Step Guide to Improving Operating Theatre Performance

NHS Modernisation Agency
Theatre Programme
### Operating Theatre & Pre-operative Assessment Programme National Team

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June 2002
Dear Colleague

Step Guide to Improving Operating Theatre Performance

Improving the performance of operating theatres is key to improving services for patients. More efficient use of operating theatres will reduce waiting times for treatment and cancelled operations. Effective scheduling of operations will further reduce cancellations.

Since June 2001, nine NHS Modernisation Agency Theatre Programme pilot sites have been developing and testing key performance indicators, diagnostic tools and improvements to services for patients. Clinicians and managers have worked together to develop good practice in the pilot sites. Ideas for improvement have also come from other NHS Trusts and from patient, professional and government organisations.

In December 2001, the NHS Modernisation Agency published, Tackling Cancelled Operations, interim guidance from the Theatre Programme. The enclosed Step Guide to Improving Operating Theatre Performance is the culmination of the Theatre Programme work over the past year. It contains diagnostic tools and common sense, practical solutions to help NHS Trusts improve services for patients.

Services to patients can only be improved if operating theatres are not seen in isolation. The patient’s surgical journey is complex and crosses many boundaries. Improving operating theatre performance must be seen in the context of a wider system, including pre-operative assessment, elective and emergency admissions, bed management and discharge planning. Improvement programmes should be linked at NHS Trust, Strategic Health Authority and national levels to ensure a whole systems approach.

NHS Trusts can significantly improve services to patients by implementing the basic good practice set out in the Step Guide as part of a whole system approach to performance improvement.

Yours sincerely

DAVID FILLINGHAM
Director

The NHS Modernisation Agency is part of the Department of Health
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Supporting documents in the Step Guide folder

Results from the Cancelled Operations Diagnostic Tool

Diagnostic tool user manuals
Key Performance Indicators
Cancelled Operations
Had an Operation?
Working in Theatres
Theatre Performance

Theatre Programme Website

Electronic copies of the following documents are available on www.modern.nhs.uk/theatreprogramme:

- Step Guide to Improving Operating Theatre Performance
- Tackling Cancelled Operations
- Results from the Cancelled Operations Diagnostic Tool
- Theatre Programme diagnostic tools & user manuals
- Audit Commission TheatreKit
- Examples of good practice documents.
Patients want short waiting times and to have the operation on the agreed date.

Improving the performance of operating theatres is key to achieving shorter waiting times for treatment, implementing booking of elective operations and reducing cancelled operations. Change can only be implemented successfully if employees are fully engaged in the change process and are able and willing to make the changes required.

A Theatre Programme was established in March 2001 to improve operating theatre performance. Our objectives are to improve:

- Patient experience – by reducing delays and cancelled operations.
- Employee satisfaction and morale.
- Operating theatre performance for elective and emergency surgery.
- Quality – by reducing emergency surgery between midnight and 8am.

Since June 2001, nine Theatre Programme pilot sites have been developing and testing key performance indicators (KPIs), diagnostic tools and improvements to services for patients. Clinicians and managers have worked together to develop good practice in the pilot sites. Ideas for improvement have also come from other NHS Trusts and from patient, professional and government organisations.

In December 2001 we published interim guidance, *Tackling Cancelled Operations*. The *Step Guide* is the culmination of our work over the past year. It contains diagnostic tools and common sense, practical solutions to help NHS Trusts improve operating theatre performance. Some NHS Trusts will already be implementing much of this guidance. But our experience shows that, although there are many examples of outstanding practice, few NHS Trusts have succeeded in spreading good practice across all theatres or all specialties. We hope that all NHS Trusts will find that the *Step Guide* offers some new ideas for improving services for patients.

Services to patients cannot be improved if operating theatres are seen in isolation. The patient’s surgical journey is complex and crosses many boundaries. Improving operating theatre performance must be seen in the context of a wider system, including pre-operative assessment, elective and emergency admissions, bed management and discharge planning. Improvement programmes should be linked at NHS Trust, Strategic Health Authority and National levels to ensure a whole systems approach.

We thank everyone who has contributed to the development and publication of the *Step Guide to Improving Operating Theatre Performance*.
How to use the Step Guide

**Step 1 – Planning & management**
Set up management structures; agree information requirements; agree management policies and procedures.

**Step 2 – Diagnosis & analysis**
Monitor performance using key performance indicators (KPIs); diagnose and analyse problems using diagnostic tools and patient process mapping.

**Step 3 – Improving operating theatre performance**
Redesign services to improve the patient experience, optimise human resources and improve elective and emergency surgery.

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<td>Reduce cancelled operations; improve the patient experience.</td>
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**Step 4 – Scheduling**
Schedule operations to make optimum use of resources and reduce the risk of cancelled operations.
The Step Guide contains four steps to help NHS Trusts improve operating theatre performance (see diagram on page 5). NHS Trusts are recommended to follow the steps in order. This will ensure that planning and management structures are established (Step 1), performance monitored and problems diagnosed and analysed (Step 2), before changes are made to services (Step 3). Finally, operations can be scheduled to optimise resources and further reduce the risk of cancelled operations (Step 4).

**Step 1 Planning & management**

Step 1 recommends planning and management structures to support effective planning and management of operating theatre performance, including implementation of systems to report regularly on key performance indicators. This step covers:

- Actions for NHS Trust Boards.
- The role and membership of the Theatre Management Group.
- Theatre policy documents.
- Examples of effective practice.

**Step 2 Diagnosis & analysis**

Step 2 recommends rigorous monitoring of performance, and thorough diagnosis and analysis of problems, before taking action to improve performance. The Theatre Programme’s **Key Performance Indicator Tool** can be used to monitor performance, highlight where action is needed to improve performance, and track progress to ensure that interventions have achieved the desired outcome.

The Theatre Programme’s **Cancelled Operations, Had an Operation?, Working in Theatres** and **Theatre Performance** diagnostic tools, along with **patient process mapping**, can be used to diagnose and analyse problems:

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Analysis of information on **theatre & list utilisation** is discussed in detail on pages 19 to 21.

All diagnostic tools and user manuals are available on [www.modern.nhs.uk/theatreprogramme/tools](http://www.modern.nhs.uk/theatreprogramme/tools)
Step 3 Improving operating theatre performance (page 25)

Step 3 recommends actions that can be taken to improve performance where issues have been identified in Step 2. Step 3 first describes how proven methods for redesigning services can be used to test new ideas and implement changes. Further diagnosis, recommended actions and examples of effective practice are set out in three sub-steps:

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Step 4 Scheduling (page 61)

Step 4 recommends ten stages to effective scheduling. Implementing Step 4 will optimise use of available resources such as theatres, equipment and beds. In addition, effective scheduling further reduces the risk of cancelled operations.
# Step 1 Planning & management

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Planning & management

Effective planning and management is essential to improve services for patients, ensure optimum use of existing theatre capacity, maximise operating theatre performance and avoid cancelled operations.

Planning and management of theatre performance is effective where:

- There is a Theatre Management Group with strong leadership, appropriate membership and the authority to take action.
- Information about theatre performance is available on a monthly basis and action is taken to improve performance.
- There is clear communication and co-ordination between managers, surgeons, anaesthetists, theatres, pre-operative assessment, wards and bed managers.
- Modernisation projects are coordinated eg pre-operative assessment, booking, emergency services, collaboratives, action on programmes, discharge planning.
- Elective and emergency theatre time allocation is responsive to changing demand and casemix at NHS Trust, specialty and consultant level.
- Pre-operative assessment takes place early in the patient’s journey so that requirements for essential resources are known in advance of the operation date.
- Scheduling is in place and takes account of the availability of essential resources such as ward beds.

Actions for NHS Trust Boards

Recommended actions for NHS Trust Boards:

- Underline the importance of theatre management and performance by nominating an executive director responsible for theatre performance and cancelled operations. The director should be a member of the Theatre Management Group (see below) and present regular reports to the Board.
- Set targets for operating theatre performance and use the Key Performance Indicator Tool to monitor performance each month.
- Discuss theatre performance each quarter, eg focusing on:
  - Achievements and/or lack of progress against targets.
  - Action for improvement.
  - Matching demand and capacity for emergency and elective work for each specialty, including how any backlog will be dealt with.
Role of the Theatre Management Group

The Theatre Management Group is responsible for strategic planning, monitoring and management of theatre performance (see box below).

In medium-sized and large NHS Trusts, the Theatre Management Group is likely to be supported by sub-groups (eg Theatre Users Groups) that focus on issues such as policy development, operational management, business cases for new equipment, health and safety, supplies and equipment, information and communications. Sub-groups may also be needed for NHS Trusts where theatres are located in more than one site. Sub-groups would submit progress reports, action plans, business cases, policies and so on to the Theatre Management Group for information and agreement. This will allow the Theatre Management Group to concentrate on strategic issues, and sub-groups such as Theatre Users Groups to concentrate on operational issues.

In smaller NHS Trusts, the Theatre Management Group may be combined with sub-groups responsible for operational issues (eg the Theatre Users Group).

Recommended role of the Theatre Management Group:

- Agree the terms of reference for sub-groups as appropriate eg the Theatre Users Group.
- Ensure that theatre policy documents are agreed and that policies are adhered to.
- Monitor and manage theatre performance and cancelled operations on an exception basis, using the Key Performance Indicator Tool and benchmarking information.
- Use the Cancelled Operations, Had an Operation?, Working in Theatres and Theatre Performance diagnostic tools to understand the causes of any problem.
- Monitor the quality of theatre management, using the Working in Theatres Diagnostic Tool to diagnose staff satisfaction and involvement.
- Make results from key performance indicators (KPIs) and diagnostic tools available to all relevant clinical directorates and individual theatre users.
- Agree action plans to tackle problems highlighted by KPIs and diagnostic tools and recommended by sub-groups.
- Monitor action taken to improve performance and track progress using the Key Performance Indicator Tool and the relevant diagnostic tool.
- Strategic planning of operating theatres, including demand and capacity required to meet planned activity levels.
- Agree business cases for new treatments and equipment.
- Agree reports on theatre performance to be presented to the Trust Board.
- Agree and monitor education and training strategy.
Membership of the Theatre Management Group

Membership of the Theatre Management Group will depend on the size and structure of each NHS Trust and the existence of sub-groups responsible for operational and other issues. The box below suggests recommended core and co-opted members of the Theatre Management Group.

**Recommended core membership:**
- Chair who carries authority with clinicians and managers eg medical director, divisional clinical director.
- Lead director for theatre performance and cancelled operations.
- Lead surgeon.
- Lead anaesthetist.
- Lead emergency clinician.
- Professional lead for non-medical theatre staff (nurses and operating department practitioners).
- Senior manager responsible for the NHS Plan cancelled operations guarantee.
- Person responsible for operational management of theatres.
- Person responsible for day surgery.
- Person responsible for service planning.
- Primary Care Trust member eg director of commissioning.

**Members who could be co-opted as necessary:**
- Patient representative eg Patient Advisory & Liaison Service (PALS).
- Human resources manager.
- Education & training manager.
- Lead clinicians for specific specialties.
- Lead managers for specific specialties.
- Lead for critical care.
- Critical care network manager.
- Lead for clinical governance.
- Person responsible for pre-operative assessment.
- Person responsible for portering services.
- Lead person for modernisation.
- Person responsible for waiting list management.
- Bed manager/admissions coordinator.
- Health & safety manager.
- Decontamination services manager.
- Lead for infection control.
- Information manager.
- Finance manager.
Theatre policy documents

The Theatre Management Group is responsible for ensuring that theatre policies are agreed, adhered to and kept up-to-date. Recommended theatre policies are described in the box below. Examples of theatre policy documents are available from www.modern.nhs.uk/theatreprogramme.

**Recommended theatre policies:**

- **Role of the Theatre Management Group and any sub-groups.**

- **Arrangements for leave of absence:**
  - Procedure for formal agreement of an employee’s leave of absence.
  - Maximum number of employees who can take leave at any one time.
  - A minimum of six weeks notice for planned absence.
  - Named individual to whom notice of leave should be given eg theatre manager/scheduler.
  - Named individual responsible for disseminating information about absence to Theatre Management Group, theatre users etc.

- **Arrangements for theatre lists:**
  - Procedures for compiling theatre lists.
  - How lists should be communicated to theatres and wards.
  - Latest time for receiving lists in theatre department and wards.
  - Procedures for notifying all relevant staff of changes to lists.
  - Definitions for list start and finish times (eg the anaesthetic for the first patient on the list will commence no later than 09:00).

- **Arrangements for cancellation or reallocation of lists:**
  - Procedure for reallocating lists.
  - Named individual (eg theatre manager/scheduler) responsible for reallocating or cancelling lists.
  - Named individual responsible for disseminating information about reallocated or cancelled lists to Theatre Management Group, theatre users etc.

- **Arrangements for emergency and trauma cases (NCEPOD 1 & 2), including a protocol for NCEPOD classification of emergency operations and a protocol for NCEPOD 1 operations after midnight. (See NCEPOD definitions on page 74.)**

- **Arrangements for NCEPOD 3 cases.** (See NCEPOD definitions on page 74. NCEPOD 3 cases are often described as ‘urgents’, but NCEPOD classifies them as ‘scheduled’ and requiring operation within three weeks.)
Examples of effective practice – planning & management

Service level agreements are established and reviewed annually. These include planned/previous activity, scheduled lists, and start and finish times. Monthly activity reports are produced and copied to all relevant parties, enabling analysis of activity. Action is taken to improve performance and match capacity to demand.

Leeds Teaching Hospitals, contact Tony Martin, Theatre Project Manager, on 07876 740118, email tony.martin@leedsth.nhs.uk

The NHS Hospital Trust holds a weekly multi-disciplinary meeting, which includes the clinical director for anaesthetics, the director for surgery, theatre manager, booked admissions manager, pre-assessment manager, secretaries and an information person. This team looks at any late starts and cancellations for the last week’s list and agrees action to be taken. The next two to three weeks’ templates for theatre lists are checked and sessions reallocated where possible.

