

Clinical Provider Perceptions of Proactive Medication Discontinuation

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Polypharmacy, often defined as a patient taking 5 or more medications,¹ is common. Roughly 40% of adults 65 years or older experience polypharmacy, with a similar prevalence in active users of Department of Veterans Affairs (VA) facilities.^{2,3} A greater number of medications is associated with risk of adverse drug events (ADEs), which leads to increased healthcare utilization, costs, and morbidity.^{4,5} Moreover, physicians may interpret subtle adverse physiologic effects as a distinct problem and add medication to treat them; such a “prescribing cascade” can lead to increased rates of polypharmacy.⁶

Providers’ perceptions of polypharmacy, as well as barriers to and facilitators of mitigating it through proactive medication discontinuation, are unclear. Clinicians lack evidence of best practices for evaluating patients’ medication regimens to determine which drugs, if any, may safely be discontinued, especially for ambulatory care patients. Several studies have demonstrated the feasibility and safety of withdrawing particular classes of medications, but many focus on inpatients and residents of long-term care facilities.^{7,8} While medication adherence and medication reconciliation have emerged as health system priorities, little attention has been paid to promoting the discontinuation of medications that may not be necessary or whose benefits no longer outweigh associated risks. Experts have suggested that the “time until benefit” of a medication be compared with life expectancy in elderly populations to aid in decisions about its continued use.⁹ Whether clinicians consider such risk-benefit balances in the general adult population is unknown.

Appropriate cessation of a medication could lead to a reduction in ADEs and to improved health outcomes, yet little is known about factors that inhibit or facilitate providers’ discontinuation of medication. Therefore, we sought to understand how providers make decisions about medications in a complex population by identifying their beliefs and attitudes about polypharmacy, as well as their perceptions of the factors that influence decisions and actions related to medication discontinuation. Based on prior literature, we hypoth-

ABSTRACT

Objectives: Polypharmacy and adverse drug events lead to considerable healthcare costs and morbidity, yet there is little to guide clinical providers in the area of discontinuing medications that may not be necessary. We sought to understand providers’ beliefs and attitudes about polypharmacy and medication discontinuation.

Study Design: Qualitative study using semi-structured interviews of 20 providers with prescribing privileges at 2 US Veterans Affairs Medical Centers, from April 2012 to October 2012.

Methods: Transcribed interviews were analyzed using grounded thematic analysis, a systematic approach to deriving qualitative themes from textual data.

Results: We identified 10 themes within 4 domains of medication discontinuation. Within the first domain (medication factors), we identified 2 themes: 1) medication characteristics, and 2) uncertainties of why a patient was taking a particular drug. Within the second domain (patient factors), we identified 3 themes: 3) clinical picture of the patient, 4) clinicians’ understanding of the patients’ knowledge and beliefs, and 5) patients’ adherence. Within the third domain (clinical provider factors), we identified 2 themes: 6) professional identity, and 7) providers’ decisions related to their own beliefs about medications. Within the fourth domain (system factors), we identified 3 themes: 8) multiple providers, 9) workload, and 10) external directives and policies such as structural components of a healthcare system.

Conclusions: Provider decisions to discontinue medications are affected by factors at all levels of the clinical encounter. Our findings have implications for development and implementation of interventions to improve appropriate medication discontinuation via enhanced medication reviews, enriched patient-provider communication, and better system-level structures. This, in turn, may reduce the continued prescribing of potentially inappropriate medications that can lead to adverse outcomes or increased healthcare costs.

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Take-Away Points

Clinical providers express concerns about polypharmacy but receive little guidance on how to make decisions about medication discontinuation. Until now, there has been little understanding of providers' perceptions of factors affecting these decisions.

- Factors at the level of medications, patients, providers, and the healthcare system itself contribute to decision making about medication discontinuation.
- Understanding these factors will enable the development and implementation of interventions to improve appropriate discontinuation, and in turn, potentially reduce adverse drug events and uncontrolled healthcare costs.

esized 4 domains related to discontinuation: medication, patient, provider, and system (**Figure**); and we sought to identify key themes within each domain to inform future interventions to improve medication discontinuation.

