


# Patient and Physician Perspectives of Deprescribing Potentially Inappropriate Medications in Older Adults with a History of Falls: a Qualitative Study



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**BACKGROUND:** High-risk medications pose serious safety risks to older adults, including increasing the risk of falls. Deprescribing potentially inappropriate medications (PIMs) in older adults who have experienced a fall is a key element of fall reduction strategies. However, continued use of PIMs in older adults is common, and clinicians may face substantial deprescribing barriers.

**OBJECTIVE:** Explore patient and clinician experiences with and perceptions of deprescribing PIMs in patients with a history of falls.

**DESIGN:** We led guided patient feedback sessions to explore deprescribing scenarios with patient stakeholders and conducted semi-structured interviews with primary care physicians (PCPs) to explore knowledge and awareness of fall risk guidelines, deprescribing experiences, and barriers and facilitators to deprescribing.

**PARTICIPANTS:** PCPs from Kaiser Permanente Southern California (KPSC) and patient members of the KPSC Regional Patient Advisory Committee.

**APPROACH:** We used maximum variation sampling to identify PCPs with patients who had a fall, then categorized the resulting PIM dispense distribution for those patients into high and low frequency. We analyzed the data using a hybrid deductive-inductive approach. Coders applied initial deductively derived codes to the data, simultaneously using an open-code inductive approach to capture emergent themes.

**KEY RESULTS:** Physicians perceived deprescribing discussions as potentially contentious, even among patients with falls. Physicians reported varying comfort levels with deprescribing strategies: some felt that the conversations might be better suited to others (e.g., pharmacists), while others had well-planned negotiation strategies. Patients reported lack of clarity as to the reasons and goals of deprescribing and poor understanding of the seriousness of falls.

**CONCLUSIONS:** Our study suggests that key barriers to deprescribing include PCP trepidation about raising a

contentious topic and insufficient patient awareness of the potential seriousness of falls. Findings suggest the need for multifaceted, multilevel deprescribing approaches with clinician training strategies, patient educational resources, and a focus on building trusting patient-clinician relationships.

**KEY WORDS:** deprescribing; falls; potentially inappropriate medications; older adults.

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## INTRODUCTION

High-risk medication use and polypharmacy pose wide-ranging, serious safety risks to older adults, including increasing the risk of falls.<sup>1–3</sup> One in four adults aged  $\geq 65$  years experience a fall every year in the USA, and falls are the leading cause of fatal injury and the most common cause of nonfatal trauma-related hospital admissions among older adults.<sup>4</sup> Fall prevention research is extensive,<sup>5</sup> with strong evidence that falls in older people can be prevented with evidence-based interventions.<sup>6</sup> Deprescribing potentially inappropriate medications (PIMs) in older adults who have experienced a fall is a key element of fall reduction strategies. However, health practitioners face substantial barriers at multiple levels (patient, system, clinician) in deprescribing PIMs.<sup>7</sup>

Deprescribing refers to the safe and effective cessation of medications that are likely to cause more harm than benefit. Deprescribing generally requires a complex mix of intervention activities at multiple levels of influence.<sup>8,9</sup> Interest in deprescribing has grown significantly in recent years as a method to reduce medication-related falls and other adverse events.<sup>10</sup> However, deprescribing is complicated, particularly among high-risk patients. For example, deprescribing benzodiazepines, a PIM for most older adults, raises questions

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regarding potentially fatal withdrawal syndrome for those with long-term use.<sup>9</sup> Efforts to encourage deprescribing through development and use of quality metrics have proven problematic: deprescribing decisions often involve complex factors that are not easily captured in a quality metric (e.g., continued use due to poor alternative outcomes from cessation), leading to recent criticisms of *potentially* inappropriate medications being measured as if it were *always* inappropriate.<sup>11</sup> Additionally, although most patients are aware of medication-induced harms,<sup>12</sup> deprescribing has been described as “swimming against the tide” of patient expectations.<sup>13</sup> Patients may have strong fears of stopping medications that have been beneficial in the past and may not perceive themselves to be at increased risk for falls, not recognizing the changing risks associated with aging or their growing risk and serious consequences of a fall.<sup>14</sup>