North Manchester Healthcare, contact Johanna Reilly, Regional Programme Manager North, on 07776 185941, email johanna.reilly@npat.nhs.uk

All theatres (except ophthalmology) are managed within the critical care division. Planning and management have been improved by:
- a unified approach to implementation of policies, procedures and standards
- pooling resources, staff, skills and equipment
- moving staff between areas to cover shortfalls
- rotation of staff to ensure development of skills
- clear channels of communication and line management at all levels
- clear links between all surgical specialities and theatres.

Leeds Teaching Hospitals, contact Tony Martin, Theatre Project Manager, on 07876 740118, email tony.martin@leedsth.nhs.uk

A Theatre Resource and Development Co-ordinator (‘Theatre Hustler’) ensures all operating lists are full; ensures details of all patients on waiting lists are up-to-date and long waiters are given an appropriate date; re-allocates dropped sessions to surgeons within the Trust; reports on theatre list utilisation. 96% of theatre lists are utilised.

The Princess Royal Hospital Telford, contact Louise Loxham, Theatre Manager, on 01952 641 222 x4515, email louise.loxham@prh-tr.wmids.nhs.uk

The Theatre Project Board uses the data from the Key Performance Indicator Tool and Cancelled Operations Diagnostic Tool to monitor performance and diagnose problems. Where performance is not improving, further diagnosis is done at specialty level to understand the reasons for the deterioration. The information is made available to Project Board members one week prior to the meeting so that they are able to come prepared with recommended action to improve performance.

Southern Derbyshire Acute Hospitals, contact Stan Ralph, Consultant Anaesthetist, email ralph.stanley@sdah-tr.trent.nhs.uk
# Step 2  Diagnosis & analysis

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Key performance indicators

The Theatre Programme has developed a set of key performance indicators (KPIs) to monitor operating theatre performance and cancelled operations. These KPIs were developed by and tested in the nine Theatre Programme pilot sites. The KPIs should be used by NHS Hospital Trust Boards and Theatre Management Groups to monitor performance, highlight where action is needed to improve performance, and track progress to ensure that interventions have achieved the desired outcome. Analysis should be undertaken at NHS Hospital Trust level to provide an overview of performance and also at individual specialty level to identify where action should be focused.

A Key Performance Indicator Tool has been developed by the Theatre Programme to facilitate reporting of the KPIs. The tool allows data to be displayed as a Trust summary; by different sites within the Trust; and as daycases or inpatients. Data is shown as run charts so that NHS Trusts can quickly monitor trends in performance. The tool is available from www.modern.nhs.uk/theatreprogramme/tools.

The KPI data on cancelled operations and the NHS Plan cancelled operations guarantee can be populated using the Cancelled Operations Diagnostic Tool. The KPI data on theatre utilisation can be populated using the Theatre Performance Diagnostic Tool. These tools are available from www.modern.nhs.uk/theatreprogramme/tools.

The KPI data is high level data and should be supplemented by more detailed information where trends in performance indicate that an in-depth analysis is required.
## Key Performance Indicators

### Cancelled operations
- Total number of cancelled operations.
- Number of operations cancelled by patients.
- Number of operations cancelled by the hospital for non-clinical reasons.
- Number of operations cancelled by the hospital for clinical reasons.
- Number of operations cancelled by the patient on the day of surgery.
- Number of operations cancelled by the hospital on the day of surgery for non-clinical reasons.
- Number of 'last minute' cancelled operations reported to the Department of Health (on the day of admission or following admission).
- Total number of 'last minute' cancelled operations reported to the Department as % of all operations performed (elective activity).

### NHS Plan cancelled operations guarantee
- % of patients whose operations were cancelled by the hospital on the day for non-clinical reasons where:
  - The patient was treated within 28 days of the cancelled operation.
  - The patient was offered a new date within 28 days of the cancellation, but chose to have the re-scheduled operation at a later date.
  - Exceptionally, the NHS Trust could not offer a new date within 28 days of the cancellation, and funded the patient's treatment at the time and hospital of the patient's choice.

### Sickness levels
- Number of hours lost through sickness of theatre staff as % of whole time equivalent hours for theatre staff.

### Elective theatre performance
- Total daycase anaesthetic plus operating time as % of total actual daycase theatre time.
- Total inpatient anaesthetic plus operating time as % of total actual inpatient theatre time.
- Number of daycases as % of all operations performed.

### Emergency theatre performance
- Total emergency anaesthetic plus operating time as % of total actual emergency theatre time.
- Total trauma anaesthetic plus operating time as % of total actual trauma theatre time.

### Emergency operations out of hours
- Number of operations in categories NCEPOD 2, 3 & 4 between midnight and 8am.
- Total anaesthetic plus operating time in categories NCEPOD 2, 3 & 4 between midnight and 8am.

See pages 19 to 21 for guidance on measuring and analysing theatre utilisation.

See page 74 for the NCEPOD emergency categories.
Diagnostic tools

The Theatre Programme has developed and tested four diagnostic tools in the nine pilot sites. These diagnostic tools should be used by NHS Trusts to gain a better understanding of performance, particularly at specialty level. A brief description of each diagnostic tool is provided below. The diagnostic tools and user manuals are available from www.modern.nhs.uk/theatreprogramme/tools. The user manuals are also provided in the Step Guide folder.

Cancelled Operations Diagnostic Tool

The Cancelled Operations Diagnostic Tool records all cancelled operations information and automatically generates reports at NHS Trust and specialty levels. Data may be entered directly into the database (e.g. by networking the database and inputting cancellations as they occur) or may be downloaded from existing information systems.

The Cancelled Operations Diagnostic Tool reports:
- Number of cancelled operations (monthly and cumulatively).
- When operations are cancelled (on the day of surgery; the day before surgery; two-seven days before surgery; or eight days or more before surgery).
- Cancellations by source (patient or hospital); specialty (against the NHS Trust average) and urgency.
- Compliance with NHS Plan cancelled operations guarantee.
- Main reasons for patient cancellations; hospital clinical cancellations; hospital non-clinical cancellations; and hospital non-clinical cancellations on the day of surgery.
- Main reasons for cancellations by inpatient and daycase.
- Whether cancelled patients had been pre-operatively assessed.

Had an Operation? Diagnostic Tool

The Had an Operation? Diagnostic Tool is a questionnaire for obtaining patients’ views of their experiences and suggestions for improvement. Patient Concern and the College of Health were involved in the development of the patient questionnaire and have endorsed its use for providing information for making operations a better experience for patients. The questionnaire has reached the Plain English Campaign Crystal Mark Standard. The questionnaire is available from www.modern.nhs.uk/theatreprogramme/tools as a Word file and also as a Formic file (so that NHS Trusts with Formic readers can scan completed questionnaires for easy data entry).

The Had an Operation? Diagnostic Tool enables NHS Trusts to survey patients’ views of:
- Being told they needed an operation.
- Going into hospital.
- The operation.
- After the operation.
- Going home from hospital.
**Working in Theatres Diagnostic Tool**

The *Working in Theatres Diagnostic Tool* is a questionnaire and focus group approach developed by Dr Dianne van Ruitenbeek of the School of Management at the University of Manchester Institute of Science & Technology (UMIST). The tool focuses on employees’ views of their working environment and their suggestions for actions to improve job satisfaction and morale. It has been developed specifically for all employees working in theatres – including medical staff, nursing staff, operating department practitioners (ODPs), porters and managers.

The *Working in Theatres Diagnostic Tool* enables NHS Trusts to survey employees’ views of:
- Which employee benefits and services they value most.
- How to improve job satisfaction, morale and motivation.
- How to improve job performance.
- How to improve staff commitment and retention.
- How to involve staff more effectively in change.

**Theatre Performance Diagnostic Tool**

The *Theatre Performance Diagnostic Tool* links to the Audit Commission’s *TheatreKit*. The *TheatreKit* was developed for the Audit Commission's theatre portfolio work. Information about individual patients is entered via the *TheatreKit* and information about theatre list utilisation is entered via the *Theatre Performance Diagnostic Tool*. As with the *Cancelled Operations Diagnostic Tool*, information can be entered directly into the *Theatre Performance Diagnostic Tool* or information can be downloaded from existing information systems.

The *Theatre Performance Diagnostic Tool* reports:
- Patient journey times.
- Theatre utilisation.
- Numbers of and main reasons for unallocated & cancelled lists.
- Early and late starts and finishes.
- Out of hours emergency operating.
- Analysis of data quality.
Theatre & list utilisation

Measuring theatre utilisation

Theatre utilisation is a key performance indicator that can be measured using the Theatre Performance Diagnostic Tool. The tool measures theatre utilisation for day cases, inpatients, emergencies and trauma – at NHS Trust level or by specialty – and also measures planned and actual list start and finish times.

Definition of theatre utilisation:
- Anaesthetic plus operating time as a percentage of total actual theatre time, where:
  - Anaesthetic plus operating time is the sum of all individual patient anaesthetic plus operating times, and:
    - start time is the time the patient’s anaesthetic commences if having a general anaesthetic, or the time the patient enters the operating room if having a local anaesthetic; and
    - finish time is the time the patient leaves the operating room (or the time the patient enters recovery, as the nearest equivalent).
  - Total actual theatre time is the total funded time of theatre lists that ran.

Theatre utilisation is a useful measure as it enables NHS Trusts to determine whether optimum use is being made of available theatre capacity. Low theatre utilisation rates should be investigated to determine why optimum usage is not being achieved. Further investigation may identify that:
- There are large delays between cases.
- Lists consistently start late and/or finish early.
- Theatres are not the main constraint in the patient’s journey (see below).
- There is insufficient demand for the theatre capacity available.

Definition of a constraint:
A constraint is usually a skill or piece of equipment that causes waits and delays for patients.

For the surgical process, the constraint is usually medical staff, theatres, equipment or beds. Where the main constraint is not theatres (e.g., ward beds), booking theatre lists to 100% capacity is likely to result in cancelled operations. Theatre utilisation will be low unless NHS Trusts increase capacity at the main constraint (e.g., increase bed availability) or utilise theatre capacity in other ways (e.g., use spare elective inpatient theatre time for emergency surgery or day surgery).

Identifying and analysing constraints in the patient flow is described on pages 22 to 24.

If the demand for theatre time is calculated correctly (see Step 4, page 63), it is unlikely that theatre utilisation will reach 100% - even if lists are booked to use 100% capacity. The demand calculation allows flexibility for variation between cases by setting the anaesthetic plus operating time for each procedure above the average. This means that lists should rarely overrun, but may finish early.
Analysing theatre utilisation

Theatre utilisation is influenced by list management and factors outside theatres, such as availability of beds and ward staffing. The key role of the theatre manager or floor manager is to ensure that the flow of patients is managed effectively, with minimum delays between cases to ensure optimum utilisation. Optimum utilisation will vary depending on the type of list and the major constraint in the patient’s journey. This is explained in further detail in Step 3c.

When analysing theatre utilisation, ask:

- Is the major constraint elsewhere? There may be insufficient beds (or other resources) available for the theatre list time.
- Is the flow of patients managed effectively with minimum delays between cases? Delays may be due to a variety of reasons, such as poor management, delays for equipment, poor communication between theatres and wards.
- Do theatre lists consistently start late and/or finish early? Late starts may be caused by pre-operative visiting of the patient by the anaesthetist and surgeon.
- Are sufficient cases booked to use 100% of the capacity of the major constraint? If theatres are the main constraint, lists should be booked to use 100% capacity.
- Is casemix planned to take account of constraints and availability of essential resources eg consultants, ITU/HDU beds?
- Are too many cases booked, or is the casemix inappropriate to fit into the allocated theatre time?
- Are emergency cases added to elective lists that do not have the spare capacity for these cases?
- Is there sufficient capacity to meet demand?
- Where theatres are not the constraint, how can resources be used in other ways, eg using spare capacity on inpatient lists for day cases?
- Could slots for specialised emergencies be available on appropriate elective lists to improve efficiency?
Measuring list utilisation

Definitions of planned, allocated & actual lists:

- **Planned lists** are lists that are planned to take place, taking account of public holidays.
- **Allocated lists** are lists that are allocated to users, taking account of planned leave, planned maintenance and the reallocation of lists to other users.
  - Allocated lists = planned lists minus unallocated lists.
- **Actual lists** are lists that actually took place, taking account of unplanned list cancellations.
  - Actual lists = allocated lists minus cancelled lists.

The *Theatre Performance Diagnostic Tool* can be used to measure list utilisation for day cases, inpatients, emergencies and trauma – at NHS Trust level or by specialty. Actions to improve list utilisation are in Step 3c (pages 52 to 60).

**Use the *Theatre Performance Diagnostic Tool* to calculate list utilisation:**

- Utilisation of planned lists:
  - Number of allocated lists as a percentage of number of planned lists.
- Utilisation of allocated lists:
  - Number of actual lists as a percentage of number of allocated lists.

Analysing list utilisation

When analysing list utilisation, ask:

- Are lists planned and allocated on a historical basis rather than on the basis of demand and capacity?
- Is reallocation of spare lists within or between specialties difficult to achieve because:
  - There are insufficient consultant surgeons and anaesthetists to cover absence (annual leave, etc) from lists?
  - There is no system (eg scheduler) or insufficient time (late notification) to reallocate lists to other consultants to cover absence?
  - Too many surgeons or anaesthetists plan holidays or attend meetings at the same time?
  - There are no incentives for surgeons and anaesthetists to utilise spare lists?
  - Theatre maintenance takes place during planned list time?
- Are lists cancelled at short notice because:
  - A minimum six week leave policy is not implemented?
  - Management meetings are called at short notice?
  - Patients are unfit or do not attend (DNA)?
  - Lists are not scheduled to take account of the availability of essential resources?
  - The hospital has insufficient beds to deal with emergency demand?
Patient process mapping

The Theatre Programme uses patient process mapping as a diagnostic tool. This enables staff to see healthcare from the patient’s point of view and to identify opportunities for improvement. The process of mapping the patient’s journey brings together multidisciplinary teams of people who are involved in the patient’s journey and draws out ideas for improvement from all groups of staff. Patients or their representatives can also be present to provide a patient-centred view of the process.

A brief description of patient process mapping is provided below. Detailed guidance on patient process mapping can be found in *The Improvement Leaders Guide to Mapping the Patient Process* (see [www.modern.nhs.uk/improvementguides](http://www.modern.nhs.uk/improvementguides)).

An example of a patient process map for theatres is in Appendix 2 on page 73.