METHODS

We conducted a qualitative study using in-depth interviews of primary care providers and pharmacists at 2 US VA Medical Centers. Qualitative methods are useful for understanding new areas and generating data to inform future research. We explored attitudes toward medication reconciliation, polypharmacy, patient-provider communication, and decision making about discontinuing medication. Institutional review boards at both sites approved the study.

Recruitment

At primary care staff meetings, the lead investigator (AL) introduced the study and distributed recruitment materials describing the project objective of understanding decision making, communication, and factors associated with medication discontinuation. Providers with prescribing privileges—including physicians, nurse practitioners (NPs), and pharmacists—were eligible to participate. Within the VA, clinical pharmacists are authorized to initiate, titrate, and discontinue medications. All eligible providers ($n = 63$) were subsequently invited to participate, and a convenience sample was scheduled for interviews. All participants provided written informed consent; no stipend was provided.

Data Collection

The lead investigator conducted individual, in-person, in-depth, semi-structured interviews of 30 to 60 minutes' duration between April 2012 and October 2012. We queried providers' views and conduct of medication reconciliation, communication with patients, interactions with colleagues, beliefs about medications, polypharmacy, and experience with discontinuing medications. The interviewer used the

Interview Guide for Providers (see **eAppendix**, available at www.ajmc.com) flexibly and followed up on unanticipated issues raised by participants.

Analysis

Interviews were audio-recorded, transcribed verbatim, and reviewed for accuracy. Transcripts were analyzed qualitatively using procedures informed by grounded theory methodology,¹⁰ a systematic approach to deriving qualitative themes from textual data. This approach begins with open coding, in which investigators identify key concepts emerging from the language used by participants and assign codes (descriptive phrases) to segments of text. We began analyses using sensitizing concepts surrounding polypharmacy and medication discontinuation.¹¹ Using NVivo qualitative analysis software (QSR International, Doncaster, Australia),¹² the lead investigator and a research assistant (TBM) coded 4 interviews independently, and through discussion came to consensus on code definitions to develop a coding dictionary. The remaining interviews were coded by the lead investigator, who refined the dictionary as needed. Throughout, detailed coded text segments were reviewed, discussed, and revised if needed by 2 investigators (AL, BB) before the text was condensed into broader themes. Prominent themes and exemplifying quotes were discussed by the research team, and each theme was mapped to one of the 4 domains (medication, provider, patient, and system factors) that comprised our conceptual model. Themes that could have been mapped to multiple domains were assigned the best fit through consensus discussion.

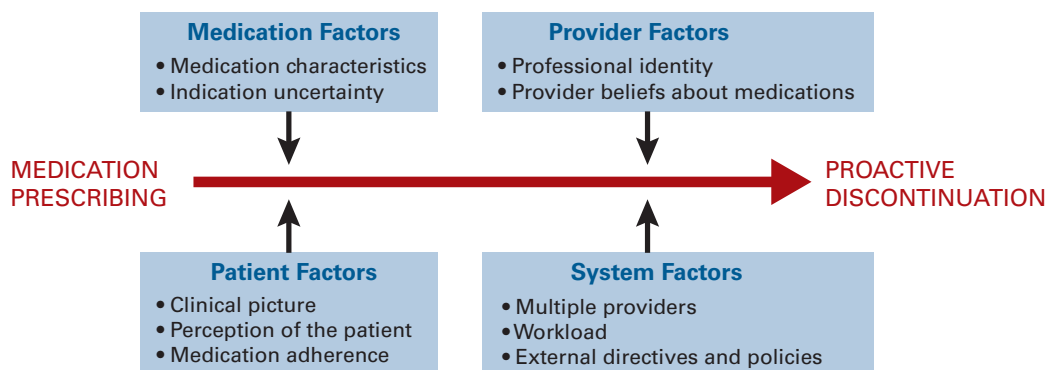
RESULTS

We interviewed 20 providers (8 male, 12 female; 15 site A, 5 site B), with a range of experience in clinical practice (2 to 39 years; median 21) and in the VA (2 to 30 years; median 15). The majority ($n = 11$) were physicians, with 3 NPs and 6 pharmacists. Twenty interviews were sufficient to achieve thematic saturation, where at a certain point no new concepts appeared. Ten themes emerged, each mapping to 1 of 4 domains influencing the process of proactive medication discontinuation (**Figure**). Exemplifying quotes that best represent the general sense of each theme can be seen in the **Table**.

