

Improving care, delivering quality



# The Quality Improvement Guide

*for Educators and Students*  
(Second Edition)



[www.1000livesplus.wales.nhs.uk](http://www.1000livesplus.wales.nhs.uk)

## What they're saying about The 1000 Lives Plus Quality Improvement Guide for Educators and Students

“In healthcare systems, even small changes in the way we operate can provide our clients, and their carers and family, with a much better experience of care. Embedding a standardised approach to improvement in education programmes is important to enable students to try a small change, to see what effect it has, and to begin making cumulative improvements for the benefit of all service users.”

**Dr Malcolm Godwin, Head of the School of Health Sciences in Bangor and chair of the All Wales Nursing and Midwifery Pre-registration Group**

“The aim of improvement is always aspirational, but for it to happen it has to be founded on practical ideas. It is about changing the way we do things to make sure that what we do is at the highest level of quality. Students need to be inspired to improve from the outset and this guide will help all students working within NHS Wales, and those who are responsible for teaching them, to find practical ways to support and lead changes that improve the quality of care patients receive.”

**Dr Chris Jones, Medical Director, NHS Wales**

“Learning about quality improvement in a practical way is beneficial and not time consuming.”

**Jane Lewis, Student**

“Everyone who is studying to become a healthcare professional needs tools and the skills to make change that really works and has a lasting impact; and in the process engenders a culture of continuous improvement. This guide is a really useful companion for everyone on the journey to a better, safer future.”

**Sue Lister, Emeritus Professor of Quality & Safety in Healthcare**

“Training to work in healthcare gives numerous opportunities to make a significant difference in the lives of people. We have to be continually seeking to learn - and this guide from 1000 Lives Plus provides a great template for introducing new ideas and learning from them. It will equip all healthcare students to better meet the needs of patients.”

**Lucy Baross, Student**

“The concepts in this guide can be applied by teams across healthcare to make concrete improvements in quality and safety. Students are ideally placed to bring new ideas and fresh thinking into systems that may have grown tired and stale. Using the methodology outlined in this guide, students can become a force for positive change in all healthcare environments.”

**Jane Jones, Assistant Director, The Health Foundation**

“I'm delighted that students studying pharmacy can now get an introduction to quality improvement and how to apply it through this special guide. Making small changes can have a big impact on medicines safety and this methodology is ensuring that patients get the best from their medicines. I will be urging all pharmacy students to make sure that they understand and are applying quality improvement during their training and throughout their career in pharmacy.”

**Paul Gimson, Director, Royal Pharmaceutical Society, Wales**

# The 1000 Lives Plus Quality Improvement Guide for Educators and Students

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## The 1000 Lives Plus Quality Improvement Guide for Educators and Students

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Published by 1000 Lives Plus, 14 Cathedral Road, Cardiff CF11 9LJ

Phone: (029) 2082 7648

Email: [1000livesplus@wales.nhs.uk](mailto:1000livesplus@wales.nhs.uk)

Web: [www.1000livesplus.wales.nhs.uk](http://www.1000livesplus.wales.nhs.uk)

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# 1

## An Introduction to the Guide

*Establishing a  
standardised improvement  
methodology will help  
deliver the highest quality  
and safest care for the  
people of Wales.*

## Introduction

In common with most large organisations in healthcare and elsewhere, at NHS Wales we need to improve in order to provide the best possible care and reduce harm, waste and variation in the system. The experience of the health service, and of people in Wales, is that excellent care can be provided, but it's not always provided reliably and consistently.

The 1000 Lives Campaign, and now the 1000 Lives Plus programme, also show that those working within NHS Wales are committed to improving. However, the biggest challenge has been using the right techniques to achieve improvement. This has sometimes given the impression that there is a lack of commitment, but we know that nobody wants to do harm or do a poor job for their patients.

The purpose of this guide is to describe a useful set of techniques and show how they can be applied in different settings to encourage everyone - the public, health professionals, support staff, students and educators - to explore how they can use these techniques in their work. The aim is to create a shared understanding and language to set about improvement.

The first question that needs to be asked is: "How should we set about making this improvement?" Scientific models which promote and support new knowledge, exciting innovations and best practice offer one-off solutions, but they're not improvements. They can distract from the regular and often painstaking work of providing a reliable service and continuous improvement. The good news is that there are better ways to manage improvement, but we will need to learn them (Berwick 1992 I and Berwick 1992 II).

Improvement will only be maintained and spread if those techniques are widely understood and shape the way that whole organisations work (Shortell, 1998).



**For improvement to be maintained there must be:**

**Will** - we must want to improve;

**Ideas** - we must know what to try; and

**Execution** - we must know how to change.

(Berwick, 2003 and Nolan, 2007)

This guide does not cover every aspect in detail. The themes are explored further in the 'How to Improve' and 'Leading the Way to Safety and Quality Improvement' guides available at [www.1000livesplus.wales.nhs.uk](http://www.1000livesplus.wales.nhs.uk)

In the first section of this guide, three examples are used to illustrate the point being made.

**1** Improving population health is from a well-known initiative in Wales which worked to reduce known health risks for the people it serves. It shows how a clear distinction between process and outcome can lead to purposeful work in everyday practice. This groundbreaking work, carried out 40 years ago, illustrates that there is nothing new in the modern approach. (Tudor Hart, 1970)

**2** Road safety is a hypothetical example that refers to how to prevent deaths and injuries due to road traffic. This example has been deliberately chosen because it is from outside healthcare. It shows that the same methods can be used in a wide range of improvement efforts.

**3** Improving stroke care shows how people in Wales can receive better treatment. It applies the method to improve the way services are organised and provided. This example shows how anyone who has a stroke should receive the same evidence-based care within an appropriate time frame wherever and whenever they have their stroke.



# 2 The Role of Education

*To continually improve the quality of care, improvement science must be reflect in all training for healthcare professionals.*

## The Role of Education

The education and training of healthcare professionals in the UK is second to none. Most healthcare professionals coming to the UK from other countries have to do 'top-up' training to bring them to our standards - set by the Nursing & Midwifery Council (NMC), the Health Professions Council (HPC) and the General Medical Council (GMC). So we can say with confidence that the NHS workforce is made up of highly trained clinical skills experts, yet things still go wrong.

The common behaviour of NHS managers when things go wrong is to send staff for re-training - to improve their clinical skills. However, it is rarely their clinical abilities that have failed. On closer examination, it is usually the systems and processes within an organisation that have undermined or prevented the healthcare professional(s) from performing their clinical tasks to their full capability.

Despite knowing this, systems thinking has not historically been part of the curricula for healthcare professionals. Meanwhile, healthcare systems are failing and the services are not yet at the standard that many of us want them to be. Being a better practitioner will not solve the problems that are detracting from the quality of the care currently provided.

To tackle this, the accrediting bodies for healthcare professional training and education (NMC, HPC & GMC) now all require quality and service improvement to be incorporated into the curricula of healthcare professionals in some form.

The task now is for the health schools and faculties of the UK universities to develop programmes to teach quality and service improvement and to embed them into their curricula.

This guide aims to highlight some simple, tried and tested methods of teaching quality and service improvement. It amalgamates improvement knowledge with good pedagogy so that we can support the provision of better, safer healthcare - and as a by product, reducing waste.

For more information,  
please visit:  
[www.1000livesplus.wales.nhs.uk/  
teaching-and-educational-support](http://www.1000livesplus.wales.nhs.uk/teaching-and-educational-support)



# 3

## Student Involvement in Improvement

*Students are ideally placed to identify and implement improvements - good quality care is everyone's responsibility.*



## Student Involvement in Improvement

One of the key concerns expressed by students when considering getting involved in quality improvement is that there is little they can do as a 'lowly student.' However, providing good quality care is everyone's responsibility. Students have a fresh pair of eyes, they can see things that others either no longer notice or they are so busy 'doing the job' they can't see a solution. Students are ideally placed to identify and implement improvements.

