Institute for Healthcare Improvement

Reducing Inappropriate Medication Use by Implementing Deprescribing Guidelines

Implementation Guide

IHI/Commonwealth Fund Innovations Network

AN IHI RESOURCE

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How to Use This Implementation Guide

This guide provides details on implementing the medication deprescribing innovation based on the experience of US health care systems participating in the International Innovations Network Learning and Action Community, led by The Commonwealth Fund and the Institute for Healthcare Improvement (IHI).

The implementation guide outlines the sequence of activities vetted by five health systems to test, adapt, and adopt deprescribing in their systems. The deprescribing innovation developed by a multidisciplinary team of clinical experts in Ottawa, Canada, is described in more detail in the original case study published on this work.[1]

The intended audience for this guide is health system quality and clinical leaders and point-of-care providers, staff, and teams who seek to deprescribe medications with any patient population.

Background

US health care systems participating in the International Innovations Network Learning and Action Community learned about the deprescribing innovation from a multidisciplinary team of clinical experts in Ottawa, Canada. The deprescribing innovation in its original form included a credible, low-cost process for developing and implementing evidence-based deprescribing guidelines and tools for assessing, tapering, and stopping medications that may cause harm or no longer benefit patients.

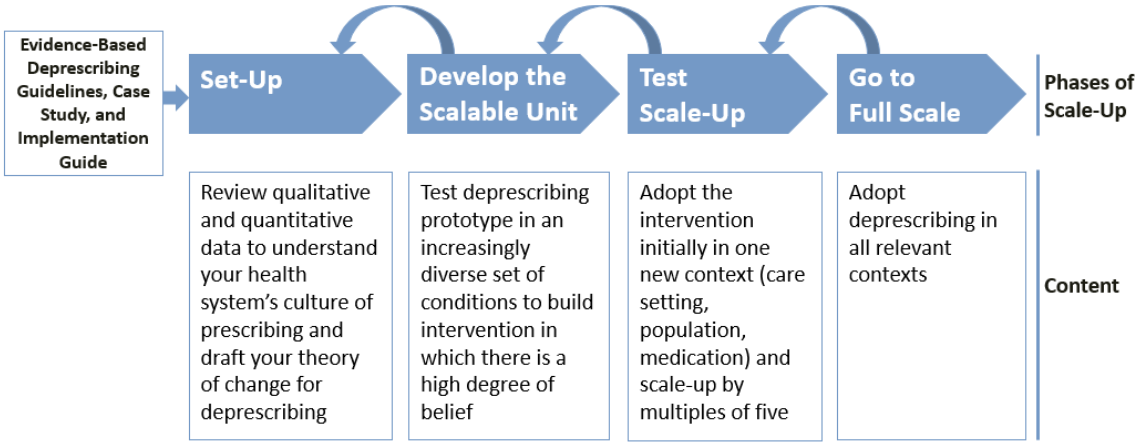
During the 18-month Learning and Action Community, five US health care systems resourced teams to adapt and adopt the deprescribing innovation in their settings. The teams applied the IHI Idealized Design Process[2] and the Model for Improvement[3] to develop a prototype, test deprescribing in one and then multiple settings, and develop a plan for scale-up and spread. This implementation guide shares their learning, which may be applied in other US health care systems.

Adapting and Adopting Deprescribing in Your Health Care System

The aim of the US-based health care systems participating in the Learning and Action Community was to test whether or not the original innovation could be implemented in their local contexts, and to learn what adaptations might be needed for successful implementation. Once they tested implementation on a small scale, the health systems sought to test spreading the innovation to other settings and/or patient populations. To that end, the teams used IHI's Framework for Going to Full Scale to guide their work.

IHI's Framework for Going to Full Scale (see Figure 1) defines four phases: 1) Set-Up, 2) Develop the Scalable Unit, 3) Test Scale-Up, and 4) Go to Full Scale.[4]

Figure 1. IHI Framework for Going to Full Scale



For health care systems seeking to test and implement the deprescribing innovation, below we describe the essential elements to consider in each step of the framework's four phases based on the learning of the teams testing this innovation.

1. Set-Up

Establish a Meaningful Aim

It takes will, ideas, and hard work to change prescribing behaviors and patterns. Qualitative and quantitative data inform where there are opportunities to deprescribe and where there is the will to undertake the hard work of deprescribing. Relevant data may include the following:

- Analysis of safety events correlated with certain medications and related harms, length of stay, and other costs;
- Volume and use of medications included in the Beers Criteria Medication List[5] with adults over 65 years of age, for which deprescribing algorithms exist[6,7] (e.g., to manage pain or other hazardous medications);
- Focus groups with a diverse population of patients to identify medications they are motivated to stop using;
- Interviews and surveys with pharmacists, physicians, and nurses to identify medications they are motivated to deprescribe; and
- Safety and other initiatives already underway that would be accelerated by integrating deprescribing into clinician behavior.