Mapping and analysing the patient process

<table>
<thead>
<tr>
<th>Map the patient’s process:</th>
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</thead>
<tbody>
<tr>
<td>▪ Define and agree which group of patients is to be mapped eg all daycase patients; patients needing cataract surgery; all patients requiring major gynaecology surgery.</td>
</tr>
<tr>
<td>▪ Define and agree the first and last step of the stage (the scope), for example from decision to operate to discharge from hospital.</td>
</tr>
<tr>
<td>▪ Identify and involve all staff groups involved within the scope of the stage of the journey being considered.</td>
</tr>
<tr>
<td>▪ Map the patient’s journey and any parallel processes such as getting patient’s notes and test results.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Analyse the patient’s process:</th>
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<tr>
<td>▪ What is the approximate time taken for each step (the task time)?</td>
</tr>
<tr>
<td>▪ What is the approximate time between each step (the waiting time)?</td>
</tr>
<tr>
<td>▪ What is the approximate time between the first and last step?</td>
</tr>
<tr>
<td>▪ When and why does the patient have to queue?</td>
</tr>
<tr>
<td>▪ How many times is the patient passed from one person to another (handoffs)?</td>
</tr>
<tr>
<td>▪ How many steps add no value to the patient’s care? Where are there problems for patients? What do patients complain about?</td>
</tr>
<tr>
<td>▪ Where are there problems for staff? What do staff complain about?</td>
</tr>
<tr>
<td>▪ Is the patient getting the most appropriate care?</td>
</tr>
<tr>
<td>▪ Is the most appropriate person giving the care?</td>
</tr>
<tr>
<td>▪ Is the care being given at the most appropriate time?</td>
</tr>
</tbody>
</table>
At a high level, the main flows through theatres are shown below.

Identifying constraints in the patient flow

Bottlenecks and constraints

A bottleneck is any part of the system where patient flow is obstructed, causing waits and delays. The constraint is the actual cause of the bottleneck. This is usually a skill or piece of equipment.

Once the patient’s journey has been mapped in detail, constraints in the patient flow should be identified. A constraint is any area where the patient experiences a delay that does not add value to their treatment or care. Some constraints will be minor; others will be major obstacles in the journey.

Theatres are often thought to be the major constraint in the patient’s journey for surgery. This is usually true for day surgery where availability of surgeons or theatre time may be the main constraint. For inpatients, the constraint may vary depending on the bed availability at different times of the year. The Theatre Programme’s work on cancelled operations shows that almost 40% of elective operations cancelled by the hospital on the day of surgery are cancelled because beds are not available. For emergencies, the major constraint may be availability of anaesthetists and surgeons, or the availability of funded emergency list time.
Analysing the constraint

Once the constraint is identified, ask:

- Could the work be done elsewhere or by someone else?
  Eg:
  - Could a consultant with a shorter waiting list do the work?
  - Could some day surgery procedures be performed in outpatients (e.g., endoscopies), primary care (e.g., minor skin lesions), or the private sector (e.g., uncomplicated varicose veins).
  - Could some procedures currently performed as inpatients be performed as day surgery (see the Audit Commission Basket of Procedures 2000)?
  - Could some procedures be performed by clinical staff who are not medically trained (e.g., endoscopies and colposcopies)?

- Is capacity used effectively at the main constraint?
  Eg:
  - Is there a high did not attend (DNA) rate for surgery?
  - Are patients remaining in beds because they are awaiting tests, test results are not available or they are awaiting discharge?

- What steps can be taken to address the issue?
  Eg:
  - Increase day surgery rates for procedures in the Audit Commission Basket of procedures 2000.
  - Implement pre-operative assessment and waiting list validation policies to reduce DNAs.

If these questions have been addressed and the constraint still causes delays, then it is the capacity that needs to be examined.
## Step 3    Improving operating theatre performance

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Redesign to improve services for patients

Having completed Steps 1 and 2, NHS Trusts are recommended to redesign systems and processes to improve services for patients. Step 3 recommends actions that can be taken to improve services. To facilitate implementation of new systems and processes, NHS Trusts should test changes using proven redesign methodology. This is described in more detail in *The Improvement Leaders Guide to Mapping the Patient Process* (see www.modern.nhs.uk/improvementguides).

Services to patients cannot be improved if operating theatre departments are redesigned in isolation. The patient’s surgical journey is complex and crosses many boundaries. Improving operating theatre performance must be seen in the context of a wider system, including pre-operative assessment, elective and emergency admissions, bed management and discharge planning.

The diagram below shows some of the links that must be made at national and local levels to improve services for patients.
### Step 3a Patient experience

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<td>Examples of effective practice</td>
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**Cancelled operations**

**Definition:**
An operation is cancelled where a patient has received a written confirmation of the date of operation and the operation is subsequently cancelled.

Detailed guidance on cancelled operations is available in *Tackling Cancelled Operations* (December 2001). The *Step Guide* does not replicate that guidance, but aims to build upon it. Implementing the *Step Guide* recommendations should significantly reduce cancelled operations. The examples of effective practice for cancelled operations in this section focus mainly on bed availability.

A report on cancelled operations data from the Theatre Programme’s nine pilot sites is provided in the *Step Guide* folder (see *Results from the Cancelled Operations Diagnostic Tool*).

**Diagnosis – cancelled operations**

**Use the *Cancelled Operations Diagnostic Tool* to monitor:**
- All cancelled operations, whatever the source and whenever cancelled.

**Take action where there are:**
- Cancelled operations, concentrating initially on the specialties that account for 80% of cancellations.

**Action – cancelled operations**

**Recommended actions to reduce cancelled operations:**
- Implement the recommendation in the *Step Guide*.
Examples of effective practice – cancelled operations

Examples of effective practice in reducing cancelled operations are provided in Tackling Cancelled Operations (see www.modern.nhs.uk/theatreprogramme). Additional examples, which deal in particular with cancellations due to bed unavailability, are shown below.

The Trust has opened a ten bed, same day admission ward to support reductions in cancelled operations. The proportion of surgical patients admitted on the day of their operation has improved by 10%.

Princess Alexandra Hospital Harlow, contact Martin Baghurst, General Manager for Surgery, on 01279 827074

Maximised use of day case beds has been achieved by taking a flexible approach to bed management within the day case unit. An additional 272 patients (who would have been cancelled on the day of surgery) were treated between June and December 2001.

Royal Devon & Exeter Hospital, contact Elaine Wallen, Clinical Nurse Manager, on 01392 402488 or Catherine Holmes, Regional Programme Manager South West, on 07788 710 682

The Trust has developed an Intranet based electronic system to assist in the management of its 3,270 inpatient bed base. The system provides live data across the Trust by site, giving the exact position on bed occupancy at any one time. Development of the system has replaced the previous method of multiple telephone calls, which was both onerous and time consuming. The system provides information on beds that are occupied, reserved or closed, enabling optimum use of the bed base.

Leeds Teaching Hospitals, contact Ian Denton, Planning & Information Manager Division of Critical Care, on 0113 3926460 or Tony Martin, Theatre Project Manager, on 07876 740118 email tony.martin@leedsth.nhs.uk

An ITU/HDU booking policy has been developed for elective surgical patients. Patients are booked early in their journey and only two patients can be booked each day. Prior to the introduction of the policy in January 2002, there were around 5 cancellations per month. In February and March 2002 there were only 3 cancellations.

Southern Derbyshire Acute Hospitals, contact: Lindsey Collingwood, ITU Manager, email lindsey.collingwood@sdah-tr.trent.nhs.uk

To maximise the use of day surgery and free up emergency beds, the Trust developed protocols that allow certain emergency patients to be treated as day cases. Previously, these patients could wait up to 36 hours for surgery as inpatients reducing available beds for elective surgery. Now, patients who comply with the protocol are treated as emergencies in the day surgery unit. Patients are added to an urgent list when in A&E, then go home and return for day surgery the next day. Up to 12 emergency patients can be treated as day cases in a week. The protocol applies to patients with abscesses, nasal manipulations and minor trauma.

Manchester Royal Infirmary, contact Judith Duncan, Day Surgery Unit Manager, on 0161 276 4059 judith.duncan@cmmc.nhs.uk

Pre-operative length of stay for elective surgical patients on Warfarin was reduced by three days following the implementation of new clinical guidelines developed by clinicians and the pre-operative assessment team. The total saving in pre-operative bed days is around 800 per year.

Princess Alexandra Hospital, contact Linda Dinis, Pre-operative Assessment Nurse Manager, on 01279 444455 (via bleep)
NHS Plan cancelled operations guarantee

From 1 April 2002, the NHS Plan provides a new guarantee for all patients whose operations are cancelled by the hospital on the day of surgery.

Definition – the NHS Plan cancelled operations guarantee is achieved where:

- The patient is treated within 28 days of the cancelled operation.
- The patient is offered a new date that is within 28 days of the cancellation, but chooses to have the re-scheduled operation at a later date.
- Exceptionally, the NHS Trust cannot offer a new date that is within 28 days of the cancellation, and funds the patient's treatment at the time and hospital of the patient's choice.

The Theatre Programme’s *Cancelled Operations Diagnostic Tool* provides a simple method of tracking patients to whom the guarantee applies and calculates the percentage success rate in achieving the guarantee.

Diagnosis – NHS Plan cancelled operations guarantee

Use the *Cancelled Operations Diagnostic Tool* to monitor:

- All patients cancelled by the hospital on the day of surgery for non-clinical reasons.
- Achievement of the NHS Plan cancelled operations guarantee for these patients.

Take action where:

- Patients are cancelled by the hospital on the day of surgery for non-clinical reasons.
- The NHS Plan guarantee is not achieved for 100% of these patients.
Actions – NHS Plan cancelled operations guarantee

Recommended actions to ensure that the NHS Plan guarantee is achieved:

**Theatre Management Group:**
- Monitor the number of patients cancelled by the hospital on the day of surgery for non-clinical reasons and achievement of the NHS Plan guarantee.
- Make reports available to clinical directorates and individual theatre users.

**Planning & management:**
- Identify a senior manager responsible for ensuring that the NHS Plan cancelled operations guarantee is achieved.
- Include the cancelled operations guarantee definition and systems for achieving the guarantee in the waiting list policy and/or the cancelled operations policy.
- Communicate policies to all relevant staff.
- Use the **Cancelled Operations Diagnostic Tool** to track all NHS Plan guarantee patients.
- Identify a co-ordinator and/or implement a single point for collection of data on these patients, to ensure that all patients are included in the tracking system.
- The Senior Manager responsible for the NHS Plan guarantee should meet weekly with the admissions coordinator, bed manager, theatre manager, theatre scheduler and/or relevant others to ensure that:
  - Each patient has a new date for treatment.
  - Each patient was treated on the agreed date.

**Re-scheduled operations:**
- Agree a new date for treatment as soon as possible, to allow the maximum time to plan the resources necessary to honour the new date.
- Where possible place NHS Plan guarantee patients first on the operating list for their re-scheduled operation to limit the risk of cancellation a second time.
- Include ‘unknown patient’ slots in the theatre list template to accommodate NHS Plan guarantee patients (see Step 4, pages 61 to 67).
Examples of effective practice – NHS Plan cancelled operations guarantee

A Cancelled Operations Coordinator has been appointed to manage the cancelled operations database and monitor and report on cancelled operations to the general manager and clinicians. The postholder ensures that all patients who are cancelled on the day of surgery are rebooked within 28 days.

Princess Alexandra Hospital Harlow, contact Martin Baghurst, General Manager Surgery, on 01279 827074

The Theatre Coordinator emails the Admissions Office by 10am daily to notify any cancellations reported from theatre on the previous day (eg due to list overruns). This prompt notification to the Admissions Office enables speedier rebooking of patients for surgery within the 28 days guarantee period.

Princess Alexandra Hospital Harlow, contact Martin Baghurst, General Manager Surgery, on 01279 827074

A member of theatre staff fills in a cancellation form for every patient cancelled from the operating list on the day of surgery. The theatre manager ensures that every patient is rebooked with the waiting list manager and the booking is then confirmed at the weekly waiting list management meeting.

The Sheffield Children’s Hospital, contact David Bywater, Theatre Manager on 0114 271 7000 x 7190 email david.bywater@sch.nhs.uk

All patients who are cancelled on the day of surgery by the hospital for non-clinical reasons are identified at a weekly theatre utilisation meeting. Plans are made to treat these patients within 28 days.

North Manchester Healthcare, contact Johanna Reilly, Regional Programme Manager North, on 07776 185 941 email johanna.reilly@npat.nhs.uk

Any patient whose operation was cancelled on the day of surgery is listed first for treatment on the theatre list for the rescheduled date. This avoids the risk of cancellation a second time.

North Cumbria Acute Hospitals, contact Lynne Gorley, Theatre Project Manager, on 01946 523491, email lynne.gorley@ncumbria-acute.nhs.uk
Patient experience & delays

For elective patients, the Theatre Programme looked at the patient’s journey starting from the time of arrival at hospital to the time of return to bed following the operation. For emergency patients, the journey began at the time the patient was booked into theatre. This is illustrated in the diagram below.

The Theatre Programme has developed diagnostic tools to better understand the experience of having an operation from the patient’s perspective.

The Had an Operation? Diagnostic Tool is a survey of patients’ experiences. Patient Concern and the College of Health were involved in the development of the patient questionnaire and have endorsed its use for providing information for making operations a better experience for patients. The questionnaire has reached the Plain English Campaign Crystal Mark Standard. The diagnostic tool was tested in three of the Theatre Programme pilot sites during February 2002. A total of 114 patients returned the questionnaire. The results showed that patients were generally satisfied with the care and information they received.

The Theatre Performance Diagnostic Tool can be used to monitor delays in the key stages of the patient’s journey.

Patient process mapping can be used to analyse the patient’s surgical journey and identify areas for improvement. Patients or their representatives can be present at process mapping sessions to provide the patient’s view of the surgical process.
Diagnosis – patient experience

Use the Theatre Project’s *Had an operation? Diagnostic Tool* to understand the patient’s satisfaction with the journey through the operating theatre process. The main steps reviewed are:

- Being told that you needed an operation.
- Going into hospital.
- The operation.
- After the operation.
- Going home from hospital.

