



ROYAL
COLLEGE OF
PHYSICIANS
OF IRELAND

Improver's Guide







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Abbreviations

| | |
|--------|---|
| ANP | Advanced Nurse Practitioner |
| CNS | Clinical Nurse Specialist |
| CT | Computerised Tomography |
| GP | General Practitioner |
| IRL | Incident and Recommendations Log |
| IT | Information Technology |
| KPI/s | Key Performance Indicator/s |
| MDT | Multidisciplinary Team |
| MRI | Magnetic Resonance Imaging |
| NCCP | National Cancer Control Programme |
| NCHD/s | Non-Consultant Hospital Doctor/s |
| PDSA | Plan, Do, Study, Act |
| PT | Physiotherapy |
| QI | Quality Improvement |
| QSM | Quality and Safety Management |
| RO | Radiation Oncologist |
| RP | Responsible Person |
| SABR | Stereotactic Ablative Radiotherapy |
| SMART | Specific, Measureable, Achievable, Relevant, Timely |

Introduction

This guide has been developed as an introduction on how to develop a Quality Improvement (QI) project. It can be used as a starter pack for getting to know the basic tools and concepts used in QI in healthcare.

This guide is best used in conjunction with an educational course where you are supported by a facilitator throughout the process of initiating and managing a QI project for the first time.

Throughout the guide, highlighted sections with associated symbols illustrate important elements. These are categorised according to the following key:



Learning Point

Emphasises important learning concepts



Top Tips

Highlights key points to support project



Toolkit

Interactive tool that can be used to progress project

Section 1: What is Quality Improvement?

Before we progress to the practical aspects of carrying out a QI project, this section briefly explains what quality improvement in healthcare is.

The Six Domains for Quality in Healthcare

The Health and Medicine Division, formerly known as the Institute of Medicine, identified six domains for healthcare systems to provide high quality care for our patients and a safe work environment for staff. They are:

- **Safe** Do we harm patients?
- **Effective** Do we give the most evidence-based treatment every time?
- **Equitable** Are the services and outcomes equal for all?
- **Timely** Do we provide good access to care?
- **Efficient** Are the services we provide good value? Is there waste?
- **Person centred** Do we take into account what matters to the individual?

Understanding what Quality Improvement is

Quality improvement has been described as the “combined and unceasing efforts of everyone; healthcare professionals, patients and their families, researchers, payers, planners and educators to make the changes that will lead to;

- Better patient outcomes (health)
- Better system performance and experience of care
- Better development and supporting of staff to deliver quality care (learning)”

– Paul B Batalden and Frank Davidoff, 2007, *What is “quality improvement” and how can it transform healthcare?*



The Quality Improvement Approach

The Quality Improvement (QI) approach defines a problem, studies the variation within that problem, formulates a goal and then develops a hypothesis about the potential interventions or changes that might work to achieve this goal.

These changes or interventions are then tested on a small scale to verify whether they have achieved the predicted outcome.

This type of approach is best suited to problems where the solution is not immediately obvious. This is often the case in complex healthcare systems.

Why Quality Improvement?

QI provides the individuals who are subject matter experts in their own area (front line staff, support staff etc.) with a method to test hypotheses in a specific, real-world context to implement real and meaningful change.

The difference between QI, Research and Audit



All three are focused on improving the quality of health care, however they each have a different primary focus:

QI focuses on the testing and implementation of changes

Audit focuses on comparison against an agreed standard

Research focuses on generating new knowledge

The next section will explore how to use QI practically in healthcare through the implementation of QI projects.

Section 2: Starting a QI project

One of the most important parts of developing a QI project is the initiation phase. At this point you will determine if your improvement idea is one you can gain support from other team members to progress.

In this section you will be brought through the steps for selecting an improvement idea and developing a project team. Stakeholder mapping and communication planning is also addressed in this section.

Identify the issue you want to improve

To start a QI project, you need to select an area or specific issue that you wish to improve.

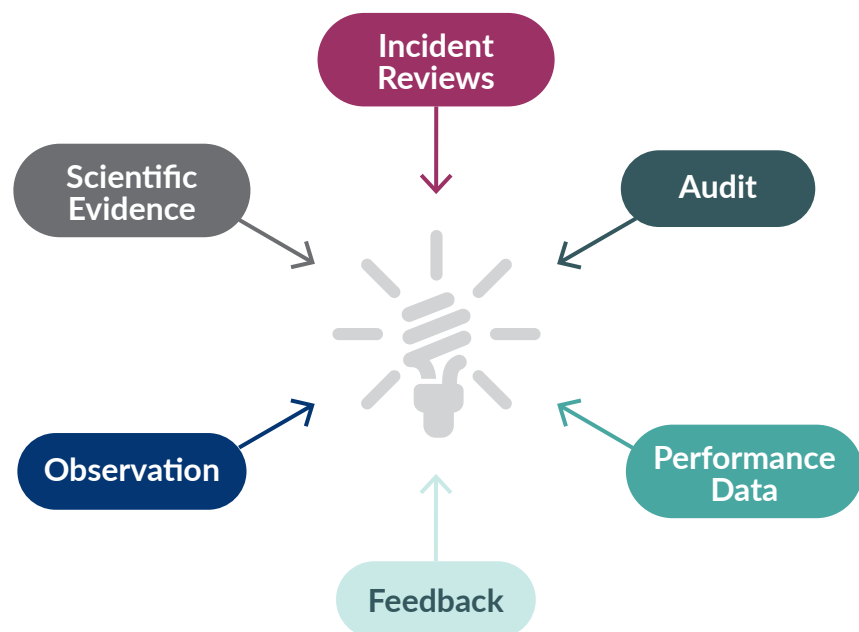


Focusing your project

To ensure your project is meaningful and will be supported, try to focus on improving something that impacts you, patients, carers or other staff.

Finding something to improve

Ideas for your improvement project may come from a variety of sources:



Is this really a quality issue?

Once you have identified an area for improvement, you should consider whether your idea is really a quality issue i.e. does it address one of the six domains of healthcare quality (safe, effective, efficient, equitable, timely and patient centred)?

Is this a sustainable project?

Consider whether your idea is a project that will continue to be a priority for your organisation and whether there will be enough support and motivation to see the project through to completion. It is also important to consider the scale of the issue you are considering. Is it something you can directly impact or is it a larger system issue?

Establish your team

Consider who you need to help you on your improvement journey and how much input you need from them. For example, how often will you need to meet to progress the project?

Identify your team members

One common reason for failure to sustain improvements is inadequate consultation or collaboration with those impacted by the proposed change.

Involving those individuals early on can ensure buy-in and support for change and can ensure long term sustainability. Try to have at least three people on the project team, ideally representing different stakeholder groups.

It is also worth considering involving individuals that will be in their role long enough to see the project to completion, in addition to those in more transient roles.

Include the voice of the service user

Include people to represent the voice of the service user. This voice will change depending on the focus of your project and could include staff, patients, carers, family members, etc. If it is not possible to include these voices on your core team, ensure that you capture their opinions through surveys, focus groups etc.



Making shared decision making a reality

Try to remember the phrase “no decision about me without me” when considering who should be involved in your project. Involving service users in QI projects enables shared decision making.



Project Charter

A project charter is a shared document developed by the team that acts as a contract for involvement with the project. When you first meet as a team to discuss your project, it can be helpful to develop a team charter. This is a shared document that acts as your commitment to the project.

