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1.0 Executive Summary

Background
The NHS Institute for Innovation and Improvement launched The Productive Operating Theatre in September 2008. The programme has been designed to support organisations to test and implement significant improvements across four quality domains:

- Team performance and staff wellbeing
- Safety and reliability
- Efficiency and value
- Patient experience and outcomes

It is a cultural change programme focussed on ‘Building teams for safer care’.

Rationale
Evidence suggests that operating theatres could be more efficient, and safer for patients. Initial achievements suggest an average hospital (16 operating theatres) could save up to £7M. Much of this on a recurrent basis. In terms of safety, 1 in every 150 patients admitted to hospital dies as a consequence of an adverse event, almost two-thirds being associated with surgical care (1). Globally each year, around a million patients die, and seven million patients develop complications, of which 50% are thought to be preventable*.

The Productive Operating Theatre (TPOT) is a modular improvement programme created by the NHS Institute for Innovation and Improvement. The aim of the programme is to improve quality and safety in theatres by enabling front line staff, with the support and commitment of the executive management team, to systematically identify and resolve day to day issues and frustrations using proven methodology; lean principles, taken from manufacturing and safety processes derived from high risk industries. The focus of the programme has been primarily NHS England but the programme also has a global appeal, to date the programme has been delivered internationally in Ireland, Northern Ireland, Scotland, Wales, New Zealand, Australia and Qatar.

Experience has indicated that there is wide variation in the degree to which organisations are able to realise the full benefit opportunity the programme facilitates. This evaluation set out to explore the potential of the programme and how organisations can ensure success. The three key questions are:

- What has the impact of the programme been on a range of health organisations?
- Does the programme deliver its intended outcomes?
- What have been the critical success factors?

* Richard G. Berrisford, Iain H. Wilson, Mike Davidge and David Sanders - Surgical Time out checklist with debriefing and multidisciplinary feedback improves venous thromboembolism prophylaxis in thoracic surgery: a prospective audit. European Journal of Cardio-Thoracic Surgery December 26th 2011 1-4
**Approach**

This evaluation aimed to present collective qualitative enquiries of six national and international health organisations’ ‘success stories’ in implementing The Productive Operating Theatre. Furthermore, the evaluation seeks to illustrate the qualitative review with quantitative data sources to demonstrate where the programme had brought about significant improvements across the four quality domains.

The NHS Institute invited eight organisations to participate in an evaluation of The Productive Operating Theatre programme. The main attributes of the organisations invited to participate included:

- demonstrating moderate to high performance in meeting operating theatre targets
- that they hold a range of operating theatre data
- that they had implemented a range of programme modules either through receiving support from the NHS Institute team or independently.

Out of those organisations invited six participated in the evaluation.

The evaluation employed three main methods of data collection; qualitative enquiries with programme leads and team members at each organisation, to gain an understanding of their success stories and experiences of implementing the programme, review of quantitative data with regards to safety and reliability of care, team-working, value and efficiency, and patient experience, and a review of case studies to capture early learning from implementing the programme. The evaluation reviewed the data collected to answer the following research questions:

- What has the impact of the programme been on a range of health organisations?
- Does the programme deliver its intended outcomes?
- What have been the critical success factors and how have they been achieved?

Specific data on patient experience was very limited, the evaluation was not able to provide sufficient evidence in this area, however by improving the other three domains, particularly safety and reliability and staff wellbeing and team performance, by implication patient experience will have improved. The organisations shared their learning and insight as to which are the critical factors that need to be in place from the outset to ensure the success of the programme and which programme modules where of greatest benefit to them in terms of supporting the organisational changes required. The key messages from the evaluation findings are summarised below.
Impact of The Productive Operating Theatre

The evidence indicates that the programme has contributed to organisations making significant financial savings as an outcome of improving processes within theatres and across the whole patient pathway. Specific examples include improvements in start times and increased theatre utilisation. In addition, effective management of stock has contributed to significant cost savings.

The interviews clearly demonstrate how bringing staff together to work towards a shared aim, solving day to day issues, as a team, in a structured format engages staff in the programme. The impact on staff wellbeing is statistically significant and builds as the fruits of their efforts are demonstrated and visible for everyone to see.

It is clear that those organisations presenting ‘measures of improvement’ and associated information on the Knowing How We are Doing board, and those that have shared this information in a transparent manner with staff, have provided teams with a greater understanding of areas for improvement, and empowered individuals to propose solutions.

Improvements in safety are evidenced by the implementation of systems and processes supporting improved team-work and communication, such as the ‘five step model’, the capturing of errors and glitches, reduction in list changes, reduction in cancellations, improved handovers, adherence to Venous Thrombo Embolus (VTE) protocols, and improved management in recovery.

Programme outcomes

The principles underpinning the programme are applicable to all clinical specialities including obstetrics and endoscopy. However, the sequence of the modules needs to be tailored to the individual priorities of the organisation. The pace of implementation across the organisation is based on several criteria:

- the ability of stakeholders to embrace change
- the resources available, specifically staff time
- the ability to measure the changes
- access to programme management skills
- improvement skills and capabilities of staff to test and implement change.

It is evident that the programme creates a climate by which continuous improvement is the responsibility of all individuals and this ultimately ensures the sustainability of improvements.

The evaluation findings demonstrate that The Productive Operating Theatre brings about clear benefits for four key domains of the programme to improve safety and reliability, team performance and staff wellbeing and improved theatre efficiency. Benefits include:

- increased session utilisation
- improved list management
- reduction in staff sickness
- increase in staff satisfaction
- uptake of the five step model including team brief and debrief
• adherence to VTE and antibiotic guidance
• improved stock management
• reduction in pharmacy costs.

Organisations are likely to gain greater value from The Productive Operating Theatre when they invest upfront in developing a ‘benefits realisation plan’, which sets out what they aim to achieve and link this directly to baseline assessment and measures for improvement. This enables organisations to target human and financial resources into the areas which will deliver significant improvements.

**Critical Success Factors**

Organisations acknowledged that clinical leadership and involvement in the programme and dedicated human and financial resources are to be identified at the outset to ensure the success of the programme.

In participation organisations, though clinical engagement to some degree was present before the programme was implemented, it was the programme itself which had facilitated improvements in engagement with this particular stakeholder group.

It was evident that the leadership team is to be accountable for the programme and provide appropriate support to the Improvement Lead. In addition, the senior leadership team should focus on quality and reliability of care as the primary long-term strategic objective to be achieved from implementing the programme, with short term financial gains viewed as a secondary outcome as a result of improvements in efficiency. The outcome of these factors being in place was reported as enabling a stronger drive in cultural change; motivating wider team members and theatres to operate more efficiently.