The importance of stopping PIMs among older adults who have experienced a fall is especially significant and has been highlighted in nationally recognized quality metrics. This includes the National Committee for Quality Assurance (NCQA) Healthcare Effectiveness Data and Information Set (HEDIS®)<sup>15</sup> metrics for “Use of High-Risk Medications in the Elderly” and “Fall Risk Management”<sup>16</sup> as well as prescribing guidelines from the American Geriatrics Society Beers Criteria, an explicit list of PIMs to avoid in older adults. PIMs are associated with poor health outcomes, including falls, hospitalization, morbidity, and mortality, leading to billions of dollars in additional costs to the healthcare system.<sup>17–19</sup> Use of PIMs remains common among older adults, with estimates of up to 42% of older adults<sup>2</sup> with a dispense of a PIM and as high as 73% of older adults in nursing homes.<sup>7</sup>

To date, insufficient research has been conducted on deprescribing in patients who have experienced a fall. Few studies have examined whether deprescribing after a fall is common, barriers to deprescribing in this population, or identified potential approaches to deprescribing PIMs after a fall. In this qualitative study, we sought to explore patient and clinician experiences and perceptions of PIMs and deprescribing in patients with a history of falls within a large, integrated healthcare system, and to gain insight into real-world barriers and facilitators to deprescribing among this population at multiple levels (patient, clinician, system) in order to inform future interventions to facilitate deprescribing.

## METHODS

### Study Setting

We conducted the study within Kaiser Permanente Southern California (KPSC) primary care physicians and patients. KPSC is an integrated delivery system serving over 4.5 million members. Members are racially, ethnically, and socioeconomically diverse and broadly representative of the underlying Southern California population.<sup>20</sup> We focused on PIM

dispensing among patients with a history of falls following the HEDIS® Drug-Disease Interaction in the Elderly specifications.<sup>3</sup> The seven potentially contraindicated medication classes were selective serotonin reuptake inhibitors (SSRIs), benzodiazepines, tricyclic antidepressants, anticonvulsants, nonbenzodiazepine hypnotics, antipsychotics, and antiemetics. Qualitative data collection was led by experienced qualitative researchers (CMP, EEH). All study activities were approved by the KPSC Institutional Review Board (IRB); we received a waiver of informed consent for interviews and feedback sessions (IRB# 10925).

### Sampling and Recruitment

We identified KPSC primary care physicians, defined as those practicing in family medicine or internal medicine at the time of the study, via clinician databases. We used maximum variation sampling to identify potential participants, where the goal was to include participants with diverse perspectives.<sup>21</sup> Maximum variation sampling is useful for identifying shared patterns that cut across cases and emerge out of heterogeneity, as well as for documenting variations in processes/outcomes.<sup>21</sup> We identified PCPs with patients in their panel who had a documented fall, based on the codes for a fall or fracture specified in the HEDIS® measure, then examined PIM dispenses for that patient population. The distribution of PIM dispenses was used to categorize PCPs into high-frequency versus low-frequency groups based on the distribution of the dispensing data. PCPs with > 18% of patients with a PIM dispense after a fall were categorized as high, and PCPs with < 10% of patients with a PIM dispense after a fall were categorized as low. PCPs with ≤ 5 patients in their panel with a fall and PIM dispense were excluded. We sought to include 80% from the high-frequency and 20% from the low-frequency group in our interviews. By including both high- and low-dispensing physicians, we can efficiently gain insights into barriers and facilitators. Potential participants were recruited via email; participating physicians were offered \$25 gift cards.

