Theatre savings flow from TPOT approach

One of the UK's biggest acute hospitals, with more than 50 operating theatres across multiple sites, is seeing some major improvements using a structured approach to theatre improvement

Operating theatres are among the most expensive resources acute NHS trusts use in the treatment of patients. NHS Improvement's analysis of nearly 70 acute trusts' voluntary cost submissions covering 2014/15 found that nearly 9% of total provider costs were tied up in theatres. Nearly 30% of all episodes had some component of theatre costs, and for these episodes, on average theatre costs accounted for one fifth of all costs.

A recent Wales Audit Office report put the direct cost of operating theatre time at £14 per theatre minute – making it clear how important it is to minimise delayed starts and turnaround times and make the optimal use of session times.

Leeds Teaching Hospitals NHS Trust set itself this exact challenge across its more than 50 operating theatres when it embarked on a theatre improvement programme in 2015 using The Productive Operating Theatre (TPOT – pronounced 'teapot') methodology. The real key for unlocking theatre efficiency was information – and this was provided with a new theatre data system, QlikView TheatrePro.

'This provides us with any information we want to look at, in relation to our theatres and how they are used,' says the trust's theatres and anaesthesia general manager, Suzanne Abrahams. 'We can drill down into specific data – for example, to see the average time a procedure takes with a certain consultant working with a certain anaesthetist in a particular theatre. Or we can obtain broad data, such as the average utilisation for a particular theatre over a set period.'

Leeds Teaching Hospitals' St James's University Hospital

Before the new system was implemented, the trust couldn't access this type of detailed information. 'So while we knew there were inefficiencies and potential for improvement, the specific issues weren't particularly clear for us to see,' says Ms Abrahams.

The new system helped to identify specific issues that would benefit from further exploration. And with the head of nursing already having used the TPOT methodology in two previous trusts with good results, the trust decided to adopt this approach.

There are four main dimensions to the methodology. It looks to improve:

- Patient experience and outcomes
- Safety and reliability of care
- Value and efficiency
- Performance and staff well-being.

The programme sets out a process for improvement using Lean management principles that involve a number of general workshops and provides a toolkit to support improvement.

This toolkit (see diagram overleaf) includes modules to support improvement activities in general, such as what and how to measure performance (foundation modules) or to help with specific parts of the patient journey through theatre – session start-up, patient turnaround and recovery, for example.

At Leeds, it was launched with a number of visioning events across the trust covering the 10 surgical clinical service units (CSUs). Everyone involved in running theatre lists was invited, including consultants, anaesthetists, nurses, administrators and business managers. In this two- to three-hour session, the staff were tasked with identifying the top three things that stopped them delivering the perfect day in theatres.

Although there were differences across the CSUs, there was a significant degree of consensus around three problem areas:

- Starting on time
- Turnaround/portering
- Delays due to bed availability.

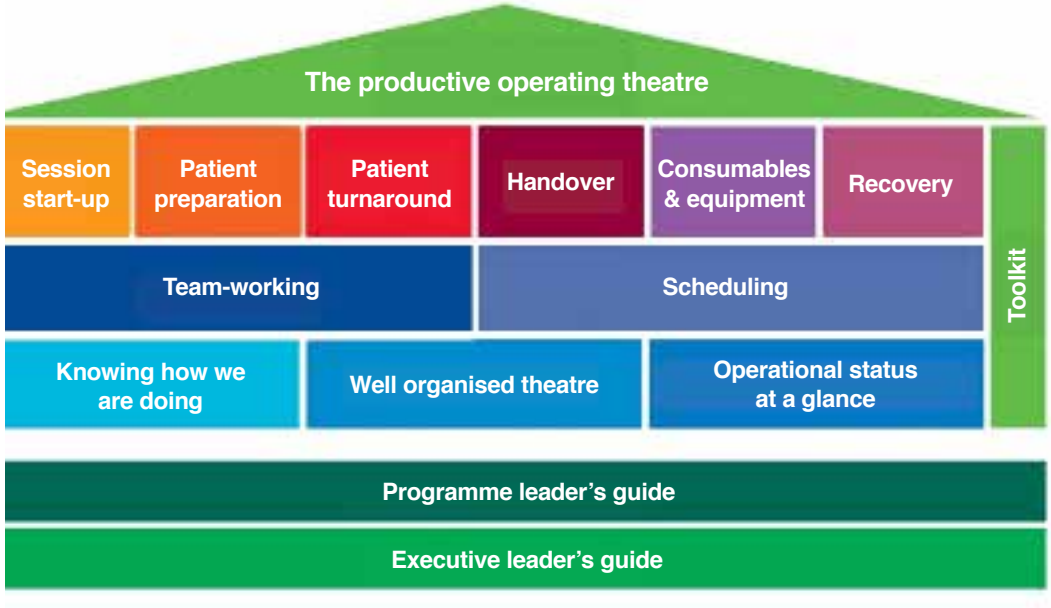
A team of quality practitioners supported

the different theatre teams to create task and finish groups for each specialty to address these issues. These groups then led detailed work for their theatres, drawing on the guidance in the various TPOT process modules and informed by data drawn from the TheatrePro system. Data was refreshed on each theatre team's 'knowing how we are doing' boards on a weekly basis with key performance indicators monitored overall and on a theatre-by-theatre basis.

Each task and finish group submits progress reports to a project board that meets twice a month. These reports show ongoing actions and the current top three improvements. They are supported by overall performance reports and trend reports provided by the TheatrePro system.

Matthew Armstead, Leeds' service manager within theatres and anaesthesia, says many of the fixes aren't rocket science.

