Accounts Commission
for Scotland

Full house

THEATRE UTILISATION IN SCOTTISH HOSPITALS

JUNE
1999

The Accounts Commission is a statutory, independent body, which, through the audit process, assists local authorities and the health service in Scotland to achieve the highest standards of financial stewardship and the economic, efficient and effective use of their resources.

The Commission has five main responsibilities:

- securing the external audit
- following up issues of concern identified through the audit, to ensure satisfactory resolutions
- reviewing the management arrangements which audited bodies have in place to achieve value for money
- carrying out national value for money studies to improve economy, efficiency and effectiveness in local government and the NHS
- issuing an annual direction to local authorities which sets out the range of performance information which they are required to publish.

The Commission secures the audit of 32 councils, 34 joint boards (including police and fire services), 15 health boards, 28 NHS trusts and six other NHS bodies. In total, these organisations spend public funds worth around £12 billion a year.

The Commission's Health and Social Work Studies Directorate is responsible for managing a national programme of value for money studies. Part of the 1997-98 programme included a review of theatre utilisation in Scottish hospitals, developed by Angela Canning, under the direction of Caroline Gardner, Director of Health and Social Work Studies. Data analysis was undertaken by Craig McKinlay.

ACKNOWLEDGEMENTS

We are grateful to Sheena Craig, Business Manager for Theatres, Anaesthetics and Surgery at the Western General Hospital in Edinburgh, who provided valuable support and advice during the development of the project and in the drafting of this report. The project team is also grateful for the advice and comments it received from an advisory panel of representatives from the NHS during the development of this review.

The Accounts Commission is grateful to the hospitals which participated in the local reviews and the local auditors who carried out the study at individual trusts. We are also grateful to individuals who provided comments at various stages in the development of this study and on the drafts of this report.

Responsibility for the contents and conclusions rests solely with the Accounts Commission.

CONTENTS

Executive summary

The provision of theatre services is challenging, with different theatre users having competing needs. In general, Scottish hospitals are performing well in the delivery of these services. However, there is wide variation in the management and utilisation of theatre departments in Scottish hospitals, and we have identified several areas where improvement can be achieved:

- Theatre managers provide a service to a range of surgeons, anaesthetists and other medical staff within hospitals, but they have no direct management control over theatre users who do not use theatre resources well. An effective theatre users' committee, supported by theatre users and with the authority to make decisions and take action, can help to overcome this problem.

- Robust management information on theatre utilisation is needed to plan and monitor activity effectively. Regular analyses of theatre utilisation will help to identify where improvements can be made. Analyses of theatre activity should be undertaken by specialty and by consultant; benchmarking among similar hospitals is also useful. This report should assist the process, by providing comparative information on how theatres are being used in different hospitals across the country.

- Performance measures for theatres will help highlight where action is needed to improve the utilisation of theatres. We identify a number of performance measures which could be used as the basis of regular reporting to theatre users' committees.

- Theatre lists need to be planned well and notified to the theatre department in good time if theatre resources are to be used as effectively as possible. Regular monitoring of the timeliness of theatre lists can help avoid problems associated with late notification.

- The utilisation of individual theatre sessions must be reviewed regularly to identify where sessions are not being used to their full potential or where more theatre time is needed. These reviews may highlight the need to reschedule the theatre timetable. We suggest five key measures of theatre utilisation which should help theatre managers and theatre users' committees identify where problems are occurring.

- There is only limited national information on how theatres are being used. There is also a lack of common definitions of theatre utilisation. We suggest that theatre departments make use of the definitions we have used in this study as a starting point for the development of robust information.

This report should help hospitals to:

- improve the use of planned theatre sessions
- identify ways to minimise session and case cancellations
- make full and best use of theatre resources
- use management information in a more effective way.

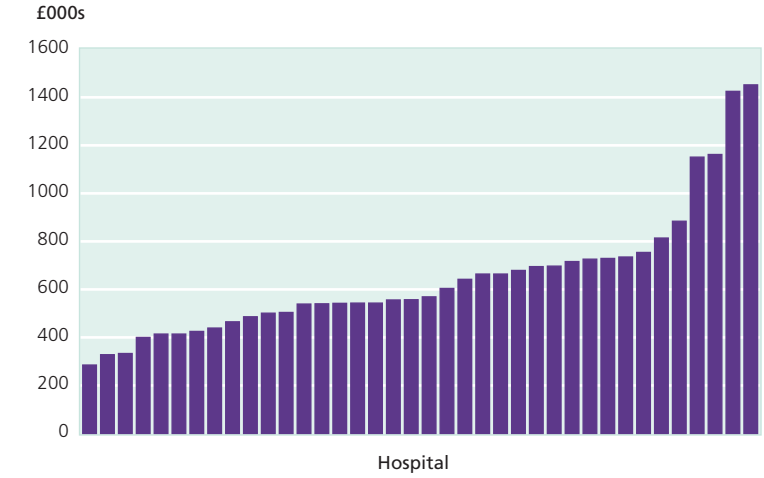
This review of theatre utilisation builds on the Commission's earlier work on day surgery[1] and managing hospital admission and discharges[2].

