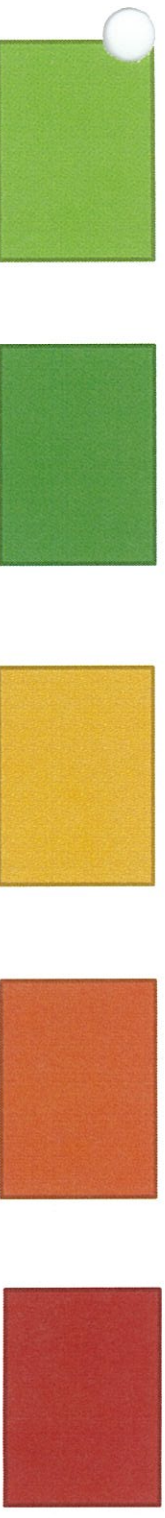


# ○ PDSA Bootcamp Packet

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**QI Training Module**  
 Arlisa K. Brown, MD, MPH, CHQ  
 University Medical Center, Inc.

# PDSA

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## Change and Improvement

- ▶ To remain competitive in the medical field, it's important to consistently look for ways to improve
- ▶ Don't only make change in reaction to something that has happened
- ▶ We must always be looking for different and better ways to accomplish our goals, whether they are clinical goals; operational goals; or financial goals

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## Change and Improvement

- ▶ What is change?
- ▶ What is a change that will result in improvement?
- ▶ What is improvement?

Because the concepts of change and improvement are tied together so strongly, it is more useful to define them together. Fundamental changes that result in improvement:

- ▶ Alter how work or activity is done or the makeup of a product
- ▶ Produce visible, positive differences in results
- ▶ Have a lasting impact

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CMC has adopted the Plan, Do, Study, Act (PDSA) model for performance improvement activities.



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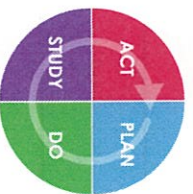
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PDSA helps answer the following questions:

- ▶ What are we trying to accomplish?
- ▶ How will we know that a change is an improvement?
- ▶ What changes can we make that will result in improvement?



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### Case Study: Dental Sealant Rates

- ▶ XYZ Center (part of an FQHC)
- ▶ Experiencing low dental sealant rates for children (UDS measure) *The data told them this*
- ▶ The site's Center Leadership Team decided to look into possible causes and to identify, test, and implement changes

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### Using the "5 Whys" to Define the Problem

- 4. WHY is education inadequate during Well Child Checks?
    - ▶ Pediatric teams do not have adequate materials and training to educate parents/patients
  - 5. WHY are there inadequate materials and lack of training for staff to educate parents/patients regarding sealants during Well Child Checks?
    - ▶ No team processes/workflows have been established to ensure information is shared about sealants
- Asking WHY 5 times helped determine the root cause of the problem, which was lack of parent and patient education. They then created a problem statement.

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### Dental Sealant Problem Statement

- ▶ UDS outcomes for dental sealant rates in children ages 6-9 have performed below target at XYZ Center because:
  - ▶ Parents do not understand the importance of their children receiving dental sealants and do not know how to access a dentist
  - ▶ Educational materials to inform parents regarding the importance of sealants are not currently available or used

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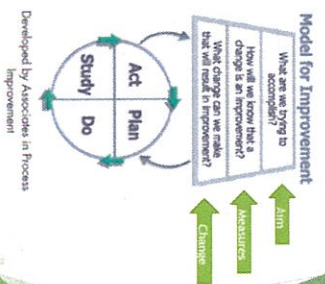
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### Tackling the problem: Using Evidence-Based Improvement Methodology



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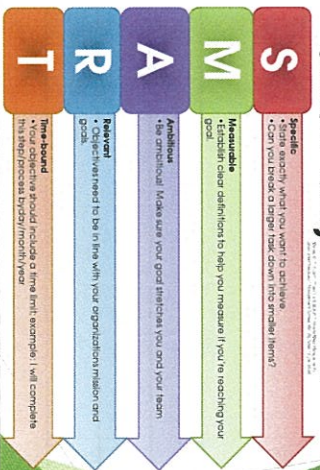
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# Smart Objectives



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## Case Study Dental Sealant Aim Statement

We will improve our dental sealant rate for children

► *Is this a SMART Aim statement?*

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## Case Study Dental Sealant SMART Aim Statement

XYZ Center will improve the UDS dental sealant rate for at-risk children ages 6-9 from 13.8% to 23.8% by December 31, 2019.