Use the data to establish an aim for deprescribing that is meaningful to your health system. The aim identifies which medication(s) will be the focus of deprescribing efforts, the percentage reduction in medication prescribing you will achieve, by when, and with which patient population(s).

Health system teams participating in the International Innovations Network Learning and Action Community that tested deprescribing attributed their success to engagement of an interdisciplinary team in the work, including informatics staff, pharmacists, physicians, nurses,

and patient educators. That engagement can begin by collaboratively reviewing your data and drafting the aim for implementing deprescribing.[8]

Here's an example aim statement from a participating health system: By July 2018, reduce the use of proton pump inhibitors (PPIs) by 50 percent in adult patients through Equivalent Patient Day measures at three health system ministries.

Identify a Leadership Sponsor and Local "Champions"

Along with data and a motivating aim, the hard work of deprescribing requires leadership. For example, each of the Learning and Action Community health system teams identified a pharmacy leader with a passion for deprescribing to champion and sponsor the work. Their interdisciplinary teams engaged in deprescribing efforts included physicians, nurses, care managers, quality leaders, and clinical leaders.

Use your data to identify a person with the will and authority to be a sponsor for the work.[9] The sponsor may be a physician or pharmacist leader. If you are working in a system that has an integrated health plan, you may consider a leader in the health plan in addition to a provider leader. In addition, identifying local "champions" can be instrumental to your testing and implementation efforts. Champions may be pharmacists with a passion for deprescribing or physician or nurse prescribers who know firsthand the positive impact of reduced medication burden.

Develop Your Aim and Theory of Change

Agreement among team members about your deprescribing aim and what factors are key to achieving it will facilitate effective and efficient team learning. A driver diagram is a useful tool for visually conveying your team's theory of change: what drives (or contributes to) achievement of your aim.[10] The driver diagram shows the relationship between the overall aim of the project, the primary drivers that contribute directly to achieving the aim, the secondary drivers that are components of the primary drivers, and specific change ideas that can be tested for each secondary driver.

The driver diagram for deprescribing will be specific and unique to each health system, based on its internal systems and processes for prescribing and for making change. Yet, Learning and Action Community health system teams identified several common drivers (e.g., the presence of a clinical guideline or algorithm for deprescribing, engagement of patients and family caregivers in the deprescribing process). Your team may want to include these drivers in the first draft of your diagram.

Once drafted, the driver diagram serves as a roadmap for your team to determine what changes to test. It can also be a useful tool for communicating to a range of stakeholders what the team is working on.

Teams in the Learning and Action Community used one of the following approaches to test deprescribing in their health systems:

- **Patient-centered deprescribing:** The patient and family caregiver are the primary decision makers as to whether or not deprescribing is initiated.
- **Pharmacist-initiated deprescribing:** The pharmacist initiates deprescribing with patients who are identified on a report that is generated based on an agreed-upon algorithm.

- **Physician-initiated deprescribing:** Physicians initiate improvement by changing their prescribing behavior at the point of care.

All approaches acknowledge the essential role of patients and their family caregivers in the deprescribing process.

2. Develop the Scalable Unit

A scalable unit is defined as the smallest representation of "full scale" and it includes the components of a self-contained functional unit (i.e., the people, processes, and structures) that produce an output that is representative of the whole system. The scalable unit serves as the initial test bed, on a small scale, to enable learning about what changes actually lead to the desired improvement before scaling up and spreading those changes.

Develop a Prototype

In order to develop the scalable unit, testing teams first need to develop a prototype: a small-scale version of the deprescribing intervention your team will test. The team might review the driver diagram to identify the drivers of deprescribing for which you want to start testing specific changes.

For example, one health system team's driver diagram focused on deprescribing in the emergency department. The team's small-scale prototype was a skit depicting the interaction between a pharmacist and an 85-year-old patient in the emergency department to discuss deprescribing her protein pump inhibitor (PPI). By acting out this scenario, the team began to learn how a patient and family caregiver might respond in a discussion about deprescribing, and this informed the initial development of scripts for deprescribing discussions with patients.

Begin Testing on a Small Scale

Develop and test the deprescribing prototype on a small scale initially so that your team can learn what works and does not work before committing more resources to implementing the change. For example, the first test is with one patient and one provider in one setting. Use Plan-Do-Study-Act (PDSA) cycles to conduct multiple, iterative small-scale tests (e.g., with one or two patients at a time) in your first week.[11] Use the PDSA Worksheet to track your tests so you can learn if your changes are leading to improvement.[12]

For example, one health system team's aim was to reduce polypharmacy through deprescribing blood pressure medications in adults 85 years and older with well-controlled hypertension. One of the team's primary drivers was engaged older adults (e.g., have routine medical appointments, take their medications), so they tested calling older adults and suggesting deprescribing their blood pressure medications. The uptake was very low. Fortunately, the resources they dedicated to testing were also very small and they could quickly adjust.

