Clinical Quality Improvement Project Guide

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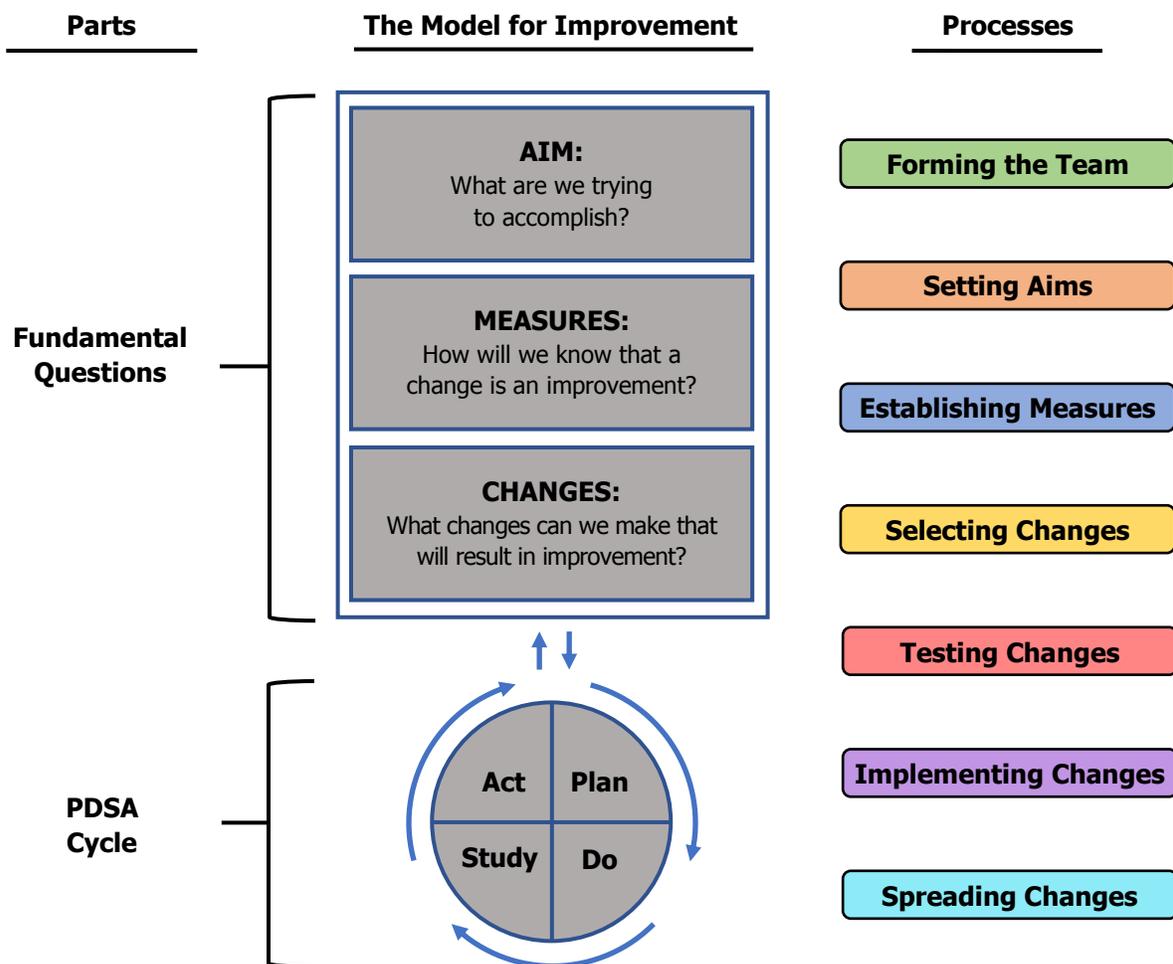
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Understanding the Model for Improvement

The Model for Improvement is a framework that guides improvement work. The model provides a structure that has been found to accelerate the pace of improvement. Additional improvement methods or practices can be incorporated into this model.

The model has two main parts:

- Three fundamental questions, which can be answered in any order and,
- The Plan-Do-Study-Act (PDSA) cycle to test changes and to determine if the change is an improvement.

In addition, there are seven corresponding processes that guide improvement (as shown below). The remainder of the section summarizes each of the corresponding processes and their relationship to the model.