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Once the Aim Statement  
has been created, then  
the rest of the PDSA  
process begins, starting  
with Plan

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To make it  
easier, a PDSA Tracker  
Worksheet has been created to  
list all of the steps of the  
PDSA.



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### CMC Airplane Design Activity



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Airplane  
Design  
Team Role  
Assignment



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Baseline data—  
How important  
is it really?

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Design and  
make a team  
paper air plane.

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## D=DO The improvement to the process

- DO the improvement process
- Implement change strategies
- Start with small changes and develop a plan to scale up
- Collect the data



▶ PD

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## Modify current paper airplane or make a new one.

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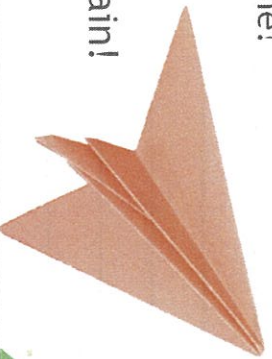
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## Let's go fly a plane! ...again!



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But how do we know that a process needs/should be improved?

The data will tell you:

- Patient satisfaction
- Staff satisfaction
- Audit results
- Survey findings
- Clinical outcomes
- UDS

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For questions contact the Quality Improvement department.



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### Resources

- ▶ Center for Care Innovations (CCI) Population Health Learning Collaborative
- ▶ Associates in Process Improvement [www.aipweb.org](http://www.aipweb.org)
- ▶ The Improvement Guide 2nd Edition, A Practical Approach to Enhancing Organizational Performance. by Gerald J. Langley, et al.
- ▶ Q Solutions, Essential Resources for the Healthcare Quality Professional Second Edition, by Dr. Frederick and Christy L. Beason

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## Aim Statement Worksheet

Directions: Read the aim statement for each example and determine what is missing or wrong with the aim statement. Reminder: Aim statements should include a baseline data, goal measurement and end date.

1. By February 2011, 25% of licensed child care providers in Blue Earth County will be trained in the “I am Moving, I am Learning” curriculum.

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2. By June 30, 2016, we will create sustainable strategies to improve asthma prevention across our community. Within our target of 10 public elementary schools in the local county, 30 percent will have staff trained in asthma prevention, 40 percent will have at least one professional who is trained to provide education to students with asthma and their families, and 40 percent will have programs to outreach to parents to increase awareness of the impact of second-hand smoke.

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3. Improve medication reconciliation at transition points by 75 percent within 1 year.

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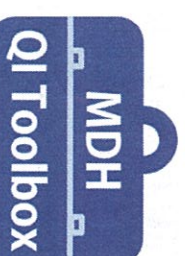
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4. Reduce complications of ICU stay by 40 percent:
  - Development of deep vein thrombosis
  - Gastrointestinal bleeding from stress ulcers
  - Line infections

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# SMART Objectives



Also in this Tool: **Meaningful Objectives**

## What are SMART Objectives? What Does SMART Stand For?

Objectives concretely measure a program's successes or shortcomings, and to show how a program is translating an organization's mission, vision, and values into action. However, organizations often struggle in creating objectives that accurately measure progress toward a goal, or that are meaningful to other team members or to external partners.

Many programs are run on grant funding tied to achieving objectives, and it is important that a program can prove its success to continue funding. It is also important to know whether a program has failed, and by how much, in order to change the program to be more effective in the future.

To ensure you're effectively measuring a program's impact, draft objectives that are: **Specific, Measurable, Attainable, Relevant, and Timely.**



## How to Write SMART Objectives

Learn more about the components of SMART objectives below by asking the questions provided.

