Primary Care Practice Facilitation Curriculum

Module 11: Using Root Cause Analysis to Help Practices Understand and Improve Their Performance and Outcomes

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Primary Care Practice Facilitation Curriculum

Module 11. Using Root Cause Analysis To Help Practices Understand and Improve Their Performance and Outcomes

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Contents

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Instructor's Guide

Practice facilitator (PF) competencies addressed in this module:

- Basic quality improvement methods and skills
- Change management

Time

- Pre-session preparation for learners: 3 hours
- Session: 85 minutes

Objectives

Learners will be able to:

1. Use the "5 Whys" process with a group to identify factors that contribute to less-than-optimal performance on a specified performance metric.
2. Use a fishbone diagram (also called a cause-and-effect diagram) to identify factors that contribute to less-than-optimal performance on a key performance metric.
3. Conduct a fall-out analysis to determine why individuals did not receive an indicated service.

Exercises and Activities To Complete Before, During, and After the Session

Pre-session preparation. Ask learners to review the following information (3 hours) and conduct the exercises:

1. Module.
2. View video on root cause analysis and review materials at: http://www.mindtools.com/pages/article/newTMC_80.htm.
3. Read about the use of root cause analysis to improve patient safety at https://psnet.ahrq.gov/primer/root-cause-analysis.
4. Conduct a 5 Whys analysis for a problem or error that is occurring repeatedly in their home or place of work. For example, regularly failing to have milk in the refrigerator.
5. Create a fishbone diagram beginning with information discovered using the 5 Whys.
6. Scan: Langley GJ, Moen R, Nolan KM, Nolan TW, Normal CL, Provost LP. *The Improvement Guide: A Practical Approach to Improving Organizational Performance*. 2009. Jossey-Bass.

During the session. Presentation (20 minutes)

1. Present key concepts from the module.

Discussion. Ask questions and explore answers with learners. (20 minutes)

1. What did you learn from completing the 5 Whys and the fishbone exercise before this session?
2. How could you use this information in your home or work to improve a process or

performance?

3. Have you used fishbone diagramming in a workplace or with a practice? If so, please describe what you did and the three most important lessons you learned using the process.
4. How could you envision building capacity in a practice to conduct root cause analyses of performance data and problems in the practice? Who would you train? How would you help them incorporate root cause analyses into their quality improvement processes?

Conduct exercise (45 minutes). Facilitate the 5 Whys process to identify root causes of a problem or strength associated with this class.

1. Ask learners to break into small groups.
2. Have each group select one person to serve as the PF for the group.
3. Ask the PF to facilitate identifying a problem with the class or course.
4. Facilitate a 5 Whys analysis.
5. Facilitate creation of a beginning fishbone diagram.
6. Ask each member to provide feedback to the PF on the strengths and weaknesses of his or her facilitation of these two processes.
7. With the large group, ask a member of each group to share two lessons learned from facilitating or observing the facilitation of the exercise that they can apply to their own work with practices.

Module 11.

Helping a practice obtain data on its performance is an important part of improvement work. Modules 13, 14, and 15 in this curriculum discuss collecting and presenting performance data. But collecting data is not enough to improve. In order to make meaningful change, practices must understand the underlying factors producing the performance; in other words, the root causes of the performance issue or problem.

Just as it is important to properly diagnose a patient's condition before prescribing a treatment, when working to improve practice performance, it is important to accurately diagnose the factors that contribute to practice outcomes.

Sometimes organizations rush to solve problems based on performance data without adequately analyzing the factors that are contributing to the performance. This can lead to interventions that do not address the real reasons for the problem, and to unsuccessful improvement efforts.

