursing, 43:10 pages 13-20	The article contained some consequences to deprescribing in care homes, but no barriers and facilitators to deprescribing in this setting. The study comprised of a survey which nurses working in care homes completed, and covered a range of topics about medicine management and administration but deprescribing was not a focus of this survey or the findings.

Reference	Why the article was not included in the literature review in Chapter 2
Iden, KR; Hjørleifsson, S; Ruths, S (2011) *Treatment decisions on antidepressants in nursing homes: a qualitative study.* Scandinavian Journal of Primary Health Care, 29:252-256	While this article appeared in other reviews about deprescribing, the article focussed on why antidepressant medicines were started and continued in care homes. While these reasons mirrored the barriers and facilitators to deprescribing in care homes, the focus was not specific enough for this review.
Flick, U; Garms-Homolová, V; Röhnsch, G (2012) *"And mostly they have a need for sleeping pills": Physicians' views on treatment of sleep disorders with drugs in nursing homes.* Journal of Ageing Studies, 26:484-494	Despite appearing in other review articles about deprescribing, and containing some information about stopping medicines for sleep disorders, this article did not focus on the barriers and facilitators to deprescribing medicines in care homes. Instead, it focused on why medicines for sleeping disorders were started in the first place and the risks and benefits of using these medicines in this population.
Jokanovic, N; Tan, ECK; Dooley, MJ; Kirkpatrick, CM; Elliott, RA; Bell, JS (2016) *Why is polypharmacy increasing in aged care facilities? The views of Australian health care professionals.* Journal of Evaluation in Clinical Practice 22:677-682	This paper was about why residents are taking so many medicines in care homes, and not why those medicines are not being stopped. There were no barriers and facilitators to deprescribing.
Pruskowski, J; Zarowitz, BJ; Handler, S (2018) *Perceptions of nursing facility providers on the utility of deprescribing.* The Consultant Pharmacist, 33:7 pages 386-402	This study focussed on the desired components of a deprescribing intervention in care homes, and there was minimal mention of barriers to deprescribing. It was decided that the findings of this paper would be useful when writing chapter 2, intervention design, but were not useful to the literature review.

Appendix C: Theoretical Domains Framework utilised in the study

Table 52 shows the validated TDF as presented by Cane et al (2012).

Table 52: Validated TDF presented by Cane et al (2012)

Domain and definition	Constructs
Knowledge (An awareness of the existence of something)	Knowledge (including knowledge of condition /scientific rationale) Procedural knowledge Knowledge of task environment
Skills (An ability or proficiency acquired through practice)	Skills Skills development Competence Ability Interpersonal skills Practice Skill assessment
Social/Professional Role and Identity (A coherent set of behaviours and displayed personal qualities of an individual in a social or work setting)	Professional identity Professional role Social identity Identity Professional boundaries Professional confidence Group identity Leadership Organisational commitment
Beliefs about Capabilities (Acceptance of the truth, reality, or validity about an ability, talent, or facility that a person can put to constructive use)	Self-confidence (Perceived competence Self-efficacy Perceived behavioural control Beliefs Self-esteem Empowerment Professional confidence
Optimism (The confidence that things will happen for the best or that desired goals will be attained)	Optimism Pessimism Unrealistic optimism Identity
Beliefs about Consequences (Acceptance of the truth, reality, or validity about outcomes of a behaviour in a given situation)	Beliefs Outcome expectancies Characteristics of outcome expectancies Anticipated regret Consequents

Domain and definition	Constructs
Reinforcement (Increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimulus)	Rewards (proximal / distal, valued / not valued, probable / improbable) Incentives Punishment Consequents Reinforcement Contingencies Sanctions
Intentions (A conscious decision to perform a behaviour or a resolve to act in a certain way)	Stability of intentions Stages of change model Transtheoretical model and stages of change
Goals (Mental representations of outcomes or end states that an individual wants to achieve)	Goals (distal / proximal) Goal priority Goal / target setting Goals (autonomous / controlled) Action planning Implementation intention
Memory, Attention and Decision Processes (The ability to retain information, focus selectively on aspects of the environment and choose between two or more alternatives)	Memory Attention Attention control Decision making Cognitive overload / tiredness
Environmental Context and Resources (Any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behaviour)	Environmental stressors Resources / material resources Organisational culture /climate Salient events / critical incidents Person x environment interaction Barriers and facilitators
Social Influences (Those interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviours)	Social pressure Social norms Group conformity Social comparisons Group norms Social support Power Intergroup conflict Alienation Group identity Modelling
Emotion	Fear Anxiety Affect Stress

Domain and definition	Constructs
(A complex reaction pattern, involving experiential, behavioural, and physiological elements, by which the individual attempts to deal with a personally significant matter or event)	Depression Positive / negative affect Burn-out
Behavioural Regulation (Anything aimed at managing or changing objectively observed or measured actions)	Self-monitoring Breaking habit

Table 53, below, was created by the author and the member of the supervisory team to guide the mapping process. Domains of the TDF are in the first column, followed by the definition provided by Cane et al (2012) and a definition of the domain with regard to deprescribing, which was provided by the author in conjunction with a member of the supervisory team

Table 53:TDF domains and their relationship to barriers to deprescribing in care homes

