A Practical Toolkit for Quality Improvement

Safety in Practice Auckland & Waitemata DHB

Contents

Learning objectives

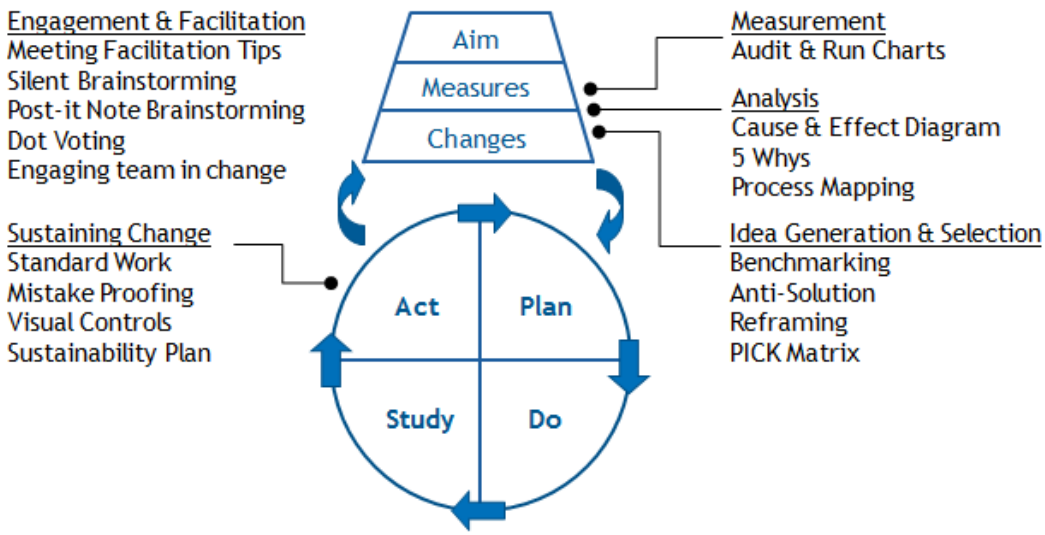
By the end of this session you will have a fundamental understanding of some practical Quality Improvement tools, and how to use them with your team to be successful in Safety in Practice.

The Model for Improvement

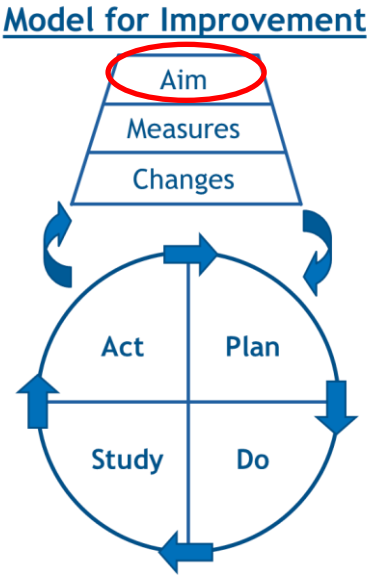
Don Berwick and Dr. Mike Evans on Improvement

https://youtu.be/ZqirNGE8w3g?t=48s

Model for Improvement & Supporting QI Tools



Aim Statements: What are we trying to accomplish?



Writing an Aim Statement – Making it SMART

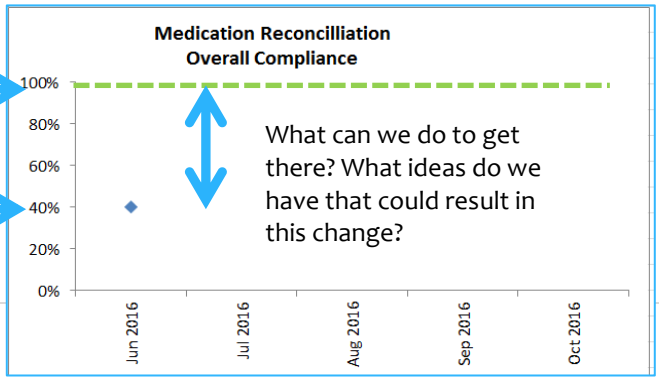
Specific	Provide a clear description of what needs to be achieved
Measurable	Include a metric with a target that indicates success
Achievable	Set an aggressive yet achievable target
Relevant	Keep your aim consistent with hgher level aims
Timely	Set a date for when your aim should be achieved

Measures: How will we know that a change is an improvement?

Monthly Audit Run Chart Graphs

This is where we want to be

This is where we are



Using the data to make changes

- Make the results visible and accessible
- Ensure everyone understands their role in making the change

Use the data for learning and focusing change

Run Charts

Purpose

To show data over a period of time

Time frame you will need

30 minutes

Tools you will need


Computer


Pens


Blank paper

What is it?

A run chart is a visual display of data collected at regular intervals over a period of time. It displays data for the measures a team has selected for a project.

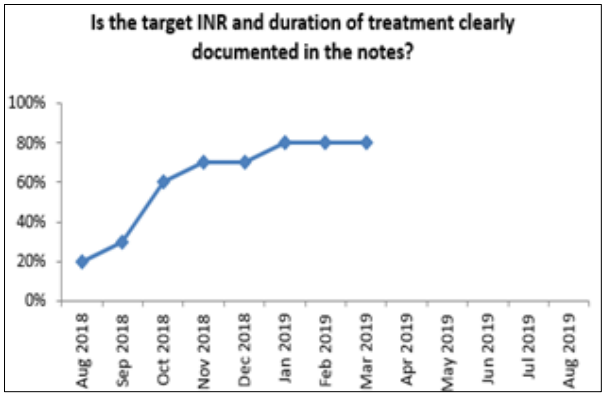
Why use it?

Run charts enable teams to track information and see trends and patterns. They help teams to determine whether a change has led to an improvement.

How to use it

1. Gather your data.
2. Draw a graph using one vertical line and one horizontal line. Leave enough room on each side for labels.
3. Label the vertical (Y) axis with what is being measured. E.g. the percentage of patients for whom there is evidence that they were told what to do if they miss a medication dose.
4. Label the horizontal (X) axis with the unit of time or sequence. E.g. January, February, March, etc.
5. Plot the data in sequence or time order.
6. Make notes on the chart to indicate when tests of change commenced, so that everyone can see the effect of the change.
7. Indicate any external events that may have affected the performance of the process. E.g. multiple locum covers due to a high level of staff sickness.