Parts	The Model for Improvement	Processes
Fundamental Questions	**AIM:** What are we trying to accomplish?	**Forming the Team**
	MEASURES: How will we know that a change is an improvement?	**Setting Aims**
		Establishing Measures
	CHANGES: What changes can we make that will result in improvement?	**Selecting Changes**
PDSA Cycle	Act · Plan · Study · Do	**Testing Changes**
		Implementing Changes
		Spreading Changes

References:

1. Institute for Healthcare Improvement. Science of Improvement: How to Improve. http://www.ihi.org/resources/Pages/HowtoImprove/default.aspx
2.

Model for Improvement: The Processes

Pages 4-8 of this document provide additional details about each process in the model for improvement: forming the team, setting aims, establishing measures, selecting changes, testing changes, implementing changes, spreading changes.

Forming the Team

Including the right people on an improvement team is critical to the success of the project. Teams may vary in size and composition. When forming the team, first consider the aim. Second, consider the systems and processes that relate to the aim. The team should be diverse, including individuals from all levels of agency, most importantly, those individuals that will be affected by the improvement.

Setting Aims

Undertaking an improvement project requires having a clear, explicit summary of what the team plans to achieve. This is the function of an aim. It keeps the team focused, creates urgency to accomplish the goal, and provides a vision of what success looks like.

A good aim establishes the following:

- **What:** Which aspect of client-service(s) is going to be improved and for which client population?
- **How much:** What is the measure, or numerical goal, for the improvement?
- **When:** What is the timeframe that the improvement should be evident?
- **How:** Which system(s) or process(es) will be changed and tested?
- **Why:** What is the motivation for the improvement?

Once the above information has been discussed and there is agreement between all team members, the information will be formed into an aim statement as shown below:

We, (**who** – project team members) will improve (**what** – aspect of client service/client population) by (**how much** – measure) by (**when** – timeframe) by (**how** – changes to test) in order to (**why** – motivation).

Below are some examples of aim statements:

- *We will achieve 95% on-time RWSP client recertifications in 6 months by standardizing and implementing a contact procedure to ensure appropriate and timely client notification.*
- *We will increase youth (ages 15-29) utilization of RW EIS testing services by 30% in 3 months by targeted social media advertising to further reduce this population's chance of contracting HIV.*

References:

[1] Institute for Healthcare Improvement. Science of Improvement: Forming the Team.
http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementFormingtheTeam.aspx

[2] Institute for Healthcare Improvement. Science of Improvement: Setting Aims.
http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementSettingAims.aspx

[3] Institute for Healthcare Improvement. Science of Improvement: Tips for Setting Aims.
http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementTipsforSettingAims.aspx

Establishing Measures

Measurement is a critical part of testing and implementing changes; it tells the team whether a change is leading to improvement. Measures for improvement work are different from scientific measures as they are concerned with bringing new knowledge into daily practice through many sequential tests to gather "just enough" data to learn about the effect of a change.

There are three types of measures:

- **Outcome Measure:** Quantifies the impact the system has on an aspect of the client.
- **Process Measure:** Quantifies the performance of a process or aspect in of the system.
- **Balance Measure:** Compares measures to ensure a change is not causing new problems in other parts in the system.

In addition, operational definitions need to be defined for any measures used for a project.

Below is an example of each type of measure and possible operational definition:

- **Outcome Measure:** *On-Time RWSP Recertification – <u>Numerator:</u> Number of clients in the denominator that recertified on-time / <u>Denominator:</u> Total clients that need to recertify with RWSP during the month*

- **Process Measure:** *Correct Client Recertification Contacts – <u>Numerator:</u> Number of clients in the denominator that were contacted by the set procedure / <u>Denominator:</u> Total clients of the Primary Case Manager (NMCM) that need to recertify during the month*

- **Balance Measure:** *For achieving on-time RWSP client recertifications: measure on-time HSP expiration rates to ensure that they do not decrease.*

References:

1. Institute for Healthcare Improvement. Science of Improvement: Establishing Measures. http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementEstablishingMeasures.aspx
2. Institute for Healthcare Improvement. Science of Improvement: Tips for Effective Measures. http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementTipsforEffectiveMeasures.aspx

Selecting Changes

Not all changes will lead to improvement. However, all improvement requires a change in a system process. A change concept is a general notion or approach to change that can be useful in developing ideas for changes that can lead to improvement.

Below are some change concepts from *The Improvement Guide* developed by Associates in Process Improvement:

- ***Eliminate Waste:*** Look for ways of eliminating any activity or resource in the organization that does not add value to an external customer.