Domain	Definition (according to Cane et al, 2012)	Deprescribing barriers that will fit into this domain
Knowledge	An awareness of the existence of something	All aspects of knowing how to deprescribing, including knowing which medicines to stop and how to undertake the process
Skills	An ability of proficiency acquired through practice	Ability to apply deprescribing knowledge
Social/professional role and identity	A coherent set of behaviours and displayed personal qualities of an individual in a social or work setting	The extent to which a participant sees themselves as involved in deprescribing and thinks it is part of their role, understanding their role and the role of others in the process
Beliefs about capabilities	Acceptance of the truth, reality, or validity about an ability, talent or facility that a person can put to constructive use	The participant's confidence in deprescribing and perceived ability to do so effectively.
Optimism	The confidence that things will happen for the best or that desired goals will be obtained	General pre-disposition to believing that prescribing is best left alone/untouched
Beliefs about consequences	Acceptance of the truth, reality or validity about outcomes of a behaviour in a given situation	Prescriber's beliefs about negative consequences, e.g. harm, litigation

Domain	Definition (according to Cane et al, 2012)	Deprescribing barriers that will fit into this domain
Reinforcement	Increasing the probability of a response by arranging a dependent relationship, or contingency between the response and a given stimulus	An absence of processes, which reward/incentivise deprescribing
Intentions	A conscious decision to perform a behaviour or a resolve to act in a certain way	Whether a prescriber sees deprescribing as a priority
Goals	Mental representations of outcomes or end stages that an individual wants to achieve	Whether a prescriber has set goals to deprescribe, difficulties in setting deprescribing goals, goals which affect the deprescribing process
Memory, attention and decision processes	The ability to retain information, focus selectively, on aspects of the environment and choose between two or more alternatives	All cognitive aspects of deprescribing, e.g. remembering to deprescribe and the ability to make a decision
Environmental context and resources	Any circumstances of a person's situation or environment that discourages or encourages the development of skills and abilities, independences, social competence and adaptive behaviour	Contextual, resource and material limitations which impeded deprescribing including time, funding, staffing, technology, equipment.
Social influences	Those interpersonal processes that can cause individuals to change their thoughts, feeling and behaviours	Social factors or how other people may influence deprescribing behaviours e.g. influence of the resident and relative, beliefs and perceptions about others
Emotion	A complex reaction pattern involving experiential, behavioural and psychological elements, by which the individual attempts to deal with a personally significant matter or event	The negative emotional elements of deprescribing, e.g. fear, stress
Behavioural regulation	Anything aimed at managing or checking objectively observed or measured actions	The absence of dedicated deprescribing programmes and specialist services

Appendix D: Reflections on the first care home visit

Two reflective accounts are presented: the first was written after the first two interviews, which took place in a care home with care home residents. The second is a reflection on recruitment challenges.

The home I visited seemed fairly basic, situated on a busy road in (place). The residents were sitting in a couple of living rooms with the TV on, and staff around busy and chatting to them. I was taken to the manager's office where I spoke with the manager and assistant manager, who was sorting out medications. Both were happy for me to speak to residents, and when I explained about the relatives I was hoping to recruit they had some people in mind who visit regularly and may be happy to take part. They were supportive and said they'd put up the posters and give information to eligible residents.

The managers seemed to have a few residents in mind that I could speak to, and when I said I was hoping to interview a couple today they immediately agreed on the two I should interview and confirmed they would be able to consent to take part. We went to the lounge where I was introduced to the two potential participants, and I gave them both PIS to read. The first then came through with me to the dining room.

I again explained who I am and what I was there to do, and gave him some more time to read the PIS. However, he said he was having trouble reading it so I read it out to him, with regular pauses to check his understanding and whether he was happy with it. I also encouraged him to read through the sheet afterwards as well. He signed the consent form, and I went through the introduction on the interview schedule making sure he understood it would be confidential and recorded. He said he was happy to go ahead, and so the interview started.

Up to this point he had been very chatty and referred to himself as a chatterbox on a couple of occasions. He had been chatting about his family, where he lived before the home, his daily routine and his friends in the home. However, once the interview started it became more of a question and answer session than a conversation – I felt I wasn't getting the depth I had hoped for, and was flying through the interview schedule. Even when I tried to probe further for answers, I wasn't getting more, and the interview only took about 20/25 minutes to complete. He did go off on a couple of tangents, but mostly stuck to the questions and didn't give very deep answers.

I thanked him and accompanied him back to the lounge, where I approached the second participant and asked him if he had read through the sheet and whether he was happy to take part. He said he was, so we went to the dining room. I checked his understanding of

the PIS and asked him if he would like to take part, and he agreed and signed the consent form. He wasn't as chatty as the first participant, but as I didn't have to spend a lot of time going through the PIS with him we didn't have the same rapport. However, I went through the interview introduction with him and he was happy to take part.

Once I started the interview though, it very much became a question and answer session again rather than a conversation. I felt more aware of this and really tried to push for depth, but I wasn't getting it. For example, when I asked how he thought his niece would feel if the doctor suggested he stopped taking some of his medicines, the exchange went something like:

Resident: Oh no, she wouldn't like that!

Me: why do you think this is?

R: I don't know, she just wouldn't like it

M: would your niece stop you discussing stopping a medicine with your doctor?

R: I'd still talk to the doctor about it, but she wouldn't like it.

Again, we flew through the schedule and the interview was done in 15/20 minutes. I felt more conscious of needing depth during this interview, so tried to push and create scenarios for him and use the prompts, but was still only getting brief answers.

After the interview had ended, I accompanied him to the lounge then went to the office to collect demographic information. The first resident I had interviewed was in there again, talking to the staff. I collected the information and had a chat with one of the carers about what I was doing, then left.