The findings demonstrate that a ‘minimum data’ set across all theatres within an organisation needs to be established so that a suitable baseline assessment can be made, robust data collected, areas of improvement be identified and reviewed. The minimum data set should cover four key domains; value and efficiency, patient experience and outcomes, team performance and staff wellbeing, and should also include qualitative data to capture ‘success stories’ and provide a greater understanding and insight with regards to the quantitative data collected.
2.0 Introduction

2.1 Background

The Productive Operating Theatre (the programme) was introduced by the NHS Institute for Innovation and Improvement (NHS Institute) in 2009. Case studies from a number of NHS organisations have demonstrated that the programme has been responsible for significant savings, for example a staggering £2 million saving achieved at University Hospitals Bristol NHS Foundation Trust as a result of improved list management\(^{ii}\). The programme has been adopted by international health organisations specifically Scotland, Ireland, Wales, Northern Ireland, Qatar, New Zealand and recently Australia and Denmark, with plans to extend to Canada and the USA. There has been national and international success in the way of improvements in efficiency, staff wellbeing, team work, safety climate and job satisfaction.

The Productive Operating Theatre programme was developed as part of The Productive Series, a collection of programmes which support the NHS to redesign working practices in order to improve the quality of care and reduce costs, the aim being that the financial benefits of implementation will provide a significant contribution to the wider NHS efficiency target of £20b.by March 2014.

The programme is part of the Productive Care national Quality, Innovation, Productivity and Prevention (QIPP) work stream. This is one of 12 national work streams, designed to help the NHS meet the efficiency challenge. The overall objective of the work stream is to ensure that all patients are cared for in the most appropriate ‘productive’ environment – whether that is on a ward, in a theatre, or in their own homes. This is an environment where quality is maximised, where processes are efficient and variation is minimal, and where patients feel safe and well cared for. One of the aims of the work steam is to ensure that provider organisations implement the complete programme across all theatres, plus a return on investment nationally of £615m by March 2014.

A key example of how The Productive Series has already supported the NHS to deliver against the QIPP work stream is The Productive Ward, a similar programme designed to improve processes and environments within hospital wards. Initiated prior to The Productive Operating Theatre programme, it enabled nurses and other healthcare professionals to redesign their environment and they way they work, thereby releasing time to focus on patient care, resulting in improved safety and efficiency\(^{iii}\).

The Productive Operating Theatre was developed following the success of The Productive Ward and in response to the evident need across the NHS to improve theatre performance\(^{iv}\).


\(^{iv}\) NHS Institute for Innovation and Improvement ‘The Productive Operating Theatre’ Programme.
2.2 The Productive Operating Theatre programme

It is crucial that operating theatres, which serve as a key part of health organisations/hospitals, are functioning at their optimum level. Not only do theatres provide critical patient interventions, but they are also responsible for a substantial proportion of both the total expenditure and income generated at every acute hospital. In addition, the delivery of key strategic organisational objectives involving patient safety, successful clinical outcomes, efficiency and maximised income are dependent upon effective organisation and management of operating theatres.

The Productive Operating Theatre programme evolved through co-production with six NHS trusts in England, working alongside experts from another high risk industry, in this case aviation, and experts in ‘Lean’ improvement.

Integral to the design of the programme was the four key domains which are represented in Figure 1. below.

**Figure 1. Four key domains of The Productive Operating Theatre**

The programme consists of modules and an associated implementation support package to encourage longer term cultural change for theatre staff (including surgeons, anaesthetists, theatre matrons, preoperative practitioners, managers and operating department practitioners) and offers a systematic approach to improving ways of working. Essentially, it aims to achieve a more productive working environment for theatres, thus improving the quality of patient experience, staff satisfaction and well-being, safety and outcomes of surgical services, as well as effective use of theatre time. In turn, these outcomes are intended to improve productivity and efficiency resulting in significant cost reductions.

The programme consists of 13 modules which are categorised into three overarching areas – Foundations, Enablers and Process, and a Toolkit, which is a reference manual to be used alongside the modules. In it each tool is explained clearly and simply to make it easy for theatre teams to use in conjunction with the modules. The Toolkit provides the tools and techniques which enable teams to understand the current situation, to help question how they could do things better, and to test and implement changes that will contribute to the overall aim. Figure 2. provides an overview of the modules.
The Productive Operating Theatre incorporated the six key factors essential to success and sustainability identified during the initial evaluation of London trusts participating in The Productive Ward – ‘Releasing Time to Care™’ programme. These included leadership engagement, strategic alignment, governance, measurement, capability and learning and resourcing. The Productive Operating Theatre also recognised the importance of clinical engagement as a necessary component to the success of the programme, and so included this as a critical success factor, primarily, unlike The Productive Ward, which focused on one staff group - nurses, the focus for The Productive Operating Theatre was multi-professional including surgeons, anaesthetists, theatre practitioners, as well as administrative staff and porters. True clinical engagement and multi-professional groups working together towards a common goal, was proved to be a necessary component in successful organisations.

A brief description of these key factors are summarised in Figure 3.
2.3 Rationale for the evaluation

The NHS Institute had collated a number of case studies from acute NHS trusts to demonstrate the benefits of the programme. However, the NHS Institute wished to commission a short independent evaluation of the programme to demonstrate its impact on a range of national and international health care organisations. The NHS Institute, therefore, commissioned Matrix Decisions Ltd (Matrix) to deliver an independent evaluation to answer the following questions.

- What has the impact of the programme been on a range of health organisations?
- Does the programme deliver its intended outcomes?
- What have been the critical success factors to success?

The section below outlines the approach adopted by Matrix to deliver the evaluation.

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**Figure 3. Key success factors**

- **Leadership engagement**: the ability to demonstrate visible executive leadership to encourage and empower operational staff to deliver the programme.
- **Strategic alignment**: establish and cascade a clear link between the strategic objectives of the organisation and the aims of The Productive Operating Theatre programme, encouraging staff at all levels to drive the relevant change that supports and delivers the organisations objectives.
- **Governance**: clarify the expectations of the board to include taking an active role in the operation of a robust governance mechanism. This will provide clear visibility of the progress and outcomes of the programme and the means to resolve issues where senior intervention is required.
- **Measurement**: engage staff in collecting and owning appropriate measures and actively analysing and responding to changes in measurements, in order to ensure that processes and metrics continue at a desired pace.
- **Capability and learning**: develop staff knowledge and skills to change the work processes and coach others; grow a shared knowledge across the organisations and nationally.
- **Resourcing**: ensure that staff have adequate time to dedicate to The Productive Operating Theatre, with support resource committed to delivering capability and learning.
- **Clinical engagement**: establish positive partnerships between clinician’s and managers at all levels within the organisation. Clinical leadership and participation is actively sought to initiate, test and sustain a culture of continuous improvement.
3.0 Approach

3.1 Overview
This evaluation aimed to present collective qualitative enquiries of six national and international health organisations’ ‘success stories’ in implementing The Productive Operating Theatre. Furthermore, the evaluation seeks to illustrate the qualitative review with quantitative data sources to demonstrate where the programme had brought about significant improvements in:

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

This section summarises the sample selection and recruitment process, the scope of the qualitative enquiries, and the nature of the data sources which the evaluation reviewed.