Agree your team goal

The first element of a team charter is to agree what you are trying to achieve as a team. This is a high-level declaration of the outcome you would like to see, e.g. to reduce waiting times at the diabetes outpatients clinic or to reduce the door-to-needle time for stroke-positive patients.

Agree responsibilities

Different members of your team will bring different skillsets and expertise. While the project responsibilities should be shared by all members of the team, try to assign work to people to lead on according to their strengths.

Decide how often you will meet

Teams that meet regularly tend to see the best outcomes, with frequent, short meetings better than infrequent marathons. You don't need everyone to be there every time, but agree together how many people you need for a meeting to go ahead.

Top tips for effective meetings!



- Plan a regular timeslot and location
- Send calendar invites
- Use an agenda to keep the meeting focused
- Consider using a conference call if you are based in different locations
- Stick to the time you have allocated for the meeting
- Agree how many people you need to achieve consensus on decision making
- At end of the meeting summarise decisions and actions coming from it

Consider your stakeholders

Consider all the individuals that may be impacted by your improvement project. Think about the project and any potential changes from their perspective. Take time to think about how any changes may influence their roles in both the short and longer term.

If you are unsure who will be impacted by the project, consider walking physically through the process yourself e.g. put yourself in the patient's shoes and see how many different people they interact with on their journey from admission to discharge.

Bear in mind that you may need to include different people in different elements of the project, i.e. you may need an executive sponsor to give approval for the project or to release people from regular duties, whereas clinical or administrative staff may be necessary to help with the day-to-day work of the project.




Stakeholder Map

A stakeholder map is a tool that allows you to visually record each of your stakeholders and their levels of enthusiasm and support for the project. It can be helpful when considering a communications plan.

In the project below, the team were aiming to reduce the waiting time for access to pulmonary rehabilitation from over 22 months to three months. They spent time as a team listing their relevant stakeholders and mapping them according to their level of influence on the project and their level of interest in achieving the aim.

| | | | | |
|---------------------------|--------|---------------------------------------|---|---|
| LEVEL OF INFLUENCE | HIGH | Hospital Manager Financial Manager | Director of Nursing | Respiratory Consultants Physiotherapy Manager Respiratory CNS Respiratory ANP Relevant PT Staff |
| | MEDIUM | | Other Hospital Consultants & NCHDs for appropriate referral | Patients Patients Families Support Groups |
| | LOW | | MDT: to provide appropriate education GP referral | |
| | | RESISTANT | NEUTRAL | SUPPORTIVE |
| REACTION TO CHANGE | | | | |



Communication Plan

A communication plan is a strategy for how you will keep people informed about your project.

On the next page there is a sample from a communication plan from a QI project that was aiming to complete lung surgery on patients within 30 days of their case being brought to the weekly lung multidisciplinary case meeting. Through this exercise the team noted that the one-to-one interactions with their stakeholders was critical in getting engagement for the project.

| STAKEHOLDER | INITIAL SUPPORT | LEVEL OF INFLUENCE | KEY CONCERN | STEPS TO GETTING BUY IN |
|--|---|--------------------|---|---|
| Chief Executive Officer | Yes, as the Lung Cancer Patient Care Pathway is a key priority | High | 1. To improve quality of care for Lung Cancer Patients in line with national KPIs | <ol style="list-style-type: none"> 1. Short-term win(s) for change (tangible benefits associated with project) 2. Confirm when quality of service will improve for patients |
| Consultant Cardiothoracic Surgeon(s) | Acknowledgment that current processes need to be reviewed | High | <ol style="list-style-type: none"> 1. The process is already established 2. KPIs are being monitored | <ol style="list-style-type: none"> 1. Short-term win(s) for change (tangible benefits associated with project) 2. Communication regarding achievement of National KPI outcomes to Lung MDT Meeting attended by Consultant Surgeons, Respiratory Physicians, Laboratory and Radiology staff respectively |
| Members of Lung Multidisciplinary Team Meeting | Yes, as the Lung Cancer Patient Care Pathway is a key priority | Medium | <ol style="list-style-type: none"> 1. That KPIs are being monitored 2. Patient access to surgical intervention is timely and in line with National KPIs | <ol style="list-style-type: none"> 1. Short-term win(s) for change (tangible benefits associated with project) 2. Confirm when quality of service will improve for patients |
| Regional Cancer Centre Business Manager; Departmental Manager & Audit Staff | Yes, input required at outset of project (MDT output data/ reports required for analysis) | Low | 1. Release / use of MDT data | 1. No action required until later in project process when prospective data may be required to be recorded in line with NCCP KPIs as a component of the project |

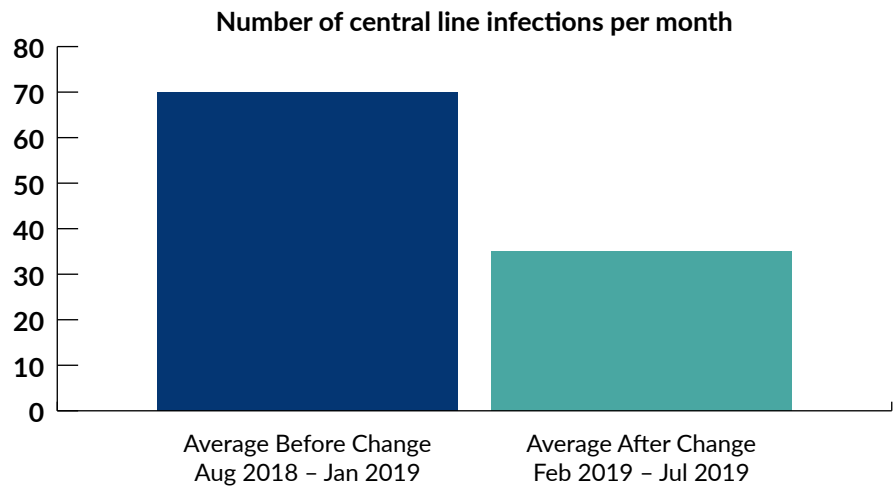
Section 3: Understanding the system

One essential element of a QI approach is systems-thinking. Before making changes to a system or process, it is essential to understand how different parts of the system interact and influence each other.

In this section you will be introduced to a number of tools and methods that you can use to gather qualitative and quantitative data in order to better understand the process and system you are working in.

