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Toolkit Guide

Model for Improvement

What is the Model for Improvement?

The model for improvement is a quality improvement methodology for developing, testing, and implementing changes that can lead to an improvement. The model for improvement is set into two parts. The first part of the framework asks three fundamental questions:

1. ‘What are we trying to accomplish?’
2. ‘How will we know a change has been made?’
3. ‘What change can we make that will result in an improvement?’.

The second part of the framework consists of Plan-Do-Study-Act (PDSA) cycles. PDSA cycles enable you to test small improvements and learn from them in a structured way. This gives you and other stakeholders the opportunity to evaluate whether a change has made the desired impact and allows you to learn from ideas that work and those that do not work. This makes the change process less disruptive and safer because changes are not implemented on a large scale.

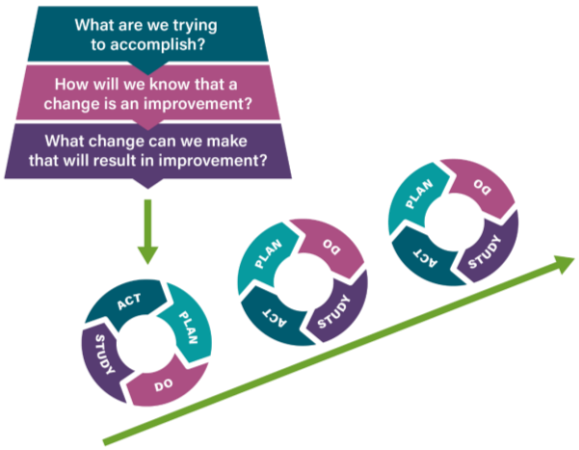

Diagram: Illustration of the Model for Improvement (*Improvement Cymru, 2023*)

Rationale

The Model for Improvement is a well-established approach for achieving successful change. It is a simplistic yet effective approach and can be used by anyone to plan, develop, and implement change. It reduced the risks involved in project because it

enables you to start small and allowing it to be a less disruptive approach to implementing change.

Background

The model for improvement was first developed by Gerald Langley and his colleagues in 1992 and incorporates the use of plan, do, study, act (PDSA) cycles into the second part of the framework. PDSA cycles are also called plan, do, check, act (PDCA) cycles and this terminology is used in other quality improvement methodologies such as Lean. The PDCA cycle was originally created by Walter Shewhart in the 1920s and the cycle is sometimes referred to as Shewhart cycles or Deming cycles. The Model for Improvement has been used effectively in improvement studies (Lanley et al, 2009) and it is widely used in healthcare in the UK and abroad.

When to use the Model for Improvement

The model for improvement can be used when you start to plan any quality improvement project. It is important to know what you want to achieve, how to measure the impact of change and what you change ideas you will use. When you start introducing changes you may not always get the results you would expect. Therefore, the Model for Improvement can be used to test changes on a small scale to learn from them before implementing them on a large scale. You can use as many PDSA cycles as you need. The number of PDSA cycles will depend on your change ideas and how successful they are.

How to use the Model for Improvement

Once you recognise a quality issue, the first step of the model is to ask the three fundamental questions.

Question 1

What are we trying to accomplish?

You and/or your improvement team need to ask the question ‘What are we trying to accomplish?’ and turn the quality issue that you have recognised into an aim.

A good aim statement should be clear, concise, results orientated and align with organisational goals. Aims should be specific, measurable, achievable, realistic and timebound (SMART). Your aim should be agreed with your project team and discussed with relevant stakeholders to generate input. And agreement. Without a clear aim statement, it will be easy for individuals and teams to become side-tracked. This could result in the intended goal potentially not being achieved which will have wasted time and resources that have already been used in in the project. Taking the time to develop an aim statement provides the opportunity to think through all aspects of the project, help with team selection, reduce variation in tasks, provide a timescale and clarify the size of the projects and if it is achievable.

Question 2

How will we know that a change is an improvement?

The easiest way to identify if a change has had an impact is to measure before, during and after changes have been made. Measurement plays a key role in improvement projects and the purpose of the measurement is to learn. Without taking measurements it will be almost impossible to know what impact the change has had. Sometimes it can be challenging to know what to measure and therefore it is important to identify your family of measures (*See family of measures toolkit guide for more information*). Measurement should be related to your aim (outcome measure), change ideas (process measures) and anything that could be positively or negatively affected by the change (balancing measures). The data you collect for measurement could be quantitative data, qualitative data, or both.

Outcome Measures

Process Measures

Balancing Measures

Question 3

What change can we make that will result in improvement?

For some improvement projects there may be an obvious solution, but you don't have the right conditions to implement it. Or for other projects, changes that could result in an improvement are not already known. When this happens, individuals use common, ill-thought ideas which results in ineffective outcomes and could waste more resources such as money, staff efficiency, space etc. To generate change ideas, you will need to understand your system. There are a number of tools that can help with this, fishbone analysis, five whys, spaghetti diagrams, Pareto and process mapping *(see our other toolkit guides*). Driver diagrams are a useful tool to visually present the theory of how an improvement goal will be attainable.

Your change ideas can be put into an ease-benefit matrix, to help you and your team to decide how easy a change idea can be implemented along with the expected impact of your change idea. Once you have decided your change ideas, it is time to trial them, measure changes and learn from the data you have collected using PDSA cycles.