Example



Do's and Don'ts

- *Do* look at your run charts regularly. Look for trends or cycles.
- *Do* share your run charts with the entire team.
- *Do* add comments to your run charts so that everyone can see when a change was tested.
- *Do* involve your entire team in considering why a trend or pattern exists.
- *Don't* start looking for trends until there are five or more consecutive points all going up or all going down.

Meeting Facilitation Tips

Purpose

To help a meeting facilitator achieve a smooth and productive meeting outcome.

Time frame you will need

15-20 minutes

Tools you will need

Planning ahead

What is it?

A collection of tried and tested methods to help you ensure every participant remains engaged, everyone is heard, the meeting starts and finishes on time and you achieve actions and outcomes.

Why use it?

If meetings in your workplace are a struggle, this will help you get the most out of everyone's time, ensure discussion is fair and decisions are based on everyone's ideas.

How to use it

- ***Personalities*:** think about personalities in your team and plan strategies for each. This can prevent your meeting turning into a collapsed scrum.
- ***Agenda:*** set a realistic agenda for the time you have. Send it out before the meeting so everyone knows what to expect.
- ***Ground Rules*:** help the group understand that every voice matters. Agree the ground rules with the group e.g. no judgement, criticism or side conversation, every idea is welcome, the goal is quantity of suggestions, all suggestions are considered.
- ***Pose a question*:** plan questions for each agenda item, this helps the meeting stay on track e.g. what change ideas should we test.
- ***Use a 'Parking Lot'****:* place questions and ideas that are not part of the agenda items, but need exploring at the end of the meeting or outside the meeting in this space.
- ***Use the QI tools****:* select which QI tool(s) you are going to use and prepare all the things you are going to need ahead of time.
- ***Timing****:* be realistic about what you can achieve in the time you have. Start and finish on time, no matter how many are there or you are not finish. A group will be more involved in the future if you get away when you said you would.

Do's and Don'ts

- Do consider and plan how you are going to manage different personalities before each meeting. Do think about:
  - ❖ A pre-meeting with 'Argumentative Alan' to address his concerns with each topic.
  - ❖ Use silent brain storming to help 'Silent Sally' use her voice.
  - ❖ Agree with 'Helpful Helen' what she will help with before the meeting.
  - ❖ Writing 1 idea per post-it note will help 'Inarticulate Ian' articulate himself succinctly.
  - ❖ Setting ground rules for behaviour and asking people to respect them during the meeting will help 'Defensive Donna' and 'Argumentative Alan' curb behaviours that could derail your meeting.
- Don't feel like you have to answer all the questions. Pass some back to the group and ask them to answer and make decisions.

Silent Brainstorming

The process of capturing everyone's ideas

- Individuals **silently** write down their ideas.
- Put everyone's post-it notes on the board.

Why?

- Gets ideas from everyone – (Silent Sally), so one person (Argumentative Alan) doesn't drown out the others
- Allows Inarticulate Ian time to articulate an idea
- Ask harder questions that benefit from **time for individual reflection** before answering
- Generates many ideas in parallel
- Helps individuals appreciate that there are shared and different ways of looking at a problem and solutions.

Notes

Cause and Effect Diagram

Purpose

To display all likely causes of an effect or outcome

Time frame you will need

30-60 minutes

Tools you will need

What is it?

Sometimes called an Ishikawa diagram or fishbone diagram, a cause and effect diagram is an organisational tool that helps you to explore and display the many causes contributing to a particular effect or outcome.

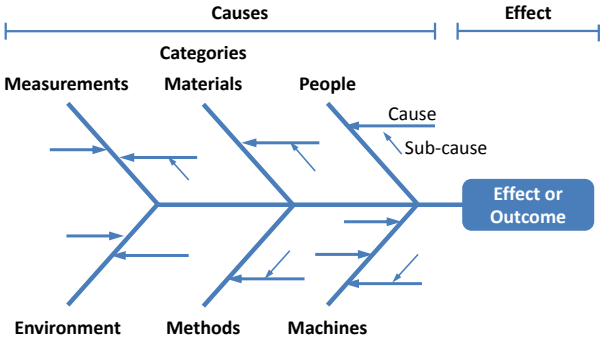
Why use it?

To identify the cause of a problem by having a group of people contribute to a structured brainstorming session. It is a good team building exercise, helps to order ideas, and reduces the tendency to pursue one cause.

How to use it

1. Clearly state the effect to be studied.
2. Draw labelled lines for the key categories: measurements, materials, people, environment, methods and machines (technology).
3. Alternative categories include:
   - 6 Ms: manpower, materials, methods, machinery, measurement and mother nature
   - 5 Ps: people, provisions, procedures, place and patrons
   - 5 Ss: surroundings, suppliers, systems, skills and safety
4. Brainstorm potential causes on every category. Consider having participants do this independently, recording each cause on a separate post-it note.
5. Sub-causes are arranged on smaller lines off the main categories.
6. Use a prioritisation tool to identify the key causes you will investigate (e.g. dot-voting).

Cause and Effect Diagram



Do's and Don'ts

- *Do* consider using the 5 Whys tool to identify sub-causes.
- *Do* document who created the cause and effect diagram, and when. Consider keeping a photograph.

More on Cause and Effect Diagrams

Watch: How to create cause and effect diagrams
https://www.youtube.com/watch?v=mLvizyDFLQ4

Watch: Whiteboard: cause and effect diagrams
https://www.youtube.com/watch?v=387chd8p54c

5 Whys

Purpose

To drill down into the details of a problem

Time frame you will need

10-30 minutes

Tools you will need


Whiteboard


Pens

What is it?

An iterative questioning technique used to identify more specific reasons for a cause.

Why use it?

The true problem is often hidden a few layers beneath the originally stated problem. By identifying the underlying cause, the resulting action needed for improvement may be clarified.

How to use it

1. Draw a box at the top of a piece of paper or whiteboard.
2. Write the problem to be explored in the box.
3. Draw five lines in descending order beneath the box.
4. Ask "why" the problem occurs, then write the answer on the first line.
5. Ask "why" the second problem occurs, then write the answer on the second line.
6. Continue in this way until all five lines are completed, or until the root cause is identified.