Diagnosis – patient delays

Use the *Theatre Performance Diagnostic Tool* and patient process mapping to identify and monitor individual components of each patient’s journey:

- Day and time of admission to ward (electives) decision to operate (emergencies).
- Time anaesthesia started or time patient entered operating room (whichever is earlier).
- Time patient left operating room (or entered recovery as nearest equivalent).
- Time patient left recovery.

Agree maximum journey times that would apply to 80% of patients:

- Maximum journey times are likely to be different for daycases, inpatients and emergencies, and may vary between specialties, procedures and consultants.

Take action where:

- Journey times for patients exceed the agreed maxima.
Actions – patient experience

Based on the results from the pilot of the Had an operation? Diagnostic Tool, the following actions will improve the experience for patients:

Waiting, booking & choice:
- Reduce waiting times for operations.
- Give patients a choice of dates for their operation and the opportunity to book their operation in advance.
- Provide patients with a choice of transport to theatres (eg walking, wheelchair), where clinically appropriate.

Cancelled operations:
- Reduce cancelled operations.
- Provide the patient with a new date immediately if the operation is cancelled.

Communication & information:
- Provide written documentation to explain the procedure and the process.
- Staff should greet patients and introduce themselves on a patient’s arrival.
- Staff should introduce themselves and inform patients about what they are doing.
- Provide patients with the opportunity to ask questions.
- Allow time for patients to read consent forms and ask questions.
- Provide privacy for discussions with medical and nursing staff.
- Inform patients of what will happen whilst they are on the ward.
- Provide patients with information about how any post operative pain and sickness will be dealt with.
- Provide patients with information about their expected progress following discharge (eg results, Perioperative follow up, what to expect at home).
- Provide patients with a name they can contact if they experience any problems following discharge.

Comfort:
- Review the comfort of surroundings from a patient’s perspective.
- Increase the level of privacy on the wards.
Actions – patient delays

Recommended actions to minimise delays for patients:

Planning & management:
- If there is spare capacity in day surgery, agree protocols for selection of NCEPOD 2 patients for day surgery. This allows patients to go home and return for day surgery within 24 hours, which also reduces the pressure on emergency beds.
- Agree protocols for timely transfer of patients from recovery.
- Agree robust arrangements for timely transfer of patients between theatres and wards – including flexible working between theatres, recovery and wards, and sufficient notice of transfers.
- Ensure appropriate numbers of staff with relevant experience are available to meet peaks and troughs in demand.
- Ensure that staffing of emergency and trauma theatres is matched by the availability of a surgeon and an anaesthetist who are not allocated to other fixed commitments.

Selection of patients:
- Pre-operatively assess all elective patients. This facilitates same-day admission, reduces on the day cancellations, reduces the time clinicians spend assessing patients on the day of surgery and facilitates timely discharge of patients.
- Select appropriate patients for day surgery in accordance with the Audit Commission Basket 2000 Procedures.
- Pre-operatively assess all emergency patients. This will facilitate effective use of emergency theatre capacity and timely discharge of patients.
- List emergency patients for theatre only when all investigations and assessments are completed and the patient is anaesthetically and surgically fit for surgery.

Patient location and transport to theatre:
- Provide one location (e.g., an admissions lounge) where surgeons and anaesthetists can see their patients immediately prior to surgery.
- Locate patients in reception wards or the appropriate surgical wards to facilitate the timely transfer of patients to theatre.
- Enable patients to walk to theatre or travel in a wheelchair where clinically appropriate.
Examples of effective practice – patient experience & delays

The Trust reduced the length of stay for day case urology patients. All patients used to arrive at 13.00 for a 13.30 list start, and total journey time from arrival to back to bed was up to 250 minutes. Patients are now brought in at staggered intervals with the last appointment at 15.15. Maximum patient journey time has been reduced to 110 minutes.

Royal Devon & Exeter Hospital, contact Elaine Wallen, Clinical Nurse Manager, on 01392 402488 or Catherine Holmes, Regional Programme Manager South West, on 07788 710 682

Ophthalmic patients in the day surgery unit are not asked to change into theatre clothes but are operated on in their own clothes.

North Cumbria Acute Hospitals, contact Lynne Gorley, Theatre Project Manager, on 01946 523491 email lynne.gorley@ncumbria-acute.nhs.uk

Prior to surgery, a ward nurse discusses with orthopaedic patients their preferred mode of transport to theatre and assesses their suitability. Patients appreciate being given the option on their mode of transport and over 90% prefer to walk or be taken by wheelchair.

North Cumbria Acute Hospitals, contact Lynne Gorley, Theatre Project Manager, on 01946 523491 email lynne.gorley@ncumbria-acute.nhs.uk

A designated trauma nurse coordinates all aspects of the orthopaedic trauma list, patient, ward, surgeon and theatre. The trauma nurse communicates changes to the theatre list to relevant staff. This improves utilisation and organisation and avoids the need to starve patients for unacceptable lengths of time.

Southern Derbyshire Acute Hospitals, contact Sharon Budd, Trauma Nurse, on 01332 347 141 bleep 3013 email sharon.budd@sdah-tr.trent.nhs.uk

Escort support workers are employed to collect patients from the wards. This has reduced delays in operating lists caused by waiting for patients to be brought from the wards. Each patient’s journey time has been reduced by 10 minutes.

North Manchester Healthcare, contact Johanna Reilly, Regional Programme Manager North, on 07776 185 941 email johanna.reilly@npat.nhs.uk

Patients are offered a choice of transport to theatre: walking, in a wheelchair or on a trolley. This has reduced patient journey times by 60 minutes.

Isle of Wight Healthcare, contact Jackie Holdich, Theatre Project Assistant, email jackie.holdich@iow.nhs.uk

Step 3a Patient experience
Pre-operative assessment

Definition of pre-operative assessment:
Pre-operative assessment establishes that the patient is fully informed and wishes to undergo the procedure. It helps optimise the patient’s fitness for the surgery and anaesthetic. It minimises the risk of late cancellations by ensuring that all essential resources and discharge requirements are identified.

In the Theatre Programme pilot sites, patient cancellations and cancellations by the hospital for clinical reasons accounted for two thirds of all cancelled operations between August 2001 and February 2002. The nearer these cancellations are to the time of surgery, the greater the impact on scheduling of theatre lists and theatre utilisation. For example, in the Theatre Programme pilot sites, from August 2001 to February 2002, almost 30% of all operations cancelled on the day of surgery or the day before surgery could potentially have been avoided by effective pre-operative assessment.

The Association of Anaesthetists of Great Britain and Ireland identified that the provision of a pre-operative assessment service can prevent cancellations and DNAs, improve operating theatre efficiency and enhance patient care. The aim in assessing patients before anaesthesia and surgery is to improve outcome. This is achieved by:

- Identifying potential anaesthetic difficulties.
- Improving safety by assessing and quantifying risk.
- Allowing planning of peri-operative care.
- Providing the opportunity for explanation and discussion.
- Allaying fear and anxiety.


The NHS Modernisation Agency will publish National Guidance for Pre-operative Assessment in Day Surgery in 2002. This guidance will highlight basic principles of pre-operative assessment and management of care of patients.

Diagnosis – pre-operative assessment

Use the Cancelled Operations Diagnostic Tool to monitor and take action where:

- DNA rates are more than 5% of elective activity.
- Operations are cancelled at short notice because:
  - The appointment was inconvenient for the patient.
  - The patient no longer wanted the operation.
  - The consultant advised the patient that the operation was no longer necessary.
  - The operation could not be performed because the patient had a pre-existing medical condition.
  - Pre-operative guidance was not followed.
- Number of patients removed from the waiting list without treatment is high.

Christina Krause 134.69.73.14
ckrause@bpsq.ca
British Columbia
Actions – pre-operative assessment

**Recommended actions to minimise the number of operations cancelled by patients or by the hospital for clinical reasons:**

**Theatre Management Group:**
- Monitor patient cancellations and hospital clinical cancellations.
- Make reports available to clinical directorates, theatre users and the pre-operative assessment department.
- Take action to reduce patient cancellations and hospital clinical cancellations.
- Agree a policy for action to be taken where patients do not attend pre-operative assessment and monitor implementation of this policy.

**Consent:**
- Ensure patients are fully informed about the planned procedure by implementing the *Good Practice in Consent Implementation Guide: Consent to Examination or Treatment* (available from www.doh.gov.uk/consent).

**Pre-operative assessment:**
- Implement pre-operative assessment, using protocols, to identify patients:
  - Who have potential anaesthetic difficulties.
  - Who have pre-existing medical conditions.
  - Who report a change in their medical condition following their outpatient appointment.
  - Who no longer wish to have the operation, or are unsure.
- Implement pre-operative assessment to:
  - Plan peri-operative care, eg any special equipment.
  - Provide the opportunity for explanation and discussion.
  - Allay fear and anxiety.
  - Provide an opportunity to discuss with patients any self-help matters to improve the outcome of their surgery (eg stopping smoking or losing weight).
  - Start planning for discharge.

**Validation:**
- Validate waiting lists at least every three months to identify patients who no longer require their operations.
- Telephone patients near to the date of admission to confirm their attendance.
- Provide surgical teams with reports on the number of patients removed from the list without having treatment.
- Contact patients who do not attend pre-operative assessment to ensure that they still require their operations.
Examples of effective practice – pre-operative assessment

Pre-operative assessment nurses in ophthalmology and the day case unit carry out telephone pre-operative assessment two weeks before the patient's admission date. This reminds patients of their admission date and ensures that their medical conditions have not changed. Over the last 12 months there have been only six DNAs.

Southern Derbyshire Acute Hospitals, contact Tim Harrison, Project Nurse Action on Cataracts, on 01332 347 141 x4003 email tim.harrison@sdah-tr.trent.nhs.uk

Postal pre-operative assessment questionnaires are sent to patients before they attend pre-operative assessment clinics. This saves time in the assessment process, leaving more time to discuss the operation, pain relief and discharge arrangements.

Princess Alexandra Hospital Harlow, contact Linda Dinis, Pre-op Assessment Nurse Manager, on 01279 444455 ext 3061

The NHS Trust has implemented pre-operative assessment across four specialties. DNAs and hospital clinical cancellations have reduced.

Royal Devon & Exeter Hospital, contact Sister Gill Fuke, Pre-assessment Co-ordinator, on 01392 402247 or Catherine Holmes, Regional Programme Manager South West, on 07788 710 682

A nurse-led pre-operative assessment service takes place at least two weeks prior to surgery. There is access to an anaesthetist – so actions can be taken where there is a clinical indication – and the nurses can refer patients to other services including GPs.

Southern Derbyshire Acute Hospitals, contact Helen Phillips, Pre-assessment Nurse Specialist, on 01332 347 141 x 5899 email helen.phillips@sdah-tr.trent.nhs.uk

To limit the impact of MRSA infected patients on elective surgery and reduce the risk of cancellations, all hip and knee patients are tested for MRSA at pre-assessment 3-4 weeks prior to surgery, rather than the day before. Patients who test positive for MRSA have their surgery safely through the involvement of pre-assessment, bed managers, infection control nurses, consultants and junior doctors.

North Middlesex University Hospital, contact Ann-Marie Garbutt, Pre-Assessment Sister, on 0208 887 2000 bleep 293 email ann-marie.garbutt@nmh.nhs.uk

100% of patients for colorectal and gastrointestinal surgery are pre-operatively assessed. Hospital cancellations and DNAs have reduced. Patient satisfaction has increased.

Doncaster Royal Infirmary, contact Ian Boldy, Pre-operative Assessment Nurse, on 01302 553 141 email ian.boldy@dbh.nhs.uk

The pre-assessment team initiate discharge planning through hip and knee classes, liaising with ward staff and the discharge planning team. Integrated care teams from the borough councils join the weekly meetings with hospital staff to ensure early discharge.

North Middlesex University Hospital, contact Ann-Marie Garbutt, Pre-assessment Sister, on 0208 887 2000 bleep 293, or David Levin, Physiotherapist, on bleep 082

Patients who meet agreed screening criteria are referred to qualified NHS Direct nurses for telephone pre-admission assessment. The service identifies patients who may be medically unfit for admission. In the first year, no patients who were pre-assessed in this way had their operations cancelled for medical reasons, and there were no DNAs.

Bolton Hospitals, contact Joanne Ellis, Modernisation Programme Manager, on 01204 390 482 email joanne.ellis@boltonh-tr.nwest.nhs.uk
Step 3b  Human resources

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Employee satisfaction & morale

Change can only be implemented successfully if employees are fully engaged in the change process and are willing and able to make the changes required. Employees are more likely to change practice where job satisfaction and morale is high. Optimising human resources and improving job satisfaction and morale is therefore fundamental to delivering the improvements to services for patients set out in the Step Guide.

To determine the state of current employee satisfaction and morale in the nine Theatre Programme pilot sites, the National Team commissioned a survey from Manchester School of Management at the University of Manchester Institute of Science & Technology (UMIST). The aim of the survey was to assess the factors influencing the morale and performance of all employees working in operating theatres; and to identify the action required to improve staff morale and performance.

The survey combined two approaches: a questionnaire sent to all staff working in theatres; and focus groups to explore in detail the issues raised. A total of 895 staff returned questionnaires – an overall response rate of 27%. All employees were represented in the questionnaire sample, including operating department orderlies, health care assistants, operating department practitioners, nurses, junior doctors and consultants.

The findings from the survey indicated that employees are committed to improving the quality of patient care and are willing to change their working practices to achieve this. But, they are frustrated and de-motivated by shortages of staff and resources and by a lack of opportunity to express their views, contribute ideas and actively help their Trust to provide a better quality of patient care. Employees suggested many changes that are needed to improve levels of job satisfaction and morale; these are summarised on page 44.

NHS Trusts should use the Working in Theatres Diagnostic Tool developed for the Theatre Programme by UMIST to survey employees working in their own theatres and ensure that action is taken in direct response to the views of their employees.
Diagnosis – employee satisfaction & morale

The staff survey and focus group approach tested in the Theatre Programme pilot sites has been developed by UMIST into the *Working in Theatres Diagnostic Tool* (available from [www.modern.nhs.uk/theatreprogramme/tools](http://www.modern.nhs.uk/theatreprogramme/tools) and the *Step Guide* folder). The tool explains how to undertake the survey, how to conduct the focus groups and how to analyse the results. The tool can be used to identify issues that should be addressed, and can be repeated at regular intervals (eg annually) to evaluate whether actions have resulted in improvements.

