

General Practice Quality Improvement

A practical guide to how to use 'Plan-Do-Study-Act'

Introduction

The 'Plan-Do-Study-Act' (PDSA) approach is a tool taken from the 'Model for Improvement'ⁱ. This guide explains how to use the approach by referring to a common GP issue – antibiotic prescribing.

Why use PDSA?

When we want to improve things in our practices, we often come up with many ideas but are not sure which will result in the change we want to see. Sometimes we try something different and we continue to do things the new way, even if it doesn't actually result in improvement. It is easy to lose motivation and start to believe that we can't make a difference.

The PDSA approach accepts the fact that not all of our ideas will work and allows us to test them out in a controlled way. We can then continue the ideas that work and stop doing those that don't. It starts on a small scale and so is a cost-effective approach.

Planning for PDSA

The first phase of PDSA is planning. It is very important that you are really clear and specific about what you want to improve and how you will know if you have been successful.

The 'Model for Improvement' gives you three questions to answer before you start testing changes:

Question 1: What are we trying to accomplish?

This needs to be specific and include 'by how much?' and 'by when?'.

For example:

'reduce the number of antibiotics we prescribe at the practice' is not very specific.

A more specific aim would be:

'reduce our antibiotic prescribing to be in line with the national average in six months' time.'

Question 2: How will we know if a change has been an improvement?

In order to know if your ideas for change are working, you will need to decide what you are going to measure. Some organisations provide us with external data about our practice. This can be very helpful in deciding on the overall success of a project, however this data is often slow to arrive and may not be provided frequently enough for judging the success of a change.

Continuing the antibiotic example:

Data about antibiotic prescribing compared to national averages is being provided every three months by the local CCG Medicines Management Team. This will be used to assess the overall success of the project after six months.

This externally collected data is not provided frequently enough to judge whether our small changes have been successful or not. We will need another data source to measure each of those individually.

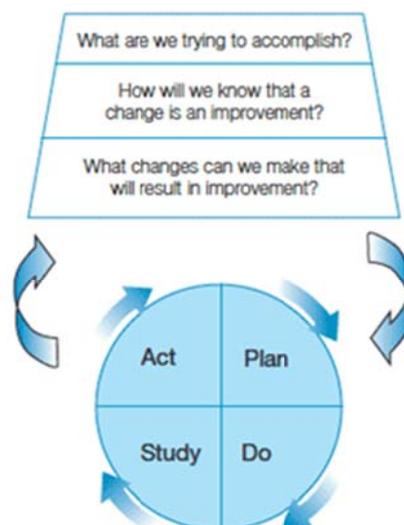
Question 3: What changes can we make that will result in improvement?

To answer this question you gather together all the ideas for change that you would like to test.

In our example, the practice agrees to test three ideas:

- *Put a poster in the waiting room explaining to patients why antibiotics are not useful for most coughs and colds.*
- *Benchmark the prescribing habits of the individual GPs in the practice – number of antibiotics prescribed per ten consultations.*
- *Provide all COPD patients with a leaflet explaining that most exacerbations should be treated with steroids first and only use antibiotics if sputum becomes purulent.*

Each idea should enter a 'PDSA cycle' in turnⁱⁱ.



The PDSA Cycle

Plan: In this stage you identify the change you wish to implement to make an improvement. Planning should also include identifying who will be responsible for the change, when it will be carried out, over what timescale and how the measurement will be conducted. All stakeholders should be involved in the process and you may need to persuade reluctant team members to participate. Consider how you might look out for the unexpected – for example checking that a reduction in antibiotic prescribing does not cause an increase in COPD admissions. This is called a ‘balance measure’.

Do: Here the change is introduced. If you are considering implementing several changes, you would usually introduce one change at a time so that the effect of each can be measured. By introducing only a small change, you are likely to encounter less resistance and, if not successful, adaptations can be made more quickly. The scale at which you test your change should also be kept small at first, for example starting with only a few patients. The measurements that have been decided upon should be commenced. Ensure that all individuals who are conducting the measurements understand what data is being collected and how to collect it. Any problems encountered or unexpected consequences should be recorded as implementation progresses.

In our example:

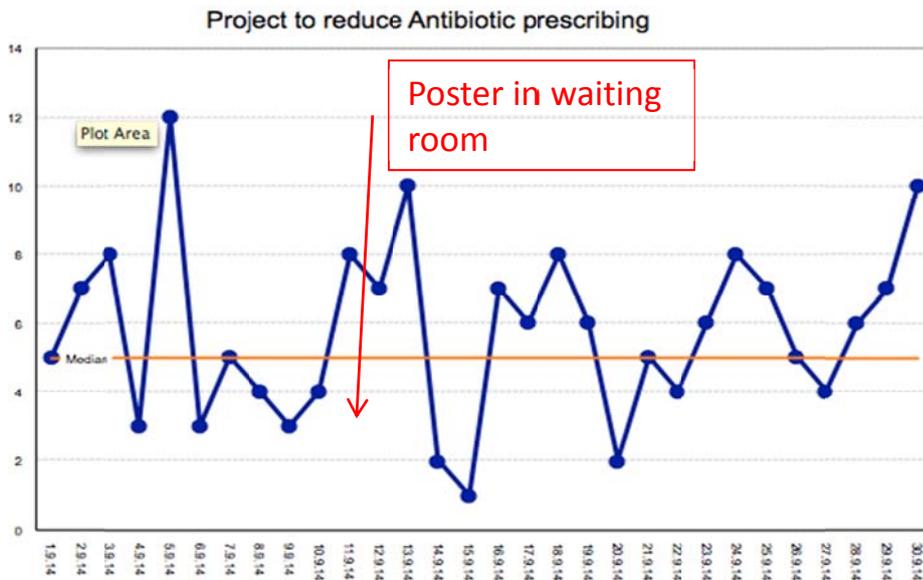
The practice decided to run a search every Friday at 17:00 to gather the number of antibiotic prescriptions issued that week.

