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# Guide to Quality Improvement

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West of  
England  
Academy

Part of the West of England  
Academic Health Science Network

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# Introduction

Anna Burhouse

## Welcome to our West of England Academy Guide to Improvement.

We know that one of the main ways NHS staff stay motivated is by knowing they have helped make a difference to patients and their families. We are lucky to have many people who are willing to use their hearts, minds and skills not only to do a good job on a daily basis, but also to think about how they can help to continuously develop and improve the quality and safety of services. The enthusiasm and passion they provide is invaluable and a great force for change.

This guide is specifically designed to be of interest to people who want to learn how to take this positive energy and combine it with an effective, scientific approach called Quality Improvement, or QI for short, to maximise the benefits for patients.

Using a methodical approach to improvement helps to identify what needs to change, generates creative solutions that can be quickly tested at small scale, refined and then spread at pace.

This can help to make a huge difference to patient outcomes, experience and safety, saving lives, money and wasted effort and time.

This guide will introduce you to some basic QI tools and methods that are quick to learn and easy to apply. Our West of England Academy ([www.weahsn.net/academy](http://www.weahsn.net/academy)) also offers a range of free resources, easy to use templates, links to e-learning, QI tutorials and films, and ways to meet like-minded people. You can also attend some of our free training programmes via our Education Pathway, which offers a three step approach to learning about QI, patient safety and innovation.

So go on – read this guide, join our Academy and use our Education Pathway – and get involved in QI work in your organisation. And do please let me know how you get on: [academy@weahsn.net](mailto:academy@weahsn.net) or Twitter @QIWEAHSN. I'd love to hear.



**Anna Burhouse**

Director of Quality, West of England Academic Health Science Network  
Consultant Child and Adolescent Psychotherapist  
Health Foundation Improvement Fellow  
Ashbridge Business School Leadership in Quality Improvement Alumni

# What is Quality?

The following dimensions of healthcare quality are widely recognised and universally accepted:

- **Safe:** avoiding harm to patients from care that is intended to help them.
- **Timely:** reducing waits and sometimes harmful delays.
- **Effective:** providing services based on evidence and which produce a clear benefit.
- **Efficient:** avoiding unnecessary waste.
- **Equitable:** providing care that does not vary in quality because of a person's characteristics.
- **Person-centred:** establishing a partnership between practitioners and patients to ensure care respects patients' needs and preferences.

Any aims to improve on these six dimensions should focus on:

- Avoiding needless deaths
  - Avoiding needless pain or surgery
  - Eliminating waste
  - Eliminating unwanted waits
  - Eliminating patients and carers feeling helpless
- Consistently: everyone, every time.

*Ref: 'Quality improvement made simple', The Health Foundation*

# Why Quality Improvement (QI)?

QI is not just a method or model, but more an approach to personal or organisational learning, development and improvement.

QI helps bring a systematic approach to tackling complex problems by:

- Focusing on outcomes
- Flattening hierarchies
- Giving everyone a voice
- Bringing staff and service users together to improve and redesign the way that care is provided.

Quality Improvement can be defined as the application of a systematic approach that uses specific techniques to improve quality. Although there is a range of approaches that fit under this umbrella, they all have the following in common:

- The concept of a cycle of improvement which involves problem definition and diagnosis, testing of change ideas, data collection and analysis, implementation and evaluation
- A set of tools and techniques that support individuals to implement the improvements
- A recognition of the importance of engaging stakeholders, including patients and carers
- A recognition of the importance of culture and the need for clinical and managerial leadership.

When done successfully, QI can change the culture of a system, whether the system is a single team, a department, an organisation or a health-economy.

# Starting to Think and Act like an Improver

This guide is intended as a springboard to help you on your way to understanding what Quality Improvement (QI) is and how to use this knowledge to improve the health system you work in.

One of the founding fathers of improvement science, William Edwards Deming, believes it takes four key areas of knowledge to lead successful improvement:

- **System thinking**

Understanding that sustainable improvement occurs when safer systems are put in place to reduce human errors – like when your computer asks if you're sure you want to delete a document