Use the *Working in Theatres Diagnostic Tool* to:

- Understand the current state of employee satisfaction and morale.
- Obtain employees' views about the changes that would improve job satisfaction, morale and performance.

Monitor (as a proxy measure for employee satisfaction and morale):

- Number of hours lost though sickness per month as a percentage of number of hours whole time equivalent theatre staff.

Take action where:

- The *Working in Theatres Diagnostic Tool* identifies issues that can be addressed.
- The number of hours lost through sickness per month, as a percentage of the number of whole time equivalent theatre staff, exceeds locally agreed targets.

Actions – employee satisfaction & morale

The views of employees working in the Theatre Programme pilot sites are shown on page 44. NHS Trusts that have achieved Investors in People status and are working towards the Improving Working Lives Standard may already have implemented many of the changes suggested by employees. Using the *Working in Theatres Diagnostic Tool* may reveal further areas for improvement.

For guidance about how to implement changes to improve employee satisfaction and morale, NHS Trusts can consult the documents and websites listed under the human resources references on page 77. The Improving Working Lives Standard website is a good source of examples of effective practice (see [www.doh.gov.uk/iwl](http://www.doh.gov.uk/iwl)).

Effective leadership is also critical to better patient care and improved working practices for staff. Good leaders challenge, motivate and empower staff to effect change. Everybody in the NHS has a leadership role. The Leadership Centre can offer support to develop the capabilities of leaders at all levels within the service (telephone 0845 607 4646).
Employees in the nine Theatre Programme pilot sites suggested the following changes to improve staff satisfaction and morale:

Pay and benefits:
- Better pay and financial benefits, eg attendance rewards, childcare vouchers, housing subsidies, free car parking, reduced cost of travel to work.
- Better staff benefits and facilities, eg improved catering, cash points and post boxes on site, sufficient and safe car parking, health and social facilities, priority healthcare.

Working environment:
- Better working environment, with adequate supplies of consumables, instruments, linen and theatre clothes.

Staffing and workload:
- Better staffing levels and a realistic volume of work.

Management and communications:
- Managers who are less distant and directive, more consultative and supportive.
- Effective two-way communication channels between management and staff at all levels.
- Regular meetings at all levels and honest information and feedback on Trust objectives, strategies, issues and problems.
- Praise and recognition for employees’ hard work and high levels of commitment.

Staff involvement:
- Opportunities for staff to suggest ideas for improving the quality of patient care and the efficiency of services, with action on what they propose.
- Active involvement of theatre staff (in all grades) in change task groups, projects and decision making.

Appraisal and development:
- Clear objectives and personal development plans for all staff, with performance formally reviewed at least twice per year.
- Better opportunities for training & career development.
Examples of effective practice – employee satisfaction & morale

The Trust Board visits the theatre department twice a year. The theatre manager presents the theatre strategy and issues that have arisen in the department. The Board then present the organisational strategy and staff can raise questions.

The Sheffield Children’s Hospital, contact David Bywater, Theatre Manager on 0114 271 7000 x 7190 email david.bywater@sch.nhs.uk

A Trust Modernisation Day and lunchtime presentations – open to all staff – raise awareness of modernisation projects and encourage staff engagement in change. An Infoweb page and articles for the Trust newsletter publicise the projects and celebrate achievements. These awareness raising activities keep staff informed of Trust developments and enable staff to identify issues across projects.

Royal Devon & Exeter Hospital, contact Catherine Holmes, Regional Programme Manager South West on 077887 10682 email catherine.holmes@npat.nhs.uk

Term time contracts are offered on a part-time basis. Staff work 10 hours during holidays and 21 hours during normal working weeks. The hours are annualised to allow for different schools holidays.

Southampton General Hospital, contact Jo Whitfield, Assistant Theatre Manager, on 0238 0777 222

The Trust has released a senior personnel manager to undertake in-depth work on the findings of the UMIST staff survey. This will cover training & development, communication, working conditions and staff management.

Southern Derbyshire Acute Hospitals, contact Stella Salt, Senior Personnel Manager, email stella.salt@sdah-tr.trent.nhs.uk

Theatre staff redesigned data collection forms, reducing the number of forms from four to one. This reduced the workload for theatre staff and increased staff morale. Data quality also improved.

Isle of Wight Healthcare, contact Hazel Lake, Theatre Practitioner Main Theatres, email hazel.lake@iow.nhs.uk

D grade staff nurses are employed on a rotational basis between intensive care units, theatres and recovery, and the emergency department. They rotate every 6 months and the whole rotation takes 18 months. This has aided recruitment of staff.

Southampton General Hospital, contact Jo Whitfield, Assistant Theatre Manager, on 0238 0777 222

The training and development needs of each employee are assessed through the annual performance review process. Each member of staff has a personal development plan which is an integral part of the appraisal document. A Training & Development Coordinator for Theatres ensures that all staff have equal access to training and development opportunities.

Isle of Wight Healthcare, contact Alison Price, Training Coordinator, email alison.price@iow.nhs.uk
Medical staffing

The Theatre Programme survey of cancelled operations identified that the unavailability of surgeons and anaesthetists is a significant cause of cancelled operations. Between August 2001 and February 2002 non-clinical cancellations by the hospital accounted for 32% of all cancelled operations. Of these non-clinical hospital cancellations, 21% were cancelled because the surgeon was unavailable and 3% were cancelled because the anaesthetist was unavailable. For non-clinical hospital cancellations on the day of surgery, the figures were 9% for surgeons and 3% for anaesthetists.

Surgeons and anaesthetists are more likely to be available for elective and emergency theatre lists where:

- Medical staffing levels are sufficient to meet elective and non-elective demand, and to cover annual leave and other commitments.
- Medical staff are freed up from other commitments – for example they are not on call for emergencies when operating on elective patients.
- Medical staff provide sufficient notice of annual, study or special leave.
- Managers provide sufficient notice of meetings at which medical staff are expected to attend.

Diagnosis – medical staffing

Monitor:

- Cancelled operations due to unavailability of anaesthetists or surgeons, using the Cancelled Operations Diagnostic Tool.
- Unallocated and cancelled theatre lists, using the Theatre Performance Diagnostic Tool.
- Medical staffing levels necessary to meet elective and non-elective demand.
- Availability of staffed emergency theatres as recommended by NCEPOD and Royal College of Surgeons (see pages 74 & 75).

Take action where:

- Operations are cancelled due to unavailability of anaesthetists or surgeons.
- There are high numbers of unallocated and/or cancelled theatre lists.
- Medical staffing is not sufficient to meet elective and non-elective demand.
- NCEPOD and Royal College guidelines are not being met (see pages 74 & 75).
Actions – medical staffing

Recommended actions to optimise medical staffing levels and minimise the impact of surgeon and anaesthetist unavailability on cancelled operations:

Theatre Management Group:
- Monitor cancelled operations caused by unavailability of surgeons and anaesthetists and unallocated and cancelled theatre lists.
- Review medical staffing levels to ensure they meet elective and non-elective demand.
- Make information available to clinical directorates and theatre users.

Medical staffing:
- Develop a systematic approach to determining medical staffing requirements to match elective and non-elective demand.
- Ensure that sufficient medical staff are available to cover annual leave and other commitments.
- Ensure that medical staffing levels take account of the increasing participation of medical staff in management issues such as clinical governance.
- Implement medical staff rotas that are flexible, to minimise unallocated and cancelled theatre lists.
- Ensure that medical staff are free of other commitments when on call for emergencies.
- Minimise the time medical staff are not available for clinical commitments by making maximum use of videoconferencing and teleconferencing.

Leave of absence & cancellation of theatre lists:
- Surgeons and anaesthetists should provide a minimum of 6 weeks notice of absence.
- Managers should ensure that timings for meetings take account of surgeons’ and anaesthetists’ clinical commitments.
- All lists that may be cancelled should be notified to the theatre manager/scheduler/other nominated individual at least 6 weeks in advance and according to agreed procedures.
Examples of effective practice – medical staffing

Flexible working by anaesthetists has improved theatre utilisation rates. An anaesthetist who is rostered for a list which is cancelled due to surgeon unavailability will work to cover other lists which are short of an anaesthetist. This includes being prepared to work a list on another day during that week, or on another week if necessary. Anaesthetists’ job plans include a requirement to remain up to date with practice in all non-subspecialised areas. This means that any anaesthetist is able to cover most lists.

North Cumbria Acute Hospitals, contact Lynne Gorley, Theatre Project Manager, on 01946 693 181 x3491 email lynne.gorley@ncumbria-acute.nhs.uk

Within the Trust the three breast surgeons have adopted a flexible weekly timetable in an attempt to cover all theatre and outpatient commitments irrespective of consultant leave. All new breast outpatient referrals are pooled. This greatly increases the flexibility to cover the workload. Over a 12 week period the team only cancelled two outpatient clinics and one theatre session (101 sessions ran out of a potential 102). If no cross-cover had been possible, ten elective theatre sessions would have been lost during this time period.

Southern Derbyshire Acute Hospitals, contact Mark Sibbering, Consultant Surgeon, email mark.sibbering@sdah-tr.trent.nhs.uk

The clinical director enforces a strict anaesthetic six week leave policy and very few lists have been cancelled in the last 12 months due to anaesthetic leave.

Royal Preston Hospital, contact Graham Jones, Consultant Anaesthetist, on 01772 522 555 email graham.jones@patr.nhs.uk

All anaesthetic leave is booked in accordance with the departmental leave policy. All applications for leave must be applied for six weeks in advance. There is an identified number of staff that can be on leave at any one time. Between the 1 April 2001 and the 31 March 2002 only 11 theatre sessions were cancelled due to no available anaesthetist.

Southern Derbyshire Acute Hospitals, contact Janet Purves, Anaesthetic Department Secretary, on 01332 347 141 x2627 email janet.purves@sdah-tr.trent.nhs.uk

The Trust has a 6 week annual leave policy, and requests for leave at notice shorter than six weeks must be approved by the Clinical Director. This enables effective list and resource planning and choice of booked operation dates for patients.

Salisbury Healthcare, contact Helen Mullender, Senior Nurse Day Surgery, on 01722 336262 x4560
Theatre staffing

The Theatre Programme’s survey of employees working in theatres and recovery in the nine pilot sites identified that shortages of theatre staff are undermining employee satisfaction and morale. Staff shortages require staff in post to work harder and longer, which may lead to staff sickness.

The number of staff required for theatres and recovery, and the skill-mix of those staff, should relate directly to the workload of theatres. The method most commonly used to calculate the required staffing establishment is the National Association of Theatre Nurses published formula (see Staffing in the Operating Department available from www.natn.org.uk).

Theatre and recovery staffing is more likely to be matched to workload where:

- Staffing levels are calculated afresh each year (zero-based), rather than reflecting historic staffing levels.
- There are low levels of sickness or vacancies.
- There is not a shortage of theatre staff at the local level.
- Operating lists are changed with sufficient notice for staffing to be altered to meet the new requirements.
- Rotas for theatres coincide with theatre list start and finish times.
- Rotas for recovery take account of the patterns and volume of recovery workload.
- Nurse and operating department practitioner roles within theatres have been merged to promote flexibility and provide short-notice cover.

Diagnosis – theatre staffing

Monitor:

- Theatre and recovery staffing levels against agreed establishment (based on NATN recommendations).
- Theatre and recovery staffing levels at peaks and troughs of demand.
- Sickness rates.
- Vacancy rates.
- Levels of agency staffing.

Take action where:

- Theatre and recovery staffing levels regularly fall short of agreed establishment.
- Theatre and recovery staffing levels do not meet peaks and troughs of demand.
- Sickness rates are high.
- Vacancy rates are high.
- Levels of agency staffing are high.
Action – theatre staffing

Recommended actions to optimise theatre and recovery staffing levels and minimise the impact of theatre staff unavailability on cancelled operations:

Theatre Management Group:
- Monitor theatre and recovery staff sickness rates; vacancy rates; levels of agency staffing; and training and development for theatre staff.
- Make information available to clinical directorates and theatre users.

Theatre staffing:
- Document staffing policies for all elements of theatre and recovery work and review these policies each year.
- Use a zero-based method of calculating theatre and recovery staffing requirements.
- Use the NATN guidelines for minimum staffing levels and build in flexibility for absence and training (NATN recommends 20% additional staff hours).
- Forecast increases in activity and build these into staffing requirements.
- Monitor actual staffing levels against agreed staffing levels and take action where staffing falls short of agreed requirements.
- Change staff shift times so that staffing matches theatre and recovery workload – including peaks and troughs in demand.
- Offer flexible working times to improve recruitment and retention of theatre and recovery staff.
- Based on the results of the *Working in Theatres Diagnostic Tool*, agree policies and action plans to improve staff satisfaction and morale.