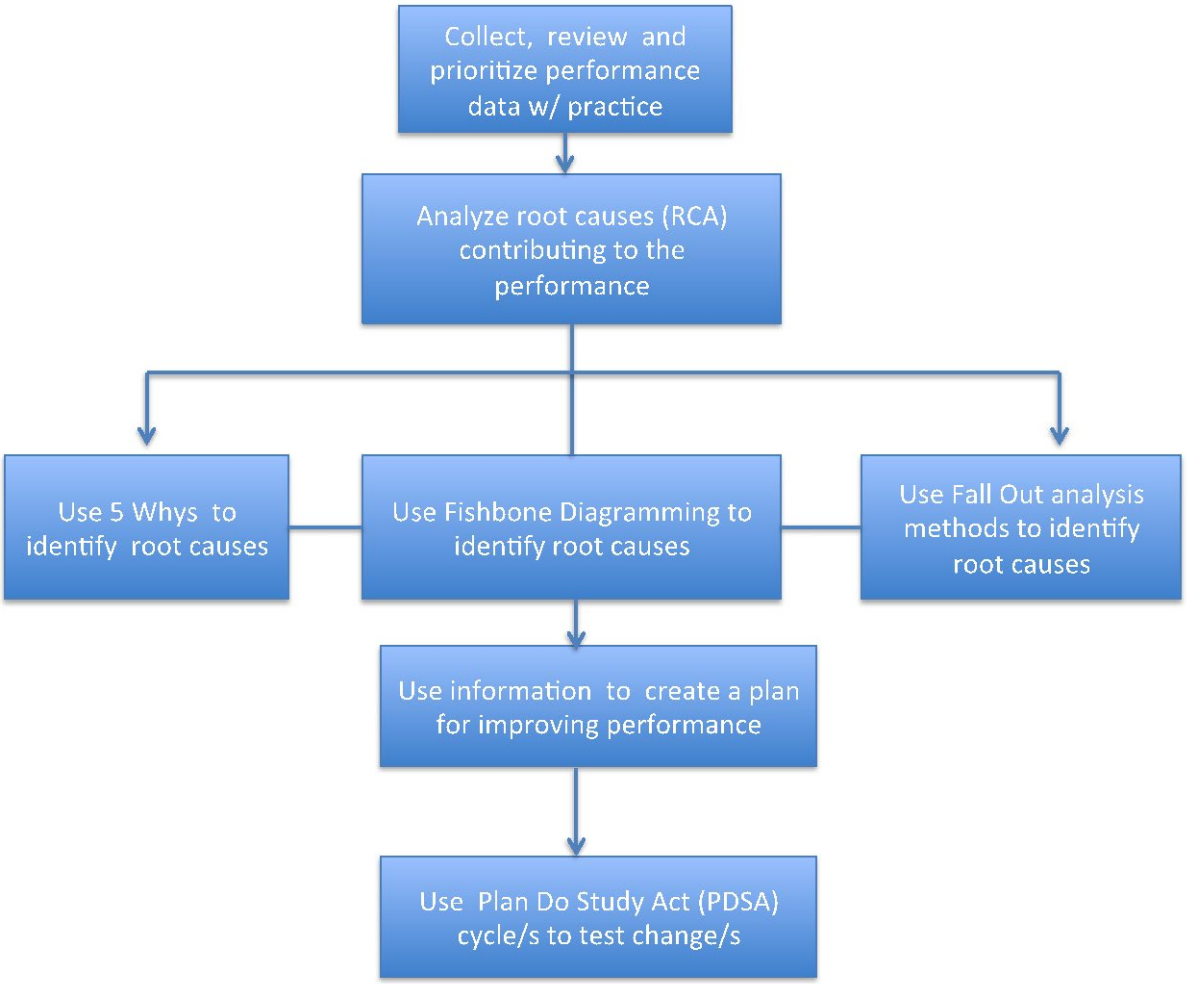
As a practice facilitator (PF), you will want to help your practices take a step back from their data and use a systematic approach to exploring the root causes of their performance before deciding on any changes to improve the performance. This is called root cause analysis. It is the key to helping practices accurately diagnose the issues affecting their performance.

This module provides you with three tools you can train practices to use and incorporate into their quality improvement processes to help them better understand factors underlying their performance or the problems they are trying to resolve. These are:

- The 5 Whys process
- Fishbone diagrams
- Fall-out analyses

After training practices to use these tools, you can work with them to modify the root causes they identify and improve their performance using the Plan Do Study Act cycles (see Module 8). For example, in a typical scenario you might work with a practice to gather, present, and review performance data (see Modules 13, 14, 15); help them use a performance metric to improve; work with them to identify the root causes of their performance using the 5 Whys, fishbone diagramming, or fall-out analysis; and then help them use the information they discover from analyzing root causes to design a Plan Do Study Act cycle to improve the process. Figure 11.1 depicts the interactions between these root cause analysis techniques and PDSA cycles.