However, the issues are identified by the staff and a consensus developed about what needs to happen – and this makes the solutions more likely to be delivered.



Bed availability

A number of theatres have acted as early implementers of the process. One issue examined in gynaecology was the number of late starts due to initial unavailability of beds for a patient to be admitted to following theatre.

'Traditional practice was to not send for a patient until we'd been given a green light about bed availability from the 8am bed meeting,' says Mr Armstead. 'But analysis of the data showed that actual cancellations of the first patient due to a lack of bed were minimal. So we've introduced a new system – sending for the first patient independently of the confirmation of a bed. This project is called "First start". We still wait for the green light from the bed meeting before the anaesthetic is started, but now the patient is already in the anaesthetic room. This has had a significant impact on late starts.'

It has led to a 24 percentage point reduction in late starts – from 66% of all sessions in 2014/15 (October to September) to 42% in 2015/16. Turnaround times have also reduced by nearly six percentage points and there have been corresponding increases in in-session utilisation and the average cases per session.

There has been a smaller reduction in late starts in plastic surgery (hand unit) within the trauma CSU (reducing from 56% late starts to 45%) and a relatively marginal reduction in late starts within breast surgery.

Looking across all elective theatres, comparing 2014/15 with 2015/16, the trust has seen lost hours due to late starts reduce by 1,046 hours. This equates to nearly 262 four-hour operating sessions. At a cost per session of £1,224, the trust says the reduction in late starts equates to potential savings of £320,000.

'If we can create enough space for an additional patient in the session, then this can become a source of income generation or it can help avoid the need for overtime or extended and additional sessions to meet waiting time pressures,' says Ms Abrahams.

Reducing late starts in breast surgery has proved more problematic, in part because of the requirement for some patients to have an injection of radioactive isotopes prior to surgery. This needs to be done on the day of surgery and can build in a delay when starting a list.

To counter this, theatre teams have been going to the radiology suite to transfer patients directly to theatre and the trust is also exploring carrying out these radioactive procedures closer to theatre. Improvements in the plastics hand unit have in part been a result of successful recruitment into clinical positions.

Portering

Portering has been another issue addressed by the TPOT programme – with theatre staff identifying sometimes significant delays in patients arriving in theatre after they've been requested. However, examination revealed this was rarely a portering issue.

'A request is submitted, the porter attends the ward,' explains Ms Abrahams. 'But the patient might not be on the ward they are recorded as being on, because they've been moved to a different ward overnight to accommodate pressures. Or they get there and the patient isn't ready and they are unable to take the patient back, so the porter has to cancel the job and it has to be re-requested.

'From the user's point of view it just feels like it is taking ages, but the porters are doing everything they have been asked to do.'

In the vascular theatres, the trust

tested a different approach, with a dedicated porter assigned to the theatre each day. 'But there was negligible improvement because the problems still remained on the wards or with administration,' she says. These issues are tied in with the multi-factoral issues associated with management of beds, theatres and the administration processes across all teams. As such, they are outside the direct remit of the task and finish groups.

But they have been highlighted to the surgical departments and the TPOT process continues to support both the surgical CSUs and the patients themselves to ensure as seamless a process as possible.

Setting targets

Ms Abrahams admits that setting appropriate targets is challenging. 'There are no national targets or definitions for any theatre key performance indicators,' she says. 'At Leeds, we define the start time as being when a patient enters the anaesthetic room. But at other trusts, it might be the time of the team brief or something else.'

Leeds has raised the lack of common definitions or indicators of good practice as an issue that should be addressed nationally to help local trusts target achievable goals.

It is difficult to quantify the benefits to date – either financially or otherwise. 'In the past 12 months we have had unprecedented bed pressures,' says Ms Abrahams. 'The absolute performance measured by the data is not necessarily reflective of the work that has been done. We do know performance across the trust would have been far worse if we hadn't taken action. There have been a lot of qualitative pieces of work that the quality improvement practitioners have done which aren't reflected in our KPIs, changes that have improved communication and flow. They've made a huge amount of difference.'

She singles out the introduction of pagers in paediatric theatres, meaning parents aren't tied to a room next to theatre during their child's operation but can walk around knowing they can be contacted at any time.

Work has also been undertaken using the TPOT Lean methodology to assess all storage locations and the use of consumables. A materials management project has recently been started with the aim of reducing the supplies-related work that theatre staff have to carry out.

A procurement officer now sits within the TPOT team and this has helped to secure greater savings through the review of consumables and the rationalisation of what is required.

Theatre performance and targets

KPI	Trust performance (Oct 2015-Sep 2016)	Target	Monthly performance (Sept 2016)
% of late starts	50.8%	10%	46.8%
% of early finishes	38.6%	10%	38.3%
Turnaround time	10.6%	10%	10.9%
Average cases per list	2.0	2.5	2.1
Number of cancelled patients	10.1%	3%	9.8%
Number of cancelled sessions	5.3%	3%	8.5%

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The TPOT work also sits alongside other improvement work within theatres. For example, the **trust's work with Virginia Mason*** has led to specific improvements with theatre inventory and scheduling. Both the Virginia Mason work and TPOT form part of the trust's overall improvement approach – known as the Leeds Improvement Method.

Ms Abrahams says the TPOT methodology is an iterative process. It's about making continuous improvement, not a single step change in performance. In gynaecology, the work as an improvement programme is being brought to an end. 'The aim is to turn this into business as usual,' she says.

*** Other resources at www.hfma.org.uk/news/healthcare-finance**

Jubilee Wing, Leeds General Infirmary