Example

Example:
A diagnosis of Chronic Lymphatic Leukaemia was unnecessarily delayed.
Why? A Full Blood Count was not repeated within 2 weeks as recommended by the hospital discharge summary.
Why? The patient assumed there was no need to repeat it as she had not heard from her GP.
Why? The discharge summary from the hospital had not been acknowledged by a GP in the electronic patient management system.
Why? The discharge summary had automatically been sent to the inbox of a GP who was on unplanned leave, with a locum covering.
Why? The process for viewing electronic discharge summaries during periods of leave does not allow for locums to view or manage them. There was no plan for another GP to do this.

Do's and Don'ts

- *Do* consider using this tool with the Cause and Effect Diagram.

Dot Voting / Dotmocracy / Multi-voting

Purpose

To quickly prioritise ideas or actions with a group

Time frame you will need

5-10 minutes

Tools you will need


Post Its


Pens


Voting stickers

What is it?

A simple decision-making tool to help a group prioritise ideas and actions.

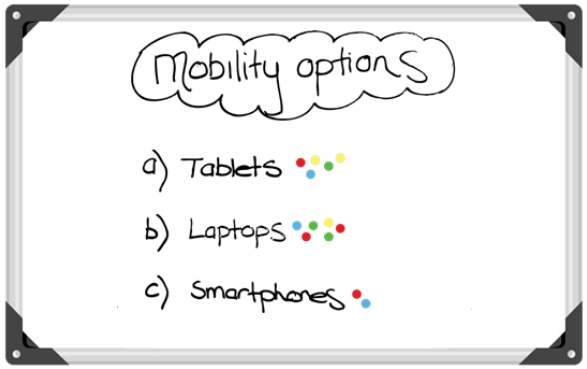
Why use it?

Dot voting is a useful approach when you have a large number of ideas or actions to reduce to a much smaller group. It enables each individual to vote for the topics that they would prioritise, and makes it easy to see at a glance which ideas are popular.

How to use it

1. Ensure that all ideas are recorded and visible (use flip charts and post-it notes).
2. Ensure that everyone in the group understands all of the ideas.
3. Consider clustering and combining similar ideas.
4. Discuss and agree upon the approximate number of ideas wanted, and broad criteria for their selection.
5. Give participants a set number of votes. The number can be determined in different ways:
   - **3-2-1**: Each individual is allocated six dots and places three dots on their top priority, two dots on their second priority, and one dot on their third.
   - **n/3 method**: Count all of the ideas to vote on (n) and divide by 3, then allocate that number of votes to each individual. Individuals can allocate their votes as they choose, or you may wish to consider limiting the votes (E.g. no more than 3 dots on any idea).
6. Add up the number of votes for each idea, and prioritise the progression of those with the most votes.

Example



Do's and Don'ts

- *Do* use sticky dots for voting. If dots are unavailable, ticks with a whiteboard marker often work just as well.
- *Do* consider voting in rounds if many ideas are presented. After the first round, reduce the number of ideas and then vote again.

Process Mapping / Cross-Functional Swim Lanes

Purpose

To document the sequence of actions and flow of work

Time frame you will need

2 hours

Tools you will need


Post Its


Pens

What is it?

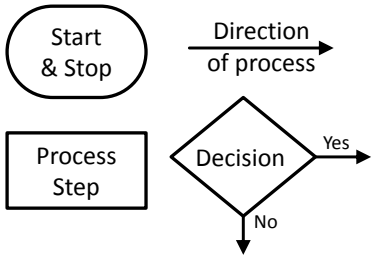
A process map is a graphical representation of how work is performed, showing each step in the process.
Each step is displayed in order, alongside the role of the person who performs it.

Why use it?

Creating a process map highlights parts of the process where improvement opportunities exist, for example rework and duplication.
Use it to establish both an understanding of the current process as well as an improved future process.

How to complete a process map

1. **Identify the process to be mapped.**
1. **Define the scope of the process**. Where will you start and end the process map?
2. **Identify the functional roles of the process**. Create a row with a heading for each role, for example, medical, nursing and allied health.
3. **Brainstorm the major process activities and decision points**. Use a verb-noun combination to describe each broad step. E.g. collect information.
4. **Group the activities** into similar categories or major steps in the process. Aim to have about 20 process steps in one process map.
5. **Determine the key decisions** that influence the process flow. E.g. is a pre-application meeting required?
6. **Assign each activity to a user**.
7. **Create symbols around each step** to indicate the type of action taking place:

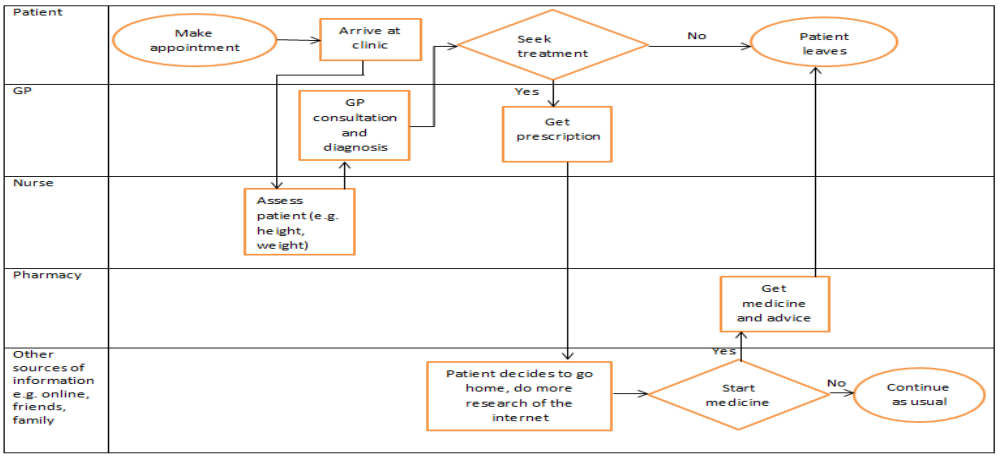


8. Arrange the steps in time sequence.
9. **Place each step on the block diagram** in a row for each step owner.
10. **Verify the process map.** Make sure that what is captured in the process map is what actually happens. Track some users through the process, or show the process map to subject matter experts.

