NHS
Institute for Innovation and Improvement

The Productive Operating Theatre

Building teams for safer care™

Recovery

Version 1

This document is for theatre managers, theatre coordinators, recovery matrons, recovery staff, anaesthetists, surgeons, theatre staff, ward staff and improvement leads

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Theatre
Recovery

The Productive Operating Theatre

Recovery

Purpose of this module

The Recovery module will help you to analyse and improve how your patients are managed immediately after surgery. It focuses on the information flows, processes and activities required to care for patients in recovery. This module covers the patient's journey from the time they leave the theatre post-operatively, through recovery, until they are either discharged home or to an inpatient surgical ward.

The care given in recovery plays a crucial role in the quality of your patients' experience. What happens during recovery influences the length of stay for your patients and the speed of overall recuperation and wellbeing after surgery.

This module provides a structured approach that will help you understand and review your current recovery processes, helping you identify where you can make improvements, and how you can adapt ideas to suit the needs of your theatre department and patients. Recovery sets standards that will enhance your patient's journey across the four domains of quality:

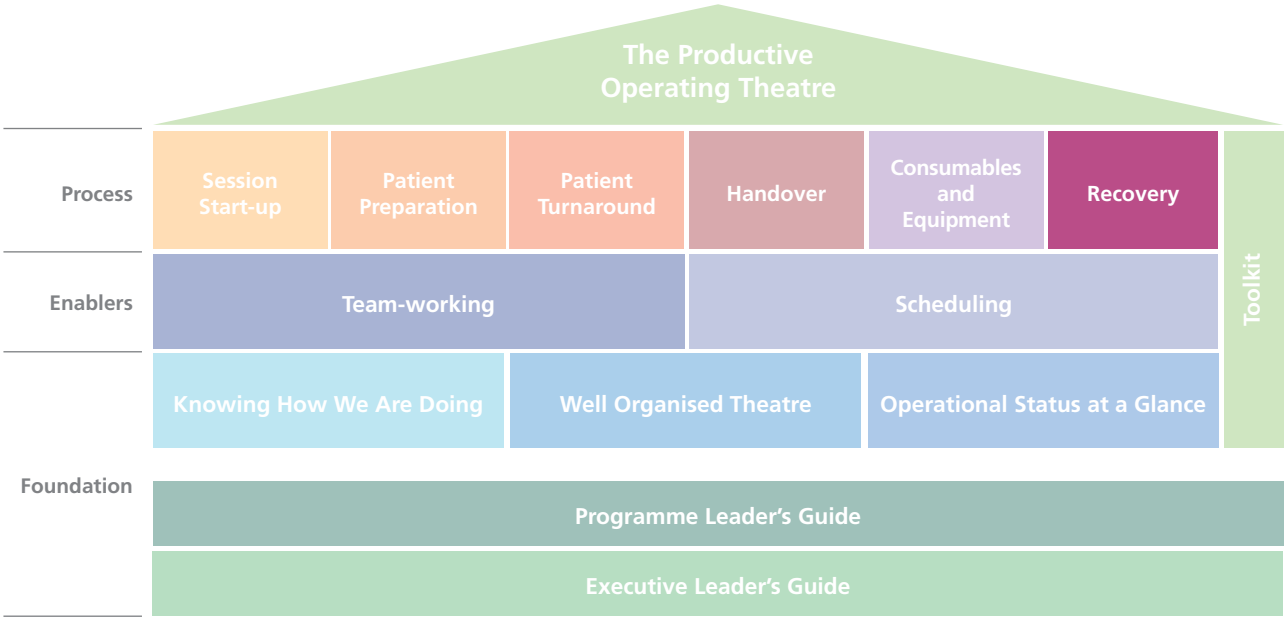
- team performance and staff wellbeing
- safety and reliability of care
- value and efficiency
- patient's experience and outcomes.

As one of the most expensive and valuable resources within a hospital, it is crucial that theatres are used efficiently and effectively. An efficient theatre department is essential to help provide high quality, safe care with no delays; the recovery unit plays an important role in achieving these aims.

'This module offers recovery staff and anaesthetists the opportunity to change practice in ways that will both improve their own working environment and deliver tangible benefits to patients recovering from anaesthesia and surgery.'

David Sanders – consultant anaesthetist, Royal Devon and Exeter NHS Foundation Trust

These modules create The Productive Operating Theatre



Contents

1. What is the Recovery module?

What is it?
The Recovery module provides a practical, structured approach that will help you to improve your processes from theatres through to recovery, to the surgical wards or discharge home. It will show you and your team how to identify improvement ideas and how these can be implemented.

Why do it?
Patients expect a safe and efficient journey from the operating theatre through to recovery, whilst staff need to work as a team, focussing on the care of each patient, with fewer interruptions, frustrations and delays. The Recovery module will enable your staff to focus on and improve their core responsibilities of monitoring observations, and ensuring the safe transfer of care from theatre to ward staff in a timely manner, with the appropriate information.

Recovery will help you to improve the safety of care for your patients by:
- reducing interruptions and delays
- reducing the time each patient needs to stay in recovery
- improving accuracy and quality of information
- creating and implementing standard processes
- improving team working.

What it covers?
This module will help you to analyse your own Recovery process, identify waste and opportunities for improvement. It will provide you with the tools to gather information and generate ideas that will enable you to test and implement significant improvements within your recovery unit. It will also help you to work with teams outside theatres such as surgical wards, to solve problems beyond the scope of your department.

What it does not cover
The Recovery module does not offer specific instructions on what to improve within your own organisation. It provides you with a structure to help you to identify your own solutions, and a methodology to take these forward in your organisation.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Important links

All the modules within The Productive Operating Theatre link together to achieve the programme's aims. Some however, are more interdependent than others. The Recovery module links particularly closely with the modules listed below.

- ***Knowing How We Are Doing***: collecting, analysing, and reviewing your measures are vital to understanding if the changes you are making are having an impact. Using this module will support you and your team in creating a balanced set of measures that will be useful and relevant, and close to real time, so they can identify the impact of the changes make in Recovery.

- ***Well Organised Theatre***: helps the recovery team organise their workplace better to support the processes being carried out in recovery. By simplifying your workplace and reducing waste, it will help you ensure that you and your team have everything in the right place at the right time ready to go.

- ***Operational Status at a Glance***: the principles within this module should be applied to the recovery unit. Creating real-time visual management tools can help your staff proactively manage the recovery unit.

- ***Team-working***: understanding the importance of team working and introducing techniques to improve communication enhances multidisciplinary team working. For recovery staff it would be beneficial to participate in briefing and debriefings. This will help your team to understand and improve team-working within their department and with external teams such as ward staff.

- ***Scheduling***: as you start to improve your scheduling process you should be able to start predicting when patients will arrive in recovery, and so plan your staff allocation more effectively. This will also provide you with an opportunity to feedback into the Scheduling improvement process.

- ***Patient Turnaround***: recovery staff are critical to ensuring a smooth transition between patients in the theatre suite, and can support this module by establishing systems to receive and collect patients from the operating theatre immediately post-operatively.

- ***Handover***: the recovery team are involved in a number of key handover activities:
  - from ward staff to recovery pre-operatively
  - from pre-operative recovery to anaesthetic room
  - from the anaesthetist post-operatively
  - from the scrub practitioner post-operatively
  - to the ward staff post-recovery.

  The Handover module will help you to focus on the safe, accurate and efficient transfer of the patient including all the necessary patient information.

Learning objectives

After completing this module it is expected that your team will:

- understand the importance of effective communication in creating a safe, effective recovery unit, as well as the impact poor communication can have in causing errors, mistakes and omissions
- understand how the recovery process impacts patients, staff and the organisation
- recognise the importance of leadership in improving and sustaining change
- understand the importance of standard work processes and clear roles and responsibilities
- be able to measure performance across a balanced set of measures
- develop skills to identify, test and implement changes
- develop a culture of continuous improvement within the recovery unit
- be able to work constructively with individuals and teams external to recovery to improve processes, communication and information
- understand the importance of patient experience in redesigning processes.

What tools will you need?

Tool	Toolkit section reference number
Meetings	1
Audit planning	3
Activity follow	5
Video waste walk	6
Interviews	7
Photographs	8
Video	9
Process mapping	11
Cost / benefit analysis	12
Module action planner	13
Timing processes	16
Glitch counts	20

What is Recovery?

Recovery is where care is provided post-surgery. It is an area, usually attached to operating theatre suites, designed specifically to provide care for patients recovering from surgery and anaesthesia, whether it be general, regional or local anaesthesia. A significant part of the care relates to surgical nursing care, eg management of drains, irrigation. Other names are used for this area, eg post-anaesthetic care unit. In this module we will refer generically to Recovery.

Nurses and operating department practitioners (ODPs) undertake essential care for these patients including:

- monitoring vital signs (heart rate, blood pressure and respiration)
- managing postoperative pain
- treating symptoms of postoperative nausea and vomiting (or PONV)

These common activities often need supplementing with more intensive treatment including:

- preparation and establishment of patient controlled analgesia (PCA) pumps
- preparation and establishment of IV or epidural infusions
- management of invasive monitoring such as arterial lines, central venous lines etc
- occasionally serious life threatening complications, such as laryngospasm or respiratory arrest can arise post-anaesthesia. Recovery staff must be trained and experienced in the immediate management of these situations.

Unless complications occur, most patients will only stay in recovery for a short period of time before returning to another department of the hospital, or being discharged home.

Recovery models

The process of the recovery period is paramount to ensuring a safe, efficient patient experience. There are two methods of managing the way care is delivered in recovery. There are advantages and disadvantages to both approaches to staff allocation but the principles of providing optimum patient experience apply to both approaches.

A. Allocation of specific operating list to a specific nurse / ODP

At the start of a shift, an appropriately skilled nurse or operating department practitioner is allocated to a specific theatre list. They will then work closely, as part of the theatre team to coordinate the best care plan for the patients on that list.

Advantage: patient centred care, supports team working and communication with the theatre team.

Disadvantage: if staffing levels fall and/or patients arrive from theatre faster than they can be discharged from Recovery (eg emergency cases / time of day) may sometimes need to adopt the other approach.

B. Nurse / ODP availability determining patient allocation

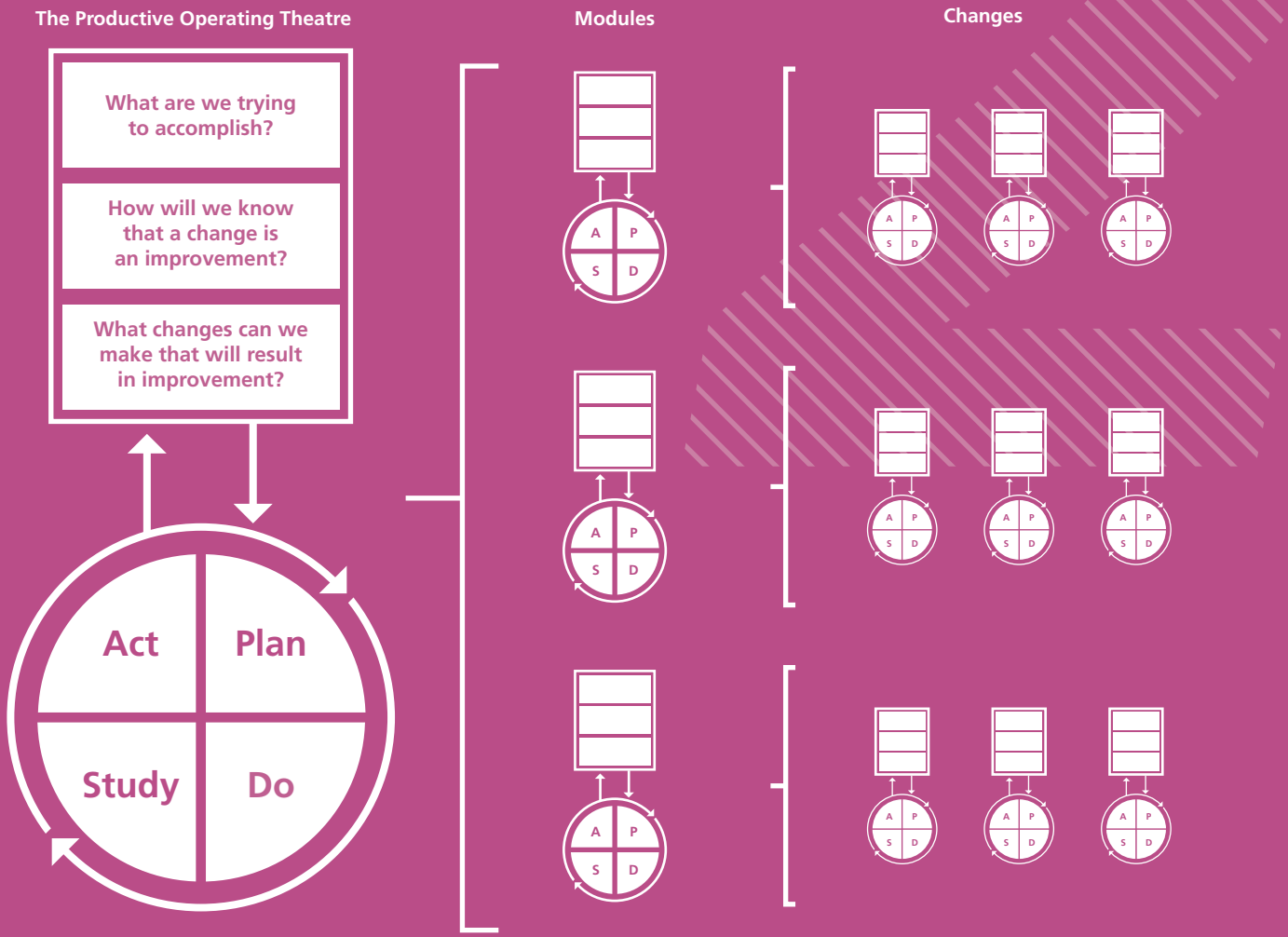
The next available nurse / ODP with the appropriate skills takes the next patient after a call from the theatre team. When they have completed the recovery of that patient the nurse / ODP becomes free to accept the next patient transferred from any theatre.

Advantage: supports recovery team-working.

Disadvantage: can allow recovery staff to 'hold on to patients' so needs to be supported by robust discharge criteria and decision making processes with excellent leadership. Reduces interaction with the theatre team and reduction in communication (briefing / debriefing).

2. How will you do it in your theatre?

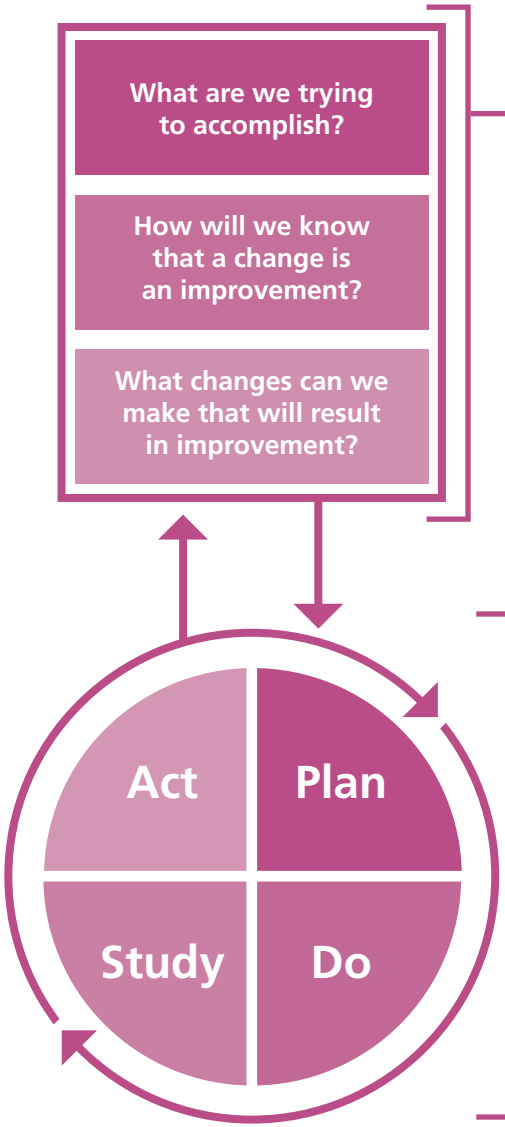
This module is structured to help you work through the model for improvement[1]. Within the module you will implement many smaller changes, developing and testing each one through small cycles of the model. The cumulative impact of these changes will come together to achieve the overall aims of the Recovery module. This, along with changes that are made within each of the other modules within the programme, will contribute to achieving the overall aims of The Productive Operating Theatre.



[1]Langley G, Nolan K, Nolan T, Norma C, Provost L. (1996)
The improvement guide: a practical approach to enhancing organizational performance.
San Francisco: Jossey-Bass

How will you do it in your theatre?

The model for improvement



The three questions

- Read the module, watch the Recovery DVD
- Agree and communicate a clear aim
- Identify module measures
- Identify changes that could be made

Plan

- Ensure strong and visible leadership
- Create the team
- Communicate, engage and raise awareness
- Understand your current state
  - Gather and review relevant data
  - Gather feedback from staff and patients
  - Understand how long individual activities take
  - Gather information about issues and problems
  - Map your current state
- Review ideas that have worked elsewhere

Do

- Map the future state
- Agree and prioritise potential solutions
- Create an implementation plan
- Test the changes
- Monitor progress
- Support the team through the changes

Study

- Collect, analyse and review feedback and data
- Assess the impact on your key measures
- Communicate progress

Act

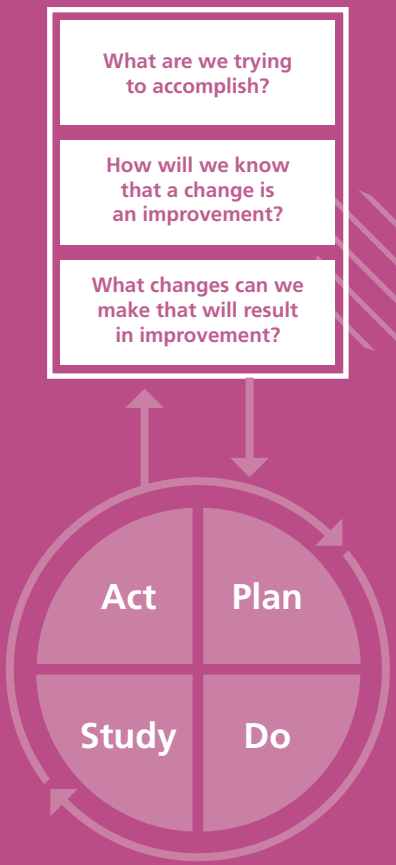
- Agree whether to adopt, adapt or abandon the change
- Celebrate and share successes
- Continue to monitor and review
- Sustain the changes
- Plan for scale-up

3. The three questions

Before you start implementing the Recovery module it is important that you make sure you are clear about the approach that you are going to take.

Take time to read through this module carefully, and watch the DVD in order to understand the full scope of what is involved. (The DVD is available in your box set and as an online resource at **www.institute.nhs.uk/theatres_resources**).

Work through the three questions from the model for improvement. These questions and your answers to them will provide you with the foundation upon which to base your Recovery improvements.

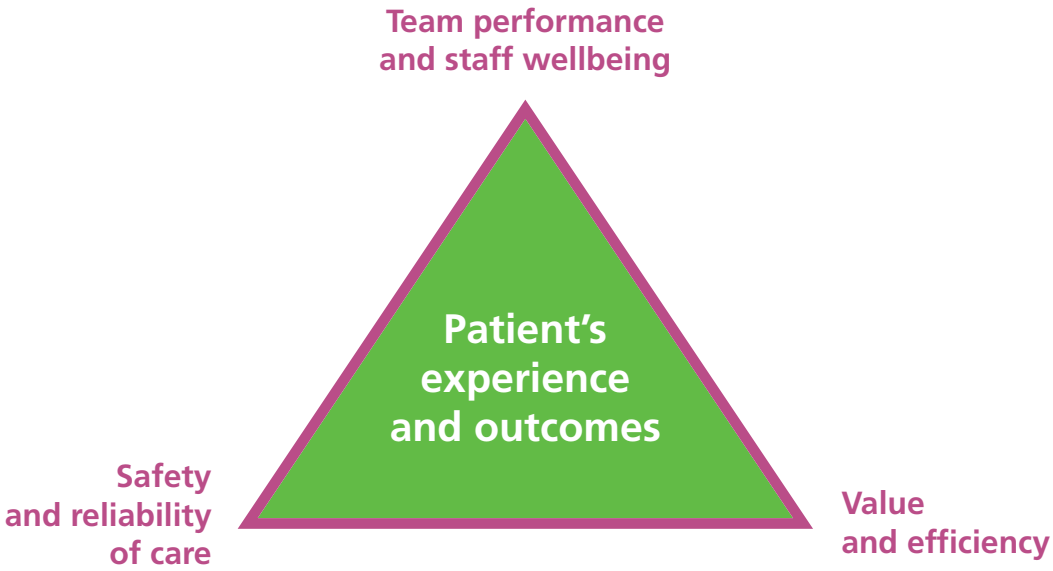


1. What are we trying to accomplish?

The main idea in answering this first question is to provide an aim for your improvements that will help guide you and keep your efforts focused.

Think about how the Recovery module will contribute to achieving both your local vision for The Productive Operating Theatre and the overarching aims of the programme to improve:

- patient's experience and outcomes
- safety and reliability of care
- team performance and staff wellbeing
- value and efficiency.

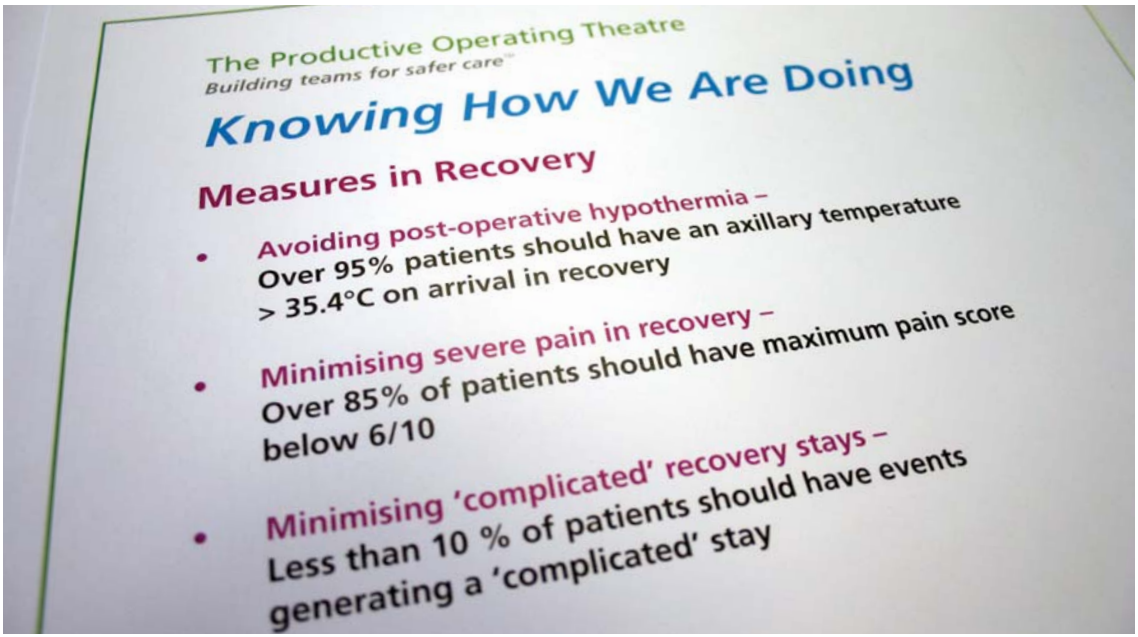


As a team set an aim for what you want to achieve from this module according to **SMART** principles

Principles for setting a **SMART** aim:	
Simple	give the aim a clear definition (eg 'to ensure that all patients in recovery have a pain score of less than 6')
Measurable	ensure that data is available
Aspirational	set the aim high to provide a challenge to the team but ensure that it is achievable
Realistic	take into consideration factors beyond your control which may limit your impact
Time bound	set a deadline

When considering your aims, it is useful to read the national best practice guidance, and benchmark your own service against these standards. Some of these are detailed in Appendix 1. This may also help you to prioritise your improvements.

Once agreed as a team, communicate the module aim(s) on your Productive Operating Theatre notice boards, showing clearly how the aims of this module link to your programme vision.



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

This second question builds on the work you have previously done in the Knowing How We Are Doing module. It is about monitoring and measuring the impact of the changes you make. If you make a change and your measures start improving at around the same time, it is likely that the change led to the improvement.

Measuring the impact of the changes you are making is really important to enhance your team's learning in recovery. It allows you to quantify the improvements you have made, which will generate further enthusiasm and support for the programme. It also enables you to identify changes you have made that have not had the desired effect, highlighting where you need to modify your approach.

As part of Knowing How We Are Doing, you will have agreed a balanced set of measures across the four programme aims. How will your improvements from the Recovery module be represented in this set of measures? If it is not explicit, you will need to add additional measures that will capture the impact of this module. The suggested measures sheet and driver diagrams in Knowing How We Are Doing will give you some ideas of how to do this.

Module measures session

To explore this further you may wish to run a Recovery measures session with the team that is going to be involved with this module. A suggested set of slides for this session is available at www.institute.nhs.uk/theatres_resources

The aims of this session are to:

- refresh the team's understanding of how to use measurement to drive improvement
- understand how the Recovery module fits into your agreed balanced set of measures
- identify measures for the Recovery module
- decide how to collect, analyse and review the information – making this as 'real time' as possible in order to make it meaningful for your team
- complete a measures checklist for the Recovery module.

Remember your measures can be both qualitative, eg asking staff their opinions, and quantitative, eg how much time, space or money you have saved?

Once your measures are agreed, start collecting, analysing and reviewing your data. Remember to share the progress on your Knowing How We Are Doing board.

Example measures

Here are some ideas of measures for Recovery. Some of these you may already be collecting – your choice may be influenced by specific issues within your own area.

- Pain score in recovery
- Temperature on arrival in recovery
- Length of stay in recovery
- Reasons for delayed discharge from recovery
- Missing documentation
- Incomplete documentation, eg surgical plan, prescription chart not properly filled out
- Number of complications occurring in recovery with a list of causes, eg bleeding, airway problems, low or high blood pressure, delayed recovery from anaesthesia
- Number of times the surgeon or anaesthetist have to be contacted with a list of causes
- Number of returns to theatre with a list of causes
- Collecting glitches, problems or frustrations.

Remember – keep it simple. Choose one or two key measures at first. You may wish to work with your showcase theatre or a ward area initially, before rolling out information across your whole theatre department and recovery process.

For more examples of measures see Knowing How We Are Doing – Appendix 2.
For more examples of how to present recovery data see Measures supplement
www.institute.nhs.uk/theatres_resources

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

Having read the module and agreed on a clear aim, you will be starting to use the data to identify the problems and issues that you have in the recovery area. You will start to identify changes that you could make within your department that may result in improvement in your recovery procedures and processes.

You will have an overall idea of what you want to achieve from this module but the detail of what and how you can achieve it will become clear as you work through the module. With your team, think through and agree a number of different solutions for improving the recovery process for patients and staff in your organisation. Then agree how you will test these ideas through a series of **Plan Do Study Act (PDSA)** cycles. It is vital to involve your service improvement expertise right from the start, as they will be able to help you with this.

The next section, **Plan**, will guide you through the process of preparation, understanding of your current situation, and how to test your change ideas. You will also find some examples of changes that have been shown to work at other sites. However, the success of this module in your organisation will depend on involving everyone and working together as a team, developing meaningful data and having a structured approach to working through the module.

Involving your team, developing meaningful data and generating enthusiasm will be the key to your success.

Examples of changes that have been successful at other sites:

- using patient involvement to drive improvement
- removal or rework of blood pressure cuff
- laryngeal mask airway: loss of sterile service bar code
- completeness of data recording
- improving pain scores
- improving axillary temperature
- reducing delays in transfer from recovery
- 5S sluice room
- multi-skilling staff
- matching staffing capacity to demand

The three questions – milestone checklist

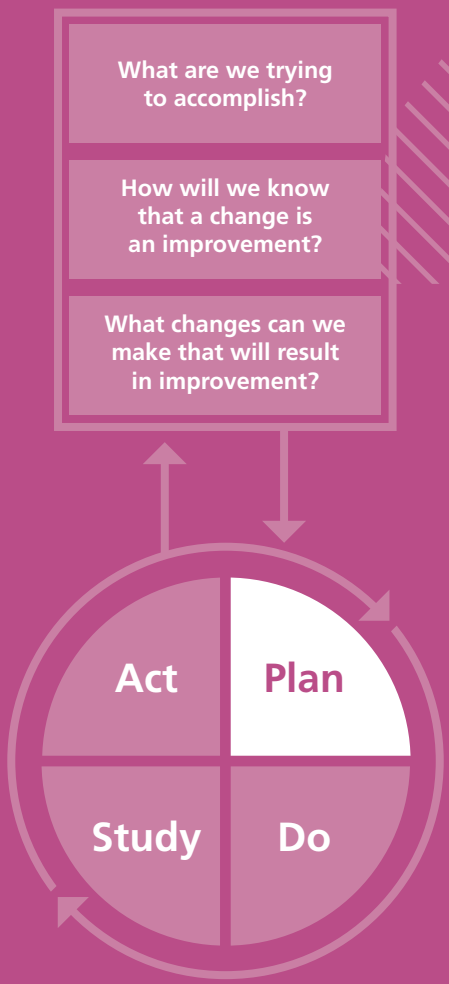
Move on to **Plan** only if you have completed **all** of the items on this checklist

Checklist	Completed?
Read the Recovery module and watched the DVD	
Agreed and communicated a clear aim for the module	
Held a module measures session	
Have identified module measures using Knowing How We Are Doing	
Thought about and discussed what changes you will make	

Effective team-work checklist	Tick if yes
Did all of the team participate?	
Was the discussion open?	
Were the hard questions discussed?	
Did the team remain focused on the task?	
Did the team focus on the area / process, not individuals?	

4. Plan

There are a number of steps to work through to help you plan tests of change using Plan Do Study Act (PDSA) cycles for implementing the Recovery module.



Ensure strong and visible leadership

Implementing change in recovery will require support and participation from a wide cross section of multidisciplinary team members within your organisation, eg anaesthetists, surgeons, porters, ward staff etc. You will need engagement and support from all of these groups including senior operational and clinical leadership to achieve success in this module. We suggest the following actions will help you do this:

- discuss implementing the Recovery module with your senior operational and clinical leaders and what support you will require from them
- ensure their support for implementing this module is clearly visible
- discuss any external support you may require from the NHS Institute for Innovation and Improvement.

'It is easy to overlook the important role that the team in recovery units have to ensure that clear and accurate information transfers from the operating theatre to the wards. In our busy hospitals patients sometimes go for surgery from an admissions area and the first time that the ward team see them is when they are in post operative recovery.

The role of the executive leader is to make that link and ensure that sufficient time and emphasis is placed on the handover points and that all staff are involved in improving safety and effectiveness at those critical points in a patient's journey.'

Elaine Hobson – chief operating officer, Royal Devon & Exeter NHS Foundation Trust

Clinical involvement

Anaesthetists and surgeons work closely with recovery staff delivering clinical care to patients in recovery. Even with these links it is easy to find examples of recurring problems and frustrations that could be resolved with greater clinical involvement and leadership:

Examples of typical problems experienced by clinicians:

- lack of a consistent approach to the management of post-operative nausea and vomiting
- inadequate or inconsistent provision of instructions to recovery staff
- identification of specific factors linked with inadvertent hypothermia in post-operative patients or to complications occurring in recovery

Clinicians can make a vital contribution to improvement by using their knowledge and experience to lead work in areas such as:

- developing and optimising protocols for the management of common problems in recovery
- promoting the use of measurement to drive improvements in the quality of care
- guiding the development of critical recovery room processes to enhance safety, reduce delays and optimise throughput of patients
- feeding back to departments and colleagues on patient outcomes in recovery and on any untoward incidents

There are many clear examples of successful improvement work nationally where consultants have become active champions and this has provided clear benefits:

- provision of leadership, engagement, influence and enthusiasm
- further promoting the multidisciplinary team working approach
- sharing their knowledge and skills in using data to inform the process
- ensuring that clinicians' expectations and solutions are actively included in improvement programmes.

Example: clinical involvement

At Royal Devon and Exeter Foundation Trust Dr David Sanders (Consultant Anaesthetist) has applied an interest in the analysis of clinical data to support the recovery nursing staff in creating a reporting system to track simple key quality markers in the patients' recovery process. Working closely with Sister Sam Chandler and a small team of recovery nurses they developed tested and implemented a database which provides regular feedback on patient outcomes in recovery for pain scores, body temperature, 'complicated' recoveries and delayed discharges. This has not only allowed recovery staff to monitor improvements as processes have been changed, but has also allowed feedback to be offered to individual anaesthetists on their patients' recovery outcomes.

'The only way we can reliably know whether we are improving outcomes for our patients is to have regular and consistent feedback. Clinicians need to take a leading role in developing, supporting and using simple systems to provide continuous quality improvement measures. These systems will not only help us to identify deficiencies, allowing us to implement changes to practice and then show the gains made but will also enable us to demonstrate instances of exemplary practice which can be offered as a model for others.'

David Sanders – consultant anaesthetist, clinical site lead, Royal Devon & Exeter NHS Foundation Trust

Create the team

This module cannot be implemented by the recovery unit team alone. You will need to identify a team including representation from departments upstream and downstream of recovery. Your team will need to work together to understand the current way of working, identify what changes could be made, and implement improvements. The Recovery module lead and champions identified at your visioning workshop will need to be included in this team.

Consider involving your:

- senior ward nurse from surgical ward
- senior theatre nurse / operating department practitioner
- anaesthetist responsible for recovery
- senior nurse / operating department practitioner from recovery
- junior nurse / operating department practitioner from recovery
- programme leader
- service improvement lead.

The team should meet regularly (see Toolkit, tool no.1 Meetings). The meetings will provide the opportunity to review progress, data, any challenges and solutions and importantly next steps.

This module links closely with the Team-working and Handover modules, it is advisable to have at least one member of the team involved in both project teams to improve the opportunity for these modules to support each other to achieve their aims.

Communicate, engage and raise awareness

As part of the start-up phase for this module it is important that the multidisciplinary team understand what the Recovery module is, why it's important, and what benefits it can deliver. You can never communicate too much, so use several of the suggestions below to ensure your team are fully informed and feel involved from the start.

- Recovery / theatre staff meetings
- Audit meetings
- One-to-one discussions or meetings
- Posters
- Newsletters
- Information on the Knowing How We Are Doing board including aims, measures and quotes from clinical staff and patients
- Email
- Recovery and theatres message book

Capture quotes from your clinical champions to include in communications to the wider theatre team. Quotes are a powerful means of communicating positive messages, particularly from influential clinical staff

Clinical engagement

Clinical engagement is crucial to this module (see Programme Leaders guide, page 52). To ensure success you will need to recruit and support clinical champions from each professional group. The visioning workshop provides a good opportunity to identify champions. See the Programme Leader's guide for more information on selecting champions and their role.

'To have a number of clinical champions actively involved in the programme was very powerful and helpful for everyone in theatres. They brought insight and experience, actively helping in designing and implementing a number of successful projects'

James Clarke – consultant anaesthetist, Elective Orthopaedic Centre

Understand your current state

To be able to progress with any improvement efforts, you need to first understand the 'current state' of the area that you are working on. This involves examining all aspects of the current situation and gathering information from a variety of sources.

Reviewing this information before you begin will ensure that you focus your improvement efforts where it will have most impact, contributing towards achieving your module aims. It will also ensure any changes you make are based on information, not simply anecdotal feedback, and that your improvement is driven and supported by data.

Understanding your current state will help you and your team to identify what you would like your new way of working to be, or your 'future state'.

Gather and review the relevant data

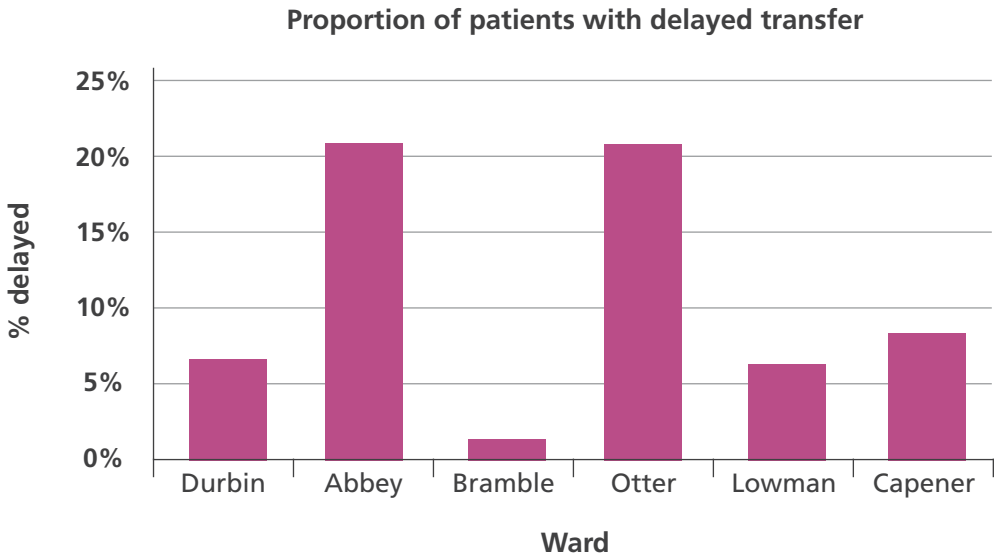
As part of the second question, 'How will we know that a change is an improvement?', you will have re-visited the Knowing How We Are Doing module and agreed your measures for Recovery. You now need to start gathering and reviewing the relevant data.

Ensure that you:

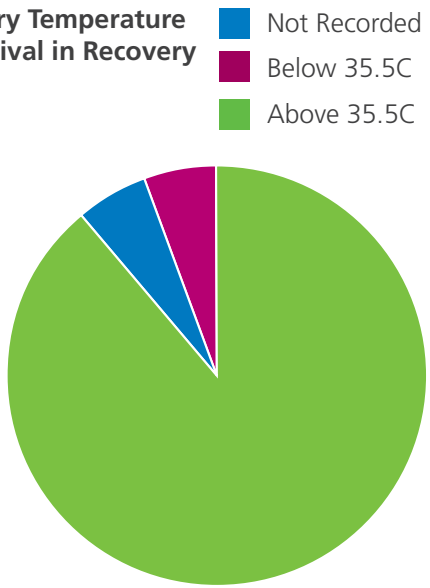
- gather your baseline data to support the measures that you have identified
- review all of the data in order to be able to understand the current state.

This information will act as a baseline against which you can measure the impact of your changes. Some of the information you may have already decided to collect as part of your balanced set of measures (see Knowing How We Are Doing module).

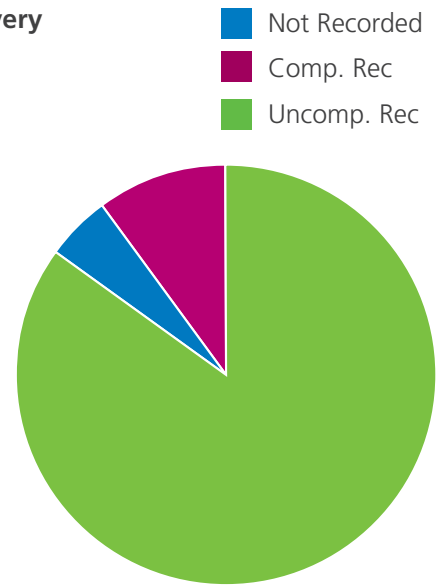
Examples: baseline data



Axillary Temperature on arrival in Recovery



Recovery



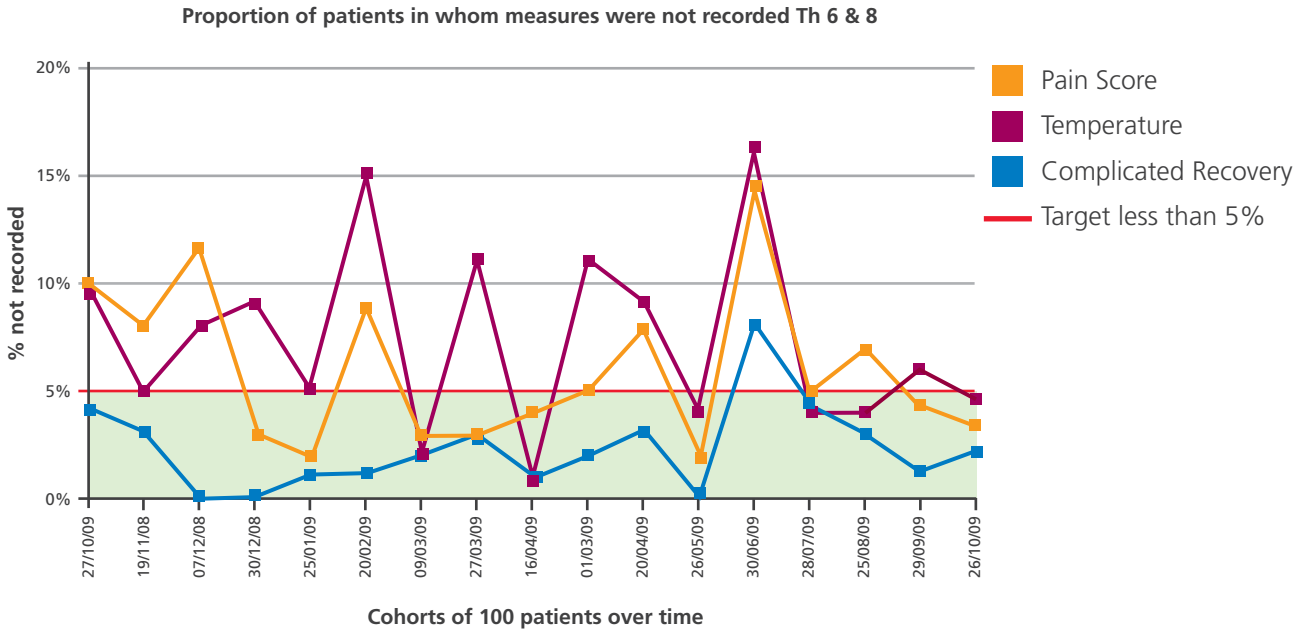
Make sure you have good data quality

You may discover that having all the necessary data and ensuring that it is accurate could be an issue – we encourage you to persevere! It is worthwhile putting the data you currently have on your Knowing How We Are Doing board, even if it is incomplete. By showing staff the incomplete and inaccurate data you are highlighting a need to set a goal, and involving them in helping solve the problem.

The example chart shows an improvement in data completeness:

- temperature
- pain score
- 'complicated recovery'.

As staff realise the importance of the data that they collect, they begin to improve the quality and ensure they record all the data required. The example shows an improvement in data completeness over a two month period.



Gather feedback from staff and patients

Feedback from staff and patients is crucial to your improvement process. You may think that you know what your staff and patients think, but until you ask them, do you really know? Staff and patients are the experts in the recovery process, and as such will be familiar with all the things that go wrong during the process. Staff in particular will be familiar with the frustrations that occur on a daily basis, which prevent them from doing their job as effectively as they would like. There are several ways of gaining meaningful feedback:

1. Interviews

The Recovery module is a fantastic opportunity to engage staff, patients, relatives and carers in the improvement process. Before you start the module ask them how they feel about:

- the way the process runs currently
- what needs to change
- ideas for improvement

As well as general questions, you may want to ask **staff** specific questions in relation to:

- learning disabilities
- physical disabilities
- religious and cultural groups
- paediatrics
- speakers of other languages

As well as general questions about their experience, you may want feedback from **patients** about specific areas for example:

- privacy and dignity
- same-sex accomodation within the recovery department

See Interviews – Toolkit, tool no.7 for more information and top tips.

Tip: *Keep a list of all staff frustrations on a flipchart near your Knowing How We Are Doing board and encourage staff to add to the list. Keep the flipchart up over a period of days to enable all theatre and recovery staff to voice their opinions.*


Sam

2. Visioning workshop outputs

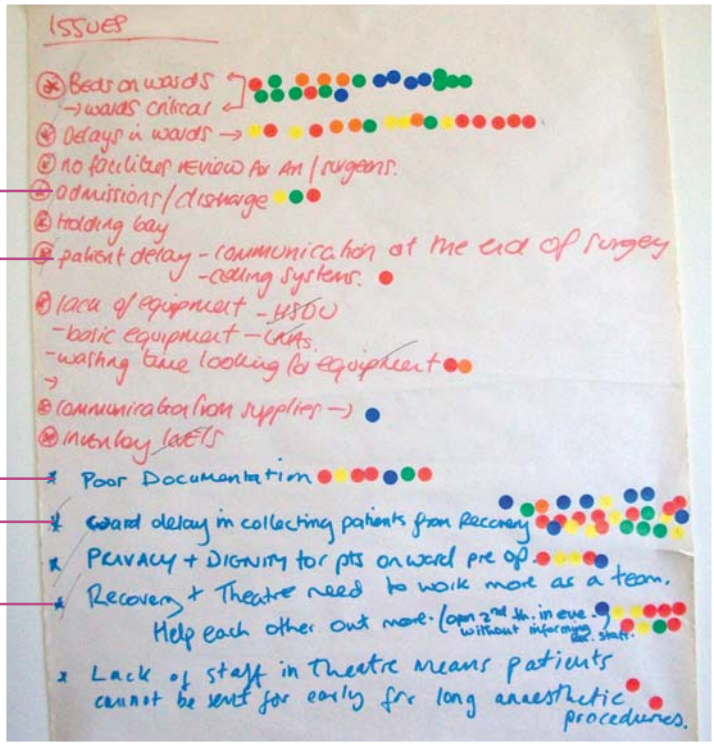
This event will have launched The Productive Operating Theatre programme in your organisation. The event focused on creating the shared vision about what the 'perfect list' looks like in your organisation, as well as identifying the barriers to achieving it.

There will be feedback from your visioning workshop from a large group of multidisciplinary staff, which you will find useful. Review the outputs of this workshop for ideas relating to recovery.

Example: outputs from the visioning workshop

Issues relating to recovery

- Admissions / Discharge
- Patient delays
  - Communication of the end of surgery
  - Calling systems
- Poor documentation
- Ward delay in collecting patients from Recovery
- Recovery and Theatre need to work more as a team



3. Patient complaints

Ask your PALS (Patient Advice and Liaison Service) or Patient Services for any feedback they have received from patients or relatives relating to their recent recovery experience.

You could also:

- look back over the past year and identify any complaints resulting from care in recovery
- consider what the issues were that led to the patient or relative complaint?

Identify waste

Another simple tool to help you and your team review the current state and identify areas for improvement is a Video waste walk – see Toolkit, tool no.6. This will help staff to identify all the sources of **waste** in recovery. There are seven types of waste (detailed below).

The seven wastes

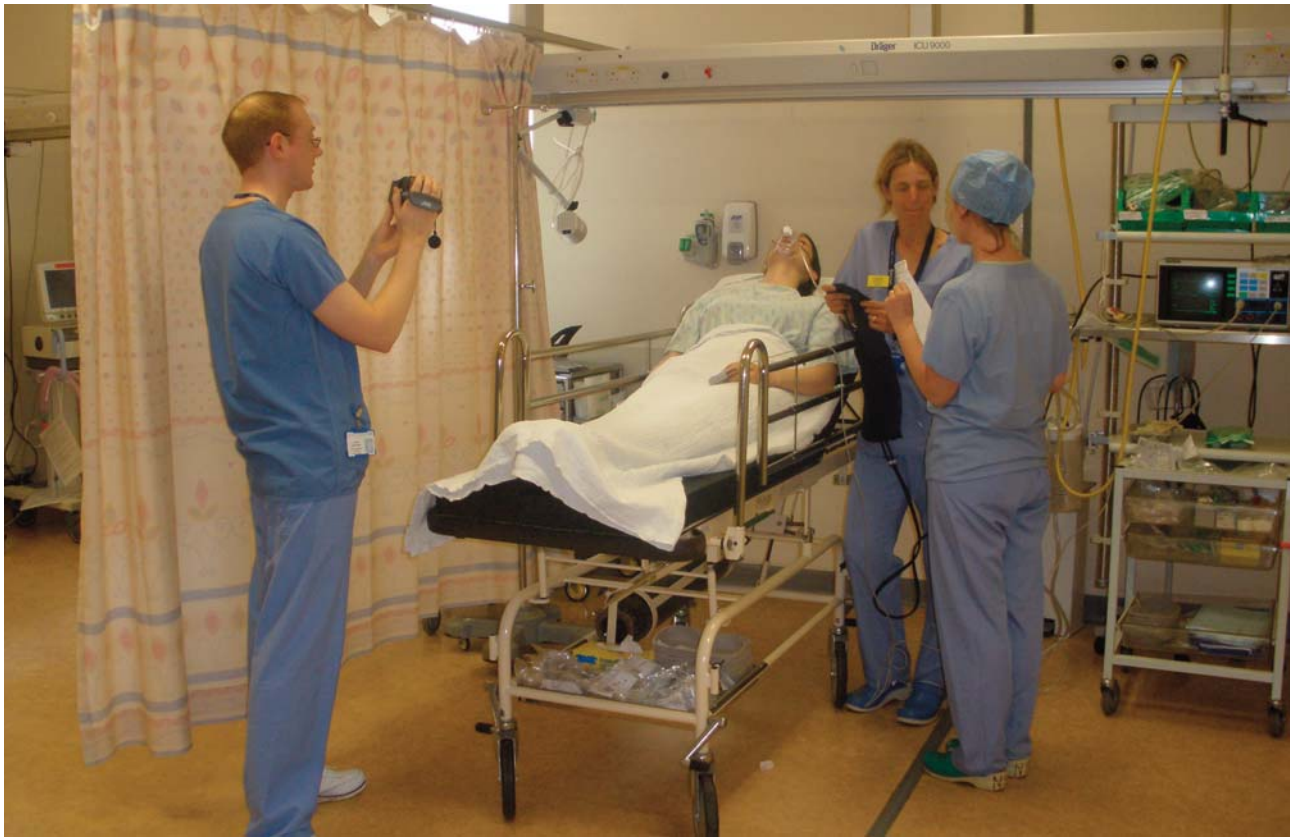
1. **Defects and rework** – due to faulty processes, repeating things because correct information was not provided in the first place
2. **Motion** – unnecessary people movement, travel, walking and searching. Things not within reach, things that are not easily accessible
3. **Overproduction** – producing more than what is needed or earlier than needed by the next process
4. **Transportation** – moving materials unnecessarily
5. **Waiting** – staff unable to do their work because they are waiting for something such as people, equipment or information
6. **Inventory** – too much stock, work in progress or patients waiting in a queue
7. **Over-processing** – performing unnecessary steps that do not add value

Record processes and activities through filming

By videoing the recovery environment and / or the processes in recovery, the team can easily identify and eliminate many of the causes of waste. It is easier to recognise areas for improvement by watching a short video as a team, it forces everyone to see things from a different perspective.

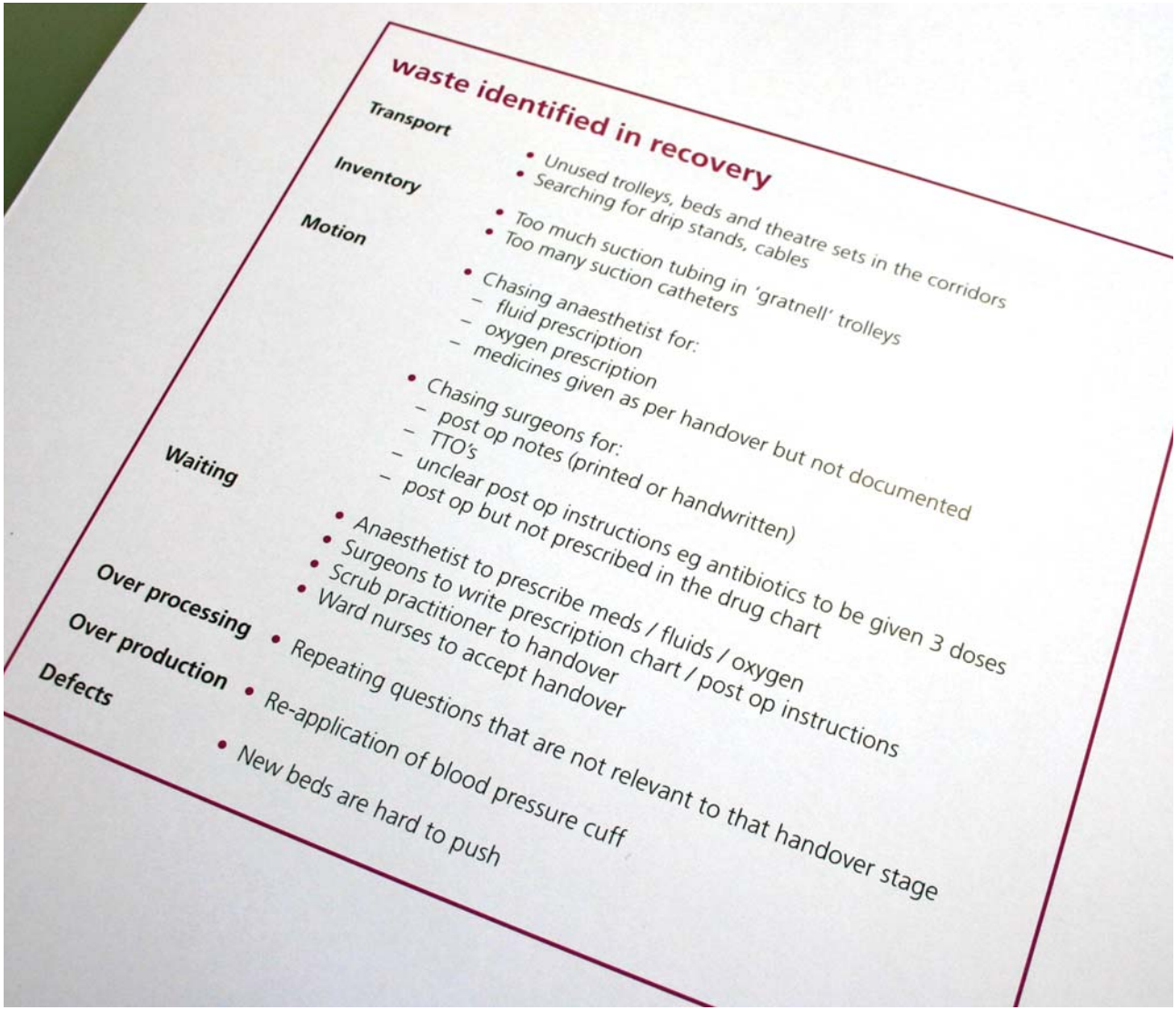
Below are some examples of processes you could video:

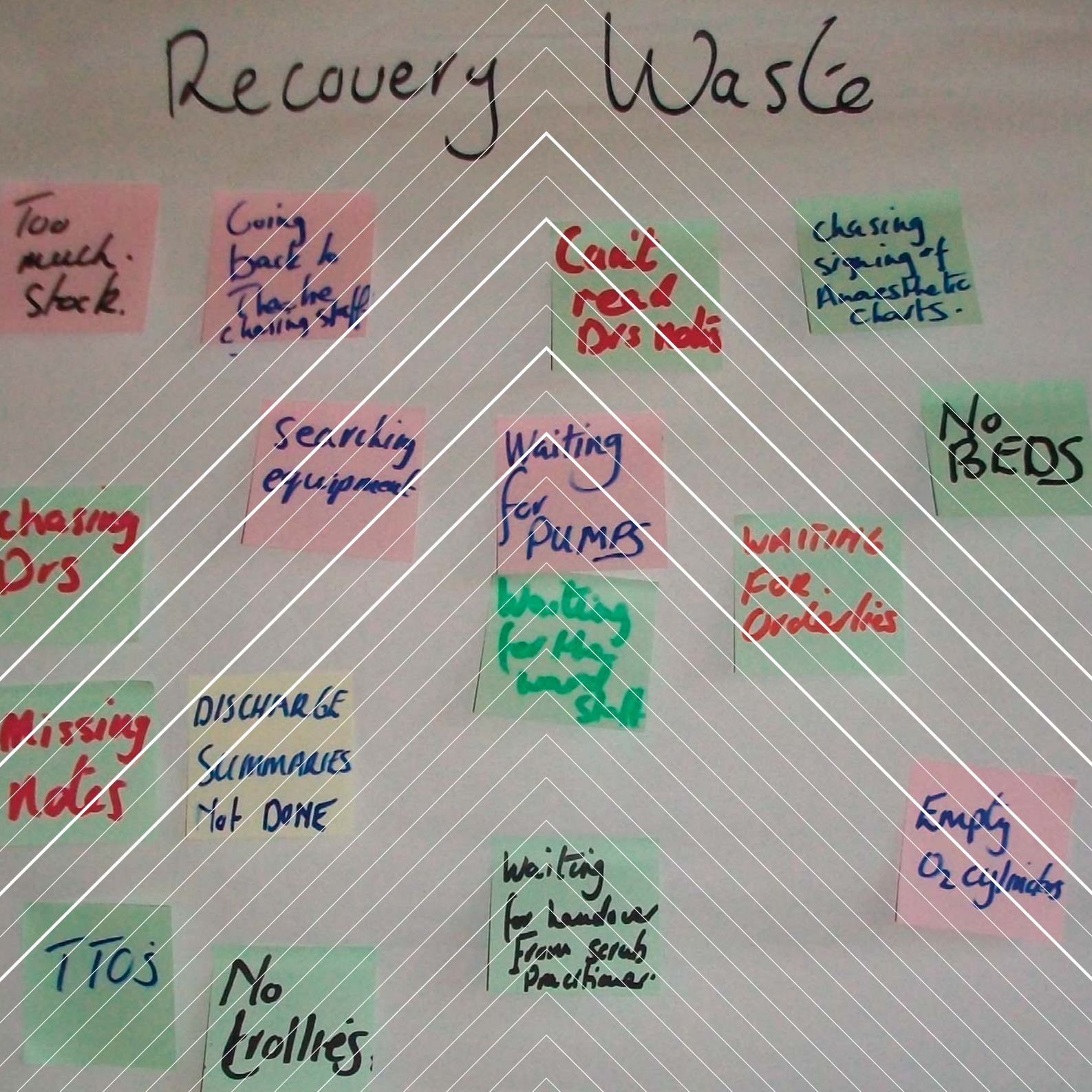
- handover (see Handover module for more detail)
- length of stay in recovery
- communication and documentation
- pain management
- missing documentation and information
- delayed discharge
- recovery staff escorting patients back to the ward.



Ask the team to highlight any wastes, one per sticky note. Once the team have watched the video and noted all their ideas, ask them to share their ideas. You can then use Dot voting (Toolkit, tool no.2) to help the team prioritise their ideas. You can also use Photographs – see Toolkit, tool no.8 to look for waste.

Example: waste identified in recovery




Recovery Waste
Too much Stock.
Going back & forth re chasing stuff
Can't read Drs Writ
chasing signing of Anaesthetic charts.
No BEDS
Searching equipment
Waiting for PUMPS
chasing Drs
Waiting for Porters
WAITING FOR Orderlies
Missing Notes
DISCHARGE SUMMARIES Not DONE
Empty O2 cylinders
Waiting for handover From scrub practitioner.
TTOs
No trolleys

Privacy and dignity

Using the same approach as the waste walk think about viewing your department with a privacy and dignity focus – what do you see that causes a negative impact on privacy and dignity?
See www.institute.nhs.uk/theatres_resources

Understand how long individual activities take

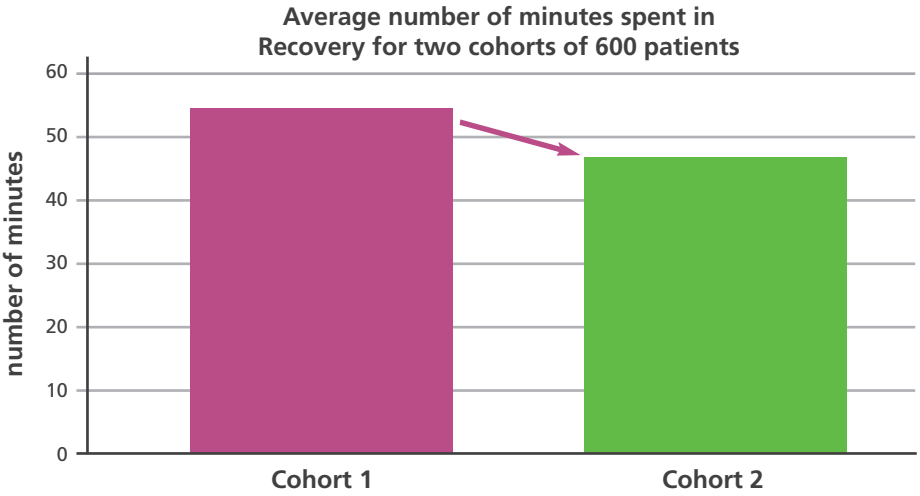
Understand how long your core processes in recovery take, eg the length of stay in recovery, or discharge to the ward, so that you can analyse it before and after implementing a change. You can calculate this by Timing processes (Toolkit, tool no.16).

Timing processes will help you:

- capture the time taken for the same process with different people performing it
- compare the times to understand the variation in time taken
- bear in mind that you may need to segment the timings if the type of procedures or speciality are significantly different.

The data from your process timings can be presented in a number of ways. The following two examples present the same information in two different ways.

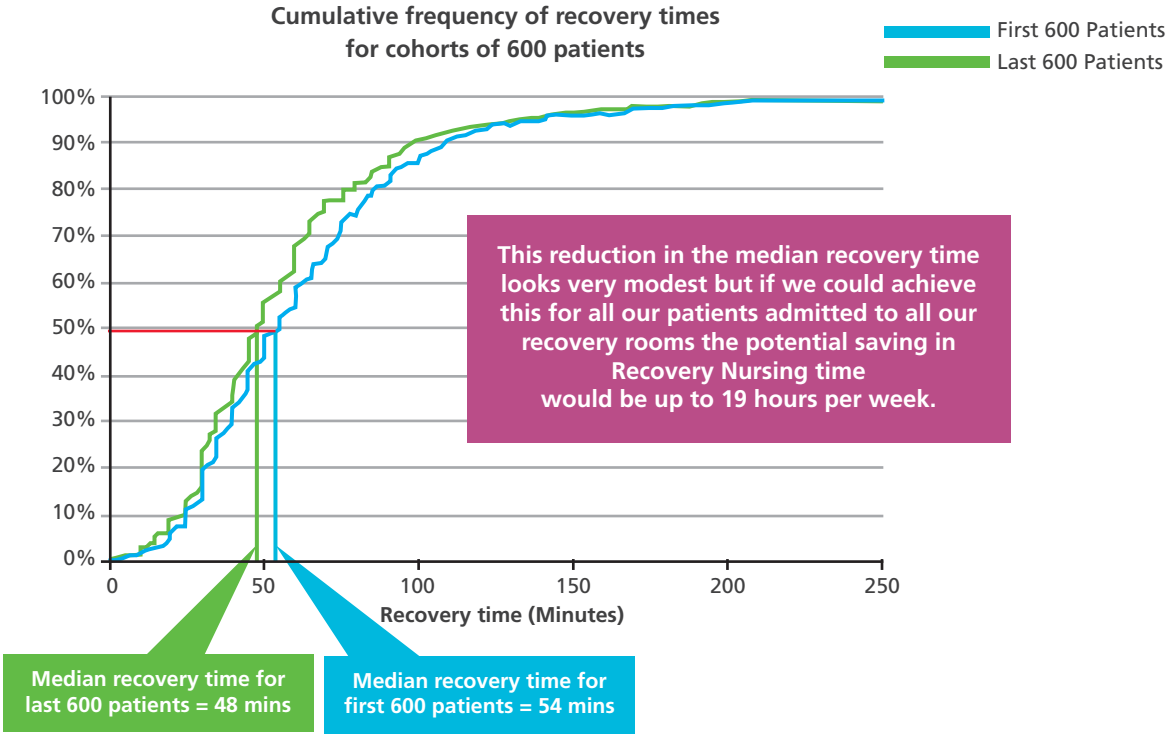
Example: a bar chart showing a six minute reduction in the average number of minutes spent in recovery from 54 to 48 minutes



A reduction of 6 minutes. This could save up to 19 hours a week of recovery nurses' time

This is a more complex graphic which is well supported by the annotation in the box. It shows two cohorts of 600 patients and shows how many minutes they stayed in recovery. It does this on a cumulative basis so that we can see that 50% of the first cohort of patients were in recovery for up to 54 minutes but for the second cohort, this had reduced to 48 minutes.

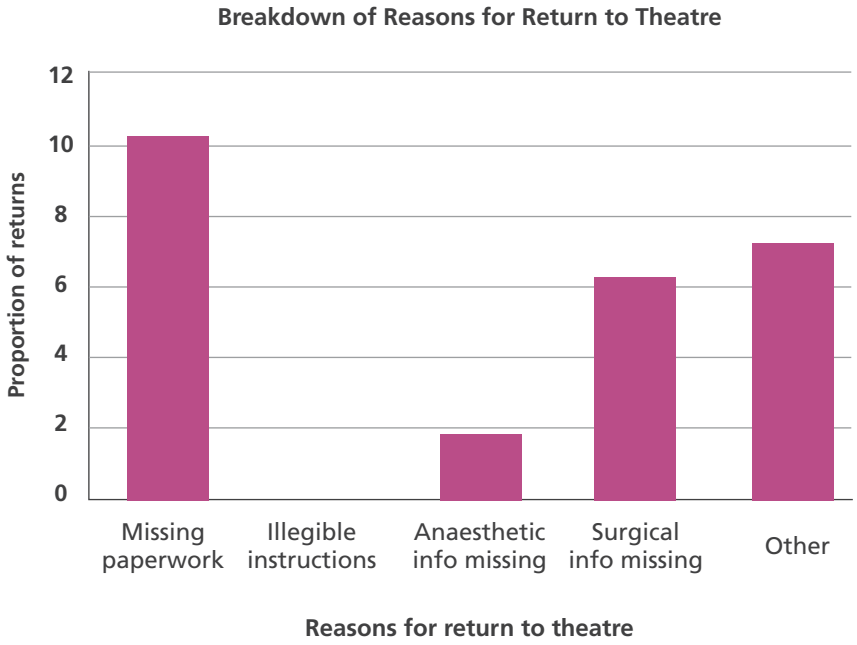
Example: a cumulative frequency chart showing the median number of minutes spent in recovery



Gather information about issues and problems

With your team identify recurring issues, problems or delays that prevent them from doing their job efficiently and effectively. To help you collect these glitches, collect them on a daily basis, possibly as part of a debrief (see Team-working module). Gather this information initially over a one month period. It is useful to present the information in a Pareto chart so that the most common causes of issues and problems are easily identified. See Glitch count – Toolkit, tool no.20 for more details.

For more information about using Pareto charts see www.institute.nhs.uk/qualitytools



Map your current state

Gather together all the data and information you can from the tools referred to in this section. By reviewing this information as a team you will be able to build a comprehensive picture of your current recovery processes and procedures. By analysing all of this as a team you will be able to identify:

- areas of good practice that can be shared and spread across the theatre department
- issues and barriers that prevent the team from consistently providing a high quality service in recovery
- ideas for change that could result in improvement.

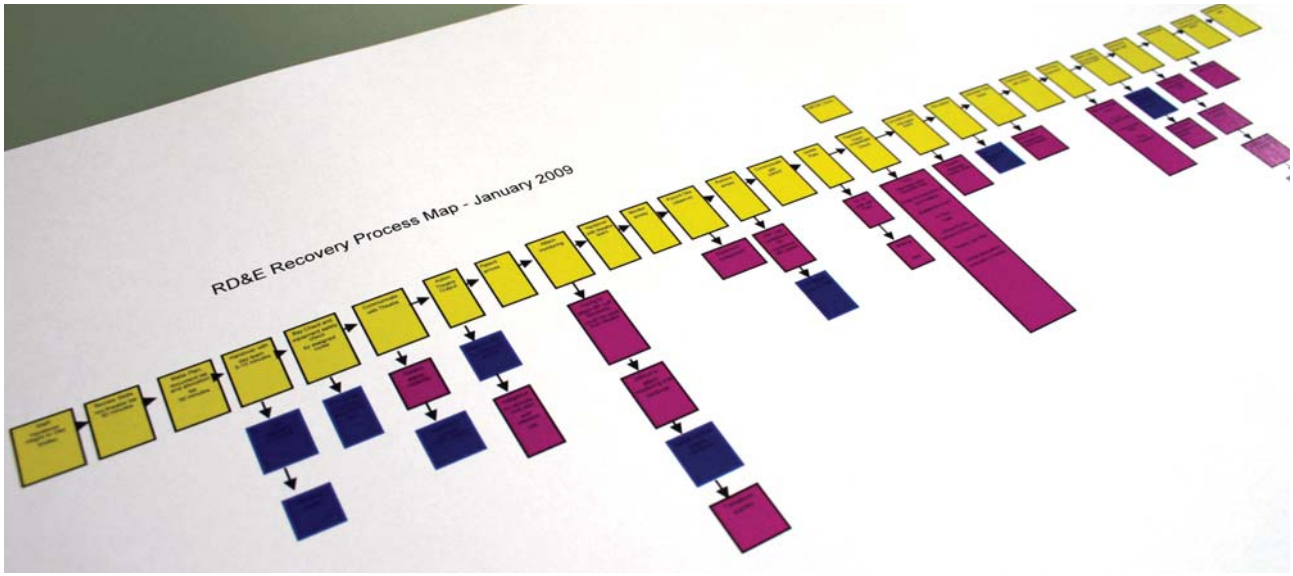
Putting effort into gathering and presenting the information to the team at this stage will result in a richer perspective of the current state of your recovery process and the challenges and opportunities there are for improvement. Crucially this will provide you and your team with sufficient information to start creating your desired future state.

With your team map your current recovery process. Refer to process mapping, Toolkit tool no.11 to help you with this important session. Use the experience you have in the room to walk through the process. As a team identify all the activities which make up the recovery process, defining them step by step in chronological order and capturing any loops of repetition and rework.

Tip: *To make the most of the process mapping session ensure you:*

- *arrange a time when the team can come together to review and understand the information*
- *make the session between two hours and half a day long in order to make good progress*
- *display the information where the team can see it, and understand the current state*
- *use a facilitator who is familiar with process mapping techniques*
- *use the meeting to agree dates for the follow up sessions for future state mapping, action planning and reviews*
- *remember to invite key stakeholders to participate and offer feedback.*

Example: recovery process map



Remember, some of this work may overlap with other modules, eg Team-working and Handover. Ensure the team has a full understanding of any other work which may be happening simultaneously. This will enable project plans to link and for your teams to support each other rather than duplicate effort at a later stage.

To help with this, it is advisable that at least one team member from Recovery is part of both the Handover and Team-working improvement work.

'Looking at recovery as a process and the elements that can be measured has really helped to clarify what we can achieve for our patients in the immediate post operative period.'

Sam Chandler – recovery sister, Royal Devon and Exeter NHS Foundation Trust

Review ideas that have worked elsewhere

Example 1: using patient involvement to drive improvement

Aim

Talking directly to patients about how they really feel about their experience in recovery and the service that they have received is a very powerful way for staff to gain some real insight and ideas about changes that need to be made to improve the patient's experience of care.

The aim was to gain real insight into patient's experience of care in recovery, to identify areas for improvement, then, as a team implement key solutions to improve how patients experience care in recovery.

What they did

The team were keen to enable the staff to have an opportunity to interview patients about their experience from admission to discharge from the recovery unit. Staff felt that the best way to gain meaningful feedback from patients was to talk to them directly, as opposed to other methods of gaining feedback such as questionnaires or surveys. Staff wanted to record the conversations on video to enable them to play them back to the recovery team.

The team selected two sessions to video patients coming in for plastic and ear, nose and throat surgery. Staff managed to interview 15 patients.

Individual patients due to be discharged after surgery were approached (after discussion with the ward staff) and were given information about the purpose of the interview. Time was taken to fully explain the work, and to obtain consent, but it was vital that the patients were well informed and given the choice as to whether they wanted to participate or not.

'We were really surprised at how much patients enjoyed having the opportunity to talk about their experience. Our team found it incredibly useful. We learned about some real concerns that we were able to fix as a team. But we also learned lots about what we were doing well, and that had a very motivating effect on all of us.'

Claire Bradford – senior matron, Royal Devon and Exeter NHS Foundation Trust

Staff reviewed the videos. Feedback showed that the main concerns from the patients included:

- a lack of information on the day of surgery, specifically about the expected time of surgery and what was going to happen during their admission
- being kept waiting too long before going to theatre (all patients arrived at 8am in the morning on the day of surgery) often experiencing prolonged or unnecessary starvation
- being starved unnecessarily for a local anaesthetic procedure.

Benefits realised

Staff responded to the patient feedback and made some immediate changes as a result:

- the team leaders in individual theatres now keep the wards more informed of any delays or changes to the list order so patients are kept updated of any changes

- introduced staggered admission times for plastic surgery. Patient's time of admission is included in their admission letter dependant on a number of factors:
  - 3 patients arrive at 8.00 hrs
  - 2 patients arrive at 11.00 hrs
  - 2 patients arrive at 13.00 hrs

- patients attending for local anaesthetic surgical procedure are not starved.

Example 2: removal or re-work of blood pressure cuff application

Aim

To prevent re-work of the blood pressure cuff application, improve direct patient care, enabling recovery staff to concentrate, with no distractions, during the anaesethetic and scrub handover.

Background

Patients in theatre would have blood pressure cuff removed, washed and dried returned to the anaesthetic room to be ready for the next patient.

Meanwhile the patient would leave theatre and be transferred to recovery where, on arrival another blood pressure cuff would be applied and would, in turn, have to be cleaned before use on the next patient in Recovery.

What they did

The blood pressure cuff now remains on the patient during their peri-operative stage in the operating suite. This has eliminated the time taken to remove and reapply after each case and also halved the cleaning time and consumables required.

The team are looking to further improve through the use of disposable cuffs for each patient.

Benefits realised

- no distraction during the anaesthetic and scrub practitioners handover
- reduction in time wasted on non-value adding activity. Depending on the patient status, the team save up to 3 minutes per patient.

Example 3: laryngeal mask airway (LMA): loss of the sterile service bar code

Aim
To prevent the re-work when loss of the barcode or bag occurs once the patient is extubated and the LMA is removed.

Background
Laryngeal mask airway (LMA) bag and barcode often get lost during transfer of patients on their journey though the operating theatre suite, resulting in recovery staff having to hunt down the missing items; this can involve interrupting theatres during the next case.

What they did
Place the barcode inside the bag and secure the bag to the patient's pillow, ensuring that the information and the bag stay with the patient.

Benefits realised
- no re-work for the recovery staff
- less frustration and time wasted trying to locate the missing items.
- compliance with the retractable LMA barcode and infection control policy

Example 4: completeness of data recording

Aim

To ensure that recovery team have confidence in the recovery measures being collected it is important not to have large 'gaps' in the data. An initial goal was set, that less than 5% of entries for temperature, maximum pain score and 'complicated recovery' should be missing from the patients' data recording sheets.

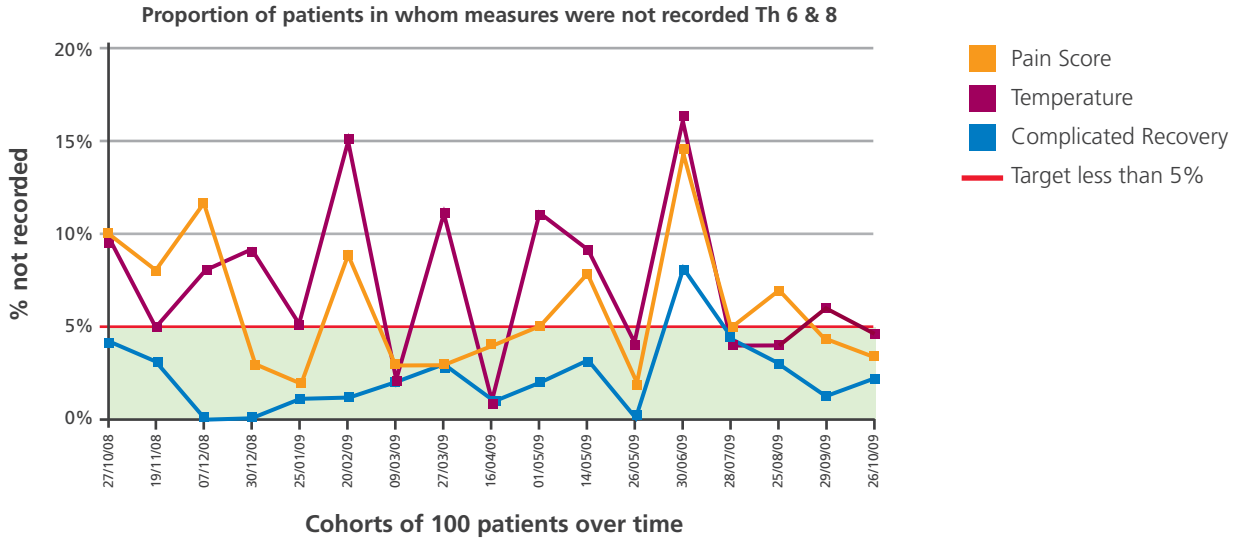
What they did

The initial target was set high to support but this did empower the recovery staff to have ownership of the data collection. An important part was played by the recovery project team in communicating why data collection is so important to measuring improvement in patient and staff experience. Data was explained and displayed in a timely manner on recovery KHWD Board. Staff understood that the data collected was meaningful and used. Data collection has developed from paper copy recording to an electronic data collection method. This has helped the team to see the development and progress of a new data collection tool.

Benefits realised

When the data on the recording sheets is transferred to the database all incomplete items are entered as 'NR' ie not recorded. We can then calculate for each of the three measures the proportion of patients with missing data. The chart below shows the trends for this missing data shown by successive groups of 100 patients.

The run chart clearly shows an improvement in the completeness of data being recorded over the last two months



Example 5: improving pain scores

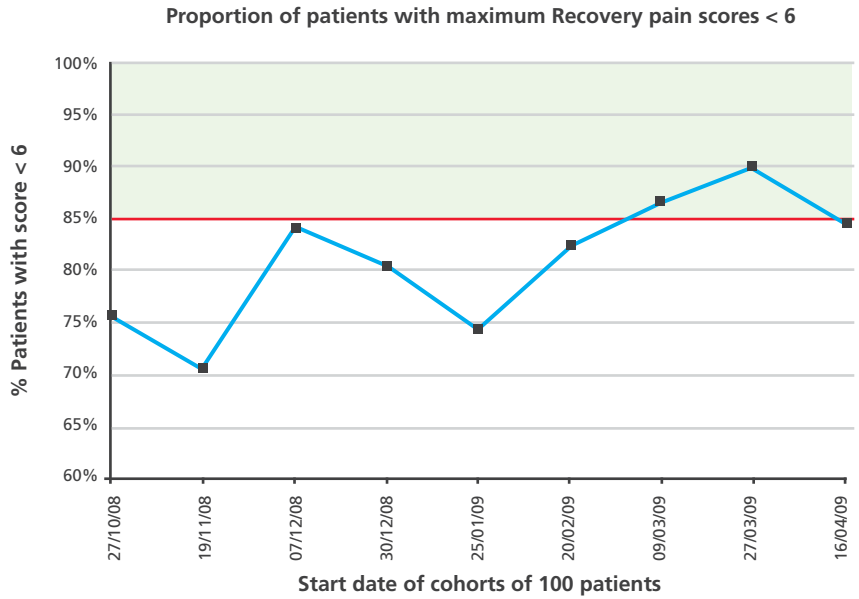
Aim
To minimise severe pain in recovery – over 85% of patients should have a maximum pain score of below 6 /10

Background
The team wanted to prevent delayed discharges. Recovery staff introduced a process to recorded patients' maximum reported pain score during their stay in recovery. Results were fed back to recovery staff and anaesthetists. This resulted in some anaesthetists changing their practices based on this feedback. Over a period of time the number of patients reporting moderate to severe pain fell – helping to improve the patient experience.

What they did
When the patient arrives in the recovery unit and is fully conscious the recovery staff asked the patient to describe their pain on a score of between 1 – 10.
After 30 minutes they would repeat the question.

Recovery staff developed measures using the tools and methods provided by the Knowing How We Are Doing module.

Benefits realised



The proportion of patients with a pain score below 6 has increased to achieve their initial target of 85% of patients.

Example 6: improving axillary temperature

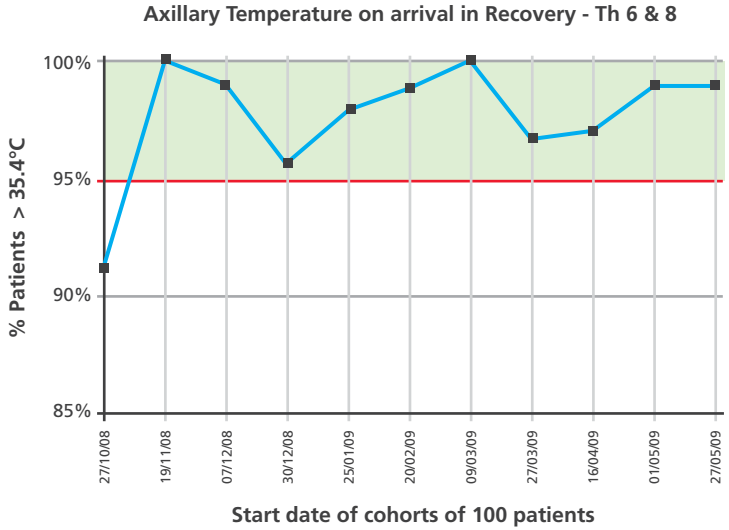
Aim
To avoid postoperative hypothermia – the team set a target that over 95% of patients should have an axillary temperature more than 35.4°C on arrival in recovery.

Background
The team felt that patients were being kept warm during the perioperative phase of their surgical journey but there was no real data to demonstrate this.

What they did
Staff recorded the patients axillary temperature on arrival to the recovery. They developed measures using the tools and methods provided by the Knowing How We Are Doing module.

Measures
Recovery staff introduced a continuous process to recorded patients' axillary temperatures on arrival in recovery from theatre. Results were fed back to recovery staff and anaesthetists demonstrating that the vast majority of patients were leaving theatre with acceptable temperatures, however this has created enthusiasm for further improvement.

Example: run chart illustrating axillary temperature on arrival in recovery



Example 7: delays in transfer from recovery

Aim

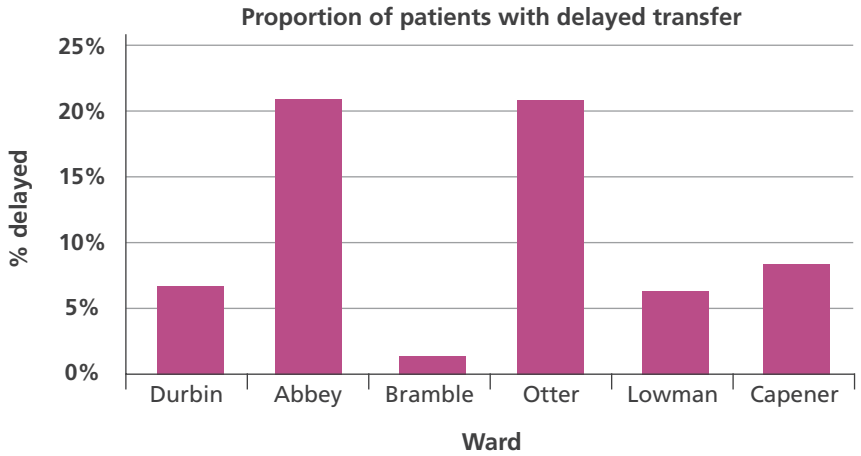
Senior ward managers and recovery staff agreed that the maximum time between a ward being notified when a patient is ready for discharge and the patient leaving recovery should not exceed 30 minutes.

What they did

As a multidisciplinary team, they reviewed the data which clearly identified ward areas, and the reasons why delays were occurring.

Reasons for Delay in Transfer to Ward	Number	%
Ward busy	95	47%
No bed	31	15%
Ward nurse not available	12	6%
No TA available	2	1%
Urgent clinical problem on ward	2	1%
Communication failure	4	2%
Recovery nurse escorting previous patient	1	0%
Nurse handover	4	2%
Not ready	2	1%
No reason	50	25%

Ward	Patient	Delayed	% Delays	Recovery Transfer
Durbin	557	39	7.0%	75.4%
Abbey	299	61	20.4%	70.2%
Bramble	251	4	1.6%	59.0%
Otter	107	22	20.6%	67.3%
Lowman	15	1	6.7%	26.7%
Capener	25	2	8.0%	16.0%



The Recovery module lead worked with the ward team. Together they reviewed the data and agreed to test solutions that would reduce delayed discharges. It was agreed that the ward matrons would display the data on the ward Knowing How We Are Doing board, and to cascade to the ward staff the reasons why it is important to collect patients from the recovery unit in a timely way. Recovery staff also understood that at times the wards are too busy to take and accept patients back, so recovery staff would escort the patients back to the wards during these times.

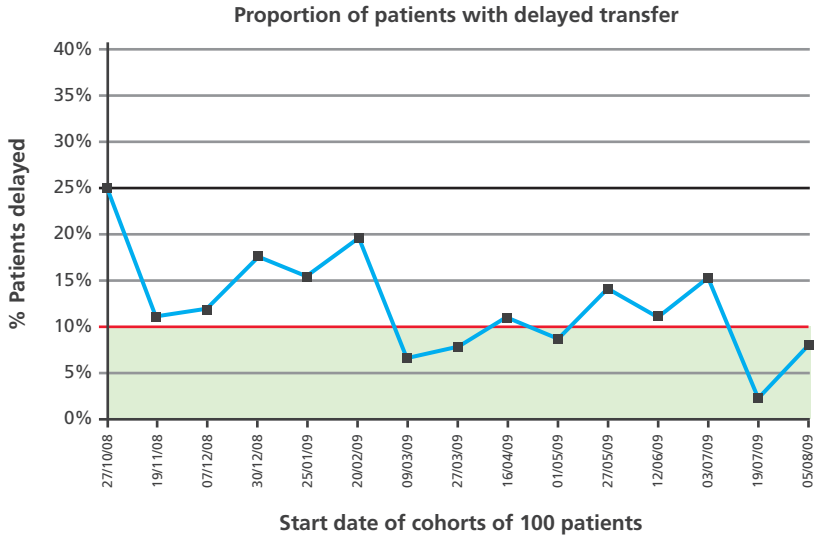
Raising awareness of the recovery staff regarding the patients potential discharge time was established which helped embed a timely discharge process.

Benefits realised

Recovery staff have recorded the times at which wards are notified a patient is ready to return and the subsequent departure times. Patients with intervals > 30 minutes are recorded as experiencing a 'Delayed Transfer'.

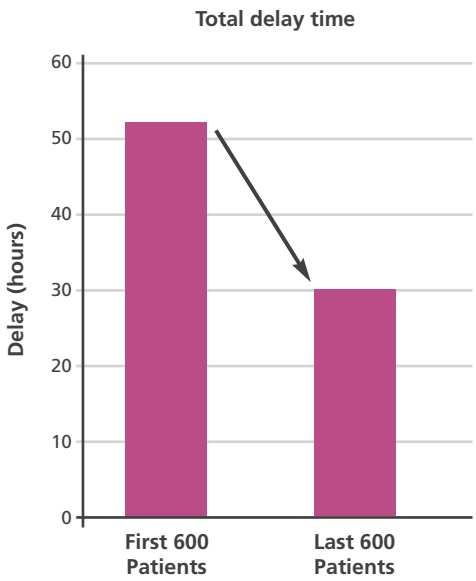
An initial goal was set, that less than 10% of patients should have delayed transfers.
The run chart below clearly shows that the proportion of patients with a delayed transfer has fallen over time

Example of chart showing proportion of delayed transfers from recovery

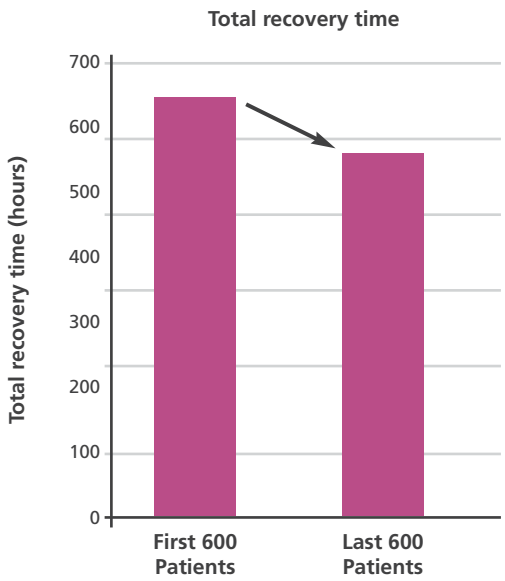


The team have demonstrated a 43% reduction in the total delay time in their showcase theatre. If this achievement can be spread across all ten theatres, this will save 6.5 nursing hours per week.

In addition, because patients are delayed less, they are spending less time in recovery. The team demonstrated a 10% reduction in the length of stay in recovery. Once this achievement is spread across all ten theatres, it will release almost 19 hours of nursing time per week.



This 43% reduction in the total delay time could save 6.5 hours of nursing time per week if achieved across all our 10 theatres



This 10% reduction in the total recovery time could save almost 19 hours of nursing time per week if achieved across all our 10 theatres

Example 8: 5S sluice room

Aim
To improve the recovery sluice area

Background
The recovery staff were frustrated by the amount of time they spent looking for items and in a cluttered untidy and over stocked sluice. The main store room is located next to the sluice so why was this happening? They wanted to make this area work for them.

What they did
Initially, the team received training on the seven wastes and the principles of 5S. This helped them to understand the process involved.

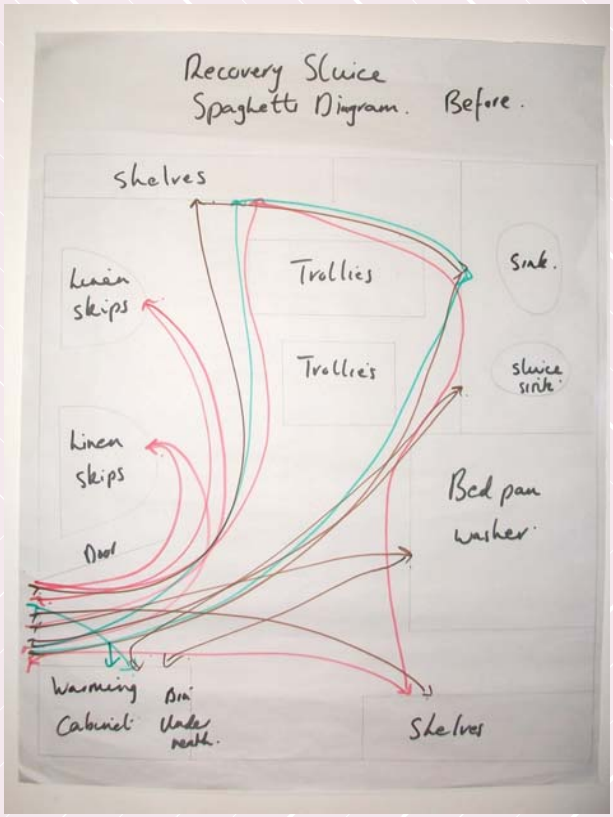
The team began by taking photographs of the area as a starting point for their improvement journey.
Next they drew a spaghetti diagram to understand how the area was currently being used, and staff discussed how they could rearrange the area and redesigned it to work more effectively.

Estates and facilities department were involved, as the old warming cabinet had to be removed, shelves taken down, and a new warming cabinet installed in the sluice. A macerator was also installed. Stock items were removed and stock levels reduced sufficiently to ensure that levels were appropriate for dally requirements, and stored in suitable locations. The area now contains only items that are really necessary.
Inventory audits were commenced and staff agreed on the final inventory list.

Regular audits of the areas carried out by allocated staff, were collated and fed back to the team. The outcomes are publicised on the Knowing How We Are Doing board so that staff can see the impact over time.

Benefits realised
- One-off stock reduction
- Reduced stock levels, reduced costs
- Staff feel that the area is more organised, clean and less cluttered reducing staff frustration and time wasted looking for items.

Example: spaghetti diagrams before and after 5S



Example 9: multi-skilling staff

Aim
To improve communication and team-working in theatres, and to multi-skill the recovery staff to meet the service needs of the department.

Background
Recovery staff identified that they had 'downtime' during their shift, and that they wanted to utilise their time better and maximise their skills to support patients, the department, and their personal development.

What they did
The team reviewed all documentation linked to training needs, recovery induction, handover proforma and talked with other theatre staff. The recovery team were keen to become more integrated into the theatre team.

The recovery staff have developed their role to include:

- participating in the briefing and debrief in theatre
- checking in patients into the anaesthetic room or holding bays
- completing the theatre sign in checklist based on WHO checklist
- assisting in the anaesthetic room with the anaesthetist and anaesthetic practitioner when required
- acting as a circulator in theatre
- receiving patients where possible when transferring the patient off the operating table.
- transferring patients to the ward when ward staff are busy.

If their shift doesn't start until after the theatre list has commenced, once on duty the recovery practitioner will go to their allocated theatre to have a re-brief from the anaesthetist and team leader.

Benefits realised

- Communication and team working has improved between theatres and the recovery unit enabling the staff to work in collaboration not in isolation
- Recovery staff member feels part of the theatre team
- Recovery staff have a greater understanding of the role of theatres and the wards
- Staff feel more empowered to improve the way they work

Example 10: matching staffing capacity to demand

Aim

To ensure valuable recovery staff time is used effectively to ensure patient safety is maximised and down time or 'waste' is avoided. To ensure the demands on the service are met in the safest, most efficient manner.

Background

Historically recovery staff worked three shifts patterns per day. Often during their shift, there were periods of time where the staff experienced 'downtime', and also, usually at the end of the shift staff, particularly at the end of an early shift, realises that there were not enough staff to safely recover post operative patients. Gradually more staff stayed on late and there was an increase in on call staff being kept on duty, resulting in dissatisfaction amongst the staff and increased staff costs.

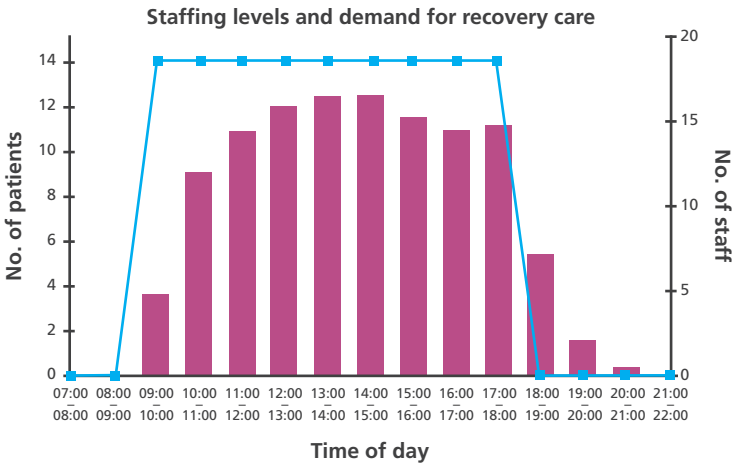
What they did

The team mapped out the current state of off duty, detailing the number of staff available over time every hour, against the number of patients arriving in the recovery unit. They also looked at the national guidelines for staffing of recovery and NCPOD.

The team reviewed the data, taking into account procedure times, anaesthetic times, mix of patients, theatre session by speciality and knowledge of the recovery staff.

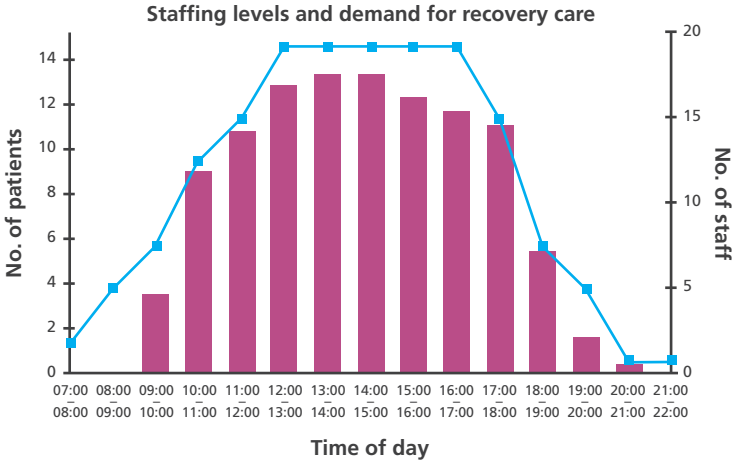
They also looked at how other recovery units staffed their department. The recovery staff were involved during this whole process.

Before



All staff adhered to three rigid shift patterns

After



Flexible shift patterns were introduced

TIME	NUMBER OF STAFF
08.00 – 09.00	2
09.00 – 11.00	15
11.00 – 19.00	19
19.00 – 20.00	5 / 6
20.00 – 21.00	4
21.00 – 22.00	1
22.00 – 24.00	1

*Based on 18 theatres in three locations with mixed CEPOD requirements

The team agreed that different shift patterns needed to be implemented and lead the process of testing different shift patterns to respond to the needs of the department.

An ‘off duty’ was completed four weeks in advance, and new shift patterns were tested. Staff agreed to adopt the new shift pattern and continued to monitor progress. The recovery team initially reviewed each day the level of demand on the service and whether sufficient staff had been rostered with the appropriate skill mix.

Benefits realised

- Improved staff experience – staff left on time, and less on-call duties
- More flexible shift patterns – supporting ‘Improving working lives’.
- Reduction in staff costs – less staff stayed late and with more flexible shifts fewer staff were required on-call.
- Decreased downtime – and waste in the system due to improved efficiency.

Standard procedure

One week in advance:

- Review the current scheduled theatre sessions and lists including emergency/ cepod sessions
- Commence the first draft of the individual recovery staff allocation sheet using the current off duty taking into account any absence.
- Assess the level of skill mix and training needs of each individual member of staff against that potential theatre session.
- Review the number of staff and level of skills required to safely recover the case mix of procedures scheduled for that theatre session. i.e. is there a need for senior member of staff to recover thoracic and paediatric lists?

Late shift before:

- Review the above. Are there any last minute changes or additions to the theatre lists after 5pm? Hopefully there are no surprises.

Day of surgery:

- Finalise staff allocation at 8am after receiving your recovery handover from the night staff.
- To take into consideration:
  - staff sickness
  - list changes and order
  - additional cases added
  - review list of cases against your allocated skill mix of staff.
  - responding to the bed situation liaising with site management (any ward issues to take into consideration)
  - ITU/HDU
  - co-ordinate between theatre team leaders and the theatre co-ordinator.

Next step is scale-up to other recovery units in the Trust.

Plan – milestone checklist

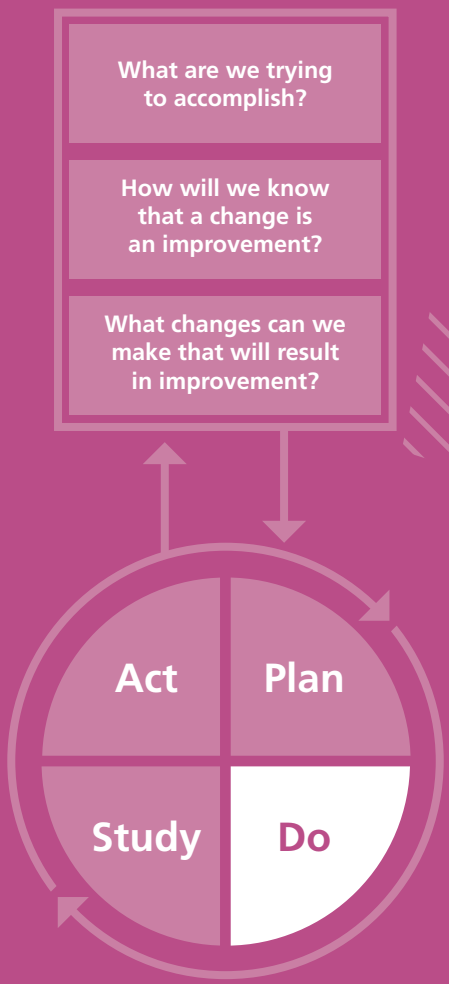
Move on to **Do** only if you have completed **all** of the items on this checklist

Checklist	Completed?
Strong, visible leadership in place	
Created the Recovery project team	
Used several methods to communicate, engage and raise awareness of the module work	
Understood your current state • gathered relevant data • gained feedback from staff and patients • analysed how long individual activities take • gathered information about issues and problems • mapped the current state	
Reviewed ideas that have worked elsewhere	

Effective team-work checklist	Tick if yes
Did all of the team participate?	
Was the discussion open?	
Were the hard questions discussed?	
Did the team remain focused on the task?	
Did the team focus on the area / process, not individuals?	

5. Do

Once you have understood your current state and identified any issues and barriers within it, it is time to develop and implement your future state.



Map the future state

By now you will have reviewed all the relevant information, mapped your current state, and gained a full understanding of all the issues and problems you have identified around your recovery process. You will have looked at the examples from other sites and reviewed guidance on best practice, and begun to discuss what a good recovery process would look like in your organisation.

Now it's time to think about exactly what you want to change and how to make the improvements happen.

Follow the steps below to design your new process using future state mapping.

Review your module aims

This is a good point to review your module aims, to make sure you remain focussed on achieving your goal. It maybe that having gained a deep understanding of your current state, you may wish to revise your aims. If you do, remember to communicate this with the wider team and your reasons why.

To map the future state

Effective group facilitation is key to the success of this important session. You will need a facilitator who is experienced in process mapping, has the skills to guide the team through the session, and is able to challenge and draw out the best ideas from everyone in the team.

For more guidance about facilitation and working with groups see www.institute.nhs.uk/facilitation and Improvement leaders guide 1.3 Working with groups www.institute.nhs.uk/ilg

To map your future state:

- get as many of your recovery team together as possible
- invite external representatives from areas upstream and downstream of recovery, they will have valuable insights and ideas, for example theatres and the surgical wards
- arrange the session allowing plenty of time to ensure as many people can attend as possible
- send a detailed agenda beforehand so that the team understand what they have been invited to and why their participation is important.

The agenda should include:

- review of the module aims
- review of all the information collected to date, including the current state map and the waste identified
- review of issues and frustrations identified to date and ideas for improvement
- further ideas generation
- future state mapping
- action planning and dates for future meetings.

Map your future state together as a team. Agree the first step, and walk through the value adding activities of the process, and create your future state process map. There should be significantly less steps and issues than your current state map.

Use Process mapping, Toolkit, tool no.11 to support you with this event. Together as a group, look for ideas or suggestions on how to improve the current process. All ideas, no matter how big or small, should be captured on a sticky note, and put on a flipchart. Encourage the team to be innovative with their suggestions. Tools to help you help staff think creatively can be found at www.institute.nhs.uk/thinkingdifferently

Other useful tools to support this session include:

- 5 why analysis – Toolkit, tool no.18
- dot voting – Toolkit, tool no.2

Carry out a cost / benefit analysis

Depending on the number of ideas and solutions which have been identified, and are within scope of this module, you may need to prioritise the ideas.

A Cost / benefit analysis – Toolkit, tool no.12, will help you and your team prioritise the ideas, based on the cost of implementation and the potential benefit to be gained. Low costs solutions with high benefit provide 'quick wins'. This helps to capture your team's attention and generate enthusiasm.

Example of a Cost / benefit analysis

Cost / benefit

- **Low cost and high benefit** – just do it.
- **High cost and high benefit** – initiate hospital procurement process, a business case will usually be required.
- **Low cost and low benefit** – nice to have, but best to implement when other priorities have been taken care of.
- **High cost and low benefit** – log as a nice idea, but put to the bottom of the priority list for implementation.

Identify issues that are beyond the scope of the module

Some of the issues and barriers identified may be beyond the scope of the module or the influence of theatres. However, these issues still need to be addressed through the appropriate person within your organisation, backed up with data and a clear indication of the impact that the issue is having on your patients, or your theatre service.

Below are some suggested solutions for resolving issues external to your implementation of the Recovery module:

- Escalation by the programme leader. There may be occasions where this needs to be escalated to the executive leader when other strategies have failed to find effective solutions.

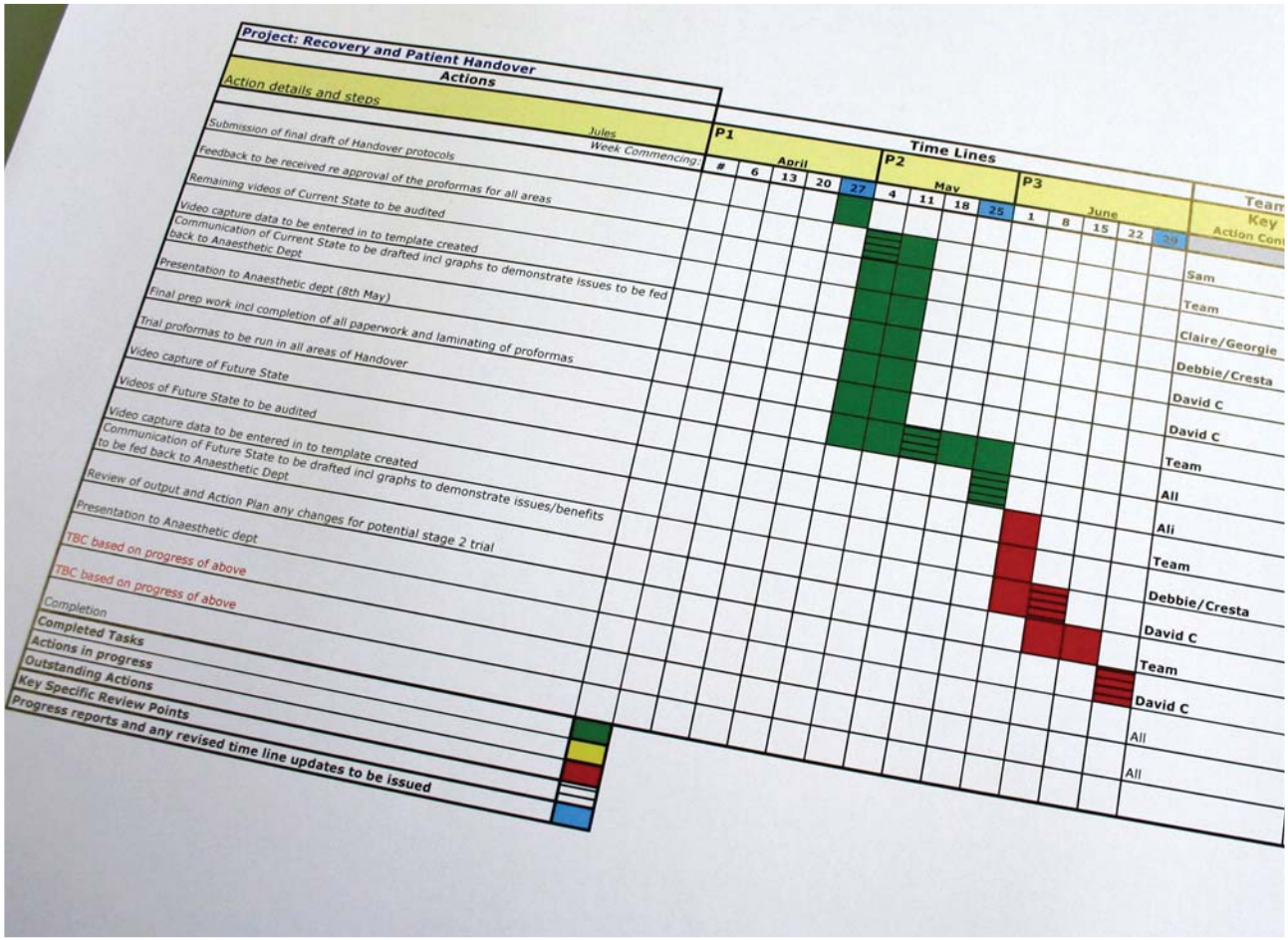
- Some key potential improvements will fall within the scope of other modules within The Productive Operating Theatre. Your programme lead will be able to link these into other module improvement work.

- Some potential improvements will also link in well with work that your organisation may be developing as part of The Productive Ward or other programmes in The Productive Series. This is an excellent opportunity to build a collaborative working relationship with other Productive programmes.

Create an implementation plan

Once you have agreed and prioritised the changes you are going to test, develop an implementation plan for keeping track of the actions. Use the Module action planner –Toolkit, tool no.13, to organise, share and communicate the actions. The planner can be used to monitor progress of your PDSA cycles week by week. Display the plan in a prominent position in your Recovery area.

Example: implementation plan



Test the changes

Now that a future state and implementation plan has been agreed the next stage is to test the potential solutions.

It is likely that even the best ideas will require you to go through several Plan Do Study Act cycles, to enable you to modify and refine your ideas before your team and organisation are happy to roll-out solutions on a large scale.

Before you begin testing ensure that:

- the leadership and ownership of each change is clearly established
- everyone involved understands the purpose of the proposed changes
- you communicate the changes that are being tested to all stakeholders, including those who are not directly involved in the tests
- you have identified the data you will need to collect to demonstrate that a change is an improvement
- the data will be accurately and effectively collected
- you have an effective method to analyse and review your data
  staff are encouraged to comment and make suggestions about the changes
- you plan to identify and help solve any problems that may occur during implementation
- you set a specific date to start
- you set a defined study period – this should be long enough to demonstrate improvements or problems, but short enough to evaluate and make further changes if required
- you set dates for future meetings to assess the effects of the changes and refine the approach based on feedback.

Monitor progress

At the beginning of this module, as part of the second question, 'How will we know that a change is an improvement?' one of the first things you did was to identify and agree your measures for Recovery.

For each measure you would have completed a measures checklist to confirm:

- the measure definition
- how and who will collect the information
- how and who will analyse and present the information
- when and who will review the information

(The measures checklist is available at www.institute.nhs.uk/theatres_resources in the Knowing How We Are Doing section.)

During the Plan phase you collected a considerable amount of information to help you understand the current session start-up process; this will have provided you with a baseline against which you can now monitor your progress as you begin to test your changes.

As you test your changes you will need to collect, analyse and review your data for each measure as described in Knowing How We Are Doing and as you outlined in your measures checklist.

It is likely that you will have to revisit some of your measures as you begin to collect, analyse and review your information and perhaps modify your measures, or the way you measure them to make sure that you are getting the information you need in a timely and manageable way. Consider the following questions:

- is the data easy to collect?
- are the measures providing you with useful information?
- can the teams understand how the data is presented?
- is there other information you could collect?

'Recovery is an ideal area for capturing data, not just on how the healthcare professionals judge the outcomes of their care, but how the patient perceives their experiences.'

Sam Chandler – recovery sister, Royal Devon and Exeter NHS Foundation Trust

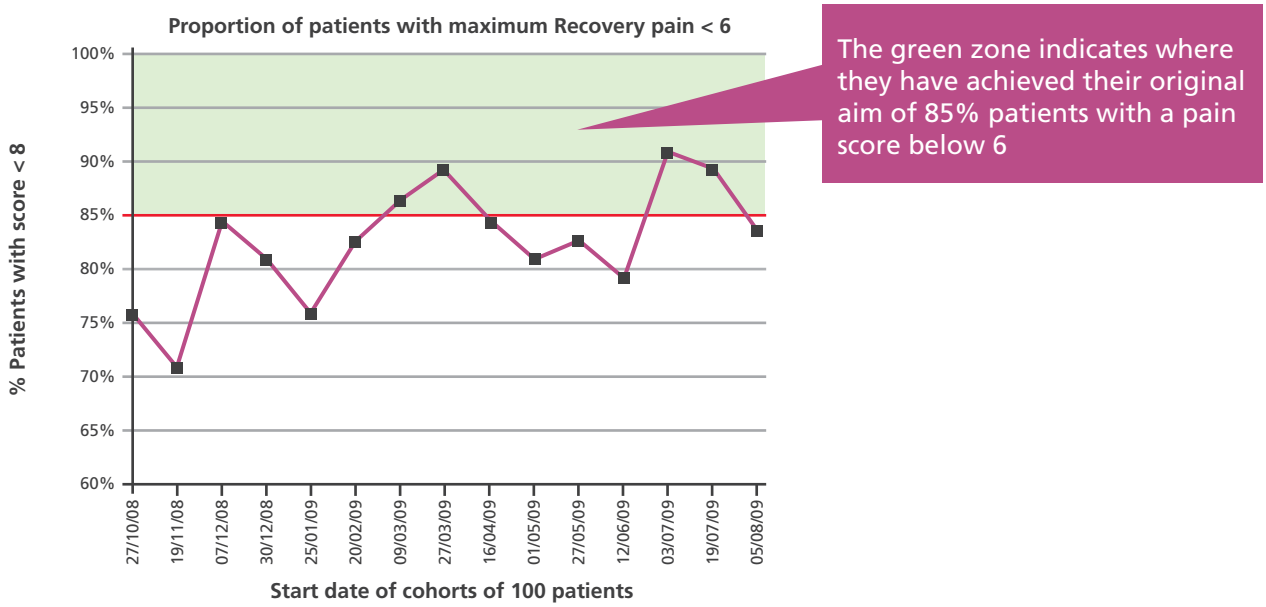
Analysing and presenting your data

There are many ways that you can analyse and present your data. For more information about how to analyse your data and lots of examples of charts that have been used within the Productive Operating Theatre see Example Knowing How We Are Doing Graphs www.institute.nhs.uk/theatres_resources

Run charts are a good way of showing the effect the changes you are making are having. They show what is happening to a particular measure over time, and so can be used to see whether things are getting better or worse. They are also easy to create and simple to understand.

For example the run chart below shows the percentage of lists that start on time is increasing over time. You could also plot the number of minutes that a session starts late or early day by day.

Example: pain score data



A more advanced way to present your information is by using Statistical Process Control (SPC) charts. For more information and a tool to create SPC charts see www.institute.nhs.uk/qualitytools

Collect qualitative information

Feedback from the team carrying out the change is also important

- Gather feedback from the team whilst they are testing the potential solution – how are things going and are there any problems?
- Encourage suggestions – the team carrying out the work is likely to be a rich source of ideas and suggestions.

Progress review meeting

Reviewing your measures is the most important part of the whole measurement process.

The purpose of measurement is to act upon the results. It is vital that you put time aside to review the measures as a team at a progress review meeting.

What is it?	• a regular, routine meeting to: – discuss progress against goals – plan actions against issues
Why do it?	• everyone has a stake in how theatres perform • promotes improved and consistent communication between theatre staff • promotes cohesive team-work to achieve theatre objectives • encourages ownership and responsibility for problems and solutions
Suggested agenda*	• welcome / update on actions from previous meeting • review charts and discuss changes for signs of improvement – congratulate on good performance and move quickly to areas where improvement is required • review your implementation plan • agree actions required / update on actions from previous meeting • assign new actions and deadline • confirm next scheduled meeting

* For detailed guidance see Knowing How We Are Doing, Step 6 – Review measures page 75

- Monitor initial data for signs of improvement – share any evidence with the team to encourage them to persevere.
- Make time to regularly catch up with the team involved in implementing the change so they can discuss progress and issues, and make suggestions for further improvements.
- Use the meeting as an opportunity to review your implementation plan to make sure all actions are on track.
- Communicate progress to the wider team through your Knowing How We Are Doing board and your organisation's newsletters.

Questions to ask

By reviewing the measures you will learn about how your theatre team is performing. You will analyse the information and develop conclusions about whether you are measuring the right things. You will begin to understand the reasons behind what the information is telling you and identify the actions you need to take.

The following questions can help guide your discussions at your progress review meeting.

What outcomes did we expect (our aim)?	eg to reduced delays in transfer of patients from recover to the ward
Do the results indicate we are achieving those outcomes?	eg are fewer patients experiencing fewer delays?
Are we confident we have made the correct conclusion?	eg is the data complete and accurate?
Do the results indicate that we should be doing something else?	eg has the average delay time decreased if not this should be the focus of the next improvement cycle
Are the measures useful?	eg you may need to measure over a longer period of time
Would some other measures tell us more?	eg are you measuring the delay correctly, could you measure it better?

Remember to communicate progress to the wider team through your Knowing How We Are Doing board and your organisation's newsletters.

Support the team through the changes

The teams implementing the changes will require:

- strong support and commitment from the programme leader and management team
- good clinical engagement
- open and clear communication about the changes and the impact they are having (positive and negative)
- time to dedicate to the module and attend the progress meetings.

'Being part of the The Productive Operating Theatre programme has got everyone involved thinking about what they do, why they do it and how their practice can improve.'

Aline Neilson – recovery staff nurse, Royal Devon and Exeter NHS Foundation Trust

Managing the challenges of implementation

Depending on the nature and scope of the solutions you are testing you may come up against challenges when implementing the change, for example:

- resistance to the change
- lack of resources – people being released to carry out the changes
- scepticism – perhaps people have engaged in improvement work in the past that has taken effort without producing results. Perhaps they do not feel that the change is important to them.

When you meet these challenges share them with the programme leader or service improvement leader who will be able to work with you to find strategies to overcome them. Much of this will be about communication.

For resources that can help you visit www.institute.nhs.uk/qualitytools and see the tools on:

- resistance – addressing uncertainty
- resistance – understanding it
- resistance – working with it.


Theatre
Recovery

Do – milestone checklist

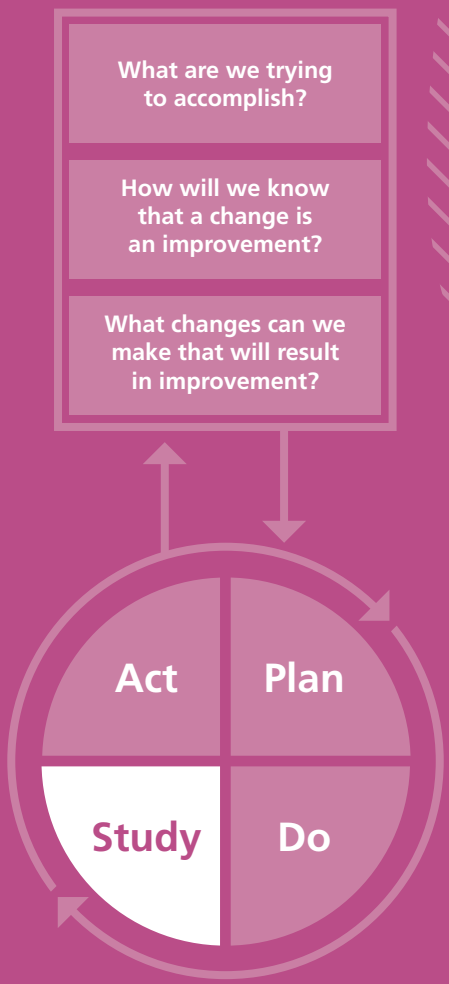
Move on to **Study** only if you have completed **all** of the items on this checklist

Checklist	Completed?
Mapped the future state	
Agreed and prioritise potential improvements	
Created an implementation plan	
Tested the changes	
Monitored progress	
Supported the team through the changes	

Effective team-work checklist	Tick if yes
Did all of the team participate?	
Was the discussion open?	
Were the hard questions discussed?	
Did the team remain focused on the task?	
Did the team focus on the area / process, not individuals?	

6. Study

Implementing improvements will take many Plan Do Study Act cycles. It is important to keep track of your measures for success so that you can assess the impact of changes soon after you make them and know if the changes you have made are improvements.



Collect, analyse and review feedback and data

During the Study phase, your team will need to reflect on how successful the changes they have implemented have been, and whether those changes are in fact improvements. This should occur after the original test period has been completed.

Use the three questions from the model for improvement as a framework to focus your thinking:

- what were we trying to accomplish?
- how do we know that the change was an improvement?
- what changes did we make that resulted in an improvement?

Throughout the test phase you will have been reviewing your changes regularly with your team at progress review meetings. The Study phase marks the completion of your defined test of change, it is at this point you will need to review the impact of the change through gathering the relevant information.

Collect feedback from staff and patients

What impact have the changes had on the different groups involved – recovery staff, theatre teams, surgeons, anaesthetists, ward staff and managers?

- Are the changes having a positive or negative impact on them? Pay particular attention to any negative feedback.
- Do they have suggestions on how the process can be improved further?
- Collect stories and quotes to provide the qualitative perspective of the change.

There are many ways to collect qualitative feedback from your teams and you will have already used some or all of them, use the most appropriate method depending on your local circumstances and scale of the change:

- group sessions (Toolkit, tool no.1 Meetings)
- one to one discussions (Toolkit, tool no.7 Interviews)
- flip charts in communal areas inviting comments
- questionnaires which can provide both qualitative and quantitative information (see www.institute.nhs.uk/qualitytools Patient perceptions and Staff perceptions)

Group sessions are particularly good as they provide the opportunity for discussion and to gather views from different perspectives.

'Its really rewarding being part of this programme, through measuring our improvements we can confidently show how we have improved the quality of care patients receive during their stay in recovery. This has had the added benefit of improving our working day.'

Sam Chandler – recovery sister, Royal Devon and Exeter NHS Foundation Trust

Collect data

As you have tested your changes you should have continued to collect, analyse and review your key measures to show the impact they have had from a **quantitative** perspective over time. You will have been doing this at your regular **progress review sessions**.

Assess the impact the changes have had on your key measures, for example:

- has there been an improvement in the number of delayed transfers? – overall, by theatre, by session
- has there been an improvement in length of stay in recovery?
- has there been a reduction in glitches?

For more information on how to analyse and interpret your data see Measures supplement www.institute.nhs.uk/theatres_resources

Review the feedback and data together

- What worked well?
- What did not work?
- What could have been done better?
- Do the changes need to be amended and tested again?

For qualitative data:

- What are the views of the team and their perceptions of the change?
- What would they like to see changed or improved?

For the quantitative data:

- Has the change been measured for a long enough time to draw clear conclusions?
- Are all of your measures providing you with valuable information – if not do they need to be amended?
- Are you having difficulty collecting the data – are there other ways that you could do it or other people you could approach to help?
- During the testing period have you become aware of other information that you would like to collect?

Assess the impact on your key measures

As you reach the end of the test phase, you should review your achievements against your original aims. Use the following questions to guide your discussion:

- what was your aim?
- do the results indicate you've achieved that aim?
- what conclusions can you draw?
- is the team confident they've made the correct conclusions?
- do the results indicate they should be doing something else?
- what next? – are you ready to move onto the Act phase?

Communicate progress

- Use your Knowing How We Are Doing board to communicate and share progress with your theatre department. Show progress on key measures, include quotes, comments and stories.
- Include the headline results in your Productive Operating Theatre newsletter, to share progress across the organisation.
- Discuss results and progress in your weekly team meetings, at audit mornings, and during brief and debriefing sessions. Ensure all staff are kept informed.

Study – milestone checklist

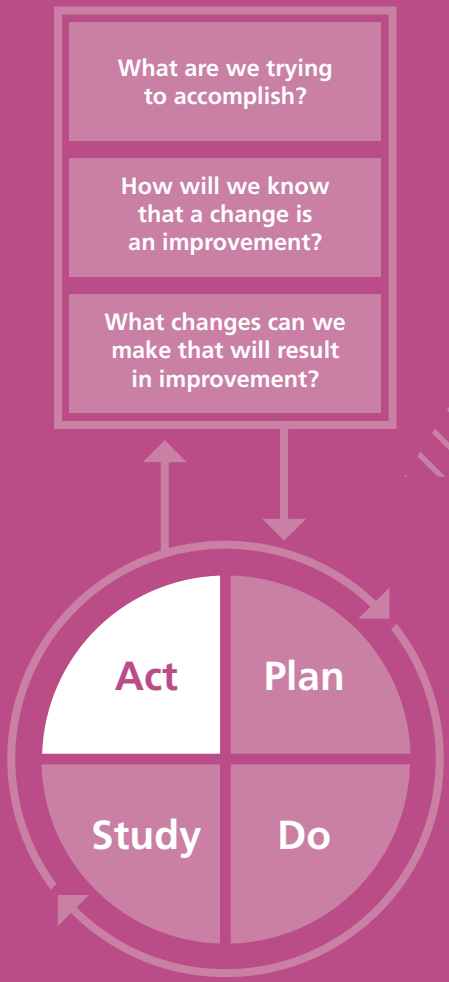
Move on to **Act** only if you have completed **all** of the items on this checklist

Checklist	Completed?
Collected, analysed and reviewed feedback and data	
Assessed the impact on your key measures	
Communicated progress	

Effective team-work checklist	Tick if yes
Did all of the team participate?	
Was the discussion open?	
Were the hard questions discussed?	
Did the team remain focused on the task?	
Did the team focus on the area / process, not individuals?	

7. Act

Once you have successfully developed and tested your improvements, you will need to decide whether to adopt, adapt or abandon the change, ensure improvements are sustained and plan for scale-up across the organisation.



Agree whether to adopt, adapt or abandon the changes

Once your team has undertaken the data analysis and reviewed the feedback, they will need to decide whether to:

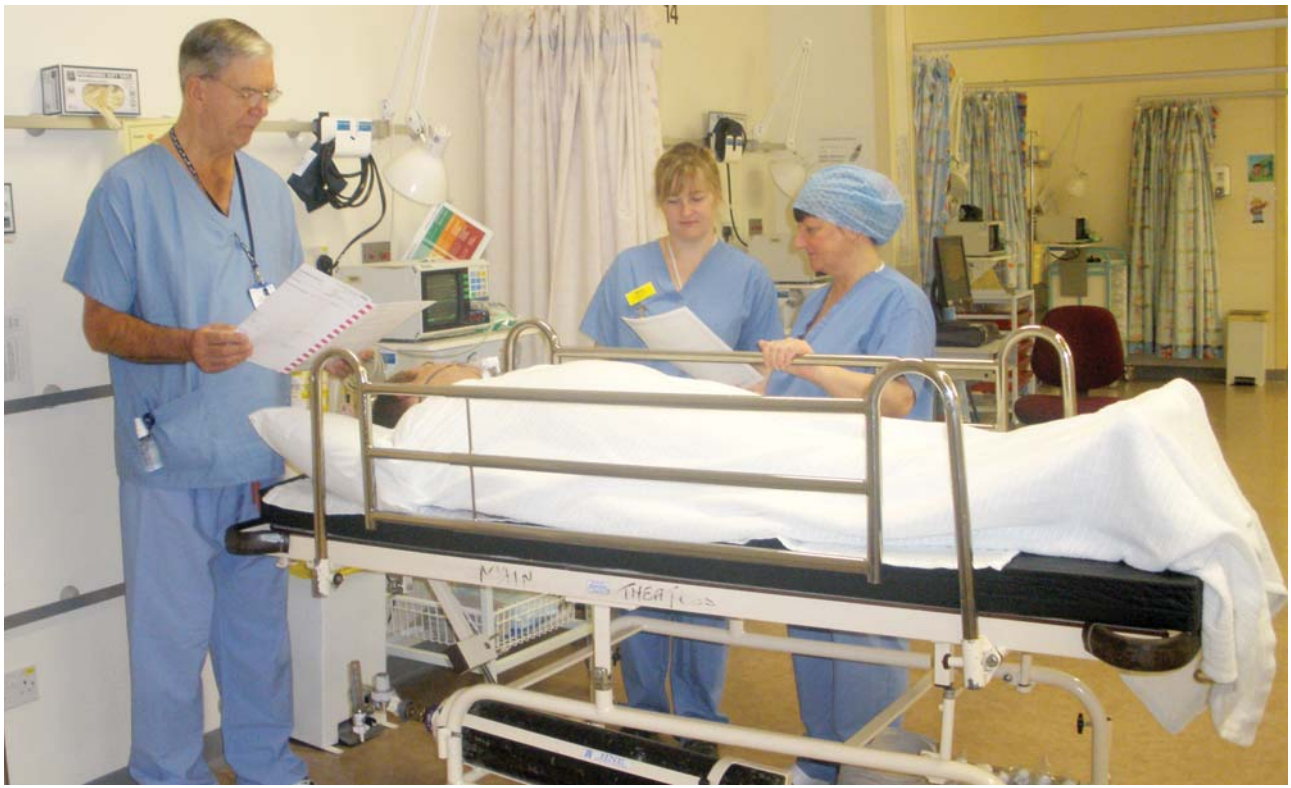
- **adopt** the change if it has been a success, work with a steering group to plan scale-up across your theatre suite
- **adapt** the process in some way to improve it further. Perhaps the change has not achieved the desired outcome, by adjusting or modifying it slightly it may be more successful. If changes are decided, you need a further period of study to understand whether the adaptation(s) have worked or not.
- **abandon** the change if it was not successful. Remember, some of the changes you propose may not be successful: do not consider this as a failure but an opportunity for further improvement. In this situation carefully analyse as a group what you have learned and what you would do differently next time. Are there things you have learned that are useful to the wider group working on other parts of the programme? If so share them.

Crucially, before the team decide to adapt or abandon a change, you need to understand why the change has not been as successful as you hoped. For example there may be poor clinical engagement, lack of time allocated to support the change or missing data. Use 5 Why analysis (Toolkit, tool no.18).

Tip: *The model for improvement encourages the testing of lots of ideas through small cycles of change. It is expected that many changes will need to be adapted before they are adopted. It is also expected that changes will be abandoned which is why you should first test ideas on a small scale in a supportive environment.*

Tip: *Create standard processes*
Once you have decided to adopt a change, it is important to 'lock down' the new process and embed it into your new way of working. Building standardised processes into your recovery (rather than simply assuming it will be covered) is one way you can support improved patient safety. Documenting your new process, making it visible and easy to understand will help your team, particularly new or temporary staff, to implement and adhere to the new standard.

Standardising your new processes supports continuous improvement as it will provide a new benchmark from which you can measure and make further improvements.



Celebrate and share successes

Display successes and feed back to everyone in the team. Be sure to credit the team with their effort. Share your improvements and learning within the department, across your organisation and externally so others can learn from your work through:

- wall displays
- emails
- newsletters
- weekly review meetings
- audit mornings
- presentation and sharing events
- submit your case studies of improvement to share nationally at www.institute.nhs.uk/theatres

Ensure that senior management are aware of your successes, and the teams involved. Too often only problems are escalated – it is good to report progress and see the service developing. It is also satisfying for staff to know that their good practice has been recognised by senior managers.

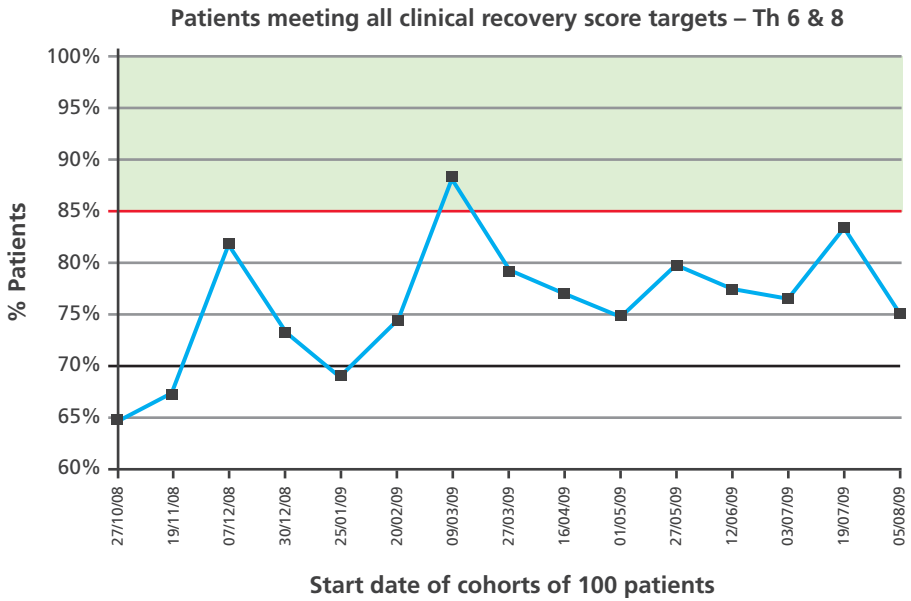
Continue to monitor and review

The example below shows how one team have identified three key priorities for improvement:

- Pain scores
- Axillary temperature
- Complicated recovery

The chart below illustrates how they are monitoring the percentage of patients of which they are achieving all three priorities, working towards their overall aim of improvement in recovery.

All patients meeting CRS target had:
Maximum pain scores < 6/10
Axillary temperature > 35.4°C
No complications in recovery



The Results - For Jul

We've been testing the "Call" since April 2009 unfortunately it looks as though, even after four months in use, it hasn't produced the desired results.

It may be time for a re-think!

Assessment of impact of "20min

16th July - 8th Sept 2009	Patients
Warning call made	148
No warning call	89
Not recorded	33
No Call OR Not recorded	122
All Patients	270

Sustain the changes

As much effort, if not more, needs to go into the sustainability of a change as that required during the planning and starting of it. Sustaining new ways of working is always a challenge. The NHS Institute sustainability model identifies ten factors that are key to the sustainability of any change; they are explained in the table below. These should be considered. Before you plan to scale-up your improvements across the organisation.

	Factor	Things to consider
Staff	Clinical leadership	• Recruit clinical champions to support and influence their peers through the changes
	Senior leadership	• Senior theatre staff and managers supporting and driving the improvements
	Training and involvement	• Provide training on the changes for those that are affected by them so that they understand any new systems and processes • Provide the information and develop a framework of review and support that will encourage active development of good practice
	Staff behaviours	• Teams will only own their own performance if they are empowered to do so, continue to involve staff in developing the changes further. Use your champions to influence their colleagues
Organisation	Fit with organisational goals and culture	• Show how the change fits with your Productive Operating Theatre vision and the wider organisation strategy
	Infrastructure	• Formally incorporate any new roles and responsibilities that people have as a result of the changes into their job plans • Develop standardised processes that embed the changes
Process	Benefits	• Discuss with staff involved what the benefits of the new way of working are for them
	Credibility of evidence	• Share the qualitative and quantitative benefits that you have collected through the testing cycles to engage colleagues across the four domains during scale-up
	Monitoring progress	• Continue to monitor the progress of the changes so that teams can see the impact of their efforts
	Adaptability	• Consider how the change will adapt to a different theatre team, speciality or site – do modifications need to be made?

To identify if there are factors you need to focus on to increase the sustainability of your improvements, complete the sustainability model which is available at www.institute.nhs.uk/sustainability

Plan for scale-up across all theatres

Adoption of your new session start-up processes will occur naturally to some extent as staff see and understand what you've achieved and the benefits its delivered. However scaling-up improvement across the whole organisation presents a significant challenge you therefore need to take into account various important considerations when planning for this. The steering group or the programme team may have clear thoughts on where to, and how to migrate the improvements across all theatres.

Importantly, scale-up across other teams will involve using the same improvement methodology and approach, but successful implementation will rely on a careful balance between standardisation and flexibility to avoid duplication, confusion and frustration.

Standardisation – to what extent should the improvements created in the showcase area be scaled-up across the whole recovery unit or theatre department? For example, once a standardised process for pain management has been developed and tested with the showcase area, that meets all the required national guidelines and best practice, it would seem both practical and effective to use this across all recovery areas within theatres

Flexibility – to what extent should the improvements created be developed by the individual teams as they work through the modules? The showcase teams in particular need to be open to the prospect of further modification of the documents or tools they created, eg what works for a cardiac recovery area may need some adaptation and development to be right for a day case unit.

However good you think your new processes are, do not be tempted to send out an instruction to all staff to implement them. Experience has shown that, at best, they will reluctantly carry it out until you are no longer watching. At worst, they will simply refuse. Staff have to be won over by engaging them, showing them the evidence that it works (qualitative and quantitative) and involving them in modifying the process to be fit for purpose in their particular clinical context. This takes time and perseverance.

Key considerations

There are many considerations to take in account before embarking on your scale-up plan. The degree of success you achieve will depend largely on:

executive commitment and support for the programme

sequencing – which specialties will you scale-up to and in what order, in what time frame?

coverage and completeness – think about how you will plan for and monitor the extent to which modules are being implemented across each area within your organisation and the extent to which each modules aims have been achieved.

clinical engagement and the degree to which your clinical champions can encourage and influence clinical colleagues across theatres

data and information analysis is crucial to understanding your baseline position, and also what impact, or return on investment the programme is achieving for the organisation

staff availability to test and implement change is difficulty during the initial phase involving just one speciality or showcase theatre. This becomes an even greater challenge when planning for scale-up across the whole theatre suite.

key roles in the programme such as programme leader ensure consistency and pace throughout the programme. Insufficient time allocation, vacancies or inexperience can only add delays, lack of continuity, or worst of all, collapse of the programme.

governance structures provide a vital framework for any improvement project. As your programme progresses through the modules and develops from showcase theatre across the entire theatre suite, so the communication and reporting mechanisms will need to evolve to ensure continued rigour and focus on achieving the programme aims.

For up to date information about how scale-up is being developed, tested and implemented see www.institute.nhs.uk/theatres

Don’t stop improving!

Just because you have decided to adopt an improvement does not mean that the work is complete.

Your new way of working with the improvements embedded now becomes your current state. Continue to look for the opportunities to improve it further. It is likely that as you scale-up and engage more teams, they will come up with more ideas of how the changes can be refined and improved further, or adapted to meet their particular needs. It is important to continue to provide opportunities for your wider teams to be able to influence and develop the new ways of working.

By doing this you will be creating a culture of continuous improvement within your department, where improvement is seen as an integral part of the working day, not an additional activity. Furthermore, your teams will have the knowledge, skills and confidence to lead the process themselves towards the ultimate aim; The Productive Operating Theatre.

Act – milestone checklist

Move on to your next **PDSA** cycle only if you have completed **all** of the items on this checklist

Checklist	Completed?
Agreed which changes to adopt, adapt or abandon	
Celebrated and share successes	
Agreed how you will continue to monitor and review	
Completed the sustainability model to ensure the changes are maintained	
Planned for scale-up	

Effective team-work checklist	Tick if yes
Did all of the team participate?	
Was the discussion open?	
Were the hard questions discussed?	
Did the team remain focused on the task?	
Did the team focus on the area / process, not individuals?	

8. Learning objectives complete?

Learning objectives were set at the beginning of this module. Test how successfully these objectives have been met by discussing your Recovery 'journey' with your team and asking them the questions in the following table.

The results of this assessment are for use in improving the facilitation of this module and are not a reflection of staff aptitude or performance. The questions are broad and the responses will relate to the experience at your organisation. Some suggested answers have been given, if the responses from your team broadly fit with the suggested answers, then the learning objectives have been met.

For the objectives that have only been partly met, think about how you can change the way you approach the module next time.

Questions	Possible Answers
What do you understand about the importance of effective communication in creating a safe, effective recovery unit, and the effect poor communication has on errors, mistakes and omissions?	• Recognise that effective communication creates a safe, effective and efficient recovery unit • Poor communication and poor information transfer can result in errors, mistakes and omissions which compromise patient safety, efficiency and team working • Application of the learning from implementing the Team-working module
What do you understand about how the recovery process impacts patients, staff and the organisation?	• You can reduce waste and inefficiency in the recovery process • Improving the recovery process reduces errors, mistakes, duplication and delays for patients and staff • Recovery staff can influence the process by pulling patients though the system, and pushing through to the wards • Delays in recovery can cause bottlenecks upstream and downstream, in the theatre and in the surgical wards resulting in issues and frustration for staff and patients, and inefficiency for the organisation
Why is strong leadership critical to improving and sustaining change in recovery?	• Providing clear direction and support to overcome and potential barriers • Being visible in the department supports the team and helps them feel their contribution is valued • Provides focus and motivation for the team to enable them to achieve their aims for the module • Engage with multidisciplinary team and ensure clear roles and responsibilities • Ongoing commitment to the module / programme ensure focus on achieving the module aims
What are the benefits of standardising work processes?	• Everybody understands what standard is expected of themselves and of others • Eliminates confusion • Builds reliability into the system • Based on best practice • Allows critical analysis when things go wrong

Questions	Possible Answers
Why is understanding measurement important and how important it is for successful improvement?	• To demonstrate performance, progress, and impact of the changes we have made • To use information to inform decision making and help prioritise actions • To base improvement on data rather than anecdotal evidence • Key to understanding whether the improvement efforts are having a positive effect • Communicating key successes through measures supports involvement and participation in the programme
What are the critical success factors to implementing change in recovery?	• You need strong clinical and managerial support and leadership to overcome any potential barriers that may occur both within and beyond the scope of the module • Understanding the PDSA cycle and how ideas can be tested using small cycles of change • Understanding and using data and measurement for improvement • Engaging the wider team and using their knowledge and ideas to improve processes • Empowerment to be able to overcome barriers and change the system in a structured way
How can you develop a culture of continuous improvement within your recovery unit?	• Continue to monitor key measures • Ensure changes are sustained through ongoing monitoring • Continue to review the processes as a team and test and implement changes continuously • Celebrate success • Persevere, be consistent and committed to the programme
How can you improve processes with teams and individuals outside recovery?	• Have a shared aim • Create a team approach to solving shared problems • Have a 'no-blame' approach • Be open to change
Why is it important to consider the patient's experience in process redesign?	• Patients should be at the centre of everything you do • Patients should be involved in identifying opportunities for improvement and reviewing their impact • Improvements in one area may have an unexpected consequence for patients experience

9. Appendices

Appendix 1
References and further reading

Royal College of Anaesthetists
Guidelines for the Provision of Anaesthetic Services - 2009
www.rcoa.ac.uk

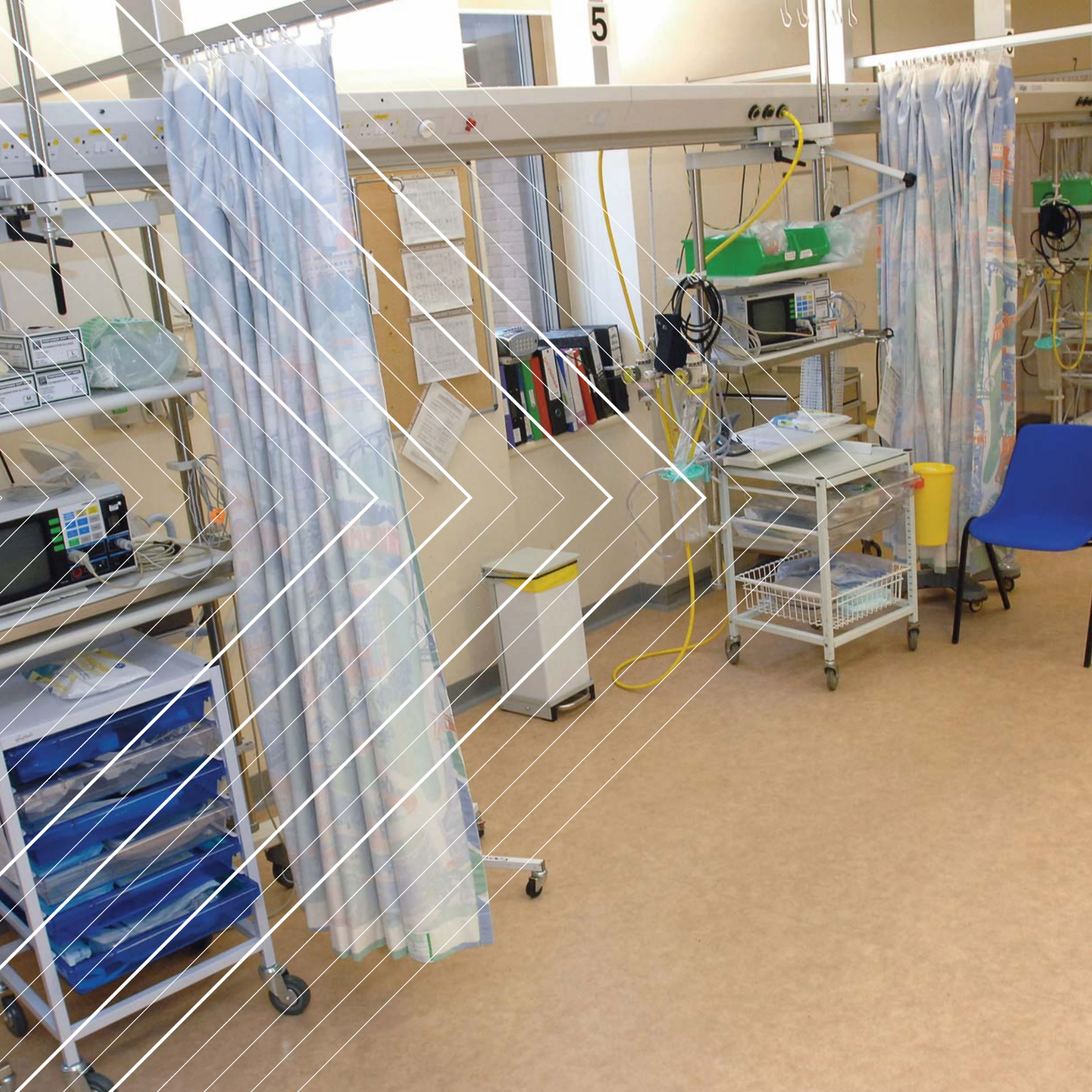
The Association of Anaesthetists of Great Britain and Ireland
Immediate Post Anaesthetic Recovery
e-mail: info@aagbi.org
www.aagbi.org

Association for Perioperative Practice 2007
Standards and Recommendations for Safe Perioperative Practice
Quality Assurance Document
www.afpp.org.uk

Enhanced Recovery Programme
www.18weeks.nhs.uk

National Institute for Health and Clinical Excellence
www.nice.org.uk

British Anaesthetic and Recovery Nurses Association
www.barna.co.uk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