Table S5 Illustrative quotations for barrier themes and subthemes

Themes & subthemes (reference)	Quotations from participants in primary study	Interpretations of findings offered by authors
Prescriber-related factors		
inadequate knowledge (61-64, 66 67, 70-73)	What do you mean by deprescribing? The term? I don't know[73]	The FPs lacked the knowledge of deprescribing in a safe and effective manner[73]
	Inappropriate connotes carelessness, and I think very few of us are careless…[62]	The term "potentially inappropriate prescribing" evoked mixed reactions in the GPs, with six of them reporting that they found the term particularly negative, value-laden and accusatory and did not incorporate the difficulties of prescribing for older patients faced by the GPs[62]
	In our practice all this happens automatically already and this is why there was nothing that needed changed[64]	Several statements suggested that the participants were not aware of the care problem or the deficiencies in their own practice and therefore saw no need to implement the recommendations[64]
concerns of adverse consequences (61, 64, 65, 67, 69, 70, 73, 74)	Fear, that they'll have a negative outcome from you reducing some of these medicines[67]	the fear of contributing to a worse outcome, possibly death, as a result of deprescribing was part of the justification for maintaining the status quo[67]
	You could be viewed as being neglectful, as being a bad doctor, as being not competent, if you're taking medications away and someone has an event[70]	they feared reputational damage (being seen to be a "bad doctor"—GP-5), accountability repercussions, and moral blame and shame ("feeling terrible"—GP-2)[70]
clinical inertia (61, 63, 65, 70, 72-74)	And that is simply a drug that the patient is using for 30 years now and under which she is well managed concerning her blood levels...I would not touch it, that is [a case of] "never change a winning team", therefore these are things I wouldn't change[61]	Frequently they had been prescribing the medication for years and lacked motivation to reconsider it or did not want to diverge too far from a standard of therapy (guidelines)[61]
	Sometimes the medication is prescribed under another treating team, so I ignore it[73]	The FPs in our study were reluctant to deprescribe medications that had been prescribed by a specialist or another practitioner. This study also illustrates that FPs feel pressured into continuing the prescription of certain medicines initiated by specialists[73]
	He prescribed it to me anyway and then he always said afterwards "Ah, do you know what? Shall we cancel that? No" he said, "we won't do that. You are so old now, it doesn't matter anymore. Just go on taking it"[63]	Some patients reported that their age was used as an argument against PIM discontinuation or for continuation by their GPs[63]
lack of communication (62, 63, 65, 68, 71, 73)	People may then get the feeling, "Don't I count anymore, am I not important?"[68]	GPs are reluctant to initiate a discussion about stopping medication because they are concerned that patients may interpret this as a sign of being given up on[68]
	I call them and it is prescribed (laughs). [...] They know that I, the girls know that I don't come around regularly because I can't[63]	Some patients reported that they obtain prescriptions for their PIM without regular personal contact. For example, a rather uncomplicated request by phone was described for benzodiazepines and other PIM[63]
Patient-related factors		
limited understandings (62-64, 66, 68, 69-71, 73)	What I quite always have then, dry mouth, dry eyes, stuff like that, you know? That should also be caused by the medication, but I don't certainly know[63]	A lack of knowledge might contribute to the chronic usage of PIM as patients are probably hindered to initiate its cessation[63]
	Part of the problem is that patients do not dare to say: I have not understood this! Communicating on an equal level is not so well developed in many cases. The patients sits there reverently and nods[64]	Some patients had limited understanding about their medicines and were not interested to know more[71]
patient nonadherence (61-64, 68)	Because sometimes, if a tablet is upsetting them, some of them [patients] can be embarrassed to tell you, and they just don't take them, and they end up with a stock pile, so I ask them to bring everything in[62]	However, it is unclear if this paternalistic model was employed by choice, or if GPs felt compelled to take responsibility where patients adopted a more passive approach to their medication management[62]
	And she doesn't like doing that, because she just says "It damages your brain". What can you damage in mine anymore, I´m going to be ninety years old soon[63]	Some patients made fatalistic statements that implied ageism as they reported that different medication-based efforts or alterations were not worthwhile due to their own age or due to already established impairments[63]

