



Tips and Tools for Learning Improvement

Plan-Do-Study-Act

What is a Plan-Do-Study-Act cycle?

A plan-do-study-act cycle (PDSA) is a simple process used to test out and adapt ideas or solutions, often called “changes”, for your unique setting (see **Figure 1**). The method helps you to learn quickly through testing your planned changes on a small scale and adapting the changes as you learn from the test to address a problem. It is a process we all do multiple times a day in trying something out, tweaking the idea and trying it again until we get the result we are looking for, like finding the shortest route to get to work or adapting a recipe.

Why is a Plan-Do-Study-Act cycle important?

By trying out an idea with a quick test on a small scale, a person or team can determine whether it will lead to improvement in their problem area and determine any potential side effects that need to be mitigated before making a permanent change. Testing the change out with staff involved in the process can help reduce resistance to change that often occurs in health facilities.

How to conduct a PDSA cycle

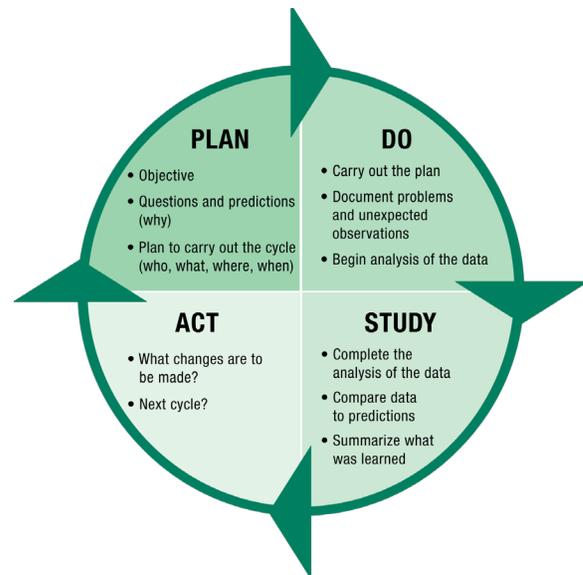
PLAN: Plan what you will do

Implementing a small-scale test still requires careful planning, including being clear about what needs to be done, who needs to do it, how and when they will do it, and what they predict will happen. The prediction or hypothesis about how this change will affect care helps the team think through what they expect to change and why. The team connects the problem they are trying to solve with the solution they are proposing and why they think it will work.

Testing on a small scale

Testing on a small-scale means trying out the change idea on a couple of patients or for a specific, short time period, such as one shift. Teams should ask themselves “what is the smallest scale I can try this out on?” and then do that test as soon as possible. This will give the teams immediate feedback on the idea: what works, what doesn’t work, and what problems or barriers need to be fixed. As they find a solution to any barriers encountered, teams can test the idea again on a larger scale. For example, perhaps they test an idea to reorganize patient flow with 5 patients the next day. If that works well, they can move to trying it with all patients for one shift, then for one week, and eventually make it a permanent part of the facility’s operation.

Figure 1. Steps in a Plan-Do-Study-Act cycle



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In addition, the team needs to think about what information and data they will need to learn from this test. Team members should ask themselves how they will know if this test worked. For example, will they use quantitative data (e.g., how many patients did this work for, how long did it take) or qualitative information (e.g., team members' observations about processes – what was successful, what wasn't successful), or both? It is important to note that the measures that reflect whether a small test worked may not be the same as the measure which tells you whether you are meeting your aim. For example, a monthly measure of the entire population of HIV patients won't be affected by a test with 5 patients, so there needs to be a simple way of knowing whether the test on 5 patients worked.

How will we know that a change is an improvement: Measures for a project vs. measures for a test

Remember that for a PDSA cycle, you need to collect a small amount of data to tell you whether the change made a positive impact on the process in question. This data is to support the PDSA cycle, should be short-term and process-focused, and may include qualitative data. These may not be the same measures that tell you whether you reached your aim.

To determine if a change idea works, you might consider the following types of measures for the test period:

- Time taken for a specific task or step.
- Number or percent of patients receiving service (per change idea).
- Ask providers how it went.
- Ask patients how it went.
- Review whether there were any unintended consequences (positive or negative).