- ***Improve Work Flow:*** Improving the flow of work in processes is an important way to improve the quality of the goods and services produced by those processes.

- ***Change the Work Environment:*** Changing the work environment itself can be a high-leverage opportunity for making all other process changes more effective.

- ***Producer/Customer Interface:*** To benefit from improvements in quality of products and services, the customer must recognize and appreciate the improvements.

- ***Manage Time:*** An organization can gain a competitive advantage by reducing the time to develop new products, waiting times for services, lead times for orders and deliveries, and cycle times for all functions in the organization.

- ***Error Proofing:*** Organizations can reduce errors by redesigning the system to make it less likely for people in the system to make errors. One way to error proof a system is to make the information necessary to perform a task available in the external world, and not just in one's memory, by writing it down or by actually making it inherent in the product or process.

- ***Focus on the Product or Service:*** Although many organizations focus on ways to improve processes, it is also important to address improvement of products and services.

Project teams can creatively combine these concepts with the knowledge of project-specific subjects or processes to help generate ideas to test for a change.

References:

1. Institute for Healthcare Improvement. Science of Improvement: Selecting Changes. http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementSelectingChanges.aspx
2. Langley GL, Moen R, Nolan KM, Nolan TW, Norman CL, Provost LP. The Improvement Guide: A Practical Approach to Enhancing Organizational Performance (2nd ed), 2009.

Testing Changes

Once the team agrees on the aim, develops measures, and determines the idea for change, it is time to test it by using a Plan-Do-Study-Act (PDSA) cycle. The PDSA cycle is a scientific method used for action-oriented learning. PDSA cycles should be simple and efficient; the goal is to gather enough data to determine if a change leads to an improvement. Multiple PDSA cycles should be used used to evaluate the impact of several small changes, or a couple of major changes. For additional information and tips on testing changes, review the references outlined below.

Below are the steps in a PDSA Cycle:

- **Plan:** Plan the test or observation, including a plan for collecting data.
    - State the objective of the test.
    - Make predictions about what will happen and why.
    - Develop a plan to test the change (Who? What? When? Where? What data needs to be collected?)
- **Do:** Try out the test on a small scale.
    - Carry out the test.
    - Document problems and unexpected observations.
    - Begin analysis of the data.
- **Study:** Set aside time to analyze the data and study the results.
    - Complete the analysis of the data.
    - Compare the data to your predictions.
    - Summarize and reflect on what was learned.
- **Act:** Refine the change, based on what was learned from the test.
    - Determine what modifications should be made.
    - Prepare a plan for the next test.

Below is an example of a PDSA cycle:

Aim: Achieving 95% on-time RWSP client recertifications in 6 months by standardizing a contact procedure.

- *Plan: Project team creates a contact procedure to standardize notifying clients of recertification.*
- *Do: NMCM follows contact procedure for a month and collects measurement data.*
- *Study: Project team reviews data and finds that clients are expiring due to lack of eligibility documents.*
- *Act: The team tests a new change idea: standardizing eligibility documents for all recertifications.*

References:

1. Institute for Healthcare Improvement. Science of Improvement: Testing Changes. http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementTestingChanges.aspx
2. Institute for Healthcare Improvement. Science of Improvement: Tips for Testing Changes. http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementTipsforTestingChanges.aspx

Implementing Changes

After testing a change on a small scale, learning from the test, and refining the change through several PDSA cycles, the change is ready for implementation on a broader scale such as pilot population or pilot unit.

Implementation is a permanent change to the way work is done and, as such, involves building the change into the organization. It may affect documentation, written policies, hiring, training, compensation, and aspects of the organization's infrastructure that are not heavily engaged in the testing phase. Implementation also requires the use of the PDSA cycle.

Below is an example of implementing a change:

- **Testing a Change:** *One NMCM tests standardized contact procedure and it is found that it increases RWSP client recertifications.*
- **Implementing a Change:** *Three NMCMs test the standardized contact procedure to further understand how to best implement the change.*

Spreading Changes

Spread is the process of taking a successful implementation process from a pilot unit or pilot population and replicating that change or package of changes in other parts of the organization or other organizations.

During implementation, teams learn valuable lessons necessary for successful spread, including key infrastructure issues, optimal sequencing of tasks, and working with people to help them adopt and adapt a change.