Figure 11.1. Typical sequence for introducing root cause analysis to a practice



After you complete this module, you should be able to:

- determine when to use the root cause analysis processes presented here,
- facilitate practices in using these tools, and
- train practice members to use these tools in your absence as a routine part of their quality improvement work.

Root Cause Analysis

Root cause analysis is the identification and analysis of factors that are contributing to a specific outcome or problem. It is an essential tool for quality improvement.

Three categories of causes may underlie a problem: human, physical, and organizational. Human causes involve someone doing something wrong, not doing something that should be done, or doing something that doesn't need to be done. Physical causes include failures of materials such as broken or missing equipment. Organizational causes include processes, procedures, and policies that are contributing to the problem (AHRQ, 2014; Mindtools, 2014; NHS, 2008; Joint Commission, 2010). See the text box for examples of these types of causes.

Understanding the Three Categories of Root Causes: Examples

Human causes: Medical assistant is entering information in the wrong place in the electronic health record. Physician is using old guideline recommendations and has not updated prescribing practices.

Physical causes: The point-of-care HA1c machine is malfunctioning; the door to the building is not wheelchair accessible.

Organizational causes: The empanelment procedures do not include training and monitoring the appointment schedulers who are scheduling patients with any open clinician rather than a member of the patient's assigned care team.

The 5 Whys, fishbone diagrams, and fall-out analyses are processes you can use with your practices to identify the different factors that are at play with a given performance issue.

The 5 Whys. The 5 Whys is a technique developed by Sakichi Toyoda to help identify the causes underlying a problem. It is a simple process that involves asking and answering a series of five *why* questions about a problem in an effort to uncover the causes (Joint Commission, 2010). It can be a good way to get an individual or group thinking more deeply about the factors underlying their performance before deciding how to approach improvement efforts.

As a PF, you will want to be comfortable using this simple process with your practices to identify factors contributing to their performance data. You should be able to teach the process to practice members so they can use it on their own, and also encourage them to develop the habit of using the 5 Whys process as a regular part of their quality improvement work.

The 5 Whys process involves three steps. First, work with practice members to define the issue they want to improve or the problem they wish to prevent. Second, engage the group in asking and answering the question *why* five times or until the group agrees that they have identified the root causes of the problem. It is important to remember that the answers need to come from the practice members, not from you or others on your PF team. You can guide and stimulate the discussion, and provide some input based on your observations of the processes being analyzed, but the substance of the discussion must come from the practice. See Figure 11.2 for an example of this exercise. Third, if an actionable "root cause" is not evident after five *whys*, then the group should continue to ask additional *whys* until a root cause becomes evident. You will know the

group has arrived at a root cause when no other *why* can be asked that would lead to a meaningful answer or action.

At the end of the exercise, the changes needed to improve the process or prevent the undesired outcome should be self-evident. You can use these to lead the practice into a Plan Do Study Act cycle to test the suggested solutions; or if more analysis is indicated, the information can be used to jump-start a fishbone diagramming process. This more elaborate process is described in the next section.

Steps for conducting the 5 Whys.

1. Work with practice members to identify the problem they want to solve or prevent.
2. Ask the question *why* five times until the group members agree they have identified the root cause of the performance issue or problem.
3. Identify and implement solutions based on findings.

Figure 11.2. Sample 5 Whys process

Problem: Recently, patients have stopped coming to health education class.

Why 1?: Patients forget to come or are not sure when classes are happening.

Why 2?: Staff member who usually makes reminder calls to patients is not making the calls.

Why 3?: She does not have the list of patients to call.

Why 4?: Current lists are not being created.

Why 5?: The person assigned to create these lists from the electronic health record system is out on leave.

Solutions suggested by the 5 Whys:

1. Assign an additional staff person to fill in and create reports when the person responsible is out.
2. Give the outreach caller direct access to the data and train her to generate her own up-to-date lists.

The group can then discuss these solutions and consider testing them using the Plan Do Study Act process.

Below are some recommendations to help make a 5 Whys process go smoothly with your practices.

Make sure the group's answers are rooted in facts and not based on what someone thinks or wishes had happened. You can do this by asking speakers to give specific examples of when they've seen the event occurring. For example, you could ask "Can you describe for me a

specific time when you saw this taking place?"

Include all individuals who are involved in the processes being improved in the 5 Whys Exercise. It is one thing to have leadership or quality improvement team members imagine or guess which factors or challenges are contributing to an issue. It is another thing to have the individuals directly involved with the process respond to these questions. It is almost always more effective for those directly involved with the process to help identify root causes underlying problems and performance.