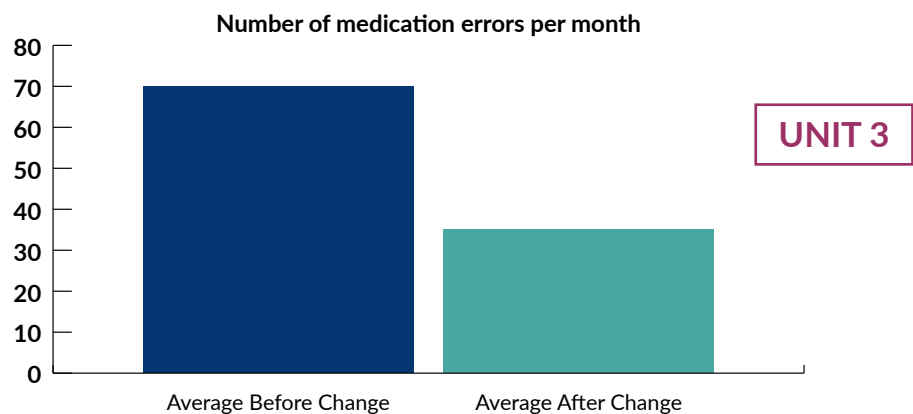
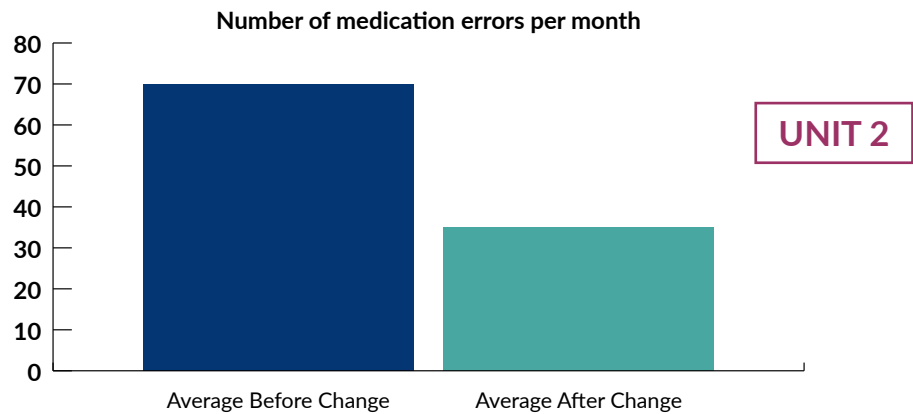
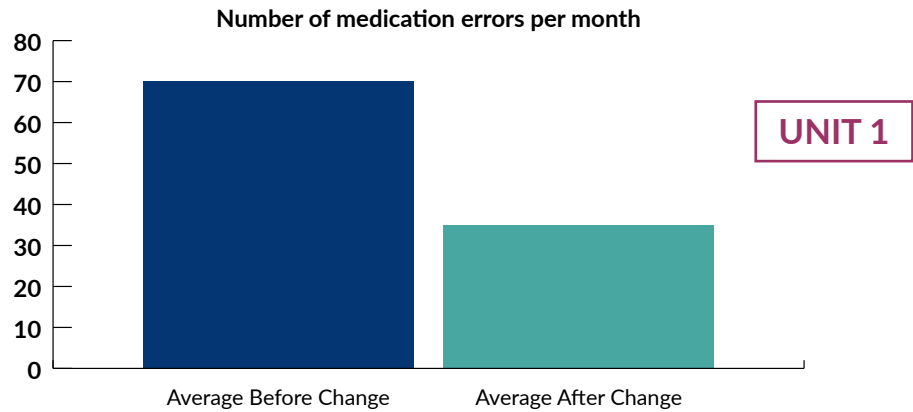
Analysing quantitative information

Analysing quantitative data enables a deeper understanding of how the system functions and the identification of opportunities to improve it. We recommend using a dynamic view of data rather than static data. A bar chart is a display method that only shows static data.

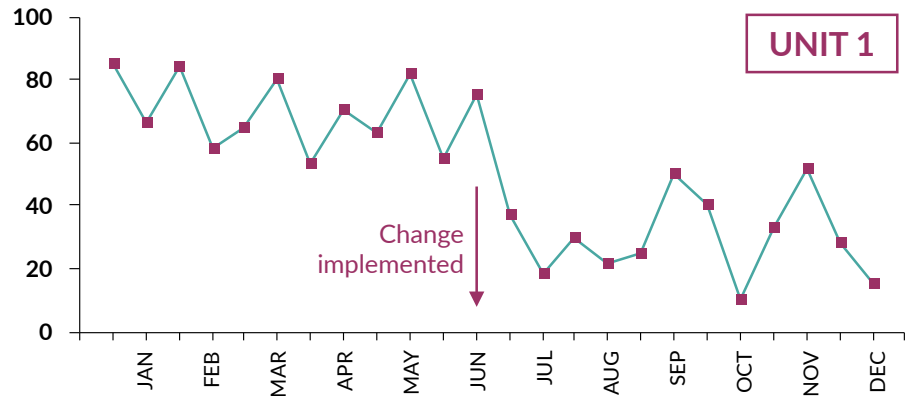


If we look at a project where they were attempting to reduce the number of medication errors by patients across three units we can see the difference in the two views of data.

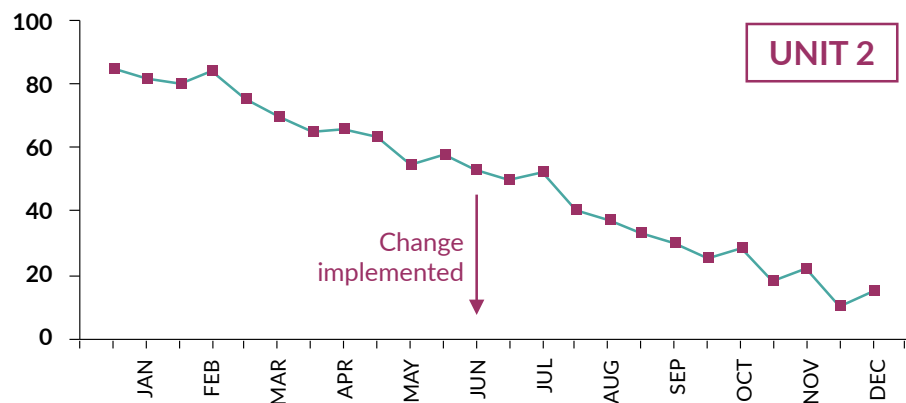
Looking at the bar charts below we can see each unit appears to be performing well and the improvement project is having a positive impact in all three;



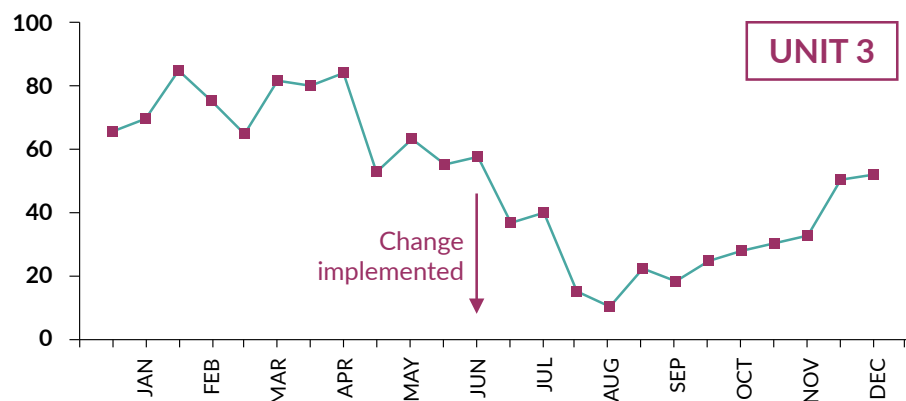
However, if you change the way in which you view the data and use a line chart that plots the data over time you will see a different story.



In June the QI project was initiated and changes were made. Looking at Unit 1, the project appears to have made a positive impact with medication errors reducing, while still showing normal variation levels.



In Unit 2, it seems that errors were already reducing consistently and therefore the project had little impact on their area.