### Specific

Objectives should be well-defined, and clear to other team members and to partners with the same level of knowledge as you. Using action-oriented verbs, such as "increase" or "decrease," will make your objectives easier to measure in the end.

- **Resource:** Who is involved with executing this program?
- **Target Population:** Who is your target population?
- **Action:** What exactly will you do for them?
- What are the benefits of this goal?
- Where will this program be executed?

### Measurable

Objectives should have a benchmark and a target, to help determine whether the objective is achieved, if it has been exceeded (and by how much), or if it hasn't been met (and by how much).

- **Change:** How much change is expected? In what direction?
- What data will prove this change has occurred? Where will this data come from?
- Is there a proxy measure to use? If this objective cannot be directly measured, or is there another measure that would be more appropriate to use instead?



# Meaningful Objectives



Also in this Tool: **SMART Objectives**

## What Makes Objectives Meaningful?

Objectives provide measurable benchmarks or milestones against which your organization can measure successes or shortcomings on the way to achieving overall goals. Objectives should make your goals clear and concrete to program staff inside your organization, as well as to external stakeholders. Objectives also help keep your overall goals realistic, by breaking goals down into manageable, measurable bites.

Many organizations find it useful (and many granting organizations require) to break down objectives into three categories:

- Process Objectives**
- Impact Objectives**
- Outcome Objectives**

## How to Write Meaningful Objectives

### Process Objectives

Process objectives document and measure the integral steps your organization will take to achieve its goal: **what** your program will do, and **how** your program will do it.

These objectives may include activities, meetings, workshops, participants, interactions, and deadlines. With enough detail, a series of process objectives can also serve as a work plan. Process outcomes help your organization track whether it's on target to carry out activities on time, on budget, and within its planned scope.

### Examples of Process Objectives

- Distribute 100 handwashing brochures per day at Minnesota State Fair
- Conduct one community meeting per quarter with North Metro Alliance
- Successfully fulfill 25 technical assistance requests per month

### Impact Objectives

Impact objectives demonstrate how your program or organization has changed participants' attitudes, knowledge, or behavior in the short term. Along with outcome objectives, they show how your program benefits participants.

Impact objectives may seem harder to write, because they are not inherently quantifiable. Despite this, they are still important in speaking to your organization's vision and mission.

### Examples of Impact Objectives

- Participants will leave the Introduction to Vaccination program with changed attitudes regarding vaccination
- Participants will leave the Positive Body Image program with higher levels of self-esteem regarding their own bodies and how they fit into a world of diverse body types



# PDSA: Plan-Do-Study-Act



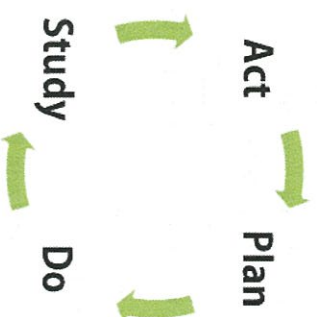
MINNESOTA DEPT. OF HEALTH  
www.health.state.mn.us/qi

Also called: **Rapid Cycle Improvement**, **PDCA** (Plan-Do-Check-Act)

## What is PDSA?

PDSA, or Plan-Do-Study-Act, is an iterative, four-stage problem-solving model used for improving a process or carrying out change.

When using the PDSA cycle, it's important to include internal and external customers; they can provide feedback about what works and what doesn't. The customer defines quality, so it would make sense to also involve them in the process when appropriate or feasible, to increase acceptance of the end result. (If you're unsure about, who your customers are, you may want to create a customer chain to assist in identification.)



In applying PDSA, ask yourself three questions:

1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What changes can we make that will result in an improvement?

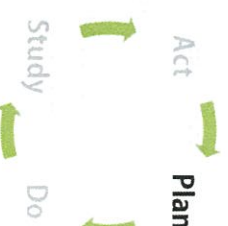
## Stage 1: Plan

### A. Recruit Team

Assemble a team that has knowledge of the problem or opportunity for improvement.