3.2 Sample selection and recruitment
In partnership with the NHS Institute’s, Productive Operating Theatre programme team, Matrix identified six organisations that had collected qualitative and quantitative data related to the benefits, outcomes, impact and cost-effectiveness of the programme. The organisations selected to be invited to participate in the evaluation included NHS England acute trusts and international hospitals and met the following inclusion criteria:

- they are likely to hold a range of operating theatre data on safety, efficiency, patient experience and staff satisfaction
- they are moderate to high performing health organisations with regards to meeting operating theatre key performance indicators and
- they have received training and support from the NHS Institute with planning and implementing the programme modules OR
- they have utilised the programme modules developed by the NHS Institute but, have independently planned and implemented the programme.

In the first instance, the NHS Institute contacted the organisations inviting them to participate in the evaluation and explained the nature of the organisation’s involvement. Once the NHS Institute had obtained consent from the organisations to share data and participate in the evaluation, Matrix followed up with the leads at each organisation to undertake the qualitative enquiries and obtain quantitative data.
3.3 Qualitative enquiries

Each organisation participated in a one hour, semi-structured, qualitative ‘peer group’ interview. A total of five organisations shared their success stories and experiences of implementing The Productive Operating Theatre. The interviews covered the following themes:

- the organisation’s rationale for implementing the programme
- organisational changes which subsequently occurred
- key challenges experienced during set up and implementation
- improvements and successes as a result of the programme
- the most valuable modules and aspects of the programme
- critical success factors.

All organisations received the interview questions in advance so that interviewees had an opportunity to consult with the wider team to obtain a range of stakeholder views (please refer to Appendix 1 for the discussion guide). Interviews were audio-recorded, summarised and then subjected to thematic analysis to highlight key themes. Findings from all interviews were then synthesised to identify similarities and differences across organisations.

3.4 Quantitative data sources

A data mapping template was designed by Matrix to gather information on data collected by participating organisations. Specifically, it looked at measures collected across the following four domains:

- safety and reliability (e.g. safety attitudes questionnaire, adverse surgical events, hand hygiene, readmissions)
- team work (e.g. personal development review, staff turnover, sickness/absence)
- value and efficiency (e.g. session utilisation, lost income, correct kit)
- patient experience (e.g. patient survey, pain score in recovery, complication free recovery).

Each organisation was sent the template which was populated during a telephone interview aimed at gaining a better understanding of the nature of data being collected, for example:

- type of data collected
- purpose of data being collected (e.g. what is this data measuring?)
- ownership of data (e.g. who is responsible for it?)
- format, frequency and mode of data collection
- storage of data (e.g. where is it kept, who has access to it?); utilisation of data (e.g. type of analysis, who reviews it, what decisions does it currently inform?)
- robustness and how fit for purpose the data is
- baseline data (e.g. data collected before the programme was implemented).
This was designed to provide Matrix with a broad overview of the type of measures and indicators the organisations collected. The aim of the template was to help Matrix to establish the commonalities and variations across the organisations in terms of data sources and whether suitable base line data existed. Using the above templates, Matrix then requested a range of data from the organisations and reviewed these datasets to determine whether they were sufficiently accurate, complete and robust for analysis. From the variety and range of data received, it was clear that organisations collected data and reported on measures that were pertinent and relevant to them within The Productive Operating Theatre programme as encouraged by the NHS Institute.

The data received was reviewed and organised to report on themes across the organisations as described in Section 4.0 of this report. A comprehensive list of the data and sources received is included in Appendix 2. A total of six organisations shared their data, but Matrix could only use the data provided by five of these organisations for analysis as the data provided by the sixth was limited.

### 3.5 Case study review

Matrix reviewed a set of case studies which had been developed by the NHS Institute between 2011 to 2012, in collaboration with four of the organisations which had participated in the evaluation of the programme. The review of case studies was to ensure that the evaluation captured the initial learning and success of the organisations in implementing the programme, and to complement the information gathered through the qualitative enquiries and quantitative data sources.
4.0 Findings

This section of the report presents the qualitative ‘success stories’ and experiences and also provides quantitative data to demonstrate where the programme had delivered significant improvements across the four quality domains.

Rationale: This section outlines the organisation’s rationale for adopting the programme, the organisational culture and working practices they seek to challenge; their experiences of implementing the programme; the improvements that were made as a result and the critical success factors and aspects of programme modules which contributed to these improvements.

4.1 Rationale

The majority of organisations had previously experienced success through implementing The Productive Ward and saw The Productive Operating Theatre as an opportunity to spread this success to their theatres. In the main organisations were seeking to make improvements with regards to a range of domains such as: value and efficiency, safety and reliability of care, patient experiences and outcomes, and staff well-being.

Some organisations had particular financial targets they wished to achieve however, for other organisations these were perceived as a secondary benefit and they were more focused on improving quality of care and/or the culture and environment. Organisations were keen to implement robust outcome measures to evidence improvement in these areas and monitor performance. Examples of specific drivers are summarised in Figure 4.

Figure 4. Examples of specific drivers

- **University Hospitals Bristol NHS Foundation Trust**: Financial savings were a primary focus, for example, cash releasing cost-savings which could be attained by improving waiting list management, thus reducing the demand for additional premium rate staff costs.

- **Cork University Hospital, Ireland**: The health services were undergoing a significant reconfiguration, consequently the CEO of the organisation requested that theatre teams engaged in the training programme to support staff to improve their working environments, and implement improved ways of working for the benefit of staff and patients.

- **Gateshead Health NHS Foundation Trust**: Following the success of The Productive Ward, the surgical leadership team were keen to achieve similar benefits within the operating theatre. The modern matron of the surgical ward, having had extensive experience of implementing The Productive Ward within the organisation, was considered the ideal person to lead the implementation of the programme.

- **Bay of Plenty District Health Board, New Zealand**: The organisation’s key driver was the need to challenge behavioural and cultural issues, and empower staff to have greater influence over decision making processes and drive improvements in their efficiency.

- **Central Manchester University Hospitals NHS Foundation Trust**: Similar to Gateshead, further to the huge success of The Productive Ward programme, the trust was keen to be involved at an early stage with the design and development of The Productive Operating Theatre, and so became a test site for it and co-produced the programme with the NHS Institute.
The Lean principles and the benefits realisation framework employed by the programme were particularly appealing to organisations. For example, University Hospitals Bristol developed a benefits realisation plan to illustrate how they could potentially attain efficiency savings from implementing the programme. This was later developed into a dashboard providing a robust measurement of performance. Figure 5 provides an example of how University Hospitals Bristol adopted the four key domains of the programme to develop their benefits realisation plan.