Spread efforts will benefit from the use of the PDSA cycle. Units adopting the change need to plan how best to adapt the change to their unit and to determine if the change resulted in the predicted improvement.

Below is an example of spreading a change:

- *If all three NMCMs successfully implement the standardize contact procedure to increase RWSP client recertifications, then spread would replicate this change to all NMCMs in the program. The three NMCMs would assist the remaining NMCMs in adopting or adapting the change.*

References:

1. Institute for Healthcare Improvement. Science of Improvement: Implementing Changes. http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementImplementingChanges.aspx
2. Institute for Healthcare Improvement. Science of Improvement: Spreading Changes. http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementTipsforTestingChanges.aspx

Understanding Other Improvement Methods and Practices

As stated earlier, the Model for Improvement can incorporate additional methods and practices. Below are some additional methods and practices used in improvement work:

Reviewing Current Evidence from the Field: When starting an improvement project, it is important to review current research-based evidence from the project-specific field.

Reviewing Best Practices from the Industry: Reviewing best practices, the methods and practices recognized by benchmark institutions as producing reliable results, can be an invaluable source of knowledge.

Systems/Processes Analysis: The quality improvement field works on the understanding that problems arise not because of individual people, but rather, are caused by issues in an organization's current systems or processes. This makes understanding these systems and processes a critical aspect of improvement work. Below are some tools that can help in this process:

- **Driver Diagram (**see appendix A**):** A driver diagram shows the relationship between the overall aim of the project, the primary drivers (sometimes called "key drivers") that contribute directly to achieving the aim, the secondary drivers that are components of the primary drivers, and specific change ideas to test for each secondary driver. (see appendix A for the tool)
- **Cause and Effect (Fishbone) Diagram:** This tool helps analyzing the different aspects of a system; i.e., people, environment, methods, resources. It is useful in mapping how the overall system functions as a result of its many parts. Link to the Tool
- **Flowchart Diagram:** This tool helps visually represent the sequence of steps in a process. It is useful for understanding how a process functions and identifying steps that may be causing issues in performance. Link to the Tool

Stakeholder Engagement/Co-Designing: An improvement will usually affect more individuals than those on the project team. It is important that those affected by the change (staff and consumers) contribute to the project to ensure that it makes sense and works for them. Co-Designing takes this idea a step further; it is a method that ensures changes are *designed with* instead of *designed for* key stakeholders (for more information see Reference 4).

Celebration: While it may seem trivial, celebration is an important process. It is an opportunity to stop and reflect, interpret, and honor what has happened as well as learn from successes and failures. Celebration reinforces a team's values in action and is meaningful and fun. (for more information see Reference 4).

References:

1. Institute for Healthcare Improvement. Cause and Effect Diagram. http://www.ihi.org/resources/Pages/Tools/CauseandEffectDiagram.aspx
2. Institute for Healthcare Improvement. Flowchart. http://www.ihi.org/resources/Pages/Tools/Flowchart.aspx
3. Institute for Healthcare Improvement. Pareto Chart. http://www.ihi.org/resources/Pages/Tools/ParetoDiagram.aspx
4. Hilton K, Anderson A. IHI Psychology of Change Framework to Advance and Sustain Improvement. IHI White Paper. Boston, Massachusetts: Institute for Healthcare Improvement; 2018. (available at ihi.org)

CQI Project Guide

_____

Project Name

_____

Quarter/CQM Plan Year

CQI Project Guide

Date Completed: _____   Project Name: _____

Improvement Identification:

State which outcome/performance measure (s) was identified for improvement:

State the outcome measure baseline data (most recent results) and corresponding measurement period:

State the quality improvement initiative (statewide or local) that aligns with this QI Project:

Project Team

State key stakeholders (e.g., specific individuals, position titles, etc.) that could form the project team:

- Project Sponsor:

- Project Lead:

- Project Team Members:

Aim Statement

State the desired outcome that the project team should work to accomplish:

Who: (the project team)	The project team
What: (aspect of client service)	will improve
For Who: (client population)	for
How Much: (in measurable terms)	by
When: (exact date or timeframe)	by
How: (change to test)	by potentially using the change ideas outlined on page 4
Why: (motivation)	in order to

Drivers and Change Ideas (see appendix A for guidance)

List your primary drivers:

List your Secondary Drivers:

List your Change Ideas:

Measures

State some possible measures that could be used to know if a change leads to improvement:

- Outcome Measure (required):

- Process Measures (optional):

- Balancing Measures (Optional):

Plan-Do-Study-Act (PDSA) Cycle (see appendix B for guidance)

Plan: Plan how you will test your change ideas and how you will collect data to evaluate their effectiveness.