DO: Carry out the intervention on a small scale

To test the proposed solution, a team needs to carry out the planned activities and record what happened. Team members need to communicate progress to all those involved in the test. They need to document what worked and what did not work during the testing process; this information is important to assess the solution.

STUDY: Study the results

During this step, the team will decide whether the solution they tested had the desired results. Here, the team needs to ask, "What did we learn from this test?"

A team should ask itself:

- Did we meet the criteria for success? Did the solution have the desired results? What did team members think of the change?
- What aspects of the test went well? What aspects were difficult?
- Did the solution create problems for others or other processes that we did not anticipate?
- What kind of resistance did we encounter?
- Was our prediction correct?

ACT: Act on the study results

Based on what was learned from the study results, the team can decide what action to take. Not every solution that is tested is then adopted. Sometimes, a solution needs to be reassessed, modified, or abandoned altogether. The team should ask itself:

- Did the change tested show promise? If not, they may need to abandon the change idea and test another change.
- Does it need to be modified to work even better? If so, they need to adapt it and run the PDSA again on a small scale at first.
- Did it work very well? If so, they will need to test it at a larger scale across a wider range of conditions (different hours of the day, more patients or different types of patients, other staff members involved) before they can be ready to adopt it. This testing method helps to increase our degree of belief that the change is an effective one.