Finally, Unit 3 is a concern. They saw improvement initially, but the errors are steadily increasing. Therefore the improvement was not sustained, and this unit requires more support.

Based on the dynamic view we can see significant differences between the three units.

The use of line charts provides much more detail and can give you a clearer idea of what is actually going on, compared to bar charts.

Line charts

- A line chart is a graph with time plotted on the X axis and the variable being studied on the Y axis. It allows the understanding of baseline data performance.



Run charts

- A run chart is a line chart with the median of the data set displayed on the same chart. By adding a line showing the median of the data, it allows interpretation of common and special cause variation. They can be used to identify special cause variation using established rules to interpret patterns in the data. You can convert your baseline data into a run chart by calculating the median.

Analysing qualitative information

Sometimes, when we set out to improve a process it is easy to focus on the superficial issues that we see. There are a number of tools that can be used to understand the root cause of issues.

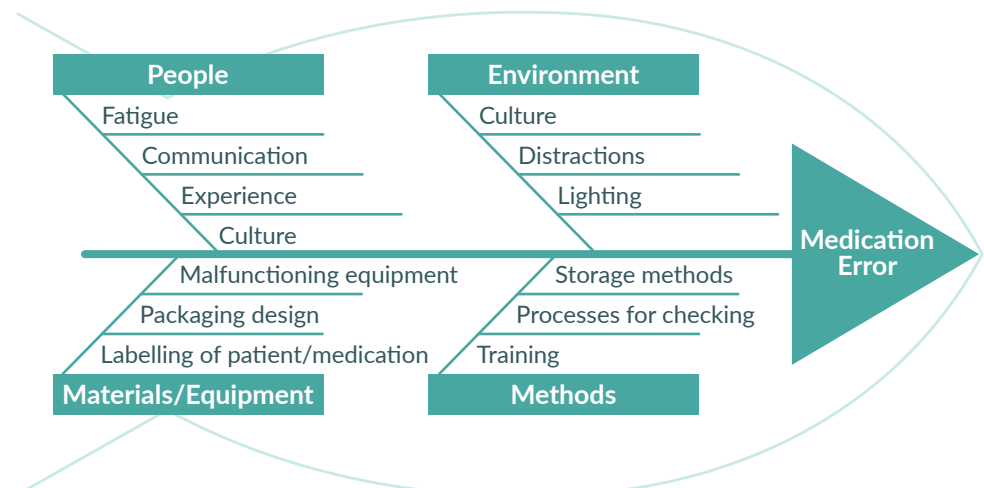


Fishbone diagram

A fishbone diagram, or cause and effect diagram, is a tool that can be used to understand the root cause and visually represent the contributing factors to an issue.

The problem or issue being analysed is written in the 'head' of the fish, with major categories of contributing factors written along each of the large 'bones'. The smaller 'bones' are then used for sub categories of these factors.

Using the fishbone diagram in a medication safety project, it might look something like this;





The Five Whys

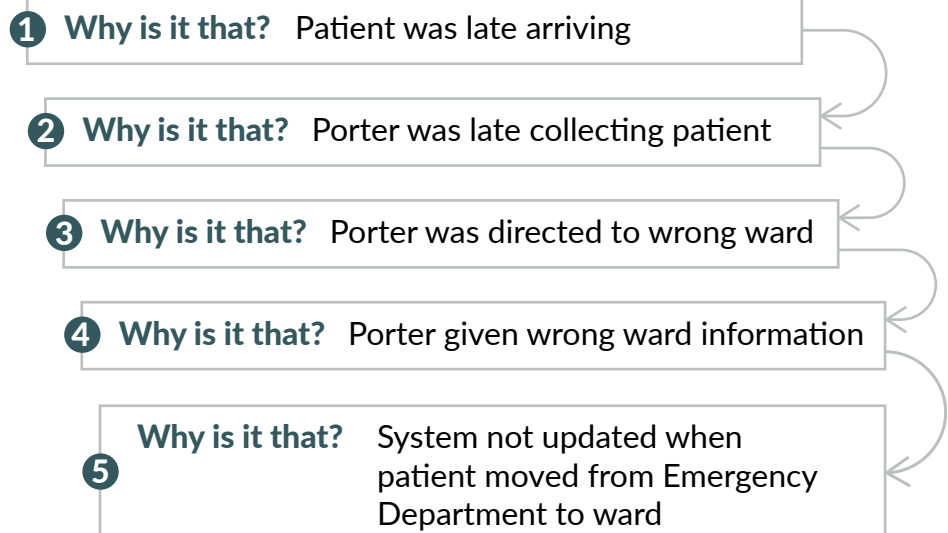
The Five Whys is a further technique for root cause analysis. By asking the question 'why?' five times, it is possible to get beyond superficial problems and understand the real drivers of an issue.

In this project the team are examining the issue of in-patients missing scheduled MRI appointments. Using the Five Whys tool you can see where there are issues in the process.

WHAT IS THE ISSUE?

Define the issue: *Patient missed scheduled MRI slot*

WHY IS IT HAPPENING?