Remember that the 5 Whys is a simple process for getting groups to think and does not replace more comprehensive processes, such as fishbone diagramming, which consider multiple causes for a problem. Although simplicity is a strength of the 5 Whys, it can also generate an overly simple image of problems if not conducted in concert with other processes, such as fishbone diagramming (Anderson, 2009).

Fishbone Diagramming. The fishbone diagram (also called a cause-and-effect or Ishikawa diagram) is another engaging and effective tool you can use to help practices identify root causes for their performance problems (AHRQ, 2014; Mindtools, 2014; NHS, 2008; Joint Commission, 2010). You can use fishbone diagrams to help practices understand that effects have multiple causes, avoid overly simplistic solutions to problems, and see the relationships between causes and effects This will help them select the most appropriate intervention to use to correct the problems (Institute for Healthcare Improvement, 2004).

Creating a fishbone diagram involves the following eight steps:

1. Schedule a 30- to 90-minute meeting with your practice team.
2. Introduce fishbone diagramming briefly to the practice team as a tool to identify root causes of performance problems. (Provide an example from another project, such as the one in Figure 11.3 below.)
3. Have team members clearly define a measurable performance issue they want to analyze and write this in the box at the head of the diagram (the fish head). For example, patient wait times for women's health visits are averaging 30 minutes.
4. Have the categories of causes already pre-filled with people, environment, materials, methods, equipment. Some practices may want to add more categories, but limiting the number of categories you use usually helps the process move along more effectively.
5. Ask participants to brainstorm factors that may be causing the problem within each category. Remind participants about the rules of brainstorming: (1) all ideas are good ideas at this stage, and (2) limit cross-talk until everyone has had a chance to share their ideas.
6. Write the group's ideas of causes on the diagram under the appropriate category headers (the diagonal lines). In some instances, one or more categories may remain empty but it is important that you ask the team to think about each category even if they cannot immediately think of causal factors in that category. Include secondary causes by adding lines off from each cause.

7. Engage the group in discussions about the results of the diagram process and its implications for next steps in improving the targeted metric or process. If there are multiple causes contributing to the problem, which is common, engage the group in discussing how each of the causes and types of causes interact and the implications of this for making changes to improve performance. Discussing the effect on performance of the interactions among the causes may take some time. It is important to discuss each cause and its interactions carefully before forming a plan for improvement, or the intervention will be superficial and will eventually fail.
8. Once the group members have fully explored all the causes and their connections to one another and the problem they are trying to solve, have them identify changes they would like to try based on what they learned completing the diagram. Use this opportunity to initiate a Plan Do Study Act cycle to test the changes.
   Note: If the group gets stuck brainstorming about causes under each category of the fishbone diagram, you can use the 5 Whys process to facilitate their thinking.