Immediately after the interviews, I felt they hadn't gone badly but hadn't gone well. I had collected some data, but I was hoping for the interviews to last longer and be more in depth. I had invented a few prompts on the spot to try get more information, but found I couldn't think as well on my feet as I'd hoped I'd be able to and I'm not sure why this is – I felt a bit like a rabbit in the headlights, even though I hadn't felt nervous about doing the interviews. I was aware that they weren't going as I'd hoped, and didn't know how to retrieve the situation. My first thought was that the interview schedule needed revisiting, and either more prompts/questions adding or perhaps re-wording the prompts – the prompts were worded as questions, but perhaps if they were reduced to just a few words I might have to think a bit more about what I was asking rather than reading them off.

I also found myself going into "pharmacist" mode – the first question felt a bit like the start of a drug history, and I wanted to write down what they were saying before realising I didn't have to as it was being recorded, which as ridiculous as it sounds did throw me a bit! I couldn't really think past what they were saying, as I'm used to my drug histories/medicines

use reviews being quite to the point and straightforward, and it is obvious when things are said during them that require further probing and how to go about that. With this, I knew I had to probe more but it wasn't obvious to me how to go about this.

I came back to the office and discussed it with a colleague, who noticed that it sounded like the mood changed when the interview "officially" started. I agree with this and will try to make this transition from "chat" to "recorded interview" less obvious next time. We also wondered whether the dictaphones may have thrown them off, however the first resident's voice did keep going quiet and there was traffic noise, so they had to be obvious on the table.

Going forward, I do think the interview schedule needs reviewing and there are a couple of things mentioned above I can try amending for the next interview. I am also going to transcribe and listen to the interviews, and as I am listening try to think of further prompts and probes I could have tried to get more information from them. We can also discuss it at our next supervision meeting, and I can get some tips from the team. Hopefully, by being aware of the issues this time and taking steps to minimise them next time, the interviews will go better in the future.

Reflections on recruitment challenges

A barrier to recruiting care homes was accessing the registered manager. A maximum of five phone calls were made to care homes which had been sent letters, and on many occasions the researcher was unable to speak to the manager to discuss the project. Many reasons were given for the manager being unavailable, but often the manager was busy dealing with relatives, in meetings, or on leave. Once the researcher was able to speak to the manager, they generally wanted to take part. On calling the home, many managers requested more information by email – in future, it would be worthwhile calling the care homes to ask for an email address and assess initial interest, as email addresses were rarely available on the internet. Sending information via email also creates a paper trail, unlike the sending of letters which can be misplaced. Having said this, emails often went unanswered and a follow up phone call is still the best way to speak to a manager.

Once a manager was happy for their home to be involved in the study, accessing the residents and staff at the home was relatively easy. However, while most residents were happy to take part in the study, others were not. "Suspicion" of the researcher was a barrier to recruiting residents to the study in one instance. One participant refused to take part on account of the researcher's apparent age, believing they were too young to have the knowledge to discuss the topic. Another took part in the interview, and fully understood and consented to the interview, but was reluctant to answer many questions as the researcher was not their doctor and they did not think they should be discussing such matters with other people.

The main challenge to recruitment was the recruitment of relatives. This was because care home relatives were not at the care homes when the researcher visited, so recruitment relied on care home managers handing out PIS, or the relative seeing a poster and contacting the researcher. When applying for ethical approval, it was not requested that the researcher could, with the relative's permission, gain the contact details of relatives interested in the study via the care home manager. Therefore, the researcher was unable to follow up on potential participants and instead had to hope that participants made the first contact.

It was difficult to gain details of resident and relative meetings, due to the difficulties described above with accessing the manager. Only one visit to a resident and relative meeting was arranged, and this was poorly attended by relatives. One manager remarked that they were not surprised that I was having trouble recruiting them, as it was difficult to involve them in life at the care home.

Due to these difficulties, a substantial ethical amendment was submitted to the ethics committee. When approved, this allowed recruitment of relatives via social media on Twitter and through various relative groups. However, these proved unsuccessful as well – the tweets generated significant interest, but people who responded were either ineligible to take part or did not make further contact with the researcher.

Overall, the best approach to recruiting relatives was the involvement of a proactive care home manager. They would distribute information, arrange meetings and act as a go-between for the researcher and participant, encouraging the interview to go ahead. In homes where managers were not as proactive, there was no interest from relatives in taking part. Proactive, interested managers also aided with the recruitment of residents and staff. For example, these managers would ensure they had enough staff at the home on the day the researcher was visiting so the interview could take place without affecting staffing levels. They also had good rapport with the residents which helped when introducing the researcher.

The utilisation of local contacts, via the supervisory team and snowball sampling, was the best way to recruit GPs and pharmacists. While there was some success recruiting GPs through the research ready GP surgery list, there was more success through the local networks. GP surgeries were only followed up three times as opposed to the five times that care homes were contacted as it was very difficult to speak with the right person when calling the surgery, and recruitment through other methods was going well. Many people – academics, researchers and participants – told me that GPs would be the most difficult group to recruit, especially as I was unable to offer them compensation for their time. However, they were amongst the easiest group to recruit and all were very happy to partake in the interview for as long as it took.

other written information provided to the participants. A copy of the signed and dated consent form should be kept with the project's main documents which must be kept in a secure location.

Appendix F: Sample participant information sheets (PIS)

The first PIS is an example of the consent form provided to care home residents. The same form, with amended pronouns, was provided to relatives of care home residents.