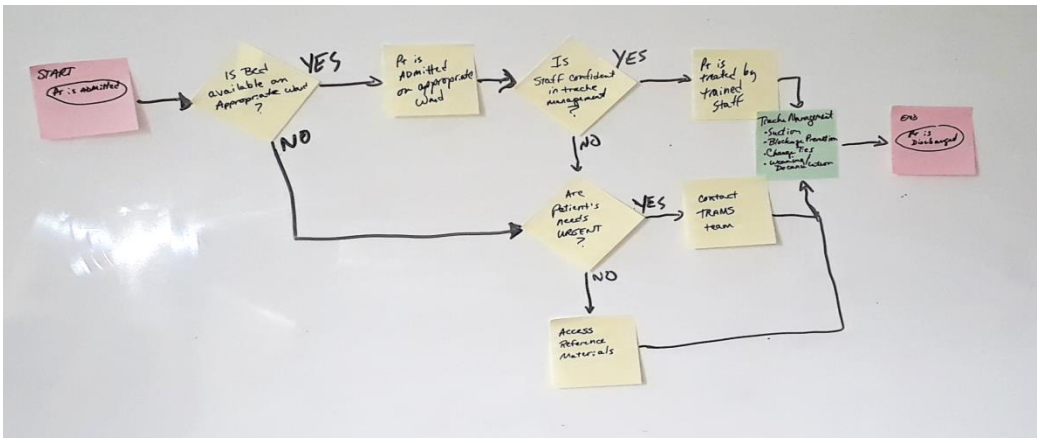
Do's and Don'ts

- *Do* list action steps as they currently occur in the process.
- *Do* document the process on a large sheet of paper hung on a wall.
- *Do* use post-it notes to display the information, in case you need to rearrange it.
- *Do* use different coloured post-it notes to indicate different roles.
- *Do* include enough detail so that daily decisions and ordinary activities are shown. Include loop backs where the process goes in reverse to retrieve missing information or parts before it resumes.
- *Do* map the flow from left to right.
- *Do* revise the project design brief if the process map shows that you need to redefine the scope of the project.
- *Don't* get too detailed. If you're writing 'pick up the phone' and 'speak into the phone', you need to come up a level.

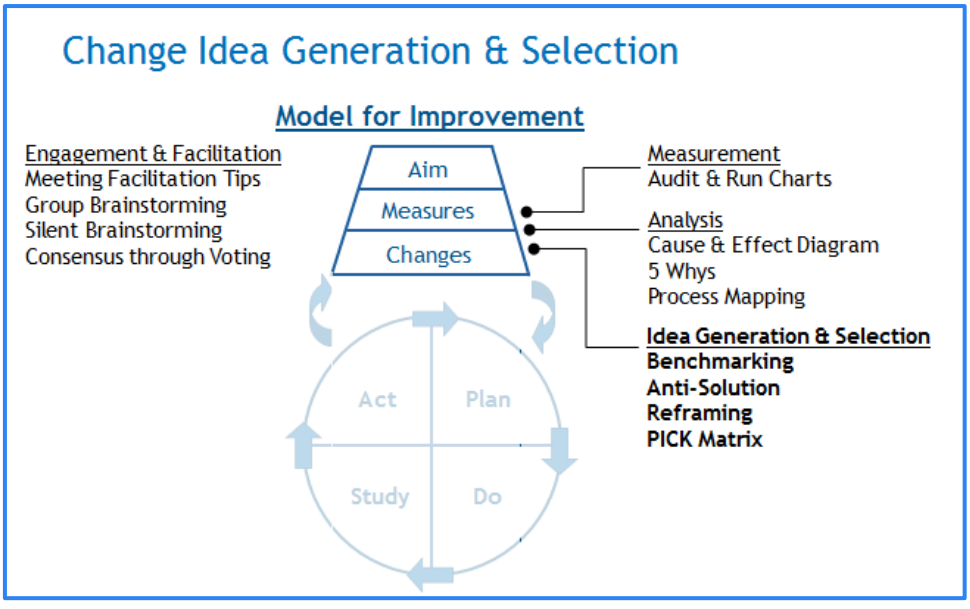
GP Visit Process Map Example



A process map does not have to be on a computer!



Change Idea Generation and Selection



Brainstorming

Purpose

To generate a large number of creative ideas in a short period of time

Time frame you will need

10 minutes

Tools you will need


Post Its


Pens

What is it?

Brainstorming is a group activity where participants work together to generate many creative ideas.

Why use it?

When new ideas need to be generated or problems need solving.

How to use it

Run a brainstorming session:

1. Review the rules of brainstorming:
   - All ideas are valid and worthy of consideration.
   - No criticism or evaluation.
   - No discussion of ideas.
   - All ideas are recorded.
   - Piggybacking on others' ideas is encouraged.
2. Define the topic you want to discuss.
3. Allow everyone to think about and record their ideas in silence for a minute or two.
4. Invite people to share their ideas with the group.
5. Record all ideas.
6. Group and theme the ideas.

Other brainstorming approaches:

Anti-solution

Ask "how can we make this worse"?

1. Determine your objective.
2. Brainstorm ideas for how to make the situation worse (e.g. how could we reduce the number of patients who attend their clinic appointments?).
3. Reverse each idea to see how it pertains to your objective.

Advantages

- Helps people to see things differently.
- Can help to engage people who do not believe that things can be improved.

Anti-solution Example:

Objective: How can we make sure we have correct patient details, so that the correct medication is given?

How to make the situation worse	→	Reverse each idea
GP receptionist guesses the patient's name	→	Receptionist confirms all patient details
Organisation provides no training to staff	→	Organisation provides staff with adequate training and all staff must be signed off as part of induction process
GP handwrites the prescription	→	GP completes the prescription on the computer/patient management system and checks patient details with the patient

Reframing

Ask “how would (someone else) solve this problem”?