Skill mix:
- Examine skill-mix of staff regularly to make best use of staff at all levels.
- Determine competencies required for roles within theatres and recovery and ensure these are matched by the competencies and roles of existing theatre and recovery staff.
- Consider flexibility by combining nurse and operating department practitioner roles.
Examples of effective practice – theatre staffing

All qualified staff within the department - nurses, ODAs and ODPs – are paid the same rate and have the same terms and conditions.
Southern Derbyshire Acute Hospitals, contact Ian Pettit, General Manager Critical Care Services, email ian.pettit@sdah-tr.trent.nhs.uk

Recovery staff have been developed to look after critical care patients and help in ICU/HDU when needed. Most recovery staff have achieved specialist qualifications and rotate to ICU/HDU to maintain their skills.
Princess Alexandra Hospital, contact Jan Noble, Modern Matron Recovery & Acute Pain Services, on 01279 444455 (via bleep)

A self-rostering system ensures adequate cover for night duty. Guidelines on numbers and skill mix are provided and staff allocate themselves for the nights they want to work. This has proved very successful as staff share out duties appropriately and covering absence is less of a problem.
Royal Devon & Exeter Hospital, contact Sherrie Surcombe Theatre Manager 01392 411611 and bleep or Catherine Holmes, Regional Programme Manager South West on 077887 10682

The Trust has increased the number of multi-skilled staff. OPDs and nurses are qualified to cover recovery and anaesthetic roles. Some staff develop general skills and other specialist skills.
Central Manchester & Manchester Children’s University Hospitals, contact Heather Bonnebaig, Directorate Manager for Anaesthesia, MRI Theatres & Sterile Services, on 0161 276 4970, email Hbonnieb@central.cmht.nwest.nhs.uk

To eliminate delays due to equipment unavailability, the roles of the floor control and list co-ordinator were clearly defined to eradicate any confusion over responsibility for equipment. There are now fewer delays due to equipment problems. Other role definitions have been reviewed and revised definitions are being tested.
University Hospitals Coventry & Warwickshire NHS Trust, contact Karen Taylor, Theatre Project Manager, on 0247 660 2020 x 8498 email karen.taylor@wh-tr.wmids.nhs.uk

All ordering of materials is now agreed and controlled by the materials manager, which helps free up clinical staff. The materials manager has designed a spreadsheet of information including surgeon preferences and stock levels.
Southampton General Hospital, contact Jo Whitfield, Assistant Theatre Manager, on 0238 0777 222

All staff were on different terms and conditions. They now have a single pay spine – based around the nursing pay scale – that rewards the most experienced clinical staff.
Central Manchester & Manchester Children’s University Hospitals, contact Heather Bonnebaig, Directorate Manager for Anaesthesia, MRI Theatres & Sterile Services, on 0161 276 4970, email Hbonnieb@central.cmht.nwest.nhs.uk
### Step 3c Electives & emergency surgery

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Day surgery & elective inpatients

Increasing the number of procedures performed as day cases is critical to reducing waiting times and reducing cancelled operations. The latest data produced by the Audit Commission (2001) suggests that if all NHS Trusts achieved the day case levels of the best performers, 120,000 existing inpatients in England and Wales could be treated as day cases.

Increasing the number of procedures performed as day cases will also reduce pressure on inpatient beds. The Audit Commission’s Basket 2000 Procedures and Benchmarks contains 25 procedures that could be performed as day cases (see Day Surgery, Acute Hospital Portfolio, available from www.audit-commission.gov.uk).

Day case units are self-contained with predictable bed and theatre capacity. Evidence from the Theatre Programme survey of cancelled operations showed that it is usually the surgeon that is the major constraint for day surgery. Scheduling in a day case unit is simpler, as essential resources are easier to control and fewer are required. Beds are ring-fenced (and rarely a constraint) and there is little or no pressure from emergencies. The high volume of similar procedures carried out in day case units allows for optimum flow of patients. Lists can be planned to use 100% capacity without risk of cancellation – assuming that surgeons and anaesthetics are available and that the time allocated to perform procedures allows for variation between cases. (Note that planning to use lists to 100% capacity does not mean that theatre utilisation will be 100%. The calculation for the time needed to perform procedures allows flexibility for variation between cases by setting the anaesthetic plus operating time for each procedure above the average – see page 63.)

For elective inpatients, the constraint in the patient process may vary throughout the year. Where NHS Trusts have adequate bed capacity, or at times of the year when emergency pressures are low, theatres may be the constraint. It is important to make maximum use of this resource and plan lists to use 100% capacity. Where there are insufficient beds available, it is likely that planning lists to use 100% capacity will result in cancelled operations. NHS Trusts should ensure that, in this case, theatre lists are scheduled according to the maximum capacity of the main constraint – beds. For example, lists could still be planned to 100% capacity by changing casemix so that overall fewer bed days are required.

NHS Trusts are recommended to use patient process mapping to identify the main constraints in the patient’s surgical journey.
Diagnosis – day surgery & elective inpatients

Use the *Theatre Performance Diagnostic Tool*, patient process mapping and the *Cancelled Operations Diagnostic Tool* to identify and monitor:

- Patient journey times and delays; constraints in the patient’s surgical journey.
- Number of day cases as % of number of elective inpatients and day cases combined.
- Theatre utilisation for day case units and elective inpatients.
- Early and late list start and finish times.
- Utilisation of planned and allocated lists and reasons why lists were not reallocated or were cancelled.
- Number of patient, hospital clinical and hospital non-clinical cancellations the day before or on the day of surgery.

Also monitor:

- For each procedure in the Basket 2000, number of day cases as % of number of elective inpatients and day cases combined.
- Demand and capacity for day surgery and elective inpatients, taking account of demand and capacity for emergency and trauma.

Take action where:

- There are significant delays in the patient’s journey.
- Number of day cases as % of number of elective inpatients and day cases combined is not increasing (unless already performing above the national average).
- Number of day cases as % of number of elective inpatients and day cases combined, for each procedure, is lower than the upper quartile in the Basket 2000 Procedures.
- Theatre utilisation is below optimum, as agreed by the Theatre Management Group.
- Lists consistently start early, start late, finish early or finish late.
- There are high numbers of patient, hospital clinical or hospital non-clinical cancellations the day before or on the day of surgery.
- List utilisation is low, with lists unallocated or cancelled.
- Operating theatre capacity is not matched to demand.
Action – day surgery & elective inpatients

Recommended actions to improve the performance of elective surgery:

Theatre Management Group:

- Monitor day case rates; patient, hospital clinical and hospital non-clinical cancellations the day before or on the day of surgery; theatre utilisation; planned and actual start and finish times; list utilisation and reasons for unallocated or cancelled lists.
- Make reports available to clinical directorates and theatre users.

Planning and management:

- Nominate a lead clinician for day surgery.
- Review the Basket 2000 Procedures by individual consultant and agree action plans with those who do not reach the upper quartile.
- To maintain efficiency, use day case units only for day surgery.
- Transfer minor day cases to other areas, eg primary care, outpatients.
- Consider implementing elective 23 hour short stay units.
- Implement pre-operative assessment to ensure that appropriate patients are listed for day surgery and reduce DNAs/last minute patient cancellations.
- Agree a policy for start and finish times and ensure that theatre managers, surgeons and anaesthetists adhere to this policy.
- Agree a policy for notifying leave of absence and reallocating lists.

Theatre utilisation, demand & capacity:

- Where theatre utilisation is low, analyse why. Take action to reduce delays between cases to optimise utilisation, eg locate patients in theatre reception areas or admission lounges to minimise delays waiting for patients to transfer from wards to theatre.
- Take action to reduce patient, hospital clinical and hospital non-clinical cancellations the day before or on the day of surgery.
- Where theatres are the constraint, ensure that lists are planned to use 100% capacity. (Note that theatre utilisation will not be 100% because the calculation for procedure time sets anaesthetic plus operating time for each procedure above the average – see page 63.)
- Where theatres are not the constraint, ensure that lists are planned to take account of the capacity at the main constraint, eg alter casemix, use remaining time for day surgery or emergencies, or free up staff for training.
- Take action to remove constraints outside theatres to allow theatre lists to be booked to 100% capacity.
- Review demand and capacity to identify spare capacity.
- Reallocate theatre lists where there is insufficient demand for the allocated theatre time – taking account of individual consultants’ waiting lists and times.
Examples of effective practice – day surgery & elective inpatients

A written policy sets out definitions for list start and finish times, and the responsibilities of each staff group (e.g., the anaesthetist will be in theatre and ready to induce anaesthesia for the first patient on the list no later than 09:00). Staff in theatre monitor compliance with the policy and report exceptions, with reasons. In cases of repeated non-compliance with the policy, the matter is discussed with the employee by either the theatre manager, lead clinician, medical director or executive director as appropriate. Details of non-compliance are published and circulated regularly.

North Cumbria Acute Hospitals, contact Lynne Gorley, Theatre Project Manager, on 01946 693 181 x 3491 email lynne.gorley@ncumbria-acute.nhs.uk

To maximise the use of day surgery and free up emergency beds, the Trust developed protocols with medical staff and DSU that allow certain emergency patients to be treated as day cases. Previously, patients could wait up to 36 hours for surgery as inpatients. Now, patients who comply with the protocol are treated as emergencies in the day surgery unit. Patients are added to an urgent list when in A&E, then go home and return for day surgery the next day. Up to 12 emergency patients can be seen as day cases in a week. The protocol applies to patients with abscesses, nasal manipulations and minor trauma.

Manchester Royal Infirmary, contact Judith Duncan, Day Surgery Unit Manager, on 0161 276 4059 email judith.duncan@cmmc.nhs.uk

The David Beevers Day Unit at St James University Hospital provides care for one liver biopsy patient on Monday afternoon and two patients on Thursday morning. A few days before the procedure, patients attend for blood tests. If the results are within safe limits, the patients are assigned to an operating list. If there is a failure to attend or any other reason for ‘non procedure’, the liaison nurse allocates another patient to that list to ensure maximum utilisation of the resource. Blood results are sent for inclusion in the notes. The liaison nurse confirms make-up of the theatre list. This co-ordination has resulted in maximum use of all available liver biopsy sessions. Waiting times for the procedure have been reduced from 5 months to 3 weeks.

Leeds Teaching Hospitals, contact Gloria Bailey, Clinical Services Manager, Day Surgery on 0113 2064787 or Tony Martin, Theatre Project Manager, on 07876 740118 email tony.martin@leedsth.nhs.uk

Service level agreements are established and reviewed annually. These include list start and finish times. Action is taken by the theatre management, in collaboration with bed holding specialties, to identify reasons for overruns with a view to planning lists more effectively or allocating additional operating time where possible.

Leeds Teaching Hospitals, contact Tony Martin, Theatre Project Manager, 07876 740 118 email tony.martin@leedsth.nhs.uk

The theatre manager monitors the make-up of planned lists in advance and has the authority to request that consultants shorten lists where an overrun is inevitable due to the casemix of the list and the likely operating time for that procedure by that surgeon.

North Cumbria Acute Hospitals, contact Lynne Gorley, Theatre Project Manager, on 01946 693 181 x3491 email lynne.gorley@ncumbria-acute.nhs.uk
A theatre list template and protocol was developed for the submission of operating lists. This reduced delays in lists by improving timeliness, reliability and accuracy of information.

Leeds Teaching Hospitals, contact Tony Martin, Theatre Project Manager, 07876 740 118 email tony.martin@leedsth.nhs.uk

Practice for cataract lists was changed so that instruments are set up in a side room rather than after the previous patient. A 15 minute delay between cases was reduced to around three minutes – freeing up time for one extra case per list.

Leeds Teaching Hospitals, contact Sue Boyes, Ophthalmology Theatre Sister, on 0113 392 2746 or Tony Martin, Theatre Project Manager, on 07876 740118 email tony.martin@leedsth.nhs.uk

Lists that become vacant because of leave are advertised to other specialties. The waiting list manager produces theatre schedules a month in advance so that consultants can see the spare lists that are available. Take up of vacant lists is very good.

Isle of Wight Healthcare, contact Liz Nials, Theatre Project Manager, on 01983 534 103 email liz.nials@iow.nhs.uk

One person collates all information on consultant leave and – in liaison with theatres, anaesthetists etc – reallocates the session to another surgeon on the basis of availability, skill mix and other critical factors. During 2001/02, one specialty reallocated 39% of otherwise cancelled lists in this way.

Leeds Teaching Hospitals NHS Trust, contact Stephanie Lee, Patient Services Manager on 0113 392 8460 or Tony Martin, Theatre Project Manager, on 07876 740118 email tony.martin@leedsth.nhs.uk

Lists that become vacant because of leave are advertised to other specialties. The waiting list manager produces theatre schedules a month in advance so that consultants can see the spare lists that are available. Take up of vacant lists is very good.

Isle of Wight Healthcare, contact Liz Nials, Theatre Project Manager, on 01983 534 103 email liz.nials@iow.nhs.uk

The assistant general manager for surgery chairs a weekly meeting to confirm leave lists. The meetings are attended by the general managers for other surgical specialties, the activity manager, the admissions manager, the theatre coordinator, the surgical medical staffing coordinator, the theatre manager and the day surgery unit manager. The assistant general manager for surgery coordinates the offer of vacant sessions, first within the directorate and then to other surgeons. The hospital currently uses 87% of allocated lists and is now aiming for 95% utilisation.

Princess Alexandra Hospital Harlow, contact Sarah Oliver, Assistant General Manager for Surgery, on 01279 444 455 x2827

Theatre porters now have keys to summon lifts when required, rather than waiting. This has saved around five hours per week and has improved the patient experience. Delays to theatre lists have reduced and the morale of theatre porters has increased.

Princess Alexandra Hospital Harlow, contact Maggie Brown, Theatre Co-ordinator, on 01279 444455 ext 2463

The orthopaedic theatre publishes information on list utilisation on notice-boards within theatres. This has encouraged healthy competition to improve.

University Hospitals Coventry & Warwickshire, contact Karen Taylor, Theatre Project Manager, on 0247 660 2020 x8498 email karen.taylor@wh-tr.wmids.nhs.uk

Christina Krause 134.69.73.14
c krause@bopsqc.ca
British Columbia
Emergencies & trauma

NHS Trusts should meet the service standards set out by the National Confidential Enquiry into Perioperative Deaths (NCEPOD) the Royal College of Anaesthetists and the Royal College of Surgeons (see pages 74 and 75). Emergency and trauma services are likely to be efficient and meet these agreed service standards where:

- There are sufficient funded daytime theatre lists or slots dedicated for emergency and trauma operations.
- Availability of surgeons and anaesthetists is guaranteed, as they are not committed in other service areas.
- There are clear protocols for implementation of the NCEPOD guidelines, including clear arrangements for NCEPOD 1 (within one hour), NCEPOD 2 (within 24 hours) and NCEPOD 3 (within three weeks) cases.
- Only emergencies that require surgery within one hour (NCEPOD 1) take place outside of funded emergency list time.
- Emergency patients are pre-operatively assessed and listed for surgery only when all investigations and assessments are completed and they are fit for surgery.

(See page 74 for the NCEPOD emergency categories.)

Diagnosis – emergencies & trauma

Use the Theatre Performance Diagnostic Tool to monitor:

- Theatre utilisation for emergency/trauma theatres.
- Patient journey times for emergency/trauma surgery (time patient booked into theatre to time anaesthesia started/time patient entered operating room).
- Number of non-NCEPOD 1 operations performed between 5pm and midnight and between midnight and 8am.

Also monitor:

- Availability of staffed emergency theatres and recovery areas as recommended by NCEPOD, the Royal College of Anaesthetists and the Royal College of Surgeons.
- Availability of surgeons and anaesthetists.
- Demand and capacity for emergencies and trauma.