The second form was provided to healthcare professionals with adjustments made only to reflect the occupation of group.

What do people living in care homes think about their medicines?

Participant information sheet: Care home residents and relatives

You are being invited to take part in a research project. Before you decide whether to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please use the contact details at the bottom if there is anything that is not clear or if you would like more information. Take your time when deciding whether or not to take part.

What is the purpose of the study?

While taking lots of medicines can be safe and necessary, it can sometimes be a problem. As you get older, the way medicines affect your body changes and some people are affected by side effects.

The purpose of the research is to find out how people who live in care homes feel about taking medicines, and how they feel about stopping medicines. To find this out, interviews will be carried out with people who live in care homes.

The purpose of this project is not for you to get specific advice about your medicines, instead we will just talk about medicines use in general.

Why have I been chosen?

You have been chosen because you live in a care home and you take medicines.

What do I have to do?

If you decide to take part, you will be interviewed by Emma Bolton, a PhD student from the University of Leeds. The interview will be a one-to-one interview and will last 30-60 minutes. The interview will take place in a quiet place in your care home.

You will be asked about how you feel about taking medicines in general. None of your medicines will be changed or stopped because of this interview.

What are the possible disadvantages and risks of taking part?

It is possible that you may become upset when talking about your medicines or health conditions. If this happens, the interview will be stopped and support offered. You will not have to continue with the interview if you do not want to.

Advice about medicines cannot be given during the interview, and your medicines will not be stopped or changed by anybody involved in this research project. If you have concerns about your medicines, speak to the staff at your care home.

What are the possible benefits of taking part?

Your views will help us learn what is important to people like you about medicines. We hope this will then help us to improve the care of people who live in care homes.

Do I have to take part?

You do not have to take part. It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and you will be asked to sign a consent form. After you have signed the consent form, you can withdraw from the study at any point until two weeks after the interview. You do not have to give a reason.

If you decide not to take part, you do not have to do anything else. Thank you for taking the time to read about the project.

Will I be recorded, and how will the recording be used?

The interview will be recorded and then someone will listen to it and write down what you said. The written interview will then be analysed. Quotes from your interview may be used in publications, at conference presentations and lectures, however none of your details will be said or published so no-one will know, or be able to work out, that you took part.

Will my contribution be kept confidential?

Only you and the interviewer will know what you say in this interview. However, if you say anything that concerns the interviewer about your safety, they might have to tell someone who could help. This might be the supervisors of the project or someone in the care home. The interviewer will talk to you about this before they tell anyone else.

The results of the research may be published in an article or presented at a conference. You will not be identified in any publication or presentation.

The interview recordings will be kept securely at the University of Leeds until the project is finished and has been submitted to be marked, then they will be destroyed. The written interviews will be kept securely at the University of Leeds for two years after the results have been published, and then they will be destroyed as well. The storage of the recordings and written interviews will comply with the Data Protection Act 1998, the Human Rights Act and the University of Leeds' Code of Practice on Data Protection.

What will happen to the results of the research project?

The results may be published in a scientific journal and presented at conferences and in lectures. Your involvement will be kept anonymous and no-one will know, or be able to work out, that you took part.

Withdrawing from the project

You can withdraw from the project at any time before or during the interview, and for two weeks after the interview. If you do withdraw, the recording and notes taken during the interview will be destroyed and none of your contributions will be used. Analysis of the interview will start two weeks after the interview, and it will no longer be possible to withdraw after this point. You do not have to give a reason for withdrawing. Your care won't be affected, and you won't get into trouble if you want to withdraw.

Who is organising/funding the research?

The research is being organised and funded by the School of Healthcare at the University of Leeds.

Contact for further information

Contact Emma Bolton for further information:

Email: hcevb@leeds.ac.uk

Telephone: 0113 343 3484

Alternatively, you can contact Dr David Alldred, Emma's supervisor:

Email: D.P.Alldred@leeds.ac.uk

Telephone: 0113 343 1805

Ethics approval

Ethical Approval from the NHS HRA Social Care Ethics Committee and HRA approval was granted on the 2nd May 2017, reference number 17/IEC08/0017 and IRAS Project ID 215674.

Exploring barriers and facilitators to reducing inappropriate medicines in care homes

Participant information sheet: Healthcare professionals and care home staff

You are being invited to take part in a research project. Before you decide whether to take part or not it is important for you to understand why the research is being conducted and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please use the contact details at the bottom if there is anything that is not clear or if you would like more information. Take your time when deciding whether or not to take part.

What is the purpose of the study?

Care home residents often have a number of health conditions, and are prescribed an average of 8-10 medicines every day. As you will be aware, this polypharmacy can potentially cause side effects, adverse drug events and reduce care home residents' quality-of-life.

The aim of the research is to explore the barriers and facilitators to stopping inappropriate medicines, "deprescribing", in care homes. Interviews will be conducted to find out why care home residents are sometimes prescribed medicines which are not useful to them anymore, and to explore people's views on stopping these medicines.

The information collected from the interviews will be used to design an intervention to facilitate appropriate deprescribing in care homes as part of a three-year PhD project.

Why have I been chosen?

You have been chosen because you are responsible for prescribing medicines for care home patients and stopping inappropriate medicines.

What do I have to do?

In order to take part, you will be interviewed by Emma Bolton, a PhD student from the University of Leeds. The interview will be a one-to-one interview and will last 30-60 minutes. The interview will take place at your place of work, or over the telephone.