To obtain the patient perspective, we conducted two guided feedback sessions with patient members of the Kaiser Permanente Southern California Regional Patient Advisory Committee (RPAC). The RPAC consists of 21 KPSC members who regularly provide input into KPSC quality initiatives, care delivery, and research studies. While these volunteers vary in age, ethnicity, and background, the majority of members are at or above retirement age; we hypothesized that many in the group would have personally experienced a fall and/or have family members with fall experience. Thus, given our research questions and desire to triangulate physician data, engaging with RPAC was an opportunity group to directly speak to the topic of falls and PIMs based on their own lived experience. RPAC members were sent introductory materials about the study and invited to participate in facilitated discussions.

## Data Collection

For our physician interviews, development of the semi-structured interview guide was guided by the empirical literature on harmful drug-disease interactions among patients with a history of falls, as well as by the Theoretical Domains Framework (TDF).<sup>22–24</sup> The TDF is a comprehensive, theory-informed framework to identify determinants of clinician behavior and inform effective implementation of interventions to change behavior. It includes multilevel factors associated with behavior change, including critical constructs at the individual and system levels. The TDF has been successfully used to investigate prescribing behaviors, and provides a robust framework for investigating barriers and facilitators to clinician behavior change.<sup>25</sup> The interview guide (Appendix 1) was vetted by an interdisciplinary team that included patient safety experts, external researchers, and clinical collaborators. The guide included sections on the following: (1) awareness of patient fall history (TDF domains of Knowledge, Context and Resources, and Memory, Attention, and Decision Processes); (2) awareness of prescribing/deprescribing guidelines for patients with a fall history (TDF domains Knowledge, Reinforcement, and Goals); (3) prescribing patterns and deprescribing experiences with patients after a fall (includes the above TDF domains plus Behavior Regulation, and Intention); and (4) perception of their patient's perspectives on deprescribing (TDF domains Emotion, Beliefs about Consequences, and Reinforcement). Two study team members with expertise in qualitative research methods conducted the interviews. Interviews ranged from 30 to 60 min and were recorded and transcribed.

For the patient sessions, we attended standing RPAC in-person committee meetings, held 6 months apart, to address key questions about the patient fall experience (e.g., *How often have you/family members/friends experienced falls?*), the extent to which they report falls to their healthcare providers (e.g., *Do you report falls to your healthcare providers, why/why not?*), and their suggestions for encouraging discussion of falls during visits. We also shared our preliminary findings from physician interviews and further explored issues centered around deprescribing for patients at risk of falls, presenting a mock deprescribing scenario. Mock scenarios allow participants in groups to speak to the issue without necessarily needing to divulge their own experience around falls and medication use, which can be stigmatizing.<sup>26</sup> We asked the members to discuss how they would likely respond in this situation, and any advice they would give physicians to improve their communication around deprescribing. Sessions were recorded and transcribed, and extensive field notes taken.

## Data Coding and Analysis

Our qualitative researchers used a team coding approach for the data.<sup>27–31</sup> Coding categories were derived using a hybrid deductive-inductive approach. Both the lead and secondary coders (CMP, EEH) worked together to create a start list of

codes mapped to the primary interview guide questions and select probes. This initial list of codes, based on our a priori research questions and informed by the TDF, was documented in a codebook. A random sample of 3 transcripts was selected and independently coded by both coders; coders applied the initial deductively derived codes to the transcript data, and simultaneously used an open-code inductive approach to capture emergent, unexpected themes and sub-themes in the data. Coders applied analytical memos to the data to capture reflections and questions during the coding process. Repeated meetings provided opportunities to compare and contrast the application of coding categories, highlight and discuss divergent findings, achieve consensus on which new emergent codes should be added to the codebook, and discuss analytical reflections captured by memos. Once the codebook was finalized, the lead coder completed, with both coders jointly completing analyses and summarization of the data into a hierarchical thematic schema, mapping themes to the TDF domains. RPAC data was used to triangulate (confirm, disconfirm) physician perceptions of patient experience.