Medication Factors

Medication characteristics. Characteristics of medications, such as the number of daily doses, therapeutic

Figure. Factors (as perceived by providers) That Influence Consideration of Proactive Medication Discontinuation



Themes that emerged from in-depth interviews (in bullet points) were mapped to a priori hypothesized domains (headings) of factors that influence the process of considering medication discontinuation (red arrow).

duplication, or whether 1 medication could address 2 problems, influenced clinicians’ decisions when reviewing regimens. Many reported paying particular attention to specific medication classes as potential targets for discontinuation (eg, proton pump inhibitors, statins, opioid pain medications). Reducing or discontinuing pain medications was described as more complicated due to perceived patient reluctance.

Indication uncertainty. Providers spoke at length about the difficulties of decision making with unclear medication indications. Multiple reasons for uncertainty were suggested, such as a patient’s inability to state the reason for his medication, or the presence of an associated indication that might not reflect the true rationale for the medication’s use. For some of their patients, the default for some providers was to maintain the status quo in the absence of a clear reason to stop a medication, despite uncertainty. For other patients, a trial of discontinuation would evaluate its necessity.

Patient Factors

Clinical picture. Providers noted that the presence of multiple comorbid conditions—each of which might require 1 or more medications—inhibited discontinuation. Conversely, a geriatric patient’s age sometimes triggered discontinuation because of concerns related to polypharmacy, decline in drug metabolism, or shifts in the risk-benefit ratio due to changes in perceived life expectancy—especially for patients with terminal cancer. Impaired patient cognition also made clinical decision making difficult because of uncertainties about whether the recommended changes would be accurately understood and implemented.

The intended and unintended medication effects were key to medical decision making. Providers felt it was

important to elicit whether a medication was providing symptomatic relief, despite noting that paradoxically, such evaluations were infrequent. In a related process, medications were often stopped on a trial basis to see if symptoms returned after discontinuation. Providers thought it important to assess for side effects warranting reactive discontinuation, but patient-reported side effects (eg, dizziness) were felt to be more difficult to ascertain than measurable ones (eg, low blood pressure).

Perception of the patient’s knowledge and beliefs. Another important factor influencing providers’ decisions to discontinue medications was their perception of the patient’s knowledge, beliefs, and preferences about taking medications. Clinicians spoke about how patients’ better comprehension of their conditions and medications often facilitated conversations about stopping a medication, albeit not always resulting in discontinuation. Patients viewed as having limited understanding made it challenging for clinicians to ensure that medications were taken as directed. At the same time, providers recognized that such patients often would “follow doctor’s orders,” thus facilitating discontinuation if called for.

Providers were influenced by patients’ beliefs about a medication’s importance; clinicians felt that patients generally prioritize medications that treat symptoms (eg, pain or heartburn). Moreover, some providers endorsed the notion that patients receive “psychological comfort” from continuing medicines they have been taking for a long time.

Medication adherence. A major factor that challenged providers’ ability to make decisions about discontinuation was uncertainty regarding a patient’s adherence to medication. Clinicians often felt that even if they obtained an accurate medication list, questions remained about how

Table. Factors (as perceived by providers) That Influence Medication Discontinuation: Themes and Quotes