Root cause: *No consistent process to update patient location*



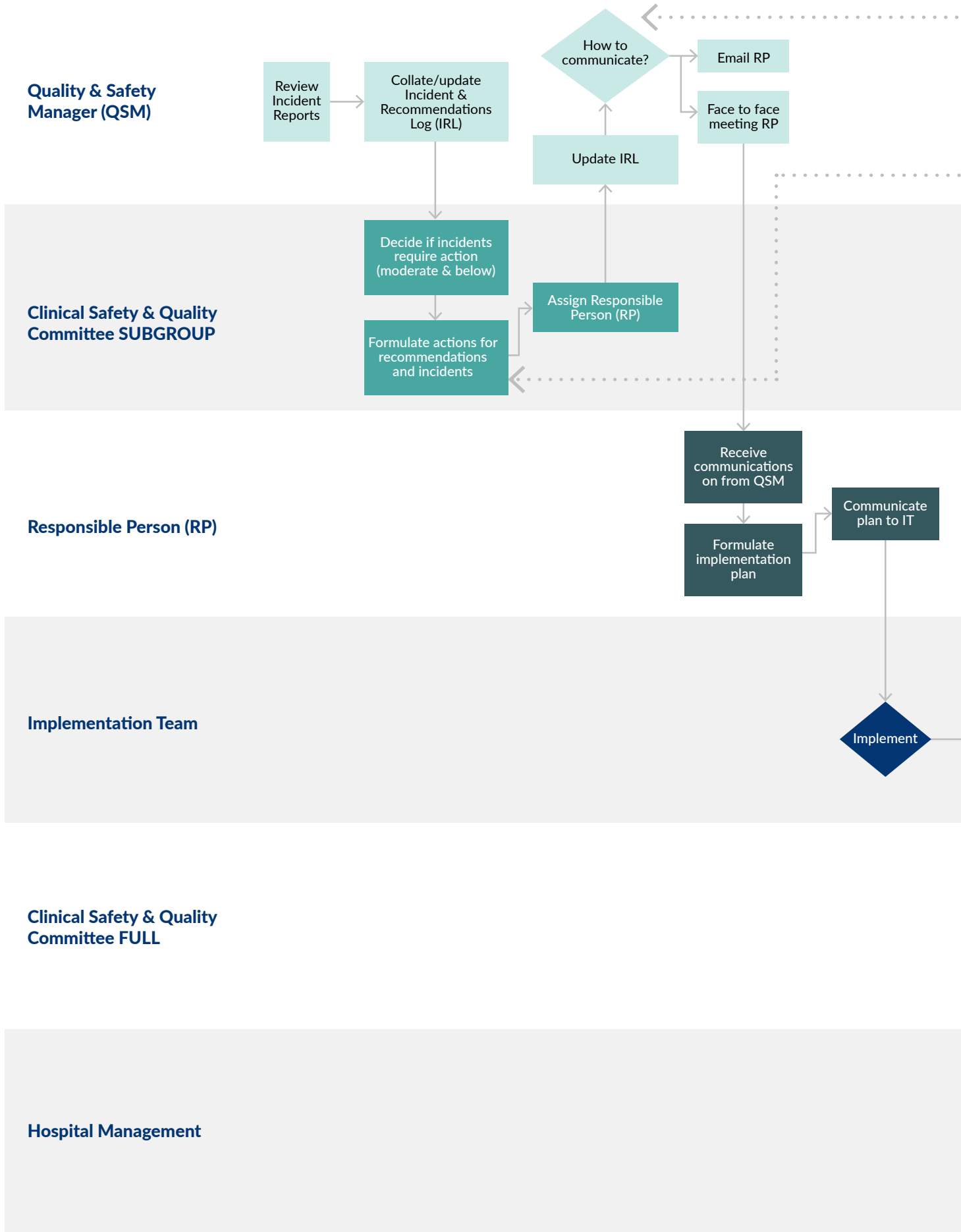
Process map

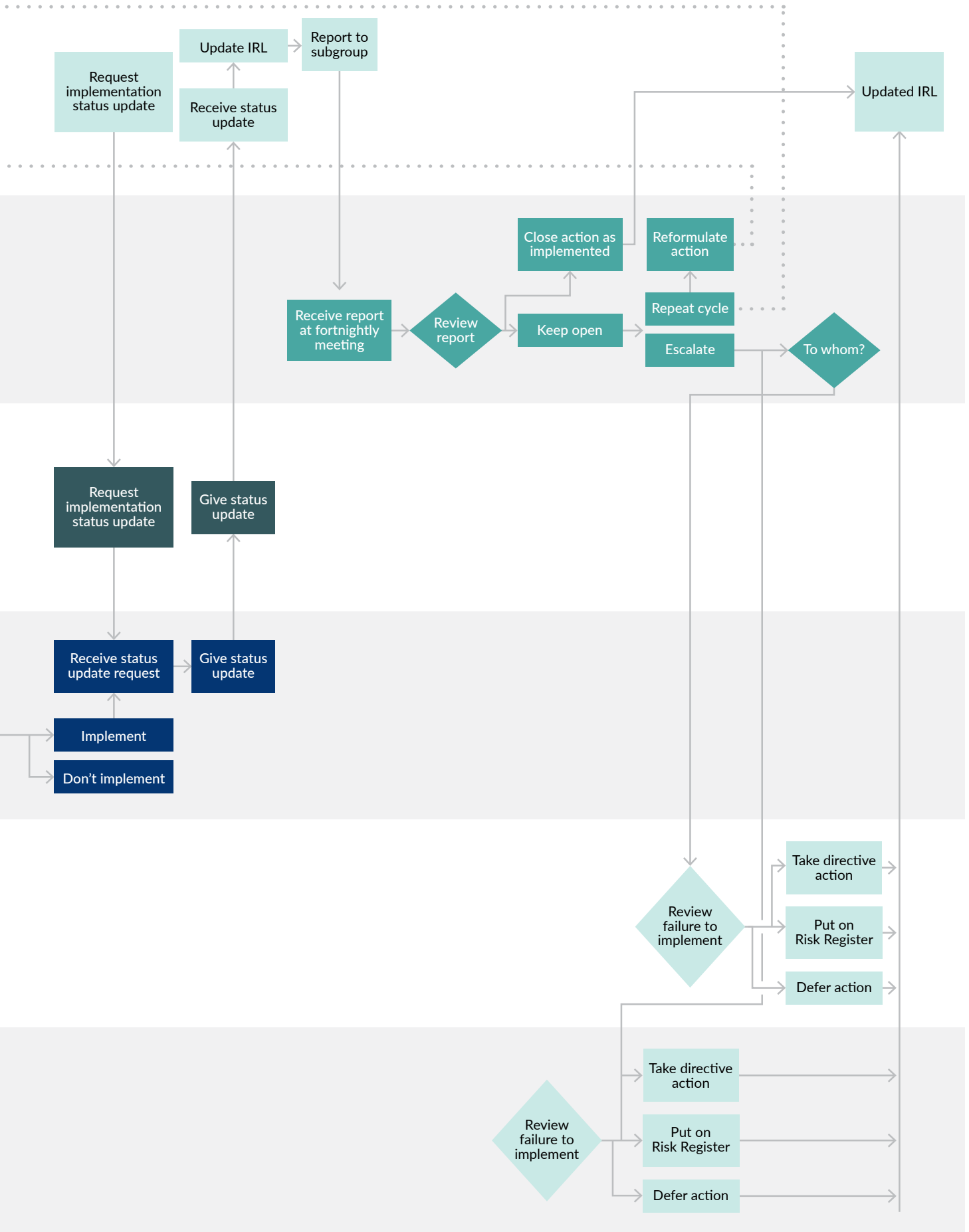
This is a visual tool that shows the series of tasks or activities in a process and how they relate to each other to achieve the outcome.

In this project the team were aiming to improve the management of incident report data through the introduction of a data tracking and presentation tool. Using a process map they clarified the entire process, and identified where changes and improvements could be made.

In order to accurately display the process, the project team had to engage with all of the stakeholders in the process and spend time mapping their input at different points.

See the full process map overleaf.





A process map/flow chart can be used to:

- understand the steps in a process
- understand the roles of individuals in a process
- identify issues/bottlenecks in a process
- identify areas for improvement
- map out what an ideal process could look like



Mapping the process

Engage stakeholders that are involved in the process when developing a flow chart, e.g. ask porters about the process of getting a patient from the ward to Radiology. They may be able to provide a different perspective on the steps and any potential bottlenecks or areas for improvement.

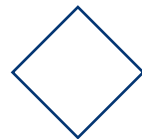
There are a number of symbols that are commonly used when drawing flow charts/process maps, these symbols indicate different stages/activities in the process:



- Indicates the beginning or end of the process



- Represents activities occurring during the process



- Represents the point at which a decision or question determines the next step



- Indicates the direction of flow of activities through the system

Section 4: Developing an Improvement Project

At this point you should have a clear idea of the area to be improved, a team willing to work together on the project, engaged stakeholders, and evidence of the current process and data.

This section moves your project forward with a focus on measurement and developing a driver diagram to inform the changes and improvements you will make.

Using the Model for Improvement

The Model for Improvement is an improvement methodology frequently used in healthcare. It was designed by the Associates in Process Improvement and it comprises of three questions, followed by a testing cycle.