Figure 5. Example of University Hospitals Bristol’s Benefits Realisation Plan

- **Value and efficiency:** 95% of cases to commence within the allocated start time and to utilise 95% of all available sessions.
- **Safety and reliability of care:** adopt a balanced score card to improve efficiency to 95% but also use the WHO surgical checklist as standard practice to improve patient safety.
- **Patient experience:** reduction in last minute cancellations.
- **Staff well-being:** utilise the information in staff appraisals to plan improvements in rates of staff satisfaction.

### 4.2 Organisational culture and working practices

Organisations identified several issues with their ‘traditional’ working practices and the culture in which they operate. These have now to varying degrees been addressed and improvements have been made through the implementation of programme. These issues fell into three main categories:

- co-ordination of processes
- cultural issues (e.g. communication across different teams/professionals and staff empowerment)
- accountability.

#### Co-ordination of processes

Lack of co-ordination across the whole patient pathway and frequent delays in getting patients to theatre was highlighted as a key issue; often attributed to behavioural issues which impacted efficiency. Organisations resolved this issue by working through the Team-working module of the programme which supported staff to better manage conflict and escalate issues appropriately. One example of this is where a team ensured that the Trauma Co-ordinator and Recovery Nurse came into theatre every morning for the team briefing sessions, allowing them to co-ordinate the process much more effectively, and provide the appropriate information to the ward area; facilitating significantly improved co-ordination within theatres and also between the ward and theatres.
Cultural issues

The organisations reported lack of effective communication across different speciality teams, departmental and professional groups as well. Lack of staff empowerment was identified as a major issue that was tackled through implementation of the programme to overcome cultural issues. The culture has now changed, the programme has encouraged staff to come forward with ideas and communicate them across the wider team (see Figure 6. for specific example)

“We’ve actually got staff coming to us now and that’s never happened in the previous fifteen years I’ve worked in procurement. So it has actually changed the culture within theatres so we are much more pro-active rather than reactive in theatres.”

Figure 6. Example of improved communication

Central Manchester University Hospitals NHS Foundation Trust: As a result of the programme communication between all staff in theatres and procurement has dramatically improved, and these teams are now able to work together and come up with new systems and improved ways of working effectively. Prior to the programme being implemented the materials management team and procurement had difficulty engaging with theatre staff, whilst theatre staff had difficulty understanding the process and requirements to effectively manage stock.

Organisations believe that staff are now more empowered and are completely immersed in the programme, perceiving it as a vehicle to deliver change. Culture change is yet to be fully embedded in all theatres within organisations however, amongst those that have experienced significant cultural changes, good progress was reported. Furthermore, individuals are more able to raise concerns about issues and propose changes for improvement (see Figure 7. for examples from organisations).

Teams reported greater staff empowerment, the main reasons for this being improved team leadership, which has allowed staff to take greater ownership of their sections and be far more involved in the system

“I see a complete difference in certain people I work with now through this programme; that ‘can do attitude’ and that ‘want to do more....”

Figure 7. Examples of improvements in staff empowerment

- Gateshead Health NHS Foundation Trust: Experienced a shift in attitudes where staff are more empowered to express themselves and challenge those above them; this is evidenced in their culture questionnaire used as a tool to measure progress.

- Bay of Plenty District Health Board, New Zealand: Feedback from staff survey demonstrates improvements in morale, behaviours and attitudes and importantly staff feel involved and listened to.

- Cork University Hospital, Ireland: Staff felt more able to raise concerns and make suggestions for improvement. Furthermore, overall communication has improved.
Accountability
Organisations have found that all staff are taking greater responsibility for improving performance. The programme encourages and facilitates the notion that all staff (theatre practitioners, surgeons, anaesthetists, porters, cleaners etc.) are accountable for outcomes in theatres. This is in part a result of the introduction of ‘measurement for improvement’ in theatres and the greater involvement of staff in developing these. Senior leadership within the organisations have recognised and commended staff for their achievements; this has led to an improvement in staff wellbeing, as staff feel that their achievements are important not just to immediate colleagues, but to a range of stakeholders.

The above issues are discussed in greater detail in the sections 5.3 and 5.4

4.3 Experiences of implementing The Productive Operating Theatre
Organisations experienced a range of challenges with the set up and implementation of the programme in the following areas:
- clinical engagement
- change management
- differing healthcare systems
- financial and human resources.

These areas are discussed in more detail below.

Clinical engagement
The engagement and involvement of clinicians was one of the most common and significant challenges experienced by all organisations. Staff were sceptical of the programme, having been involved in previous programmes that have failed, and often perceive it as a management driven initiative to make them work harder. Efforts were, therefore, made to change people’s understanding of the purpose of the programme using a range of tools. A simple example being changing the label ‘increasing productivity’ to ‘improving ways of working to better the environment for both staff and patients’ in some organisations, and by introducing the strap line ‘building teams’ in Bay of Plenty, New Zealand.

Due to these efforts, over the course of the programme organisations have seen an increase in clinical engagement; another successful tool has been to demonstrate the value of the programme to staff. Quite simply, for some organisations, this has entailed walking the floors and providing information to staff in a way that articulates the benefits and contributions of their work (e.g. starting on time helps to leave earlier). In Central Manchester University Hospital, the use of staff champions to engage clinicians has proven successful.

“...often as a manager, seen as directing staff to do things [it is] sometimes better if it [direction] comes from within the team rather than top down.”
The skills taught and tools provided to staff in the Team-working module have helped to manage engagement difficulties. In addition, Team-work training focused on raising awareness of human factors which has engaged all theatre staff and clinicians (including surgeons and anaesthetists). Although there was initial resistance, staff feel more empowered to flatten the hierarchy in the operating theatre, to challenge medical staff, and drive forward change.

**Change management**

Delivering the change management plan required to implement The Productive Operating Theatre was particularly challenging for some organisations. Specific challenges experienced by organisations included the following.

- The scope of stakeholder engagement was significant. As the programme encompasses the whole patient pathway - from scheduling of surgery to discharge back to the ward, the culture shift required is extensive.

- The introduction of a programme lead (either from a clinical or service improvement background) was daunting for some, as this meant the introduction of a new member of staff into their team who would manage the implementation. For example, the new member of staff was either a new person who led the programme or provided support to a clinical member of the team who had taken on the lead role.

- Engaging management was an initial difficulty. Particularly helping them to understand their role in the programme and what was required from them to support and sustain it. For example, embedding the new ways of working into the day-to-day operational practices of clinical and administrative teams, and driving continuous improvement beyond the life of the programme.

- Operating theatres are an intensive area of work and senior clinical staff are reluctant to change their ‘traditional’ working practices.

- Additional pressures due to external financial drivers were experienced by a few organisations, mainly due to the wider financial climate; there were uncertainties about their future and significant changes to their team and to the management structures. The introduction of the programme was met with resistance and for some not seen as a priority. Figure 8. provides an example of how the programme supported an organisation to overcome challenges during times of uncertainty and turbulence.