Domain	Theme	Exemplifying Quote
Medication factors	Medication characteristics	"I am trying to sort through which meds... don't have a dual purpose... If I had a med that I am using in a patient that can kill two birds with one stone, perfect, that's what I want to use." (C13, pharmacist)
	Indication uncertainty	"Sometimes you just renew it. I mean, it's sort of like, you've been on this forever... if somebody says that they have no idea why they're taking something... I'll say to them, 'Well it's for this and this problem.' And they'll say, 'Well, I still have that problem,' or 'I don't know if that medication ever made it different.' I'll say, 'Just get rid of it and see what happens.'" (C14, physician)
Patient factors	Clinical picture	"People come to me on tons of medication, and most of them are necessary. [Patients] have hyperlipidemia and diabetes and hypertension, and they sometimes need multiple medications to control these things." (C19, physician)
	Perception of the patient	"It's just so unique to certain patients—their reluctance or desire to stop meds, it varies patient to patient, and I think it varies medicine to medicine, and what you're treating. If it's something they're totally asymptomatic from, they're going to maybe be reluctant to start a medicine but maybe not feel so strongly or be reluctant to stop it because they may not feel it's providing them anything anyway." (C11, physician)
	Medication adherence	"I'm not going to go forward in [a] state of confusion. You know, you wouldn't have me drive down the street with my windshield blacked out, so why would you ask me to proceed with this poor understanding of what's going on with the patient and their medicine?" (C4, physician)
Provider factors	Professional identity	"I say, 'Listen, I'm a physician, and this medication is dangerous for you. And I'm not going to prescribe something that's dangerous for you.'" (C14, physician)
	Provider beliefs about medications	"I don't think that you're ever going to be able to scientifically define it, but I think that it's kind of like the Supreme Court's definition of pornography: I know it when I see it... So some people, they legitimately need 10 medicines and some people, 3 is probably too many for them." (C4, physician)
System factors	Multiple providers	"Someone with renal failure who's on certain blood pressure medications and you talk to them about stopping things and switching things, and they come back to you and say, 'No, my other doctor said leave things alone.'" (C5, physician)
	Workload	"It's really crunch time when you're in there with the patient and they bring this whole list in, and then you're looking through the list of stuff and also the documentation from the outside providers... medication lists, bags of the medications... Trying to do that at the same time as talking to the new patient, making eye contact, trying to be welcoming, showing them that you care about him and aren't just looking at the computer, which is tempting because you are trying to get all of this in." (C1, nurse practitioner)
	External directives and policies	"For one thing, we are... increasingly benchmarked. If we truly have 25% of our patients over the age of 80 and we [are] reading increasingly that patients' diabetes A1C should be more loosely controlled in that population, why in heck... are we being pushed to lower the hemoglobin A1C to [these] artificially low levels? ... It is pushing us towards polypharmacy." (C20, physician)

The "C" in the blind participant ID indicates clinician.

consistently adherent patients were to those medicines. Many clinicians spoke about the need to have additional contact with the patient in order to derive an updated medication list—considered essential for prescribing decisions.

Provider Factors

Professional identity. Providers discussed how their background and job descriptions created a sense of identity that enabled them to make prescribing decisions. Many

spoke about the responsibility they felt to provide appropriate, comprehensive care with ultimate accountability for medication decisions. Previous experience—and success—in discontinuing medications provided confidence for providers to attempt discontinuation in the future. Other providers expressed hesitation to alter regimens for a medication that fell outside their scope of practice, for which they had little experience prescribing, or that another clinician was actively managing.

Provider beliefs about medications. Providers' perceptions of polypharmacy—its definition, prevalence, and importance—may be critical to decisions about discontinuation. Deciding at what point patients were taking “too many” medications varied, and polypharmacy was considered to be quite prevalent and even the norm. When asked to define polypharmacy, numeric answers ranged from 2 to 12 medications, and many said it depended on the patient.

System Factors

Multiple providers. For patients who obtained medications from providers in other healthcare systems, participants felt limited in their ability to make changes and noted that communication across systems was often difficult. Providers also discussed how the duration and quality of their relationships with patients influenced the patients' views on whom they trusted most to make decisions.

Workload. Core job duties and perceived workload were frequently cited as influential factors in prescribing decisions. Clinicians viewed discontinuing a medication as a complex process requiring an explicit decision, patient-provider communication, and possibly longitudinal monitoring to assess outcomes. These extra steps were seen as additional work compared with medication renewal.

Most physicians spoke of the potential for nurses and pharmacists to aid in medication reconciliation—an often time-consuming process—to allow time for other clinical issues; however, 1 physician had reservations about tasking another team member with this role. With better schedule capacity to monitor patients closely longitudinally, pharmacists embraced expanded roles that facilitated medication discontinuation.