You will be asked questions about your views of stopping unnecessary medicines for care home residents, including exploration of any barriers and facilitators to this process that you have encountered. This will include reflection on your own practice as well as your understanding of the practice of the GP profession as a whole. It will also include consideration of any tools that you feel could assist you to identify and stop inappropriate medicines for care home residents.

What are the possible disadvantages and risks of taking part?

No risks to taking part have been identified. A disadvantage to taking part is that you would have to give up some of your time to participate.

What are the possible benefits of taking part?

Taking part in the project will offer you the opportunity to reflect on your working practices. Your views will help us to identify the barriers and facilitators to reducing inappropriate medicines and therefore contribute to developing a successful intervention to improve the care of care home residents.

Do I have to take part?

You do not have to take part. It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and you will be asked to sign a consent form. After you have signed the consent form, you can still withdraw from the study at any point until two weeks after the interview. You do not have to give a reason.

If you decide not to take part, that's OK. Thank you for taking the time to consider the study, you do not need to do anything else.

Will I be recorded, and how will the recording be used?

The interview will be audio recorded and transcribed. The transcript will then be analysed. Quotes from your interview may be used in publications, at conference presentations and lectures, however the quotes will be anonymous.

Will my contribution be kept confidential?

The interview is confidential and the data will be anonymised, however if you reveal anything which raises safeguarding or similar concerns, this may have to be discussed with the supervisors of the project or the care home manager. However, this will be discussed with you before anyone else is involved. Similarly, if you reveal information that suggests you have breached your duty of care this will be referred to the practice/care home manager, the General Medical Council and/or the Care Quality Commission, as appropriate.   The local safeguarding team is aware of this project.

The results of the research will be published within the next two years. No identifiable information will be revealed in any publication.

The interview recordings will be kept securely at the University of Leeds until the PhD thesis has been submitted, then they will be destroyed. The written interviews will be kept securely at the University of Leeds for two years after the results have been published, and then they will be destroyed as well. The storage of the recordings and written interviews will comply

with the Data Protection Act 1998, the Human Rights Act and the University of Leeds' Code of Practice on Data Protection.

What will happen to the results of the research project?

The results will be published in an appropriate peer reviewed journal and presented at conferences and in lectures. Your involvement will be kept anonymous and no-one will know, or be able to work out, that you took part.

Withdrawing from the project

You can withdraw from the project at any time before or during the interview, and for two weeks after the interview. If you do withdraw, the recording and notes taken during the interview will be destroyed and none of your contributions will be used. Analysis of the interview will start two weeks after the interview, and it will no longer be possible to withdraw after this point. You do not have to give a reason for wishing to withdraw.

Who is organising/funding the research?

The research is being organised and funded by the School of Healthcare at the University of Leeds.

Contact for further information

Contact Emma Bolton, PhD student and interviewer, for further information:

Email: hcevb@leeds.ac.uk

Telephone: 0113 343 3484

Alternatively, you can contact Dr David Alldred, Emma's supervisor:

Email: D.P.Alldred@leeds.ac.uk

Telephone: 0113 343 1805

Ethics approval

Ethical Approval from the NHS HRA Social Care Ethics Committee and HRA approval was granted on the 2nd May 2017, reference number 17/IEC08/0017 and IRAS Project ID 215674.

Appendix G: Recruitment letters

The following is an example of the recruitment letter sent to care homes and GP practices. The content of the letter reflected the setting of the destination.

<div align="right">

Emma Bolton

Room 3.35, Baines Wing

University of Leeds

Leeds

LS2 9JT

0113 3433484

hcevb@leeds.ac.uk

XX/XX/XXXX

</div>

[Care home/GP practice address, or body of letter could be sent by email]

Dear XXXXX,

I am a PhD student at the University of Leeds, conducting research into the barriers and facilitators to stopping inappropriate medicines for care home residents. As you will be aware, care home residents are prescribed many medicines, some of which are probably not necessary, and we are seeking to work out why this is and how we can reduce the burden of medicines for residents and staff. This project will involve interviewing care home residents, their relatives and staff as well as general practitioners and pharmacists who provide a service to care homes. I am writing to enquire as to whether you would be happy for your residents, their relatives and your staff to be approached to participate in a one-off interview. The project has received ethical approval from the School of Healthcare Research Ethics Committee and any individuals wishing to participate would be asked to provide informed consent.

The project aims to:

- Find out why care home residents are sometimes taking medicines that may not be useful anymore,
- Explore how people feel about stopping medicines which may not be useful anymore
- Work out how inappropriate medicines can be reduced.

Participants will be asked to take part in a one-to-one interview with myself. The interview will last 30-60 minutes and will take place in the care home at a mutually convenient time; staff and relatives of care home residents will have the option of taking part in a telephone interview.

Please find enclosed/attached example participant information sheets for care home residents, their relatives and care home staff.

Please do not hesitate to contact me for more information. I will follow up this letter in two weeks with a telephone call to discuss the project with you.

I look forward to hearing from you,

Emma Bolton

PhD student

University of Leeds

Appendix H: Confirmation of care home participation in the research project:

The following form was signed by care home managers to indicate they were aware of research being conducted on the premises

Confirmation of care home participation in the research project:

How do people who live in care homes, their residents and care home staff feel about the medicines taken by care home residents?

I can confirm that I, _____ ,

manager of _____

_____

give permission for the research project to be undertaken and am aware of the research activity taking place in the care home.

Signed: _____

Care home manager

Date: _____

Appendix I: Sample interview schedules

This appendix contains two interview schedules. The first was utilised in interviews with residents and relatives (with pronouns reflecting the participant's role) and the second was utilised in interviews with healthcare professionals and care home staff (again, amended only to reflect the occupation of the participant).