**Figure 8. Overcoming challenges in times of uncertainty**

*Central Manchester University Hospitals NHS Foundation Trust:* as an organisation, was already experiencing major changes at the time the programme was introduced; two hospitals were merging. As a result of the merger, staff numbers were reduced by 30% which impacted directly on staff morale and importantly the experience, skills and expertise available within the organisation. Concerns were raised over the feasibility of implementing the programme at a time when the team structure and management was being completely rebuilt from scratch. However, it transpired that the programme provided the solution, as it equipped the organisation with a tool to successfully restructure theatre and management teams. In addition, it provided a positive focus at a time when they were busy with decommissioning and commissioning new theatres, therefore, allowing staff to look at areas that required improvement.
Differing healthcare systems
In New Zealand, the majority of clinical staff work both in the private and public sector and as such, have limited availability and engagement with the programme, therefore, their flexibility around scheduling is restricted. This was perceived to be an added challenge.

In Ireland the health care system is perceived to be far less flexible. This coupled with extensive pay cuts across the board built in additional challenges, making it more difficult to gain staff involvement and to keep staff motivated to improve efficiency of care in the absence of rewards for their efforts. Interestingly, motivation amongst staff to effectively engage in the programme increased once there was a greater understanding that the programme could support business cases for additional resources, through the collection and monitoring of key performance indicators as well as bringing about improvements in staff well-being and team working.

Financial and human resources
The current economic climate has had major financial implications for health care organisations at a national and international level. This has to some extent impacted on the implementation of the programme as organisations have struggled to test and implement changes due to limited staff availability, which has the potential to reduce the opportunity to achieve long term culture change.

4.4 Improvements
The organisations reported a range of improvements as a result of implementing the programme, these have been categorised into the following areas:

- data collection and measurement of performance
- organisation and standardisation of theatre equipment and consumables
- team working and communication
- efficiency.

These are discussed below in more detail.

Data collection and measurement of performance
The programme encourages staff to take a leading role in identifying appropriate measures and indicators to monitor performance. This has led to improvements in data collection methods and has resulted in more robust data being captured, and also improved staff ability to use data constructively to inform evidence based decision making. For example, in University Hospitals Bristol, data recording is now more accurate and representative of the activities taking place in theatre because staff are motivated by the opportunity to measure and improve safety in theatres.

“A lot of people feel work has been about figures, but there is validity in data cleansing and making sure you are giving a true reflection of what is going on.”
Central Manchester University Hospital have improved the coding of data and managed their consumables more closely. This has resulted in them being able to monitor their monthly spends more accurately and link increased expenditure to increased activity.

Organisations are now sharing information with all staff so they have greater visibility of the activity that takes place in theatres and feedback on performance is more constructive.

Improvements in data collection have enabled staff to identify issues which they may have previously been unaware of; thus problems which would otherwise go unsolved have been resolved. As a result there is a greater shared understanding of the factors which have an impact on outcomes.

Information boards such as Operational Status at a Glance board, the Vision board, and Knowing How We are Doing board, have all created a high level of understanding and ownership of both the operational and improvement work in theatres. Ultimately, staff are now able to see the value of the work and time that they have invested in the programme. Figure 9. provides specific examples of how organisations have shared information with staff.

**Figure 9. Examples of sharing information**

<table>
<thead>
<tr>
<th>Central Manchester University Hospitals NHS Foundation Trust: Data collected on efficiency and productivity showed an opportunity for improvement and this was shared with individuals where improvements were needed. This also provided a means for staff to benchmark their team against other theatres and departments and make comparisons across the whole organisation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cork University Hospital, Ireland: Registrars have put an “Orthopaedics shared folder” on computers so that everyone can access information regarding the running of the theatre e.g. cancellations, blood results etc; this has helped increase efficiency.</td>
</tr>
</tbody>
</table>

**Organisation and standardisation of theatre equipment and consumables**

The programme highlighted organisations’ needs to review the physical environment they work in and assess how aspects of the environment impact on safety and efficiency. Organisations were quickly able to identify that their environment was cluttered and disorganised. For example, consumables and equipment were not labelled; there was lack of information regarding stock levels, issues regarding access to equipment and drugs, and lack of space to store stock.

“When staff are doing something every day they don’t notice the environment they work in, for instance ‘waste walks’; and staff watching the video back...staff didn’t realise how cluttered the environment was...such as trolleys in the way.”

Gateshead has managed to move from four store cupboards to one, with all equipment labelled and standardised. By virtue of the new ‘theatre user groups’ equipment is now standardised through the collaboration of the ‘materials management’ and theatre management teams. Prior to this, theatres used their own products based on surgeons’ preferences.
Some organisations have also rationalised types of stock and renegotiated contracts across the whole trust as opposed to theatre by theatre to drive efficiencies. In addition, one of the pharmacy departments organised deliveries of intra venous fluids direct from the manufactures to the theatre complex instead of to the pharmacy. Staff at North Tees and Hartlepool cleared out all utility and anaesthetic rooms and agreed what level of stock should be held. For example, staff looked at average use over a week and adapted stock lists accordingly and labelled shelves with items and recommended stock levels. Figure 10. provides examples of the financial savings made by Gateshead and North Tees and Hartlepool with regards to improvements in stock control.

**Figure 10. Financial savings from case studies**

**Gateshead Health NHS Foundation Trust:** Reduced two theatre drug stores to just one saving over £17,000; with an additional £22,000 saving through reductions in Paracetamol IV and oral Paracetamol by restricting the use of costly anaesthetic gas Sevoflurane.

**North Tees and Hartlepool NHS Foundation Trust:** Saved £65,000 by returning unwanted stock from five theatre utility rooms.

Central Manchester University Hospital, Children’s hospital stock room is now organised alphabetically so staff can locate items quickly, saving both time and stress. Figure 11. provides a summary of the financial savings Central Manchester University Hospitals achieved by implementing improvements in the process of organising and standardising theatre equipment and consumables.

**Figure 11. Financial savings**

**Central Manchester University Hospitals NHS Foundation Trust** achieved the following financial savings through generating efficiency gains.

- Financial reimbursement of £35,000 (equivalent to 7.5% of consumable budget) through a reduction in stock held within children’s theatres.
- Reduction of overstock due to reorganisation and labelling of store room of £68,000 (equivalent to 12% of total stock holding within children’s theatres).
- Recurrent cost reduction in expenditure achieved through the introduction of full materials management enabling ongoing improvements such as rationalisation of product lines and improved contracts. A further reduction of £58,000 in the cost of stock held from March to December 2011 (a further 12% reduction in cost of stock compared to March 2011) within children’s theatres.

**Team-working and communication**

Significant improvements have been achieved in team culture, behaviour and empowerment as a result of better team working. The programme has provided staff with greater scope to ask questions, challenge issues and share new ideas. In addition, organisations have reported that there is a greater understanding of what the term ‘team’ means. Staff are also realising the benefits of working as a team. Overall this has contributed to strengthening relationships and communication within and across teams.
‘We’re all there to achieve the same goals and there are no individuals [goals].’