- **Variation**

Achieving excellent outcomes by reducing variations within a system

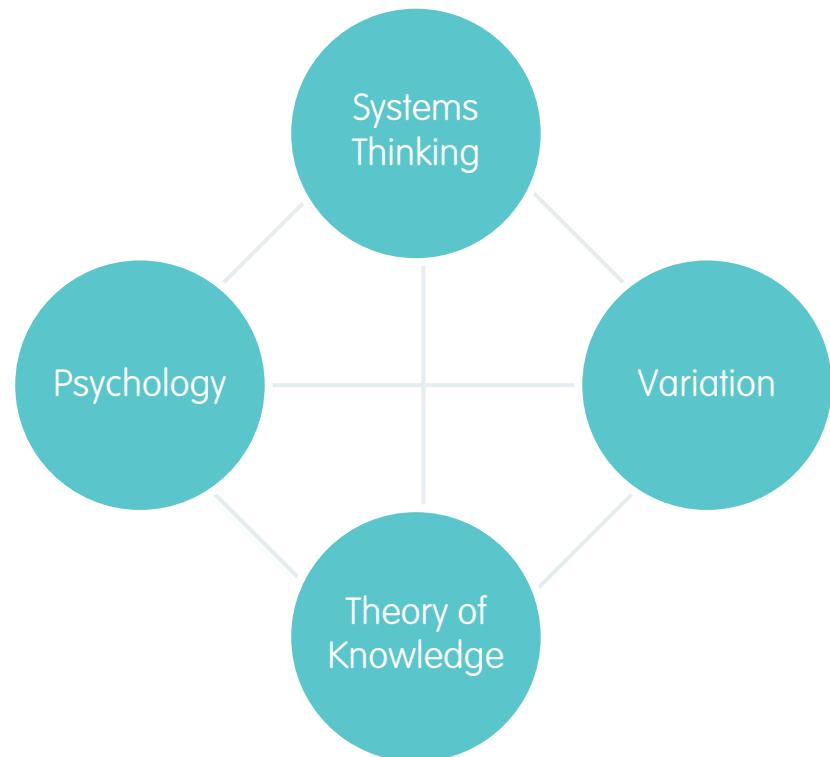
- **Psychology**

How we can motivate and encourage people to make and sustain changes

- **How to make change happen**

QI methods, tools and techniques.

## System of Profound Knowledge – William Edwards Deming



This guide focuses on the fourth area of knowledge: the QI methods, tools and techniques you can use to begin to think and act like an improver.

We offer an introduction to all these elements, and you'll find more detail in the Improvement Journey section of our website: [www.weahsn.net/improvement-journey](http://www.weahsn.net/improvement-journey).

For more useful information on the 'Habits of an Improver' see [www.health.org.uk/publication/habits-improver](http://www.health.org.uk/publication/habits-improver).

# Types of Improvement

It is broadly recognised that there are three types of improvement that can be made.

1

Reducing defects from the viewpoint of the patient or carer.

This focuses on the quality of all aspects of the service being provided.

2

Reducing cost/waste in order to improve efficiency.

See examples opposite, taken from Lean Methodology: [lean6sigma4all.eu](http://lean6sigma4all.eu)

3

Providing a new product or service, or an old one at an unprecedented level.

This focuses on new attributes that can exceed the patient or carer's expectations. For example, bringing new research into practice or the use of new innovative technology.

## The Eight Wastes

To remember the Eight Wastes, use the acronym DOWNTIME.

D Defects

O Overproduction

W Waiting

N Non-utilised talent

T Transportation

I Inventory

M Motion

E Extra-processing



Defects

Efforts caused by rework, scrap and incorrect information



Waiting

Wasted time waiting for the next step in a process



Transportation

Unnecessary movements of products and materials



Motion

Unnecessary movements by people (eg walking)