Interview schedule: Care home residents and relatives

Hello, my name is Emma. I'm a student and I'm doing some research at the University of Leeds. Thank you for letting me come today to talk to you as part of the study.

Today, I'd like to talk to you about medicines. I'm trying to find out, in general, how people feel about their medicines, how many they take, how they would feel about stopping medicines which might not be useful anymore, that sort of thing. No-one is going to stop any of your medicines because of our conversation. I just want to find out how you feel about the amount of medicines you take.

Please can I confirm that I have your consent to talk to you for this research?

I'm going to record our conversation on this (show dictaphone/recording equipment). Is that OK?

After our conversation, I will listen to the interview and write it down. Is that OK?

Only you and I will know what you say in this interview, and I won't tell anyone your name. However, if you tell me something that concerns me I might have to speak to someone about it that could help. I will talk to you about this before I do it though.

You do not have to answer any questions that you don't want to. If you don't want to answer a question, just let me know.

We can stop the interview at any time, just let me know. We can also take a break if you need to, again just let me know.

Is there anything you want to ask me before we start?

1	Can you tell me about the medicines you take? **Prompts:** Do you know why you take them?/What do you understand about your medicines?/Why do you think you need them?	

	How do you take them?	
	Do you have any eye drops, creams, patches, injections etc.?	
3	Do you think all your medicines help you? **Prompts:** Which ones do you think help you? Why? Which ones do you find most beneficial? Why? Are there any you particularly like taking? Why?	
2	Do you feel happy about the number of medicines that you take? **Prompts:** Do you like taking your medicines? Why/why not?	
4	Would you like to take more medicines? **Prompts:** What for? If not, why not? How would you feel if your doctor wanted to start some more medicines? Do you feel there is more your medicines can do?	
5	Are there any medicines you wish you didn't have to take? **Prompts:** Are there any medicines you don't like taking? Have you ever thought about doing anything about this? What could you do? Why haven't you? Which ones would you like to stop and why? Are there any medicines which make you feel unwell? What would make you want to stop taking a medicine? (Further prompts: side effects, drug interactions)	
6	Have you ever tried to stop any of your medicines before?	

	Prompts: Situation: Have you ever taken any medicines in the past that made you feel unwell? Situation: Have you ever taken any medicines in the past that you didn't like taking? What happened to these medicines – did you talk to anyone about them? What happened – who did you speak to? Was it a positive or negative experience?	
7	If you wanted to stop some of your medicines, what would you do? **Prompts:** Situation: If you started a medicine and it made you feel unwell, what would you do? Who would you speak to? (Further prompts: CH staff? Family? GP?) Would anyone try to stop you or help you? Why do you think they might do this? (Further prompts: Family? GP?) What support would you need to help you stop taking a medicine – e.g. family, CH staff, GP, alternatives, "trial"	
8	Can you think of a time in the future where you might want to stop taking some medicines? **Prompts:** Situation: if in the future you became unwell or if you had difficulty swallowing and you found it difficult to take your medicines, how would you feel? What if you had to get your medicines by injection, or by swallowing liquids instead? Would you talk to your doctor about this? Or family/staff? Would you feel comfortable talking to the doctor/family etc about this?	
9	If your doctor suggested stopping some of your medicines they felt weren't useful to you any more, how would that make you feel? **Prompts:**	

	Are there any medicines you wouldn't want the doctor to stop? What would you do if they suggested stopping that? Would you agree or disagree? Would it make you feel worried/scared/sad/happy/relieved? Would you be worried about withdrawal/your condition getting worse? How do you think your family would feel about this? Explore – supportive? Unhappy?	
12	If a pharmacist or nurse suggested stopping some medicines they felt weren't useful to you any more, how would that make you feel? **Prompts:** Explore beneficial medicines again. Would you agree or disagree? Would you want a second opinion or to speak to anyone else about this? Would it make you feel worried/scared/sad/happy/relieved? How do you think your family would feel about this? Supportive? Not happy? Why? Explore if different to a doctor.	
10	Have you ever talked to your doctor about your medicines? **Prompts:** Has anyone spoken to you about them or explained why you need them? Would you find that useful? If your doctor wanted to change your medicines, would you want them to discuss that with you? Would you feel comfortable talking to the doctor about changing your medicines? How would you feel if your doctor changed your medicines without talking to you? Do you think you are the best person for the doctor to talk to about your medicines? Explore – why? If not, who should the doctor speak to?	

	Would you like/prefer your doctor to talk to anyone else about your medicines? Can you think of a time when a decision was made about your medicines? Were you involved?	
13	Do you ever talk to the staff about your medicines? **Prompts:** Do you feel they can advise you? If you haven't, do you think you could? Explore. If you have, what did you talk about? Were you happy with the conversation? Do you feel in control of your medicines? How did you manage your medicines before you lived here? If they self-managed: Were you managing? Did that stop when you came here? Were you involved in that decision? How did it make you feel to stop managing them? Do you feel like you have a choice of whether to take your medicines or not? Do they ask them if you want to take them? If not asked, would you like to be asked?	
14	**If the patient has family:** Have you ever spoken to your family about your medicines? **Prompts:** If yes – what do you talk about? Are you comfortable talking to them about your medicines/do you like them to be involved? Do you think they know what you take? If no – why not? Are you not comfortable/don't like them to be involved etc – explore. Do your family speak to the staff/your doctor about your medicines?	

| 16 | Is there anything else you would like to add to our conversation? | |

Thank you for talking to me today, your answers have been very helpful.