The first caveat to deal with is that this level of improvement is not about tackling negligence, incompetence and inadequate clinical skills. There are systems for dealing with these issues and if you come across them as a student you should discuss it with your practice support staff (mentor, facilitator, preceptor, etc.) or with your university tutor. It should not be ignored, but you are not responsible for managing at this level.

As a student one of the best ways of considering how to improve care is to reflect on situations when you have felt that optimal care was not provided. These are the experiences you have with patients that leave you thinking, 'that could have gone better,' or 'it shouldn't have been like that,' or 'I know that patient isn't happy'.

Take time now to reflect on a situation you came across in your last placement where you felt like this. It could be a communication issue - between either the staff and the patient or within the team. It could be that staff don't follow procedures which creates difficult situations. It could be that you carried out a process on another placement (in a different ward/unit/hospital) in a way that you consider to be better for the patient and can see how it could be done better. It could be anything!

Once you have identified an issue that you would like to improve, to prevent it happening again, discuss it with staff and colleagues. Explain why it makes you uncomfortable or why you think the patient is not getting the best care. Then ask if you can look at it to see if you can suggest an alternative way of doing things. Once an issue is drawn to peoples' attention, while they may be sceptical that they can do anything else, they rarely oppose trying to make things better, especially if you are volunteering to do it.

The next step is to use all the resources available to you to get support and help in developing your improvement project. Many healthcare professional students are now studying quality improvement tools and techniques as part of their pre-registration courses and have to undertake improvement projects as part of their assessed course. If you are, use this to support your initiative. However, there are other resources widely available for students of healthcare, for example the Institute for Healthcare Improvement (IHI) Open School.

The IHI Open School is an international organisation with university or hospital based Chapters (local groups) all over the world. There are currently nearly 40 Chapters in the UK. It is an interprofessional educational community that gives students the skills to become change agents in healthcare improvement.

These are skills that include quality improvement, patient safety, teamwork, leadership, and patient-centered care which can all be studied through online courses provided free by the IHI Open School. There are no applications, no admissions requirements and no deadlines for coursework. It is an educational community that's free and open no matter where you are.

In addition to your own School/Faculty and the IHI Open School, there is a lot of literature to help you. The Model for Improvement (Langley, et al, 1996) on page 28 is tried and tested and is simple enough to help you through the process. In addition the examples of student improvement projects on page 61 will also show you that improvement projects are possible for students to undertake.

### Further reading

Gawande A (2010) *The Checklist Manifesto - How to get things right.* Profile Books, London.

NHS Institute (2007) *The Improvement Leaders' Guides.* The NHS Institute for Innovation and Improvement. Available online at [www.institute.nhs.uk/improvementleadersguide](http://www.institute.nhs.uk/improvementleadersguide)

Scholtes PR, Joiner BL, Streibel JL (2003) *The Team Handbook - 3rd Edition.* Oriel Inc.

*Students can get involved by joining the 1000 Lives Plus Student Chapter. To find out more, see page 86.*



# 4

## Person Centred Care

*Encouraging students to think about what they are doing, why, and how they can improve the system is going to be beneficial to all patients and healthcare as a whole.*

## Putting the person at the centre of all care delivered

The people we care for are at the heart of all that we do, the starting point should always be what is best for the person as a whole.

Analysing the real life experiences of people in your care helps to determine what individuals want and expect from their care.

Patients are not outsiders to the healthcare system. In many ways, they are the only true ‘insiders’. They are the ones who experience healthcare most personally - the reliability of the system and effectiveness of treatment can literally be a matter of life or death to a patient.

Person centred care is a priority in healthcare as evidence shows that it can lead to improved quality, reduced waste, a better experience of care, and better use of resources.

A popular definition of person centred care comes from the Institute of Medicine: ‘Providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions’.

However there are a number of definitions available from across the globe and they all have common themes around:

Improvement through the eyes of the public.

Involvement in decision making and respect for patients’ preferences.

Empathy, dignity, compassion and emotional support.

Clear, comprehensible and timely communication.

Fast and smooth access to optimal care.

Education and empowerment to self manage/care.

A genuine partnership between the public and healthcare professionals must exist to design and deliver true person centred care. To achieve this, staff needs to view the services being delivered through ‘the patients’ eyes’, in order to meet their needs in the ways most valuable to them.

Three simple questions that are helpful in achieving person-centred care are:

1. *What does the person need/want?*
2. *What is important to the person as the initial need for a service arises?*
3. *What is important for the person following their last contact with the service?*

### Examples of simple things everyone can do are:

#### Stories for Improvement

Capturing healthcare experiences are proving an effective and powerful way of making sure the improvement of services is centred on the needs of the people using them.

All experiences are equally valuable and can provide great insight into the care provided.

Individuals are interviewed and their stories are analysed and used in numerous ways - as a tool to identify areas of good practice or improvement, to support spread of evidence based interventions, to support effective communication, and to help all staff members to appreciate the impact of the care provided - from Board to ward.

## Shared Decision Making

The majority of individuals want to play an active role in their treatment decision. Shared decision making tools are designed to support patients during consultations when presented with different treatment options. Option grids are developed to support such treatment choices and encourage an equal partnership with those we care for.

## Provide dignified care

Dignity in care is at the heart of caring for people, and it allows everyone to be able to effectively engage in their care as partners and is a cornerstone to person centred care.

Simple things such as supporting individuals to set their own daily goals and helping them achieve simple tasks can have a big impact in their healthcare experience. This has been achieved in Wales through the use of a simple questions such as ‘What can I do for you today?’

## Communicate effectively

Effective sharing of information is key to achieving person centred care and can reduce demand on the system. Avoiding medical jargon and using effective communication skills can ensure individuals are more able to access and navigate the system, and better manage their health.

Communication techniques and tools are available to support both healthcare professionals and members of the public to maximise each health touch point and support partnership working.



# 5

## The Model for Improvement

*The Model for Improvement provides a practical way to try a small change and measure its effect over time.*

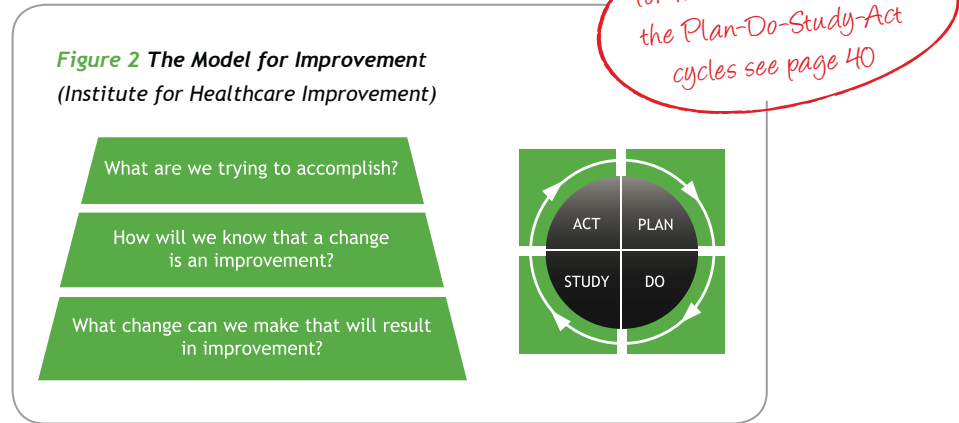
# The Model for Improvement

The Model for Improvement provides a framework to structure improvement efforts. It was originally developed by Associates for Process Improvement ([www.apiweb.org](http://www.apiweb.org)) to provide the best chance of achieving goals and adopting ideas (Langley et al, 1996).

The model is based on three key questions, known as the thinking components:

1. *What are we trying to accomplish?*
2. *How will we know that a change is an improvement?*
3. *What change can we make that will result in improvement?*

These questions are then used in conjunction with small scale testing, the doing component known as Plan-Do-Study-Act cycles (PDSA) as outlined in figure 2.



## 1. What are we trying to accomplish?

Improvement requires effort, so it is important to direct our efforts to the right problem. The first thing we have to do is be clear about what we aim to achieve. For example, is the aim to reduce death, avoid dependency or illness, or reduce risk?