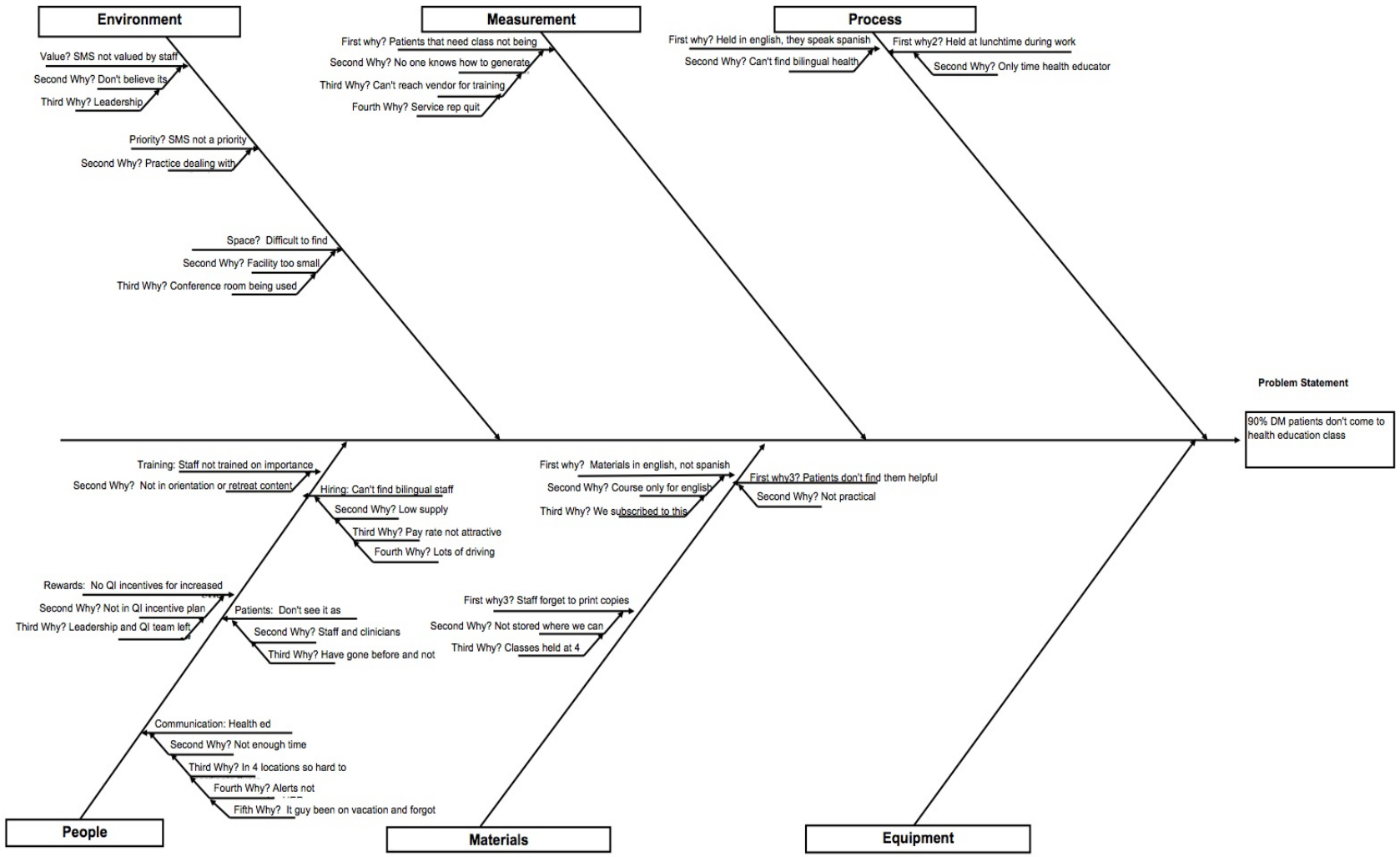
As a PF, you should be skilled in helping practices create these diagrams, and training clinicians and staff to incorporate them into routine quality improvement work.

General recommendations. Include individuals involved in the outcome under study in the mapping process, as they are more likely to know of contributing causes than others who are not directly involved in the process. This can include receptionists, practice managers, physicians, nurses, physician assistants, medical assistants, community health workers, health educators, and coaches. The practice may also want to include patients, depending on the nature of the problem.

Make it easy for everyone participating in the analysis to see and contribute to the diagram as it is being developed. For example, draw the empty diagram on a whiteboard or flipchart. You can write the goal (at the head) and standard categories and then add items as group members suggest them. Depending on the situation, you may want to invite a member of the group to serve as the scribe for the process, so you can focus your attention on the group, or you may want to serve as scribe yourself for efficiency.

Encourage quiet participants to add their ideas. They may be the ones with the "missing pieces" or the causes that others miss. You can encourage them to participate by calling on them directly, "Sally, you have been quiet during our discussion. What would you add to this diagram?"

Figure 11.3. Sample fishbone diagram



You may also want to train a member of the practice to facilitate root cause analysis for the practice in the future. You can use this module to train the staff member or as a starting point for developing your own training session. It can be helpful to have this person colead a 5 Whys or fishbone diagramming process with you so he or she can gain experience using the process with the practice and build some credibility as a resource for this type of analysis.

Helpful tools for fishbone diagramming are available at:

- http://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/QAPI/downloads/FishboneRevised.pdf
- http://www.mindtools.com/pages/article/newTMC_03.htm

Fall-Out Analysis. A third process you can use with your practices to identify root causes is fall-out analysis. A fall-out analysis is used to evaluate why an individual "fell out" of a particular performance metric. For example, why did a patient with diabetes not have an HbA1c lab value in his or her chart for the past 12 months? A fall-out analysis can be conducted as a stand-alone process or as a way to further examine some of the causes raised during fishbone diagramming.