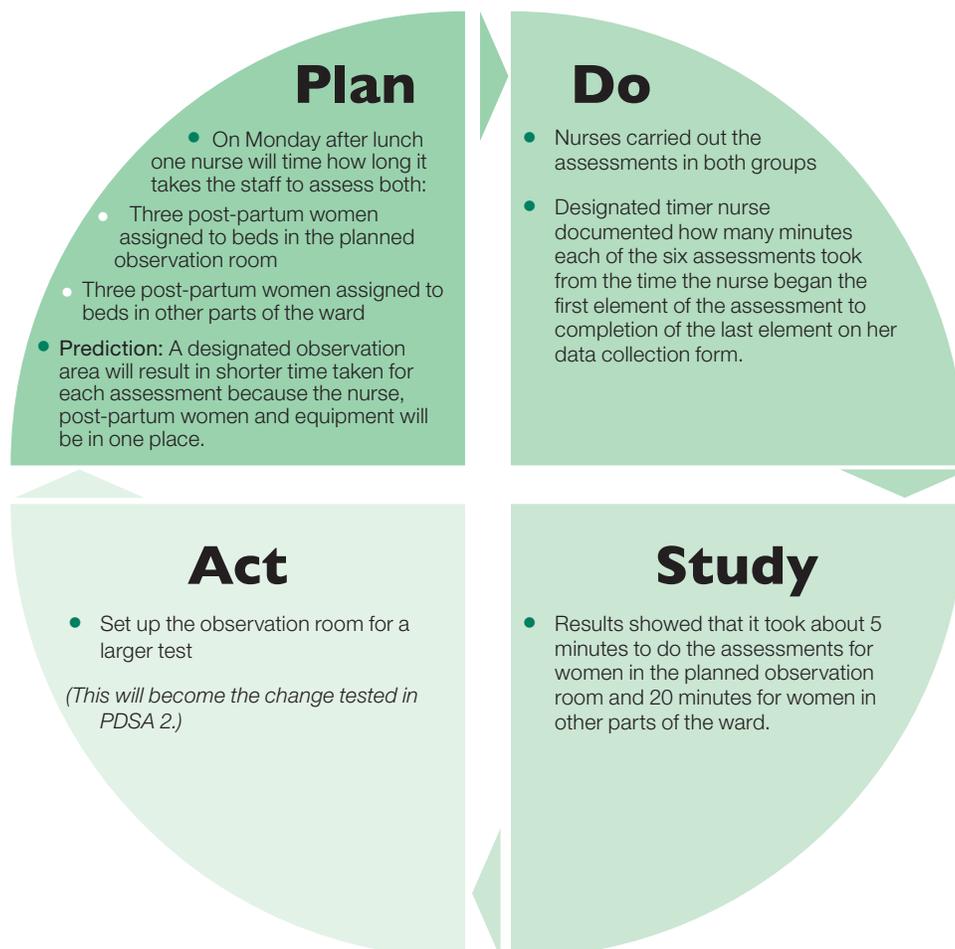
Example

An improvement team at a hospital in India decided to increase the frequency of post-partum assessments (structured clinical checks with women who have just given birth) to comply with the Government guideline to assess 11 times within 48 hours. They were hoping to catch and treat women with danger signs to prevent maternal deaths. The team's aim was: "Within 2 months, we will increase the number of times each woman post-delivery is assessed to at least 6 times within 48 hours." Their discussion prompted some extra attention to be given to assessments. The team met and discussed the fact that assessments for post-partum women were increasing in frequency, but the number of women being identified with complications was not increasing. They thought that the reason was that staff workload prevented them from doing the assessment carefully. They wondered if they could find ways of making the assessment more efficient so it would take less time and could be done properly.

The team decided that reorganizing the hospital maternity ward could make the assessments more efficient. Reorganizing a ward is a large change. The team wasn't completely sure that this would work to improve assessment frequency so they decided to test it first. Their ward had three rooms. Their change idea was to turn one room into an area for observing postpartum mothers for the first 24 hours. Before they made this a permanent part of their entire ward, they planned to test the idea.

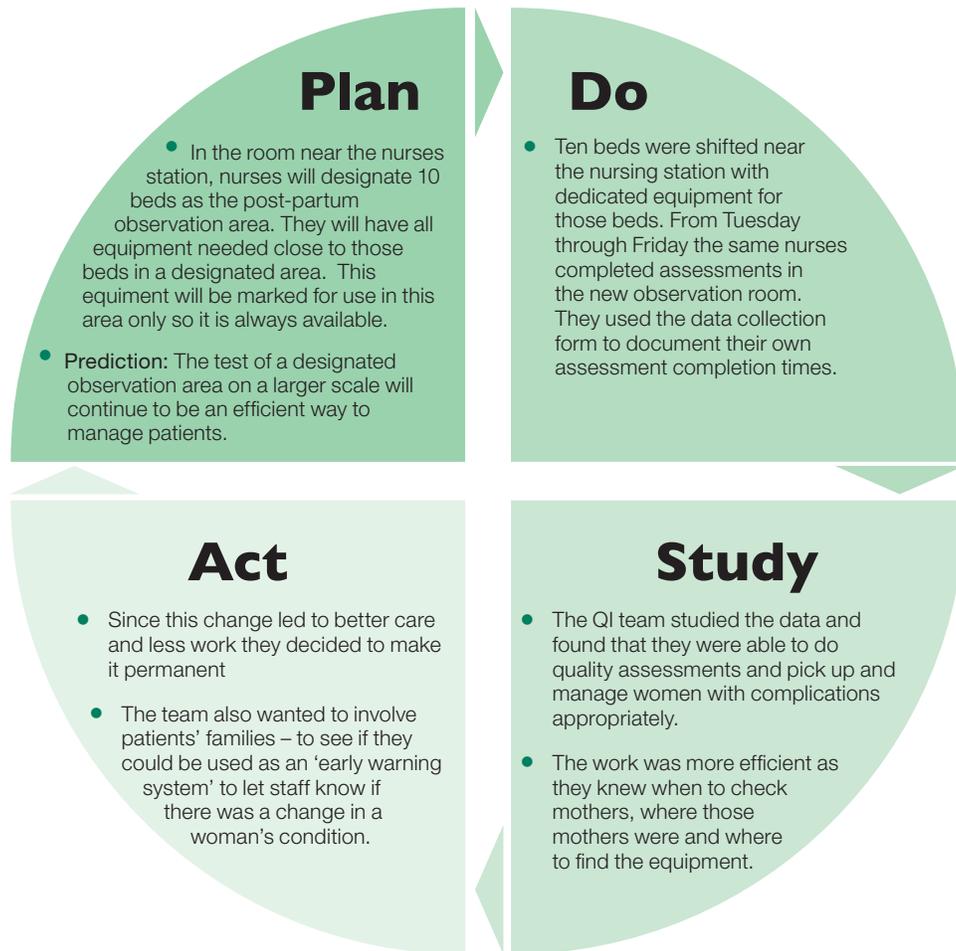
PDSA 1:

Compare the time to complete the post-partum assessment of three women in the planned observation room near the nurses' station to that of three post-partum women in other parts of the ward.



PDSA 2:

Test the observation area on a larger scale with 10 beds.