A range of tools have been tested and implemented in organisations to improve team working and communication, for example, the use of ‘daily huddles’ provides an opportunity to provide face to face information on operational issues and take a view on the activities for the day ahead. Greater team spirits in theatre has been facilitated by providing the opportunity to take time to discuss the performance of the theatre.

“There is enormous value in allowing people to do that [sit down and have a discussion]. The consumable [Consumables and Equipment] module is taking on leagues of its own as people are sitting down for the first time and thinking ‘how do we actually want to organise this’ as opposed to just doing it”.

The implementation of team briefing and debriefing has emphasised the importance of having team discussions and opportunities to talk about the processes in departments. Previously staff did not get this valuable opportunity. Figure 12. provides evidence of the impact of effective communication on staff briefing rates, with Figure 13. providing evidence for the impact on staff safety attitudes as a result of staff briefings.

**Figure 12. Staff briefing rates**

<table>
<thead>
<tr>
<th>Trust</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gateshead Health NHS Foundation Trust</td>
<td>100% team briefing rate achieved between August 2010 - December 2011 (for all but one month)</td>
</tr>
<tr>
<td>Central Manchester University Hospitals NHS Foundation Trust</td>
<td>The Trust’s team briefing compliance increased from 85% to 100% between April 2009 and May 2010.</td>
</tr>
<tr>
<td>University Hospitals Bristol NHS Foundation Trust</td>
<td>The level of team brief implementation increased from 81% to 95% between April 2010 and February 2011. This has been consistently achieved since then for 10 of 12 months.</td>
</tr>
<tr>
<td>North Tees and Hartlepool NHS Foundation Trust</td>
<td>98% of briefings were completed but only 75% of debriefs. Debriefs have increased by 10% in 2010 as a result of the programme.</td>
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</table>

**Figure 13. Safety attitude score**

<table>
<thead>
<tr>
<th>Trust</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Manchester University Hospitals NHS Foundation Trust</td>
<td>25% increase in “Team Work Climate” mean score (56 and 70)</td>
</tr>
<tr>
<td></td>
<td>20% increase in “Safety Climate” mean score (54 and 65)</td>
</tr>
<tr>
<td></td>
<td>27% increase in “Job Satisfaction” mean score (48 and 61).</td>
</tr>
</tbody>
</table>

Gateshead Health NHS Foundation Trust has adopted a ‘culture’ questionnaire which was administered to staff at the beginning, middle and end of the programme. It has been used as a measurement tool and has demonstrated a cultural shift over the duration of the programme. Communicating the scores from the questionnaire to staff has enabled them to better understand the improvements which have been made and which areas still require development.

Team working and staff wellbeing has improved as a result of the programme and this is reflected in staff appraisals and sickness levels – with an associated decrease in the use of bank staff. Figure 14. provides an example of improved sickness rates and its impact on staff bank hours.
Figure 14. Staff sickness rates and bank hours

Gateshead Health NHS Foundation Trust: The staff sickness rate has fallen over the last three years from 13.33% to 3.53% between 2010 and 2012 which represents an overall reduction of nearly 74%. Correspondingly, within the same time period, the Trust has seen a reduction of 72% in staff bank hours from 1,220 to 339.

North Tees and Hartlepool NHS Foundation Trust produces a leaflet containing the latest news on the programme. The leaflet is stapled to monthly payslips to ensure that every member of staff in the operating theatre is kept up to date and informed of the latest progress and events happening within the programme.

University Hospitals Bristol run ‘sharing events’ every three months and these are attended by sponsors, divisional leads, divisional managers, consultants and the programme steering group. The event provides a forum for each team to update each other on progress, what they are aiming to achieve and the challenges they have experienced. It also provides an opportunity for senior management to hear about progress and visibly support the teams. In addition, at the events staff are nominated to receive rewards based on demonstrating ‘excellence’ in their working practices. The Productive Operating Theatre has been the driver for facilitating the set up of the events and has enabled staff to gain recognition for their efforts.

In Central Manchester University Hospital the Team-working module has allowed theatre staff to examine reasons for delays in patient flow and given them the tools to address areas in need of improvement. In doing so, it has provided the opportunity to involve staff at all levels of the team (including junior and consultant level clinicians) and has facilitated improvements in staff engagement. Figure 15. provides a summary of increases in staff engagement by role.

Figure 15. Staff engagement levels by role

Central Manchester University Hospitals NHS Foundation Trust: For staff that are actively involved in the programme, the staff engagement level has increased from July 2009 to July 2010:

- Theatre staff - 7% to 98%
- Anaesthetists - 20% to 80%
- Surgeons - 6% to 75%
- Management - 66% to 100%

Improvements in team working and communication have had a positive impact on aspects of patient safety, with University Hospital Bristol achieving constancy in compliance with Venous Thrombo Embolus and antibiotic checks. Figure 16. provides a summary of evidence illustrating these improvements.
University Hospitals Bristol NHS Foundation Trust: The Trust aimed to achieve 95% of patients will receive a Venous Thrombo Embolus (VTE) risk assessment. The Trust’s VTE compliance rate increased from 72% to 95% between April 2010 and February 2011. From February 2011 and January 2012, the Trust consistently achieved its target during 11 of these 12 months.

The Trust aimed to achieve a target of 95% of patients to be given antibiotics within 60 minutes prior to incision when clinically indicated. The Trust’s antibiotic compliance rate increased from 76% to 94% between April 2010 and August 2011. From September 2011 to January 2012, the Trust has consistently achieved its target for all of these five months.

Efficiency

All organisations have achieved significant improvements in theatre utilisation as a result of improving the number of sessions that start on time and decreasing the number of patient cancellations. The programme has equipped organisations with tools to gain greater insight into the problems, and provided the tools and techniques to enable them to improve efficiency by reviewing their current processes and identifying areas for improvement.

Organisations have adopted a range of solutions to improve their processes to increase efficiency such as:

• staggering lunch breaks to ensure the continuity of patient flow through theatres
• designated theatre co-ordinator to manage the theatre list every day and mitigate issues as they arise, provide updates on progress to other teams along the patient pathway
• standardised tools for handovers between teams along the patient pathway
• walking patients to theatre (as opposed to being transported by trolley) to save portering time
• implementing a prospective session planning tool, which tracks session usage, and helps improve scheduling.

University Hospitals Bristol developed and implemented a ‘Short Notice Protocol’ for second eye cataract patients, whereby, should there be a cancellation, patients can be brought in for operation with one hour notice; this enables better utilisation of operating theatres. The success of the protocol has encouraged the team to extend this approach to plastic surgery patients. Figure 17. provides evidence of improved theatre session utilisation rates as a result of the programme.