External directives and policies. Providers felt burdened by the current electronic clinical reminders, several of which are intended for performance measurement. Policies that dictate benchmarking goals were viewed as inhibiting discontinuation because of the need to use medications to achieve targets, regardless of patient age or treatment preferences.

Providers had mixed views regarding the influence of information technology (IT) on medication discontinuation. For example, by using the electronic health record, providers could ascertain whether the pharmacy had recently dispensed medications, at times leading them to discontinue medications that patients were no longer taking. In contrast, inaccurate problem lists led to uncertainties about the appropriateness of medications, and

complicated decision making. Providers felt there was untapped potential for IT to aid in clinical decision making specifically related to discontinuing medications, but were wary of adding more electronic reminders or alerts.

DISCUSSION

Polypharmacy and adverse drug events lead to significant healthcare costs and morbidity, yet there is little information to guide clinical providers in the process of discontinuing medications in the general adult population. Providers in our study had clear, but varying, views on issues surrounding medication discontinuation, which supported the hypothesized domains in our conceptual model of factors affecting discontinuation decisions. Although themes were determined to primarily relate to 1 domain, overlap of codes from multiple domains was not uncommon. For example, indication uncertainty—a medication-related factor—also related to patient and system factors. This interrelatedness is informative for critical focus of interventions in the future to improve medication reviews, patient-provider communication, and system-level structures that will result in appropriate medication discontinuation.

Providers expressed concern about the adverse consequences of using medications inappropriately and supported the notion of reducing unnecessary drugs. However, they faced many difficulties in a typical clinical encounter, such as patient complexity, uncertainty, interactions with other healthcare providers, and constraints imposed by the healthcare system.

Participants indicated they generally attempt to minimize pill quantity, and thereby improve patient adherence,¹³ although this approach was complicated by uncertainties about the medication's original indication—particularly when another provider initiated the prescription. Given the frequency with which uncertainty was discussed, a potential IT-based intervention that requires each prescription to include the indication could facilitate future decision making. Some healthcare systems do this currently, but its effect on decision making is unknown.¹⁴ Including the indication would enhance communication between healthcare systems, and would be helpful when a provider “inherits” a patient from another clinician.

A key factor impacting discontinuation decisions was the provider's perception of what the patient preferred. Providers may not accurately assess beliefs, and they may overestimate the degree to which they understand their patients.¹⁵ The resulting knowledge gaps could result in continued prescribing of a particular drug, despite a lack

of provider belief in its medical necessity.¹⁶ When a patient feels strongly about continuing a medication, understanding the underlying reasons through high-quality patient-provider communication may enable the provider to deliver information targeted to those beliefs, or lead to a compromise, such as a lower dose. Conversely, identifying patients who welcome a reduction in pills may facilitate appropriate discontinuation.¹⁷ Finally, given that patients are nonadherent to approximately half of their medications,¹⁸ discontinuing medicines with lower potential benefit may improve adherence to those remaining, with concomitant better health outcomes.¹⁹

While research and performance measures frequently use a cutoff of 5 medications to define polypharmacy, many study participants felt that patients often require at least that many to manage their comorbidities. This observation is consistent with other research suggesting that defining polypharmacy using a specific numeric threshold is not clinically useful.²⁰ Consequently, any intervention to raise awareness of polypharmacy must account for the possibility that 5 may not be a sufficient number of medications to prompt clinicians to review regimens for potential discontinuation. Further, discontinuation may also be relevant for patients not meeting a prespecified numeric definition of polypharmacy.

Clinicians may feel empowered by a successful prior experience discontinuing a medication, leading them to make similar decisions in the future. While our study was not intended to discern differences between types of providers, we did note that physicians appeared to be more comfortable discontinuing medications than other clinical providers, even if the medications were initially prescribed by subspecialists. As the scope of practice for NPs expands, their perceptions of autonomy may change and influence empowerment to make specific prescribing decisions.²¹ Whether a provider felt “ownership” of a medication also varied, and the ability to make recommendations could be influenced by whom the patient trusted most to make those decisions. Identification of provider characteristics that are associated with proclivity to discontinue medications could provide focus for tailored interventions aimed at the clinical provider.