Take action where:

- NCEPOD and Royal College guidelines are not met.
- Non-NCEPOD 1 operations are carried out between midnight and 8am.
- Patients are waiting for surgery until surgeons or anaesthetists are freed up from other commitments. This will be demonstrated by:
  - Low theatre utilisation of daytime dedicated emergency and trauma lists
  - Long patient journey times for emergency/trauma surgery.
  - Non-NCEPOD 1 operations performed between 5pm and midnight.
- Emergency and trauma theatre capacity is not matched to demand.
Action – emergencies & trauma

Recommended actions to improve emergency and trauma surgery:

**Theatre management group:**
- Monitor cancelled operations due to emergencies/trauma; non-NCEPOD 1 emergency operations performed outside daytime theatre time; theatre utilisation; and demand and capacity.
- Make information available to clinical directorates and theatre users.

**Planning & management:**
- Classify the urgency of all operations according to the NCEPOD categories to ensure that cases are treated according to clinical priority (see page 74).
- Develop an agreed protocol – which may include a lead person – to schedule and coordinate emergency and trauma surgery.
- Implement pre-operative assessment for all emergency patients to facilitate effective use of emergency theatre capacity and timely discharge of patients.
- List emergency patients for theatre only when all investigations and assessments are completed and the patient is anaesthetically and surgically fit for surgery.

**Staffing:**
- Develop an agreed protocol for the staffing of emergency and trauma surgery, and ensure that surgeons and anaesthetists are not allocated to other fixed commitments.
- The anaesthetists staffing the daytime emergency/trauma list should not be the anaesthetist ‘on call’.
- Where theatre utilisation of funded daytime emergency and trauma lists is low, and there are significant number of non-NCEPOD 1 operations between 5pm and midnight, examine patient journey times and medical staff availability. Patients may be waiting until after 5pm because medical staff are not freed up to do emergencies during daytime emergency and trauma theatre time.

**Scheduling:**
- Minimise the number of emergency and trauma operations performed outside daytime theatre lists. Perform only NCEPOD 1 operations between midnight and 8am.
- Where specialised emergencies require specialised theatres, consider performing them on elective lists rather than on general emergency lists eg perform cardiac emergencies on cardiac lists, and ophthalmology emergencies on ophthalmology lists. The theatre list template should allow for emergency patients (see pages 65 and 66).
- Use theatre capacity flexibly, eg where there is spare capacity on an elective list, it may be possible to take emergency cases and relieve pressure on emergency lists.

**Demand & capacity:**
- Measure demand for emergency and trauma theatre time and available capacity. High theatre utilisation of daytime emergency and trauma lists can be an indicator of insufficient capacity. Where demand exceeds capacity, make additional theatre time available.
Examples of effective practice – emergencies & trauma

Within obstetrics & gynaecology there is a nominated consultant on call for a week, during the day, for emergencies. During this time the consultant has no elective commitments, which ensures that he or she is available for any emergency as it occurs.

Southern Derbyshire Acute Hospitals, contact Duncan Bedford, General Manager Obstetrics & Gynaecology Directorate, on 01332 340 131 x5072 email duncan.bedford@sdah-tr.trent.nhs.uk

Trauma meetings are held at 8.30am daily, chaired by the surgeon with the routine theatre list for the day (generally following a day on call). The meeting is attended by clinicians, a senior person from the trauma theatre and the ward physiotherapist. Each case and the operative plan are discussed and the order of the list is agreed.

Princess Alexandra Hospital Harlow, contact Ian Hanmore, Acting Theatre Manager on 01279 827491

At 9pm the trauma team decide the first patient for the next morning's trauma list. The next day, the trauma team leader joins the morning round, then the order of cases is decided and the necessary resources are made available eg equipment and staff skill mix. Cases that can be added to the elective list are identified. The trauma list takes place from 09.00 to 21.00 with dedicated anaesthetists and there is no out of hour operating except for NCEPOD 1 cases. There are fewer delays due to equipment unavailability.

University Hospitals Coventry & Warwickshire, contact Martin Cain, Operational Manager Theatres, on 02476 602020 ext 6790

The consultant-led service for emergencies helps with utilisation and planning – especially for trauma – theatre staff attend Trauma Meetings to improve communication and clinical decisions can be made more quickly.

Southampton General Hospital, contact Jo Whitfield, Assistant Theatre Manager, on 0238 0777 222

A specialist nurse clinically examines and assesses all emergency patients prior to surgery to ensure that optimum pre-operative health is achieved. Working with the anaesthetic and surgical teams, the nurse completes further investigations and initiates a treatment plan. The patient’s care process is then coordinated by the nurse within existing hospital and theatre capacity. Strategies used include redistributing cases from emergency to elective theatre schedules, day case emergency surgery, and ‘booking’ parts of the emergency care process.

Good Hope Hospital, contact Mark Radford, Clinical Nurse Specialist in Emergency Services, on 0121 378 2211 ext 1121
## Step 4  Scheduling

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Scheduling

The Theatre Programme’s survey of cancelled operations in the nine pilot sites showed that operations were often cancelled by the hospital on the day of surgery because essential resources (such as medical staff, ward beds, critical care beds or equipment) were not available. Effective scheduling can reduce cancelled operations by ensuring that operations are only planned to take place where these essential resources are available.

Scheduling can be done at a basic or more advanced level depending on each NHS Trust’s starting point. Basic scheduling requires an understanding of the principles of demand and capacity – and how to apply these to the stages in the patient’s surgical journey (process map). Advanced scheduling depends on an in-depth analysis of demand and capacity – possibly down to the level of each surgeon and anaesthetist.

Basic scheduling is described in this Step Guide. In the Theatre Programme, advanced scheduling and advanced demand and capacity is currently being tested in pilot sites and the results will be published in spring 2003. Further guidance on capacity and demand is available in The Improvement Leaders Guide to Matching Capacity & Demand (see www.modern.nhs.uk/improvementguides).

Scheduling involves ten stages:
1. Map the patient’s process.
2. Analyse the constraints.
3. Measure demand.
4. Identify the essential resources.
5. Develop the patient flow templates.
6. Identify the availability of the essential resources.
7. Measure capacity.
8. Design the theatre list templates.
9. Schedule using the theatre list template.
10. Review.

1. Map the patient’s process

Patient process mapping is described in Step 2, pages 22 to 23. For scheduling, the process should be mapped from decision to operate to discharge. For basic scheduling, begin with the most common procedures eg the procedures that account for 80% of the workload in each specialty.
2. **Analyse the constraints**

Analysing the main constraints is described in Step 2 (pages 23 and 24). A constraint is usually a skill or piece of equipment that causes waits and delays for patients. The main constraint for day surgery is often the availability of surgeons, anaesthetists or theatre capacity, but for inpatients it may be the availability of ward beds or critical care beds.

3. **Measure demand**

For scheduling, demand should be measured at the main stages of the surgical journey as identified in the theatre flows in Step 2 (page 23). For basic scheduling, measure demand for the most common procedures that account for 80% of the workload. An example of measuring and analysing demand for theatre time for a surgical procedure is shown below. The same process can be applied to measuring the demand for beds for an inpatient surgical procedure. Demand will need to be calculated for both elective and emergency work.

**Calculate the time it takes to perform the procedure:**

- Measure the anaesthetic plus operating time for individual patients undergoing the procedure. The sample size needed will depend on the variability of the time taken by individual surgeons and anaesthetists. A quick rule of thumb is to use a sample size of at least 30 or 25% of patients (whichever is the greater number).
- Where times of different procedures are similar, group procedures eg all minor gynaecology procedures.
- Draw a distribution curve showing patient numbers against anaesthetic plus operating time in minutes for each group of procedures.
- Measure the time in minutes taken to complete 80% of procedures (see graph below).
- Do not use the average (median) anaesthetic plus operating time as this will not allow sufficient time for variations in procedure time and would result in list overruns and cancelled operations.

![Graph showing anaesthetic plus operating times](image_url)
4. **Identify the essential resources**

For basic scheduling, identify the essential resources for the most common procedures.

**Identify the essential resources:**
- Identify the resources essential to undertaking each surgical procedure by mapping the process across the whole patient journey.
- A resource is essential where it cannot be replaced in the short-term and, if not available, results in the cancellation of the operation. Essential resources are likely to include:
  - Human resources: eg anaesthetists, surgeons, theatre staff, perfusionists.
  - Facilities: eg fully equipped theatres, ward beds, critical care beds.
  - Equipment and consumables: eg specific surgical or diagnostic equipment, specific consumables.
  - Paperwork: eg medical records, results of tests, consent.

5. **Develop the patient flow templates**

For basic scheduling, identify ‘patient flow templates’ for the most common groups of procedures. The patient flow templates are used to understand demand and to schedule resources according to available capacity. At the more advanced level, patient flow templates can be developed for each anaesthetist and surgeon – although this is only necessary where wide variations exist between individuals.

**Develop patient flow templates:**
- Produce a patient flow template for each procedure by identifying the requirement for each essential resource in terms of time and volume at each stage of the patient’s journey.
  - Eg: a coronary artery bypass graft requires one surgeon, one anaesthetist, one perfusionist, and a fully staffed theatre for five hours; a fully staffed critical care bed for approximately 24 hours; and a fully staffed ward bed for five days.
- Measure the time in minutes required for each essential resource using the demand calculation in Stage 3 (page 63).
- For each specialty, group procedures which have similar patient flow templates, ie similar essential resources in terms of type, time and volume.
  - Eg: in cardiothoracic surgery procedures could be grouped into:
    - Complex procedures which require up to five hours theatre time, over 24 hours of critical care bed, five day ward bed, surgeon, anaesthetist, perfusionist (eg heart transplant, coronary artery bypass graft, aortic valve replacement).
    - Non-complex procedures which require one hour theatre time, one day ward bed (eg broncoscopy).
6. **Identify the availability of the essential resources**

For the patient flow templates developed in Stage 5 (page 64), identify availability of essential resources.

**Identify availability of essential resources:**

- Identify the availability of essential resources for a specified time period, eg six weeks in advance.
- Reschedule resources where possible to meet demand, eg change anaesthetic rotas.

7. **Measure capacity**

Measure capacity at the main constraint in the patient flow. The capacity at the main constraint will dictate how quickly patients can flow along the patient journey. Total capacity is the availability of essential resources in hours at that stage of the patient’s journey.

**Measure capacity:**

- Measure capacity at the major constraint identified in the patient flow.
- Capacity = equipment x skills
  
  Ie, multiply the number of facilities/equipment by the hours of human resources required to operate them. (The staff time available cannot be greater than the hours available on the equipment).
  
  Eg:
  
  - The weekly theatre capacity for a cataract list in day surgery is the number of fully equipped theatres (eg two) multiplied by the availability of human resources (eg 3.5 hours for ten lists in each theatre) ie total capacity equals 70 hours.

8. **Design the theatre list templates**

For basic scheduling, design ‘theatre list templates’ for each specialty, based on the patient flow templates for the most common groups of procedures. The demand calculation will allow sufficient flexibility for theatre list templates to be developed for groups of procedures.

For more advanced scheduling – and particularly where there are wide variations between the anaesthetic and operating times of anaesthetists and surgeons – theatre list templates can be developed for each surgeon. Templates may vary depending on other factors such as which anaesthetist will be present and whether the list is a training list.
Design the theatre list templates:

- Begin from the scarcest essential resource (the main constraint).
- Agree the theatre list template for each theatre list. The template sets out the groups of procedures that can be performed on each list given:
  - The demand at each stage of the patient flow template calculated in Stage 3 (page 63) eg, anaesthetic plus operating time, bed days.
  - The capacity of the scarcest essential resource and of other essential resources calculated in Stage 7 (page 65).
- Include ‘unknown patient’ slots in the theatre list template to accommodate NCEPOD 3 operations (operations that should be performed within 3 weeks – see page 74).
- Where specialised emergencies are performed in specialised theatres on elective lists, include ‘unknown patient’ slots in the theatre list template to accommodate NCEPOD 1 and 2 operations (see page 74).
- Example:
  - Critical care beds are the bottleneck in cardiac surgery. The availability of critical care beds determines that the five cardiac surgeons may perform one complex procedure and one non-complex procedure on each theatre list.
  - Two slots per day are required for NCEPOD 1, 2 or 3 operations. Each theatre list template therefore allows one complex and one non-complex procedure, with two unknown patient slots per day across all available lists.

9. **Schedule using the theatre list templates**

Scheduling using the theatre list templates requires a named individual to coordinate resources and ensure that procedures are scheduled according to the templates.

Schedule using the theatre list templates:

- Coordinate the availability of resources essential for the theatre list templates.
- Schedule procedures to the theatre list templates, leaving slots where appropriate for ‘unknown patients’.
- Ensure that templates are flexible to allow for changes to individual anaesthetic and operating times eg for training lists.
- Maintain a list of patients for NCEPOD 1, 2 and 3 operations and ‘pull’ these through the system as unknown patient slots become available.
- Where possible ‘lock off’ critical resources once the procedure has been booked eg ensure that essential equipment cannot be made available for another procedure.
- Communicate the agreed theatre lists and essential resource requirements to users.

10. **Review**

Review:

- Review demand and capacity regularly to ensure that theatre list templates continue to match demand.
- Repeat stages 1 to 9.
Examples of effective practice – scheduling

Cardiac surgery activity is scheduled according to clinical need, bed availability, available theatre sessions and staffing. A theatre list template sets out what cases can be performed on each surgeon’s list. ‘Unknown patient’ slots are available for emergency and urgent patients. Emergencies ‘in hours’ are performed by the ‘on take’ surgeon. Theatre utilisation averages 80% and cancelled operations are minimal. One person, the Cardiac Theatre Scheduler, co-ordinates all cardiac theatre activity.

Royal Devon & Exeter Healthcare, contact Jackie Elsworthy, Clinical Nurse Manager on 01392 411 611 & page or Catherine Holmes, Regional Programme Manager South West on 07788 710 682

Two slots are kept on every day case gynaecology list for day case emergency patients. This prevents the unnecessary use of elective inpatient beds and avoids out of hours emergency operating. Patients receive prompt treatment and appropriate discharge.

