Pressure ulcers

Quality improvement

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This booklet is an introduction to quality improvement (QI) designed to help staff, teams and organisations to get started with a QI project, specifically to improve pressure ulcer incidents.

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How to navigate this document

This report contains references and links to useful online tools and resources. If you are reading it online you will be able to access these tools and resources directly by clicking on the green, underlined hyperlinks as you work your way through the document.

If you are reading a printed version of this report all online links for the resources are listed in full in the reference section on page 21.

Other useful links to help you navigate the document include active page numbers on the contents page and the back to contents link at the top of each page.

Editorial

Authors: Heidi Sandoz, tissue viability services lead, Hertfordshire Community NHS Trust; Jacqui Fletcher, independent nurse consultant tissue viability; Jenni MacDonald, lead nurse tissue viability, NHS Lothian; Joanna Swan, senior lecturer in tissue viability, Birmingham City University

Managing editor: Steve Ford, editor, *Nursing Times*

Designer: Jennifer van Schoor

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Introduction
Pressure uclers: quality improvement

In the face of the complexity that lies within the NHS, the desire to improve the quality of care and patient outcomes is both an aspiration and a necessity. Quality improvement (QI) can be defined as "a systematic approach that uses specific techniques to improve the quality" of care (The Health Foundation, 2013).

The reduction of patient harm and associated costs is positioned firmly in *The NHS Long Term Plan* (NHS, 2019). *The NHS Patient Safety Strategy* (NHS England (NHSE), 2019) states that the point of care is the place where the greatest improvement impact can be achieved. Enabling our workforce with the capabilities for QI is, therefore, a necessity in order to deliver these aspirations.

Pressure ulcers (PUs) have long been considered a preventable harm (NHS Improvement (NHSI), 2018a; Downie et al 2013; Hibbs, 1987) and since the NHSE point-of-care survey instrument, the Patient Safety Thermometer, was introduced in 2012, have been a focus of measurement of harm within patient care delivery.

At the first safety thermometer audit, 6% of patients were recorded as having a PU. A significant reduction to 4.4% was achieved by November 2014 and has, since then, remained more or less static, with a low of 4% in September 2017, a peak of 5% in April and May 2019, then back to 4.4% by November 2019.

As the Patient Safety Thermometer only counts the PUs that occur, it is not clear if the severity of PUs has changed. Recent small increases in the percentage occurrence may in part be due to changes in the way PUs are described and reported, following the introduction of the document *Pressure Ulcers: Revised Definition and Measurement* (NHSI, 2019).

Guest et al (2015) identified that 7% of the population with a wound had a PU (*n*=153,000) at an estimated cost to the NHS of £506–530m (Guest et al, 2017).

Clearly, if we can reduce the occurrence further and improve healing rates for existing PUs, we can reduce harm and spend, while improving the quality of the healthcare experience of some of our most vulnerable patients.

The challenge is not knowing whether they can be prevented. Downie et al (2014) reported that 66% of PUs acquired during hospital care were unavoidable and, therefore, not preventable.

The Stop the Pressure campaign, originally launched by NHS Midlands and East in 2012, was rolled out nationally in 2016 and now, managed by NHSE and NHSI, has contributed to the reduction in PUs over these years. The **Stop the Pressure website** hosts many examples of good practice, resources and information.

The NHSI PU improvement team supports organisations to identify their weaknesses in PU prevention and drive change for improvement. Elements of this programme now sit within the **National Wound Care Strategy Programme**, while the QI element remains within the nursing directorate of NHSE and NHSI. Similar work in other parts of the UK sits with **Health Education and Improvement Wales** and **Healthcare Improvement Scotland**.

Despite the sustained effort and resources that have been put into PU prevention, the number of PUs seems to have stagnated for the last few years. Why is this? What more can be done that is not already being done? Have we achieved the best we can hope to achieve?

Those working in this field, who strive constantly to improve care around PU prevention, may become frustrated when there is no measurable improvement in the numbers occurring.

This frustration can be exacerbated during serious incident investigations or root-cause analysis meetings when lapses in care are highlighted, not because the patient outcome would have changed if they were fulfilled but because they are easy to measure for improvement.

For example, let's imagine that several patients did not have their Waterlow score completed within the stipulated timeframe, however those patients did have an appropriate prevention plan in place.

Despite the missed risk assessment, clinical judgement had initiated an adequate plan of care and actually the problem was something else altogether – but, because it's easy to measure the risk assessment not being completed, the learning actions will be to ensure staff are educated and improve documentation compliance.



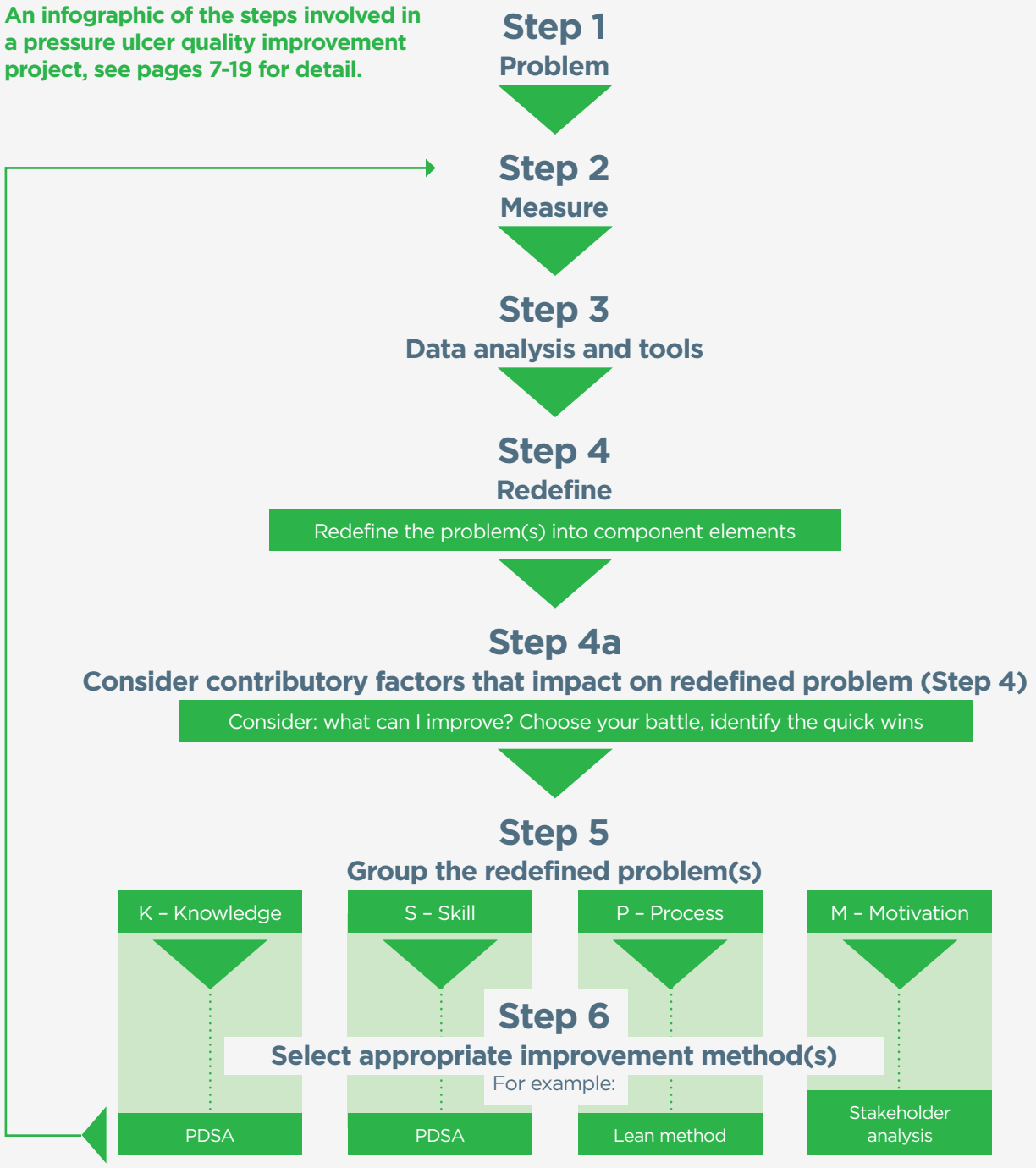
This pressure ulcer quality improvement toolbox has been developed to help you:

- Use tools to understand prevalence and incidence
- Consider what aspects of care, process, culture or behaviour may be contributing to the development of PUs
- Identify which aspects to focus on first to realise the greatest chance of improvement
- Identify the improvement tools that will best suit the individual project

Clinical significance

Informed quality improvement

An infographic of the steps involved in a pressure ulcer quality improvement project, see pages 7-19 for detail.



PDSA = Plan, Do, Study, Act

Step 1

Identify the problem

Patients are developing pressure ulcer (PUs) while in your care. Why? What is it that is not being done that could be done to prevent them? Or, if everything is being done and the PUs are inevitable, are you confident that you can demonstrate this in every case?

There are several methods you can use to help you identify the problem:

1. Data collection

To recognise there is a problem, the numbers must first be understood. Counting PUs, the categories, the body site, the patient demographics, and the staff involved in the care can all help you identify that there is a problem.

Data can be collected and presented in a variety of ways. All category 2, 3, 4 unstageable and deep tissue injury PUs need to be reported using an incident reporting system. A good-quality system will allow for these reports to be collated as data. Consider the data points you would like to collect and ensure these are enabled within the reporting tool.

NHS Improvement (NHSI) has published the Making Data Count document – NHSI (2019) – in order to help you decide how best to report your data.

In addition, Microsoft Excel is a spreadsheet tool that can be used to collate, analyse and pictorially present data.

2. Audit

Auditing can help identify the problem. Examples include a prevalence audit, an observational audit or a record-keeping/documentation audit. Consider what you think the problem is and the best way to audit this.

Your gut feeling may be that patients are not being repositioned often enough. To assess this, you could carry out both an observational audit and a documentation audit. On completion, the audit might show staff are repositioning often enough and recording it, but that the technique for repositioning is inadequate and leaving patient's skin vulnerable to pressure. Now you know what you need to address to improve the problem.

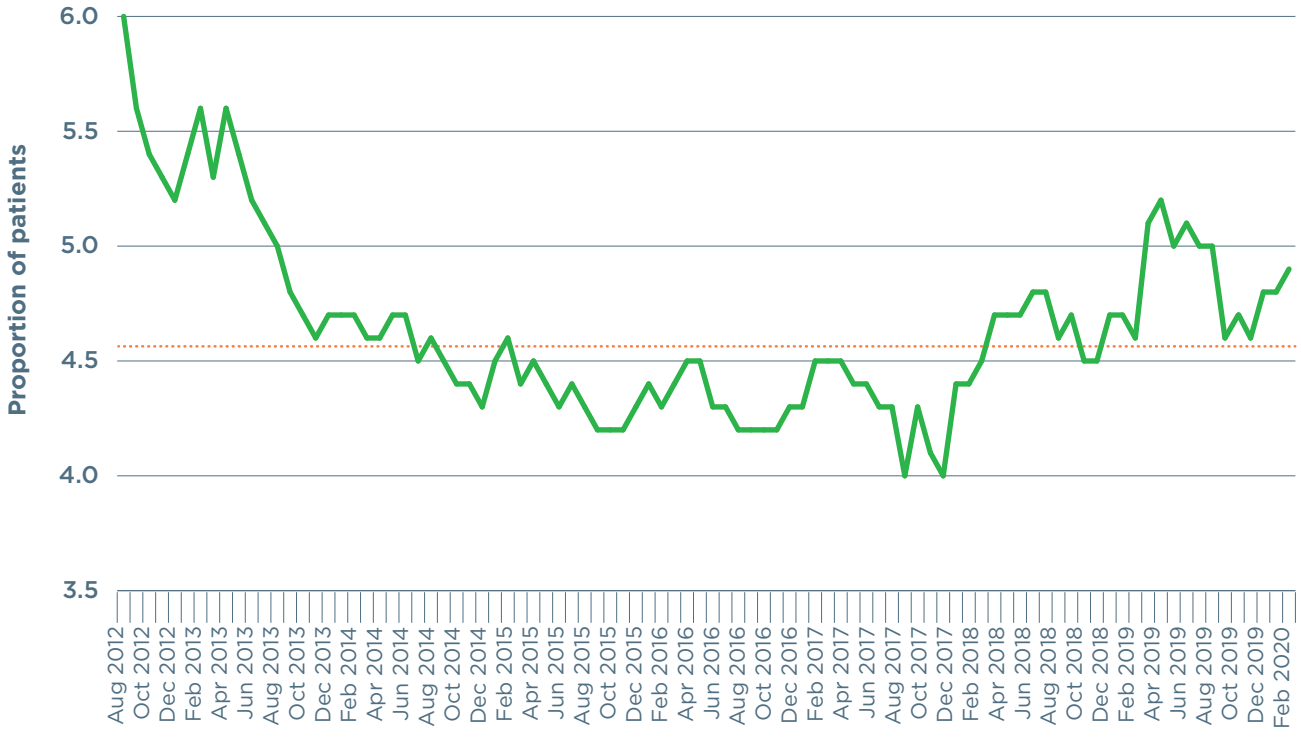
The Healthcare Quality Improvement Partnership (HQIP) has published a guide to reporting and recording local clinical audits and, in 2019, NHS England (NHSE) and NHSI published a guide to ensuring good governance on local audits. Both documents – HQIP (2020) and NHSE/NHSI (2019) – will help you understand audit further.

Undertaking a prevalence audit will allow the counting of PUs on one day. Between April 2012 and February 2020, NHSE used a monthly prevalence audit tool called the Safety Thermometer to measure PUs.

While not perfect, it does demonstrate some improvement early on, which later becomes more static (Fig 1).

Fig 1

The monthly pressure ulcer (PU) safety thermometer run chart is presented as a percentage of the proportion of patients with a PU in all organisations submitting data



Source: NHS Improvement (2013)

Step 1

Identifying what is behind the problem can be easy or complex. For example, an audit of documentation might tell you that risk assessments are not being completed within appropriate timescales, but it will not identify why this is not happening.

Breaking it down into the differing components of when and how PU risk assessment is undertaken can help you pinpoint where the biggest challenge lies (Fig 2).

3. Root-cause analysis

Root-cause analysis (RCA) is a retrospective, in-depth investigation into events that resulted in a patient harm, for example, PU development.

In England, all category 2, 3, 4 unstageable and deep tissue injury PU incidents are investigated. Using RCA is a helpful way to identify clinical and organisational areas for improvement.

Considering each PU incident reported and analysing the underlying root cause can identify themes. Investigating each patient and PU development, asking what happened and why did that happen can highlight the root cause.

Very often, when several such investigations are considered together, a common theme or themes can become apparent (see Cause and effect, p12).

4. Patient experience, complaints, feedback

Gathering information from patients may help identify/give clarity to a problem. If patients are consistently raising a particular issue, then this may highlight that there is a problem and help you start to identify exactly what that problem is.

NHSI has published a resource – NHSI (2018b) – designed to guide you through the process of gathering and understanding patient stories, as part of its online library of quality, service improvement and redesign tools.

5. Gut feeling

You think you know there is a problem, and you think you know what it is but you now need to demonstrate whether your gut feeling is correct or not. Using the tools listed can help you to do this.

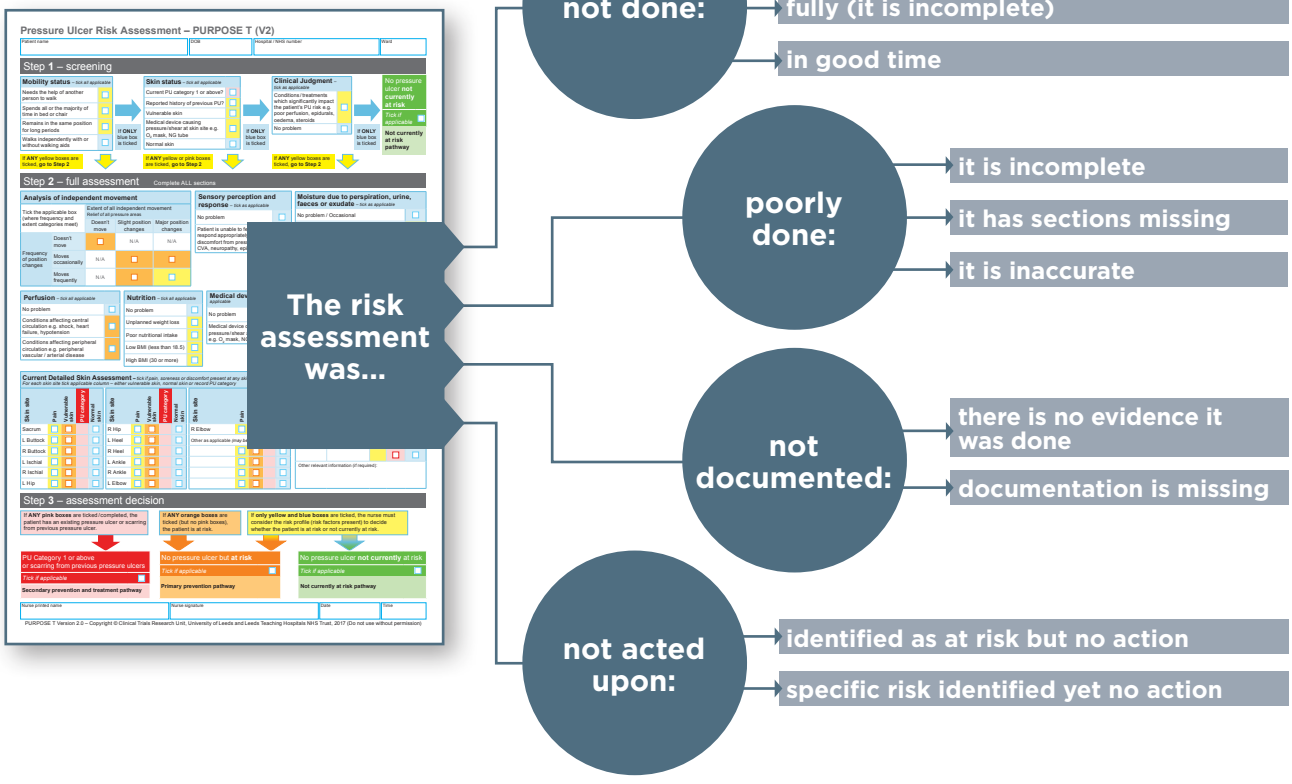
6. Pathway mapping

If you are unsure what the problem is, mapping the pathway (the patient journey) and asking staff to highlight areas where they feel there are challenges may help.

You can also map the journey of the last 10 patients and see where variation occurs. NHSI has published a resource to help with this mapping process – NHSI (2018c) – which forms part of its library of quality, service improvement and redesign tools.

Another way to identify a factor limiting the desired outcome is to follow the theory of constraints. NHSI has published a helpful guide to the theory of constraints – NHSI (2018d). Utilising the patient's journey, the process demonstrated in the guide may help you identify the constraints.

Fig 2
Breaking down the components of undertaking risk assessment



Step 2

Measure the problem (big data)

Quality improvement (QI) cannot take place without data. All clinicians tasked with QI for pressure ulcers (PUs) will require access to a minimum data set (MDS).

MDS content and size will vary depending on the organisation and setting. An MDS – preferably live data – must be flexible, easily accessible and presented in a way that informs the QI clinician.

It should be noted that an MDS for the purpose of QI will vary considerably from an MDS used for quality assurance.

A suggested MDS for QI for PUs in a hospital setting could contain:

- A statistical process control (SPC) chart outlining total monthly organisational PU incidents;
- A monthly/weekly listing report of all PU incidents (acquired and/or present on admission);
- A table outlining PU high incidence clinical areas;
- A bar/line chart detailing monthly/annual level of harm associated with PU.

A suggested minimum data set for QI for PUs in a community setting could contain:

- An SPC chart outlining total monthly organisational PU incident rates;
- Monthly listing of all PU incidents;
- The number of patients receiving care from community staff, home care and/or a nursing/residential care home.

Big data

Big data comes in many forms. It is important to identify:

- What data you need to measure the problem;
- How best the data you need can be obtained.

The examples and QI tools outlined below will help you with this decision making.

Performance benchmarking

What: This is the act of comparing your organisation's big numbers alongside those of another organisation, but using the same data set, for example, your organisation's total acquired PU versus the national average acquired PU. It can be tempting and sometimes helpful – in order to determine improvement targets – to benchmark your big numbers with those of another, similar organisation. However, interpret this comparison with caution, as no two organisations are the same and there are numerous variables that contribute to an organisation's performance. It is important to measure and compare your organisation's internal performance data, for example, comparing different clinical areas' monthly acquired PUs.

How: This data can usually be obtained via teams in your organisation, such as the risk, safety, performance or information teams. Note: sometimes this data is spread across many of these teams.

Clinical audit

What: A clinical audit is a close inspection or evaluation of a particular aspect of health or social care. It can take many forms and can be conducted in many ways and for different reasons. Clinical audits can be very large (eg, national prevalence audit) or small (eg, one clinical area) and conducted in many ways. They can be used to monitor performance on the front line, for example, risk assessment completion rates, but can also be used to identify problems you may/may not know about (as per Step 1). You may wish to use clinical audit to measure the extent of an existing problem, for example, the percentage of patients receiving a PU prevention information leaflet.

How: Clinical audits can be conducted in many ways. It is important to be mindful of the best way to collect the data you desire; this will have an impact on the size of your audit. For example, if you do not know where improvements need to be made to prevent PUs, the results of a large prevalence and/or quality audit is a helpful starting point. If you already know the problem, auditing that specific issue will require a smaller audit, such as observing clinical practice or auditing documentation.

Root-cause analysis

RCAs, as described in Step 1, can both identify the problem and be used as a baseline measure.

What: Step 1 highlights how RCA can be used to identify themes. Using RCA as a measure for baseline requires pooling of the themes and translating them into a number.

How: Most organisations will have a structured and intuitive RCA template that is designed to enable the designated investigator to determine the root cause of the harm by extrapolating any service/care delivery issues and contributing factors. Tabulating the themes can help to identify the challenges that may need to be focused upon.

Patient experience/complaints

Complaints can both identify a problem and be a measure. If these were used to identify that a problem existed, then they can be used to measure the extent of the problem. Complaints could be retrospectively reviewed to create a baseline measure of a particular problem that is wanted to be measured. For example, one ward may have received some complaints where a common theme is that patients were not being supported to eat. This may prompt the team to explore this further, review further back in time for complaints demonstrating this theme and produce a baseline number of complaints.

Step 3

Analyse the data and tools

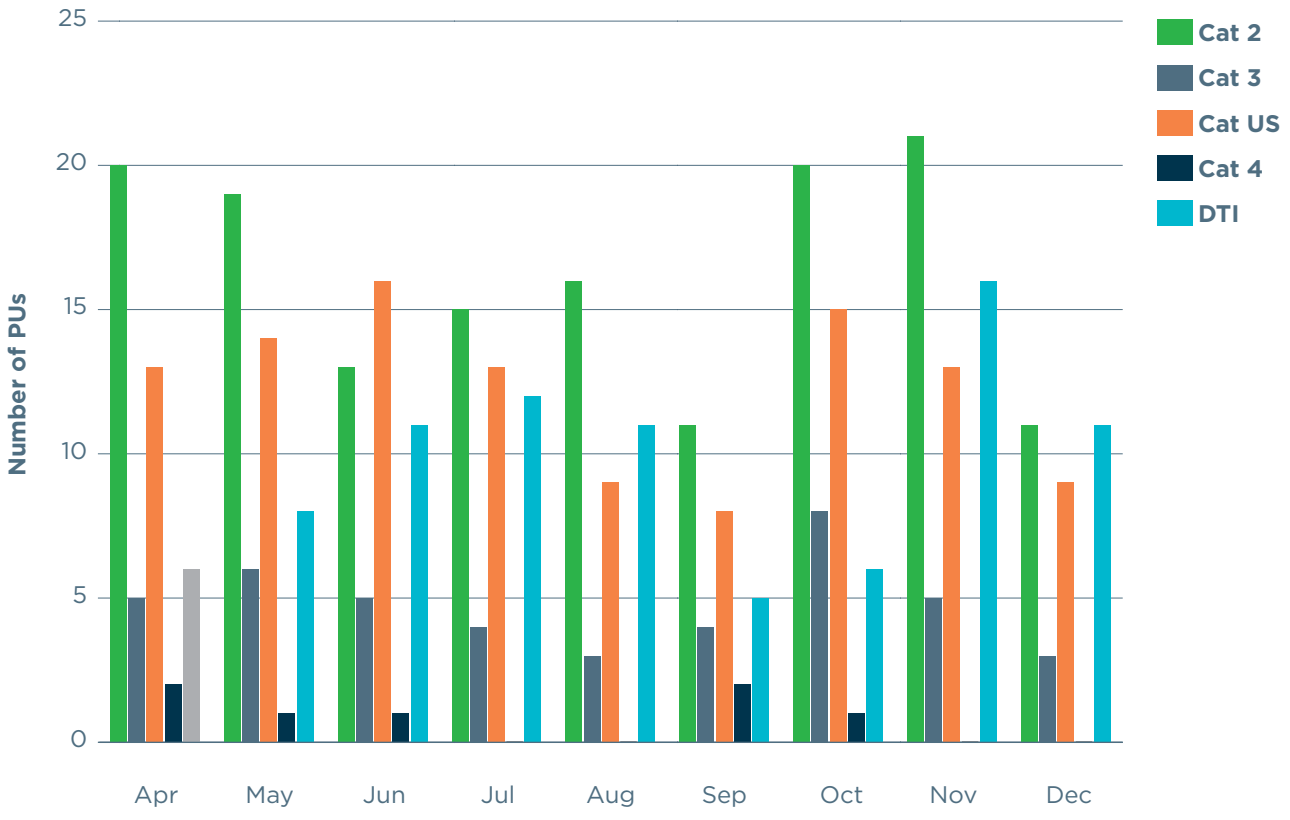
Collecting the data is the first step to helping you understand what a problem might be (see Steps 1 and 2). Analysing requires further exploration of the data you have collected.

Raw data

Data may be listed as a collection of numbers, for instance, a bar chart demonstrating number of pressure ulcers (PUs) by month and category (Fig 3).

However, this is a poor indicator of whether there is any improvement or deterioration. Was there a real problem in November or was this normal variation?

Fig 3
A bar chart demonstrating the number of pressure ulcers by month and category in organisation St Elsewhere

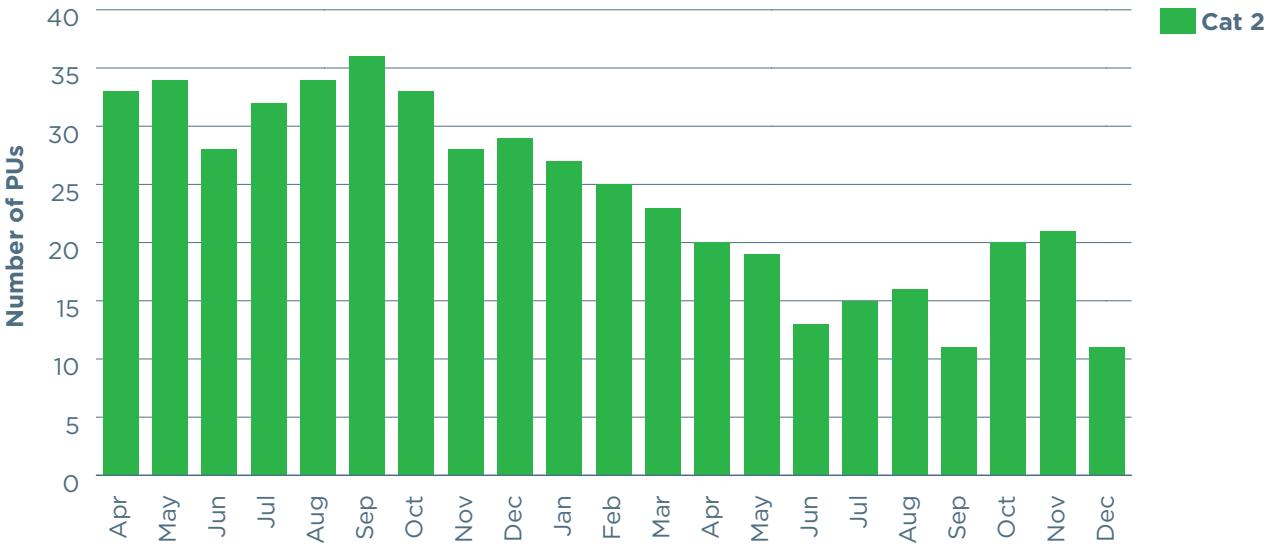


Cat = category; DTI = Deep-tissue injury; PU = pressure ulcer; US = unstageable

Step 3

Fig 4

A bar chart demonstrating the number of category 2 pressure ulcers by month and category in organisation St Elsewhere. A good way to demonstrate PU numbers but not new process improvements



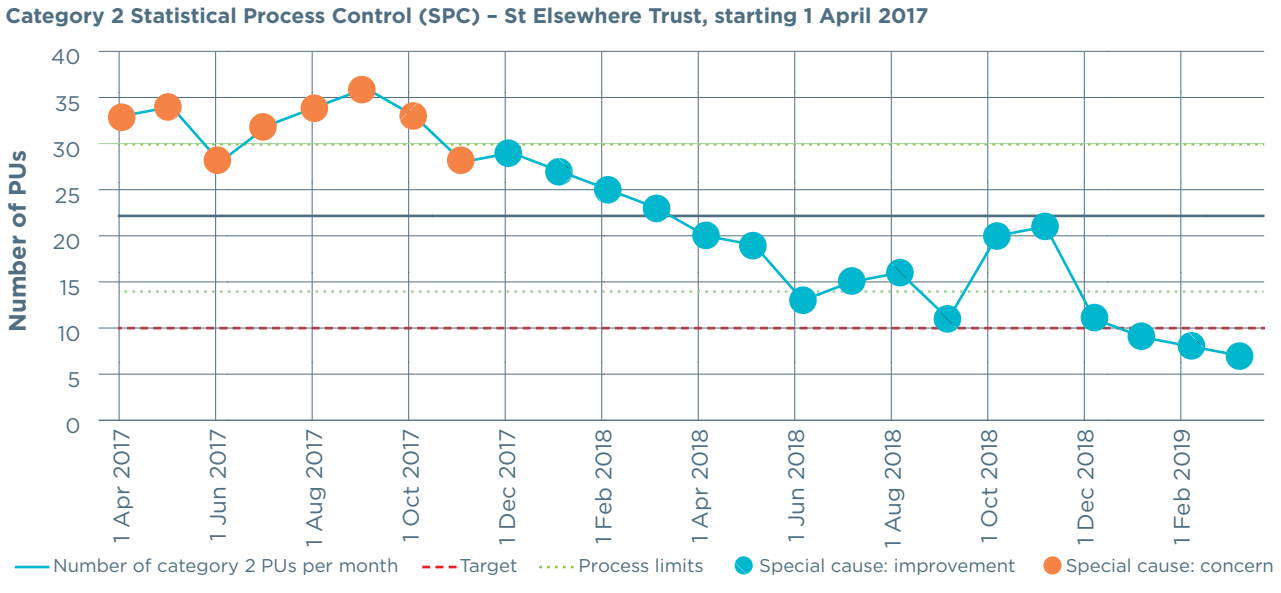
Cat = category; PU = pressure ulcer.

Measuring using statistical process control (SPC) requires the collection of data over an extended period of time and can help to identify the normal range or where there are occurrences outside of the norm. NHS England (NHSE) has published information, including a video, on its website explaining SPC and provides a tool to use to input your data.

On this page are examples that demonstrate data presented via bar chart and SPC. Fig 4 displays the numbers of category 2 PUs over a two-year period in a bar chart. It suggests an improvement in the number of category 2 PUs. When demonstrated in an SPC (Fig 5), the data shows there has been a change, possibly due to the implementation of a new process. In the scenario presented in Fig 5, for example, a new process or care action may have been implemented around December 2017, and that change appears to have driven an improvement in PU numbers, which the SPC demonstrates better than a bar chart.

Fig 5

A statistical process control chart demonstrating the number of category 2 pressure ulcers by month and category in organisation St Elsewhere. A good way to demonstrate change in category 2 PUs and any process improvements driving that change

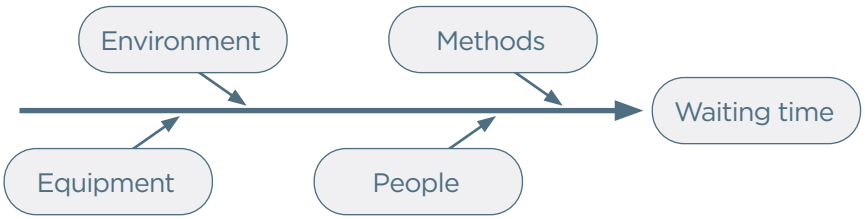


Step 3

You can use a Pareto chart to measure data in order to identify where the biggest challenge lies and, therefore, which challenge to tackle. Data is collected over time and put into a Pareto chart tool, such as the one created by the New South Wales government's Clinical Excellence Commission (Fig 6).

Pareto uses the 80:20 rule, with 80% of the data demonstrating where the biggest problems lie. This allows you to identify which aspects of care you would be best served to focus on. If you focus on the "vital few" (top 80%) and plan to improve those, rather than the "trivial many" (the bottom 20%), a bigger quality improvement impact can be achieved.

Fig 7
Fishbone diagram



Cause and effect

Following root-cause analysis or identification of a problem, in order to understand the problem, you will need to dive deeper into the cause.

Investigating the development of a PU while in your care may identify that a risk assessment was not completed, and that the patient was not repositioned.

This may be why they developed a PU. However, it is not enough to stop there. Ask why. Why was the risk assessment not carried out? Why were they not repositioned?

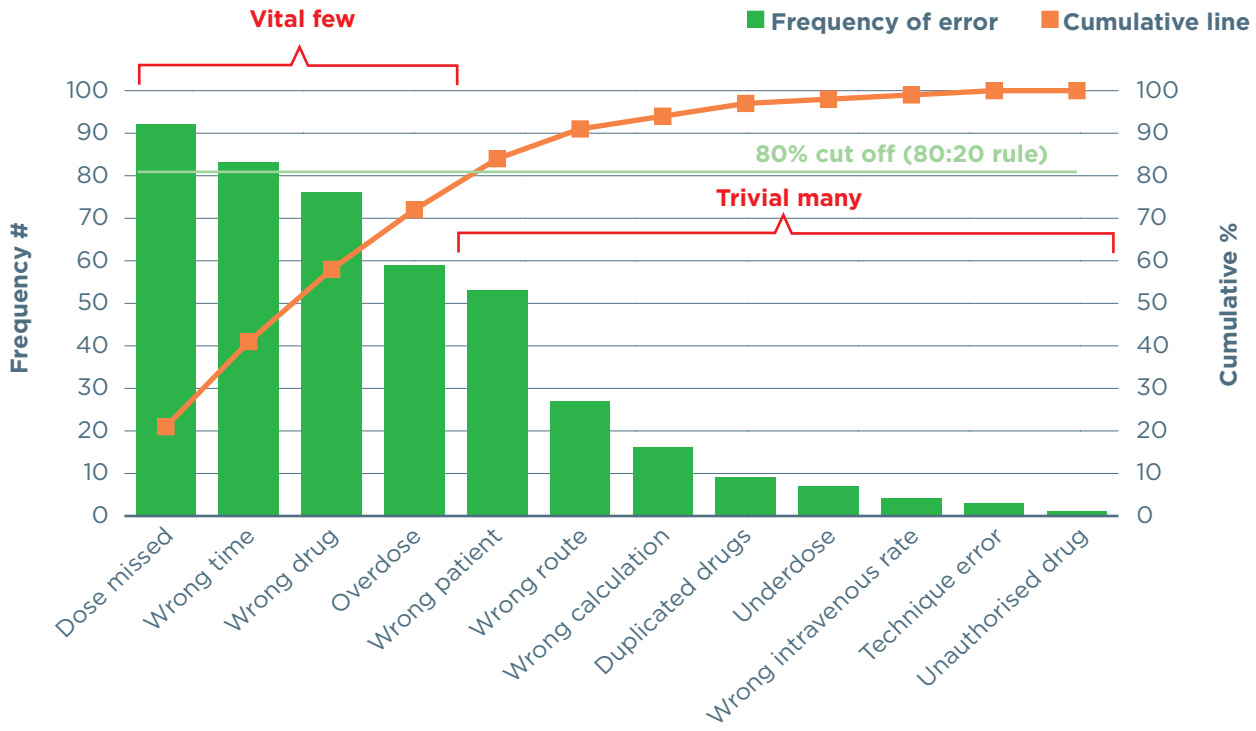
Using a fishbone diagram (Fig 7) and the 'five whys' model (see p13 for more information) can help you understand the underlying causes of a problem. NHS Improvement (NHSI) has previously published guides on the use of both – NHSI (2018ef).

Process mapping

Process mapping will give you an understanding of the effectiveness of the process and procedures along the patient journey, some of which may be contributing to PU development.

NHSI published a guide on using conventional process mapping – NHSI (2018g) – (See p17 for more information on process mapping.)

Fig 6
An example of a Pareto chart demonstrating types of medication errors. In this example using medication errors, it can readily be seen that in 80% of cases the biggest error reasons are dose missed, wrong time, wrong dose and overdose. These are the vital few reasons. To make the biggest quality improvement impact with regard to medication errors, targeting these four will most likely return the most significant improvement to the overall numbers of medication errors. Focusing on the trivial many will not see the same level of benefit



Step 4

Redefine the exact problem

When starting a quality improvement (QI) project, it is easy to believe you fully understand what the problem is and the most obvious solutions. By following Steps 1-3, you should have determined more accurately what the problem is and have a clear idea of what you need to improve.

Before starting your improvement, it may help to think about what you can actually change and what is outside of your scope. For example, if your problem relates entirely to NHS electronic patient records being unable to use the same codes, that is unlikely to be within your gift to change.

There are many ways of getting to the root of the problem, including the 'five whys', on which NHS Improvement has published a handy guide – NHSI (2018f) – as part of its series on quality, service improvement and redesign tools.

The five whys model suggests that by repeatedly asking the question "Why?" you can get to the root of the problem. An example of root cause analysis using five whys could be:

- The patient repositioning was not documented at the right time – why?
- The documentation is done when all the patients in the bay have been turned – why?
- It is time consuming to enter information into the electronic patient record – why?
- There is only one computer in the bay and it is kept at the far end – why?
- There is only one accessible electrical socket...

The root cause here is that the majority of electrical sockets cluster around patients' bed spaces. As a result, there is only one freely accessible plug socket to keep the computer fully charged, so it remains anchored at the far end of the bay. Staff perceive it to be time consuming to come away from a practical task to go repeatedly to the computer to complete each record at the appropriate point after turning the patient and, instead, did them all at the same time.

The problem could equally have related to the length of time to log on or many other factors. Once you have identified what the root cause is, you can begin to think of how you may address it.

Fig 8
The five whys

Define the problem:

Why is this happening?

Why is that?

Why is that?

Why is that?

Why is that?

Why is that?

Note: If the last answer is something you cannot control, go back to the previous response

Step 5

How to address the problem

A useful way to tackle a problem is to follow the Will Training Help? model developed by internationally renowned training designer Cathy Moore.

Moore's flow chart (Fig 9; Moore et al, (2015)) breaks down why the problem occurs. So, taking the previous examples of risk assessment, if you ask staff why risk assessment has not been fully undertaken, the most common responses will include:

- Lack of time;
- Lack of knowledge;
- Unfamiliarity with the documentation (especially if there are high numbers of bank or agency staff);
- Lack of resources, such as weighing scales to complete elements of the assessment;
- Unfamiliarity with the tool.

Using the model centralises whether the problems relate to knowledge, skills, environment/process and motivation. Understanding which category the challenge fits into helps to select the correct form of improvement methodology.

When analysing reasons for the poor completion of risk assessment, the following factors may apply and should be considered:

Environment/process

- The electronic (or paper) patient record is not user friendly, there are too many boxes to complete;
- The ordering of the process is illogical;
- The same information is required in several places so does not get fully completed in all of them;
- The form does not allow for subtle nuances and, therefore, parts get omitted or incorrectly completed;
- The area relies heavily on non-substantive staff, for example, bank or agency workers unfamiliar with the tool/documents.

Motivation

- Staff are too busy;
- Staff believe from their own judgement the patient is not at risk, so do not prioritise risk assessment;
- Staff prioritise delivery of preventative care over carrying out activities perceived to be box ticking;
- The leadership is not seen to value the process;
- Staff trained in other countries may not be used to undertaking risk assessment or some elements of risk assessment, such as skin checks;
- Staff do not see it as important and do not think they can make a difference;
- Staff do not see the relevance to their patient group;
- Staff do not see the link between the tool and delivery of care;
- Staff are overconfident in their own judgement;
- Staff do not want to bother someone more experienced for assistance;
- Staff lack confidence.

Knowledge

- Staff have no knowledge of risk assessment at all;
- Staff have outdated or incorrect knowledge about risk and associated actions;
- Staff lack of knowledge about key factors within an assessment, for example, which comorbidities or medications are relevant;
- Staff lack of understanding of how key factors contribute to risk;
- Staff lack of understanding of how the factors jointly contribute to risk for a specific individual;
- Staff are unfamiliar with the particular risk assessment tool.

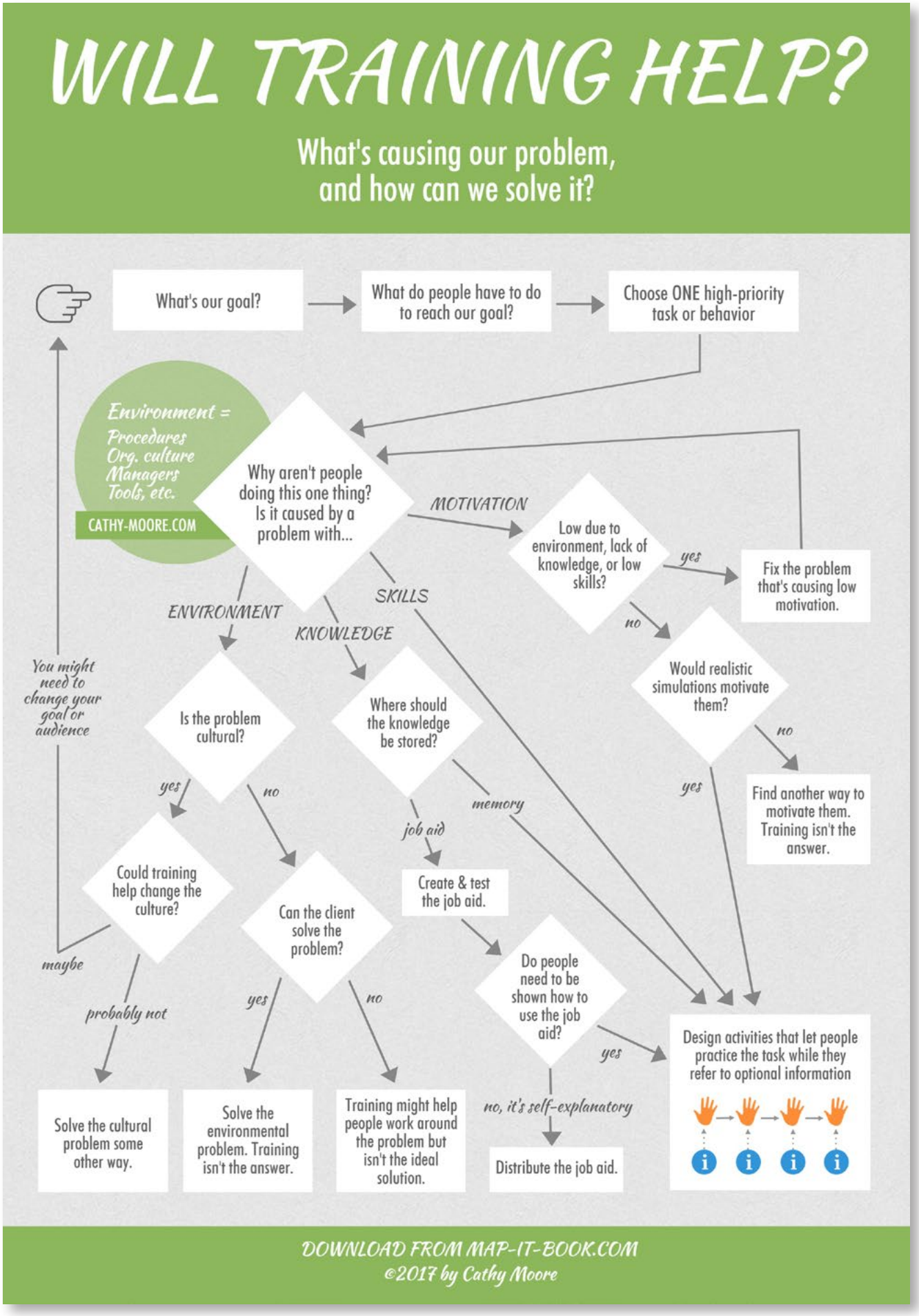
Skills

- Determining what is knowledge and what is skill can sometimes be tricky;
- Staff do not know how to undertake a skill, for example: how to measure and calculate body mass index (BMI) if you cannot measure the patient's height. Are staff aware they can use alternative measurements such as ulna length? Do they know the alternative method exists and do they have the skills to carry out the alternative measurement?
- When using the Waterlow score and thinking about the 4-6 scoring range within the neurological deficit section, having the skill to ascertain where to score within that range comes with confidence;
- Understanding why a person might not be following advice regarding their own PU prevention and supporting them to find solutions to prevention requires both conversational enquiry and negotiation skills.

Once it is clear which of the four domains the problem lies in – environment/process, motivation, knowledge and skills – a more focussed quality improvement project can be undertaken.

You may now wish to alter your data set or narrow your data further, focusing in on the problem dependent on your findings (small data).

Fig 9
Will Training Help? model



Step 6

Improvement models: making the change

Now you have identified the care issue or problem you wish to improve, have some helpful baseline measures and data, and an idea of why the problem might be happening, your improvement plan needs to be designed and thought through.

Setting in motion some improvement strategies is commendable, but how will you know they have made a difference if you haven't wrapped a structure around the process?

What should that structure look like?

NHS Improvement (NHSI) has created many valuable resources to help you with an improvement project, including a specific set of quality, service improvement and redesign tools that is now housed on the NHS England website.

This toolbox can help you navigate those resources and identify those that may be of more use to you.

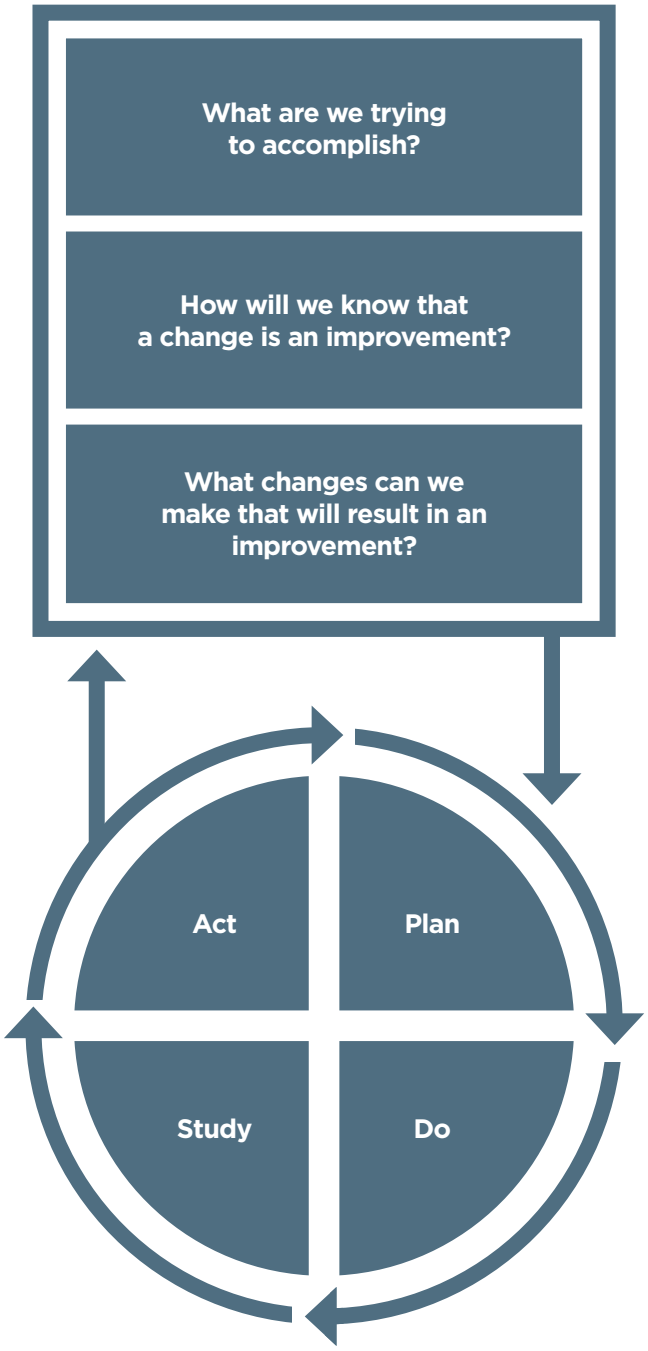
Plan, Do, Study, Act cycles

Plan, Do, Study, Act (PDSA) cycles (Fig 10) are a method for initiating and driving improvement. NHSI's quality, service and redesign tool guidance – NHSI (2018h) – describes PDSA cycles and their potential as follows:

> *"The model for improvement provides a framework for developing, testing and implementing changes leading to improvement. It is based in scientific method and moderates the impulse to take immediate action with the wisdom of careful study."*

> *"Using PDSA cycles enables you to test out changes on a small scale, building on the learning from these test cycles in a structured way before wholesale implementation. This gives stakeholders the opportunity to see if the proposed change will succeed and is a powerful tool for learning from ideas that do and don't work. This way, the process of change is safer and less disruptive for patients and staff."*

Fig 10
The PDSA cycle



Source: Associates in Process Improvement

Step 6

Following the steps already outlined, you have in fact started the PDSA cycle. You have been planning by identifying the problem and the extent/size of the problem. This cycle is designed to test the change in practice.

Starting by asking yourself three questions can help focus on what you want to accomplish:

1. What are we trying to accomplish?

a. Example: reduce the number of acquired pressure ulcers (PUs) developing on ward B by 50% in three months
b. Using Step 1 and Step 2, you have identified your problem and the baseline measures

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

a. Example: the number of acquired PUs developing on ward B reduces by 50%;
b. Using Steps 2 and 3, you have defined your baseline and targeted your problem;
c. Using Step 4, you have re-defined your problem to be more specific.

3. What changes can we make that will result in the improvement we seek?

a. Example: training in using the 30-degree tilt, provision of pillows to reposition using the 30-degree tilt, wall charts above bed with clock displays so staff, patients and visitors know when next repositioning is due;
b. Using Step 5 may have contributed to this already.

Then move into working through the PDSA cycles of Plan, Do, Study and Act, as illustrated and described in Fig 10.

Plan

A. Develop your aim

Brainstorming sessions with key members of staff can help define the aim. Define your aim – follow the SMART goals principle:

S Be specific: we (who) will reduce the number of acquired PUs (what) by 50% in three months (when);
M Be measurable: by 50% (you need to know your baseline);
A Be achievable: by 50% in three months? Is this an over-stretch? Review, if so;
R Be relevant: reducing the number of acquired PUs is relevant to patient safety, experience and quality of care;
T Be time specific: in three months.

B. Engagement: identify who needs to be involved or engaged

Obtaining stakeholder engagement and buy-in is important to the success of your improvement project. Identify who your stakeholders are. A brainstorming session may prove useful.

Consider how relevant they are to the improvement. You might like to consider them using the stakeholder analysis tool illustrated in Table 1, a draft framework for which is published in guidance on the topic by NHS Improvement – NHSI (2018i).

Identifying those people who have high power and high impact, and gaining their support for the project can help ensure success. Think about what's in it for them and how can you sell the change, so they want to be a part of the project.

Table 1: Stakeholder analysis tool

High Power	● Tissue viability nurse ● Chief executive ● Senior nurse/chief nurse	● Ward manager and nursing staff ● Therapists
Low Power	● Portering staff ● External department staff (e.g. radiology)	● Patients ● Pharmacist ● Visitors
	Low impact stake holding	**High impact stake holding**

In addition, are there any opposers? If yes, and they are of high power and high impact, how are you going to get them on board? For example, a therapist might object because they now have to spend extra time getting the patient into a certain position after their therapy. How can you address this concern with them?

How will you engage the patients and their loved ones in this project? How can you get their views and gain their involvement?

C. Process mapping

Creating a visual representation of the process can help to illustrate the patient's journey.

For example, what are all the steps involved in implementing the 30-degree tilt for repositioning patients on the ward?

Use a brainstorming session to map this out. Walls and Post-It notes are useful tools to help map this out before it is written down into a formal document.

Once implemented, it can also help you to notice where, perhaps, processes don't allow the change to be implemented easily and allow for change in other areas.

Once again, NHS Improvement has published a helpful guide on conventional process mapping – NHSI (2018g) – as part of its online library of quality, service improvement and redesign tools.

Do

You will now be in a position to start to test out your change. Start small – perhaps test it in one hospital ward or with one community nursing team?

This allows small-scale measurement and re-adjustment of process where needed. Were any new problems identified by the change? How can these be overcome?

Study

Collect and analyse the data, compare the results with your predictions. Did you see an improvement as expected? Does the change need refining in any way?

Act

Once you are confident that the change has had a positive impact, you can roll it out in a bigger way – perhaps two wards or the whole of the surgical department?

Continue to measure and redefine. Be prepared for failure – change may still not be effective on a bigger scale. Explore those reasons and determine if they can be rectified.

Continue to analyse your data, define the improvement quantitatively, showcase this and celebrate your success!

Step 7

Re-measure the problem (small data)

At this point in the process, revisit Steps 2 and 5. It is vital to re-measure the same way you measured in Step 2 (big data) and Step 5 (small data) to be able to make a fair comparison. Doing this is important in order to be able to judge whether the change you implemented has had a positive impact on the problem you set out.

Here is an example:

The data set is the total hospital-acquired pressure ulcer (HAPU) incidence (big data) split into medical-device-related and non-device-related pressure ulcers (PUs), further narrowed to show those specifically caused by nasogastric (NG) tubes (small data).

You implement a change in clinical practice to improve the securing technique of NG tubes and then re-measure. If you only re-measured the big data you may not observe any change in HAPU incidence. But by re-measuring both the big and small data above, you may note that there has been a significant decrease in NG-related HAPU and an increase in non-device-related HAPU, which has caused the big data to remain the same. You can be confident that the change you implemented has made a positive impact to patient outcomes for the problem you were focusing on.

When measuring small data, you may wish to consider measuring this over a longer period of time to improve confidence in the data. For example, if you collect data monthly you may need two years' worth to demonstrate effect or change, while if you collect data daily then 60 days' worth may be sufficient. Using statistical process control can give the above context to your data over a specific period of time.

It is important to note that not all changes tested will improve the problem. The impact of the implemented change may be an:

- **Improvement:** what worked well? Can you strengthen the change to maximise impact? Will the change have similar effects in different clinical settings?
- **No change:** was this the correct clinical setting for the change? Have you missed the root cause of the problem? What did you learn? What can you do differently?
- **Deterioration:** why did this happen? Was the change not the correct solution for the problem? Did the change raise awareness and, therefore, increase reporting? Were there other factors influencing this, such as a change in leadership, Inaccuracies?

Step 8

Post-project review

It is now important to undertake a post-project review, so that you can then either celebrate the success of the project or accept that no improvement is possible.

Undertaking such a review can identify both what went well and what did not go quite so well, meaning that learning can be shared with colleagues and departments, and others can learn from your experience.

It is important to celebrate success and to communicate and share what has been achieved with the following:

- Staff involved in the project: thank people for their involvement, have a celebration event;
- Other departments and teams;
- Key stakeholders.

There are a number of ways that you can communicate your success. For example, you could consider presenting, promoting or publishing your findings.

Present

- Present information via your organisation's intranet;
- Use information/communication boards in the ward/department/clinical areas;
- Submit the project for an award, internally or nationally;
- Deliver presentations at internal meetings to key stakeholders;
- Submit for presentation at a conference.

Promote

- Write a review of the project for newsletters or your organisations newspaper;
- Tweet the project results;
- Include results in your organisation's Facebook pages.

Poster

- Produce a poster for display at events/conferences;
- Use a pop-up banner to present results.

Publish

- Write up the project for external publication.

By celebrating and communicating success, the sustainability of the improvements made can be increased. It can generate enthusiasm in others and encourage others to undertake a similar project.

Conclusion

Pressure ulcers (PUs) continue to be costly to both the NHS and individuals and, despite a high profile and vast amounts of work to reduce the numbers of PUs developing, little improvement has been seen in the last few years.

For those working in the field, the lack of improvement can be frustrating but trying to identify the key drivers and strategies for sustainable change can be overwhelming.

Quite often, the problem appears obvious and too big to tackle but it is important to be open minded and positive when embarking on a quality improvement (QI) project. While this toolkit has focused on PUs, the steps and guidance included can easily be adapted for a variety of different QI initiatives related to tissue viability.

QI methodology allows for a structured, systematic approach to identify the actual key problems and effect sustainable change. It is important to be realistic about what it is possible to change; identifying and utilising the data sources available will determine possibilities and inform the direction of the project, and building a team that includes all key stakeholders will improve the chances of success.

The guidance and resources in this toolkit offer a step-by-step approach to:

- Identify and measure the problem using appropriate qualitative and quantitative data sources;
- Analyse data and the tools that can help to determine the actual problem;
- Redefine the exact problem;
- Address the problem;
- Choose the most appropriate improvement model to implement strategies for change, test those changes in practice and to evaluate the results of the change.

Finally, it is important to view QI as an ongoing cycle of measurement and re-measurement to embed strategies into everyday practice, but celebrating positive outcomes must form part of the process.

Making those who have been involved in the QI project feel valued and excited about the positive outcomes will aid in the sustainability of the change. Communicating the positive outcomes can also motivate others to undertake their own QI project.

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Appendix Example 1: repositioning

Step 1
Problem: patient repositioning

Step 2
Measure: non-participant observation audit, retrospective review of repositioning documentation, review of root-cause analyses, pressure ulcer incidence, staff focus groups and questionnaires

Step 3
Data analysis and tools: thematic analysis, descriptive statistics, bar charts

Step 4
Redefine the problem from findings:

Redefine the problem(s) into component elements	1. More repositioning was completed than documented 2. Not all members of multidisciplinary team documenting 3. Positions used not effective in relieving pressure 4. Electronic repositioning tool and restrictions making documentation more difficult 5. Not enough pillows for all requiring 30-degree tilt 6. Inconsistent use of slide sheets

Step 4a
Consider contributory factors that impact on redefined problem (Step 4)

Consider: what can I improve? Choose your battle, identify the quick wins

Step 5
Group redefined problem(s)

K – Knowledge	S – Skill	P – Process	M – Motivation
3, 6	3	4, 5	1, 2

Step 6
Select appropriate improvement method(s)

For example:

PDSA	PDSA	Lean method	Stakeholder analysis

Step 7
Re-measure/measure outcomes:
reduction in sacral and buttock pressure ulcers within ITU

Step 8
Celebrate success:
- Improvements shared with unit teams
- Presentation on the project and its success delivered to divisional and trust preventing-harms groups
- Report to care-quality group
- Share results at tissue-viability link nurse study days

ITU = intensive therapy unit; PDSA = Plan, Do, Study, Act

Appendix Example 2: risk assessment

Step 1
Problem: risk assessment

Step 2
Measure: retrospective review of risk assessment documentation, review of root-cause analyses, staff focus groups and questionnaires, observation of practice, time and motion study

Step 3
Data analysis and tools: descriptive statistics, bar charts, qualitative information

Step 4
Redefine the problem from findings:

Redefine the problem(s) into component elements

1. Documentation is difficult to use
2. Staff perceive risk assessment to be of low value compared to implementing prevention
3. Sections of the tool are missed
4. Sections of the tool are misunderstood
5. Staff are too busy to complete the paperwork
6. There are no weighing scales so staff cannot calculate BMI
7. Staff do not know how to calculate BMI using ulna measurement
8. Assessment does not result in an appropriate care plan
9. Assessment does not result in the implementation of preventative care

Step 4a
Consider contributory factors that impact on redefined problem (Step 4)

Consider: what can I improve? Choose your battle, identify the quick wins

Step 5
Group the redefined problem(s)

K – Knowledge	S – Skill	P – Process	M – Motivation
3, 4, 7, 8, 9	6, 7, 9	5, 6	2, 5, 8, 9

Step 6
Select appropriate improvement method(s)

For example:

PDSA	PDSA	Lean method	Stakeholder analysis

Step 7
Re-measure/measure outcomes:

Improvements within timeliness and completeness of risk assessment

Step 8
Celebrate success:

- Improvements shared with unit teams
- Presentation on the project and its success delivered to divisional and trust preventing-harms groups
- Report to care-quality group
- Share results at tissue-viability link nurse study days

BMI = body mass index; PDSA = Plan, Do, Study, Act

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