Consider the strengths each team member brings—look for engaged, forward-thinking staff.

After recruiting team members, identify roles and responsibilities, set timelines, and establish a meeting schedule.



### B. Draft an Aim Statement

Describe what you want to accomplish in an Aim Statement ([QI Toolbox: Aim Statement](#)). Try to answer those three fundamental questions:

1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What change can we make that will result in improvement?

## E. Identify Causes and Alternatives

### Analyze Causes

For the problem in your problem statement, work to identify causes of the problem using tools such as control charts, fishbones, and work flow process maps (QI Toolbox: [Control Chart](#), [Fishbone Diagram](#)). The end of the cause analysis should summarize the cause analysis by describing and justifying the root causes.

Examine your swim lane map, and ask:

- Is this process efficient? What is the cost (including money, time, or other resources)?
- Are we doing the right steps in the right way?
- Does someone else do this same process in a different way?

### Develop Alternatives

Try to mitigate your root causes by completing the statement, “If we do \_\_\_\_\_, then \_\_\_\_\_ will happen.” Choose an alternative (or a few alternatives) that you believe will best help you reach your objective and maximize your resources.

Develop an action plan (QI Toolbox: [Action Plan](#)), including necessary staff/resources and a timeline. Try to account for risks you might face as you implement your action plan.

## Stage 2: Do

Start to implement your action plan.

Be sure to collect data as you go, to help you evaluate your plan in **Stage 3: Study**. Your team might find it helpful to use a check sheet, flowchart, swim lane map, or run chart to capture data/occurrences as they happen or over time (QI Toolbox: [Check Sheet](#), [Flowchart](#), [Swim Lane Map](#), [Run Chart](#)).

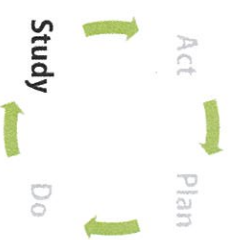
Your team should also document problems, unexpected effects, and general observations.



## Stage 3: Study

Using the Aim Statement drafted in **Step 1: Plan**, and data gathered during **Stage 2: Do**, determine:

- Did your plan result in an improvement? By how much/little?
- Was the action worth the investment?
- Do you see trends?
- Were there unintended side effects?



You can use a number of different tools to visually review and evaluate an improvement, like a Pareto Chart (QI Toolbox: [Pareto Chart](#)), Control Chart (QI Toolbox: [Control Chart](#)), or Run Chart (QI Toolbox: [Run Chart](#)).





# PDSA Bootcamp Project

## Paper Airplane



**Session Description:** The Airplane Exercise. A small group activity to demonstrate use of the PDSA cycle for making structured, measurable rapid cycle changes.

**Learning Objectives:**

1. Demonstrate the basic concept of rapid cycle change using the Plan-Do-Study-Act approach to process improvement.
2. Practice skills for using the PDSA approach to change.
3. Learn how to use the PDSA approach with a team in order to achieve a specific aim.

**Team Assignment:**

As a team, assign team members to specific roles: team leader, data coordinator, design team and test pilots 1, 2.

**Team Task:**

1. **PLAN:** Design a paper airplane using the materials provided. Set an aim and measure for your team-what do you want to accomplish?
2. **DO:** Each two pilots should take a turn to fly the plane. No modifications can be made to the plane between flights.
3. **STUDY:** After each test flight, the data coordinator should measure the distance the plane traveled down the runway and record this on the PDSA form.
4. **ACT:** Based on the measurements, review the design of your plan and look for improvements (what can we do that will result in an improvement). Make just ONE change to the design of the plane, and repeat steps 1-4 until you have collected data for 4 cycles (original design cycle (baseline data) + 3 change cycles). Be sure to specify the impact you want the change to have for each cycle (e.g. to increase distance flown by 15%).

Use the PDSA form to record all steps of the PDSA for each change cycle.

**Change Cycle Rules:**

1. Only one design change per PDSA cycle.
2. All planes must have wings and be able to glide.
3. Each design/change modification must be flown by two different test pilots.