Are you still happy for me to use our conversation as part of my research?

OK, just to let you know that you have two weeks to let me know if you want to change anything you have said to me or add anything you have forgotten – XX/XX/XXXX. You also have two weeks, until XX/XX/XXX to decide if you no longer want to be a part of the study. Just let me know (provide contact details).

Do you have any other questions?

Please do not hesitate to get in touch if you have any questions, wish to change your answers or leave the study.

Interview schedule: Healthcare professionals and care home staff

Hello, my name is Emma. I'm a PhD student at the University of Leeds. Thank you for agreeing to take part in the study. Today, I'd like to talk to you about the process of deprescribing unnecessary medicines for care home residents.

Firstly, please can I confirm that you consent to be a part of this research project?

The interview will be recorded [show dictaphone] and transcribed. Do you consent to this?

We can end the interview at any point, and you do not have to answer any question that you do not want to. Just let me know during our conversation.

The interview is confidential and the data will be anonymised, however if you reveal anything which raises safeguarding or similar concerns I may have to discuss this with appropriate people. I will also have to speak to the appropriate authorities if it is revealed that you have breached your duty of care. I will discuss this with you before doing so.

Before we start, do you have any other questions?

	Knowledge Are you aware of the concept of deprescribing? *(The process of a trial of inappropriate medicines)* **Prompts**: What do you understand it to mean? Have you heard the term before? Do you, or anyone you know, use the term? Do you know any evidence about deprescribing? Do you know of any deprescribing procedures?	
	Intentions Do you want to reduce the amount of medicines care home residents take? **Prompts:** Do you think this is important? How much – is it a priority?	

	Skills Have you ever been involved in deprescribing for a resident? Or How often are you involved in deprescribing for care home residents? **Prompts:** What happened? Was this easy? If not, why haven't you been? Do you think it would be easy? Do you think all the medicines residents in your care take are useful to them? What happens when a pharmacist or nurse suggests deprescribing – is this helpful to you? Would pharmacist and nurse prescribers help with this process?	
	Memory, attention and decision process What would you do if you thought a resident would benefit from stopping a medicine? **Prompts:** How does it usually come about – routine review or ad-hoc? Who would you speak to? Resident/relative/care home staff/other HCP? Would anything interfere with this process for you? Would anything make this process easier? What would you do if a resident or relative told you they wanted to stop one of their medicines? Is this the sort of thing you would make a priority to deal with?	
	Memory, attention and decision process Are there any scenarios where you might decide not to proceed with the deprescribing process for a resident? **Prompts:** How would you feel if: - The resident has dementia, - Their family could not be reached,	

	- You were unsure about the potential consequences?	
	Knowledge Do you feel you have the knowledge to recognise medicines which may be inappropriate for care home residents? **Prompts:** Would training help? If so, what in? What do you think you need to know to be involved in deprescribing? Do you feel your knowledge is lacking in any area?	
	Beliefs about capabilities Do you feel able to stop medicines for relatives in your care? **Prompts:** Do you feel confident deprescribing for residents? Is there anything that would help you feel more confident making these suggestions? How do you think these suggestions would be received by the resident/their relatives/CH staff/other healthcare professionals?	
	Social and professional role and identity Who do you think is responsible for deprescribing in care homes? You may think it is one person, or more than one person. **Prompts:** Do you think you have a role in deprescribing for care home residents? Do you think you should have a role in deprescribing? How do you find working with the multi-disciplinary team in care homes? What do you think the role of CH staff/GPs/relatives/the resident or other HCPs is? Do you feel comfortable talking to other healthcare professionals/care home staff/residents/relatives about the medicines taken by the resident?	

	Do you think that other healthcare professionals, such as nurses and pharmacists, can play a bigger role in the process than they do now? Would a prescribing qualification be necessary?	
	Reinforcement Is there anything stopping you from being involved in deprescribing? **Prompts:** Is there anything that could encourage you to be involved in deprescribing? If they are regularly involved in deprescribing: What do you think may stop others from being involved in deprescribing? CQUIN Specialists	
	Environmental consequences and resources Are there any competing tasks or time constraints that stop you being involved in deprescribing? **Prompts:** Do you think any of these are specific to care homes? Do these things stop you discussing a resident's medicines with them and/or their relatives, or are there other tasks that prevent this?	
	Environmental consequences and resources Do you have the resources available to help you to reduce the number of medicines care home residents take? **Prompts:** What would help? How much does any perceived lack of resource impact on your deprescribing behaviour? If you had the right resources, would you suggest deprescribing for your residents more regularly? Anything specific to care homes?	
	Behavioural regulation	

	What do you feel you need to enable you to assist with deprescribing in care homes? **Prompts:** What barriers have you encountered? What barriers do you think you might encounter? What would facilitate the process? How could you change your working practices? What could you do to do more deprescribing in care homes? What could other people in the multi-disciplinary team do?	
	Optimism Do you think that deprescribing will become a routine part of the care you and other GPs offer to residents? **Prompts:** Do you think that deprescribing should become a routine part of the care offered to residents?	
	Beliefs about consequences What do you think about the potential consequences of deprescribing for care home residents might be? **Prompts:** Do you think it's worth doing? Do the potential consequences concern you? Or do you think they would be positive? What about consequences for the resident/their relatives/colleagues care homes/NHS? If they only highlight positive consequences, suggest some negative ones and vice versa to see how they would feel about that.	
	Emotion How does the prospect of deprescribing in care homes make you feel? **Prompts:** How do you feel about the medicines taken by care home residents?	