Overproduction

Production that is more than needed or before it is needed



Non-utilised talent

Under-utilising people's talents, skills and knowledge



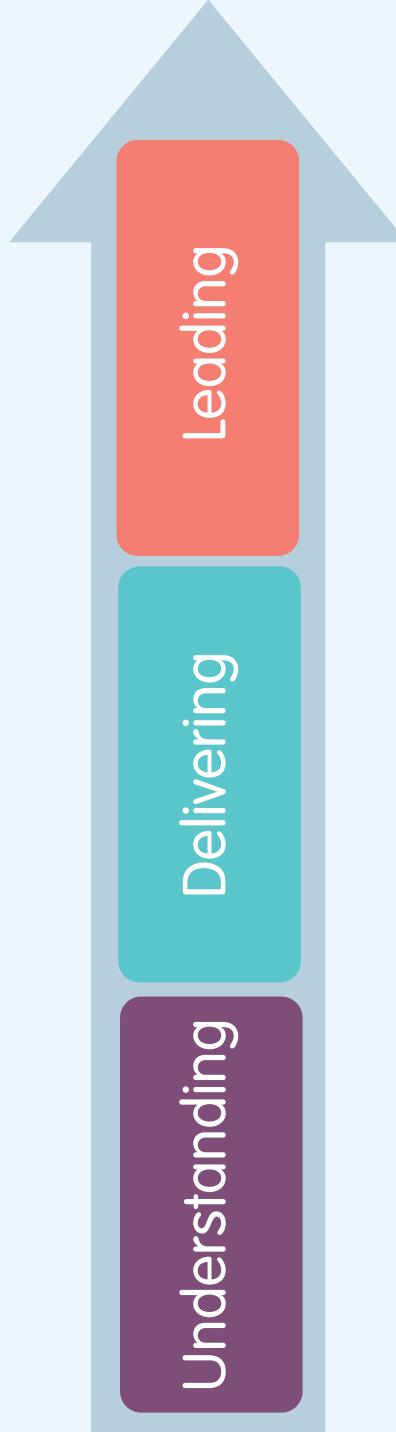
Inventory

Excess products and materials not being processed



Extra-processing

More work or higher quality than is required by the customer



## Education Pathway Steps

The West of England Academy's Education Pathway aims to provide staff with knowledge, confidence and support to undertake and lead on improvement projects that will deliver benefits to patient safety and patient care.

The Pathway has three steps: Understanding, Delivering and Leading.

### **Step One: Understanding**

Step One is an online training facility that signposts staff to established, high quality, online training material. It will provide staff members with base level knowledge and an understanding of QI science which will enable them to plan, support or lead, and deliver a QI project.

### **Step Two: Delivering**

Step Two will encourage and help staff to lead or support a QI project in their organisation. The Academy offers a unique opportunity for staff to obtain a BMJ Quality licence for free. The licence provides:

- Access to BMJ online training materials and case studies
- Mentoring support to improvement project leads
- The facility for improvement leads to publish their work on the West of England Academy page of the BMJ Quality website, supporting the spread and adoption of innovation and great practice.

Staff members can apply for a licence on completion of Step One or confirmation the knowledge offered in Step One has already been acquired.

### **Step Three: Leading**

Our aim is to develop a faculty of QI expertise in the West of England who will enthuse colleagues and support wider use of QI science and tools to deliver greater improvements to care and safety.

For more information, go to the West of England Academy website: [www.weahsn.net/academy](http://www.weahsn.net/academy)

## Improvement Journey

The West of England Academy's online **Improvement Journey** is a framework for planning, testing and delivering improvement by way of a QI project.

This five phase systematic approach can be used, no matter how complex the problem you are trying to fix, or challenging the change you need to make.

Each phase outlines the approach you should take and the output you should aim for. On completion of each phase you can move onto the next, until the project has achieved the overall aims and is completed.

Additionally, within each phase we signpost you to information on relevant tools and resources. These include templates to download, video clips, information sheets, online resources and learning modules.

**Over the following pages we give you an overview of each phase and provide an example of one or two of the QI tools available.**

All tools and resources are available on the West of England Academy website:  
[www.weahsn.net/improvement-journey](http://www.weahsn.net/improvement-journey)

# Improvement Journey

# Improvement Journey



Phase	Approach	Methods / Tools	Output
<b>1. Define the problem</b>	Identify problems or service shortcomings.	<ul style="list-style-type: none"> <li>• Root Cause Analysis: 5 whys, cause and effect (Fishbone), force field analysis, affinity diagram</li> <li>• Process / value stream mapping</li> <li>• Safety culture</li> <li>• Understanding data <ul style="list-style-type: none"> <li>– Pareto analysis</li> <li>– Patient &amp; staff experience data</li> </ul> </li> <li>• Trigger tools</li> <li>• Topic scoping and research</li> </ul>	Define the problem, diagnose why the problem exists and what improvement would look like.
<b>2. Develop a shared purpose</b>	Form a team of enthusiasts who are resilient, passionate and committed to delivering improvements.	<ul style="list-style-type: none"> <li>• Leading and influencing</li> <li>• Human dimensions of change</li> <li>• Project management</li> <li>• Human factors</li> <li>• Communication and stakeholder engagement</li> </ul>	Establish a clear aim for an improvement in patient safety / care – that aligns with organisational and quality improvement objectives.

Phase	Approach	Methods / Tools	Output
<b>3. Plan and implement the changes</b>	Formulate, prioritise and test solutions – be clear about the benefits to patients.	<ul style="list-style-type: none"> <li>• Deming's System of Profound Knowledge</li> <li>• What is Systems Thinking?</li> <li>• Logic Model / Driver Diagram</li> <li>• Model for Improvement</li> <li>• Lean</li> <li>• Six Sigma</li> <li>• Generating ideas and creative thinking</li> <li>• Theory of Constraints</li> <li>• Demand and Capacity</li> <li>• Experience Based Co-design</li> <li>• Understanding variation</li> <li>• Designing reliable processes</li> </ul>	Complete a Project Charter to detail proposed improvement, including investment required and potential benefits to patients.
<b>4. Test and measure improvement</b>	Test, review and re-test improvements – in order to find a solution.	<ul style="list-style-type: none"> <li>• Measurement for improvement</li> <li>• Run charts</li> <li>• SPC charts</li> <li>• Return on Investment (ROI)</li> <li>• Evaluation</li> </ul>	Solution identified that demonstrates 'change' is an improvement in quality and safety without negative consequences.
<b>5. Implement, embed and sustain</b>	Implement the improvements widely, using project management methodology and appropriate governance.	<ul style="list-style-type: none"> <li>• Sustainability</li> <li>• Spread and diffusion</li> <li>• Large-scale change</li> </ul>	Formalised procedure in place to ensure the improvement is embedded into routine practice and sustained with governance arrangements. Project completed. Share learning for others to adopt.