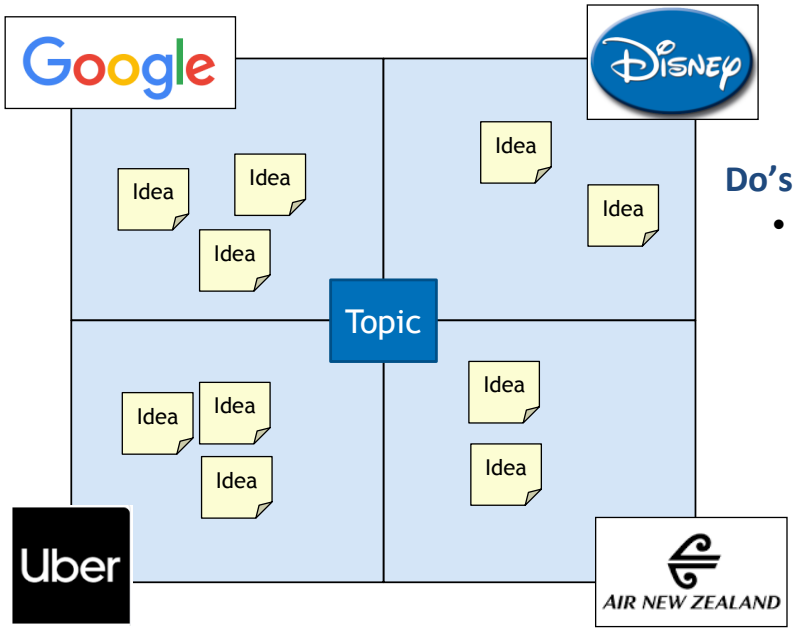
1. Identify the topic or problem you wish to solve.
2. Identify four different perspectives to approach the problem from. Options could include:
    - 4 organisations – e.g. Google, Uber, Disney, Air New Zealand.
    - 4 professions – e.g. engineer, astronaut, retailer, teacher.

Brainstorm ideas: “How would _____ solve this problem?”

Advantages

- Prompts the project team to problem solve from different perspectives.

Reframing Example



Do’s and Don’ts

- *Do* write 1 item/idea per post-it note.

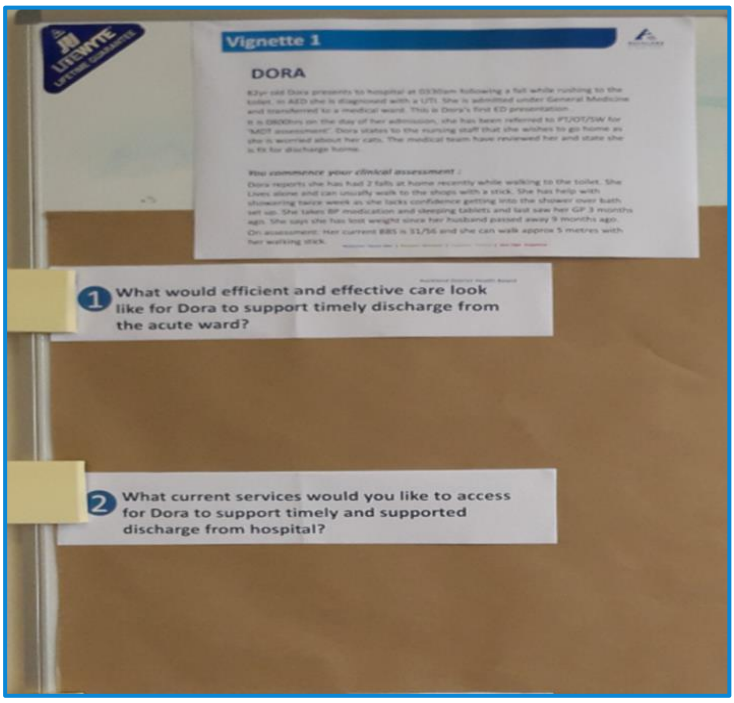
Billboard Survey/ Idea Box

Method

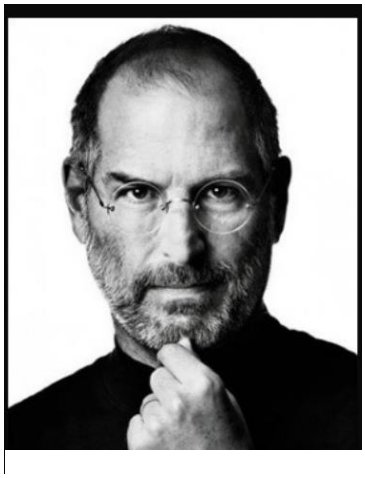
- Put your questions for ideas up on a whiteboard or flip chart in a shared area e.g. tea room.
- Communicate to your tea,, requesting them to submit ideas.
- Provide a time frame for ideas to be in by.

Advantages

- Can engage more people if you can't get everyone together for a meeting



Benchmarking – How have others solve this?



"We have always been shameless about stealing great ideas."

Steve Jobs

Notes

PICK Matrix

Purpose

Used to prioritise ideas to implement

Time frame you will need

15-30 minutes

Tools you will need

What is it?

A PICK (Possible, Ideal, Challenge, Kibosh) matrix is a visual plot of ideas by the perceived positive impact an idea will have if implemented, and the effort it will take to implement.

The PICK matrix is also known as an Impact Versus Effort Matrix or 2x2 Decision Matrix.

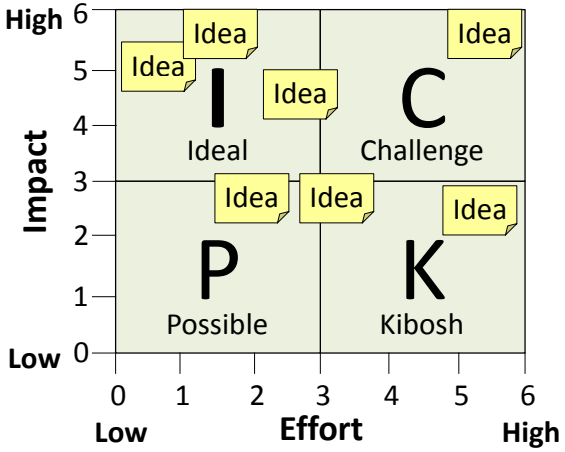
Why use it?