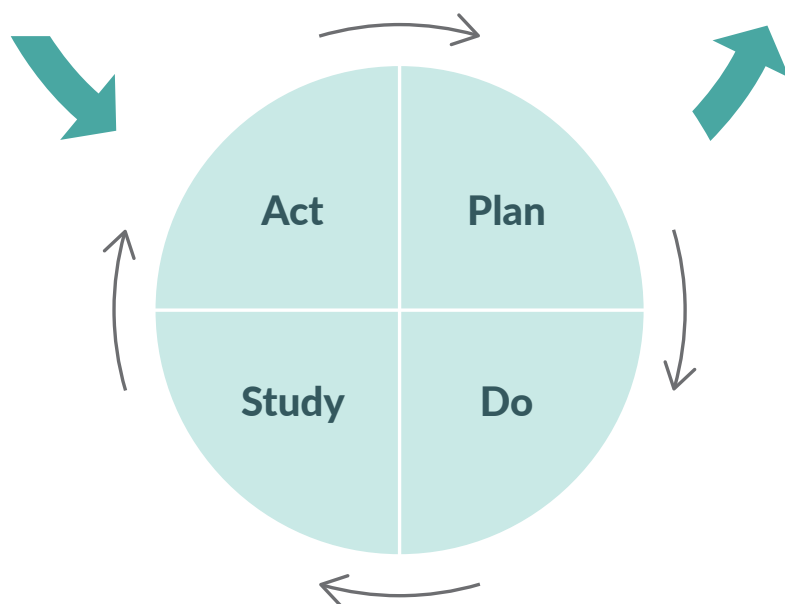
The three questions address the aim of your project, how you will measure and what change ideas you can create.

Once you have answered these questions, you can move on to the testing cycle (Plan, Do, Study, Act). This is described in detail in the next section *Testing Change Ideas*.

1 What are we trying to accomplish?

2 How will we know a change is an improvement?

3 What change can we make that will result in an improvement?



1 What are we trying to accomplish?

Have a SMART aim

As a team, you have already established your project goal. To develop a strategy, it is helpful to translate this into a more specific aim statement. This should give a clear picture of how good you want to be, by when, and who this will impact.

To focus the team on the task to be achieved, try to ensure that your aim statement is SMART:


| | |
|-------------------|--|
| SPECIFIC | Who, what, where, when will be impacted? |
| MEASURABLE | How will you know you have achieved this? |
| ACHIEVABLE | Can you action this within the timeframe? |
| RELEVANT | Is this a real quality issue for others too? |
| TIMELY | When will you have achieved this? |

An example of a SMART aim is detailed below. In this project the team focused on reducing waiting lists in a bronchoscopy service:

| | | | | |
|-------------------|------------------------------|---|---------------------|-----------------------|
| RELEVANT → | We will decrease: | <i>the length of the waiting list</i> | ← SPECIFIC | (outcome) |
| | From a baseline of: | <i>6 weeks</i> | ← MEASURABLE | (%/rate/#) |
| | To a future state of: | <i>2 weeks</i> | ← ACHIEVABLE | (%/rate/#) |
| TIMELY → | By: | <i>31 December 2020</i> | ← TIMELY | (timeframe) |
| SPECIFIC → | In: | <i>patients awaiting bronchoscopy at X hospital</i> | | (population impacted) |

Driver diagram

A driver diagram is another tool you should use to clarify what you are trying to accomplish. You can use it when you have created your SMART aim.




Driver Diagram

A driver diagram is a visual tool used to link change ideas to the aim by identifying the main contributors to the issue (drivers) and linking these to potential solutions (change ideas).

Driver Diagrams have a number of components:

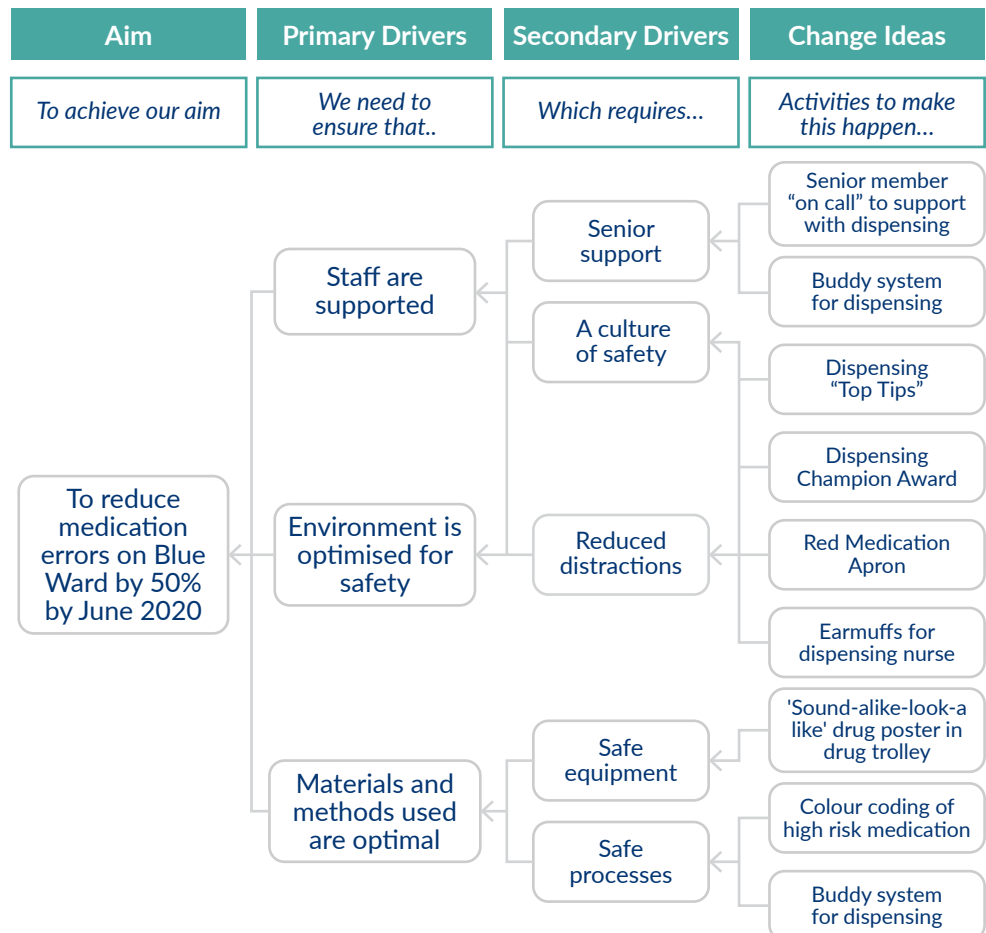
- **Aim** the goal you are trying to achieve
- **Primary drivers** high level contributors to the aim
- **Secondary drivers** sub categories that contribute to the aim
- **Change ideas** activities that may positively impact upon the drivers



Keep it current

A driver diagram should be a live document. Update it regularly as you learn more about your system and identify new drivers and ideas.

Below is an example of what a completed driver diagram looks like;



2 How will we know a change is an improvement?

What we measure – types of measures

There are three main types of measures that are used in QI projects: outcome, process and balancing measures:

| | | |
|--------------------------|---|---|
| Outcome Measure | This is used to measure progress towards the project aim. A baseline for this should be determined prior to commencing testing. | e.g. the number of medication errors on ward per week |
| Process Measure | This measures steps in the system or a change that we are making. | e.g. number of medication doses administered each day or number of interruptions during round |
| Balancing Measure | This measures the impact of our changes on the system; these can be positive or negative. | e.g. patient satisfaction or the time taken to complete a drug round |

How we measure – data collection

Identify a simple method of reliably collecting your data and the individual(s) who will be responsible for this. Determine how much data you will need and how frequently you will need to collect it to get a representative sample.