# Phase One: Define the Problem

1

## Phase One: Define the Problem

Phase	Approach	Methods / Tools	Output
1. <b>Define the problem</b>	Identify problems or service shortcomings.	<ul style="list-style-type: none"><li>• <b>Root Cause Analysis:</b> 5 whys, cause and effect (Fishbone), force field analysis, affinity diagram</li><li>• Process / value stream mapping</li><li>• Safety culture</li><li>• Understanding data<ul style="list-style-type: none"><li>– Pareto analysis</li><li>– Patient &amp; staff experience data</li></ul></li><li>• Trigger tools</li><li>• Topic scoping and research</li></ul>	Define the problem, diagnose why the problem exists and what improvement would look like.

# Root Cause Analysis

## What is Root Cause Analysis?

What we see as a problem that needs fixing is often not the cause of the issue at hand. Sometimes we need to explore the problem in depth to find out the true cause, or, the root cause.

Root Cause Analysis (RCA) investigation is a well-recognised way of doing this. It is used to identify areas for change and to develop recommendations which deliver safer care for patients. It seeks to:

- Determine what happened
- Understand why it happened
- How to reduce the likelihood that it will happen again.

There are various tools you can use to undertake a root cause analysis - for example, the Five Whys Technique.

## The Five Whys Technique

By asking the question 'why?' you can peel away the layers of an issue to get to its root cause. It can uncover the root cause of a problem that has occurred during a project or programme. It not only uncovers glitches in the delivery, but also issues with organisational or team processes.

Reasons for a problem can often lead into another question. You may need to ask why fewer or more than five times to get to the origin of a problem. Remember to:

- Avoid assumptions and encourage your team to keep drilling down to the real root cause of a problem
- Focus your resources in the correct areas and make sure the right action is taken
- Ground your answers in fact, avoiding listing events that might have happened.

# Phase Two: Develop a Shared Purpose

2

## Phase Two: Develop a Shared Purpose

Phase	Approach	Methods / Tools	Output
<b>2. Develop a shared purpose</b>	Form a team of enthusiasts who are resilient, passionate and committed to delivering improvements.	<ul style="list-style-type: none"><li>• Leading and influencing</li><li>• Human dimensions of change</li><li>• Project management</li><li>• Human factors</li><li>• <b>Communication and stakeholder engagement</b></li></ul>	Establish a clear aim for an improvement in patient safety / care – that aligns with organisational and quality improvement objectives.

# Stakeholder Engagement

To improve service delivery processes you may need to actively engage a wide variety of people who have an interest in your project, such as clinicians, administrative staff, patients and user groups. Thorough analysis and proper planning will help.

Here are some key steps to effective stakeholder management:

## 1. Identify your stakeholders

Assemble a group of subject matter experts to brainstorm a list of all the people and groups likely to be affected by the proposed change. See our website for a list of '9C's' which might help you identify who your stakeholders are.

## 2. Prioritise your stakeholders

Analyse the stakeholders in terms of their power over your project or change initiative.

## 3. Understand your key stakeholders

It is important to know more about your key stakeholders and their level of interest in your project, such as how are they likely to feel about and react to your intended project outputs?

<b>High power</b>	<b>Satisfy</b> Opinion formers. Keep them satisfied with what is happening and review your analysis of their position regularly.	<b>Manage</b> Key stakeholders who should be fully engaged through full communication and consultation.
<b>Low power</b>	<b>Monitor</b> This group may be ignored if time and resources are stretched.	<b>Inform</b> Patients often fall into this category. It may be helpful to take steps to increase their influence by organising them into groups or taking active consultative work.
	<b>Low impact / stake holding</b>	<b>High impact / stake holding</b>

## 4. Managing your stakeholders

From the stakeholder mapping and analysis the project team can devise a communications plan that sustains supporters' interest and commitment and wins round doubters. A simple plan will include the following information for each stakeholder or group of stakeholders:

- Method of communication: presentations, emails, newsletter, meetings, etc.
- Frequency of communication: monthly, weekly, daily, etc
- Key messages you want to give regarding progress.