Plan, Do, Study, Act (PDSA) Cycles

Plan, Do, Study, Act (PDSA) cycles form the second part of the model for improvement framework and is a vehicle for action and learning. PDSA cycles allows you to plan your change ideas, put them into action, study the impact and learn from them and act on the information from the study. Your knowledge will grow through developing change theories, making predictions and testing predictions, gathering data, studying the data, improving the theories based on the data, making predictions based on revised theories and the cycle continues. Cycles build on current knowledge of the change to provide direction of what to do next. This is known as PDSA ramps or test of change; each PDSA ramp has multiple cycles of change within it. PDSA cycles answer questions about subject matter theory and conclusions drawn from the analysis of past studies. Each PDSA cycle will aim to answer a specific question that relates to the main aim from the first question of the

model. Multiple PDSA ramps can be implemented If there are simultaneous cycles, it will be important to note any interactions between cycles because a change in one cycle could have an impact on change in another cycle.

Plan

The first phase of the PDSA cycle is to plan. This step should provide clarity for the specific focus for this cycle. With your team, agree your objectives and state any specific questions that you may want answered which will form your predictions for your change during this cycle. Predications will have an impact on the data collection plan because you will need to compare the data to your prediction. The plan for the cycle should describe the who, what, when, where and how for this cycle. This section takes longer than any other part of the cycle.

Do

During this phase, the data is collected, and analysis begins. The information analysed in this step will prepare for the next step which is to study. You should document any problems or observations. You should also include anything that was not part of the plan e.g., staff sickness.

Study

This phase brings together the predictions you made in the planning phase and the data results you have analysed. You need to compare the data collected to your predictions and summarise what you have learnt. If the results match your predications, your beliefs about the change idea will be strengthened. If the results do not match your predictions, then this is an opportunity to learn and understand why the predictions you made were not accurate.

Act

After you have studied your results, you will need to act on what you have learnt and decide on the next course of action. The decisions you make in the act phase will help you develop the next PDSA cycle. You will need to ask questions like ‘is further testing needed?’, ‘do we need to test alternative change ideas?’ or ‘have we tested the change idea enough that we are ready to implement it on a full scale?’. Your project team should be involved throughout your testing.

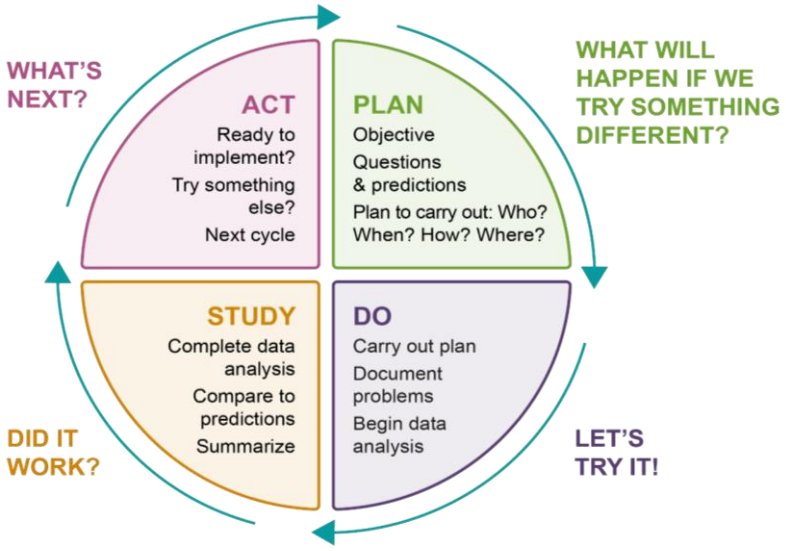

Diagram: Illustration of a Plan, Do, Study, Act cycle (*Improvement Cymru, 2023*)

Continuous Improvement

PDSA cycles allow you to continually improve. Often there will be a continuous series of PSDA cycles as you learn from the results from previous cycles. PDSA cycles are short and allow steady but continuous improvement to be made. There is no set number for how many PDSA cycles you need to use. This will depend upon the change you introduce and the impact it will have.

What next?

Once you have refined your change ideas and learnt from PSDA cycles you could start increased the scale of the change. Once you have tested your changes through PDSA cycles and decided which changes have the most impact, the next stage would be to fully implement the change on a bigger scale. Implementation should only be undertaken when multiple cycles have taken place under various conditions.

Helpful tips

Test change ideas with people who believe in the improvement work you are doing. It is easier to convert people to accept the change once you can show that it is working on a smaller scale.

Additional Resources

If you are interested in learning more about how improvement practices can benefit your workplace, we offer a range of training courses. Visit our website for more information.https://phw.nhs.wales/services-and-teams/improvement-cymru/improvement-cymru-academy/ or email us improvementcymruacademy@wales.nhs.uk to find about the improvement courses we offer.

Further reading

Langley, G.L, Moen, R.D., Nolan, K.M., Nolan, T. W., Normal, C. L., Provost, L. P. (2009). *The Improvement Guide: A practical approach to enhancing organisational performance*. 2nd edn. USA. Jossey-Bass.

The Health Foundation (2021). Quality improvement made simple. 3rd edn. Accessed from: https://www.health.org.uk/sites/default/files/QualityImprovementMadeSimple.pdf (Accessed 21 Jun 2023)

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