Figure 17. – Theatre session utilisation rates

Gateshead Health NHS Foundation Trust: Increased list utilisation rates for all specialties from 89% to 92% between January 2010 and September 2011 (the data is based on actual procedure times from anaesthetic start time to leave theatre time for each patient, therefore does not take into account turnaround times).

Bay of Plenty District Health Board, New Zealand: The hospital achieved a session utilisation rate of 90% or over consistently between July 2010 and February 2012. Similarly, the hospital demonstrated a low cancellation rate as a percentage of total elective operations of between 3% and 5%.

University Hospitals Bristol NHS Foundation Trust: The Trust achieved its target for usage of elective theatre sessions of 90% for 2010/11 and 95% for 2011/12. Between April 2010 and January 2012, the Trust achieved its target during 19 of these 22 months.
The programme has improved session start times by helping organisations identify where delays within the patient pathway exist by undertaking process mapping. For some, this involved examining current practice by following patients to theatre from admission and identifying delays and areas requiring improvement, (using Video Waste Walk and Activity Follow(s)). Communicating the start time to all staff, ensuring patients arrive in theatre on time, and having all staff present and ready to go, were the key interventions that supported starting on time.

North Tees and Hartlepool Trust used the Team-working module to reduce late starts by ensuring everyone was in their theatre 30 minutes before the start of the operating list to conduct a team briefing. Furthermore, they introduced the use of electronic diaries as part of the Operational Status at a Glance module to help eliminate errors with ordering loan kits. Staff in the booking office used red, green and yellow colour coding as a visual tool to indicate what stage in the preparation process each patient was. Cancellations due to delays in receiving loan kit have been significantly reduced by the use of electronic diaries.

Cork University Hospital improved start times by testing and implementing a process whereby the ward is contacted the night before and told which patient is first on the list. The first patient is then ready when theatres ask for them. Figure 18. provides evidence to demonstrate improvements in start times.

Figure 18. Start times

- **North Tees and Hartlepool NHS Foundation Trust:** During the two years from April 2010 to February 2012, the percentage of lists starting late (>15 minutes late) has reduced from 82% to 44%.
- **Central Manchester University Hospitals NHS Foundation Trust:** Improvements in theatre efficiency were initiated by improving start times from 20% to 40% between December 2010 and July 2011.
- **University Hospitals Bristol NHS Foundation Trust:** The Trust’s session start time rate increased from 49% in April 2010 to 76% in January 2012. There is work underway to reaching the target figure of 95%.

Some organisations experienced high rates of patient cancellations. This was the case for Bay of Plenty District Health Board in day surgery, mainly due to patients being unwell (averaging 12 per month). They have now implemented measures to reduce this and as a result, have only received three cancellations per month over a four month period.

Similarly North Tees and Hartlepool Trust have achieved improvements over the two years from April 2010 and February 2012 across the Trust, with a reduction from 6.5% to 5.9% in patient cancellation on the day of surgery.

### 4.5 Critical success factors

The organisations identified a number of critical factors for ensuring the success of the programme. They also made suggestions about improvements to the modules and future development ideas for the programme.
Critical success factors

Leadership engagement and strategic alignment were considered the most important critical success factors. Managers are also seen as being key to success as they have the responsibility of driving the cultural change required. Moreover, it is essential that staff are able to see the commitment from senior management in order to motivate them.

Clinical engagement, although present to some degree, has increased as a result of working through The Productive Operating Theatre. However, the organisations are actively looking to increase awareness and understanding to increase participation and involvement. The degree of clinical engagement tends to remain a major challenge for some. One organisation suggested that different professional groups should have different levels of engagement in each of the modules for it to succeed, for example, a surgeon may not need to be involved in changes made to a store room, through the Well Organised Theatre module, but would play a key role in the implementation of briefing and debriefing in the theatre, featured in the Team-working module.

Improved level of capability and knowledge was also seen as a critical success factor. Specifically staff understanding of the approach to improvement (the model for improvement) and crucially an understanding of measurement principles advocated in the programme, such as the ‘seven steps to measurement’. Individuals with programme and project management skills also make a vital contribution to drive the programme forward and keep progress on track. Experience within the team of other Productive programmes is helpful; often organisations have had previous experience with implementation of The Productive Ward. An understanding of Lean principles is advantageous, but not essential as the programme tools use this as the foundation on which the programme was designed.

Availability of resources was also mentioned as essential. There is a requirement for dedicated human and financial resources to set up and initiate the programme. Dedicated programme leadership resource is crucial however, though this person can be from either a clinical or from a service improvement background.

Clinicians played a vital role in the programme’s success. However this does not necessarily involve additional time commitment. Clinicians used their time creatively being advocates for change, influencing colleagues and being willing to test and develop new ways of working, much of which can be built into the daily work so their additional time commitment can be much less than expected.

The Executive Lead must dedicate sufficient time to lead the steering group, be an advocate for the programme with Board colleagues, and make time to be visible to staff in theatres to actively support the programme.

Often the initial financial outlay is recouped in the early stages of the programme through implementation of the Well Organised Theatre module. It was recognised that particularly in the current financial climate, when resources are limited, organisations need to demonstrate the impact of the programme on performance. The best way to achieve this is to be clear as an organisation at the start of the programme about the benefit opportunity that the programme is required to deliver. Understanding the benefits prior to launching the programme helped organisations focus their resources more effectively, and helped build a case for additional resources if required.
4.6 Programme modules

It is difficult to ascertain which particular programme modules were of most value as this tended to vary depending on the organisational context. However, the most commonly mentioned included:

- Knowing How We Are Doing
- Well Organised Theatre
- Scheduling
- Team-working.

Visioning session: There were mixed views regarding the Visioning Session for example, some found it a valuable opportunity to bring together a range of professions to share experiences and learning in terms of issues and problem solving strategies. Others however felt it to be too long an event where clinicians tended at times to disengage with the exercises. There was also the suggestion that there should be a more localised, personalised approach to the programme initiation, as organisations vary in size and professionals may not always share the same perspectives.

Benefits realisation: One organisation suggested that the benefits realisation could be centrally managed by the NHS Institute – for example, agreeing national benchmarking criteria (e.g. 85% utilisation); increasing visibility of other organisations’ progress (e.g. via dashboards) could also be a valuable resource for sharing best practice.

Other organisations commented on the diverse contextual factors and the policy environment in which they operate, and that these needed to be taken into consideration and modules adjusted accordingly (e.g. for non NHS England organisations).

Some suggested that the NHS Institute should develop a module which supports organisations to gain a greater depth of understanding regarding the financial benefits of the programme, and how to extract and utilise appropriate performance information to do this.

The evaluation found that in implementing the programme, the pace of change and ability to implement actions needs to be managed from the outset with realistic expectations being set. Some organisations have learnt that initial over enthusiasm and their inability to measure their improvements against expectations can result in disappointment and lead to de-motivation.
5.0 Conclusion

The evaluation concludes that significant improvements in quality and safety can be achieved through implementation of The Productive Operating Theatre.