## RESULTS

We completed 22 in-depth qualitative interviews with PCPs. The mean age was 49 years, 59% were male, and 64% were family medicine clinicians, 27% internal medicine, 5% ob/gyn, and 5% urgent care (Table 1). We held two facilitated discussions with the RPAC patient members; the initial session in August 2018 was attended by 14 members and focused on experience of falls. This was followed by a session in March 2019 attended by 16 members to present a mock case study. Over half of attendees were over 65 years of age. The majority of a priori and emergent themes were mapped to TDF domains (Table 2).

**Table 1 Physician Participant Demographics, N = 22**

	Total (N = 22)
Race	
Asian	8 (36%)
Black	2 (9%)
White	12 (55%)
Gender	
Female	9 (41%)
Male	13 (59%)
Clinical department	
Family medicine	14 (64%)
Internal medicine	6 (27%)
Urgent care	1 (5%)
Ob/Gyn	1 (5%)
Age in 2018	
Mean (SD)	48.7 (9.9)
Range	33.7–64.1
Years since medical school in 2018	
Mean (SD)	19.6 (9.55)
Median	18.0
Range	7.0–36.0
Total years at Kaiser Permanente	
Mean (SD)	14 (9.2)
Median	13.6
Range	2.3–29.0



**Table 2 Primary Thematic Categories from Primary Care Physician Interviews Mapped to Theoretical Domains Framework (TDF) Domains Represented in the Data, N = 22**

Primary thematic categories	TDF domains
Awareness and perceptions of guidelines	Goals: mental representations of end states that a person wants to achieve Knowledge: an awareness of the existence of something Reinforcement: increasing the probability of a response by arranging dependent relationship or contingency
Awareness of patient falls/fall history	Environmental Context and Resources: circumstances of a person's situation or environment that encourages or discourages development of skills, independence, competence, or adaptive behavior Intentions: a conscious decision to perform a behavior or resolve to act in a certain way Memory, Attention, Decision Processes: ability to retain information, focus selectively, and choose between alternatives
Medication prescribing behavior	Knowledge: as above Beliefs about Consequences: acceptance of the truth, reality, or validity about an ability, talent or facility that a person can put to constructive use Reinforcement: increasing the probability of a response by arranging dependent relationship or contingency Environmental Context and Resources: as above
Barriers and facilitators to deprescribing	Emotion: a complex reaction pattern by which the individual attempts to deal with a personally significant matter or event Social Influences: interpersonal processes that cause individuals to change thoughts, feelings and/or behaviors Skills: ability or proficiency acquired through practice Beliefs about Consequences: as above Intentions: as above Knowledge: as above Reinforcement: as above

## Awareness of Recommendations

Physicians were aware of relevant deprescribing recommendations, most often citing the Beers Criteria and relevant HEDIS® measures: “Basically, the Beer’s list guides us... there are some obvious drugs to avoid in the elderly that don’t have to do with falls...but most of them, I think, are around falls.” (see Supplementary Table 1). While awareness of this guideline and HEDIS® was high, perceptions of their value were mixed. On the one hand, physicians noted that they find the Beers Criteria helpful as back-up and justification when they are having difficult conversations with patients about deprescribing after a fall. However, physicians expressed frustration that the guidelines and metrics are constantly changing:

The thing about the Beers list is that it’s called ‘potentially inappropriate medications in the elderly’ but we’re monitored as if it’s ‘never to use medications for the elderly’...There’s nothing on the list of prescriptions we’ve given to indicate whether it was truly

inappropriate or not. Likewise, our five-star Medicare status depends on having our number low, and therefore everything is kind of inappropriate because we’re always in danger of losing that status.