Result:

After the reorganization of the ward, five post-partum women were identified with danger signs, two of which were picked up by relatives. All were identified early, managed appropriately, and discharged within a week.

Exercise 1: Developing a plan

Please read the case below and help the team develop a plan.

An improvement team at a large hospital wanted to improve the care they were providing for HIV/TB co-infected patients. One of the problems they found was that patients with HIV and suspected TB are referred to the TB clinic in the same hospital but often do not go to the TB clinic to complete their referrals. The improvement team set an aim to increase the percent of completed referrals to the TB clinic of patients with HIV and suspected TB to 100% within 6 months. The team decided to test the following change:

- Any HIV patient who is suspected by the HIV clinic staff to have TB will be escorted from one clinic to the other to assure linkages to care.

The HIV clinic sees on average 100 patients per day and there are long waits to see the clinicians.

The team needs to create a plan for this first PDSA cycle. Help them out by circling the best option of the three for the plan. Remember: The idea is for a **rapid test on a small scale**. Make a note of why you choose the option.

Plan component	Option 1	Option 2	Option 3	Reasons for choice
Who will be responsible for escorting patients?	Physician or clinical officer	Nurse	Volunteer	
Test scale or period: for how many patients or how long will we test the change?	The next 100 HIV patients with suspected TB	The next 5 HIV patients with suspected TB	All HIV patients with suspected TB for the next month for the whole clinic	
How will we know if the test was successful (learning from the test)?	The team will ask the head of the HIV clinic and the head of the TB clinic if it worked	All patients found to be co-infected are escorted to the other clinic; the staff, volunteer and patient found it helpful.	The team will review whether there is a change in the percent of completed referrals of HIV patients with suspected TB to the TB clinic for all patients in one month	
When should we first review the results of the test?	At the regular meeting of the team at the end of the month	Once per hour during the test period	A quick, informal meeting when the test is complete	
Who will collect information for review?	Volunteer alone	Volunteer and staff members from HIV and TB clinics	Facility leadership	
What is your prediction about what will happen?	(Write in your prediction here)			

Exercise 2: Reviewing study and act steps

Please read the case below and help the team study their test and act on it.

The hospital improvement team enacted their plan to improve referral from the HIV clinic to the TB clinic for HIV patients with suspected TB. The plan was for the volunteer to escort the next 5 HIV patients with suspected TB to the TB clinic and get them registered. They met their 5-patient test number in one day. The team enacted this test and met the next day to discuss what happened.

As their study step, the team reflected on what they learned from their test:

- The clinical officer and nurse identified 5 HIV patients with suspected TB during the afternoon following the meeting.
- Only 4 of the 5 patients were escorted by the volunteer to the TB clinic.
- The last patient identified was found at 4:30 pm after the volunteer had left for the day so he wasn't escorted.
- The volunteer did not know what to do with the patient once in the clinic. The first few times he just walked them to the waiting area. One time he told the registration desk it was a referral. One time he asked for the person to skip the line and be seen right away.

Part 1

The team then needed to decide if this was a good or bad change. Three team members disagree on whether this was a successful change or not. Choose the team member that best reflects your analysis of the situation.

Team Member 1

"This change was not successful. The volunteer didn't escort everyone. This change relied on one volunteer and when he left it dropped. He didn't know what to do when he got there. We don't know whether they were registered or seen at the TB clinic. I would recommend we test something completely different."

Team Member 2

"This was a successful change because we know that the HIV patients are making it to the clinic. However, we need to make modifications to refine the change, address some of the problems, and test it again."

Team Member 3

"This was a great change. Most people made it to the clinic, and that's much better than our current rate of completion for referrals. I suggest that we implement this for all patients starting tomorrow. We don't need further testing because we know it works."

Part 2

Answer the following questions below:

Which of the following improvements is NOT a good next step?

- Clarify what happens when the volunteer reaches the TB clinic with a patient
- Have the nurse escort patients instead of the volunteer
- Create a coverage schedule so there is always a volunteer available to escort patients

Which of the following is the best idea for the scale of the next test of having a schedule of volunteers to escort patients?

- Testing the new schedule of volunteers for 6 months
- Test on 200 patients
- Test a new schedule of volunteers for one full clinic day