Royal Devon & Exeter Healthcare, contact Jackie Elsworthy, Clinical Nurse Manager on 01392 411 611 & page or Catherine Holmes, Regional Programme Manager South West on 07788 710 682

In the Day Case Unit, the pre-assessment nurses plan all operating lists. Each procedure has a points value and the list to be utilised has a points value for available capacity, which is surgeon-specific. If a patient cancels their date for surgery, they re-negotiate their new date with the pre-assessment nurses. The pre-assessment nurses also hold a list of patients who would be willing to attend at short notice.

Southern Derbyshire Acute Hospitals, contact Shirley O’Sullivan, Pre-assessment Nurse Specialist, on 01332 254939 email shirley.o.sullivan@sdah-tr.trent.nhs.uk

A scheduling points system has improved the utilisation of oral surgery day case lists. Previously, four patients were booked on each list regardless of procedure. Each patient is now assigned a number of points depending on length of time the procedure will take. Lists are booked to a maximum of 12 points, instead of a set number of patients. Between November 2001 and January 2002 an additional eight patients were treated, making maximum use of capacity.

Royal Devon & Exeter Hospital, contact Elaine Wallen, Clinical Nurse Manager on 01392 402488 or Catherine Holmes, National Project Manager on 07788 710 682

A multi-disciplinary team plans the mix of cardiac and thoracic cases to take account of availability of ITU beds.

University Hospitals Coventry & Warwickshire, contact Tracey Sykes, Operational Manager for Cardiac Theatres, on 02476 602020 ext 8395
# Appendices

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Appendix 1 – Operating Theatre & Pre-operative Assessment Programme

History

The Theatre Programme, launched in May 2001, has worked with nine pilot sites across the NHS to develop, test and implement good practice in operating theatres using proven redesign techniques. Based on pilot site findings, the Theatre Programme published interim guidance, *Tackling Cancelled Operations*, in December 2001. The guidance includes a diagnostic tool and was distributed for implementation by all NHS Trusts.

The Pre-operative Assessment Project was launched in 1999 to reduce the variation of pre-operative assessment in practice, and improve patient access and quality of patient care.

£8.5m investment for a new Operating Theatre & Pre-operative Assessment Programme was announced in February 2002. The new programme brings together the Theatre Programme and the Pre-operative Assessment Project to ensure good practice in operating theatres and pre-operative assessment is implemented throughout the NHS. The programme focuses on NHS Trusts that received 0 and 1 star ratings for overall performance and 2 star NHS Trusts that significantly underachieved in delivering the cancelled operations key target. The 33 Trusts will be known throughout the programme as ‘programme sites’.

Programme aims & objectives

Good practice in pre-operative assessment and operating theatres should lead to significant improvements for both patients and staff.

The key objectives of the Operating Theatre & Pre-operative Assessment Programme are to:

- Improve the patient experience by reducing delays, reducing cancelled operations, and implementing pre-operative assessment.
- Optimise human resources by improving employee satisfaction and morale for all employees working in theatres.
- Improve theatre performance through effective planning, management and scheduling.
- Improve quality by reducing emergency surgery between midnight and 8am and implementing pre-operative assessment.
Whole systems approach

Services to patients cannot be improved if operating theatre departments are seen in isolation. The patient’s surgical journey is complex and crosses many boundaries. Improving operating theatre performance must be seen in the context of a wider system, including pre-operative assessment, elective and emergency admissions, bed management and discharge planning.

The Operating Theatre & Pre-operative Assessment Programme aims to link to other programmes at NHS Trust, Strategic Health Authority and national levels to ensure a whole systems approach. The diagram below shows some of the links that must be made at national and local levels to improve services for patients.

Programme targets

Targets to meet each core objective have been agreed by the nine pilot sites and will be agreed with the 33 programme sites. The targets, known as key performance indicators, will monitor operating theatre performance and cancelled operations, focusing on the following:

- Cancelled operations.
- NHS Plan cancelled operations guarantee.
- Sickness levels.
- Elective theatre performance.
- Emergency theatre performance.
- Emergency operations out of hours.
Programme plan of work

The programme plan of work includes the work carried out to date within the nine pilot sites and the ongoing spread throughout the additional 33 programme sites. Descriptions of the three main stages of the programme are provided below.

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<td>Developing and testing of diagnostic tools in nine pilot sites – focusing on cancelled operations, patient experience, employee satisfaction, theatre utilisation &amp; performance, and capacity &amp; demand.</td>
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<tr>
<td></td>
<td>Determining what information is needed locally to manage theatres and developing key performance indicators – focusing on cancelled operations, patient experience, employee satisfaction &amp; morale, theatre utilisation and quality.</td>
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<table>
<thead>
<tr>
<th>Stage 2</th>
<th>Good practice</th>
<th>June 2001 - December 2002</th>
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<tbody>
<tr>
<td></td>
<td>Develop &amp; test good practice in nine Theatre Programme pilot sites</td>
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<tr>
<td></td>
<td>Identifying good practice from existing standards, guidelines and studies, drawing on the expertise of professional and government organisations.</td>
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<tr>
<td></td>
<td>Identifying good practice from the nine Theatre Programme pilot sites and other NHS Trusts.</td>
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<tr>
<td></td>
<td>Identifying good practice from other NHS Modernisation Agency programmes.</td>
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<tr>
<td></td>
<td>Developing and testing good practice in the nine Theatre Programme pilot sites using proven redesign techniques.</td>
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<thead>
<tr>
<th>Stage 3</th>
<th>Spread</th>
<th>December 2001 - March 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spread good practice to all NHS Trusts</td>
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</tr>
<tr>
<td></td>
<td>Developing a spread strategy to ensure that NHS Trusts adopt good practice.</td>
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</tr>
<tr>
<td></td>
<td>Publishing good practice guides, diagnostic tools and key performance indicators.</td>
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<tr>
<td></td>
<td>Supporting NHS Trusts to implement good practice guidance and improve performance.</td>
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</tbody>
</table>
### Outputs

Good practice from the programme is spread to the NHS in stages as it is developed. The list below details the reports and publications that have already been published and those that the programme intends to produce:

<table>
<thead>
<tr>
<th>Year</th>
<th>Report / Guidance</th>
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</thead>
<tbody>
<tr>
<td>December 2001</td>
<td><strong>Tackling Cancelled Operations</strong> guidance – including cancelled operations diagnostic tool.</td>
</tr>
<tr>
<td>2002</td>
<td><strong>National Guidance for Pre-operative Assessment in Day Surgery.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>National Guidance for Pre-operative Assessment in Inpatients.</strong></td>
</tr>
<tr>
<td>2003</td>
<td>Further guidance on scheduling; demand &amp; capacity; and innovative solutions to improve operating theatre performance.</td>
</tr>
</tbody>
</table>

### Achievements

The Theatre Programme has achieved the following results in the nine NHS Trust pilot sites:

- Significant reductions in cancelled operations between August and December 2001. All cancellations were cut by 25%, hospital non-clinical cancellations were cut by 27% and hospital non-clinical cancellations on the day of surgery were cut by 8%. Overall, cancellations rose in January due to severe ward bed availability problems in some Trusts, but further reductions in cancellations in February and March show that the Programme is back on track.

- Isle of Wight Healthcare cut non-clinical hospital cancellations on the day of surgery by 98%. North Middlesex Hospital and Southern Derbyshire Acute Hospitals achieved significant cuts in cancelled operations from August 2001 to January 2002. North Middlesex Hospital cut all non-clinical hospital cancellations by 17%. Southern Derbyshire Acute Hospitals cut non-clinical hospital cancellations on the day of surgery by 44%.

- 14% cut in hours of sickness per whole time equivalent theatre staff.

- Increased theatre utilisation for elective theatre lists in six of the nine pilot sites.
Appendix 2 – Patient process map

What have we done so far?

Pre-op assessment
- Long waits to see pre-op doctor
- Long waits for pre-op tests

Day of admission
- No beds available
- Surgeons and Anaesthetists locating patients pre-op
- Long waits in day rooms waiting for beds

Going to theatre
- No ward staff available to escort
- Pre-op paperwork incomplete
- Waiting for lifts
- Multiple checking procedures
- Patient not ready

Operation
- Waiting for radiographer
- Late start times
- Communication between surgeons and anaesthetists for emergencies
- Change to order of lists

Recovery
- Waiting for lifts
- Delays due to theatre staff covering recovery nights and weekends
- Delays waiting for trained staff ward collection

Ideas for improvement
- Improve access (telephone IT) to admissions office
- Nurse led pre-op assessment clinics
- Protocols for pre-op assessment
- Nurse led venepuncture and cardiology testing at POA
- Nurse led diagnostic requesting
- Ring fenced beds
- Review/streamline checking procedures
- Quick guide to booking emergency patients for junior doctors' credit card
- Wheelchair/walking patients to theatre
- Theatre escort nurse service
- Alert phone call to ward 30mins prior to patient collection
- Revised policy for start and finish times
- Policy for use of emergency theatres
- Publish utilisation data
- Review of competencies for escort nurses
- Six day week recovery service
- Extended working weekday for recovery staff
- Designated list for theatre
Appendix 3 – Service standards for emergencies & trauma

NCEPOD recommendations

The National Confidential Enquiry into Perioperative Deaths (NCEPOD) recommends that NHS Hospital Trusts should have:

- A dedicated operating theatre during weekdays in normal hours for urgent and emergency operations.
- Surgical, anaesthetic and theatre staff who are allocated specifically for this work.
- A properly functioning scheme for categorising the urgency and priority of operations.

NCEPOD recommends that only NCEPOD 1 operations should be carried out between 12 midnight and 8am. The NCEPOD categories are:

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCEPOD 1</td>
<td>Immediate life saving operation, resuscitation simultaneous with surgical treatment (eg trauma, ruptured aortic aneurysm)</td>
<td>Within 1 hour</td>
</tr>
<tr>
<td>Emergency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCEPOD 2</td>
<td>Operation as soon as possible after resuscitation (eg irreducible hernia, intussusception, oesophageal atresia, intestinal obstruction, major fractures)</td>
<td>Within 24 hours</td>
</tr>
<tr>
<td>Urgent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCEPOD 3</td>
<td>An early operation, but not immediately life-saving (eg malignancy)</td>
<td>Within 3 weeks</td>
</tr>
<tr>
<td>Scheduled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCEPOD 4</td>
<td>Operation at a time to suit both patient and surgeon (eg cholecystectomy, joint replacement)</td>
<td>At time to suit patient &amp; surgeon</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
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</tr>
</tbody>
</table>

Royal College of Anaesthetist guidelines

Guidelines for the provision of anaesthetic services recommend:

- Staffing levels will be adequate to ensure full cover for emergency services.
- The organisation of theatre services will include 24 hour availability of an emergency theatre. A properly staffed and equipped recovery room must also be available throughout the 24 hours.
- 24 hour access to a full range of laboratory and radiological services for investigations.
Royal College of Physicians & British Orthopaedic Association recommendations

The national standard recommended by the Royal College of Physicians, and adopted by the British Orthopaedic Association, is that fractured neck of femur patients should be operated on within 24 hours of admission.

Royal College of Surgeons requirements & recommendations

To continue to accredit NHS Trusts for training junior surgeons and anaesthetists, the Royal College of Surgeons requires NHS Trusts to have:

- A 24-hour theatre dedicated for emergency operations.
- At least one trauma session on each day of the week.
- Consultant-led operating in these sessions (ie consultant must be free of other commitments and in the hospital, available to help).

Royal College of Surgeons guidance states that:

- A job description for a post in general surgery or trauma and orthopaedics with a sub-specialty interest should clearly identify the emergency surgical and trauma responsibility. It should include programmed emergency and/or trauma sessions with 24 hour availability of fully staffed operating theatres.
Appendix 4 – References & links

Admission, bed management & discharge

- Building Capacity and Partnership in Care, An agreement between the statutory and independent social care, health care and housing sectors, Department of Health, October 2001, www.doh.gov.uk/buildingcapacity
- The Way to Go Home: Rehabilitation and Remedial Services for Older People, Audit Commission, June 2000, www.audit-commission.gov.uk

Anaesthetic services


Consent

- Good practice in consent implementation guide: consent to examination or treatment, Department of Health, November 2001, www.doh.gov.uk/consent

Day surgery

- Day Surgery, Acute Hospital Portfolio, review of national findings, Audit Commission, December 2001 no 4, www.audit-commission.gov.uk
- Day Surgery Follow-up – Progress against indicators from A Short Cut to Better Services, Audit Commission, 2001, www.audit-commission.gov.uk
- British Association of Day Surgery, www.bads.co.uk

Demand and capacity

Emergency care

- *Improving the flow of emergency admissions - key questions and action steps*, NHS Modernisation Agency, October 2001, 4th Floor, St. John's House, East Street, Leicester
- *The price of NHS responsiveness: emergency admissions to acute hospitals*, Economics and Operational Research Division (OR Branch), Department of Health, April 1996

Human resources

- Leadership Centre, Telephone 0845 607 4646.

Operating theatre management & utilisation

- *Good practice in operating theatre management*, NHS Management Executive, 1994
- *The management and utilisation of operating departments*, NHS Management Executive VFM Unit, 1989 (‘The Bevan Report’)
- *Operating theatres*, Scottish Health Management Efficiency Group, 1990
- *Operating Theatres audit guide*, District Audit, 2000
- *Use of operating theatres in the National Health Service*, National Audit Office, 1987
Operating theatre & pre-operative assessment programme

- www.modern.nhs.uk/theatreprogramme

Patient process mapping


Pre-operative assessment


Waiting list management

Appendix 6 – Acknowledgements

The Theatre Programme National Team would like to thank the following organisations and individuals for their contributions to the development of the Step Guide:

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    Liz Nials, Project Manager
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    Lynne Gorley, Project Manager
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  Veronica Shaw, Director of Modernisation

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  David Crossely, former Lead Clinician
  Pam Gurton, Project Manager
  Medical Illustration Department
  Kate Sunley, Director of Service Development
  Anne Wilkinson, former Project Manager

Royal College of Anaesthetists
Royal College of Nursing
Royal College of Surgeons

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University Hospitals of Leicester NHS Trust:
   Carl Walker
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   Dr Sandra Fielden
   Claire Harris
   Dr Di van Ruitenbeek
   Dr Kate Sparks