In addition, the guidelines are not viewed as “super practical for most situations,” given the lack of viable alternative medications and therapies. Physicians are also concerned that the constantly changing list of acceptable medications contributes to a loss of their credibility (“...if you’re, like, saying, ‘now...this nortriptyline is so great...we got [you] off something else, and now...that’s on a list now, and we have to get you off that.’ So, we lose credibility with the patients and with the physicians, too.”).

## Prescribing and Deprescribing PIMs

Although physicians try to follow the guidelines by avoiding writing new prescriptions, they often face difficult clinical decisions in which they have newly prescribed PIMs to their patients at risk for falls, or who have recently reported a fall. One physician shared, “I don’t routinely start these things... once in a while, I will start a new prescription [for someone] who again is a danger to themselves and a danger to others where there is no good alternative.” Another physician explained, “I try to be more reluctant to use medication when I know [patients are] at risk of falling. But there are some [compelling] situations...every patient is a little bit of a palliative care patient as they get older...” Several reported evaluating whether there are sufficient safety mechanisms in place to justify prescribing a non-recommended medication to certain patients—for example, in instances where there are responsible family/caretakers involved and these individuals, along with the patient, are amenable to more frequent follow-up. In terms of weighing whether to refill a prescription or trying to deprescribe after a fall, a physician commented:

... if somebody’s already on something and it’s working for them, you don’t even have time to deal with that issue. I don’t see myself really proactively trying to change things in those situations. I mean, I’m happy enough if they just say that their depression is under really good control on the SSRI.

## Deprescribing Barriers and Facilitators

**Physician-Level Challenges.** While a few physicians admitted they hesitate to deprescribe because they do not want to impugn other physician’s prescribing decisions, even in patients with a fall, they expressed larger concerns regarding potentially contentious discussions with patients over stopping medications.

And none of us wants to be the bad guy - we want to be the good guy. We didn’t go into medicine to be the bad

guy. We didn't go into this to hurt people - we went into this to help people.

There is concern that patients will doctor-shop if they push too hard, especially when patients have been prescribed these medications over a long period ("It was a challenge, but I'd say 50 percent listened to me...and 50 percent were like, 'I'm just going to go see somebody else.'"). Furthermore, physicians conveyed the underlying, intrinsic drive they have to gain their patients' trust and acceptance. Additionally, physicians reported that patients may hide or minimize their falls, making it difficult to categorize patients as high risk for an additional fall and initiate appropriate deprescribing conversations. One physician noted patients are often embarrassed about being perceived as a fall risk because "...if you're falling a lot, you're not as strong as you used to be, not as fit as you used to be, not as young as you used to be. That can be embarrassing." Others suggested patients often "brush [a fall] off" because they perceive it as a one-time experience. Patients may also fear a loss of certain privileges (e.g., passing a driver's test) or independent living. Patient RPAC members reported lack of clarity as to what constitutes a "meaningful fall" as well as poor understanding of the seriousness of falls in older adults and the potential cascade to limited mobility and other health issues.

**Physician-Patient Communication.** Physicians reported varying comfort levels and approaches to deprescribing strategies. Some felt that the conversations might be better suited to others, such as nurses or clinical pharmacists, while others seemed to have developed well-planned approaches. Physicians cited numerous strategies they have developed to assist them in their deprescribing conversations with patients, including (1) keeping a patient-centered focus grounded in a risk-benefit discussion (i.e., side effects, changes in the way a person metabolizes medications as they age, etc.); (2) having the conversation early and often with patients across multiple visits, recognizing that it takes time to address patient resistance and/or safely taper medications; (3) citing national recommendations, or safety research, as a form of back-up during conversations; (4) helping patients better understand the connection between medications and fall risk as well as the serious consequences of falls; and (5) encouraging negotiation by creating a deprescribing plan or contract with the patient. However, participants stressed that these discussions with patients are often extremely challenging and do not always result in the desired outcome. One participant was relatively resigned to the fact that many patients, even after focused discussion, are very resistant to stopping a medication they believe contributes significantly to their quality of life even after a fall:

...everything has side effects...we just talk about it, and if they still need it, because otherwise, 'Doctor, I'm going to go crazy if I can't sleep.' Fine. We just talk

about it and make sure that they're aware of the potential that it could be affecting their falls...there's a good portion that will just say, no, I need to sleep...I want to stay on it anyway. But at least we've had the conversation, and they're aware.