	I´m sometimes a little bit insecure then, you know? [...] But I made arrangements therefore, I know exactly where my slippers are, [...] So, that´s working well[63]	The intensity and valence of these side effects varied and side effects did not affect the patients in a sufficiently strong way to create a wish to stop the intake[63]
	[Patients say] "I don't really know why the doctor's wanting me to do this", they'll get all defensive and just go, "I'm fine, I can manage my medication fine"[71]	patients can feel as if they are being tested or their GP thinks they have done something wrong[71]
drug dependency (61, 63-65, 68, 69, 73, 74)	I was demanding that. I said [to him] "My wife always got your prescription for that [drug]", and then I said "and she always fell asleep immediately[63]	Patient demands and their relative interest in medication were noted to strongly influence the changing or discontinuation of medication. Some patients were described as demanding treatment and not being content to adjust their medication due to fear of change or loyalty to the doctors' prescription orders[69]
	Some patients love his or her medications even more than their kids, even if you recommend something better they resist to change[73]	Patients may not always be willing to stop or change medicines they have been taking for a long time, despite the physician's recommendations[73]
	I don't know, if it is psychogenic or, but I do think so, that it is being addicted[63]	Several patients that chronically used benzodiazepines or hypnotics in particular reported some sort of dependency on the drug[63]
Environment-related factors		
lack of integrated care (61, 62, 64-71, 73, 74)	A lot of the time when we get the prescriptions, it's from an outpatient clinic. It might be in good cases 2 weeks later, in other cases, 5 or 6 months later when we get a letter of explanation for why the changes were made, ok, so do we ignore the prescription until we get an explanation for it[62]	Communication between primary and secondary care was identified as problematic in both directions. However, for the study participants, the most salient issue was that changes made in hospital/outpatient settings were often not communicated in a timely manner to inform decision making[62]
	I think a lot ends up falling on primary care…we're often called upon to reconcile things that we're not necessarily managing. So it has to be something that the whole medical center buys into so that we can get the help of subspecialists…we might not be able to resolve the discrepancies ourselves[66]	Many providers acknowledged a lack of support staff to assist with medication reconciliation, primarily taking on this task alone[66]
	All doctors should speak with one voice. Different stories provoke distrust[68]	Contacting the specialist to change medication, however, took additional effort and GPs feared that it would be difficult to reach a consensus as the specialists often have a different viewpoint[61]
	A classic is of course Ibuprofen. Well, Diclofenac, NSAIDs which are taken very, very often. […] I always try to include the orthopaedist, […] they very, very quickly recommend […] this group [of medications] without asking themselves, "Is there a pre-existing internal condition?"[65]	Compared with the GP, they know much less about the patients concerning comorbidities, established medications or other specifics (e.g. medication sensitivity, changed metabolism) and may, therefore, consider risks and benefits less[65]
insufficient investment (61, 64, 66, 71)	This actually is a relatively long process, as I don't have internet access here. […] I print it [the CMR] and make notes. […] Then I wait until the patient comes again. But I have [a study patient] who doesn't come very often and then it's difficult[61]	The functions of the practice software were another issue because not all systems allowed easy adaption of the template for medication lists, and compatibility with the systems in hospitals or other practices was usually not given[64]
	It's a very difficult system to use. It's often…not working and it's not easy to get into…If I need to use secure messaging…I have to look [the patient] up and wait and wait for the delay[66]	The functions of the practice software were another issue because not all systems allowed easy adaption of the template for medication lists, and compatibility with the systems in hospitals or other practices was usually not given[64]
	Some of it has been abused ... it's really deplorable, but I think that is probably a reflection of the status of what the [pharmacy] profession is in. They're trying to re-invent themselves in another way because ... everything's so badly paid[71]	Pharmacists talked about the financial difficulties related to the monthly cap on HMRs – that remuneration was not enough for the time spent with patients and on HMR paperwork – and how this may have led to a subset of pharmacists over-servicing HMRs[71]
time constrains (61, 64-67, 69, 70, 73)	There is no time … [You've got] complicated, complex patients and you never have more than 15 minutes and sometimes its double booked. There's never time to spend on this[70]	The FPs reported lack of time as one of the barriers, as time constraints may stop them from addressing all of the patients' concerns, which may lead to suboptimal medicine management[73]
	Well it's just, I guess, everybody's busy. Ehm, things maybe are not reviewed as often as they should be (…). So, you know, it does not, it just flies by and you know, you have got a number of other reasons, which are far more immediate in terms of inappropriate	Being busy with serving many patients and doing administrative work were believed to restrict time to do medication reviews and to have follow-up contact with prescribers to discuss potential changes[69]

	prescribing, that you need to look out for[69]	
Technology-related factors		
complexity of implementation (62, 63, 66-68, 70, 72, 73)	These elderly people who have a lot of symptomatic illnesses as well, you know, attend me, and I have less and less options[62]	GPs felt that polypharmacy, multimorbidity, and patient heterogeneity, all contributed to complexity at the patient level. Potential side-effects and drug interactions, and perceived poor patient medication adherence, further compounded these difficulties from the GP perspective[62]
	The problem is that you are trying to weigh up unmeasurable harm quite often against unmeasurable benefit. We are trying to do that in our minds and trying to work out—Is it more likely to be doing benefit or more likely to harm?[67]	The process of making a decision in a patient with potentially inappropriate polypharmacy involved trying to estimate and weigh up the harms and benefits of therapeutic options in the face of many unknowns in this diverse and complex patient group[67]
	It's harder to access other services. Non-pharmaceutical options are often a lot harder to access than medications[70]	These alternative treatments either were not effective or they were used in addition to the intake of the PIM[63]
	A very cognitively impaired person, who's living independently, is going to take a lot more time, because we are going to look in the bottles and potentially do some pill counts to check[66]	Participants in the GP focus groups viewed deprescribing as a time and resource intensive process, requiring not just an up-front, but ongoing commitment of effort, particularly when there are competing clinical priorities[67]
inapplicable guidance (61, 62, 64, 65, 67-70, 72-74)	To me, the guidelines are kind of a hindrance. At the moment they do not cater for older patients[68]	Sometimes GPs found the new recommendations not comprehensible or considered the recommendations as not applicable to the individual patient who was perceived biologically younger[61]
	So you have to ultimately stick to the general guidelines, because if you go there now radically, then you contravened the guidelines of the professional societies. It's difficult[61]	Discrepancy between guidelines' recommendations and lack thereof for older patients[73]
	I think, therefore, sometimes you are doing it without the really significant evidence-based security—or at least I don't even know[67]	The lack of scientific evidence presented difficulties for professional accountability[67]