This sounds obvious, but is often hard to answer precisely. Without this clarity, it is impossible to decide what action to take or to know whether the outcome is an improvement. So the vital question is: "What outcome do we want?"

The table below sets out the desired outcome of each of the three example cases:

	Example 1 Population health	Example 2 Road Safety	Example 3 Stroke Care
Desired outcome	Reduce people's exposure to known health risks	Reduce death and injury on the UK roads	Improve the outcomes for people following a stroke

## 2. How will we know that a change is an improvement?

Once we are clear about the desired outcome, the next task is to choose a standard to measure the outcome against. At best, this measurement will be simple and easy to use, but it is often difficult to find a perfect measure. We may need to accept some imperfection and collecting the necessary information may be difficult.

### The principles to follow when selecting a measure are:

- Use a measure which is:
  - Well defined;
  - Allows comparison between sites and over time; and
  - Already in use, if possible.
- Use a measure that is specific and sensitive enough to allow you to identify and monitor outcomes. Here are two examples to illustrate the terms ‘specific’ and ‘sensitive’.
  - When trying to reduce deaths on the road, monitoring all deaths in the UK may well miss the outcome achieved because the deaths on the road are not distinguished from deaths from all other causes. The measure is not specific enough. See page 32 for an appropriate measure.
  - When trying to reduce people’s exposure to health risks, monitoring harm from medicines by counting mistakes in prescriptions might produce very misleading results because many cases of harm from medicines are not the

result of prescription mistakes. In this case, the measure is not sensitive enough. (It is also not specific enough because many mistakes do not result in harm). See page 32 for an appropriate measure.

- Don’t reject a measure simply because other factors could affect the effectiveness of the measure. If those other factors are likely to stay constant, the measure may still be valuable.
- When choosing an outcome measure, favour one that can be applied to the whole community, population or system.

Whether using an existing measure or creating new ones, it is vital to be clear about how they are defined. If using an existing measure, it is likely to have been developed for a different purpose, so take time to understand how it was put together. Make sure that everyone involved in collecting information for new measures knows why they are doing it.

Lastly, improvement work sometimes needs to go ahead without there being a good outcome measure, and often before monitoring is stable. This is because improvement work is not an experiment trying to prove the value of an action, it is about adopting and adapting practice, based on evidence. For this reason, and also because it can take a long time for any change in outcome to be recognised, we should also have at least one measure of process. Guidance on how to choose appropriate process measures is given on page 40.



*Here are the outcome measures for our three examples*

	Example 1 Population health	Example 2 Road Safety	Example 3 Stroke Care
Outcome measures	Incidence of left ventricular hypertrophy  Mean blood urea of more than 40mg/100ml	Number of deaths each year from road accidents in Great Britain  Casualties per 100 million vehicle kilometres  Road deaths per 100,000 people	Number of deaths each year from stroke  Hospital mortality rate from stroke  Change in Barthel score while in hospital

### 3. What changes can be made that will result in improvement?

It is essential to link outcome measures to ‘interventions’ - the systems and processes that will help us achieve the desired outcome. We will not make consistent progress towards improving outcomes by focusing on outcome measures alone.

There are two parts to this question - “What is wrong with the system now?” and “What works?”

#### What is wrong with the system now?

The experience of our staff, the evidence of our own eyes, and feedback from our patients and other service users will all help us identify what we need to focus and concentrate our efforts on.



**We need to consider the following:**

- What will deliver the biggest benefit? This is often addressing the things that are done most often or the area where most waste is incurred.
- What do typical cases tell us about the system?
- Are demand and need understood properly? How much demand is repeat work or work caused by another part of the service?
- What is the high-value part of the system (the part that delivers real benefit)? Is it the same as the part which has the highest costs?

- What can simplify the process?
- How can we use the knowledge of service users and people in other parts of the process?

**In other words, we need to make a conscious effort to:**

- Avoid making change for change's sake.
- Avoid considering one interesting, seemingly urgent and personally fascinating topic at the expense of important mainstream work.
- Avoid focusing only on 'special causes' which are particularly serious or unusual as they will often give false information about how to improve the system in general. To improve, we need to focus on the things which regularly cause unreliability.

For example, in acute stroke services, some of the biggest causes of unreliability result from certain staff not being available outside 'office hours'. Approaches to improve reliability have tackled the skill mix of the staff available at any one time and re-examined segregation of duties to reduce the differences in care patients experience at different times.

- Avoid adding extra steps to 'fix' a system that isn't working. Especially avoid adding a solution while allowing a problem to continue. This is what Balestracci refers to as "scraping burnt toast" (Balestracci, 2005). Such steps will add handovers, bottlenecks and bureaucracy but will not improve efficiency.

- Avoid the 'silo' mentality where departments or groups do not want to share information with others. Do customers get what they want from parts of the service? Are we running a 'great' department while quietly blaming other departments for poor delivery?
- Avoid confusing information on performance (whether targets have been met) with information on improvement (how the system is working).

### What works?

To find out what works we first need to gather evidence of how a good system should work. Don't make this unnecessarily hard by going into too much detail. Greenhalgh et al (2004) has shown that successful change is most likely to be achieved using simple steps that can be applied in local situations (see page 74).

We use the evidence gathered to produce driver diagrams to summarise desired outcomes and how they can be achieved. Pages 37, 38 and 39 give examples of driver diagrams based on the desired outcomes of:

- Reducing people's exposure to known health risks;
- Reducing death and injury on UK roads; and
- Improving quality of life for people following a stroke.

The first step to producing a driver diagram is to gather evidence of what works. The best evidence is published accounts of controlled experiments or, better still, systematic reviews of several publications. If that evidence is not available, professional guidelines, national service frameworks and evidence of good practice may be useful, but we need to be aware of their limitations.

When producing driver diagrams there are some basic rules which must be followed:

- The first column - 'Aim' - shows the desired outcome of the service (the simpler the better).
- The second column - 'Drivers' - shows the factors that affect the outcome.
- The third column - 'Interventions' - shows the actions that have been shown to make a difference and bring about improvements.

A panel of experts will have to agree the driver diagram. It should be brief and simple, and contain only evidence-based and important interventions.

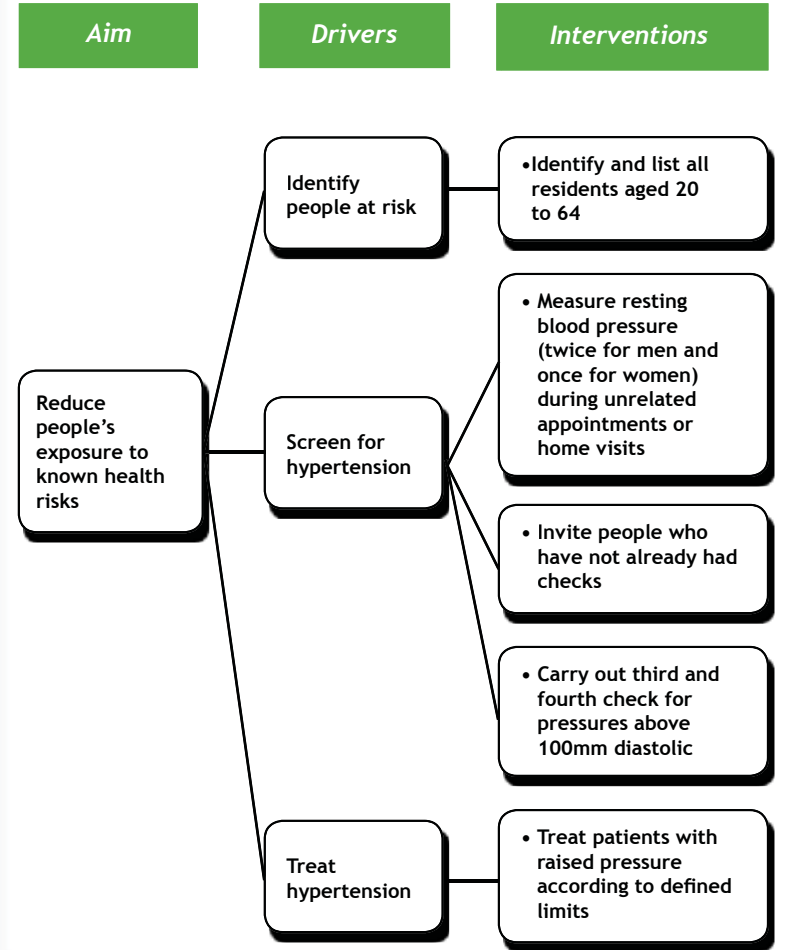
As far as possible, the interventions should state what happens to the patient and not specify where care takes place or the type of staff involved.