# Phase Three: Plan and Implement Changes

3

## Phase Three: Plan and Implement Changes

Phase	Approach	Methods / Tools	Output
<b>3. Plan and implement the changes</b>	Formulate, prioritise and test solutions – be clear about the benefits to patients.	<ul style="list-style-type: none"><li>• Deming's System of Profound Knowledge</li><li>• What is Systems Thinking?</li><li>• <b>Logic Model / Driver Diagram</b></li><li>• <b>Model for Improvement</b></li><li>• Lean</li><li>• Six Sigma</li><li>• Generating ideas and creative thinking</li><li>• Theory of Constraints</li><li>• Demand and Capacity</li><li>• Experience Based Co-design</li><li>• Understanding variation</li><li>• Designing reliable processes</li></ul>	Complete a Project Charter to detail proposed improvement, including investment required and potential benefits to patients.

# Model for Improvement

The Model for Improvement is a systematic approach to testing your ideas for making improvement. It is a widely recognised process in healthcare and frequently creates positive outcomes for improvement. The model is not time consuming. In fact it is popular because it requires a fast approach of testing ideas to see if they work. Test small, fail quickly and move on to a new idea, or hopefully, see results and begin to spread the change.

The approach relies on three key questions:

- What are we trying to accomplish?  
(Develop a clear aims statement)
- How will we know that a change is an improvement?  
(Decide what you will measure)
- What changes can we make that will result in improvement?  
(What are your ideas to make improvements – refer to ideas from your Driver Diagram, see page 30).

These questions are answered by testing change ideas using PDSA cycles, which are a fantastic way of taking ideas, trying them in practice, learning what works and what doesn't to help you achieve success.