What are your questions about the change idea?

What are your predictions for what will happen?

How will you collect data to evaluate the effectiveness of your change idea?

Do: Implement your change idea on a small scale.

How was the test implemented?

What changes did you observe? Were they helpful or harmful?

What does the data say?

Study: Evaluate the results of your change idea and compare it with your predictions from the "plan" phase.

What did you learn from implementing your change idea?

Act: Make a decision, based on what you've learned so far, and decide what you will do next.

Do you want to adapt, adopt, or abandon your change idea?

Appendix A: Driver Diagram from the Institute for Healthcare Improvement and Innovation

Institute *for*
Healthcare
Improvement

QI Essentials Toolkit:

Driver Diagram

A driver diagram is a visual display of a team's theory of what "drives," or contributes to, the achievement of a project aim. This clear picture of a team's shared view is a useful tool for communicating to a range of stakeholders where a team is testing and working.

A driver diagram shows the relationship between the overall **aim** of the project, the **primary drivers** (sometimes called "key drivers") that contribute directly to achieving the aim, the **secondary drivers** that are components of the primary drivers, and **specific change ideas to test** for each secondary driver.

Primary drivers are the most important influencers on the aim, and you will have only a few (we recommend 2 to 5); secondary drivers are influencers on (or natural subsections of) the primary drivers, and you may have many. As you identify each driver, establish a way to measure it.

Remember: It's unlikely that a single individual has a clear view of an entire complex system. When developing a driver diagram, enlist the help of team members who are familiar with different aspects of the system under review.

IHI's QI Essentials Toolkit includes the tools and templates you need to launch and manage a successful improvement project. Each of the nine tools in the toolkit includes a short description, instructions, an example, and a blank template. NOTE: Before filling out the template, first save the file on your computer. Then open and use that version of the tool. Otherwise, your changes will not be saved.
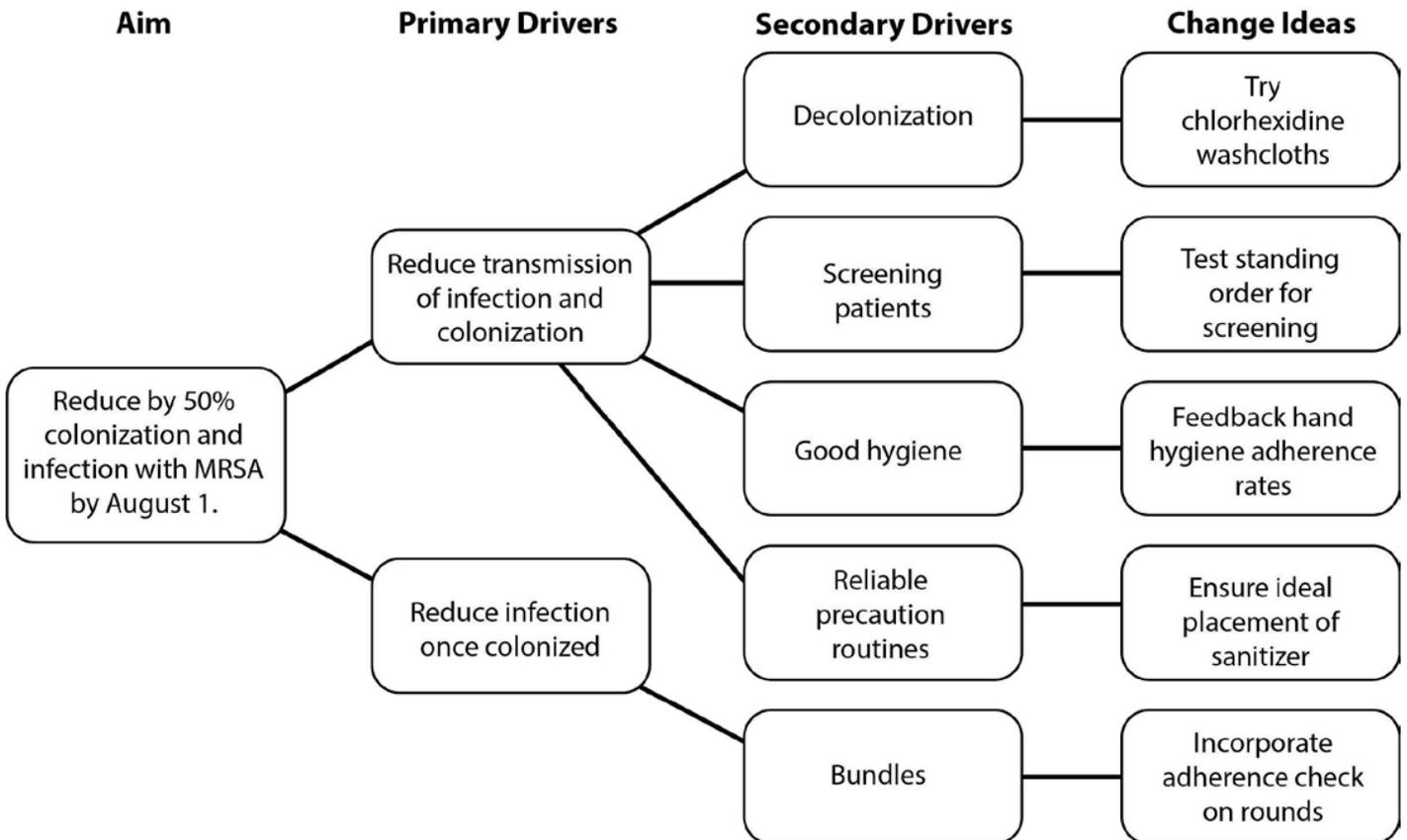
- Cause and Effect Diagram
- **Driver Diagram**
- Failure Modes and Effects Analysis (FMEA)