There is a large amount of literature available on achieving change and we have deliberately kept this text short. However, Pronovost provides another very accessible approach for medical settings Pronovost et al (2008).

*Link outcome measures to interventions - the systems and processes that will help achieve the desired outcome.*

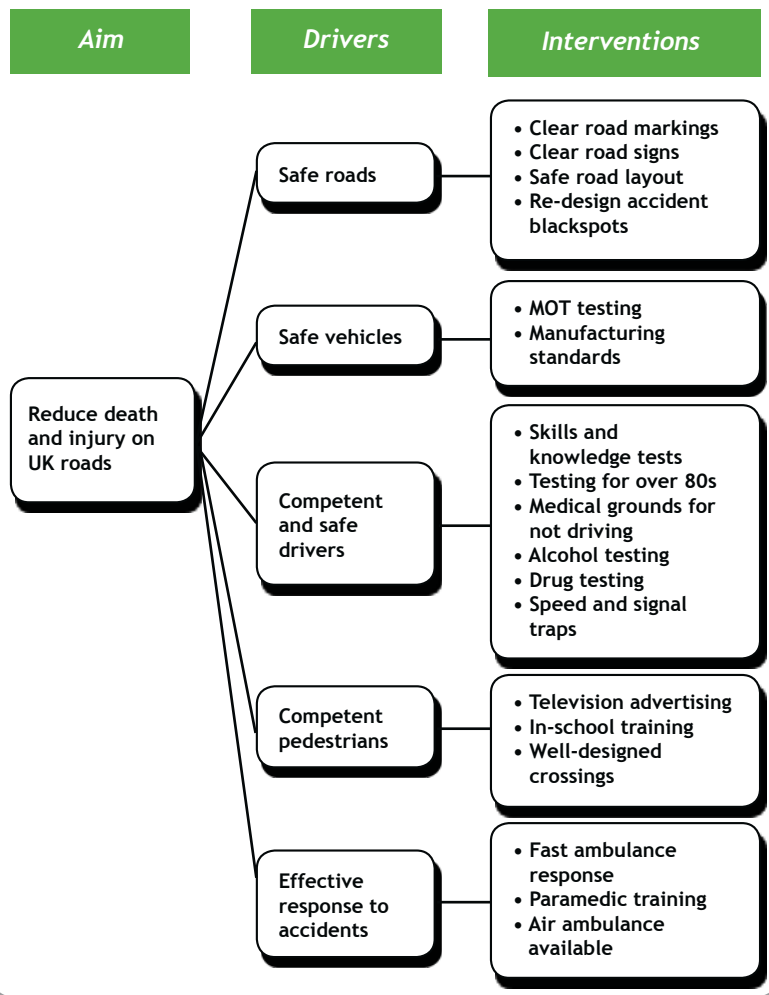
*Driver Diagram 1*

An example of a driver diagram for reducing the risk in primary care (based on Tudor Hart, 1970)



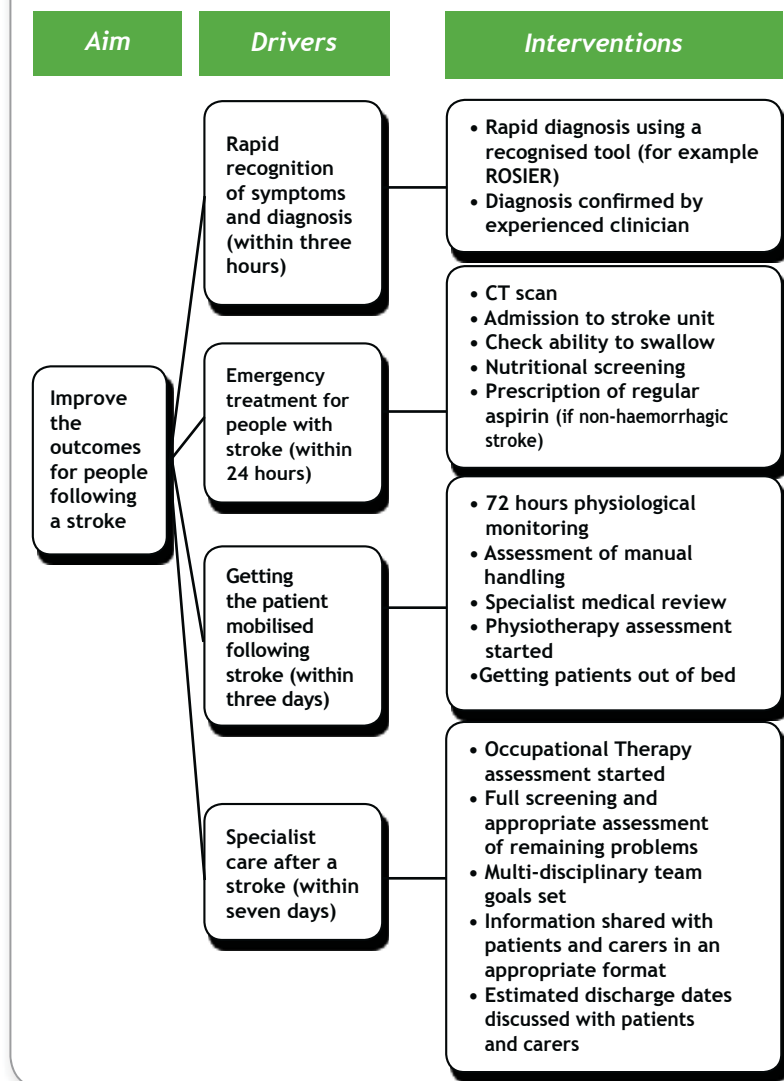
## Driver Diagram 2

An example of a driver diagram that might be used in road safety



## Driver Diagram 3

An example of a driver diagram for improving outcomes after stroke



## How do we introduce changes to processes?

In the 1000 Lives Plus improvement work, we have learnt that to try something new in a reliable way, it is best to start small - one person, one setting, one service provider.

Even if something has been shown to work in other settings, we should take the time to do a small-scale trial. There are almost no 'plug and play' solutions that work in all situations. Testing allows us to adapt actions to particular settings. To test a new procedure or technique, we need to 'plan, do, study and act' as explained below.

### ▶ Plan

Plan what you are going to do differently - 'who, what, where and when'.

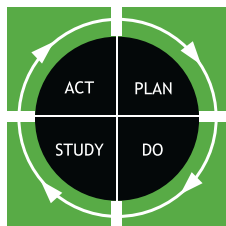
### ▶ Do

Carry out the plan and collect information on what worked well and what issues need tackling.

### ▶ Study

Gather relevant team members as soon as possible after the test for a short informal meeting. Analyse the information gathered and review the aim of the new procedure or technique against what actually happened. Questions that need to be asked include the following:

- 'What is the information telling us?'
- 'What worked and what didn't work?'
- 'What should be adopted, adapted, or abandoned?'



### ▶ Act

Use this new knowledge to plan the next test. Agree the changes and amend the outcome measures if necessary.

We should continue testing in this way, refining the new procedure or technique, until it is ready to be fully introduced. But, do it quickly (think in days, not weeks). When the change has been reliable for 90 to 95% of patients, spread to more sites.