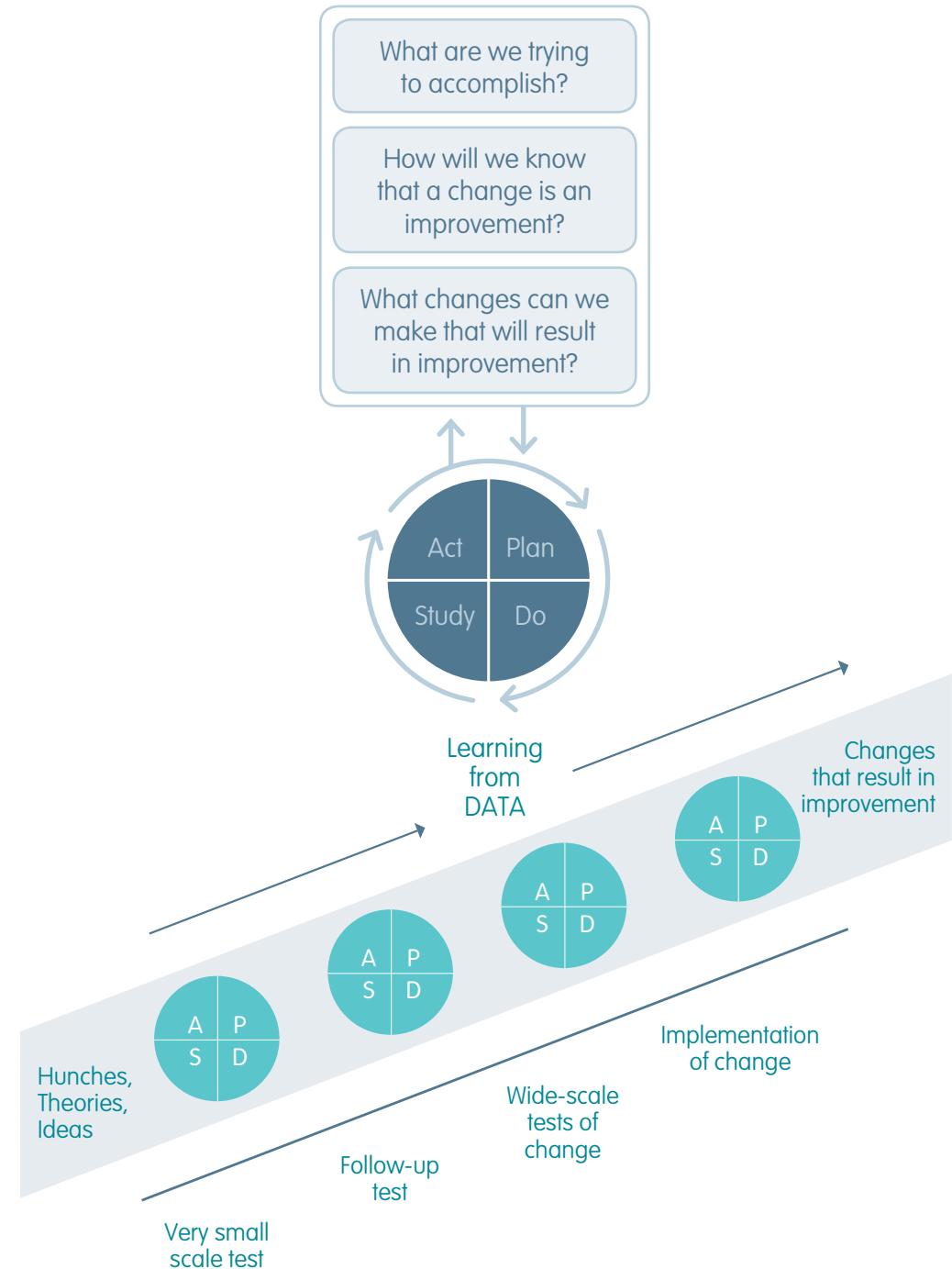
**Plan:** the change you want to test

**Do:** carry out the test

**Study:** observe and learn from the test

**Act:** determine what should happen next based on the success of the test.

It usually takes a number of short testing cycles to refine a change idea before it is ready for full implementation.



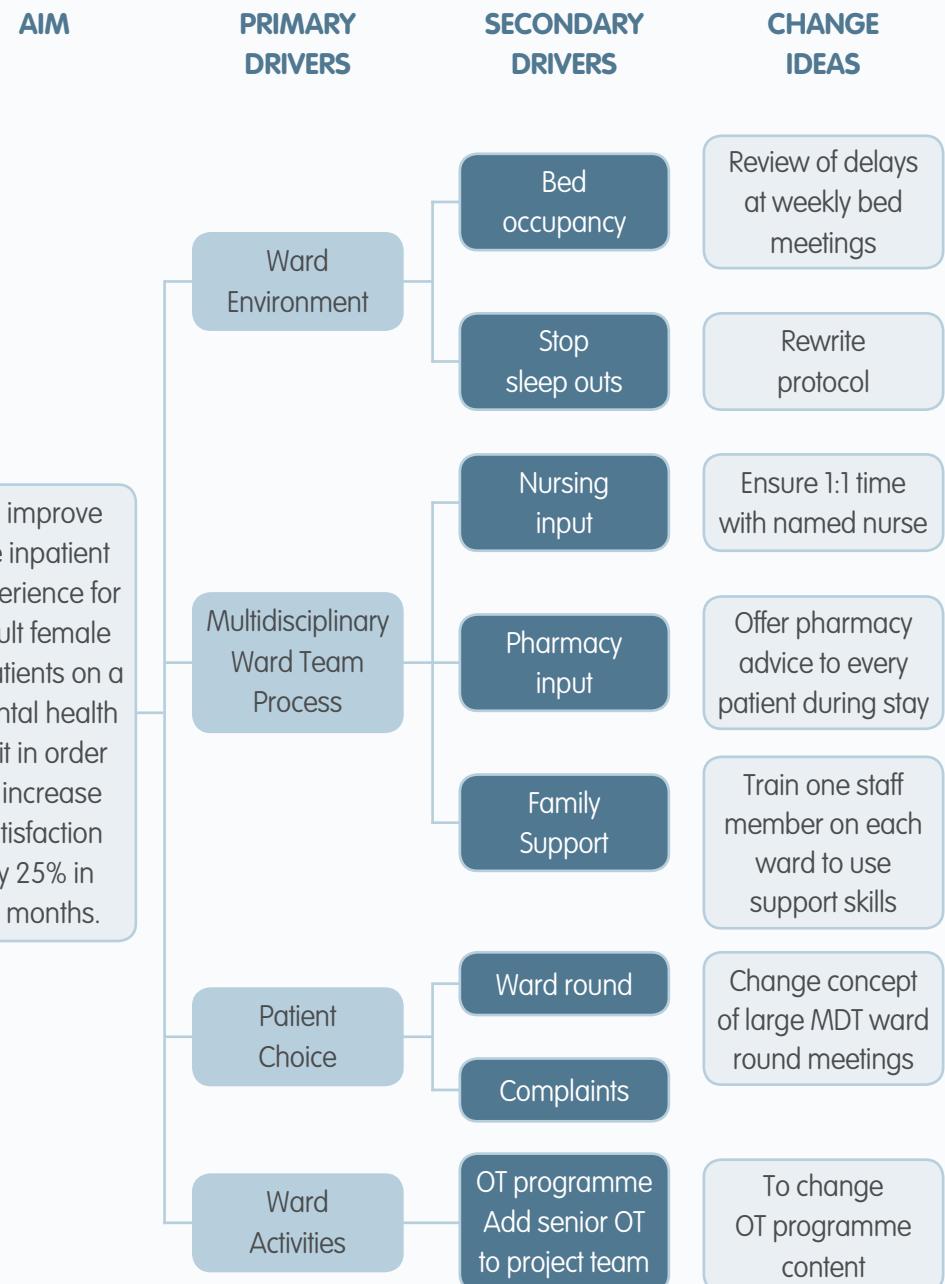
# Driver Diagram

Driver diagrams are a type of structured logic chart with three or more levels:

- a goal or vision
- the high-level factors that you need to influence in order to achieve this goal (called ‘primary drivers’)
- specific projects and activities that would act upon these factors (called ‘secondary drivers’).

Four steps for a successful driver diagram:

1. Set out what you want to achieve in your Aim. Make it specific and measurable.
2. Identify the big topics and important areas that need to be addressed to achieve your aim in the Primary Drivers, such as Patient Choice.
3. Consider which activities can positively influence the Primary Drivers. In the case of Patient Choice it might be complaints or a ward round. These are Secondary Drivers, which can influence more than one Primary Driver and help you identify relevant Change Ideas.
4. Think very carefully about your Change Ideas. They should have an effect on at least one Secondary Driver and help achieve your aim. These are the important changes that will go into your project plan.



## Phase Four: Test and Measure Improvement

# Phase Four: Test and Measure Improvement

# 4

Phase	Approach	Methods / Tools	Output
<b>4. Test and measure improvement</b>	Test, review and re-test improvements – in order to find a solution.	<ul style="list-style-type: none"><li>• Measurement for improvement</li><li>• <b>Run charts</b></li><li>• SPC charts</li><li>• Return on Investment (ROI)</li><li>• Evaluation</li></ul>	Solution identified that demonstrates 'change' is an improvement in quality and safety without negative consequences.

# Measuring for Improvement

## – Run Chart

Measuring for improvement is different from measuring to manage performance or for research purposes. It does not seek to prove or disprove whether clinical interventions work – it seeks to answer key questions; “how do we make it work here?” or “How do we know a change is an improvement?”

### Types of measures

1. **Outcome measures** reflect the impact on the patient and show the end result of your improvement work
2. **Process measures** reflect the way your systems and processes work to deliver the outcome you want.
3. **Balancing measures** reflect what may be happening elsewhere in the system as a result of the change. This impact may be positive or negative.

Collecting data is an important element of any improvement project, and an effective tool to help you review and analyse the data is a Run Chart.

### Run Charts

Small amounts of data can be collected regularly and compiled into ‘run charts’ to review the impact of a change over a period of time.

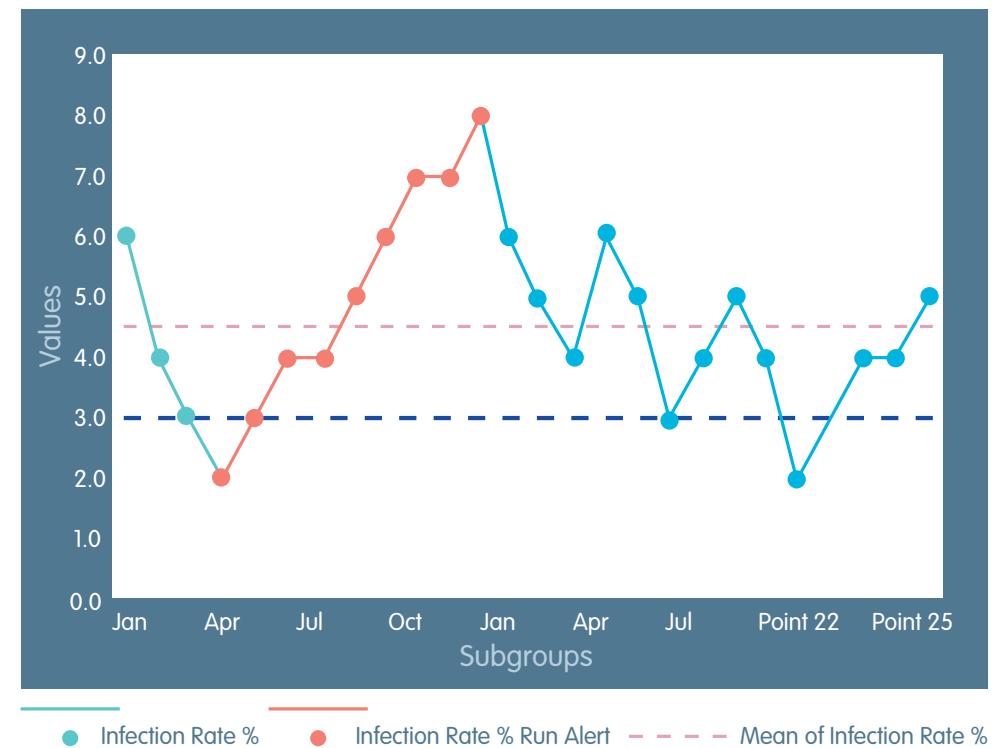
Run Charts focus on variation.