	Do you feel like it's too much/not enough?	
	Do you feel responsible at all for the medicines taken by the residents in your care?	
	How does that make you feel?	
	What could help you overcome this?	
	Is there anything else that you would like to add?	

Thank you for taking part in the interview, your answers will be very useful and will help us to gain insight into deprescribing behaviours in care homes. Are you still happy to be a part of the study?

You have a period of two weeks, until XX/XX/XXX, to think about the interview and get in touch to amend your responses, add something or withdraw from the study.

Do you have any other questions?

Please do not hesitate to get in touch if you have any questions, wish to change your responses or leave the study.

Provide contact details.

Appendix J:The frameworks developed during framework analysis

During framework analysis, the resident and relative interview data were analysed together, and the GP, pharmacist and care home staff interview data were also analysed together thus forming two analysis groups. As described in Chapter 3, section 3.8, themes and subthemes were developed from the data and utilised to create frameworks into which the data was sorted. Three frameworks for each analysis group were created, one for each theme developed. The subthemes developed formed the columns, and the participants the rows, of the frameworks as demonstrated in Figure 11.

Below in tables 54 and 55 are the themes and subthemes which formed each of the frameworks utilised during framework analysis.

Table 54: Frameworks developed during the analysis of the resident and relative interview data

Frameworks, based on themes developed	Columns of the framework matrices, based on the subthemes developed
Life as a care home resident	Being a care home resident
	Being involved in care
	The future
Medicines and health	Concerns about medicines
	Making sense of medicines
	Navigating ill health
	Response to medicines change
Roles and relationships	Managing views and information
	Perceptions of staff and systems
	Trust in others

Table 55: Frameworks developed during the analysis of the GP, pharmacist and care home staff interview data

Frameworks, based on themes developed	Columns of the framework matrices, based on the subthemes developed
Environmental context and resources	Healthcare systems
	Skills and knowledge
	Tools and resources
Making sense of medicines	Attitudes to deprescribing
	Deprescribing in practice
	Understanding of medicines taken by care home residents
Social influences	Residents and relatives
	Roles and responsibilities
	Working with others

Appendix L: Training attended by the author during the research programme

General training

Training attended	Date
Word for Thesis Part 2 (Final Year)	23.11.18
Word for Thesis Part 1	30.10.18
Maintaining Motivation Workshop	18.09.18
The Finishing Thesis Writer	22.03.18
NVivo Part 2	21.03.18
Safeguarding Data	14.11.17
NVivo Part 1	07.11.17
Intro to Data Protection & GDPR Research	17.11.16
NHS Ethical Approval Process	11.11.16
Vulnerable Research Participants & Mental Capacity	09.11.16
Word for Thesis Part 1	25.05.16
NVivo Part 1	03.05.15
Research with Human Participants	15.01.16
6th Postgraduate Researcher Conference	08.12.15
Project Managing Your Research Degree	02.12.15
Ethics & Ethical Review	24.11.15
Faculty of Medicine and Health Literature Searching	04.11.15
Faculty of Medicine and Health Starting your Research Degree	13.10.15

Training specific for the PhD

Training attended	Date
Consulting with older people CCPE workshop	05.07.17
Safeguarding children and vulnerable adults level 2 CPPE training	13.04.17

NHS ethical approval process	11.11.16
Vulnerable people and the mental capacity act	09.11.16
IRAS e-learning course	12.09.2016
Sense about Science: Voice of Young Science Media Workshop	08.04.2016
CPPE The mental capacity act (2005) and covert administration of medication	20.01.2015
Care home visit with a practice pharmacist	01.12.2015

Other training activities

Participation in University groups such as the Early Careers Research Network and the medicines optimisation research theme group.

I continued to locum throughout my PhD to maintain my skills in practice, and took part in teaching opportunities within the school.

Appendix L: Abstracts presented at conferences throughout the course of the research programme

Abstract for presentation at FIP conference 2018, Glasgow

Deprescribing: barriers and facilitators to stopping inappropriate medicines in long-term care facilities

Bolton E.V, Easthall C, Spilsbury K, Alldred DP

School of Healthcare, University of Leeds

Background information

Millions of older people globally live in long-term care and inappropriate polypharmacy is prevalent in this context which can lead to adverse drug events, hospital admissions and poorer quality of life.[1,2] Reducing inappropriate prescribing is an international priority and deprescribing (the cessation of inappropriate medicines) is a potential solution.

Purpose

To gain an understanding of barriers and facilitators to deprescribing for older people living in care homes to inform development of a novel intervention.

Method

Semi-structured interviews were conducted with care home residents and relatives. Interviews were audio-recorded and transcribed. Themes and explanations were developed using framework analysis.

Results

11 residents and 4 relatives were interviewed from 8 homes. Analysis revealed themes of: making decisions; medicines and health; roles and relationships; passivity. Barriers to deprescribing included: difficulties communicating with residents and healthcare professionals; concerns about stopping medicines, e.g. recurrence of the condition the medicine was being used to treat. Facilitators included having good relationships with healthcare professionals.

Conclusion

There is a paucity of research on the views of this vulnerable population about deprescribing. Practitioners involved in deprescribing should involve and empower residents and relatives to make informed decisions about residents' care. The results will be used to create a behaviour change intervention to facilitate deprescribing in care homes.