Another referred to these discussions as a "...a big gamut. A lot of people say, 'why can I take it when I'm 64 and not when I'm 65?' There are other ones who think the doctor that gave it to them is better than the one taking it away from them."

## Patient Reactions to Deprescribing

**Physician Perceptions.** Physicians reported that patients are commonly resistant to their deprescribing efforts even after a fall and ascribed this resistance to multiple factors including the following: (1) drug dependence ("We all know this, but...these patients are completely dependent and/or addicted to the drugs, and they don't want to stop."); (2) lack of understanding that advancing age can make currently prescribed drugs unsafe ("It's difficult because many patients don't want to get off that benzo...and they're not connecting the use of the drug to their recent fall..."); (3) fear of diminished quality of life ("You're just going to take all my medicines away? I mean, what am I going to do, and how am I going to sleep...?"); and (4) conflicting messaging from physicians ("...[patients come back to me from urgent care or the ED]...and they're angry at me because [they say]... 'But that doctor gave it to me.'")

**Patient Perceptions.** Patient RPAC members reported that they would not want a family member to stop taking a medication if they still needed it, even after a fall; thus, a fundamental question for them is what alternatives are available in place of the medication ("People on sleep medications would probably panic if taken off that medication if they weren't offered a viable alternative."). Some also said they would likely be skeptical about whether a fall was really related to the medication, while others understood that medications may affect long-term users differently over time. One participant said that if she had a minor fall, she would just think, "What is the big deal?...if the doctor said...'I am not going to refill your prescription.' [I would say] 'Hello! I know where I can get it, don't mess with me!'"

RPAC members also stressed the importance of weaning people off their medications slowly to increase the acceptability, and the group agreed with a participant who stated, "It can't be underestimated how scary it is to a patient when a doctor wants to make a change to their medication...and how sensitive the doctors need to be about that." The group acknowledged that physicians may face an uphill battle with many patients, suggesting that they do more to develop a "really strong relationship" with each patient, remain tactful, initiate conversations with patients about their medications

early and often, and develop a "...good repertoire of responses to reassure the patient" when it comes to deprescribing after a fall. With triangulation, we found confirmation of clinician perceptions including the following: (1) fear of "doctor shopping" if clinicians do not continue a potentially inappropriate medication after a fall; (2) hiding or minimizing falls; (3) embarrassment about falls; and (4) concern about loss of independence after a fall (Supplementary Table 2).

## DISCUSSION

Our study suggests that the trepidation of raising the often emotional and contentious topic of deprescribing with patients hinders effective medication management in patients with a history of falls, particularly when there may not be good prescription alternatives. This novel finding underscores the difficulty of deprescribing long-term medications, and even a documented fall might not act as a "teachable moment" to trigger cessation of PIMs. While physicians were aware of deprescribing recommendations for patients with falls, some questioned their value when making real-world decisions and negotiating deprescribing, a relatively novel insight regarding these guidelines. Physicians cited strategies they have developed to assist them in their deprescribing conversations with patients, including risk-benefit discussions, citing national recommendations, and encouraging negotiation. However, physicians stressed that these discussions often do not result in the desired outcome and some patients are very resistant to stopping a medication they believe contributes to their quality of life. This was confirmed in our RPAC data; patients expressed strong attachment to their medications and fear of potential changes. We also found confirmation of physician perceptions that patients would leave their practice if PIMs were discontinued after a fall, and that patients are often embarrassed or afraid to report falls. The RPAC discussions provided a novel opportunity to triangulate the clinician data with a highly relevant patient group who had personal experiences with falls and PIMs. The sessions captured both personal and family experiences, reinforcing the major themes we found in the clinician data.