Don't assume that a change can simply be 'rolled out' once it has been successfully tested. The introduction needs to be managed at every stage. There is no hard and fast rule for how fast to introduce the change. Once it has been introduced in a new area, test the change again.

We must remember to account for the organisation's ability to make sure it can manage a larger number of new sites while continuing to maintain existing ones.

*Use the PDCA cycle as a way of trying a new technique.*



# 6

## Measurement and Reliability

*"Basic principles of measurement help students to fully consider such questions as "how will I know if a change is an improvement?" and to link aims/objectives with concrete outcomes".*

## Measurement and Reliability

To summarise the last section, improvement cannot happen without measurement:

- We cannot try a solution until we understand the problem.
- We cannot test a solution unless we are measuring its effect.

Study the system to see which action offers the most potential value. Use a spreadsheet to count all critical parts in the process. Alternatively, use “process mapping” which converts the process into a visual, step-by-step diagram, or existing audits or recent reports.

However, bear in mind that audits and reports are likely to study small fractions of the information available and may be inaccurate. For both these reasons, they can lead to false conclusions. There is no substitute for looking at the system personally, seeing where any measurements come from and how they are made.

### How we measure

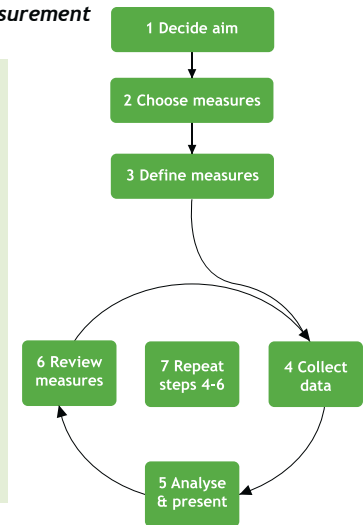
The diagram on the next page, ‘The seven steps to measurement’, illustrates the complete process. The first three steps have been covered in earlier sections of this guide (see page 28). ‘Decide aim’ (step 1) is covered in ‘What are we trying to accomplish?’, and steps 2 and 3 are covered in ‘Finding an outcome measure.’

Steps 4 to 6 form the ‘Collect-Analyse-Review’ cycle. First collect some information (step 4), then analyse it and present it in an appropriate way to convert it into useful information (step 5), and finally review the information to see what decisions need to be made (step 6). The Collect-Analyse-Review cycle then starts all over again (step 7).

**Figure 3 The Seven Steps to Measurement**

The seven steps to take are:

- Step 1 - Decide your aim
- Step 2 - Choose your measures
- Step 3 - Define your measures
- Step 4 - Collect your baseline data
- Step 5 - Analyse and present your data
- Step 6 - Meet to decide what it is telling you
- Step 7 - Repeat steps 4 to 6 each month or more frequently



The first Collect-Analyse-Review cycle will provide a ‘baseline’ of current performance (the starting part). If we collect data about 20 - 25 times and plot the results on a chart, this will provide an ideal number of points to create a baseline or identify a trend. One way to get more points is to measure more frequently.

Often the information needed is not currently being collected. If so, start collecting your information straight away. But we do not have to wait to start making small changes. They will not affect the overall situation while creating the baseline.

Using ‘run charts’ is a simple way to help analyse information, and a statistical process control chart will help you look at your information

and understand any variation in the process you want to improve. ‘Plotting the dots’ is very effective because it helps us to spot trends and patterns displayed to us.

The frequency of measurement, often carried out weekly, is a major difference between measurement for improvement and more traditional forms of measurement.

Traditionally, figures are smoothed out to get to ‘the real underlying trend’ by taking an average of the period. The problem comes when comparing the previous average with the current one to see if there’s been an improvement. Simply comparing two numbers and knowing that one will be bigger than the other gives a 50% chance of being better (or worse)! In contrast, run charts and statistical process control charts have rules which provide confidence that when a change has been spotted, it really is one. We give an example run chart at the end of this section (please see page 49).

Finally, step 6 reminds us that it is vital to set time aside to look at what the measures are telling us. How often the information is collected, analysed and reviewed sets the pace for change being introduced.

When we are aiming to improve, it is important that measurement is carried out fairly and openly. However, if people think that their measurement will be used to criticise them, then they will be reluctant to collect information. There are three main reasons for collecting information:

- improvement - to help discover ways to improve;
- accountability - to hold people accountable and make sure they are working to an acceptable standard; and
- research - to discover something new.

*Figure 4 Comparison of data requirements for improvement, accountability and research.*

	Improvement	Accountability	Research
<b>Aim</b>	Improvement of care	Comparison, choice, reassurance	New knowledge
<b>Method of testing</b>	Small sequential tests	No testing - simply evaluate performance	One large carefully designed test
<b>Bias</b>	Accept consistent bias	Adjust what you collect to reduce bias	Design to eliminate bias
<b>Sample size</b>	Small sequential samples	Potentially large - need to gather all relevant information	Large - need information to cover all eventualities
<b>Flexibility of hypothesis</b>	Hypothesis changes with learning	No hypothesis	Fixed hypothesis
<b>Type of analysis and presentation</b>	Run charts or statistical process control charts	League tables, achievement of target	Traditional statistical tests
<b>Confidentiality of information</b>	Information used only by those involved in improvement project	Information available in the public domain	Results widely available but research subjects’ identity protected



Figure 4 shows how the way things will be measured will change, depending on what the measurement is going to be used for. (Solberg et al, 1997 adapted).

Frequent measures also allow us to monitor reliability - how many times did we do what we intended as a proportion of the total number of tries? For example, if we have a procedure for screening all patients admitted to hospital, what proportion of the total were actually screened? When we try to do two things in a process, reliability gets harder. What proportion of those screened received the resulting intervention? If both steps have 80% reliability, the reliability of the process is 64% (80% of 80%).

Typically, when we measure reliability for the first time, the results are disappointing. 80% is typical for one step, and less than 50% for bundles of steps where four or more steps are linked.

It is often possible to reach 95% reliability for single steps (for example, by providing training, memory aids and built-in reminders). If greater levels of reliability are needed, or if these simple changes do not deliver 95%, the system itself needs to be redesigned. Design is the best tool for achieving reliability.

For more information on measurement and reliability, the 'How to Improve' guide published by 1000 Lives Plus covers this in much more detail. The guide is available at [www.1000livesplus.wales.nhs.uk](http://www.1000livesplus.wales.nhs.uk)

Here is a run chart for a process measure from our stroke example

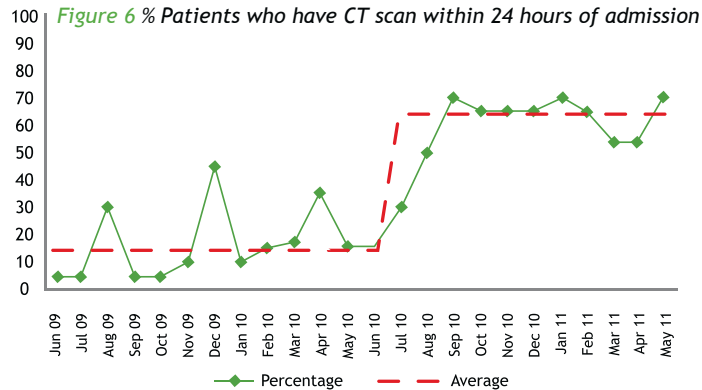
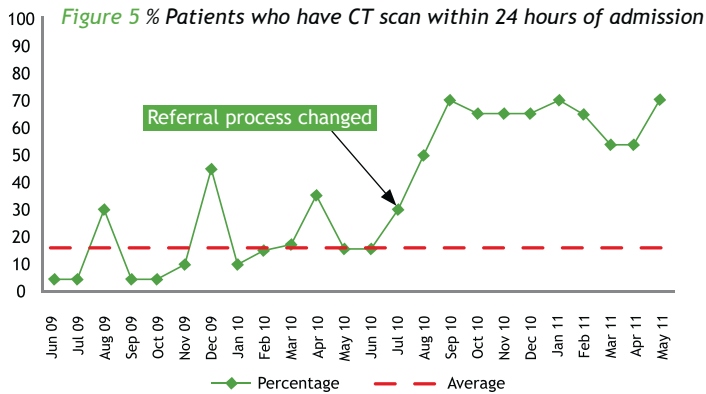
**A Stroke Unit has developed a new process for referring patients for CT scans, along with staff training to communicate the changes in process. The aim of the work was to improve the percentage of patients which receive a CT scan within 24 hours of admission. What is the impact of their service improvement work?**

The Stroke Unit has data for the period June 2009 to May 2011. The data for June 2009 - June 2010 is a baseline position prior to any service improvement work undertaken. **(Ideally we should use 20 - 25 data points to create a baseline position)**. To monitor the impact of changes in process firstly we need to calculate the median average baseline position.