NB. There is an important distinction between these and snapshot audits:

- A run chart acts a bit like a camcorder, showing you every up and down.
- Snapshot audits are more like a camera, taking a picture of what things look like at just one point in time.

To show that things have improved you need to show the things that have changed, and that the change is not a one off. You must consider whether the change has been sustained. A Run Chart allows you to see if this has happened.

Typically a Run Chart has two axis that measure: 1) the impact of change (vertical) against 2) time (horizontal). It gives a pictorial view of changes being tested or implemented.



# Phase Five: Implement, Embed and Sustain

5

## Phase Five: Implement, Embed and Sustain

Phase	Approach	Methods / Tools	Output
<b>5. Implement, embed and sustain</b>	Implement the improvements widely, using project management methodology and appropriate governance.	<ul style="list-style-type: none"><li>• Sustainability</li><li>• Spread and diffusion</li><li>• Large-scale change</li></ul>	Formalised procedure in place to ensure the improvement is embedded into routine practice and sustained with governance arrangements. Project completed. Share learning for others to adopt.

# Spread – Dissemination versus Diffusion

Spread can be defined as the process of communicating and sharing new ideas or innovations outside the original system. This process is important because it increases the impact of successful improvement for more patients.

There are two widely-recognised approaches to spread: dissemination and diffusion. It must be noted that these are the two ends of the spectrum and not distinct and independent approaches.

When planning spread, a combination of both approaches is recommended as both can be effective ways of spreading innovations.

	Dissemination	Diffusion
Definition	Spread of innovation is planned, formal, centralised and occurs through vertical hierarchies.	Spread of innovation is unplanned, informal, decentralised and largely horizontal or peer-mediated.
Methods	Wide range of methods: <ul style="list-style-type: none"><li>• Presentations at events and meetings</li><li>• leaflets</li><li>• peer-reviewed publications</li><li>• formal dissemination programmes</li><li>• websites</li></ul>	<ul style="list-style-type: none"><li>• Word of mouth through existing professional and social networks.</li><li>• Use of opinion leaders, champions and boundary spanners can accelerate the diffusion of innovation.</li></ul>
Strengths of approach	The message and means of communication used can be tailored depending on the target audience.	Fewer resources required, as it happens more naturally and organically. Effective if influential key people buy into the idea.
Weaknesses of approach	It usually attracts early adopters only. Often the initial will of early adopters fades away before any action has been taken.	No control of the message and its reach.

# Join the QI movement

# Notes

Hopefully a read through this guide has whetted your appetite to learn more about QI and put some of your new knowledge into practice.

So, go on... get involved! Here are some tips to help you:

- Keep this guide near you as a point of reference – and show it to your colleagues. More are available free by emailing [academy@weahsn.net](mailto:academy@weahsn.net).
- This booklet gives you a taster of the many QI tools and approaches that are available. To learn more, go to the West of England Academy web pages ([www.weahsn.net/academy](http://www.weahsn.net/academy)) where you will find the Improvement Journey. This is a great library of resources organised in a way that guides you from how to get started through to how to share your results at the end of the work. It also signposts you to some of the best QI resources available and helps you to find the tools and methods you will feel most comfortable with.
- Demonstrate the knowledge you are gaining through our Education Pathway – and get your QI passport stamped. It is a recognised achievement across the West of England and you can apply for a **free** BMJ Quality licence to support your QI project and then write it up for publication.
- Meet fellow QI enthusiasts in your organisation; contact your Improvement Coach and ask how you can get involved. Email [academy@weahsn.net](mailto:academy@weahsn.net) for the name of your Improvement Coach(es).
- Best of all – get involved by joining a project team or leading a project yourself. It doesn't matter how small the project and it doesn't have to be delivered in a clinical setting. QI works for finance teams, hotel services, HR teams, estates (the list goes on!) as well as for health professionals.

We can all play an important role in transforming care for our patients.  
Lots of small changes can make a **HUGE DIFFERENCE!**

# Notes

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For much more information on how to lead or contribute to an improvement project see the Improvement Journey pages on the West of England Academy website at [www.weahsn.net/the-improvement-journey](http://www.weahsn.net/the-improvement-journey).