- Flowchart
- Histogram
- Pareto Chart
- PDSA Worksheet

- Project Planning Form
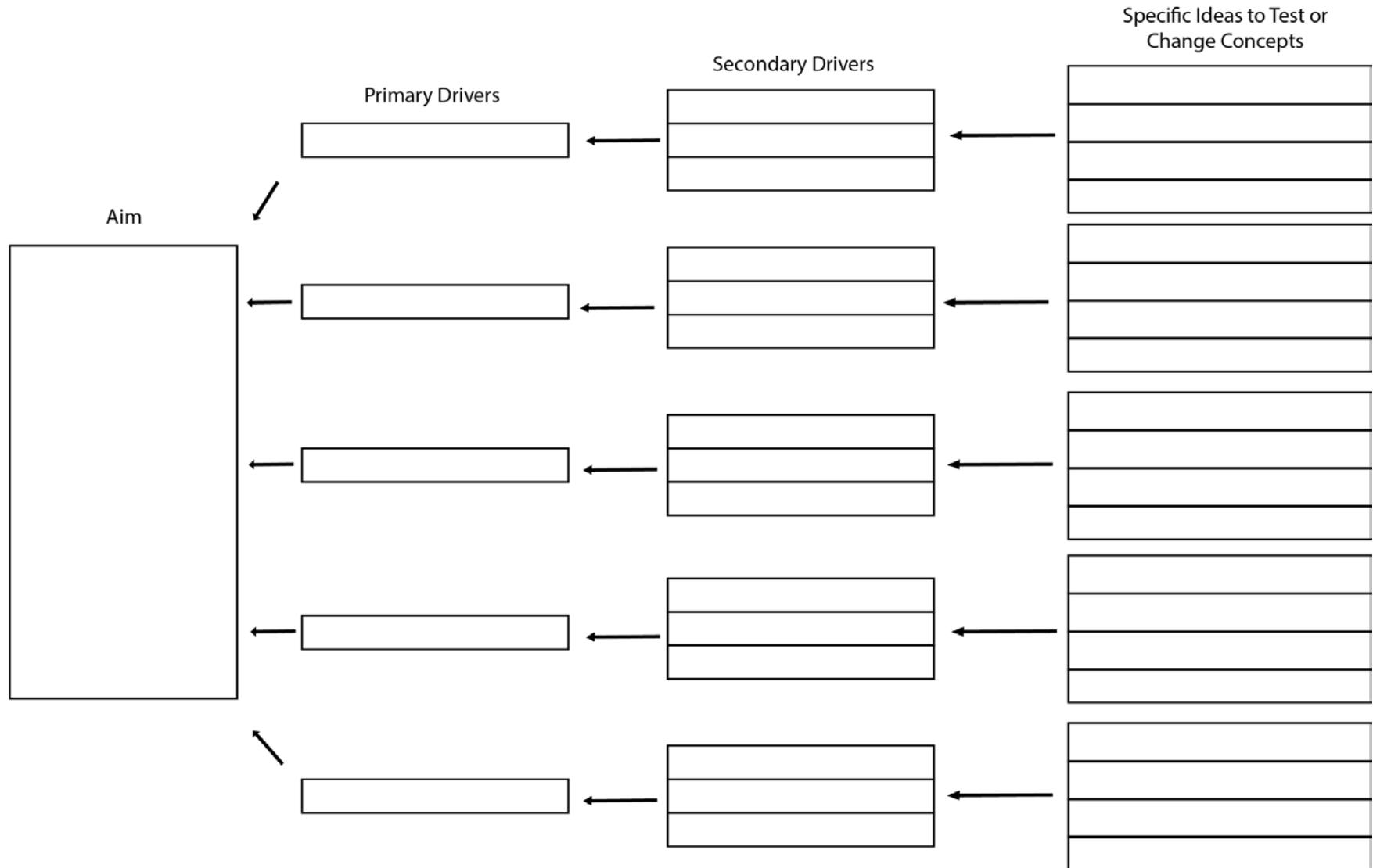- Run Chart & Control Chart
- Scatter Diagram