Plotting ideas on a PICK matrix can help a team to agree which change ideas to test, and in which order.

How to use it

1. Begin with a list of change ideas. Consider using a brainstorming technique to generate the ideas beforehand. Tip: record each idea on a separate post-it note.
2. Draw a large square on a whiteboard or flip chart, and label 'impact' on the vertical axis and 'effort' on the horizontal axis.
3. Plot each idea within the square. Ideas with greater impact will be closer to the top of the square. Ideas with greater effort will be closer to the right of the square.
4. Divide the square into four quadrants, labelling as per the diagram below.
5. Test ideas from the 'Ideal' quadrant first, followed by those within 'Possible' or 'Challenge'. Ideas in the 'Kibosh' quadrant should not be considered.

PICK Matrix



Do's and Don'ts

- *Do* complete with your team.
- *Do* discuss ideas if there is disagreement about their expected impact or effort.
- *Do* consider how you could reduce the effort associated with proposed ideas, in order to improve their suitability for implementation.
- *Do* use a PICK matrix without post-it notes if necessary. Ideas can be listed and numbered, and the numbers plotted on a PICK matrix.
- *Do* consider customising the impact and effort scales. For example, high effort could be considered in time (E.g. > 1 year) or cost (E.g. > $100,000).

More on PICK Matrix

Read: Impact Effort Matrix
http://asq.org/healthcare-use/why-quality/impact-effort.html

Model for Improvement – Plan Do Study Act (PDSA) Cycle

Purpose

Use as a framework to achieve an aim by testing change ideas on a small scale

Time frame you will need

Dependent on change ideas tested

What is it?

The Model for Improvement is a method for accelerating improvement.

The Model has two parts. The first part consists of three questions. Aim: What are we trying to accomplish? Measure: How will we know a change is an improvement? Changes: What changes can we make that will result in an improvement?

The second part consists of small tests of change through Plan-Do-Study-Act (PDSA) cycles.

Why use it?

Use the Model for Improvement as a framework to guide improvement work. PDSA cycles should be used as a tool to test a specific change idea.

How to use it

Begin by completing the following:

1. **AIM –** Articulate an aim statement that is SMART: Specific, Measurable, Achievable, Relevant and Time-bound.
2. **MEASURE** – Identify a quantitative measure to determine if a specific change leads to an improvement.
3. **CHANGES –** Select a change idea to test.

Test the change ideas with PDSA cycles as follows:

1. **PLAN –** Identify the question you want to answer, and the outcome you predict. Develop a plan to test the change (who, what, when, where), including what data you will need to collect.
2. **DO –** Carry out the test on a small scale. Document any problems and unexpected observations. Collect the data and start to analyse it.
3. **STUDY –** Analyse the results of the test and compare them to your predictions. Summarise and reflect on what you've learned.
4. **ACT –** Based on what you learned from the test, plan your next steps. Decide whether you will:
   - **Adapt** – make changes and run another test
   - **Adopt** – test the change on a bigger scale
   - **Abandon** – not conduct further tests on this change idea

Model for Improvement diagram

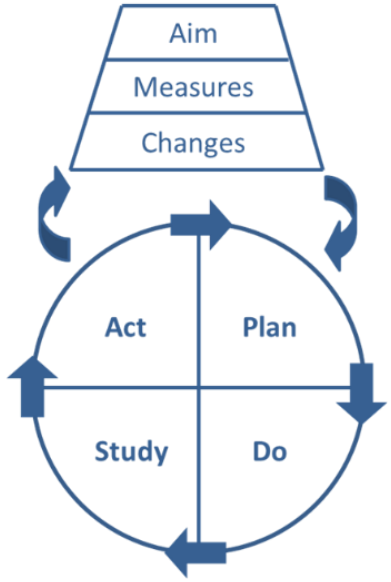
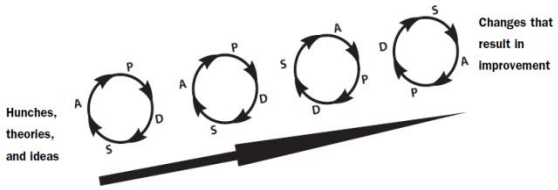


Diagram for repeat PDSA cycles

Repeat PDSA cycles to test change ideas until the aim has been achieved.



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Using a PDSA template:

PDSA Worksheet for testing change

AIM: (overall goal you wish to achive)

We aim to reduce the time it takes for everyone to touch the ball in sequence.

Every goal will require multiple smaller tests of change

Describe your first (or next) test of change	Person responsible	When will this be done
Line everyone up by sequence order	Shona	Before the test starts

PLAN:

List the tasks needed to set up this test of change	Person responsible	When will this be done
1 Volunteer for team coordinator	All	Before test starts
2 Volunteer to record	Sue	Before test starts
3 Volunteer for time keeping	Eleri	Before test starts
4 Assign team number	Eleri	Before test starts
5 Get everyone in sequence order	Shona	Before test starts
6 Give instructions	All	Before test starts
7 Check understanding of instructions	All	Before test starts

Predict what will happen when the test is carried out	Measures to determine if prediction succeeds
Because we are in sequence order it will be quick and less balls dropped	Time taken & number or balls dropped

DO: Describe what actually happened when you ran the test

Lots of balls dropped because we are terrible at playing catch, this increased the time taken

STUDY: Describe the measured results and how they compared to the predictions

Time taken is greater than 1 ½ minutes, balls dropped exceed 20 times. Failed to achieve predictions.

ACT: Will you adapt/ adopt or abandon the change idea and why?