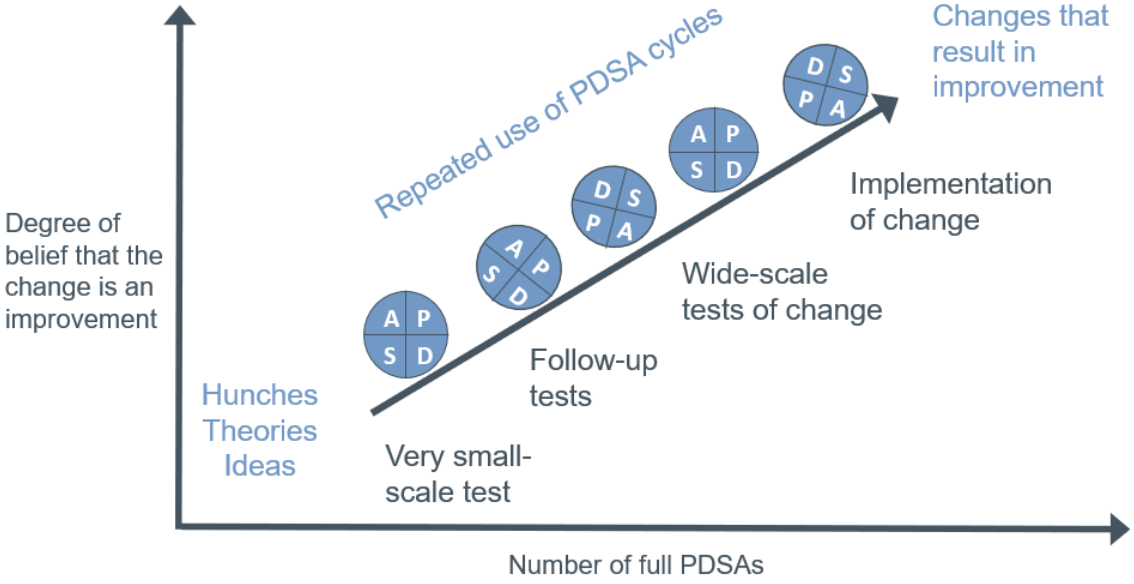
For the next PDSA, the team called patients to congratulate them on their well-controlled hypertension and suggested deprescribing the anti-hypertensive (e.g., "Congratulations, you have 'graduated' from your lisinopril!"). The patient uptake was slightly higher for this test. For the third PDSA, the team tested stating up front that they were calling on behalf of the patient's physician, then congratulated the patient on their well-controlled hypertension and offered deprescribing. The uptake increased with this approach and remained high.

Continue Testing in an Increasingly Diverse Set of Conditions

Continue to expand testing of the refined prototype in an increasingly diverse sets of conditions in order to develop a robust set of interventions in which there is a high degree of belief that they will achieve the desired aim. While the goal of initial testing is to identify whether the deprescribing prototype leads to improvement in a stable and well-supported environment (e.g., a clinic session that is fully staffed and when a pharmacist is physically present), it is necessary to pressure test the prototype to ensure it will lead to improvement under a broader range of conditions (e.g., a Friday afternoon when fewer clinicians are available). The purpose of broader testing is to increase the team's degree of belief that the changes being implemented do lead to improvement and the desired aim in various conditions.

Conduct approximately 10 small-scale tests each week, using iterative PDSA cycles (see Figure 2), in the various diverse conditions where deprescribing will be implemented.

Figure 2. Learning with Iterative PDSA Cycles



Source: Langley GL, et al. *The Improvement Guide*. Jossey-Bass; 2009:146.

Articulating Your Scalable Unit

When you have tested the prototype in various conditions and achieved results consistent with your aim, update the driver diagram to reflect the specific change ideas that lead to improvement. Next, identify the resources needed to deprescribe (e.g., an algorithm, a consulting pharmacist, identifying electronic health record changes that are needed), including draft process flowcharts, training guides, and tools.

For example, one health system team working on reducing opioid use in total joint replacement changed the electronic health record medication order set to include tapered use of pain medication post-surgery, which set the deprescribing of certain medications as the default. Their scalable unit was the changed medication order set for pain medications, which could be expanded to other drug classes or care pathways.