The median (15%) has been calculated for the baseline period. This is shown as a dotted line on the charts below. It is projected beyond June 2010, when the service improvement work commenced. The median shows that in half of the months at least 15% of patients received a CT scan within 24 hours. If everything remained the same this would not change.

In July 2010, the staff training commenced and a new referral process was introduced. Figure 5 demonstrates the impact of the changes in process. There has been a "shift" in the data. A shift in the data is represented by 6 or more consecutive data points above the median line.

*Here is a run chart for a process measure from our stroke example*



The sample data displayed in this run chart is for illustration purposes only.

Once we have established there have been any changes in the data using run chart rules, and we fully understand what changes have impacted on the data we are able to recalculate the median to review for any future changes in the data. See figure 6 which demonstrates a new median of 65%. By introducing the new referral process along with staff training now 65 out of 100 patients typically receive a CT scan within 24 hours.

# 7 Putting it into Practice

*The tools for quality improvement are simple and effective. Small changes can provide people with a much better experience of care.*

## Putting it into Practice

### Human error

A central tenet of healthcare improvement work is that harm and waste are not caused by bad people but instead by bad systems. Contrary to the media driven image of harm in healthcare caused by malice or intentional negligence on the part of the individual, it is errors of omission that are responsible for most healthcare related adverse events.

One large study has demonstrated that the rate at which basic, standard care was not delivered in US healthcare was 45% (McGlynn et al, 2003) indicating that it is what we don't do as healthcare teams that causes the harm and avoidable mortality.

These frequent lapses are not a sign of poor personal standards or of a lack of knowledge or skills. They are the inevitable consequence of attempting to perform in a complex system with human limitations.

As the phrase has it, 'to err is human', and whilst human beings are capable of brilliant and innovative solutions to problems, maintaining reliability in care and treatment delivery in the often chaotic healthcare environment under conditions of stress and fatigue make it inevitable that error will occur.

James Reason, one of the pioneers of error reduction in healthcare states that: 'the paradox at the heart of the patient safety problem... is that Medical education, almost uniquely, is predicated on an assumption of trained perfectibility' (Reason, 2009). It is noticeable that this attitude is not unique to medical education and sets an unrealistic and unachievable standard.

### Human factors - smarter ways of working

The aviation industry has long been aware that 70-80% of aviation accidents can be attributed to human rather than mechanical error (Endsley, 1988). With other 'safety critical' industries, aviation has developed the principles of human factors which work to counter the natural human propensity to error. So important are these non technical skills now thought to be that competence in human factors is a necessary requisite for continued accreditation as a pilot.

Combined with a very open culture with regard to error and safety, human factors training, known as crew resource management (CRM), focuses on teamwork, communication, flattening hierarchy, managing error, situational awareness and decision making.

In recent years the phrase 'human factors' has gradually entered the healthcare lexicon. In the UK, human factors principles form the basis of the NPSA Foresight Training, whilst internationally it is considered an essential part of training in Patient Safety by the World Health Organization.

The WHO Patient Safety Curriculum Guide for Medical Schools (World Health Organization, 2009) includes the following principles on human factors:

- Avoid reliance on memory;
- Make things visible;
- Review and simplify processes;
- Standardise common processes and procedures;
- Routinely use checklists;
- Decrease the reliance on vigilance.

These principles have been adopted and adapted by members of the 1000 Lives Plus improvement collaborative programmes in ingenious and unexpected ways.

### *Creating an improvement culture*

1000 Lives Plus has adopted and developed the IHI collaborative programme as the primary methodology for enabling healthcare teams to improve the quality of patient outcomes whilst reducing harm, waste and variation.

The collaborative methodology draws together participants with a shared improvement goal and supports them in using the Model for Improvement and measuring improvement whilst allowing the sharing of ideas, experiences and tools, thus promoting a culture in which improvement can thrive.

Students from all disciplines have the opportunity to participate in these collaborative programmes through clinical placements, study days, national events and to use their experience of improvement as subject matter for assessments. The contribution of the student as a ‘fresh pair of eyes’ with new ideas and perspectives should not be undervalued by the clinical teams.

The collaborative programme method has been applied successfully in a wide variety of healthcare settings including the acute hospital ward, primary care, maternity and mental health. All collaborative programmes, whilst having differing goals will progress within the following (non sequential) themes:

- Improve team working;
- Set aims and agree priorities;
- Improve your working environment;
- Embed Improvement methodology.

### *Improve team working*

The Model for Improvement emphasises valuing the contribution of all stakeholders in the clinical team and it is noticeable that some of the most innovative and effective solutions have come from often overlooked team members such as domestic and reception staff.

One study found that erroneous verbal communication between staff members was a root cause or contributing factor in more than half of severe patient safety incidents (Rabøl et al, 2011) and it is acknowledged that the main reason for poor team working is deficiency in communication.

Clinical teams have used human factors principles to improve communication by adopting safety briefings and using the SBAR (Situation, Background, Assessment, Recommendation) tool in verbal and printed format in settings from the board report to escalating care for the deteriorating patient. The PSAG (Patient Safety at a Glance) board promotes situational awareness for the entire clinical team whilst performing a debrief allows teams to celebrate what went well during a shift or clinical incident whilst planning on how to improve performance next time.

One of the important recommendations of the report of the Kennedy Inquiry into Paediatric Cardiac Surgery at Bristol Royal Infirmary (2001) was that clinical teams that work together should also train together. This principle has long been accepted in other safety critical industries but in healthcare it is common that professional groupings train for common but important eventualities separately and in areas removed from the clinical setting. Simulation training has huge potential for bringing about better team-working whilst promoting collaboration between service and education.



## Tools

- Briefing and debriefing
- SBAR
- Patient Status at a Glance (PSAG) board
- Simulation

*Learning opportunity*

*Discuss how team working could be enhanced by using simulation and communication tools in a way that would have minimal resource implications.*

## Set aims and agree priorities

The most important question in the Model for Improvement is ‘What are we trying to achieve?’ and it is important in quality improvement work that a clear vision and direction are set. This vision should be shared by the clinical team but should also align with the priorities of the healthcare organisation in which they work.

One of the successes of 1000 Lives Plus has been the alignment of all tiers of the health board from ward to board in identifying and dealing with the adverse events that present the most harm.

When attempting to understand priorities, frontline teams are at the mercy of what is termed the ‘tyranny of small numbers’ where the extent of a problem is viewed on an individual subjective level rather than on an all organisation scale. An example of this would be that although severe sepsis is thought to be responsible for the deaths of

37,000 people annually in the UK (Daniels and Nutbeam, 2010) an individual healthcare worker may only see one or two cases during a year and so not appreciate the full scale of the problem.



## Tools

- Root Cause Analysis
- 5 Whys
- Cause and Effect (Ishikawa, Fishbone) Diagram
- Safety Cross
- Run Chart
- SPC Chart

*Learning opportunity*

*Investigate a critical incident to establish an understanding of the underlying causes.*

## Improve your working environment

Healthcare teams work in an environment that has evolved over decades rather than being designed for purpose. In many cases this has led to the creation of more and more elaborate ‘work arounds’ that are deleterious to the receipt of safe and effective care by patients and necessitate the waste of staff time and effort.