Interaction between providers was greatly affected by system-level factors. It was felt that better information transmission occurred between providers within the same healthcare system; however, while meaningful use of electronic health IT aims to break down these barriers, data transmission between sites is still limited.²² Having a complete, accurate record of all prescription and nonprescrip-

tion drugs for a patient is prerequisite to making informed clinical decisions and capitalizing on electronic decision support systems.²³

There is potential to tap into the power of electronic systems to support clinicians in determining whether a medication may be appropriate for discontinuation trial, such as when a relevant indication in the problem list is absent, or when the prescription has surpassed a specified duration of time. This consideration must be balanced with “alert fatigue,” so that the alerts are acted upon rather than ignored.²⁴ Participants were particularly frustrated with the use of alerts and clinical reminders that urged increasing healthcare use in order to achieve treatment targets.

Limitations

We conducted our study at 2 VA medical centers; providers from other geographic regions or non-VA care settings may have different views. We had a limited number of participants, and thus may not be able to discern differences in beliefs among physicians, nurse practitioners, and pharmacists. Providers who volunteered to participate may differ from those who did not respond, and many participants had long tenure in their current position. Future research to survey a broader sample of providers will enable better understanding of the range of opinions and associations with specific provider characteristics. Finally, this study was limited to the perspectives of primary care providers, and patients’ perceptions of medication discontinuation should be examined.

CONCLUSIONS

While discontinuing medication can ostensibly be considered “doing less,” doing so in a clinically responsible manner in fact requires a greater investment of time and energy by the provider. Our findings establish a foundation upon which further research can examine how various providers view medication discontinuation, as well as what they identify as barriers and facilitators. This, in turn, will enable development of interventions to reduce the continued prescribing of potentially inappropriate medications.

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eAppendix

Interview Guide for Providers

1. **Provider background**
 - a. How long have you been practicing in primary care medicine?
 - b. What do you find rewarding about your work? Frustrating?

2. We are going to spend about an hour today to discuss issues around managing **patients with multiple medications** and **polypharmacy**. Think about some of your patients who take multiple medications.
 - a. Can you tell me about how you approach patients who take multiple medications?
 - b. Are there issues that are unique to patients like this?
 - c. How much of an issue is it in your practice?
 - d. What do you find challenging about treating patients with multiple medications?
 - e. What do you think would make it easier to manage patients with many prescriptions?
 - f. At what point do you consider patients having polypharmacy?

3. **Medication management**
 - a. Can you tell me about how you review medications in a clinical visit?
 - b. In the VA [Veterans Administration], patients often get medications from non-VA providers or over-the-counter. How do you address these medications?
 - c. Do you have any policy on limits to medication renewals?

4. I would like to shift gears a bit and talk about **medication discontinuation**.
 - a. Can you think of an encounter where you thought a medicine should be discontinued?
 - b. What about that patient made it easy or difficult to discontinue a medication?
 - c. How do you think other patients might have responded?
 - d. How do you think it would change if it were a different type of medicine?

5. Now I'd like to talk more about **difficulties** with medication management.
 - a. Have you ever encountered a patient taking a medicine where it was not clear what the indication was for that medicine? (eg, patient is taking gabapentin but unclear if for pain or seizures)
 - b. Patients often have medicines prescribed by multiple providers. Have you ever had a situation where you wanted to stop a medication initiated by another provider? Can you tell me more about that?

6. I want to talk now about when **patients suggest discontinuation**. If a patient suggested that he did not want to take a specific medication, how do you think you would respond?
7. Finally, I'd like to step back from discussing specific interactions with patients and ask you to think about **system issues**.
 - a. What barriers exist in the VA that make it difficult to manage medications?
 - b. What do you think helps you to better manage medications for your patients?
 - c. What do you think would help you in your practice to make prescribing decisions?
8. Do you **have any final ideas about medication discontinuation that you would like to share** before we finish?