Study: The success or failure of the change is assessed at this stage, both quantitatively (by looking at the data collected) and qualitatively, by discussing how everyone experienced the change. Run charts could be used for numerical data (see [‘A practical guide on how to build a run chart’](#)). You should compare the results with the predictions you made and document any learning, including recording the reasons for success or failure. Remember not all changes result in improvement but learning can always be gleaned.

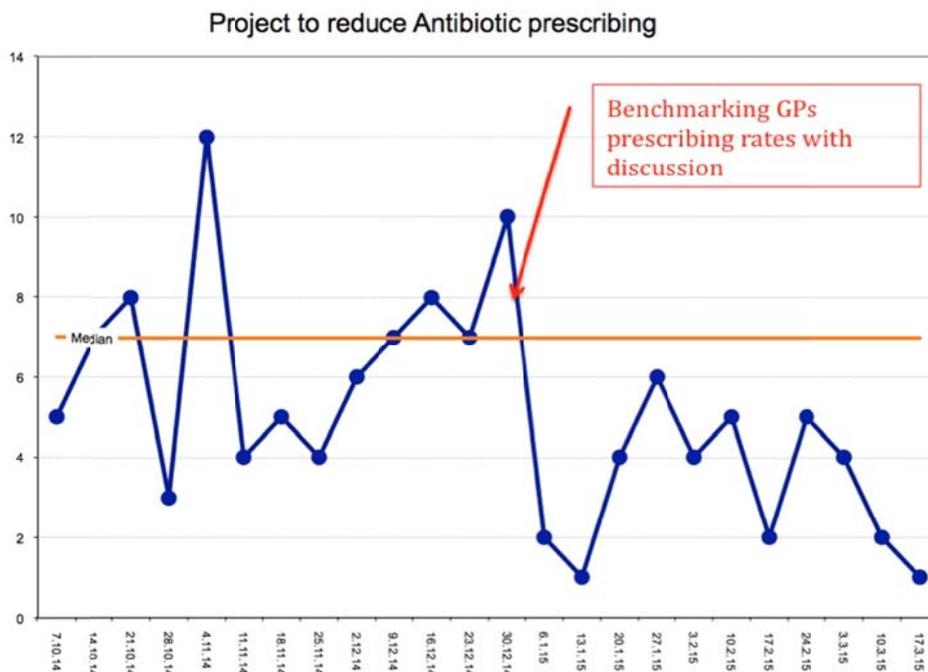
In our example:

The practice first tested having the poster in the waiting room and, once that PDSA cycle had completed, the practice tested benchmarking GP prescribing habits.

Here is the run chart of the number of antibiotic prescriptions per week before and after introducing the poster in the waiting room:



Here is the run chart of the number of antibiotic prescriptions per week before and after benchmarking the GPs' prescribing habits:



[‘A practical guide on how to build a run chart’](#) includes some simple rules for interpreting run charts. From these charts, the practice determined that the poster made no impact on the number of antibiotic prescriptions issued but the benchmarking of GPs' prescribing habits did reduce the number issued.

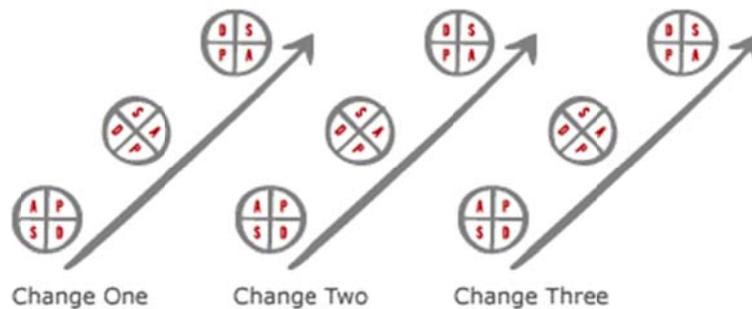
Act: In this stage you have to decide if you need to adapt what you have tried, or try something new.

In our example:

The decision was made not to re-instate the poster in the waiting room and to continue the benchmarking exercise every two months.

Summary

It is best to test small changes and then do multiple cycles. Learning from one cycle informs the nextⁱⁱⁱ.



This method allows fairly rapid assessment of any intervention in a cost-effective manner.

ⁱ Langley GL, Nolan KM, Nolan TW, Norman CL, Provost LP. *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance* (2nd Edition). San Francisco, California, USA: Jossey-Bass Publishers; 2009. ISBN-10 0470192410 ISBN-13 978 0470192412

ⁱⁱ PDSA diagram: The Scottish Government Health Delivery Directorate: Improvement and Support Team. *The Scottish Primary Care Collaborative*. 2008. <http://www.gov.scot/Publications/2008/01/14161901/3> ISBN 978-0-7559-5269-4 (accessed 2 March 2015).

ⁱⁱⁱ PDSA cycle diagram. *How to Improve: Science of Improvement: Testing Multiple Changes*. Cambridge, Massachusetts: Institute for Healthcare Improvement. <http://www.ihl.org/resources/Pages/HowtoImprove/ScienceofImprovementTestingMultipleChanges.aspx> (accessed 3 March 2015)