Involvement in 1000 Lives Plus collaborative programmes, particularly Transforming Care, has enabled teams to re-examine the work environment and use human factors and ‘Lean’ principles to find better ways of working.



## Tools

- Activity follow
- 5Ss
- Process Mapping
- Patient Status At a Glance (PSAG) board

*Learning opportunity*

*Analyse how changing the systems and processes in the clinical environment can contribute to reductions in waste and harm.*

## Embed improvement methodology

When using the Model for Improvement the question is asked ‘How will we know how we are doing?’ to which the only answer must be by measurement. Experience with 1000 Lives Plus has demonstrated to clinical teams that the reliability of healthcare delivery is always overestimated and that feedback of this in the form of a run chart or safety cross often leads to rapid improvement.

However, measurement carries with it a burden of extra time and effort and wherever possible measurement for improvement should be incorporated into the normal process so that it becomes ‘just the way we do it’. Improvement teams have used human factors principles to devise checklists and care bundles documentation that are integrated into care planning. At the same time standard operating procedures, SBAR and safety briefing forms can be used as

guidance but also become the permanent record for critical events whilst making data collection easier and automatic.

By continued reinvention and innovation clinical teams are able to integrate measurement into everyday activity and therefore ensure that quality improvement becomes established practice.



## Tools

- Checklists
- Standard Operating Procedures
- Care bundles
- The STOP order
- 2 minute safety briefing

*Learning opportunity*

*Debate methods for embedding measurement within daily activity so as to improve process reliability without increasing the burden of data collection.*

*To access these tools please visit:  
www.1000livesplus.wales.nhs.uk/  
educators-students-qi-guide-tools*

# 8

## Examples of Student Quality Improvement Projects

*The skills I've gained from my QI project will enable me to become a better practitioner, team member, leader and a health professional that my patients can trust in.*

## Examples of Student Quality Improvement Projects

### 1 .OT equipment arriving on time

The Community Occupational Therapists (OT) discussed at a team meeting the issue of new equipment not being delivered to clients' homes prior to their appointment to train the client in its use. This resulted in many service users requiring a number of appointments - wasting their time and the OT's. The OT student process mapped the ordering and delivery system for equipment. The student followed the process and had discussions with people at each stage to see why the delivery of the equipment and the appointments were not coordinated. The student found on discussion with the van driver / delivery team that they had no idea that the equipment needed to be delivered at a set time - prior to the OT training visit. He organised deliveries based on location (shortest distance to drive in one day) and the size of the equipment (what would fit). The receptionist who made the appointments and ordered the equipment electronically suggested giving the delivery team access to the OT team's online diary, so they could coordinate delivery.

#### Outcomes

- Equipment was delivered before the OT's arrived to train the client.
- Appointment allocation not only took into account urgency of need but also location - to reduce transportation costs and time for the delivery team.

- The delivery team could inform the OT team if they could not meet a delivery deadline and the client could be given a new appointment.
- Reduction in wasted appointments and frustration.
- The delivery team became part of the multi-professional team.

### 2. Face wipes reduce complaints

A student noticed that residents in a care home often had food left around their mouths (not wiped after meals). Relatives regularly complained about this. The student observed the feeding processes and realised it was the residents who were fed in their own room who had food left around their mouths. It was not always the same residents or the same staff who were leaving residents with 'dirty faces'. Face wipes were readily available in the dining room but there was no easy access to face wipes in the residents' rooms (only having hard paper towels or toilet paper available). On observation the student noticed that the staff would aim to return to the resident with face wipes to clean their faces but often got diverted into other tasks. The student asked the kitchen team to put a packet of face wipes onto the meal trays when they were made up.

#### Outcomes

- Residents no longer have food left around their mouths.
- Reduction in complaints from relatives.



### 3. Repeated taking of bloods

At a hospital, there was a large delay in the arrival of blood samples at the labs. This led to staff on the wards sometimes taking multiple samples, thinking the original sample had been lost. The student followed a sample from the ward to the lab and noticed the delay was due to the shift rota of the porters. The student worked with the porters to identify an improvement.

#### Outcomes

- Amendment of the porters' rota.
- Blood samples arrive from wards promptly at the pathology lab.
- The porters felt part of the process, commenting: "No one has ever discussed the impact we have on patient care before" and "We are normally 'told' what to do, not asked how we can make things better for patients".

### 4. Duplication of questions and documentation

A problem was identified with the documentation of the single assessment process. Users were being asked duplicate questions and this was frustrating for them and caused anxieties. The student decided this could be improved temporarily with getting professionals to photocopy their input and placing it in the medical notes so that duplication was avoided.

The student then measured the response of users, and provided a presentation guiding service providers on the use of the single assessment process, including the threats, opportunities and

evidence. They also ensured that the management and ward sisters were on board with the plans.

#### Outcomes

- It has decreased the duplication of questions and documentation.
- It has decreased the anxiety and frustration felt by the user (69% of service users felt they were being asked duplicate questions before and this was subsequently reduced to 39%).

### 5. Not receiving nutritional supplements

Patients who were prescribed nutritional supplement drinks were not receiving them when required. These supplements are important to maintain and improve weight to prevent malnutrition. Staff were unsure as to whether patients already had their drink and there was no system in place to record what was given and when. The student introduced a white board detailing resident, type of drink, frequency and staff signature.

#### Outcomes

- Patients receive correct supplement drink as appropriate for their needs.
- Staff are clear as to when patients have received a drink and by whom.
- Carers and relatives satisfied with patient care.

## 6. Advice about vital signs in young children

A young boy was brought into the walk-in clinic, the diagnosis was uncertain but there was sufficient concern for the staff to recommend that the parents take their son straight to hospital. Instead, they went home to collect the things they felt their son would need in hospital. By the time the child was taken to hospital, his condition had deteriorated. The parents hadn't realised their son was unconscious on the journey, they thought he was asleep.

A student recognised the need for parents to be more informed about vital signs in young children, in particular, symptoms of concern in order to prevent avoidable deteriorations in health. They also recognised the need for making parents aware that all necessary items are available at the hospital.

### Outcomes

- An information sheet was produced is used by local GPs.

## 7. Knowing how to use a pump

A pump which delivers artificial feed from the bag into the patient had broken, setting off the alarm. The ward staff did not know how the pump worked so the alarm continued for 20 minutes. The staff had received training but due to lack of regular use of the pump they had forgotten some of the details about how to use it. There was no material available on the ward about how to operate the pump. A student identified the actions to improve the situation. A booklet outlining how to operate the pump on the ward was developed and the 'troubleshooting' page laminated and kept with the machine.

### Outcomes

- Any pump failure can now be dealt with quickly.
- There is less unnecessary stress caused by the pump alarm going for lengthy periods of time.
- Patients are less distressed by pump failures and have a greater confidence in the care provided.

## 8. No clock in an operating theatre scrub area

There was no clock in the surgery scrubbing area and staff had no idea how long they were washing their hands for. Most thought they did it for five minutes, but when timed it was in fact three minutes. A student looked into all aspects of purchasing a clock (the ordering and installation process for the theatre). The process was so complicated that when written out on 'post-it' notes, it fitted around three walls of the staff room. The student and theatre manager went through the procurement/installation process and removed unnecessary steps. The final process map fitted onto one third of a wall of the staff room (still on 'post-it' notes).

### Outcomes

- The clock is now installed.
- Hand-washing is undertaken for five minutes - infection control procedures can be followed.
- The operating theatres have a new procurement process.

## 9. Overrunning of the dietetic clinic

A dietetic clinic based at a GP practice continuously over-ran. New patients were booked into 15 minute appointments. 15 minutes is the usual time allocated for follow-up appointments but not enough time to appropriately cover the dietary advice with a new patient. The consequence was that patients were seen late and some patients were not prepared to wait. The dietitian regularly had to forego their lunch break. The dietetic student worked with the GP practice to change the appointment protocol so that all new patients would be given a 30 minute appointment.

### Outcomes

- Patients are seen for an appropriate length of time and at their allotted appointment time.
- The dietitian gets lunch.