Little and often

As QI requires the testing of ideas, it is better to collect smaller amounts of data more regularly. Try to collect data daily or weekly so that you can quickly see if the change that you are testing is having the desired impact.

Why we measure – variation

Measurement is essential to track progress towards our aim (outcome), to track changes being made (process) and to check if the changes are causing any unintended consequences (balancing).


Quality improvement seeks to reduce unwanted variation in the performance of our system. To do this, baseline data is required (as discussed in Understanding the System), so that we know our starting point. A baseline is also helpful to ensure that the stated aim is realistic. Variation in the baseline data indicates the range of possible outcomes, while plotting data over time allows the visualisation of these fluctuations over time.



Baseline Data

Plotting baseline data at this stage is important to ensure you can see and measure the impact of making any changes. This will allow you to study the impact of changes and see clearly if they have the desired effect.

There are two types of variation that we study in QI:



Types of Variation

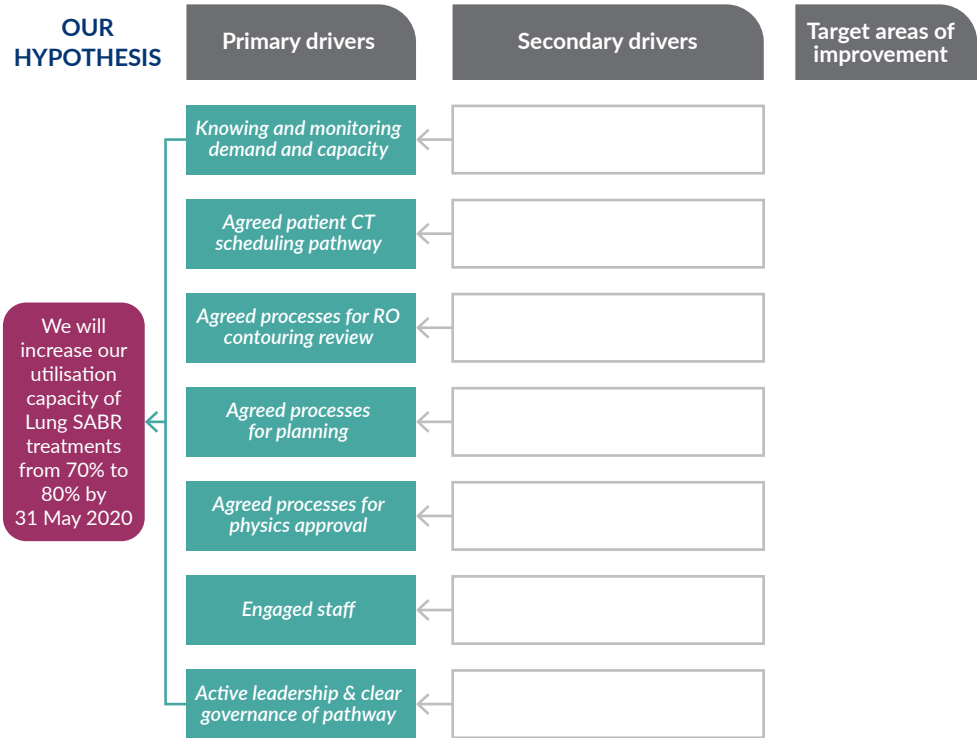
Common cause variation is random variation inherent in the processes of the system e.g. red traffic lights impacting duration of commute.

Special cause variation is non-random variation due to a factor that is not an intrinsic part of the system e.g. snowstorm impacting duration of commute (in Ireland!).


All special cause variation should be investigated as it is statistically likely that there is something in the system driving this variation. Finding out what this is can identify suggestions for improving the system.

This project was focused on increasing patient access to lung stereotactic ablative radiotherapy (SABR). The team specified their aim as increasing capacity from 70% to 80% by the end of May 2020. Based on this aim they devised the primary drivers that directly influence or impact the delivery of it.

Following this the team developed secondary drivers against each primary driver. This enabled them to identify the target areas for improvement.



3 What change can we make that will result in an improvement?

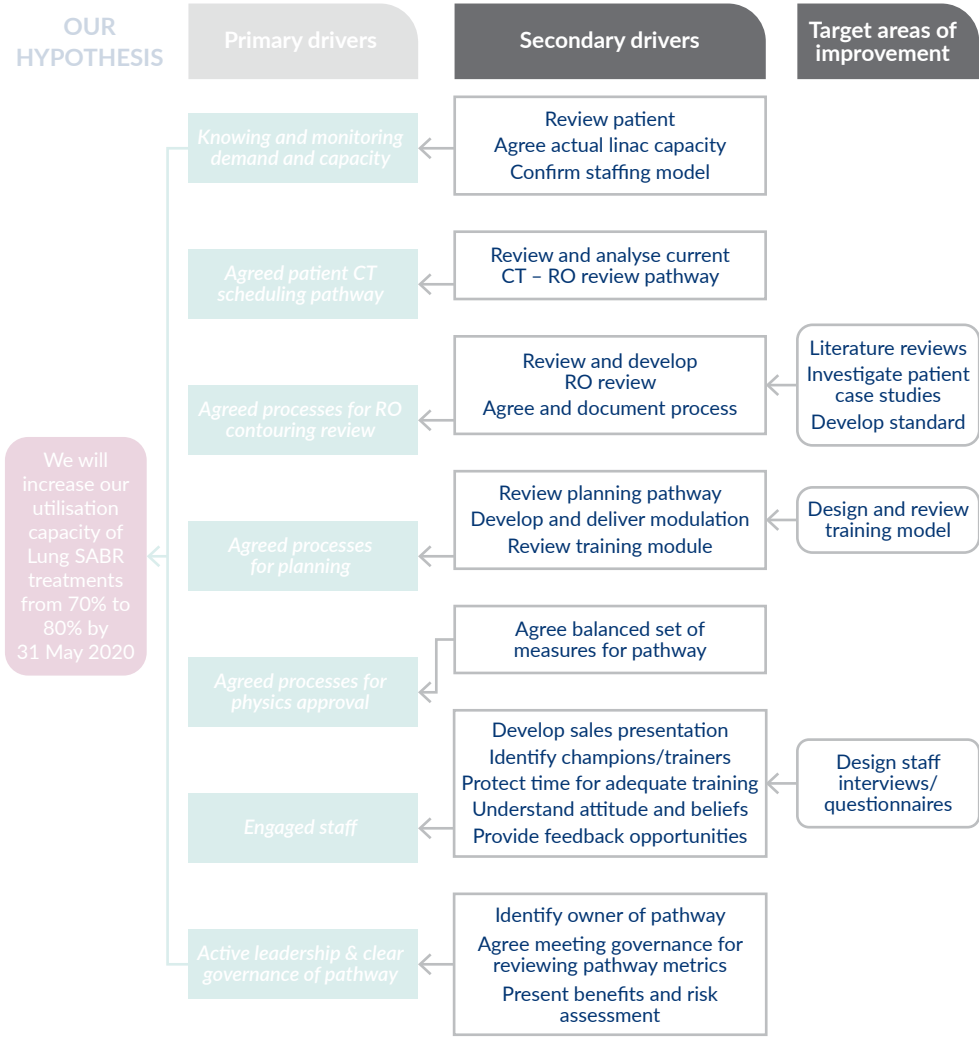


Change idea

A change idea is an improvement or solution that can be tested to see the impact on the system (measured as progress towards the aim).