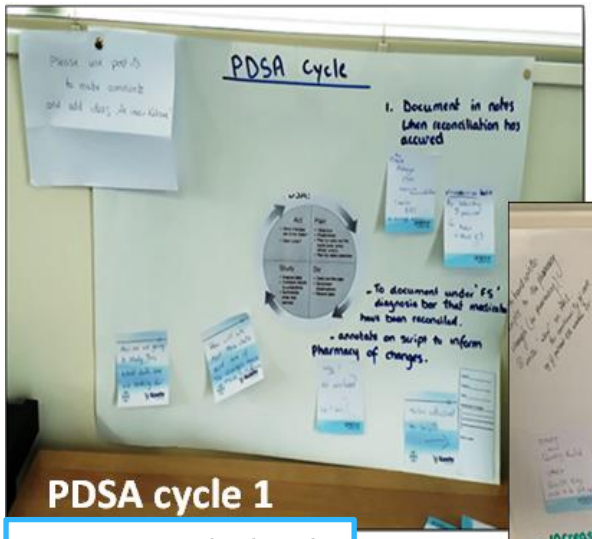
Adapt. We will keep people in sequence order, but explore a different method of passing the ball

PDSA Do's and Don'ts:

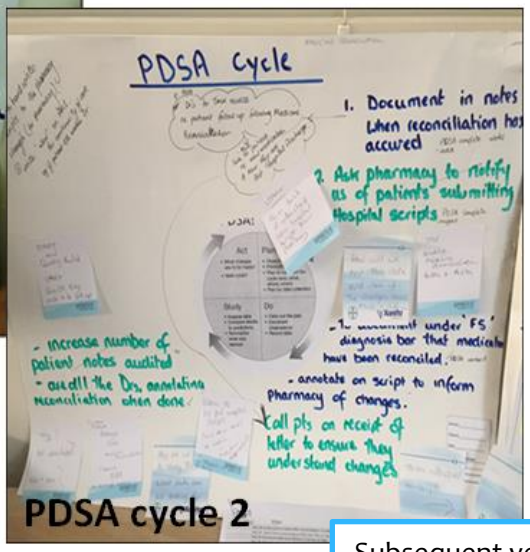
- Do test small, grow each test cycle.
- Do measure and keep data – it will keep you focused on your aim.
- Don't be afraid of a solution not working – write it up and reflect on how to do it differently.
- Don't get so caught up in 'doing' that you don't collect data.

Notes

Example of PDSA in practice

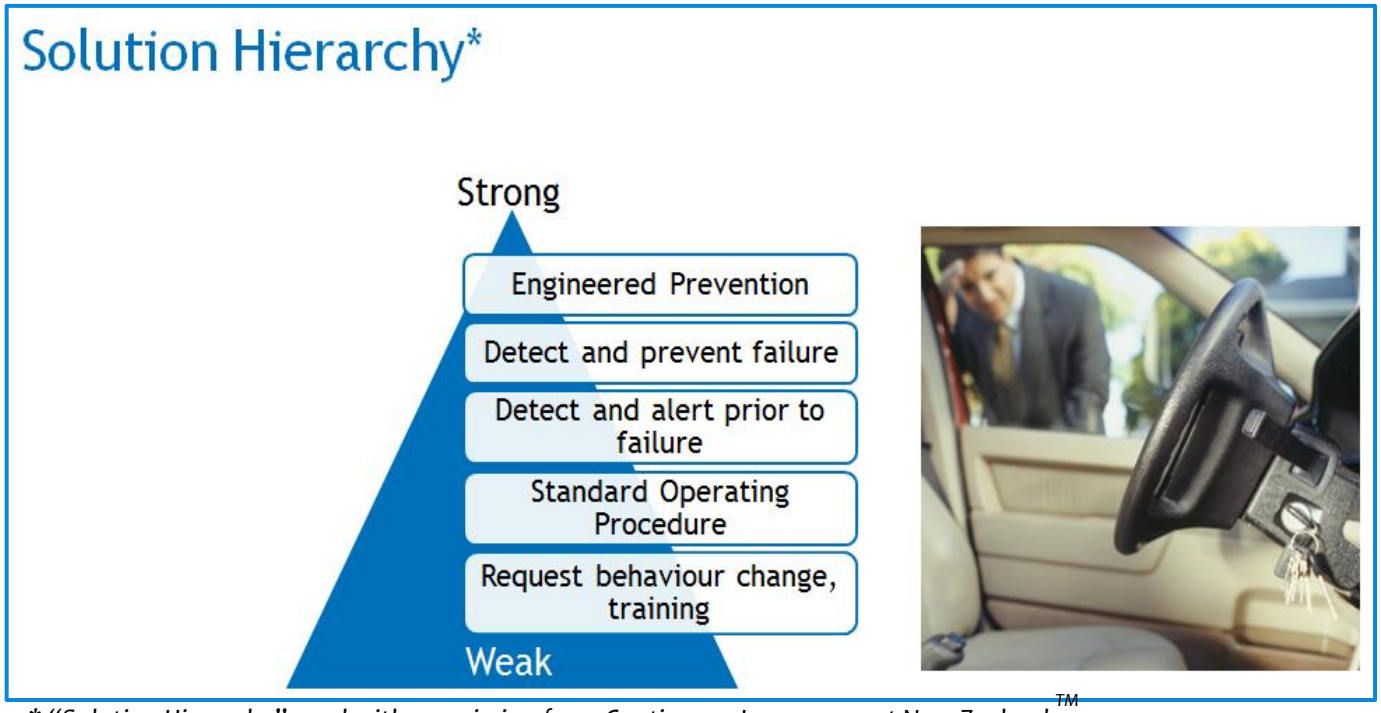


A GP practice displayed their PDSA process and progress in the staff tea room, so everyone could see it and add to



Subsequent versions had several rounds of PDSA on the same display with more ideas.

Sustaining Change:

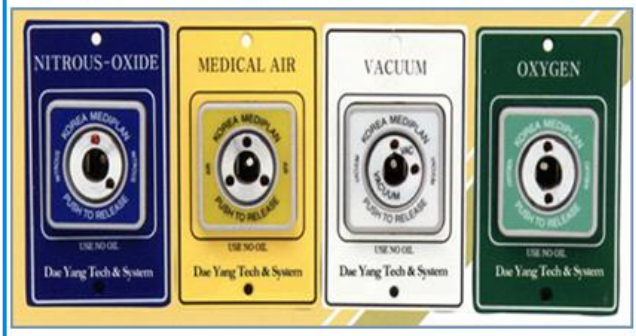


** "Solution Hierarchy" used with permission from Continuous Improvement New Zealand™*

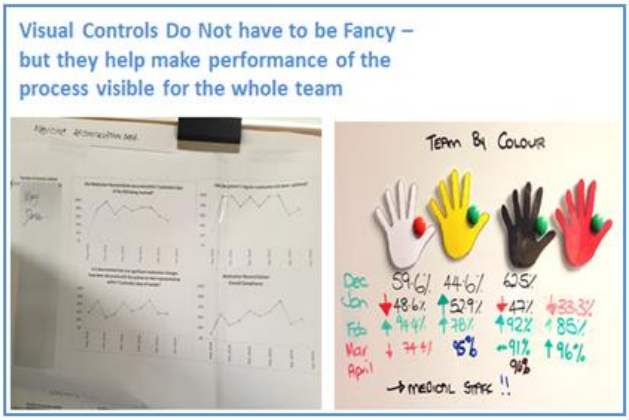
Mistake Proofing

Detect and Prevent, & Detect and Alert

Mistake Proofing - Engineered Prevention



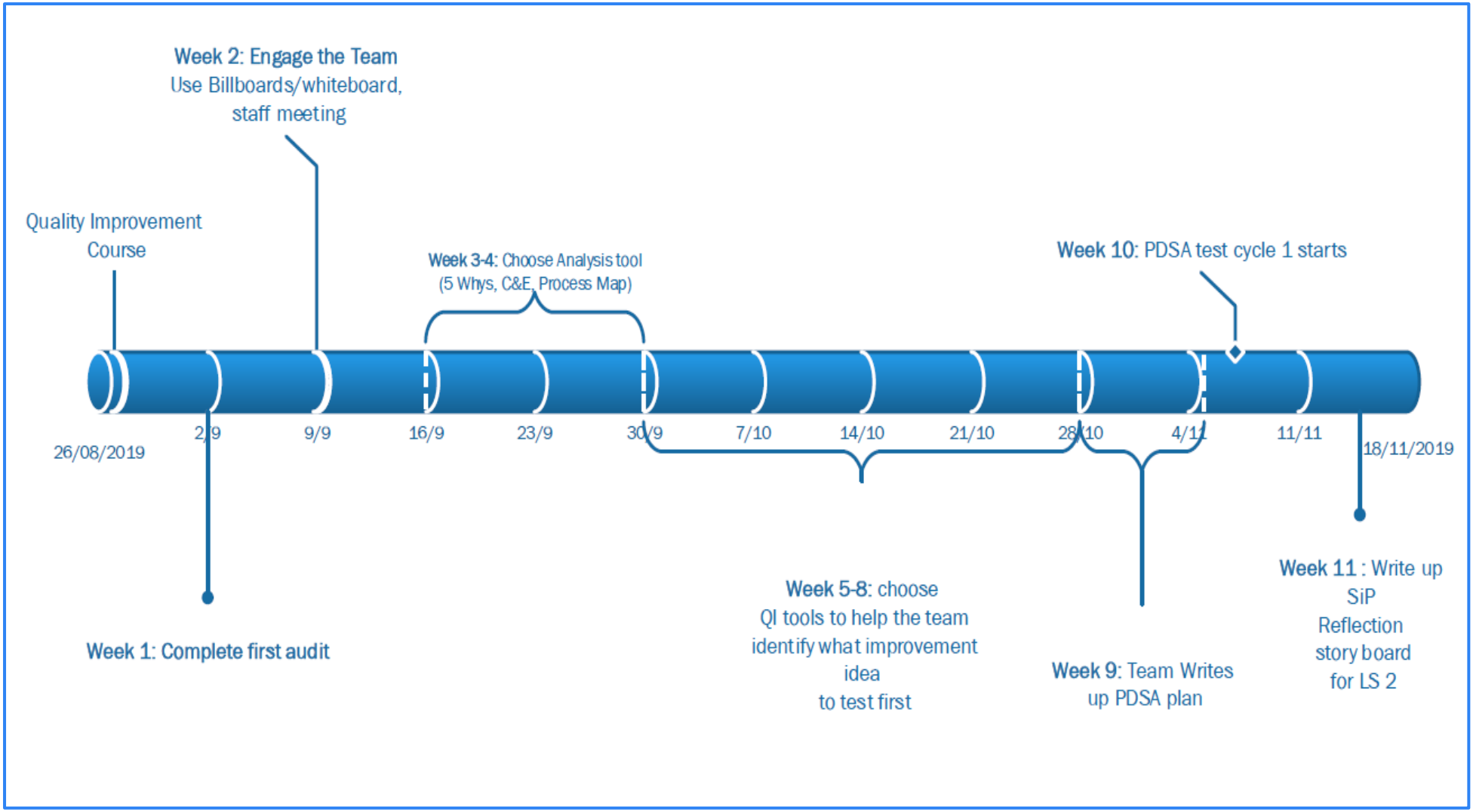
Visual Controls



Using a Sustainabilty plan

Category	Examples of Actions Required	Actions we will take	Person Responsible	By When
Standardisation How will standardisation be achieved?	- Protocols for change have been developed and approved - Patient Information developed/available - Staff information and protocols updated/available - How will know if everyone is following the standard? - Are there review dates in place?			
Documentation	- Has the new process or change been clearly documented - Has any equipment required been defined - Change in job descriptions or roles as required - All staff informed of new documentation			
Training	- Training requirements defined - Training scheduled as required - New employee training procedure complete			
Measurement Ongoing, there needs to be agreement what will be measured /reported on /who will be responsible	- New measurements defined - How we will introduce visual controls defined - Process for measurement defined - Responsibilities for measurement defined - Frequency of measurement agreed and scheduled - Who will analyse the data agreed - How we will share the data is defined			
Resourcing	Are the necessary resources secured: - To maintain data recording and reporting - Staff expectations have been communicated - Process for restocking resources established, process is communicated			

Preparing for the next learning Session



Improvement Reflection Sheet

Quarter: 1, 2, 3, 4 (circle accordingly)

Practice Name:	Module:	Date:

What did your data tell you?

What changes did you make?

(Think about inserting photos of your change ideas)

What challenges did you face with these changes?

What changes would you like to try next?

What does your team predict will happen when you test your new change idea(s)?

Your Shout Out

Our successes have been:

(Think about inserting photos of work done at team meetings change, e.g. your brain storming ideas board, or compliments, staff feedback)