3. Test Scale-Up

Determine which scale-up approach will best achieve your deprescribing aim. For example, if your aim is to reduce use of PPIs across Health System ABC by 50 percent by December 31, 2019, your scale-up approach may be to first spread deprescribing to all primary care providers and settings, and then to other ambulatory settings, the ED, and inpatient care settings.

Implement the deprescribing interventions initially in one new context (e.g., care setting, patient population, medication). Test the change ideas in that new context and use the PDSA Worksheet to track results. Review your results after each PDSA. Did the changes implemented lead to improvement in the new setting? Increase the scope of testing to additional contexts by multiples of five (e.g., expand testing from one primary care setting to five); test until you achieve improvements consistent with your aim and then increase testing again by multiples of five (e.g., expand testing from 5 to 25 primary care settings).

Based on your scale-up approach and testing results, identify which specific changes must be spread in all contexts. Make a plan for coverage and completeness: Does each spread site need to implement all of the changes? Or are there a few key changes that are critical for success that must be spread to all sites?

Test the interventions in another new setting, track results on the PDSA Worksheet, and review results after each PDSA. Were the changes improvements in the new setting? Increase the scope of testing by multiples of five (e.g., expand from one to five clinics next), test until you achieve improvements consistent with your aim, and then increase again by multiples of five (e.g., expand from 5 to 25 clinics next).

Update draft process flowcharts and training guides. Harvest new ideas from the spread sites to inform adaptations of the prototype that lead to even more improvement. Gather and record (using low-technology methods) stories of the deprescribing experience of diverse populations of patients, clinicians, and staff. Be sure to get approval to share these stories.

4. Go to Full Scale

Adopt the deprescribing interventions in all relevant contexts in your health care system:

- Engage a sponsor and champion to kick off going to full scale;
- Build the sequence of implementation rollout;
- Use process flowcharts and training guides to communicate the changes with staff;
- Ensure that practices are embedded in clinical protocols and guidelines, job descriptions, or workforce planning; and
- Share stories of the deprescribing experience of patients, clinicians, and staff to build will and gain support for implementing the interventions.

Lessons Learned and Implementation Tips

The health care systems participating in the Learning and Action Community utilized various approaches to deprescribing.[13] One key commonality for all teams was the use of the electronic health record to identify patients who were appropriate for deprescribing. Once patients were identified, the subsequent deprescribing approaches included the following:

- **Build algorithms to prompt or automate physician deprescribing:** For example, algorithms based on revised prescribing guidelines would default to not prescribing certain classes of medications. Physicians would then have to specifically order those medications to deviate from the protocol, embedding the standards into IT processes.
- **Engage pharmacists to initiate deprescribing:** Health systems found that having improvement teams that were led by or actively collaborated with pharmacists improved their success rates with deprescribing. Pharmacists changed protocols, verified medication orders, and ran drug lists.
- **Work directly with patients in different settings to encourage them to consult with their prescribers to deprescribe:** For health systems choosing to focus on deprescribing in the acute care setting, providers used these interactions as touchpoints to encourage patients to discuss their home medications and previously prescribed medications with their primary prescribers.

Other lessons from the Learning and Action Community highlighted ways in which health systems focused more broadly on changing prescribing culture and methods for scaling and adapting the innovation.

- The health systems utilized the evidence from the original innovation to build will for deprescribing and improved prescribing in their own systems. Consider how the original innovation can serve that role in your health system.
- Some of the health systems were motivated to consider deprescribing as a response to an error in prescribing behavior and decided to focus on upstream processes to change prescribing patterns.
- Several systems noted that while changing pharmacy protocols and algorithms was relatively straightforward, engaging physicians in this work was critical to shifting the overall culture to one that addresses polypharmacy issues and is seeking to create more age-friendly health systems.[14]
- The original innovation provided algorithms for deprescribing that were utilized by some of the health systems. However, most systems opted to develop their own algorithms that were better suited to their context and served as a means to engage providers in the work.
- Most of the health systems began deprescribing with one medication or class of medications. One health system deprescribed according to disease state.
- At the point of scale-up, the health systems selected to do so by reaching more sites of care and/or by deprescribing additional medications.

Notes on Measurement

The aim statement shapes the process and outcomes measures the team establishes to gauge whether changes are leading to improvement to achieve the desired aim. Balancing measures are also important to ensure there are no unintended negative consequences resulting from deprescribing (e.g., return of symptoms or conditions the medication was addressing, increased workload on providers, and increased use of alternative medication whose risks and benefits require monitoring).

For example, health system teams participating in the Learning and Action Community that tested deprescribing protein pump inhibitors established dispensed volume of H_2 blockers as a balancing measure. Another team working on deprescribing opioids established pain reported by the patient as the balancing measure.[15]

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