Instructions

1) On the left, list the project aim (what will be improved, by how much, for whom, and by when) and draw a box around it.

2) To the right of the aim, list a few "primary drivers" — the most significant high-level influencers on the aim you've identified. Draw a box around each of the primary drivers, and draw lines to connect the primary drivers to the aim.

3) To the right of each primary driver, list as many "secondary drivers" that influence the primary driver as you can think of. Draw a box around each secondary driver, and draw lines to connect the secondary drivers to the primary drivers. Note: Secondary drivers can connect to more than one primary driver.

   o   Tip: To show strong relationships, use solid lines; to show weaker relationships, use dotted lines.

4) To the right of each secondary driver, list specific change ideas you will test to influence the secondary driver. Note: Change ideas can connect to more than one secondary driver.

Example: Driver Diagram

Before filling out the template, first save the file on your computer. Then open and use that version of the tool. Otherwise, your changes will not be saved.

Template: Driver Diagram

Specific Ideas to Test or
Change Concepts

Secondary Drivers

Primary Drivers

Aim

Appendix B: PDSA Worksheet from the Institute for Healthcare Improvement and Innovation
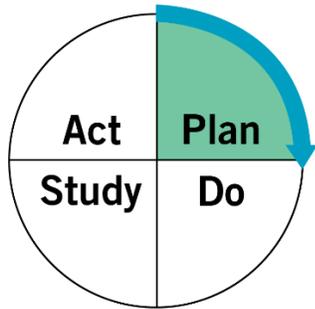
QI Essentials Toolkit:

PDSA Worksheet

The Plan-Do-Study-Act (PDSA) cycle is a useful tool for documenting a test of change. Running a PDSA cycle is another way of saying testing a change — you develop a plan to test the change (Plan), carry out the test (Do), observe, analyze, and learn from the test (Study), and determine what modifications, if any, to make for the next cycle (Act).

Fill out one PDSA worksheet for each change you test. In most improvement projects, teams will test several different changes, and each change may go through several PDSA cycles as you continue to learn. Keep a file (either electronic or hard copy) of all PDSA cycles for all the changes your team tests.

IHI's QI Essentials Toolkit includes the tools and templates you need to launch and manage a successful improvement project. Each of the nine tools in the toolkit includes a short description, instructions, an example, and a blank template. NOTE: Before filling out the template, first save the file on your computer. Then open and use that version of the tool. Otherwise, your changes will not be saved.
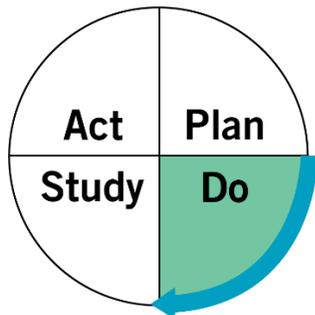
- Cause and Effect Diagram
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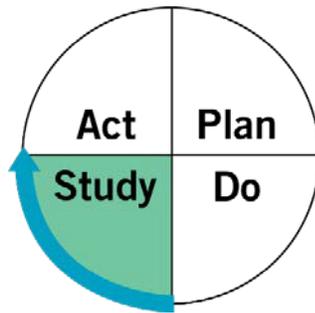- Run Chart & Control Chart
- Scatter Diagram

Instructions

Plan: Plan the test, including a plan for collecting data.