The process of developing a list of change ideas can be carried out using simple brainstorming or divergent thinking techniques. These are creative techniques that encourage your team to think laterally about the problem to come up with new and different ideas.

QI methodology focuses on testing change ideas to see if they have the desired impact on the system and specifically, the aim/outcome. A theory of change helps to ensure that the ideas that you test are linked directly to your aim and that your hypothesis for testing these ideas is clear.



Section 5: Testing Change Ideas

With your driver diagram completed you can start testing change or improvement ideas. In this section the Plan, Do, Study, Act cycle part of the Model for Improvement is described.

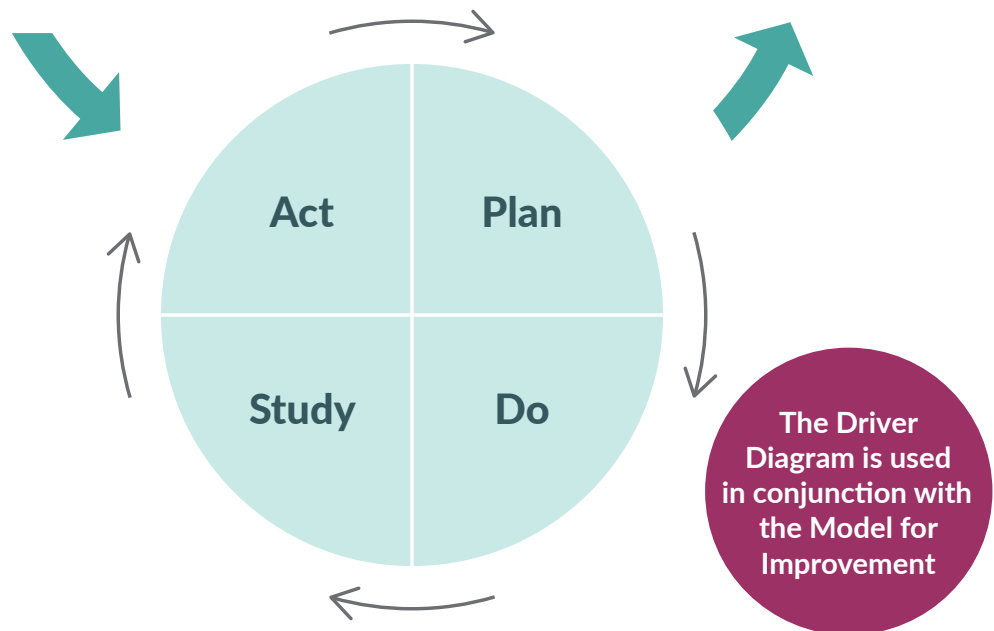
Plan Do Study Act Cycles

Following the development of a driver diagram and a list of change ideas, you need to decide which idea to test first. You will then move on to implementing a Plan, Do, Study, Act (PDSA) cycle. PDSA cycles are the engine of quality improvement. They allow you to test your theory of change in an iterative way.

1 What are we trying to accomplish?

2 How will we know a change is an improvement?

3 What change can we make that will result in an improvement?



Test your theory

Each test that you carry out should be a test of one of your change ideas from your driver diagram. It is a test of your theory of change.



Plan

Using your driver diagram, identify the driver you wish to begin with and select the individual change idea that you wish to test. Then plan exactly how you want to test the change idea.

A plan should incorporate the following elements:

| | |
|---------------|---|
| Why? | Ensure that you have a clear prediction or theory behind this idea. <i>e.g. I think that by having a dedicated 'quiet' space for doctors to write prescriptions will improve the accuracy and legibility of the script.</i> |
| Who? | Who will be the person on the ground testing the idea? Think back to your Project Champions (see Starting a QI Project) <i>e.g. Doctors and Nurses on the ward</i> |
| What? | What will you actually need to do on the day? <i>e.g. Doctor will need to go to the dedicated space to complete their prescriptions</i> What equipment will you need to carry out the test? <i>e.g. Desk space to use</i> |
| Where? | Where are you going to test the idea? <i>e.g. At the nurses station, with 4 patients from room 1 on the Blue Ward</i> |
| When? | When will you test the idea? Be exact - add in time, date etc. <i>e.g. On Tuesday morning at 10am (usually quietest so good place to start)</i> |
| How? | How many times/patients/people/pathways will you test the idea on? <i>e.g. 4 patients in room 1</i> How will you measure? Ensure you plan for data collection <i>e.g. Process measure – number of interruptions (document in notebook)</i> <i>e.g. Outcome measure – number of medication errors (measured KPI)</i> <i>e.g. Balancing measure – staff satisfaction (rating out of 5)</i> |



Start small!

Test a new idea on just 1 patient on the first go, then 3 patients, then 5 patients etc. This allows you to refine your idea in a small, low-risk way.

Task vs Test



Try to differentiate between tasks and tests when planning PDSA cycles.

Task: action you need to complete to enable you to test e.g. creating a checklist.

Test: something you need to try to see if it works e.g. trying the checklist in a clinic.



Do

Test your idea in practice according to the plan you developed. Record any data that you need to collect and document how the idea works in practice!

- e.g. Doctor A went to the dedicated space and completed prescriptions for 4 patients in Room 1. Wrote number of interruptions and nursing staff experience of ward round in notebook.



Study

Analyse the data and compare the actual results to predictions.

- e.g. Three people interrupted Doctor A as they were not aware of the project and the dedicated 'quiet' space

Summarise what was learned from the testing in this cycle.

- e.g. Staff were not aware there was a dedicated 'quiet' space for writing prescriptions and there were a few interruptions during the process.



Act

Based on your discussions in the “Study” phase, decide what you will do for the next cycle

Adopt: keep the change idea exactly as tested, perhaps test on a larger scale.

Adapt: make small alterations to the change idea you tested and test again.

Abandon: consider a totally different change idea from your driver diagram.

- *e.g. Before testing again talk to the nursing leaders for the ward and discuss how to inform more staff of the change you are trying to make. Following better communication about the project, do the same small test again.*

All improvements require change, but not every change is an improvement



If a test doesn't get the desired result, ask:

1. Was it conducted according to the plan?
2. Was the data collected properly?

If the answer to both of these questions is yes, it is likely that the idea you are testing is not an improvement on the current process.

Ready for more?

This guide describes, at a high-level, how to progress a QI project from an initial idea to a successful improvement in the workplace.

Here in RCPI we run several QI education programmes each year that focus on developing the key skillset associated with delivering QI across the healthcare system. Ranging from national collaborative learning to smaller team-based approaches, there is a wide selection of education models used.

To see what's on offer simply visit our website www.rcpi.ie

As part of our role as a professional body, we strive to facilitate the continuous development of QI across Ireland. We are continuing to develop a network of healthcare professionals who share their learning and work collaboratively together.

If you are interested in meeting others involved in QI and sharing your improvement experiences, please contact us by emailing qualityimprovement@rcpi.ie or through Twitter [@RCPI_QI](https://twitter.com/RCPI_QI).

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Notes



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