## 10. Stories improve podiatry service

A recent service reconfiguration meant that most new podiatry patients would be initially assessed in one central clinic rather than in different locations. The service wanted to know how the new service design impacted on patients' experience of care. Two students volunteered to be trained in the collection of patient stories and collected two new patient stories. The students worked with podiatrists to analyse the stories to explore if the new service had affected the delivery of care.

### Outcomes

- Better understanding of the patients' experience of the assessment clinic.
- Development of an action plan for service improvement.

*Students can get involved by joining the 1000 Lives Plus Student Chapter. To find out more, see page 86.*



# 9

## Common Improvement Questions

*By understanding the practical ways to make a positive change, we can improve the reliability of our systems and processes.*

## What is an audit?

Many staff take part in clinical audits as part of professional practice. Audits are essentially about comparing what should be happening with what has actually happened. This means that it is useful for governance and assurance, for example, in whether service standards or expected practice has been followed.

However, audits only provide a ‘snapshot’, which usually relies on an interpretation of notes or records originally compiled for a different purpose. At its best, an audit gives detailed knowledge of a process and can be helpful in setting improvement priorities.

Even when an audit results in specific recommendations for improvement, and a commitment is given to carry out another audit at a later date, too often the necessary change does not follow.

## How does the Model for Improvement differ from traditional change methods?

The Model for Improvement requires the ongoing gathering of information and feedback, rather than periodically assessing progress. Improvement science encourages teams to know their systems and work to achieve better outcomes. If we know our system, and know where it is failing, we can choose and adapt an improvement idea from elsewhere (see reference to Greenhalgh on page 82). Rolling out best practice reinforces the opposite - ‘top-down’ instructions which impose solutions that do not take account of the actual problem and which then cannot be assessed.

As Shortell et al (1998) said: “The overall system of caring for patients must be transformed into a culture that emphasises

integration and teamwork rather than individualism, measurement for improvement rather than judgement, and continuous learning from each other rather than identification of “best practices” which are treated as sacred cows”.

## Why focus on harm, waste and variation?

### Harm

Evidence suggests that harm and death which can be avoided are a common side effect of healthcare provided in NHS Wales and beyond. In the UK, Sari et al (2007) found that harm had been caused to patients in 8.7% of hospital admissions. The harm contributed to the person’s death in 10% of these cases, and to disability in 15% of the cases.

### Waste

Once harm has happened, dealing with the consequences costs money and represents a large and avoidable cost. In 2001, harmful events were estimated to cost the UK NHS around £1 billion a year in extra bed days alone (Vincent et al, 2001).

In the US, it is estimated that \$19.5 billion a year is wasted as a result of errors (avoidable mistakes). The three most expensive errors are post-operative shock (\$93,682 per case), infection due to central venous catheter (\$83,365 per case), and infection following infusion, injection, transfusion or vaccination (\$78,083 per case) (Shreve et al, 2010).

## Variation

There is often a difference between what we do and what we think we do and there is now a lot of evidence that best practice is not being delivered reliably and consistently.

This variation is not normally the result of individual competence or practice, but a result of the systems and processes being used. Berwick frequently quotes that: “Every system is perfectly designed to achieve exactly the results it gets”. It is through improving reliability in the systems and processes we use every day that there is the greatest potential for improvement.

## Do care pathways and national service frameworks drive change?

These are both useful devices for agreeing models of service and setting out expectations for service users. But on their own, they are unlikely to drive change. The reasons why were described by Greenhalgh (2004) who researched the characteristics of effective changes. They are as follows:

- ‘It must have clear relative advantage’ - the people or teams (users) who are asked to make the change part of their work must be able to see that the new method is likely to be better.
- ‘It must have compatibility with the users’ values and ways of working’ - if users find it hard to incorporate the new method, they are unlikely to do so.
- ‘Complexity must be minimised.’

- ‘Users will adopt more readily if innovations allow trialability’ - can it be tested on a small scale to allow learning and familiarity before full commitment?
- ‘There must be observability, that is, it must be seen to deliver benefit’ - if the benefits are not obvious, or they take a long time coming, energy will be lost.
- ‘Reinvention is the propensity for local adaptation’ - this is the key to achieving sustainable improvement. A good improvement must be incorporated into the changing system and not preserved like a museum piece.



# 10

Summary



## Summary

Providing good quality care is everyone's responsibility. Experience has shown that through some simple principles and techniques, a shared understanding and language for improvement can be created.

The Model for Improvement provides a framework to structure improvement actions, but this is not enough by itself. Improvement work is about adopting and adapting evidence-based practice to the particular setting, and a well-defined outcome measure allows improvement to be tracked between sites over time.

Consult the best evidence to choose the most appropriate actions to achieve improvement and use a driver diagram to summarise the aim and actions. Make sure you consult an expert group to agree these. Use the 'Plan-Do-Study-Act' (PDSA) cycle as a way of trying a new technique, starting small and spreading to more sites only when the new technique is 90 to 95% reliable.

To improve you need to use measurements to understand the problem and to measure the effect of a change. Study your system to see which action offers the most potential value. Use the Collect-Analyse-Review cycle to produce a baseline and use run charts or statistical process control charts to demonstrate how the process is performing. How often you collect, analyse and review information sets the pace for introducing change.

To put the Model for Improvement into practice, an understanding of the inevitable consequence of attempting to perform in a complex system with human limitations needs to be developed. Clinical teams have used human factors principles to improve communication by adopting tools such as briefing and debriefing, SBAR, Patient Status at a Glance (PSAG) board and Simulation. These can be used in

education and as part of student improvement projects to help create an environment designed for purpose.

The Model for Improvement emphasises valuing the contribution of all stakeholders and it is noticeable that some of the most innovative and effective solutions have come from often overlooked team members such as domestic and reception staff or students.

Students are ideally placed to lead improvements. They have a fresh pair of eyes, they can see things that others either no longer notice or they are so busy 'doing the job' they can't see a solution.

The task now is for the health schools and faculties of the UK Universities to develop programmes to teach quality and service improvement and to embed them into their curricula.





# 11

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Visit: [www.1000livesplus.wales.nhs.uk/student-qi-guide](http://www.1000livesplus.wales.nhs.uk/student-qi-guide)



## Join the 1000 Lives Plus Student Chapter



As the workforce of the future, join the 1000 Lives Plus Student Chapter, an active network of student volunteers enthused by quality improvement and patient safety. The Chapter provides the opportunity to become involved in the improvement journey, to gain the skills and experience to become more effective, and to practice safer care.

### *As a member, you'll benefit from:*

- Expert quality improvement training and learning opportunities to increase your knowledge and skill sets.
- Access to free online training on quality improvement, patient safety and leadership, and receive a certificate of completion to add to your portfolio.
- Opportunities to enter competitions to win PPD funding and access to new learning opportunities to boost your career.
- Participating in inter-professional virtual networks with like-minded students, using facebook, twitter and website blog to have your say on the care patients receive.
- Regular updates through our e-Newsletter - so you're aware of local news, events, and teaching.
- Leadership opportunities, including leading a quality improvement project or acting as the student leader for your university and profession.

*Join today  
visit: [www.1000livesplus.wales.nhs.uk/student-chapter](http://www.1000livesplus.wales.nhs.uk/student-chapter)*

Improving care, delivering quality



# The Quality Improvement Guide

## *for Educators and Students (Second Edition)*

‘The 1000 Lives Plus Quality Improvement Guide for Educators and Students’ describes a simple set of techniques that can be applied to improve the quality of services provided.

They can be applied in different settings to encourage everyone - the public, health professionals, support staff, students and educators - to explore how they can use these techniques in their work.

Includes:

- The Role of Education
- Student Involvement in Improvement
- The Model for Improvement
- Putting it into Practice
- Examples of Student Quality Improvement Projects
- Common Improvement Questions

Published by 1000 Lives Plus, the national improvement programme supporting organisations and individuals to deliver the highest quality and safest healthcare for the people of Wales.