- State the question you want to answer and make a prediction about what you think will happen.

- Develop a plan to test the change. (Who? What? When? Where?)
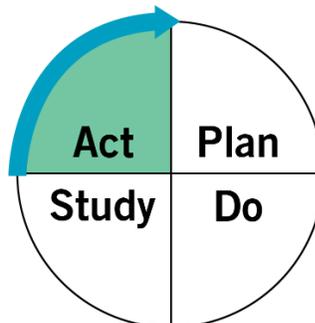
- Identify what data you will need to collect.

Do: Run the test on a small scale.

- Carry out the test.

- Document problems and unexpected observations.

- Collect and begin to analyze the data.

Study: Analyze the results and compare them to your predictions.

- Complete, as a team, if possible, your analysis of the data.

- Compare the data to your prediction.

- Summarize and reflect on what you learned.

Act: Based on what you learned from the test, make a plan for your next step.

- Adapt (make modifications and run another test), adopt (test the change on a larger scale), or abandon (don't do another test on this change idea).

- Prepare a plan for the next PDSA.

Example: PDSA Worksheet

Objective: Test using Teach-Back (a closed-loop communication model, in which the recipient of information repeats the information back to the speaker) with a small group of patients, in hopes of improving patients' understanding of their care plans.

1. Plan: Plan the test, including a plan for collecting data.

Questions and predictions:

- How much more time will it take to use Teach-Back with patients? It will take more time at first (5 to 10 minutes per patient), but we will start to learn better communication skills and get more efficient.

- Will it be worthwhile? The extra time will feel worthwhile (and possibly prevent future rework).

- What will we do if the act of "teaching back" reveals a patient didn't understand the care plan? If a patient is not able to explain his or her care plan, we will need to explain it again, perhaps in a different way.

Who, what, where, when:

On Monday, each resident will test using Teach-Back with the last patient of the day.

Plan for collecting data:

Each resident will write a brief paragraph about their experience using Teach-Back with the last patient.

2. Do: Run the test on a small scale.

Describe what happened. What data did you collect? What observations did you make?

Three residents attempted Teach-Back at the end of the day on Monday. Two residents did not find anything they needed to ask patients to Teach-Back. Jane found that her patient did not understand the medication schedule for her child. They were able to review it again and, at the end, Jane was confident the mother was going to be able to give the medication as indicated.

3. Study: Analyze the results and compare them to your predictions.

Summarize and reflect on what you learned:

- Prediction: It will take more time at first (5 to 10 minutes per patient), but we will start to learn better communication skills and get more efficient. *Result: Using Teach-Back took about 5 minutes per patient.*

- Prediction: The extra time will feel worthwhile (and possibly prevent future rework). *Result: Jane felt the time she invested in using Teach-Back significantly improved the care experience.*

- Prediction: If a patient is not able to explain his or her care plan, we will need to explain it again, perhaps in a different way. *Result: After a second review of the medication orders, the patient was able to Teach-Back the instructions successfully.*

In addition to the team confirming all three predictions, Jane realized the medication information sheets she had been handing out to parents weren't as clear as she thought. She realized these should be re-written — maybe with the input of some parents.

4. Act: Based on what you learned from the test, make a plan for your next step.

Determine what modifications you should make — adapt, adopt, or abandon:

Jane is planning to use Teach-Back any time she prescribes medication. Although it may take more time, she now understands the importance. The other residents are going to work on using Teach-Back specifically for medications for the next week.

They would like to pull together a team to work on some of the medication information sheets with parent input, but they are first going to gather more information through more interactions in the coming days.

Before filling out the template, first save the file on your computer. Then open and use that version of the tool. Otherwise, your changes will not be saved.

Template: PDSA Worksheet

Objective:

 1. Plan: Plan the test, including a plan for collecting data.

Questions and predictions:

-

-

Who, what, where, when:

Plan for collecting data:

_____

 2. Do: Run the test on a small scale.

Describe what happened. What data did you collect? What observations did you make?

_____
_____
_____

3. Study: Analyze the results and compare them to your predictions.

Summarize and reflect on what you learned:

4. Act: Based on what you learned from the test, make a plan for your next step.

Determine what modifications you should make — adapt, adopt, or abandon: