

The Productive Operating Theatre

Building teams for safer care™

Scheduling

Version 1

This document is for the executive leader, theatre managers, theatre matrons, schedulers, coordinators, theatre staff, anaesthetists, surgeons, information analysts and improvement leads.



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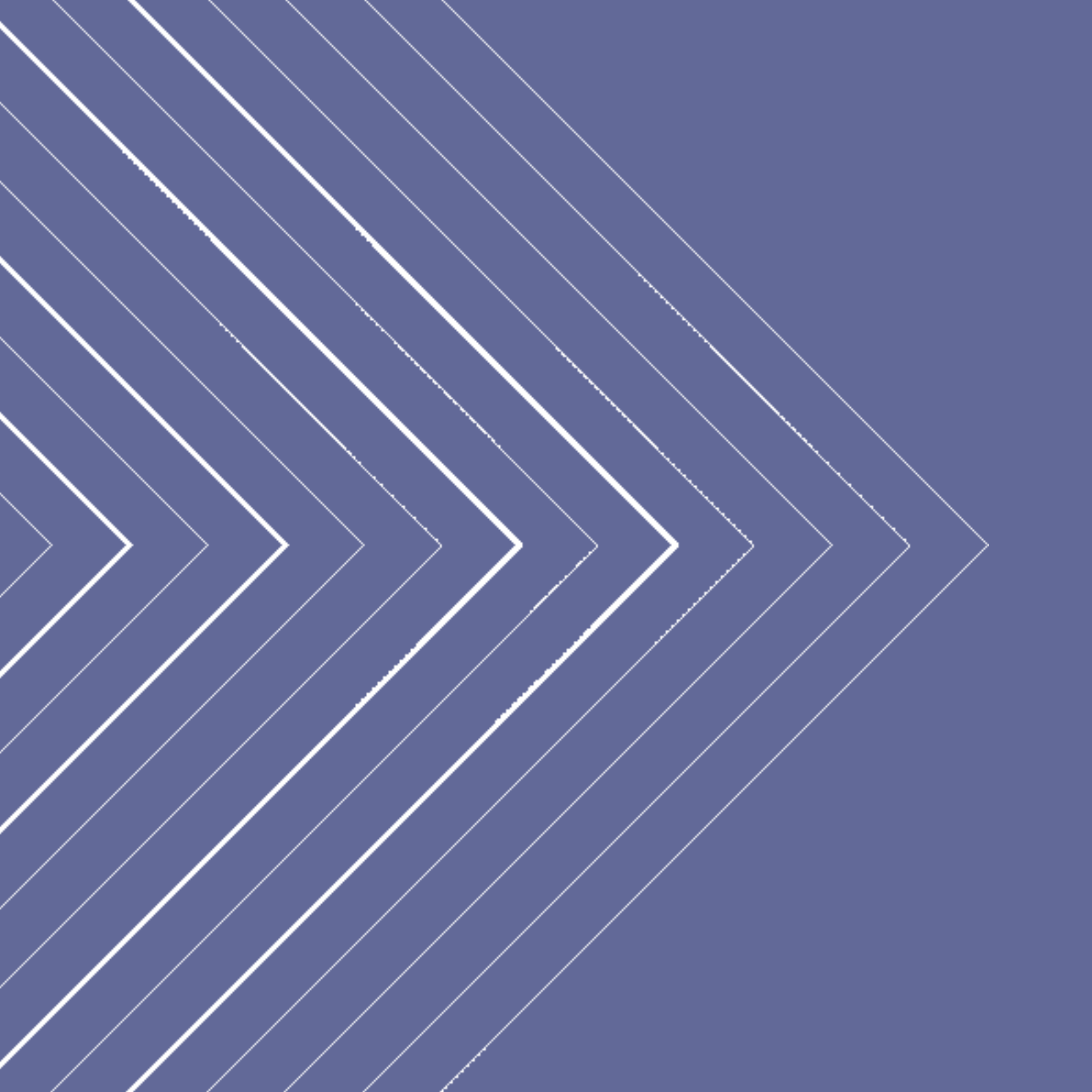
Session Utilisation			
Planned Hours of Scheduled Sessions	Planned Hours of Used Sessions	Cancelled Sessions	Hours
Orthopaedic - Day Surg	909:30	845:30	64:00
Linear (Orthopaedic - IP)	14:00	7:00	7:00
Linear (Orthopaedic - Day Surg)	923:30	852:30	71:00
Target			

Session Utilisation			
Planned Hours of Scheduled Sessions	Planned Hours of Used Sessions	Cancelled Sessions	Hours
Tuesday AM	14:00	14:00	0:00
Total	14:00	14:00	0:00
	130:00	104:00	

Good Hope Operating Theatres Vision
"A high performing theatre suite that provides quality patient care"
"A place where..."

1000hrs

IN USE



Scheduling

Purpose of this module

This module will help you to create a scheduling system which is efficient and effective. By applying improvement techniques to two key areas of your scheduling system, specifically, how you make the most of your available theatre sessions, and importantly, how you manage each list within those sessions.

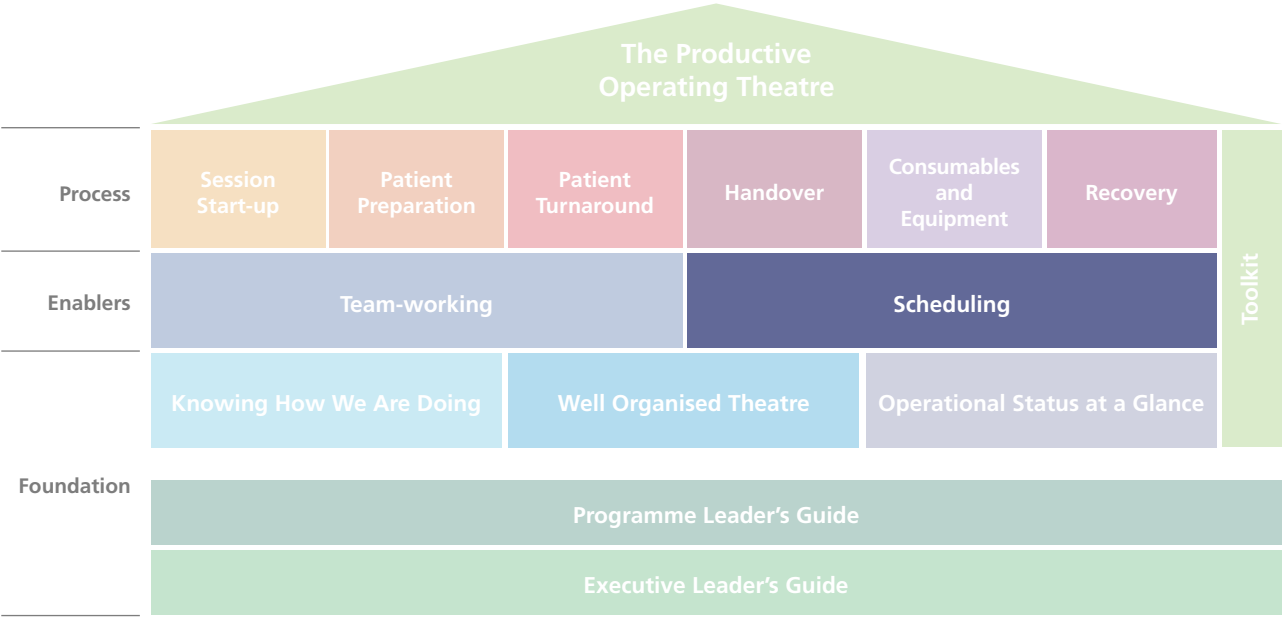
This module provides a structured approach that will help you understand and review your current scheduling systems and processes, helping you to identify where you can make improvements, and how you can tailor solutions to suit the needs of your organisation. The scope of this module is extensive, unlike the other modules, scheduling reaches way beyond the boundaries of the theatre department. There are quick wins, however, some improvements will take longer to implement. The potential benefits are significant, across the four domains of quality:

- Team performance and staff wellbeing.
- Safety and reliability of care.
- Value and efficiency.
- Patient's experience and outcomes.

The drive for an effective and efficient service comes from two key perspectives; patients increasing expectations on services to provide high quality, safe care with no delays, and also from an organisational requirement to ensure resources are used effectively. Theatres are one of the most expensive and valuable resources within a hospital, it is crucial to ensure they run efficiently.

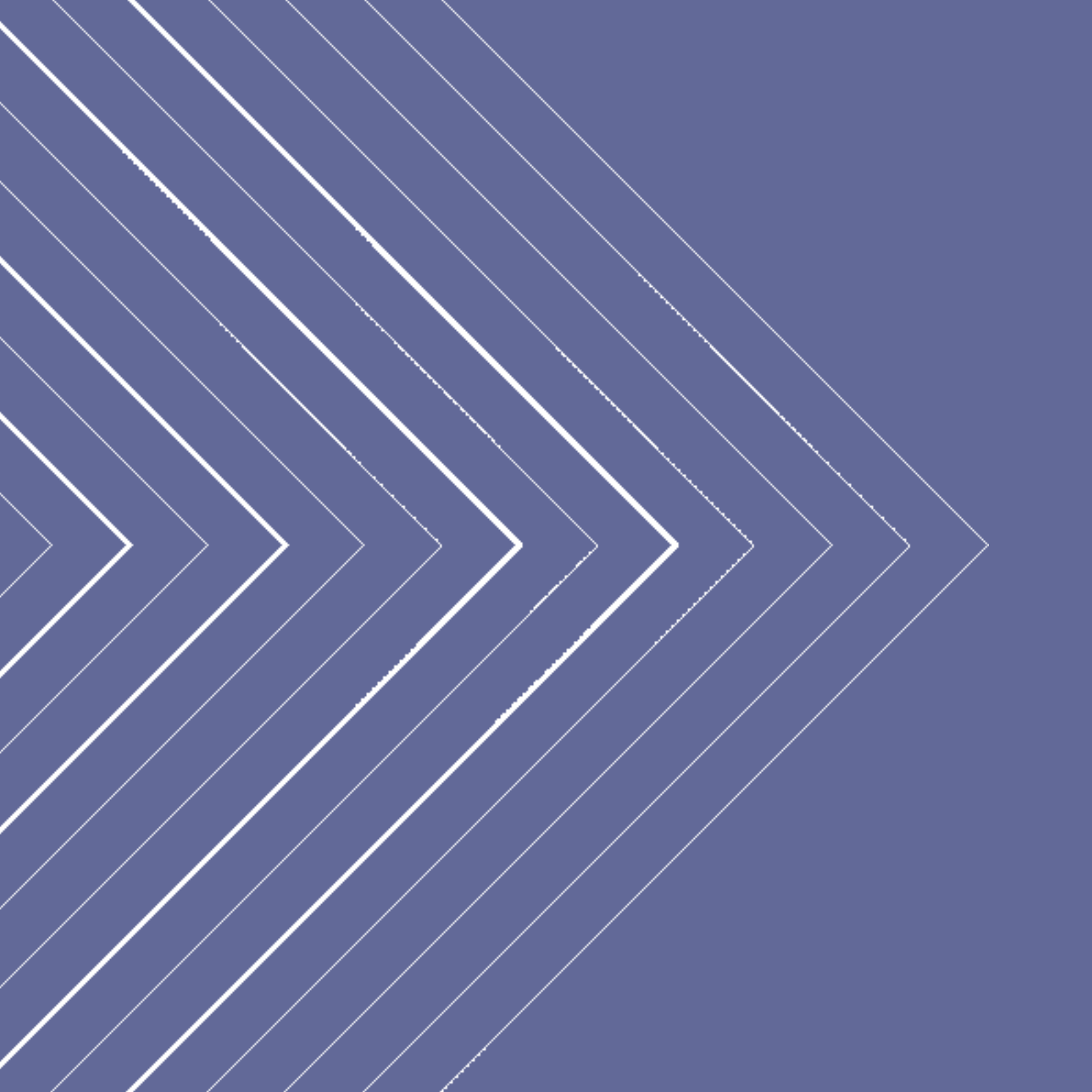
Good scheduling is essential to ensure you achieve these benefits for your patients, staff and your organisation.

These modules create The Productive Operating Theatre



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1. *What is the Scheduling module?*

What is it?

The Scheduling module provides a practical approach to understanding your theatre scheduling systems and processes, identifying where and how you can make improvements to deliver a reliable, achievable list in a timely manner. This enables you to make the most effective use of your theatre capacity, your team's knowledge and experience, and the resources you have available. Effective scheduling of operating sessions is essential to improve services to patients, provide organised achievable lists for staff, and ensure optimum use of operating theatre capacity.

This module takes you through a diagnostic process to help you understand your current system: it introduces high impact interventions that will have significant effects on how you utilise your theatres, and will provide a generic approach to improvement that will help you identify and implement changes that are specific to your organisation.

Why do it?

Scheduling is a critical part of how an operating theatre department runs. How you schedule can make the difference between a well organised, efficient and effective department and disarray and increased stress for all involved. Poor scheduling is one of the most common causes of staff frustrations. Good scheduling delivers benefits to patients, staff and the organisation.

For patients, good scheduling improves the delivery of safe, reliable and efficient care by:

- reducing waiting times, avoiding cancellations and unnecessary delays on the day of surgery
- ensuring relevant information is distributed in a standardised manner that enables the right team, right equipment and right information to be in the right place at the right time for each procedure
- providing clear and relevant information in a timely manner allowing patients and their relatives to plan their admission and discharge.

For theatre teams, good scheduling improves their experience and wellbeing by:

- ensuring lists are constructed in a way that does not lead to significant under or over-runs
- ensuring timely notification of operating lists that allows any specialist equipment and the correct skill mix of theatre staff to be arranged
- minimising the time spent on rework
- reducing delays and eliminating wasted time.

For schedulers, good scheduling improves their experience by:

- raising the profile and importance of the role of schedulers and scheduling within the organisation
- helping reduce the complexity of many of the current processes
- reducing the current levels of re-work
- helping improve the relationship between the role of the schedulers and theatre teams.

For surgeons, good scheduling improves their experience by:

- ensuring lists are realistic and achievable every time
- ensuring that specific needs in terms of equipment, test results and the correct surgical teams are present every time
- preventing last minute re-working of lists.

For the organisation, good scheduling improves organisational efficiency by:

- using one of the most expensive resources within a hospital by maximising theatre utilisation effectively
- effectively meeting national targets with minimum stress and decreased costs
- improving the patient experience
- improving staff wellbeing
- improving the reputation of the organisation
- improving communication helping to decrease repetition and reduce rework.

What it covers

This module will help you determine the best way to improve your theatre scheduling by enabling you to:

- understand your current scheduling system and processes, identifying where improvements can be made
- understand your theatres capacity and demand
- analyse your data to understand how many sessions you actually use and the impact and cost of unused sessions
- develop systems to ensure you always use all available sessions
- manage individual lists effectively
- decide how best to utilise your theatre time.

What it does not cover

This module will not prescribe one solution; it will help **you** decide what a good scheduling process should look like within **your** organisation and help **you** make that happen.

Through the Scheduling module you may identify areas where you can make improvements within a theatre list, for example during Patient Turnaround or Session Start-up, however this module will not focus on those areas as they are covered in detail in the process modules.

'At The Productive Operating Theatre visioning sessions, scheduling, and more specifically over-running lists is consistently highlighted as one of the three biggest barriers to achieving the teams' vision of the perfect operating list.'

**Amanda Fegan - lead associate, The Productive Operating Theatre,
NHS Institute for Innovation and Improvement**

Learning objectives

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

- be able to optimise the use of theatre time and improve patient care through forward planning and organisation
- have identified measures that are important to scheduling and how to monitor them on an ongoing basis
- understand how to achieve optimal utilisation of operating sessions
- understand the importance of monitoring theatre capacity and demand and know how to do it
- appreciate why procedure times and anaesthetic times are essential to scheduling
- understand the importance of reviewing scheduled lists
- understand the current scheduling process and eliminate any waste within it
- understand the importance of involving and providing feedback to all those who contribute to scheduling
- have built up an effective communication system ensuring the right information will be in the right place at the right time.

What tools will you need?

Tool	Toolkit section reference number
Dot voting	2
Waterfall diagram	4
Interviews	7
Process mapping	11
Cost / benefit analysis	12
Module action planner	13
Timing processes	16
5 - Why analysis	18

What is Scheduling?

In its simplest form scheduling can be defined as:



'Planning or arranging something to take place at a certain time.'

Chambers English Dictionary

It sounds so simple. However, when scheduling a theatre list there are many factors that need to be arranged and coordinated to make sure that a patient can be operated on at a specific time. Not only do you need to do the best for the patient in front of you, but you also need to make the best use of your resources (staff, theatre capacity and equipment) to ensure you can deliver the same level of service for all patients.

Theatre scheduling is complex, it involves many different elements and people, often with competing priorities. Through this module you will develop a comprehensive picture of all the parts involved in your scheduling process, you'll develop a better understanding of the interdependencies between the different roles and the implications your actions have on others involved in different stages of the process, and ultimately, the patient.

Through this understanding you will be able to identify where improvements can be made to ensure you deliver an effective and efficient service for your patients, while ensuring optimum use of your theatre capacity and resources. It may not be immediately apparent that there is an issue with scheduling, but we have found that, by taking a look at this complex process, there are always significant opportunities for improvement.

What does the perfect scheduling process look like?

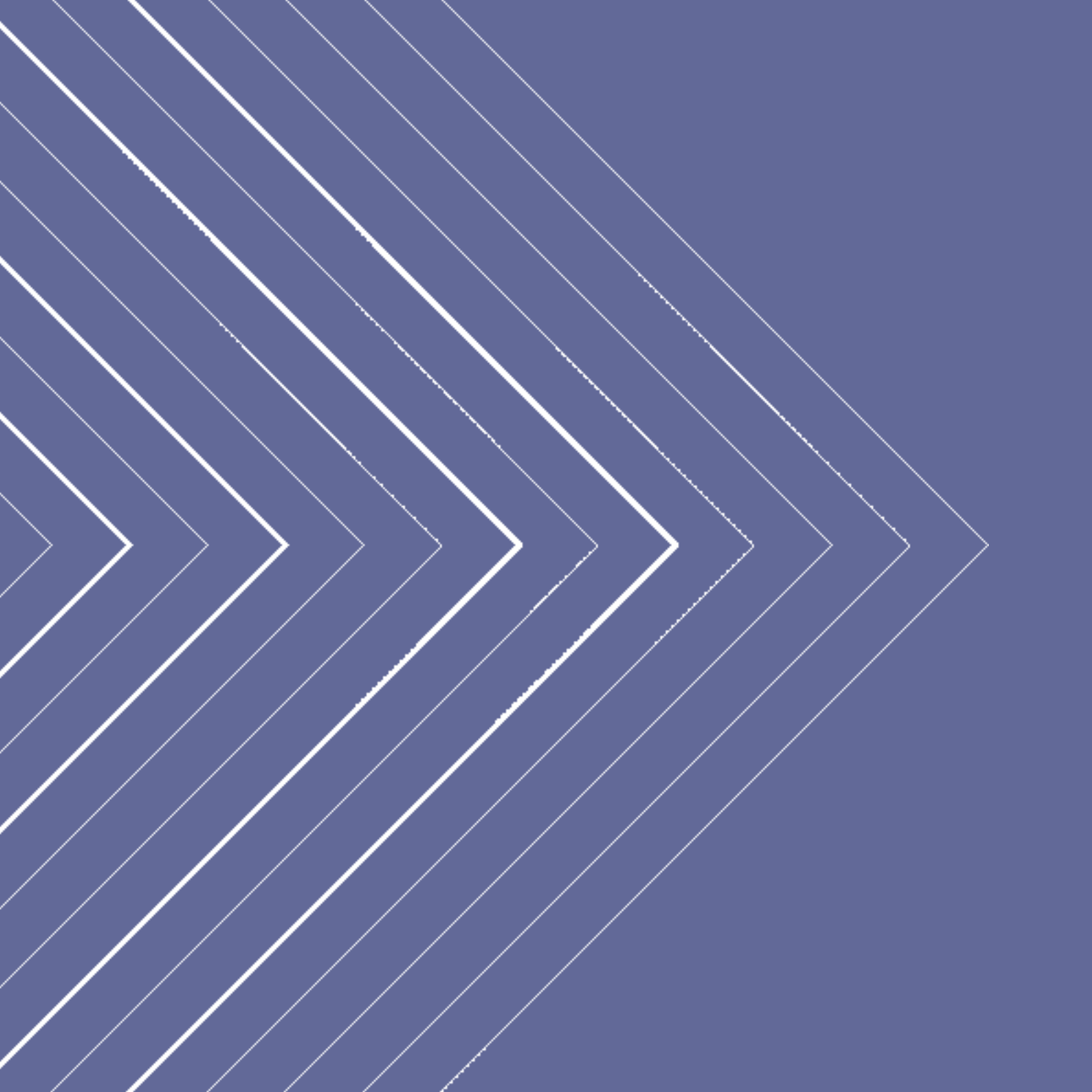
- Theatre capacity that matches demand – the number of procedures per week are balanced with the number of patients added to the waiting list per week.
- All available sessions are used – no empty sessions and no need for waiting list initiatives.
- Realistic and achievable lists compiled using actual procedure times – no early or late finishes.
- No non-clinical cancellations on the day of surgery due to hospital error.
- Theatre lists and their order are confirmed prior to the day with no last minute changes – correct procedures listed with all the details.
- Theatre list issued with time to prepare – staff skill mix, equipment, instrumentation, ITU and ward beds.
- A smooth booking process with no re-work for the schedulers.

These are a few ideas; you probably identified most of these factors at your visioning session and possibly more!

Typically, scheduling does not consistently achieve this and the following is all too often familiar:

- Waiting list pressures due to a perceived insufficient theatre capacity.
- Sessions not being utilised.
- Theatre lists that are often based on an individual's perceived knowledge, rather than what actually happens in theatres, resulting in early finishes, or over-running lists.
- Cancellations on the day due to incorrect information or information not being available.
- No confirmation of the theatre list prior to the day resulting in equipment not being available.
- Lack of post operative beds available as no consideration is taken as to the effect of length of stay and there is no forward plan for the number of beds required each day.

Once again these are only a few of the daily issues. Many of these issues can be addressed through improved scheduling.



2. How will you do it in your theatre?

To begin to understand and improve scheduling in a manageable way, this module has identified two approaches, described in the following sections:

- Utilising sessions
- Managing lists.

Each section follows a Plan Do Study Act model for improvement.

Different groups of staff will be involved in the different approaches and the time it takes to implement and realise the benefits will vary. As a result it is possible to begin working on both approaches simultaneously.

able theatre

	Sat	Sun
3	4	5
10	11	12
17	18	19
24	25	26
31		

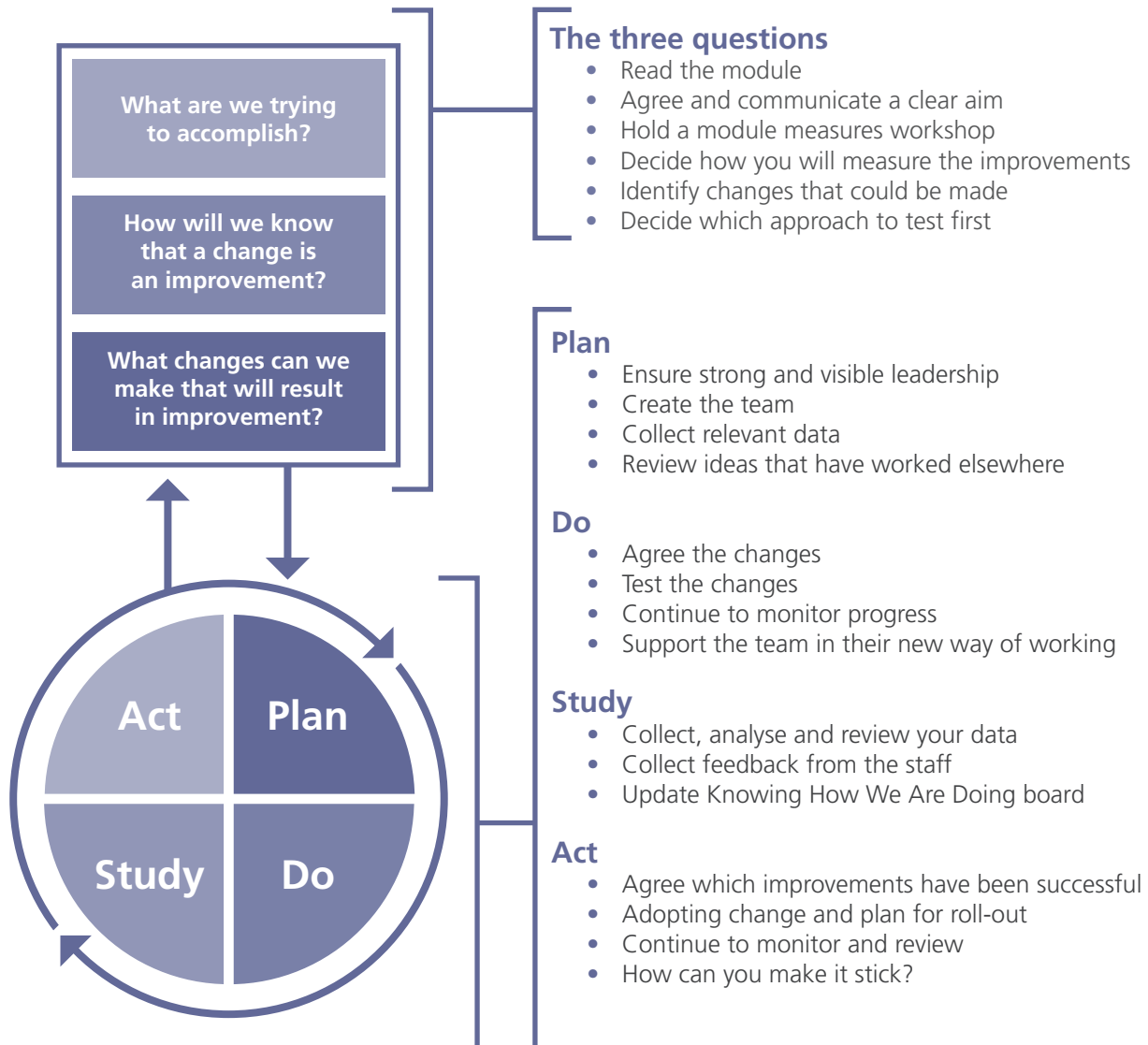
Session status

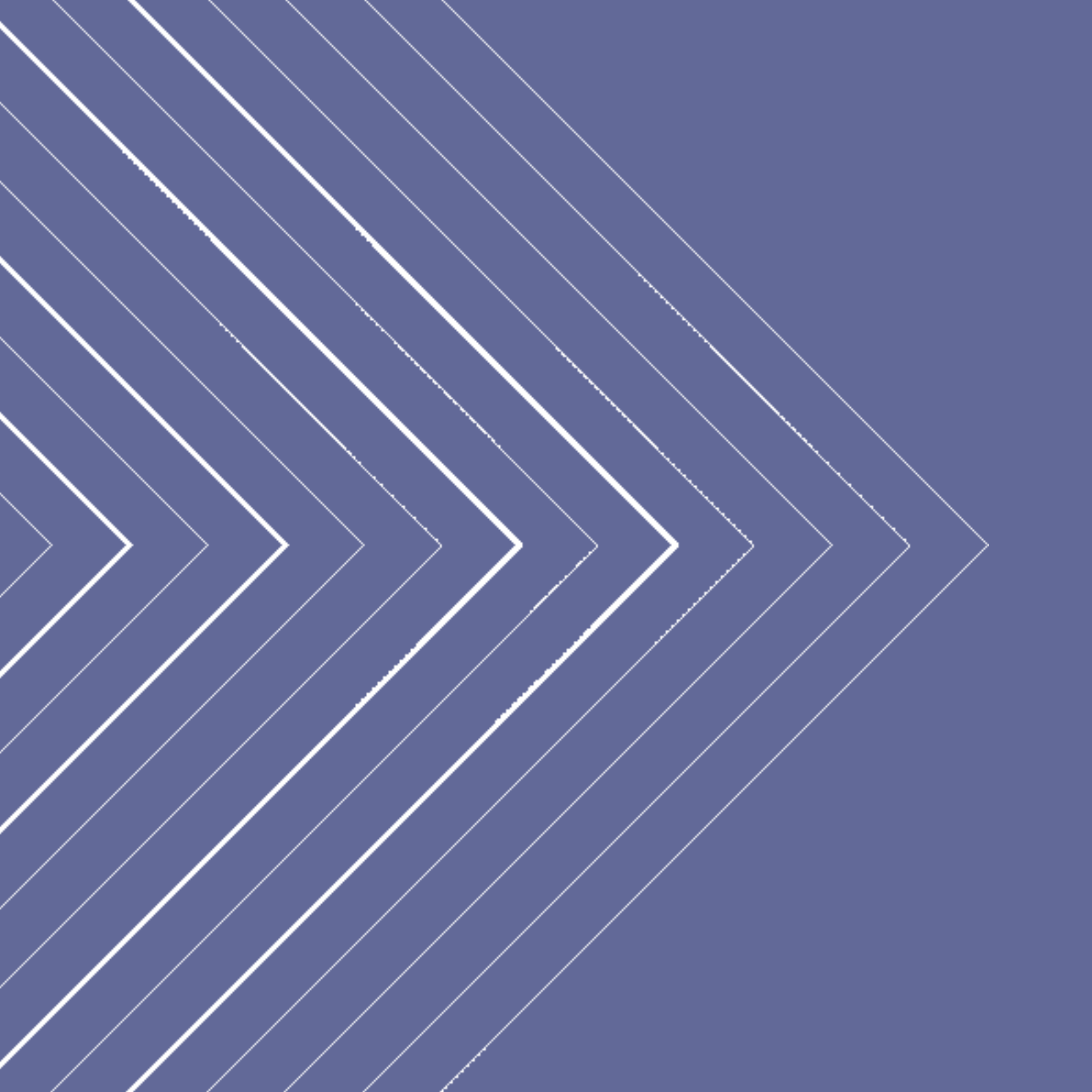
- ☐ Planned theatre list
- ☐ Utilised list
- ☐ Vacant list
- ☐ Session not available
- ☐ On hold
- ☐ Unplanned session
- ☐ Unused session

- Run
- Res
- Prim
- Bac

How will you do it in your theatre?

The model for improvement





3. The three questions

Before you start to implement the Scheduling module, be clear about the approach you are going to take. Take time to read through the module carefully, so that you understand the full scope of what is involved.

Then work through the three questions from the model for improvement. These questions and your answers to them will provide you with a framework that will be fundamental to achieving your improvements.

1. What are we trying to accomplish?

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

Think about how the Scheduling module will contribute to achieving both your local vision for the programme and the overarching key aims of the programme of improving:

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



It may be necessary to identify a number of aims, as there are two approaches involved in the Scheduling module and it is likely that there will be a number of different workstreams.

When setting your aims for Scheduling make sure they follow the SMART principles.

Setting a SMART aim

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

Simple – give the aim a clear definition (eg reduce turnaround time)

Measurable – ensure that data is available

Aspirational – set the aim high to provide a challenge to the team but make sure it is achievable

Realistic – take into consideration factors beyond your control which may limit your impact

Time bound – set a deadline.

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



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

This second question builds on the work you have 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 get better over time, then you can conclude that the change led to an improvement.

Measuring the impact of the changes you are making is really important to enhance you and your team's learning. 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. Consider how your improvements from the Scheduling module will be represented in the balanced set of measures.

If it is not obvious, 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 about what you could measure.

To explore this further, run a module measures workshop 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 Scheduling module fits into your agreed balanced set of measures
- identify measures for Scheduling
- decide how to collect, analyse and review the information
- complete a measures checklist for each measure in the Scheduling module.

Once agreed put in place processes to start collecting, analysing and reviewing the data for your balanced set of measures. Remember to share the progress on your Knowing How We Are Doing board.

Here are some ideas of what you might wish to collect. You may already be collecting some of these - your choice may also be influenced by other modules.

- Number of staffed sessions not being taken up.
- Session utilisation - percentage of staffed sessions actually being run.
- Number of additional lists being put on by specialty – waiting list initiatives.
- Number of minutes each session starts late / early.
- Number of minutes each session finishes late / early.
- List utilisation – percentage of the session time spent as contact time.
- List utilisation – actual contact time **within** the agreed session hours as a percentage.
- List utilisation – actual contact time as a percentage of the planned session time.
- Amount of time each operation takes by procedure / surgeon.
- Anaesthetic time.
- Turnaround time.
- Lost income due to cancelled sessions.
- Percentage of lists which are validated by a multidisciplinary team in advance.

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

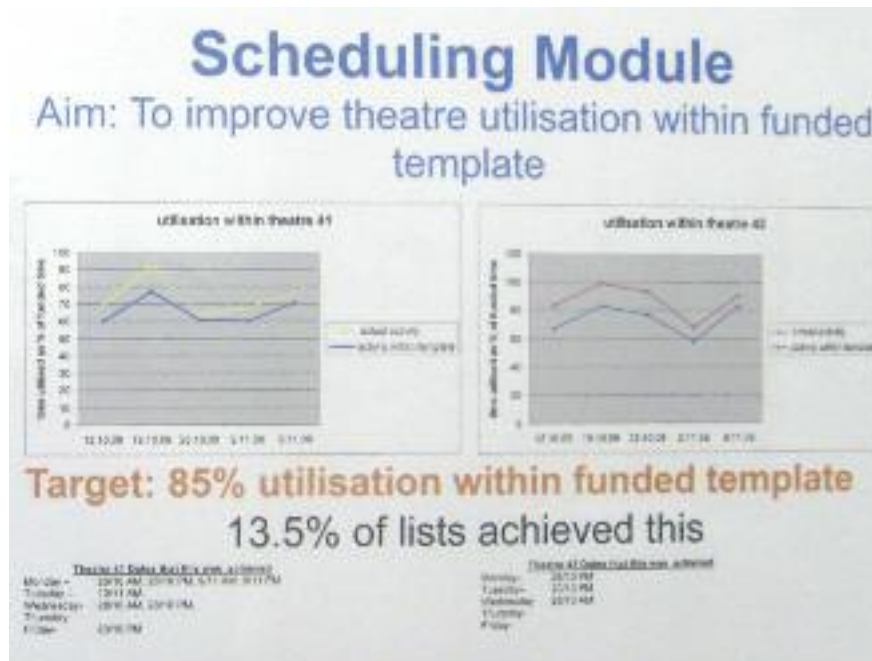
Having read the module and agreed on a clear aim, start to think about the changes you could make within your department that will result in improvement.

This module will consider scheduling from two approaches:

- Utilising sessions
- Managing lists.

You will have an overall idea of what you want to achieve from the Scheduling module, however the detail of what and how you can achieve it will become clear through your diagnostic work, such as your data collection and analysis and process mapping. With the teams for each section of the Scheduling module, work through a number of Plan Do Study Act (PDSA) cycles testing a variety of different approaches to improving your Scheduling. Remember to start small, testing with one team and one list while you learn and develop the approach before working up to a full roll-out across a specialty and then department.

Lots of examples of changes that have been shown to work are provided in the Plan section.





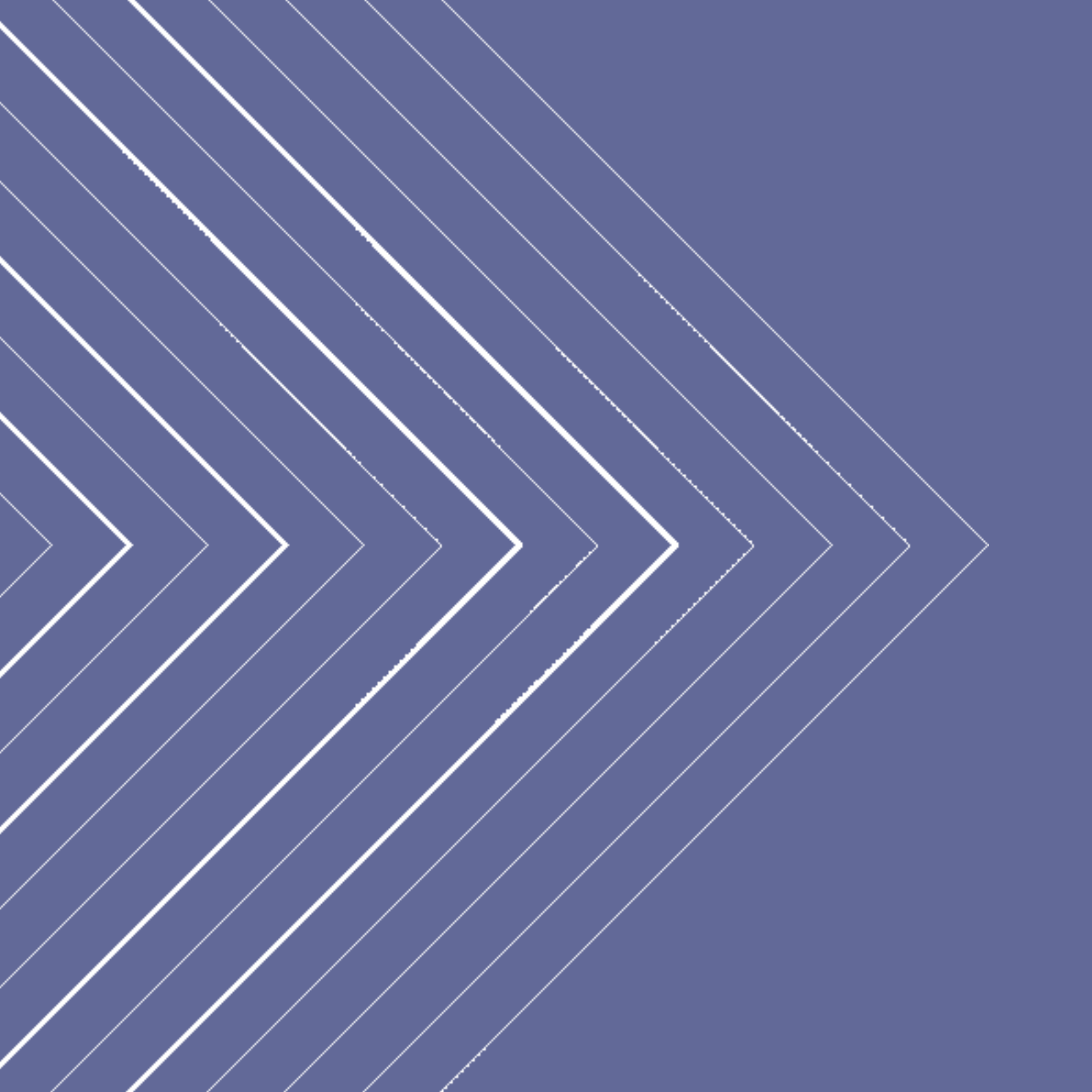
The three questions – milestone checklist

If you have completed **all** of the items on this checklist move on to **the next sections**:

- Utilising sessions
- Managing lists.

Checklist	Completed?
Read the module	
Decided and communicated a clear aim for the module	
Held a module measures workshop	
Agreed how you will measure your changes	
Thought about 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. Utilising sessions





What is Utilising sessions?

Most organisations will already have a full theatre programme or timetable where they have allocated all the sessions in each theatre to a particular surgeon or specialty on a weekly or fortnightly basis. This stage of the Scheduling module focuses on the level of detail beneath that high-level timetable. It ensures that all sessions are either used as agreed and if they are not, perhaps as a result of annual or study leave, that each session is reallocated within the specialty or made available to other specialties. This will result in no unused staffed sessions.

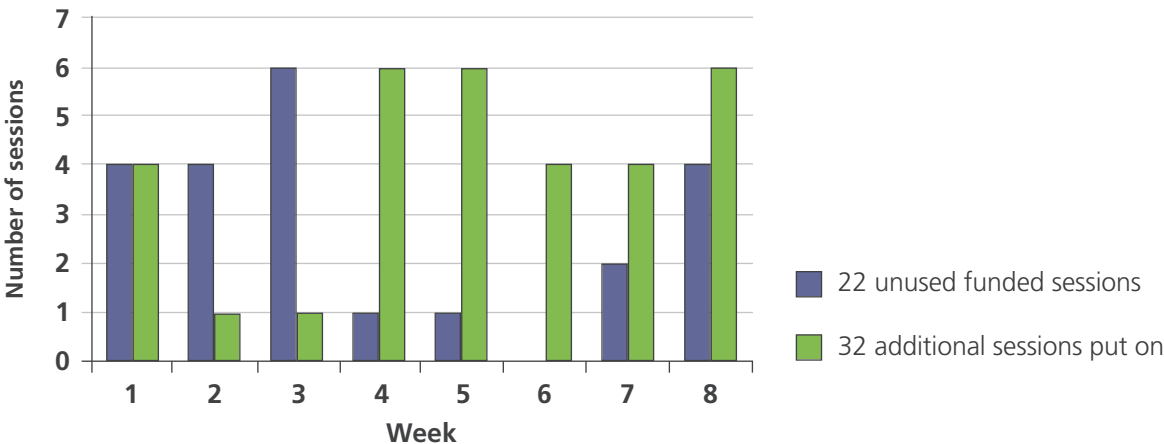
By working through this section of the module you will understand the impact that 'dropped' sessions have when aggregated over time. You will also develop a robust approach to systematically ensuring all available sessions are utilised.

Why utilise sessions?

The cost of running an operating theatre varies, however it is approximately £1,200 an hour, or £4,800 for a four-hour session; this includes theatre staff, estates and equipment.

Therefore, if a funded session is not utilised, for example if the surgeon is on leave, it will still cost the organisation £1,200 per hour or £4,800 for a four hour-session. In addition to this, as this time was not used for any procedures, the organisation will not receive any income for that time. Also importantly, it will cost the same again to re-schedule those patients into theatre. It may even cost more if the patients are seen as part of a ‘waiting list initiative.’ Waiting list initiatives are extra lists that are put on to provide additional capacity, often at the weekend or in the evenings and at additional premium rates. They are usually arranged to help meet national targets or manage increased demand.

The chart below shows some of the baseline data from one of The Productive Operating Theatre test sites. It compares the number of unused sessions per week to the number of additional sessions put on each week. Had they effectively utilised the 22 unused lists they could have decreased their need for additional lists from 32 to 10, a reduction of 70%.



By effectively using all available sessions and systematically reallocating any individual sessions that are not going to be used, it should be possible to substantially reduce or even abolish the need for extra lists. Effective use of existing theatre capacity may also reduce the need to build new theatres to manage increased demand.

Most organisations already have session utilisation data readily available, which is often presented at trust board level. Typically, targets for session utilisation are often 90 to 95%. Organisations that meet their target, may assume that they do not have an issue with their session utilisation. But the following example - where the organisation is meeting its 95% target shows they could still make an annual saving of £2.2 million by using all available sessions.

Performance Indicators	Month 1	Month 2	Month 3	Total
No. of unused sessions	45	32	38	115
% session utilisation - (target 95%)	95%	96%	96%	96%
Number of sessions used	853	830	933	2616

Theatre utilisation and potential cost savings from the example

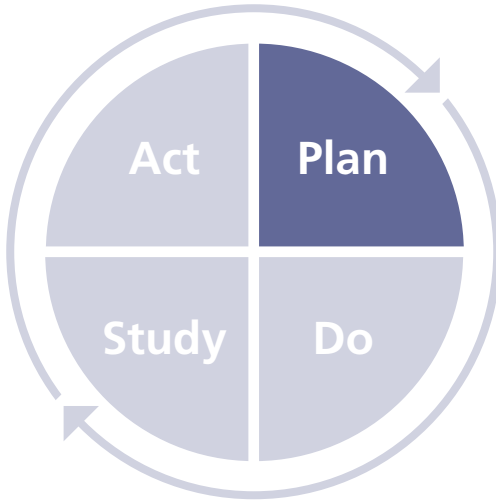
- **115 sessions** x 4 hours = 460 hours
- At a cost of £1,200 per hour = £552,000 (for a 3 month period)
= **an annual cost of £ 2.2 million**

This figure is despite meeting the organisation's utilisation target of 95%.

There are many reasons why sessions go unused for example:

- an empty slot never filled
- a surgeon being on annual or study leave
- specialist equipment unavailable on the day.

Many of the causes show a systems failure with poor recognition of the problems, poor data capture to understand the causes and frequency of the problem, or putting in place effective solutions. The cost of an empty theatre, loss of income and the expense of putting on additional lists, make it worthwhile to invest in understanding the issues and finding effective and sustainable solutions.



Plan

There are a number of steps to work through to help you plan tests of change (PDSA cycles) for implementing Utilising sessions.

The module team needs to understand the importance of involving all groups of staff to make sure the solutions tested in PDSA cycles meet everyone's needs.



Ensuring strong and visible leadership

We suggest that the executive leader actively leads on this particular part of the Scheduling module because:

- it involves a diverse number of groups such as theatres, scheduling, the different surgical directorates with their own management structures and cultures, consultant surgeons, their secretaries and anaesthetics. It will need engagement and support from all of these groups to be successful. The executive leader will have the influence to bring these groups together to find effective and sustainable solutions.
- it has the potential to have a very significant financial impact on efficiency, by reducing lost revenue and decreasing the number of extra lists needed.

Create the team

This piece of work cannot be done by the theatre team alone. You will need to identify a team representing the various groups involved from across the organisation. This team will work together to understand the current way of working (current state), identify what changes could be made, and implement the improvements that will enable your organisation to utilise all of its sessions.

Suggested membership of this team could include:

- **programme leader**
- **managers from each surgical specialty**
- **theatre manager**
- **senior clinical staff from surgery and anaesthetics**
- **schedulers**
- **consultants' secretaries**
- **finance director**
- **medical director**
- **information analyst.**

Holding a series of meetings to understand the current state is an important first step.



Understanding theatre demand and capacity

Is your theatre timetable correct?

Before looking at how you reallocate any dropped sessions it would be important to understand whether:

- theatre capacity matches the demand of the referrals coming in
- theatre capacity is correctly distributed between the different specialties.

Put simply demand and capacity can be explained as:

Demand: the work you need to do, eg referrals coming in

Capacity: the resources available to do the work, eg number of theatres multiplied by the hours of staff time available to run them.

It is also important to understand:

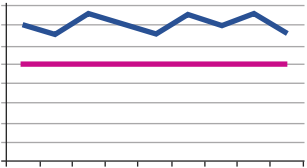
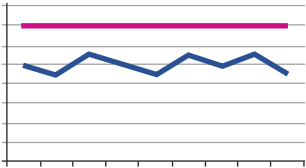
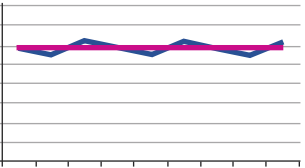
Activity: the work that you actually do, eg number of hours operated.

Backlog: the demand that has not been dealt with, eg the waiting list.

Demand and capacity can be analysed simply or in as much detail as your data and analytical capability allows. Whether you calculate it simply by using the number of patients or by using surgeon specific procedure times that incorporate variation, the important point is that you start to think about the shape of the demand coming into theatres and how it relates to your capacity to do the work.

To do a very basic capacity and demand study for theatres, simply plot on a run chart the total number of patients that are referred for surgery every week and how many patients are treated every week for each specialty.

What your demand and capacity analysis will show you:

Shape			
Analysis	Demand greater than capacity	Capacity greater than demand	Capacity matching demand
Impact	Waiting list increases (build up of backlog)	Waiting list should reduce (backlog reduces)	Waiting list should be roughly stable or rises slightly as excess demand will still be there next week, whereas unused capacity is lost for ever.
Possible action	Requires increase throughput through theatres, are additional sessions available?	Could theatre sessions be reduced or offered to other specialty?	Capacity is approximately correct but you need to consider the impact of variation.

For a more accurate analysis subtract the weekly ROTT rate from your demand, this stands for ‘removal other than treatment’ and refers to the patients that are referred for surgery but are taken off the waiting list without being treated. This could be for any reason, eg if they are clinically unfit or simply decided not to have the procedure.

As your data and analysis becomes more sophisticated you can change from using the number of patients as your unit of measurement for demand and begin to use the time each patient’s procedure will take as your unit for demand. This will give you an even more accurate analysis.

You can then start to take into consideration variation in demand and then look at how you can reduce that variation.



A demand and capacity tool is available at www.institute.nhs.uk/theatres_resources where you can input your data, whether simply using the number of patients referred for surgery or the procedure times of the patients referred for surgery.

From your data you will generate a number of charts available at both specialty and surgeon level:

- basic run chart showing the shape of your weekly demand
- capacity required to meet the demand
- statistical process control chart – showing the variation in demand.

From your data you will also be able to produce a table detailing the capacity required by each surgeon and specialty, based on demand.

Monitor your demand over time to make sure:

- you have the correct amount of capacity to meet the demand
- theatre capacity is correctly distributed between the different specialties
- you pick up changes in demand before the waiting times get out of control.

Once you are satisfied that the capacity of your theatre timetable matches the demand for each specialty, move on to collect data about utilising sessions.

For more information about demand and capacity visit:

- www.institute.nhs.uk/ilg for the Improvement leaders guide to matching capacity and demand
- www.institute.nhs.uk/qualitytools for tools on
 - demand and capacity – a comprehensive guide
 - variation
 - statistical process control (SPC).





Collect relevant data

Collecting data allows you to understand how you currently work, which is known as your current state. By understanding your current state you will be able to identify what you would like your new way of working to be or your future state.

This information will also act as your baseline, against which you can measure the impact of changes. Some of the information you may have already decided to collect as part of your balanced set of measures.

Collect the following data:

- Current theatre timetable or programme.
- Current actual utilisation of planned sessions. This can be on a specialty basis as it is probably already in place. You will need to define planned and cancelled sessions and any unallocated theatre sessions.
- Reasons why planned sessions were not used. If this is not readily available, a one-month retrospective snap shot should provide insight into reasons for cancellations or unused sessions.
- Notice given before a planned session was dropped.
- Breakdown information into surgical directorates and by specialties.
- Costs of unused theatres, which could include:
 - cost in terms of theatre staffing, estates and equipment (approximate cost is £1,200 per hour)
 - lost income from the list
 - cost of re-booking cancelled lists, including anaesthetic and surgical costs.
- Number of extra sessions that are arranged by each surgical specialty.
- Costs of extra sessions by each surgical specialty.
- Understand the leave notification system and any variation across different directorates.
- Map out the current methods used by each surgical specialty or directorate to manage unused lists.

Tip:

- It is better to convert your final calculations into hours, rather than number of lists, as the definition of a list may vary, even across a single organisation. For example all day versus half day lists.
- Converting hours into '£' can convey a powerful message.

Understanding your data

With your team you should now analyse all the data collected to understand your current state. Identify any further data you could collect that will deepen your insight.

At the end of this diagnostic phase you should understand:

- what is currently happening by specialty
- the main drivers contributing to or causing the current state
- the cost to your organisation in terms of lost income and re-booking from unused sessions
- the cost of putting on additional sessions
- the number of additional sessions that could have been saved by re-utilising the unused sessions
- these should then all be converted into hours and '£'s
- where you should target your efforts for maximum impact.



Review ideas that have worked elsewhere

Working with test sites, we have seen a number of successful solutions to utilising sessions. However, you will need to develop your own solutions that work in your own organisation.

Whatever your approach consider the following key points:

- The most important factor is recognising that there are opportunities for significant improvement.
- Ensure scheduling is recognised as a priority within the organisation: this will ensure the necessary resources are allocated to allow solutions to be found and put into practice.
- Recognise how utilising all your sessions will directly impact on the number of extra sessions required.
- Collect, analyse and review your data and use it to show progress.
- Recognise potential empty sessions at least six weeks (and longer if possible) before they happen, to allow time to reallocate them.
- Allow a limited period for the specialty involved to reallocate a session before offering it to other specialties.
- Put in place a percentage session utilisation target that has been decided by your organisation in response to its own needs and expectations.
- Find innovative ways of getting surgeons to backfill sessions for example:
 - list splitting with one consultant surgeon using two theatres
 - having surgeons with a floating session per week
- Have an effective hospital-wide diary system open to all relevant staff, where consultants leave must be entered at least six weeks in advance or preferably longer.

Musculoskeletal Target for % of theatre sessions used is 95.5%

Weekly, this equates to 2 sessions
lost = 4 patients and up to £8,000

95.5%

Upper Quartile
National Target

**WE ARE
HERE**

92.5%

National
Target

84%

Local Minimum
Target

Week commencing:

5th Oct 2009

We achieved:

97.5%





Learning points

Backfilling empty sessions can be a complex problem which is why so many occur. This may occur because:

- no part of the organisation takes responsibility for it; it is not a schedulers role nor a theatre managers role, though they may often spend hours trying to address it
- the organisation has not realised the enormous amount of revenue these empty sessions represent and has not therefore put in place systems to deal with it
- setting a target utilisation of between 90-95% automatically builds in the concept of underutilisation and it is not therefore flagged up as an issue
- the connection between the concept of unused sessions and paying for additional sessions is not recognised
- backfilling unused sessions is often done at the last minute when it is not possible to find a surgeon available to do the list
- job planning for consultants can make it difficult to allow them to use their free time flexibly
- unused sessions are often only offered within a specialty. Due to poor communication with other specialties.

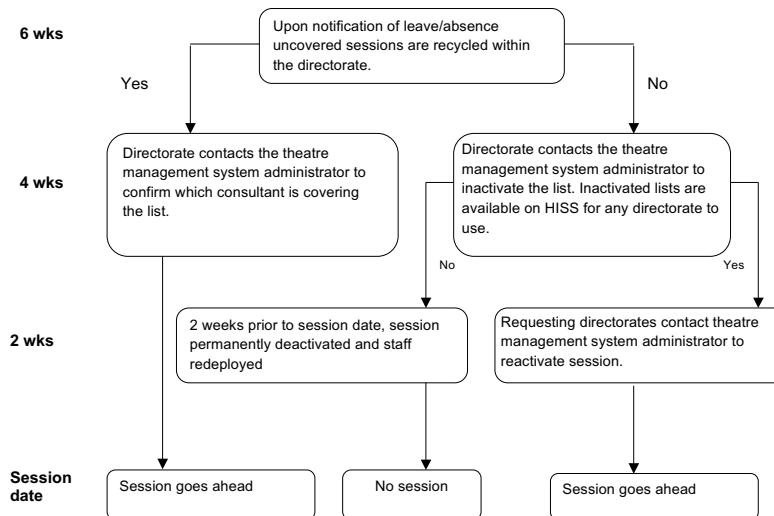
Example 1: using data to drive improvement

Before undertaking the Scheduling module one of the test site teams did not feel they had any issues with using all their funded sessions. They were consistently utilising above 90% of sessions, which achieved their organisation key performance indicator. As part of their diagnostic data collection they recognised the cost of 'only' achieving 90-95% session utilisation and therefore how they could make better use of their theatre capacity, and reduce the need for waiting list initiatives – a significant opportunity and relatively simple to implement.

What they did:

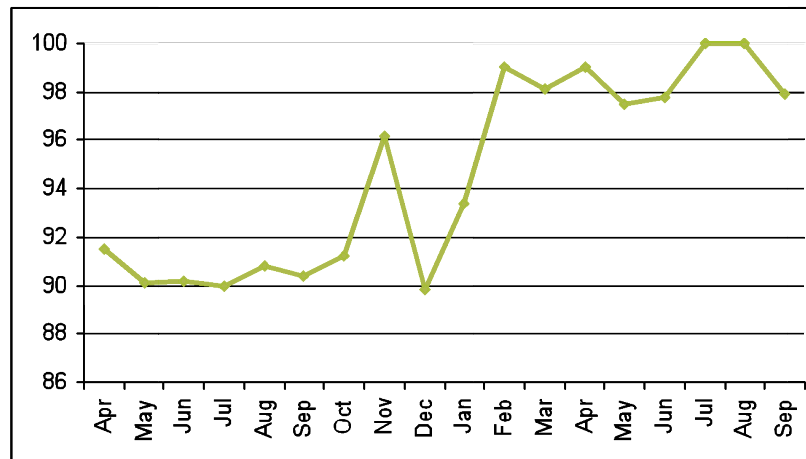
- As a result of their diagnostic data collection they understood the potential for improvement in utilising sessions. This awareness instantly resulted in an increased effort by the team to 'recycle' any sessions that had been dropped.
- To ensure this effort and the results achieved are sustained, the process of recycling or reallocating dropped sessions has now been made more formal by:
 - developing, communicating and implementing a recycling policy so that the process is clear, simple, understood and adopted by all
 - having an identified member of staff from each directorate who is responsible for notifying theatres of the intention to recycle a theatre session
 - having an identified member of staff in theatres who is responsible for updating the theatre management system and co-ordinate the reallocation of dropped sessions.

The flow chart explains the process that now ensures all sessions are utilised

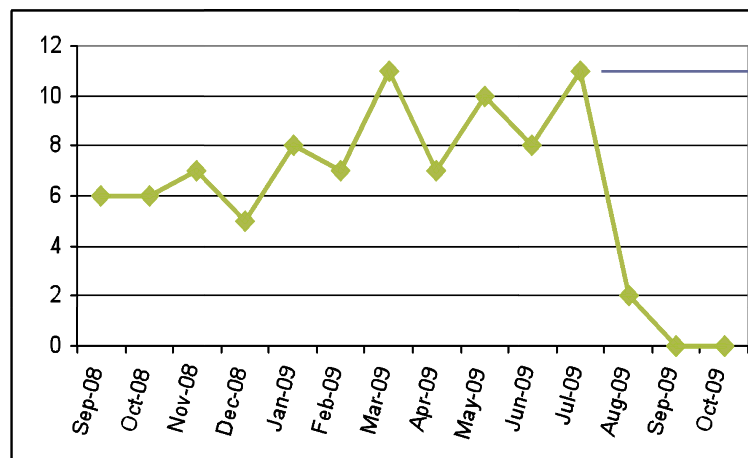




The charts show the effect this work has had on the percentage of utilised sessions at the test site and the impact on the number of additional sessions required.



% of sessions utilised



Team completed their diagnostic data collection

% of additional sessions run

Example 2: weekly review meetings and open communication

Weekly review meetings and an intranet based theatre planner underpins effective theatre session utilisation at this organisation.

- The meeting is attended by theatre appointment manager, service delivery manager, coordinator and representative from each surgical directorate.
- The group work through the intranet-based theatre planner to identify and discuss any sessions that are not going to be used as planned.
- Notification that a session is not going to be used is given at least six weeks before the day of surgery. This is then reallocated within the directorate, if it is not taken up, the session is offered to the other directorates.
- Sessions have to be reallocated four weeks before the day of surgery. If a session is not picked up then it is identified on the theatre planner as an unused session and removed from the intranet-based rota so that theatre staff are not allocated to cover the session.
- The status of each session, whether being used as planned, on hold for another consultant, reutilised or closed is all captured visually on the theatre planner.
- The theatre planner is displayed on a large plasma screen in the theatre department and can be viewed at any time by all staff. It is also available through the intranet and can be accessed by all staff from any hospital computer.
- The theatre planner also contains the details of each list including:
 - patient's name, gender, date of birth,
 - procedure
 - pre-op status, body mass index, medical history and medication
 - infection control alerts.

'Our intranet based session planner has become an essential part of our scheduling process. Due to its high visibility within the department and ease of use, theatre and medical staff use it regularly throughout the day.'

David Heath - service delivery manager, theatres, The Shrewsbury and Telford Hospital NHS Trust

Shrewsbury Theatre Seasons based on Week3' rota template				Last updated: Thu 16 Jul 2009 13:07		
Thu 16 Jul 2009		Fri 17 Jul 2009	Sat 18 Jul 2009	Sun 19 Jul 2009	Mon 20 Jul 2009	Tue 21 Jul 2009
Theatre 1 AM	Mr Goring	Mr Lynn			Mr Coppinger	
Main PM	Mr Goring	Mr Lynn			Mr Coppinger	Mr Tapp
Theatre 2 AM	Emergency	Emergency			Emergency	Emergency
Main PM	Emergency	Emergency			Emergency	Emergency
Theatre 3 AM	Mr McCleod	Mr Schofield			Mr Schofield	Mr Dayless
Main PM	Mr McCleod	Mr McCleod			Mr Schofield	Mr Schofield
Theatre 4 AM	Mr Sedgwick	Mr Sedgwick			Mr Sedgwick	Mr Sedgwick
Main PM	Mr Sedgwick	Mr Sedgwick			Mr Sedgwick	Mr Sedgwick
Theatre 5 AM	Mr Hill	Mr Steele			T&D	Mr Steele
Main PM	T&D	T&D			T&D	Mr Steele
Theatre 6 AM	Mr Fox				Mr Sykes	Mr Sykes
DSU PM	Mr Fox				Mr Sykes	Mr Sykes
Theatre 7 AM	Mr Rao	Mr Thompson	Mr Craig		Mr Rao	Mr Walker
DSU PM	Mr Raag	Mr Craig	Mr Craig		Mr Goring	Mr Leigh
Theatre 8 AM	Dr Goodall	Edmund	Mr Dayless		Mr Barker	Mr Tapp
DSU PM	Mr Pickard (G&A)	Mr Dayless	Mr Dayless		Mr Wiley	Dr Managar
Theatre 9 AM	Mr Sedgwick	Dr Walker			Mr Hunt	Mr Gopple
DSU PM	Mr Sedgwick	Dr Walker				Mr Sykes
Theatre 10 AM		Mr Fernon			Mr Fernon	Mr Thompson
H&N PM	Mr Scott	Mr Collier			Mr Scott	Mr Thompson
Theatre 11 AM	Mr Goring				Mr Pickard	Mr Craig
H&N PM	Mr Skinner				Mr Skinner	Mr Skinner

- Colours are used to identify the status of each session

1. Patient's name, gender, date of birth,
2. Procedure
3. Pre-op status, body mass index, medical history and medication

Theatre Sessions based on 'Week3' rota template Last updated: Thu 18 Jul 2009 13:37

Fri 17 Jul 2009 Sat 18 Jul 2009 Sun 19 Jul 2009 Mon 20 Jul 2009 Tue 21 Jul 2009

Operating List

Number of patients on list: 6

Theatre Consultant: Mr Thompson

Theatre Date: Fri 17 Jul 2009

Theatre Site: RSH

Casenote	Patient name	Age	Sex	IM	Admission Procedure	PreOp Status
	57 yrs	F	IMP	Tonsillectomy	Green	
	62 yrs	M	DAY	Myringotomy with insertion of grommets	Green	
	26 yrs	M	DAY	Septoplasty	Green	
	58 yrs	F	DAY	MicroLaryngoscopy	Green	
	60 yrs	M	DAY	EUA of pharynx	Amber	



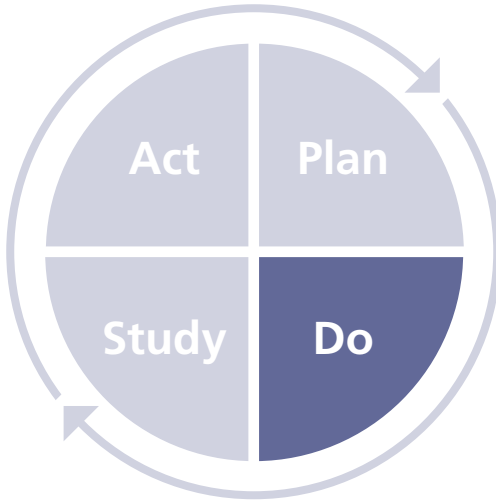


Utilising all available sessions – Plan – milestone checklist

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

Checklist	Completed?
Ensured strong visible leadership	
Created the team	
Understood theatre capacity and demand	
Collected relevant data	
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?	



Do

Once you have identified some ideas for improvement that you would like to try, you will need to test it on a small scale, with one specialty to see if it works.

Remember implementation works best when staff are involved and are encouraged to develop their own solutions.

This section may involve several iterations of the PDSA cycle.



Agree the changes

As part of the plan stage you will have collected data that will have given you a good understanding of the current state of how your department works. You will have also reviewed ideas and approaches to utilise all available sessions that have worked in other organisations.

With this knowledge the team will:

- identify what the future state will look like and generate ideas that will increase your session utilisation
- use the examples previously given to help produce ideas amongst your team. But remember that all organisations are unique and you will have to develop an approach that will work for you
- brainstorm ideas that could help increase your session utilisation prioritise your ideas using dot voting (see the Toolkit, tool no. 2, Dot voting)
- agree on the changes you want to test, then consider whether there are any other stakeholders that you will need to get agreement from before beginning your tests. Your executive leader or champions should be able to help with this.



Test the changes

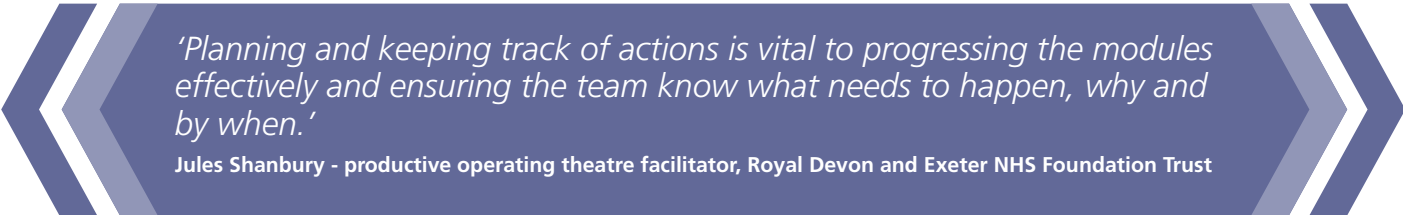
Once you have decided on the ideas you want to trial, develop a plan for your test:

- use the module action planner (see the Toolkit, tool no. 13) to plan and track the required actions
- make sure that your deadlines for actions or results are realistic and achievable
- keep everyone relevant informed of decisions, deadlines and progress.

It is likely that even the best ideas will require several Plan Do Study Act cycles, to enable you to modify and refine your ideas before you are happy to roll them out on a larger scale. Try your ideas out on a small area first, perhaps on one list or in one specialty – your approach will depend on the idea you are testing.

Regardless of the approach you take, effective communication to all stakeholders is an important component in implementing new ways of working. If you decide to start with a single specialty make sure that the other specialties are aware of the work you are doing and can contribute it they want.

Any improvement should be celebrated. However, ideas that are not as successful are equally valuable and are an important part of the learning process. It may take time to reach your final goal – especially if it is to be sustainable.



'Planning and keeping track of actions is vital to progressing the modules effectively and ensuring the team know what needs to happen, why and by when.'

Jules Shanbury - productive operating theatre facilitator, Royal Devon and Exeter NHS Foundation Trust



Continue to monitor progress

At the beginning of the module you identified measures that will help you to know that the changes you make are improvements; you built on this information in the plan stage by collecting relevant data. In the Do stage you will continue to collect, analyse and review this data as you test your changes.

Support the team in their new way of working

One of the reasons that scheduling is so complex is because it requires co-ordination between different departments and specialties that have different ways of working and different lines of accountability.


The teams implementing the changes will need to have:

- strong support and commitment from the executive leader
- good clinical engagement
- open and clear communication about the changes and the impact they are having (positive and negative)
- the time to dedicate to the project
- regular team meetings during the testing and roll-out to monitor progress, feedback on the changes and any suggested modifications or refinements.

'We were only able to get on top of the problem and find solutions when we created headroom to allow us to hold regular meetings'

Jill Armstrong - orthopaedic theatre scheduler, University Hospitals of Leicester NHS Trust

Learning points

- 
- Establish effective routes of communications between specialties and directorates to manage the situation.
 - Be aware that you may meet resistance to changing the status quo.
 - Strong leadership is essential to engage all stakeholders and implement changes that impact across the organisation.
 - Ensure any resources needed (analytical support) are released to support this work (strong leadership will enable this).
 - Collect data on the impact of any changes.
 - Be innovative in finding new solutions to difficult stumbling blocks – involving as many people as possible in the idea generation stage will result in a wealth of ideas and engagement in the project.
 - Ensure you actively engage with your clinicians, real sustainable improvements will not occur without their help and active cooperation.
 - Ensure all parties are kept informed of progress and that they 'own' the solutions.

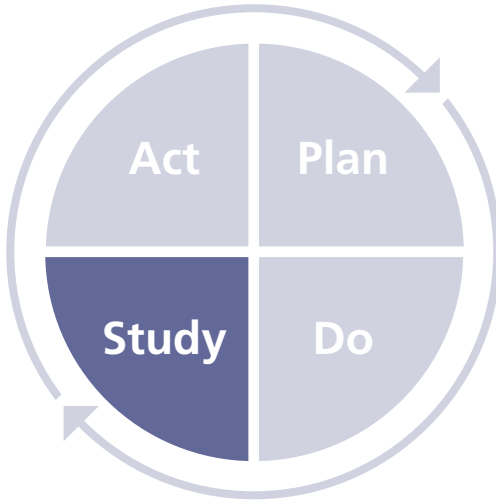


Do – milestone checklist

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

Checklist	Completed?
Agreed the changes to test	
Communicated with and got agreement from the wider stakeholders	
Developed a plan for the test(s)	
Continued to collect analyse and review your measures	
The team have support from the executive leader and clinical support for 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?	



Study

Implementing improvements will take several PDSA 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.



Collect, analyse and review your data

As you have tested your changes you should have continued to collect, analyse and review your key measures to show the impact of the changes you have made over time.

The Scheduling module, and in particular this section, has some clear quantitative measures:

- Session utilisation - percentage of funded staffed sessions actually being run.
- Number of staffed sessions not being taken up.
- Number of additional lists being put on by specialty – waiting list initiatives.

What is the impact of the changes you have made on these measures or the others that you have been collecting, analysing and reviewing?

Use the following questions to guide your discussions	Examples
<ul style="list-style-type: none"> • What were we aiming to achieve? 	To increase session utilisation and decrease the amount of additional lists
<ul style="list-style-type: none"> • Do the results indicate we are achieving those aims? 	Yes, we have increased our session utilisation. The number of additional lists has reduced but could be improved further.
<ul style="list-style-type: none"> • Is the team confident we have made the correct conclusions? 	Yes, there is a clear relationship between our changes and increased utilisation.
<ul style="list-style-type: none"> • Has the team measured the change for long enough to draw conclusions 	Two months more data would show if the trends continue to increase or are going to be sustained.
<ul style="list-style-type: none"> • Do the results indicate we should be doing something else? 	Perhaps in relation to the number of additional lists.
<ul style="list-style-type: none"> • Are the measures useful? 	Yes.

Collect feedback from staff and patients

What impact have the changes had on the different groups involved – the theatre teams, surgeons, anaesthetists, schedulers in the surgical specialties?

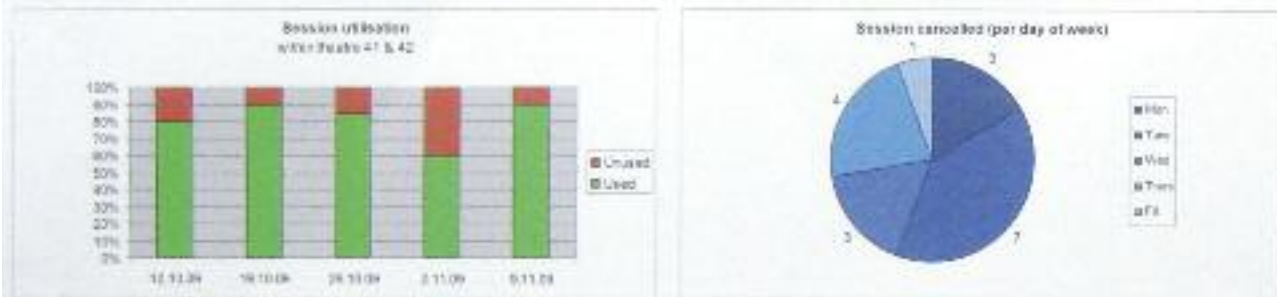
- Are the changes having a positive or negative impact on them?
- Do they have suggestions for how the changes can be improved further?
- Collect anecdotes and examples.

Update the Knowing How We Are Doing board

- Use your Knowing How We Are Doing board to communicate and share progress with the theatre department on key measures. Also include quotes, comments and staff and patient stories.
- Include the headline results in your Productive Operating Theatre or newsletter, so that progress can be shared across the organisation.
- Remember to share and communicate the progress with all members of the team.

Scheduling Module

Aim: To improve session utilisation



Aim: To reduce the number of list changes on day of surgery

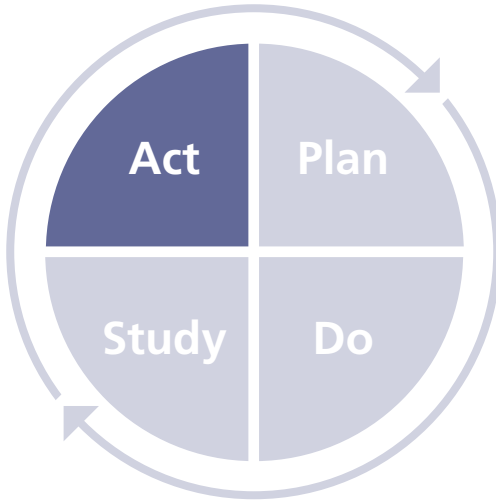


Study – milestone checklist

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

Checklist	Completed?
Continued to collect analyse and review your data	
Discussed the impact the changes have had on the data	
Collected feedback from staff about how the changes have affected them	
Updated the Knowing How We Are Doing board	

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?	



Act

Once you have successfully developed and tested your improvement ideas, you will need to plan for roll-out across your organisation, and crucially, how the changes will be sustained in the long term.



Agree which improvements have been successful

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

- **adopt** the change
- **adapt** the process in some way to improve it further. Is one part less successful than another? If changes are decided on then do you need a further period of study to understand whether the adaptation(s) have worked?
- **abandon**. If the proposed change has not worked do not despair. Carefully analyse as a group what you have learned and what you would do differently next time. Are there things you have learned that may be useful to the wider group working on other parts of the project? If so share them.

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.

Adopting a change and planning for roll-out

For the changes you are adopting as a team, you will need to create a roll-out plan that considers the following factors:

- how you might roll changes out and embed them across a wider group of theatres, specialties or sites?
- who will lead on this and take ownership of the changes?
- how will you disseminate the information to all those concerned?
- how will you put in place a monitoring system to ensure the change is sustained over time?

Continue to monitor and review

- It is important that you continue to collect, analyse and review your key measures, to encourage sustainability - particularly as you roll-out to new areas.
- It is still important to collect, analyse and review your data in the original area where you first implemented the change. However once you are satisfied that the change is an improvement and is being sustained, you may reconsider the frequency and the number of measures that you collect, analyse and review.



How can I make it stick?

As much effort, if not more, needs to go into the roll-out and sustainability of a change as goes into the planning and start of it. Sustaining new ways of working is always a challenge. The NHS Sustainability Model identifies ten factors that are key to the sustainability of any improvement. They are explained in the table below. These should be considered in your roll-out plan.

	Factor	Things to consider
Staff	Clinical leadership	<ul style="list-style-type: none"> Have strong clinical leaders and champions supporting the change, use them to influence their colleagues.
	Senior leadership	<ul style="list-style-type: none"> The programme executive leader.
	Training and involvement	<ul style="list-style-type: none"> Provide training on the changes to those that are affected by it so that they understand any new systems and processes, eg if you change from a paper to electronic diary make sure the staff are confident in using the new electronic system.
	Staff behaviours	<ul style="list-style-type: none"> Continue to involve staff in developing the changes further – people own what they help to create which will increase the likelihood of sustainability. Use your champions to influence their colleagues.
Organisation	Fit with organisational goals and culture	<ul style="list-style-type: none"> Show how the change fits with your Productive Operating Theatre vision and the wider organisations strategy.
	Infrastructure	<ul style="list-style-type: none"> Formally incorporate the new roles and responsibilities that people have as a result of the changes into their job plans. Develop policies that embed the changes.
Process	Benefits	<ul style="list-style-type: none"> Explain to the staff involved what the benefits of the new way of working are for them.
	Credibility of evidence	<ul style="list-style-type: none"> Share the qualitative and quantitative benefits that you have collected through the testing cycles to engage colleagues during roll-out.
	Monitoring progress	<ul style="list-style-type: none"> Continue to monitor the progress of the changes so that teams can see the impact of their efforts.
	Adaptability	<ul style="list-style-type: none"> Consider how the change will adapt to a different theatre team, specialty or site, do modifications need to be made?

To identify factors you may need to focus on to increase the sustainability of your improvements complete the Sustainability Model which is available at www.institute.nhs.uk/sustainability



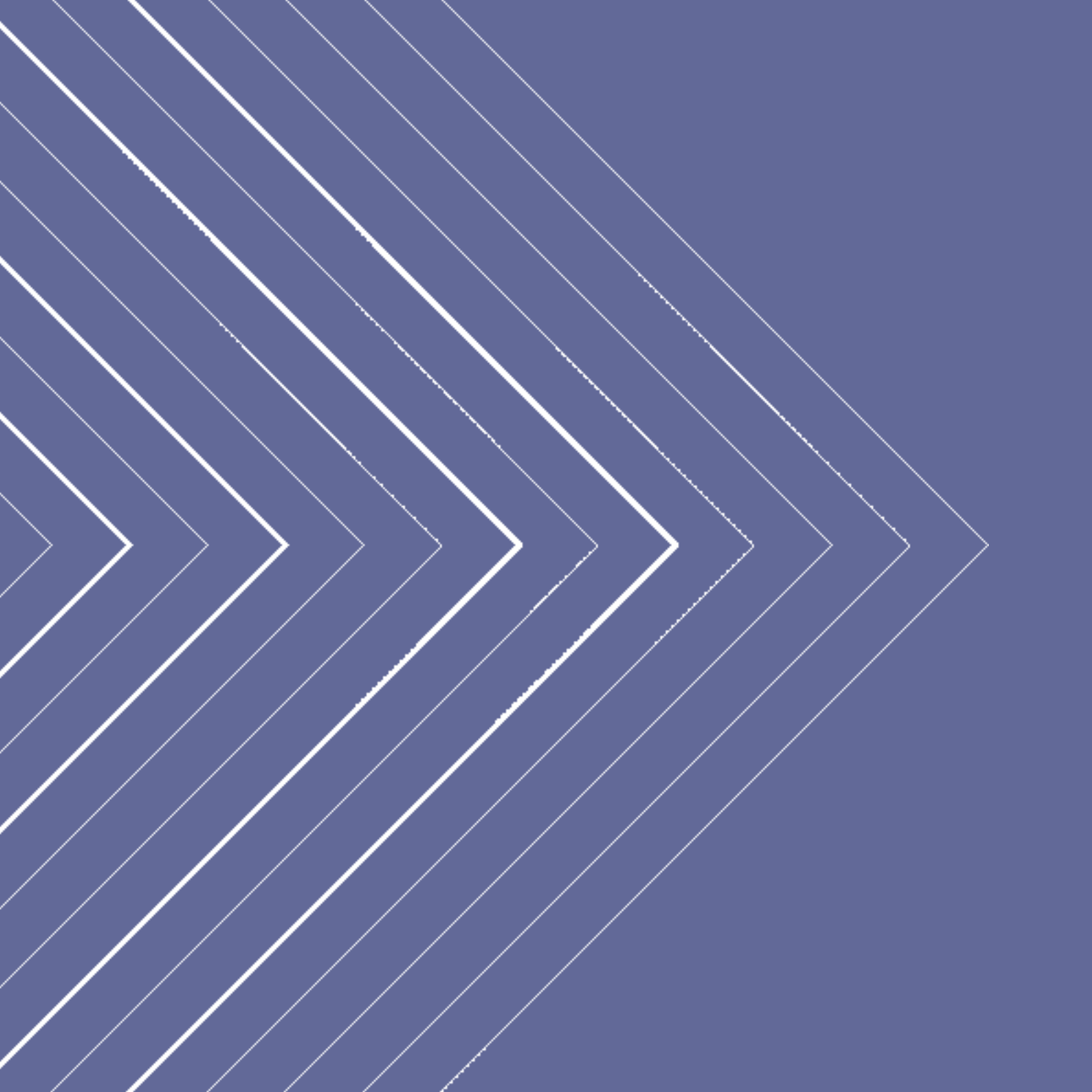


Act – milestone checklist

Go back to **Plan** for another cycle of improvement when you have completed all of the items on this checklist.

Checklist	Completed?
Agreed which changes have been successful and should be adopted	
Agreed which changes need to be adapted and decided how they will be taken through another testing cycle	
Agreed which changes should be abandoned	
Developed a roll-out plan for changes that will be adopted	
Agreed how you will continue to monitor your measures	
Completed the Sustainability Model to identify any factors that may need further work to increase sustainability	

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. Managing lists





What is Managing lists?

This section will be the most familiar to schedulers as it deals with:

- creating an operating list from the booking information
- ensuring lists are optimised
 - not overbooked leading to late finishes
 - not underbooked leading to early finishes
- cascading the information about the operating lists to appropriate groups in a timely manner to ensure correct staffing and equipment are available.

This section will show you how to:

- work with your colleagues in theatres to collect and use relevant data
- use this information to create realistic lists based on:
 - the actual time it takes to undertake anaesthesia and surgery
 - the turnaround time between cases
- identify how the current scheduling system works, the waste within it, and how to eliminate it.

Why do it?

Overbooked and underbooked operating lists have potentially serious effects on everyone and need to be minimised wherever possible by careful planning.

To correctly populate an operating list you will need to know how long each part of the operating list takes. There will be many surgeons and anaesthetists in your organisation, each of whom work at different speeds on different operations. A 'one size fits all' approach to filling lists will therefore never work effectively.

The only way to actually know how long a team takes to undertake an operation is to measure it on many occasions to provide a good evidence base of how long each type of operation for each surgeon actually takes.

To be able to correctly populate a list it is also important to understand the whole scheduling process, the people involved, what they do at each stage, what information is communicated and how. This will enable you to identify areas where you can make the process more reliable and efficient.

The problems with overbooked lists

For staff

Lists that are regularly overbooked and therefore over-run, can cause considerable stress to theatre staff. Every list that over-runs increases the likelihood of theatre staff:

- becoming disengaged and de-motivated
- having increased sickness rates
- leaving the organisation.

For patients

Overbooked lists risk patients being cancelled. This can be very upsetting and disruptive for patients and their families who have:

- reorganised their commitments to come in for the operation
- experienced the stress of expecting an operation, preparing themselves and then realising they will have to undergo the whole pre-operative experience all over again.

For consultants

Overbooked lists are tiring and stressful. The situation has the potential to:

- significantly decrease performance, thereby affecting the quality of the surgery and therefore surgical outcomes
- increase errors by all members of the operating teams.

Overbooking lists builds an increased risk of errors and suboptimal results into the system, which can be avoided by correct scheduling.

For the organisation

It is inefficient, expensive and unsafe to overbook. Overbooking results in:

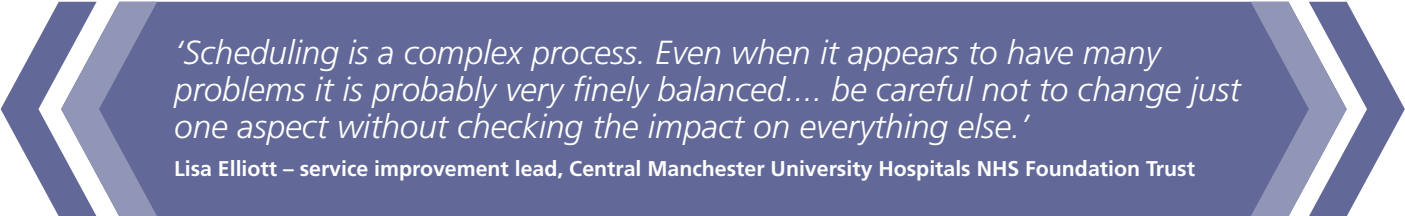
- increased safety risks due to teams becoming fatigued
- reduced quality due to teams becoming fatigued
- overtime or owed time – which causes disruption at a later date
- using expensive agency staff to back fill these gaps
- disengaged staff – which has been shown to decrease productivity
- increased sickness rates, absenteeism and staff leaving the organisation.

Problems with underbooked lists

The issues with overbooked lists have to be balanced against the problems with underbooked lists. Underbooked lists can lead to:

- increased waiting times for patients
- additional lists at premium rates to manage waiting times
- theatre teams not being able to use their skill and expertise to help patients
- unused / wasted theatre and staff time (an expensive resource)
- loss of income for the organisation.

Once the list has been created and agreed, it needs to be communicated widely in a timely manor to allow the required staff and equipment to be made available so that the list can run smoothly on the day.



'Scheduling is a complex process. Even when it appears to have many problems it is probably very finely balanced.... be careful not to change just one aspect without checking the impact on everything else.'

Lisa Elliott – service improvement lead, Central Manchester University Hospitals NHS Foundation Trust

Linking Scheduling with other modules

Although they are clearly linked, it is important to understand the difference between a list that is overbooked and a list that overruns.

Overbooked lists have too many cases or not enough time allowed for each case, this indicates an issue with scheduling.

Over-running lists could be a result of too many cases or not enough time being allocated for each case. They could also be a result of late starts, inefficient turnarounds, patients not being ready for surgery, glitches or complications that have occurred throughout the day.

Similarly there is a difference between a list that is underbooked and a list that under-runs.

Underbooked lists have too few cases or too much time allocated for each case; again this indicates an issue with scheduling.

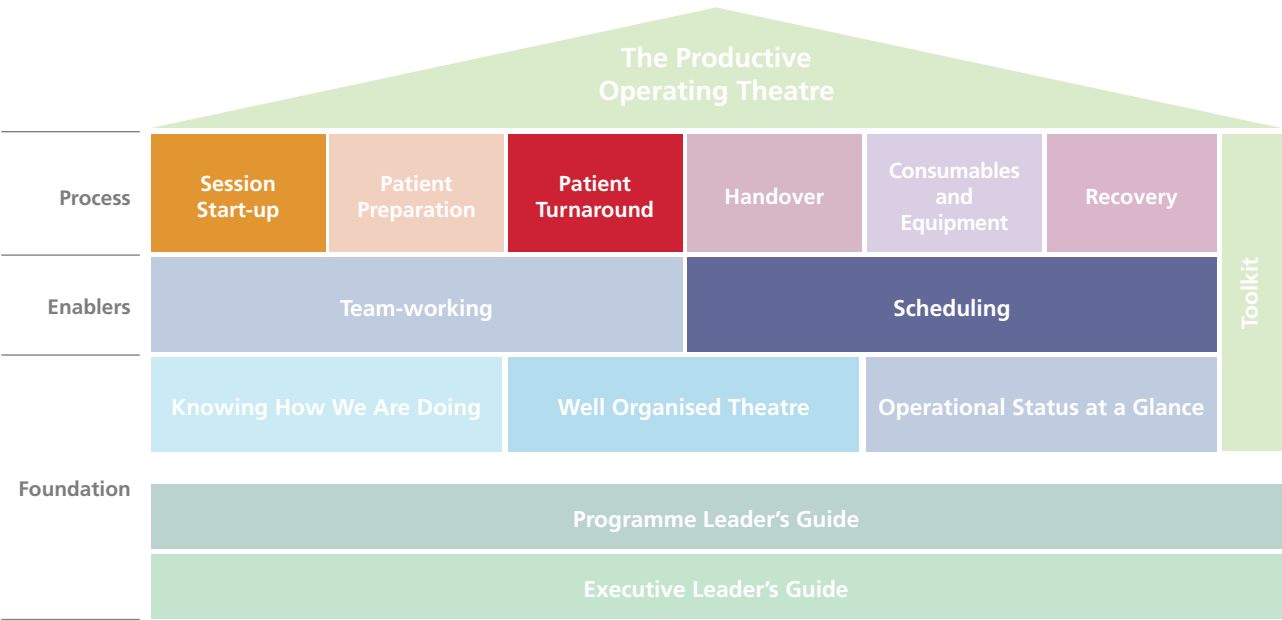
Under-running lists or lists that finish early could be the result of too few cases or too much time allocated for each case but could also be a result of efficiencies made during processes within the list, such as session start-up, turnarounds or elimination of glitches.

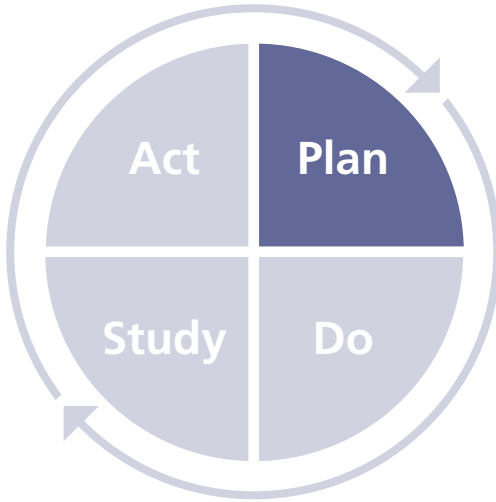
As a result of this close relationship between scheduling and the processes occurring within a list, this stage of the Scheduling module is closely linked to the process modules. It is therefore important that the module teams work closely together in particular around:

- **Session Start-up**
- **Patient Turnaround**

The aim of both the Session Start-up and Patient Turnaround modules is to remove any waste from these processes, so that they can be routinely carried out in the most efficient way in terms of both time and process. This will result in a reduction or the elimination of delayed starts and improved times for turnarounds between cases.

As part of these modules the teams will time how long, in minutes, these processes take. This information will be needed for this module to schedule and manage lists effectively.





Plan

There are a number of steps to work through to help you plan tests of change (PDSA cycles) for implementing Managing lists.

The module team needs to understand the importance of involving all groups of staff to make sure the solutions tested in PDSA cycles meet everyone's needs.



Ensure strong and visible leadership

Identify a lead for this part of the module. This could be the programme leader, an improvement facilitator, a senior scheduler, a surgeon or one of your programme champions. They will need to:

- agree an implementation plan with the executive leader, programme leader and lead clinicians for the programme
- set the direction and drive this project forward
- manage the timelines
- arrange and lead meetings and working sessions
- provide support and encouragement to the project team
- engage and influence the wider team
- work closely with clinical teams and schedulers
- work closely with the process module teams.

Creating the team

There are various groups involved in the different stages of creating a list and it is important they are all involved in this project. The team will work together to understand the current way of managing a specific list from the different perspectives of all the groups and identify what changes could be made to improve the process for all involved and in particular the patient.

Membership of the team might include:

- programme leader
- members of the theatre teams
- schedulers
- surgeons
- anaesthetists
- theatre manager
- directorate manager
- surgical and anaesthetic secretaries
- information analyst.

This is intended only as a guide; other groups or individuals may need to be involved at specific parts of the journey, eg surgical ward matron, ITU, radiology.

As previously mentioned this part of the Scheduling module links very closely to the process modules, in particular Session Start-up and Patient Turnaround. The teams working on these modules will have to work closely together. We would encourage an overlap between the membership of these teams to guarantee a connection between the modules.

Collecting relevant data

The collection of data is necessary to:

- help you understand your current state
- identify areas for improvements
- provide you with a baseline
- create effective lists that are based on procedure times.

Before collecting any data, decide an area to focus on first. There are a number of different possibilities:

- collect data on all surgeons and anaesthetists who use one or two pre-defined theatres, initially your Productive Operating Theatre showcase theatres
- a predefined group of surgeons.

Both of these approaches have worked.



'By taking time to look at our data we recognised that the actual utilisation within the sessions could be improved and that as a result, we could easily make better use of our theatre capacity.'

Cheryl Hudson - associate director of service transformation, Heart of England NHS Foundation Trust



Procedure times

Collection of actual procedure times is the key to creating effective lists. To understand how long each procedure actually takes, collect the following information:

- surgeon's name
- anaesthetist's name
- precise information on what procedure was undertaken (not what was on the operating list as this may have changed)
- length of time anaesthesia took (minutes)
- length of time the surgery took (minutes)
- turnaround time between cases (minutes)
- details of any special circumstances that may affect the time.

You should try and collect data on all the surgical procedures in your test group for at least one month, preferably two or three, to capture as much information as possible.

You may already collect this data, if not use Toolkit, tool no.16, Timing processes to help.

Use this data to identify the average time each surgeon takes to carry out each procedure and the time each anaesthetist takes for anaesthesia. Exclude from your average any timings that had special circumstances such as complications, that resulted in the procedure taking an unusual length of time.

This data will give you a realistic set of times from which it will be possible to create lists to fill the allocated time effectively.

Start, finish and turnaround times

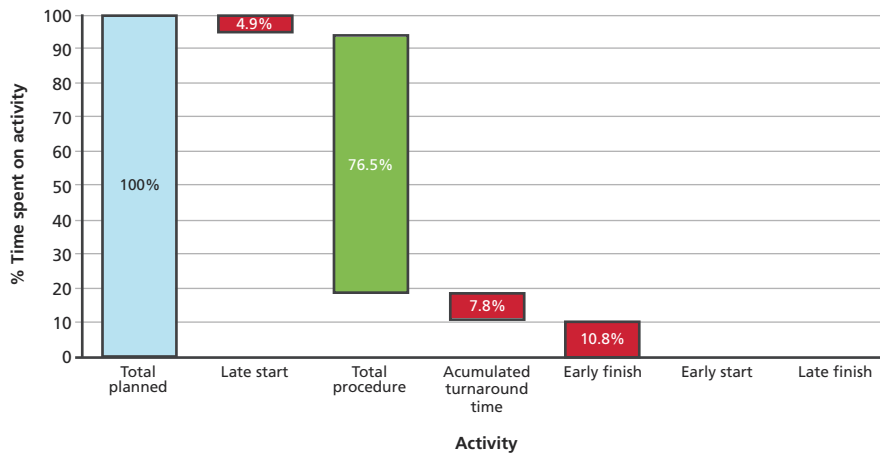
To understand how your lists currently run you will need the following core information:

- **start time:**
 - number of minutes each session starts late or starts early
- **finish time:**
 - number of minutes each session finishes late or early
- **turnaround time:**
 - number of minutes the turnaround between each patient takes.

It is likely that this information will be available from your theatre information system and you may already collect it as part of your balanced set of measures for the programme.

To give you an overview of how the time in theatre is used, to create a waterfall diagram with this information, using Toolkit tool no. 4. This will show you the proportion of contact time and turnaround time within a session and the impact of early and late starts and finishes.

Example waterfall diagram



Alternatively you can ask your theatre teams to collect start and finish times manually in a very simple way:

- Ask the team to mark with a highlighter the start and finish time of each session.
- List usage charts which are available at www.institute.nhs.uk/theatres_resources.

The benefit of this manual system is that it is very visual and the theatre teams own the information and its analysis.

This information will show you whether lists are over or under-running.



Manual list usage chart

The highlighted pink sections show start and finish time of each session.



Cancellations and rescheduling

For an indication of the amount of re-work involved in re-scheduling cancellations, collect the number of patients rescheduled each week and the reasons why.

Understand how long it takes

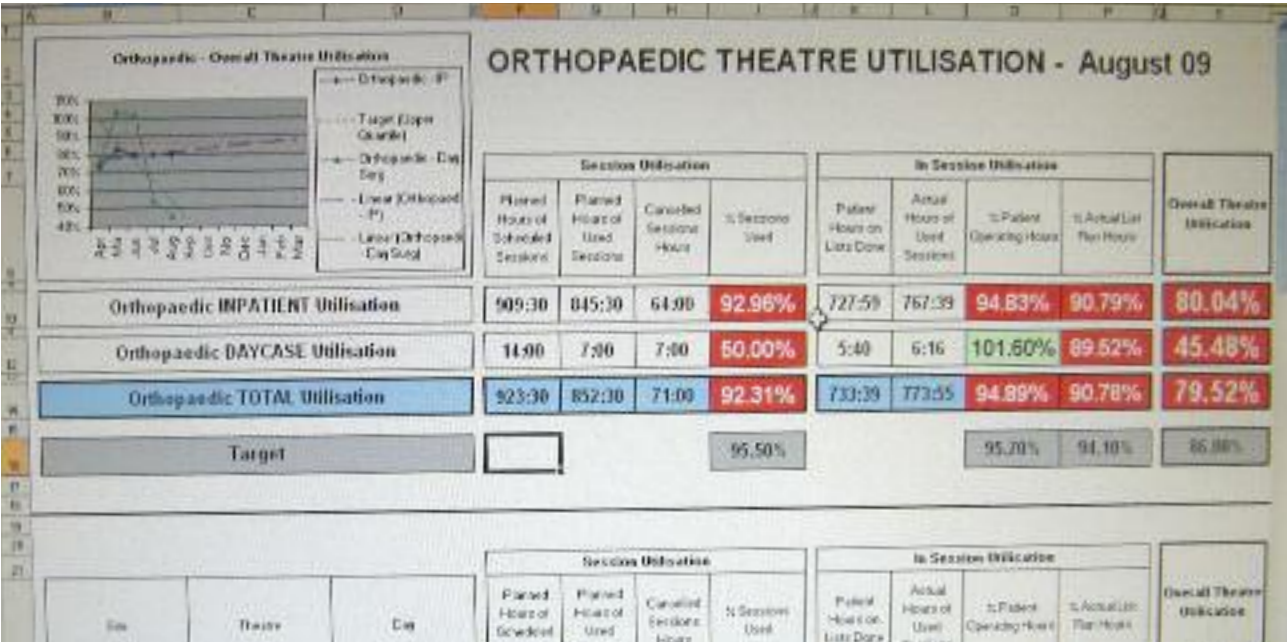
Use Toolkit, tool no. 16, Timing processes. Measure each process to see how long it takes to:

- compile a theatre list (include all telephone conversations, written requests)
- book a patient
- cancel and re-book a patient.

Policies and templates

Collect:

- policies relating to scheduling that your organisation has developed
- examples of templates that are used to collect and pass on information at the various stages of the scheduling process
- screenshots from any IT systems and understand how they are used.





Talk to staff

From the data collected so far, the team will be able to see the impact of the current way the lists are created. Are sessions being used effectively. Do they over-run or under-run?

To support this information and to begin to understand where improvements can be made, you will need to understand the process used to create the current lists.

Speak to theatre staff, schedulers, surgeons and anaesthetists and others involved in the scheduling process. The aim is to get general feedback from all staff involved in the scheduling process to help you understand how lists are currently created and to gather ideas about how it could be improved. Use these questions to guide your discussions.

- What information is used to create the list?
- What works well?
- What frustrates you?
- What ideas do you have about how it could be improved?

This information can be collected in one-to-one interviews or in small group sessions. Refer to the Toolkit tool no.7 Interviews for guidance on interviewing.

Talk to patients

The scheduling process is one of the stages of the surgical pathway where the patients are conscious and can therefore provide feedback on their experience of the service they received. Their insight is essential in improving your scheduling process so that it is centred on the patient.

Collect feedback from patients. You could do this through a questionnaire, through semi-structured interviews or using the Experience Based Design approach and emotional mapping.

The aim is to understand how the scheduling process felt to them, so that you can make improvements the patients really want.

For more information about getting patient's perspectives visit: www.institute.nhs.uk/qualitytools for tools on patient perspectives.

For more information about Experience Based Design and emotional mapping visit www.institute.nhs.uk/ebd

Analyse the data collected

Review all the information, data and feedback that has been gathered in order to get a clear understanding of how your current scheduling process is working, how the lists are currently constructed and how effectively they run on the day of surgery.

You should be able to identify:

- positive elements of the current scheduling process - that you want to keep and build on
- negative elements, problems or frustrations that you want to eliminate, change or improve.

You will use all of this information to create a process map of how you create and communicate a list.

Review ideas that have worked elsewhere

As scheduling is such a large and complex process, you will need to develop your own approach for your organisation that focuses on your local issues. Reviewing the learning points and examples of improvements made in other sites may prompt ideas that could also work for your organisation.



Learning points

What we have learned from our test sites and other organisations about creating effective lists:

- use the data you have collected to inform you in your decision making process
- work closely with your colleagues in theatre to have common definitions, eg 'start up' and 'finishing' times
- you will need to ensure that anaesthetic time and turnaround times are included in all your calculations as these can account for a considerable proportion of the times especially for relatively short surgical procedures
- recognise that some surgeons and anaesthetists may display considerable variation in procedure times for the same operation. You will need to understand why this occurs to effectively manage these lists
- discuss with your surgeons the idea of 'pooling' some patients. Being able to transfer patients between consultant surgeons increases flexibility to a significant degree. In some organisations this may prove easy to effect whilst in others it may generate considerable resistance. You may consider trialling this first with a small basket of procedures such as hernias or arthroscopies
- you will need to work with anaesthetists and surgeons to identify complex or unusual cases and estimate operating times
- effective communication methods are essential for gathering the right information in sufficient time to create the lists, and then to distribute them across the organisation.

Example 1: creating an effective list (surgical planning meeting)

Last minute changes to lists can be very disruptive for theatre teams. One organisation has prevented this from occurring by having a surgical planning meeting a week or two before the list.

The aim of this meeting is for the surgical team to create an effective list by understanding:

- how complex each procedure will be
- any prosthesis or special equipment that is needed
- whether the patient has any medical problems and will need an ITU bed
- preventing equipment clashes by identifying if teams are requesting to use the same equipment at the same time.

The team, who meet for 30 minutes each week, comprises of:

- two to three surgeons from the same specialty
- anaesthetist
- scheduler
- senior theatre team member working on the lists
- surgical trainee.

Once the list order is agreed it is only changed if a problem with one of the patients is identified.





Example 2: briefing and debriefing for scheduling

One organisation has developed a weekly formal meeting between theatres and the scheduling team, where they review all lists from the previous week and all the lists for the week ahead. The meetings are attended by the head scheduler, the lead nurse for theatres and day surgery and all theatre team managers.

They review the previous week's lists using the debriefing principles of:

- what went well?
- what could have been better?
- what will we do differently in the future?

They also review the lists for the week ahead to identify, discuss and modify any lists that are:

- overbooked and will over-run, they look at removing cases
- underbooked and will under-run, they look at adding cases
- they also discuss any potential problems with equipment.

The result of this meeting is formal agreement of the content and order of each list one week ahead of the list date. The list is then fixed and communicated. As this way of working becomes more embedded within the organisation, the team plan to increase the time between fixing a list and the day of surgery, to allow more time for planning of resources. (They build in flexibility for cancer patients on 31 / 62 day pathways).

Scheduling and theatre staff find these meetings very useful. It brings together both groups as a team and provides a structured process for feedback and team-working which was not available before.

Example 3: rules for scheduling

The schedulers and theatre teams are working together to develop a series of local rules for scheduling lists. The rules are being developed to help inform the scheduling of lists to prevent any potential clashes that result in cancellations or changes to lists due to lack of ITU beds or equipment clashes. They include things such as the procedures that require:

- specific stacker systems and how many stacker systems are available to be used
- a particular instrument set and how many of these sets the department has
- an ITU bed and how many ITU beds are available
- image intensifiers and how many are available.

The theatre and scheduling staff are already benefiting from the rules. It improves the quality of service they provide for the patients and makes the days run smoothly for staff by eliminating rework for schedulers and preventing glitches that the theatre teams have to resolve throughout their day.

Example 4: communicating information about lists

One solution is to have the lists available as a 'read only' system on your intranet system. This allows for relevant information to be available to all teams, including:

- information on the patient
- the operation
- proposed date and time of admission
- pre-assessment alert of any medical conditions and need for HDU or ITU
- surgeons' special requirements
- any special anaesthetic needs
- predicted length of stay.

The information is open to all, however it is for each group to check the information relevant to themselves in a timely manner. This hospital has recently extended this system allowing consultants to access the information via the internet.

Communicating information in a timely way is a key part of ensuring effective lists.



Example 5: communicating with patients

One organisation has developed a system where the pre-surgery team phone every patient 48 hrs before admission. This system has a number of important advantages:

- For the patient reassurance:
 - from the organisation calling them to ensure they are okay to proceed with surgery
 - that when they arrive in pre-surgery they are greeted by the person who spoke to them on the phone
 - of being able to make last minute checks such as what drugs to take or stop on the day of admission, visiting times, who can come to the hospital with them
 - **that** it allows the patient to reconfirm their expected arrival time.
- For theatres and the organisation:
 - reduces the number of patients not attending on the day of surgery
 - identifies patients with new problems such as coughs and colds or more serious conditions, allowing informed choices to be made as to proceed or defer
 - if a patient is cancelled, it allows time to schedule another patient who has said that they are willing to come in at very short notice
 - allows pre-surgery to check it has all relevant notes and tests available and if not, has 48 hours to obtain them
 - reduces last minute cancellations thereby increasing theatre utilisation.



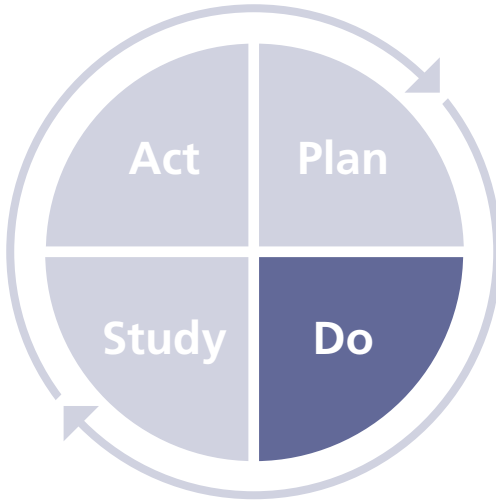


Plan – milestone checklist

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

Checklist	Completed?
Identified strong visible leadership	
Created the team	
Collected relevant data and information	
Identified and collected procedure times	
Collected data on start, finish and turnaround times	
Talked to staff to get their feedback	
Talked to patients to get their feedback	
Analysed the data and information	
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?	



Do

Once you have identified some ideas for improvement that you would like to try, you will need to test it on one list or with one specialty to see if it works.

Remember implementation works best when staff are involved and are encouraged to develop their own solutions.

This section may involve several iterations of the PDSA cycle.



Process mapping the current scheduling process

Display the analysis identified

The information that has been produced from the data collection should be displayed close to where the mapping of the current state will take place. This is so that the information can be used during the mapping event, to enhance the depth of understanding of the current state and use information to aid your decision making.

Now that all the information has been collected and understood, the current processes can now be mapped.

It may be more manageable to break the scheduling process down into smaller parts. Consider:

- mapping the whole process initially at a high level first
- then produce detailed maps of the individual processes:
 - the booking process
 - how a list is created.

'Until we carried out the current state process map I as a Theatre Matron just didn't realise how complex the whole of scheduling process was.'

Claire Bradford - programme leader and theatre matron, Royal Devon and Exeter NHS Foundation Trust

Map the current state

Create a current state process map based on your team's understanding of the scheduling process and the data you have collected. Refer to the Toolkit, tool no. 11, Process mapping for full guidance.

Populate the map:

- Add all the staff feedback to the map.
- Add any process timings or data to the map.
- Review each process step by step and highlight any concerns or issues that you may have with the process.
- Add all the issues to the map.



Create the future state

Having mapped the current state, discuss:

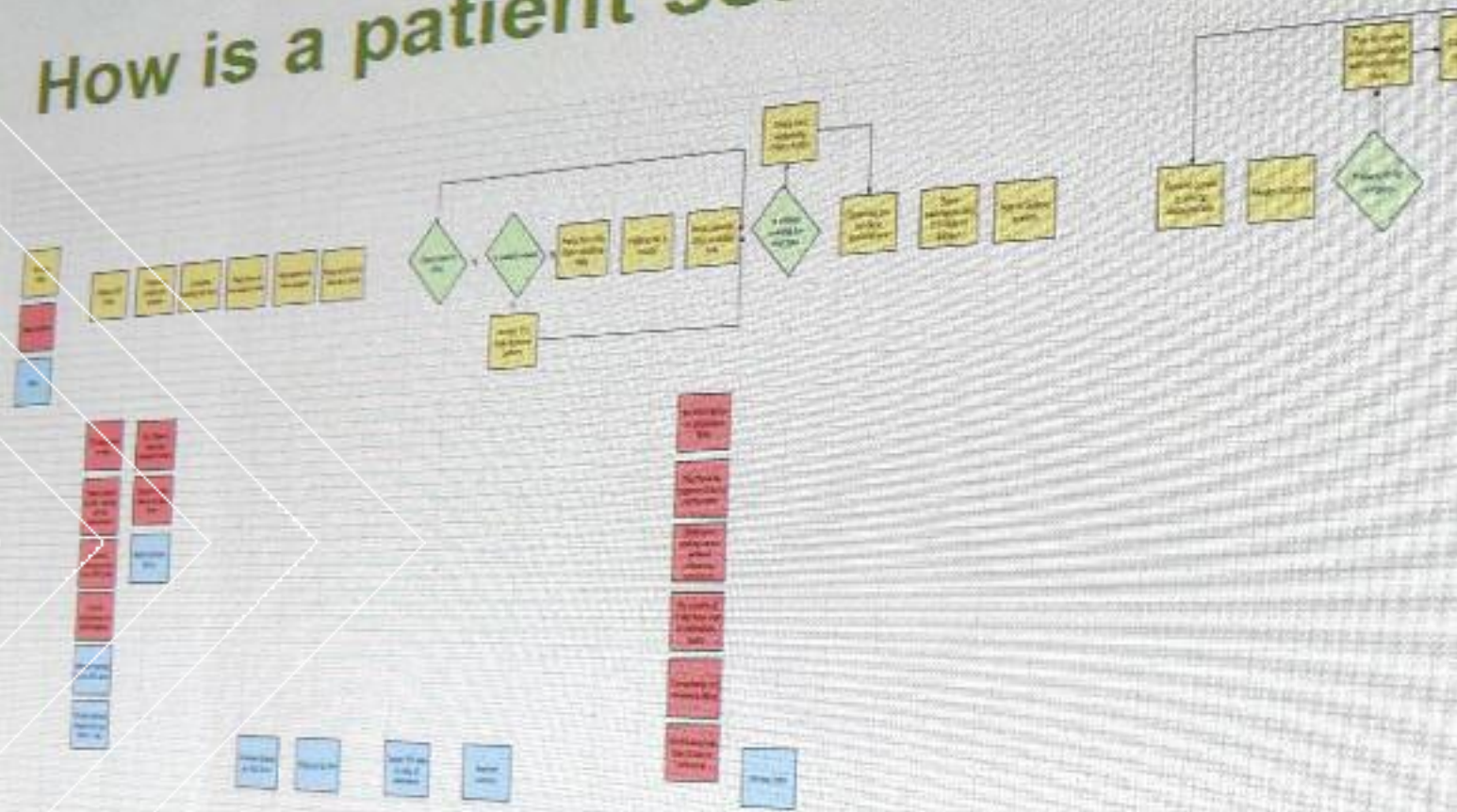
- how it could be improved
- how to make the improvements happen.

Create the new design as shown on the next page the actions beneath the new process steps are those which need to be implemented to achieve this desired future state.

Current state process map



How is a patient scheduled?



Process mapping backwards from end
Usually poorly monitored



Agree the changes

The team needs to agree what changes are required to implement the new improved future state scheduling process. However, you will need to get agreement from other stakeholders outside the improvement team, eg changing the template of a waiting list pro forma will require the consultants' agreement.

Consider who you need to consult and involve for each of the proposed changes. They will probably identify additional ideas for improvement that could also be tested.

'I was surprised to discover the multiple factors which have to be considered when booking a patient from their outpatient clinic appointment to their subsequent treatment. This was highlighted through process mapping.

As a result we have produced a crib sheet which is completed in clinic by the clinicians outlining the requirements of the patients. This has helped the secretarial / admissions team scheduling patients.

It has also brought into effect a shared working practice which has provided a standard approach to scheduling.'

Jayne Collins - medical secretary, Royal Devon and Exeter NHS Foundation Trust

Create an implementation plan

Use Toolkit, tool no. 12, Cost / benefit analysis and no. 13, Module action planner, to create your implementation plan.

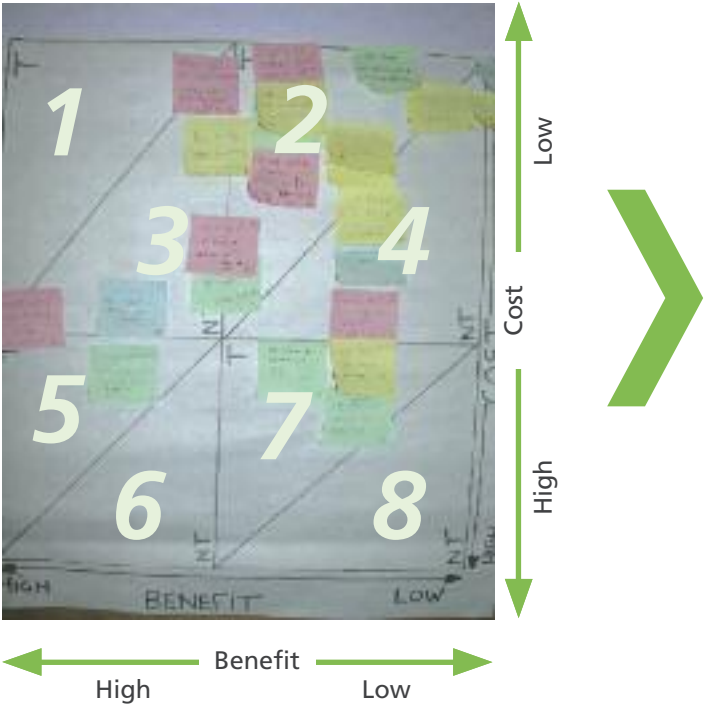
The cost benefit analysis will enable you to prioritise your changes based on the cost to implement them and the benefit they will bring. This may be necessary if you have identified a large number of changes. Remember to consider the benefits in terms of the four programme aims of

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

Then, with the team, create a module action plan to establish and track any actions, timescales and ownership of the tasks.

The module action planner can then act as your weekly review document to make sure implementation stays on track. Display the completed module action planner sheet in a prominent position within the theatre department.

Cost / benefit analysis and Module action planner



Module Action Planner

⊕ = Understood ⊕ = Underway ⊕ = Complete ⊕ = Sustained

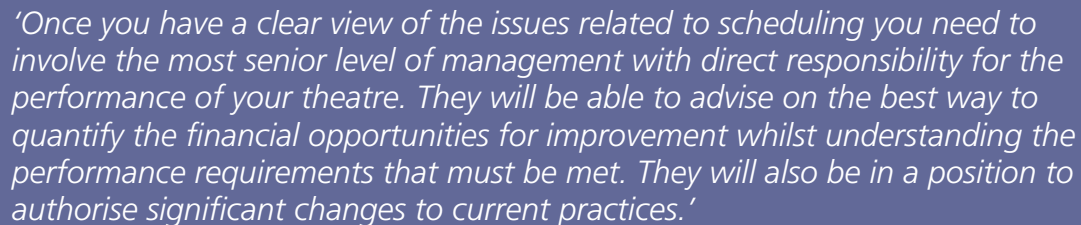
	Action	Who	When	Progress	Initial
1				⊕	
2				⊕	
3				⊕	
4				⊕	
5				⊕	
6				⊕	
7				⊕	
8				⊕	
9				⊕	
10				⊕	
11				⊕	
12				⊕	
13				⊕	
14				⊕	

Test the changes

Once you have agreed the ideas you want to test and have created a plan, ensure that:

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

Remember, 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 the team is happy to roll-out solutions on a large scale.



'Once you have a clear view of the issues related to scheduling you need to involve the most senior level of management with direct responsibility for the performance of your theatre. They will be able to advise on the best way to quantify the financial opportunities for improvement whilst understanding the performance requirements that must be met. They will also be in a position to authorise significant changes to current practices.'

Lisa Elliott – service improvement lead, Central Manchester University Hospitals NHS Foundation Trust



Continue to monitor progress

Throughout your defined test period, continue to collect, analyse and review your data as described in Knowing How We Are Doing. During the Plan stage you collected a considerable amount of information to help you understand the current scheduling system. You will be able to use this as part of a baseline against which you can measure your progress.

- Set regular meetings where the team involved in implementing the change can discuss progress and issues, and make suggestions for further improvements.
- Communicate progress to the wider team through your Knowing How We Are Doing board and the organisation's newsletters.

Support the team in their new way of working

One of the reasons that scheduling is so complex is because it requires co-ordination between different departments and specialties that have different ways of working and different lines of accountability.

The teams implementing the changes will need:

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



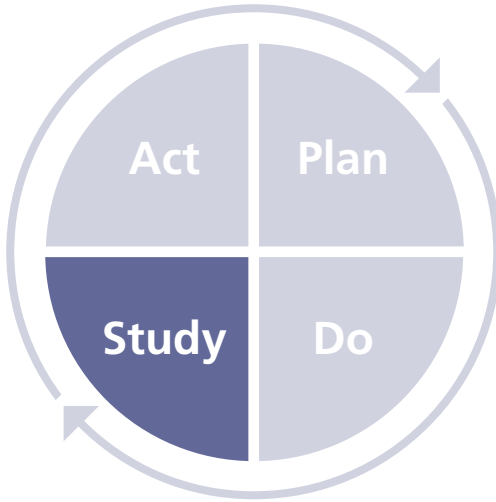


Do – milestone checklist

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

Checklist	Completed?
Process mapped the current scheduling process	
Created a future state for the scheduling process	
Identified and agreed the ideas to test	
Communicated with and got agreement from the wider stakeholders	
Developed an implementation plan for the testing	
Began the tests	
Continued to monitor progress	
The team has executive leaders and clinical support for 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?	



Study

Implementing improvements may require several PDCA 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.



Collect, analyse and review you data

During the Study stage, the team will reflect on how successful the changes they implemented have been. This will 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?

As you have tested your changes you should continue to collect, analyse and review your key measures to show the impact of the changes you have made.

- Assess the impact the changes have had on your key measures, for example:
 - has there been a reduction in late finishes due to overbooking?
 - has there been a reduction in early finishes due to underbooking?
 - has the use of actual procedure, anaesthesia and turnaround times resulted in lists that are consistently achievable and has this optimised the theatre time available?
 - are lists produced in a timely manner that allows for staff and equipment to be arranged?
 - has there been a reduction in cancellations and rework involved in rescheduling patients?

Collect feedback from the staff and patients

- What impact have the changes had on all those involved - both positive and negative?
- Do they have suggestions for how the changes can be improved further?
- Collect anecdotes and examples.

Review the quantitative and qualitative data together

- What worked well?
- What did not work well?
- What could have been done better?
- Has the team measured for a long enough time to draw clear conclusions?
- Do any further tests need to be undertaken to refine or improve the changes?
- What are the staff views and perceptions of the change? What would they like to see changed or improved?
- Did you discover any unexpected benefits useful to your team or the work going on in other The Productive Operating Theatre modules? If so have you disseminated them?

Update the Knowing How We Are Doing board

- Use the Knowing How We Are Doing board to communicate and share progress with the 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, audit mornings, and brief and debrief sessions: ensure all staff are informed including night staff.

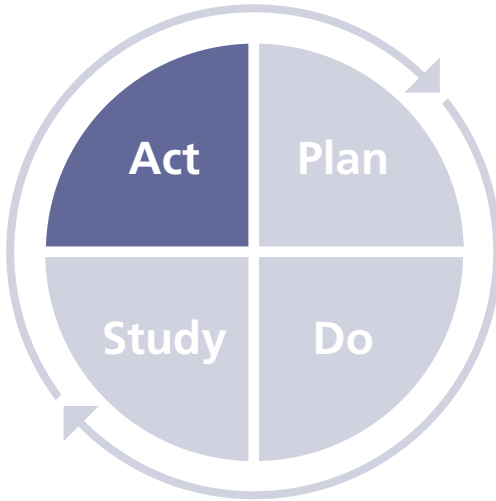


Study – milestone checklist

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

Checklist	Completed?
Continued to collect analyse and review your data	
Discussed the impact the changes have had on the data	
Collected feedback from staff about how the changes have affected them	
Communicated progress by updating the Knowing How We Are Doing board	

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?	



Act

Once you have successfully developed and tested your improvements, you will need to plan for roll-out across your organisation, and crucially, how to sustain them in the long term.



Agree which improvements have been successful

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

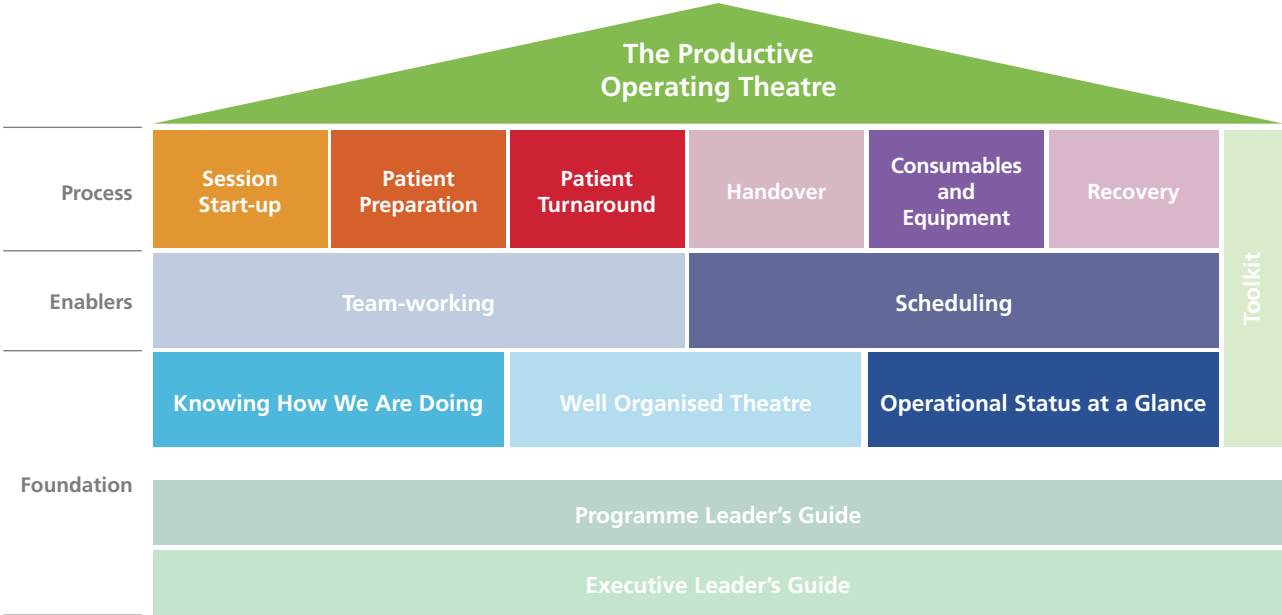
- **adopt** the change if it has been a success and look to roll it out to other areas
- **adapt** the process in some way to improve it further. Perhaps the change has not achieved the desired outcome, by adjusting or modifying it slightly it may be more successful. If changes are decided, you need a further period of study to understand whether the adaptation(s) have worked or not
- **abandon** the change if it was not successful. Remember, many of the changes you propose may not be successful: do not consider this as a failure but as 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 project? If so share them.

Adopting a change and planning for roll-out

For the changes you decide to adopt as a team, you will now need to consider:

- how to roll-out and embed the change across a wider group of theatre specialties or sites
- who will lead on this and take ownership off the changes
- how you will disseminate the information to all those concerned
- how the changes link in or impact the work of the other Productive Operating Theatre modules, in particular:
 - **Operational Status at a Glance**
 - **Knowing How We Are Doing**
 - **Session Start-up**
 - **Patient Preparation**
 - **Patient Turnaround**
 - **Equipment and Consumables**
- how you will put in place a monitoring system to ensure the changes are sustained over time.

Your Productive Operating Theatre steering group may have clear thoughts or have developed a plan detailing how the whole programme will roll-out across the organisation. Discuss with the steering group your ideas for the roll-out of the Scheduling work and how they fit with the overall plan.





Continue to monitor and review

- It is important that you continue to collect, analyse and review your key measures, to encourage sustainability - particularly as you roll-out to new areas.
- It is still important to collect, analyse and review your data in the original area where you first implemented the change. However, once you are satisfied that the change is an improvement and is being sustained, you may reconsider the frequency and the number of measures that you collect, analyse and review.

How can I make it stick?

As much effort, if not more, needs to go into the roll-out and sustainability of a change as the planning and starting of it. Sustaining new ways of working is always a challenge. The NHS Sustainability Model identifies ten factors that are key to the sustainability of any improvement. They are explained in the table below. These should be considered in your roll-out plan.

	Factor	Things to consider
Staff	Clinical leadership	<ul style="list-style-type: none"> Have strong clinical leaders and champions supporting the change, use them to influence their colleagues.
	Senior leadership	<ul style="list-style-type: none"> The programme executive leader.
	Training and involvement	<ul style="list-style-type: none"> Provide training on the changes to those that are affected by it so that they understand any new systems and processes, eg if you change from a paper to electronic diary make sure the staff are confident in using the new electronic system.
	Staff behaviours	<ul style="list-style-type: none"> Continue to involve staff in developing the changes further – people own what they help to create which will increase the likelihood of sustainability. Use your champions to influence their colleagues.
Organisation	Fit with organisational goals and culture	<ul style="list-style-type: none"> Show how the change fits with your Productive Operating Theatre vision and the wider organisations strategy.
	Infrastructure	<ul style="list-style-type: none"> Formally incorporate the new roles and responsibilities that people have as a result of the changes into their job plans. Develop policies that embed the changes.
Process	Benefits	<ul style="list-style-type: none"> Explain to the staff involved what the benefits of the new way of working are for them.
	Credibility of evidence	<ul style="list-style-type: none"> Share the qualitative and quantitative benefits that you have collected through the testing cycles to engage colleagues during roll-out.
	Monitoring progress	<ul style="list-style-type: none"> Continue to monitor the progress of the changes so that teams can see the impact of their efforts.
	Adaptability	<ul style="list-style-type: none"> Consider how the change will adapt to a different theatre team, specialty 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



Don't stop improving!

Just because you have decided to adopt an improvement it 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 roll-out 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 the 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 – the ultimate aim of the Productive Operating Theatre.

'Scheduling is still ongoing and we are still learning from it, you can't think that because you have set it up, that is it, sit back and relax and think we have got it sussed, you need to continuously develop and improve your systems.'

Beverley Main - theatre department manager, Shrewsbury and Telford Hospitals NHS Trust

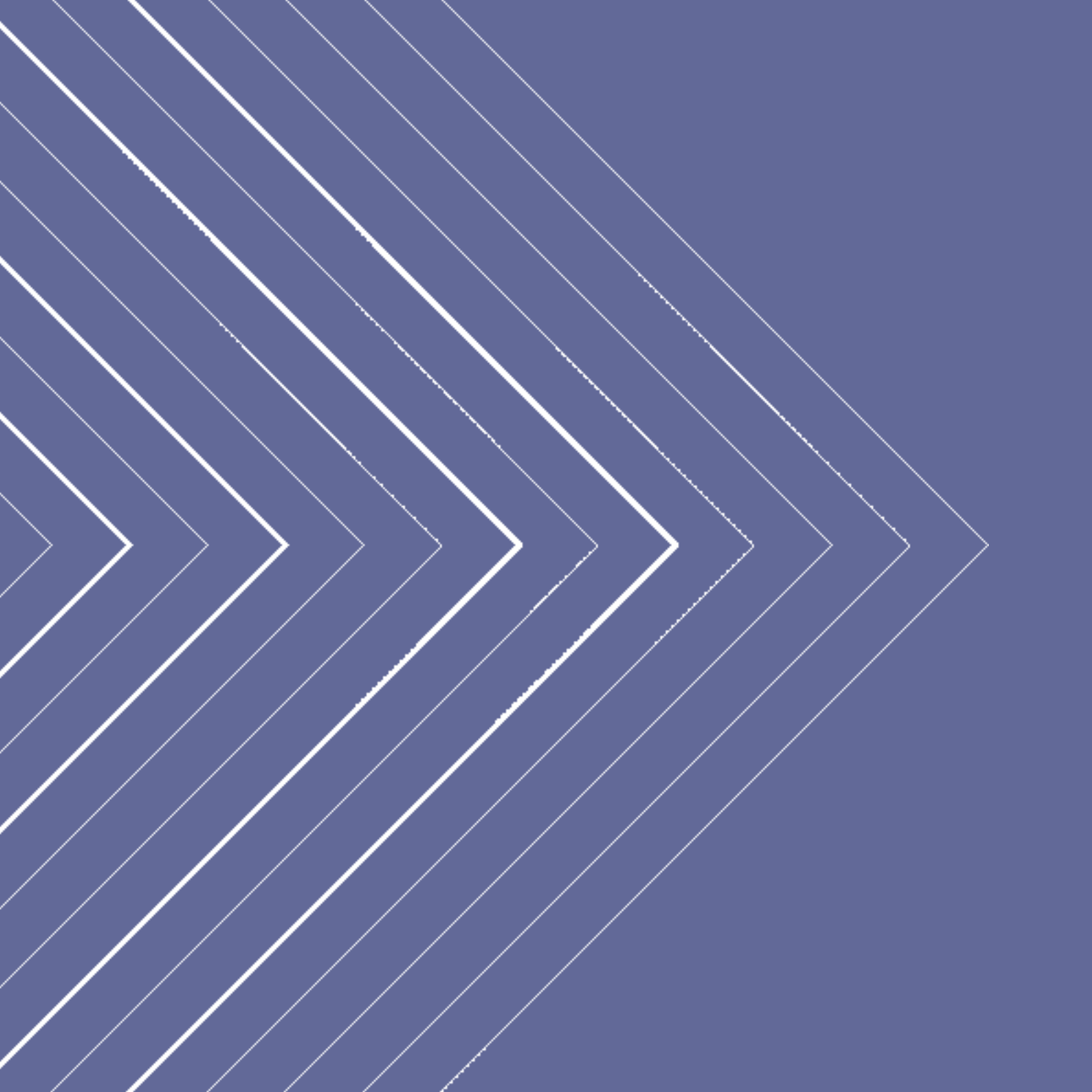




Act – milestone checklist

Checklist	Completed?
Agreed which changes have been successful and should be adopted	
Agreed which changes need to be adapted and decided how they will be taken through another testing cycle	
Agreed which changes should be abandoned	
Developed a roll-out plan for changes that will be adopted	
Agreed how you will continue to monitor your measures	
Completed the Sustainability Model to identify any factors that may need further work to increase sustainability	
Provided opportunities for continuous improvement	

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. Learning objectives complete?

Learning objectives

Key learning objectives were set at the beginning of this module. Test how successfully these objectives have been met, by asking members of the improvement team the questions in the table.

Ask the questions in the first column and make an assessment against the answer guidelines in the second column. Answers will vary based on your team's experience and the improvements you made.

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

Question	Possible answers
What improvements have we made to achieve optimal utilisation of operating sessions?	<ul style="list-style-type: none">• Developed a clear approach to identifying any sessions that are not going to be used six weeks before the day of surgery so that it can be reallocated within the specialty or offered to a different specialty.
Why is it important to monitor theatre capacity and demand and how do you do it?	<ul style="list-style-type: none">• To make sure the capacity is correctly distributed between the specialties to maintain an acceptable waiting time for patients.• To make optimal use of theatre capacity.
Why are procedure and anaesthetic times essential to scheduling?	<ul style="list-style-type: none">• To ensure lists are created that optimally use the theatre time avoiding over-runs and under-runs.
Why is it important to review scheduled lists?	<ul style="list-style-type: none">• To make sure the team agree that the list is achievable optimise theatre capacity.• To allow time to arrange the correct skill mix of the theatre team.• To ensure any special equipment required is ordered.• To avoid any equipment clashes.• To make sure there will be enough ITU beds available.

Question	Possible answers
What did you learn about the current state scheduling process?	<ul style="list-style-type: none"> • How complex the process is. • More people and steps involved than expected. • The amount of rework involved. • The impact actions in one areas has on another area.
What measures are important to scheduling and how to monitor them on an ongoing basis?	<ul style="list-style-type: none"> • Session utilisation. • Number of additional lists being put on. • Number of minutes lists start and finish early.
Why is it important to involve and provide feedback to all those who contribute to scheduling?	<ul style="list-style-type: none"> • So that everyone involved understands the impact their actions have on others, (eg in terms of rework, overrunning lists, costs of empty theatres) and can learn how to work together to provide a better service for the patient and each other.
What communication systems have you got to ensure the right information is in the right place at the right time?	<ul style="list-style-type: none"> • Intranet based theatre schedules. • Regular meetings. • Clear roles and responsibilities of information will be communicated.

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