Use of the TDF was instrumental in identifying and exploring physician perceptions of their own skills, goals, and influences regarding deprescribing. Our resulting themes fell broadly into the TDF domains, with strong emphasis on the domains of Knowledge, Environmental Context and Resources, and Reinforcement. The domain of Social Influences captured the pressure physicians feel regarding patient satisfaction, potentially losing patients, and the dilemma of PIMs prescribed by other clinicians. A sub-theme related to the Beliefs about Consequences domain is that physicians often struggle to reconcile the guideline recommendations with the lived reality of their patients and try to balance the "known" consequences of PIMs after a fall according to the guidelines and patient quality of life.

Other studies have found that deprescribing is more likely to occur when there is a continuous relationship between the clinician and patient, and if there is a clear clinical trigger for deprescribing.<sup>32</sup> However, our results illustrate the challenges in addressing these factors. In large systems, patients may interact with a variety of clinicians for their primary care needs, disrupting the potential for a continuous relationship with a clinician. Additionally, the difficulty in finding documentation of falls and fall severity, combined with patient reluctance to report falls, may lead to under-recognition of clinical triggers to deprescribing. Our finding that physicians may be uncomfortable with changing or deprescribing medications prescribed by a different physician echoes findings from other deprescribing studies focused on broader populations; for example, Djatche et al. found that 40% of primary care physicians were hesitant to deprescribe medications prescribed by another physician.<sup>33</sup>

Our findings offer insights into the specific targets for needed interventions, including: (1) *Enhanced patient education regarding aging and medication*. Even after a fall, patients may not realize that a medication they have taken for many years could metabolize differently as they age. A recent randomized trial of patient education found that those who received education were significantly more likely to discontinue contraindicated sedative hypnotics than those who did not.<sup>34</sup> (2) *Clinician training that includes negotiation techniques and how to have difficult conversations with patients*. Clinician-level interventions such as education or implementing deprescribing guidelines increased clinician self-efficacy in putting a deprescribing plan into place.<sup>35,36</sup> (3) *Identification of effective alternatives to PIMs, including non-medication options*. However, while these individual interventions may be a necessary component of deprescribing after a fall, they may not be sufficient. A recent systematic review of randomized trials of deprescribing found that while deprescribing can be successful in select classes of drugs, it may require intensive, ongoing intervention and may not lead to expected outcomes, such as improved fall rates, cognition, and quality of life, or lower hospital admission rates, and deprescribing can have unexpected adverse outcomes affecting patients' quality of life.<sup>37</sup> Early and ongoing involvement of patient, physician, health education, pharmacy, and operational stakeholders will be critical to advance progress, particularly during clinical guideline development.<sup>38</sup>

Our study has several strengths, including the real-world clinical setting, inclusion of both physicians and patients, and a high degree of consensus and overlap of findings. We employed rigorous qualitative methods, including maximum variation sampling and team coding, as well as a relevant framework for gaining insight into clinician behavior. There are also limitations: first, we used a type of purposive sampling that, while appropriate, can increase risk of bias from self-selection. Second, there is a possibility of social desirability in participant responses, as the research team is embedded within the care delivery system and may be perceived as part



of quality management. Third, our physician sample was confined to primary care physicians who tend to have strong relationships with the patients in their panel and may not be generalizable to specialists, urgent care physicians, or emergency room physicians. Finally, KPSC is a highly integrated system, and findings may not be generalizable to other types of healthcare systems, although our findings resonate with other deprescribing literature focused on different populations and settings.

Overall, findings suggest the need for multifaceted, multi-level deprescribing approaches with clinician training strategies, patient educational resources, and a focus on building trusting patient-clinician relationships.

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#### Compliance with Ethical Standards:

**Conflict of Interest:** The authors declare that they do not have a conflict of interest.

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