Key messages

• Benefits realisation
  At programme initiation, establish a clear understanding of the benefit opportunity open to the organisation. This process will not only provide purpose and direction to the programme, but also provide confidence in the potential return on investment, ensuring the business case is more robust from the outset.

• Critical Success Factors
  Important elements that need to be in place to ensure long terms success and sustainability of the programme outputs:
  o Leadership engagement and strategic alignment
  o Clinical engagement
  o Improved level of capability and knowledge
  o Availability of resources

• Long term quality of care strategy rather than short term financial gains
  The evidence demonstrated that successful organisations employed a clear vision achieved with staff, which was communicated and articulated to all staff, and became the driver for change in the organisation.
6.0 Appendix 1 — Discussion guide

A. Rationale
1. Why did your organisation decide to take part in The Productive Operating Theatre programme?
   • Where did you first hear about The Productive Operating Theatre programme? Whose idea was it to engage in the programme?
   • What issues did you want to address?
   • How did you think The Productive Operating Theatre programme could help with these?
   • What did you hope to achieve from the programme?

2. How did the theatre(s) work before engaging in the programme?
   • In terms of: efficiency, patient experience, safety and reliability and team work?
   • Can you describe how management/leadership and how the team was previously structured?

B. Challenges
3. What have been the challenges in taking part in and implementing the programme?
   • What were the challenges? Who and what did they effect/impact on most?
   • What were the most significant challenges?
   • Were they anticipated/expected at all?
   • How were the challenges overcome? What strategies/measure did you put in place to manage them?
   • Have these difficulties been completely addressed now? If not, what is being done about it?

C. Organisational change
4. What changes has the programme brought about in terms of culture, environment, behaviours and attitudes of the theatre teams and relevant staff?
   • Give some examples of the above and describe the drivers for change.
   • Are staff able to make suggestions for improvement and have they been listened to?
   • Can you provide examples?
D. Success factors
5. The NHS Institute has identified a number of critical success factors for successful implementation. Were these present in the organisation before implementing the programme?

- Clinical engagement?
- Leadership engagement?
- Strategic Alignment?
- Clearly defined governance structure?
- Improvement capability and knowledge?
- Resourcing?
- Measurement?
  - How (if at all) did these aid your success? In what ways?
  - Has the programme had any impact on these?

6. What are your greatest successes achieved as a result of the programme?

- What are they? Who do they involve?
- What were the key drivers of your success as an organisation? What were the factors that led to your success?
- What impact have they had and on whom?

E. Improvements
7. What improvements has the programme contributed to (in both the long and short term)? Such as with regards to:

- team-work?
- patient experience?
- value and efficiency?
- safety and reliability?
- any other areas?
- what evidence do you have to demonstrate these improvements?

8. Have you achieved your aims and objectives for the programme?

- If yes, which ones? How were these met?
- If no, why not? How do you think these can be met?
- Has the programme met your expectations? In what ways?
F. The NHS Institute and The Productive Operating Theatre programme

9. Of all the modules, which one(s) was the most valuable and why?
   • Which one was the least helpful and why?

10. Are there any other issues which you would like to raise?
# 7.0 Appendix 2  – Summary of quantitative data sources

## University Hospitals Bristol NHS Foundation Trust

<table>
<thead>
<tr>
<th>Theatre utilisation</th>
<th>Elective theatre session usage</th>
<th>Sessions starting with 15 minutes of booked session start time</th>
<th>Last minute cancellations</th>
<th>Session late finishes</th>
<th>Actual procedure time of elective lists</th>
<th>Number of patients – operations completed (emergency and elective cases)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Staffing &amp; patients</th>
<th>Team safety briefing</th>
<th>Antibiotic compliance</th>
<th>VTE compliance</th>
<th>Staff appraisal compliance</th>
<th>Staff training (statutory and mandatory)</th>
<th>WHO checklist</th>
<th>Glucose compliance</th>
<th>Normothermia compliance</th>
<th>Staff sickness rates</th>
</tr>
</thead>
</table>

## Central Manchester University Hospitals NHS Foundation Trust

<table>
<thead>
<tr>
<th>Finance</th>
<th>Financial reimbursement through reduction in stock</th>
<th>Financial savings through reduction in overstock due to reorganisation and labelling in store rooms</th>
<th>Recurrent cost reduction through materials management</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Theatre utilisation</th>
<th>Theatre start times (morning lists)</th>
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<table>
<thead>
<tr>
<th>Staffing and patients</th>
<th>Staff Attitude Questionnaire (SAQ) survey</th>
<th>Staff team briefing</th>
<th>Staff engagement level in the programme</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Data collection</th>
<th>Improved coding through introduction of materials management data</th>
<th>Colour coded labelling to aid staff time spent searching for items</th>
</tr>
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</table>

## Gateshead Health NHS Foundation Trust

<table>
<thead>
<tr>
<th>Finance</th>
<th>Monetary saving through monitoring of theatre utilisation</th>
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<thead>
<tr>
<th>Theatre utilisation</th>
<th>Theatre utilisation rates</th>
<th>Cancelled operations</th>
<th>Day of surgery admissions</th>
<th>Safer surgery compliance</th>
<th>Theatre 2 (elective) start and finish comparison</th>
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<thead>
<tr>
<th>Staffing &amp; patients</th>
<th>Staff briefing rate</th>
<th>Staff sickness rate</th>
<th>Staff bank hours</th>
<th>Staff injuries referred to Occupational Health</th>
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<table>
<thead>
<tr>
<th>Other</th>
<th>Never event</th>
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</table>
### Bay of Plentry District Health Board, New Zealand

<table>
<thead>
<tr>
<th>Theatre utilisation</th>
<th>Theatre session utilisation rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cancellation rate</td>
</tr>
<tr>
<td></td>
<td>Monthly measures – theatre turnaround (minutes), percentage late starts, percentage on time starts, total operations</td>
</tr>
</tbody>
</table>

#### Staffing and patients

<table>
<thead>
<tr>
<th>Surgical Admission Unit (SAU) patient satisfaction survey (July 2010 &amp; February 2012)</th>
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<tbody>
<tr>
<td>Staff safety culture survey (October 2010 &amp; December 2011)</td>
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#### Other

| Computer solutions survey               |

### North Tees and Hartlepool NHS Foundation Trust

<table>
<thead>
<tr>
<th>Theatre utilisation</th>
<th>Percentage lists starting late (&gt;15 minutes late)</th>
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<tbody>
<tr>
<td></td>
<td>Percentage patients cancellation on day of surgery</td>
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<td>Run time utilisation</td>
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<td>Theatre start time measure</td>
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<td>Op time utilisation</td>
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#### Staffing and patients

<table>
<thead>
<tr>
<th>WHO checklist audit results</th>
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<td>Staff briefing and debriefing completion measure</td>
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