Fall-out analysis is different from the 5 Whys and fishbone diagram processes discussed earlier because it relies mainly on objective data and focuses on one particular type of problem—determining why patients did not receive an indicated service.

To conduct a fall-out analysis, you will need to be able to analyze patient datasets for trends and patterns, conduct observations of care processes, and review medical charts for clues for reasons patients may not have received the indicated care.

To begin a fall-out analysis, you should confirm that the performance data you will be analyzing are correct and that the results are not invalidated by mapping or other data errors. After validating the findings, generate a list of the patients who failed to receive the recommended service. Next, identify four to five patients from that list and conduct reviews of their medical records to identify potential factors that contributed to their failure to receive the service. For example, in the case of missing lab data, you might examine the records with the following questions in mind: Did the patient come in for services in the performance period? Did his or her clinician order the lab test? If so, what happened next? Is there evidence the patient tried to follow through? Did the lab result arrive and not get entered into the record?

As you complete this initial review, write down any potential causes that you uncover. Next, visit with clinicians and staff and brainstorm about the possible causes you identified and others they think might be contributing. You may start to see an early pattern of causes emerge. Continue this process until you have generated a comprehensive list of causes or until a clear pattern or reason for the fall-out is identified. There is often not a single cause, but several. One of your roles as a PF should be to discourage practices from rushing to quick, overly simplistic solutions, and help them consider all possible causes to the problem.

You will also want to examine data for the entire sample if available. You can do this using

Excel or a statistical software program. Typically, you don't need to do more than run frequencies to take a basic look at the data. In many instances, conducting a successful fall-out analysis will require input from a clinician, as many of the factors that contribute to a patient's falling out of a metric may not be evident to you if you do not have a clinical background.

Steps for Completing a Fall-Out Analysis

1. Identify two-to-five patient cases that "fall out" of the performance metric in question.
2. Review the content of these patients' medical records and other related documents to identify potential causes for their falling out of the metric.
3. List reasons that you identify and discuss these with staff and clinicians for additional input.
4. Continue with an iterative cycle of reviewing cases and discussing with clinicians and staff until a clear root cause or set of root causes is identified.
5. Encourage the practice to use the Plan Do Study Act cycle to implement and evaluate improvements based on the findings of the fall-out analysis.

Example: Using fall-out analysis to improve diabetes care in a federally qualified health center. A small family practice in the Midwest is trying to figure out why more than 200 of its patients with diabetes do not have the required HbA1c values recorded in their medical records. When brainstorming about potential causes during a fishbone exercise, most clinicians and staff believed the main cause was patient noncompliance, in other words, the patients are failing to go to the lab to get the requested tests.

Based on this assessment, the practice began discussing the idea of implementing a patient education program to teach patients about the importance of getting their prescribed lab work done. The PF suggested that, in addition to the fishbone exercise, the group also conduct a fall-out analysis of a few patient cases to see if the findings supported what the group had identified in the fishbone exercise, and whether there were any other potential causes they might have missed.

The PF obtained medical records for 10 patients who did not have the required lab work recorded and discovered that the last HbA1c for 6 of them had been within normal limits. As the PF explored further, she discovered that the patients' physicians had failed to order the lab tests in the past 12 months. When she interviewed the physicians, they said they did not order the lab tests because the patients' last lab values had been normal.

She then analyzed lab data for the remaining 194 patients and found that 70 percent had previous HbA1c results within normal limits. These analyses uncovered an "unknown" cause for the

practice's poor performance on HbA1c documentation and suggested the need for an entirely different type of intervention to address the problem.

Summary

Obtaining performance data is just the beginning of a quality improvement process. What a practice does next is especially important if, for example, performance assessment finds that care is not meeting important HEDIS measures, or wait times to see a clinician have lengthened to more than 20 minutes per patient, or patients are not receiving indicated care for chronic kidney disease. PFs need to be highly skilled in using processes for analyzing root causes of performance, and helping their practices incorporate these processes as a regular part of their quality improvement work. The findings from a root cause analysis are invaluable to crafting solutions to performance problems. The 5 Whys, fishbone diagrams, and fall-out analyses are processes that PFs and practices can use to analyze root causes to problems, and help practices make good decisions about factors to change to improve performance.

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