Introduction

Background

Theatre departments are the focus of much hospital activity, consuming a large proportion of a hospital's resource in terms of capital, equipment, drugs and staffing. It is estimated that it costs around £400,000 to equip a new theatre[3]. In 1997/98, expenditure on theatres (excluding maternity hospitals) in the NHS in Scotland was £206 million[4], with wide variation between hospitals in how much is spent (exhibit 1). This variation may be partly explained by specialty and case mix. Internal financial arrangements may also influence how costs are allocated.

Exhibit 1: Average expenditure per theatre 1997/98



Source: ISD

In the late 1980s, key reports on theatre utilisation in England were produced by the National Audit Office (NAO)[5] and by the NHS Management Executive (commonly known as the Bevan report)[6]. They reported that theatres were only being scheduled for use for about 70% of a normal working week, and that only around 70% of that scheduled time was actually being used. The Bevan report recommended that hospitals should aim to use 90% of planned theatre time. These findings highlight the potential for improvement in how theatres are utilised.

More recently, the introduction of clinical governance to the NHS in Scotland demands that services are provided, organised and managed in a manner which supports the delivery of high quality care[7]. This review of theatre utilisation should help trusts, particularly the newly formed acute trusts where a number of theatre departments may be coming together, to address how theatre services can be planned and managed to enable them to be used as efficiently as possible.

Scope and methodology

Our review of theatre utilisation was undertaken during 1998 at 27 hospitals across Scotland (Appendix 1). It covered both inpatient and day case services. The study focused on how well operating departments are being managed. It did not look at the length of time it takes to complete individual procedures, or the length of time between procedures: data on intra-operative delays (such as patient escort delays) is not gathered routinely.

External auditors carried out a preliminary audit at each hospital. More detailed work was undertaken at some hospitals depending on these initial findings. Each hospital has received a report from their local auditor outlining their findings and containing action plans where appropriate. Basic data on theatre utilisation for eight surgical specialties was collected as part of these local audits. We have used this data to provide comparisons of how individual hospitals are utilising theatres. Analyses of theatre utilisation in the eight specialties are shown in Appendices 2-6, and are highlighted at various points in the report.

Some auditors encountered problems in collecting the data for our analyses, generally because the hospital concerned does not collect the data on a routine basis. Therefore, some of our analyses do not contain all the data requested for all sites covered in our review.

Our review of theatre utilisation had three main objectives:

- to review how theatres are managed and staffed, and to look at the management information available for decision-making
- to examine how hospitals plan theatre activity and utilise the time available in theatres
- to identify possible ways to improve theatre utilisation.

The length of time which patients remain on a waiting list before they receive treatment has been under the spotlight. It seems obvious to relate poor theatre utilisation to long waiting times. However, the situation is more complex than this. Other issues affect waiting times, including bed capacity, the availability of surgeons and anaesthetists, the organisation of outpatient clinics and emergency workload. Our review did not look directly at the relationship between theatre utilisation and waiting times, but improving how theatres are run and managed is a key factor in minimising waiting times.

Main findings

- The theatre manager has no direct management control over theatre users who do not utilise theatre resources well. This problem can be overcome through an effective theatre users' committee.

- Theatre users must be aware of the resources they are utilising. This can be achieved by developing robust information on theatre utilisation and highlighting the theatre resources they consume. Local auditors found that some hospitals do not collect and monitor basic information about theatre utilisation. Theatres are an expensive resource and their use must be reviewed regularly. Theatre users' committees must be involved in this process and take action where sessions are being poorly utilised.

- Late notification of theatre lists can hinder the effective use of theatre resources. The timeliness of theatre lists should be reviewed regularly.

- Theatre timetables are largely based on historical patterns. Alterations to timetables are often limited. Regular reviews of the timetable and the use of individual sessions by the theatre manager and the theatre users' committee will contribute to better utilisation of theatre resources.

- There are no nationally agreed definitions of theatre utilisation. We have developed some definitions for the purposes of this project and we suggest that hospitals use these as a basis for discussion.

- We compared hospital's utilisation rates with Bevan's target of 90% utilisation. In general, hospitals are not meeting this target. When examined at specialty level we found wide variation, with specialties in some hospitals exceeding the target but with other hospitals well below 90% utilisation. Hospitals should examine how their theatre departments are performing and compare them with the 90% target utilisation rate.

- Theatre sessions often do not start or finish when they are planned to. Theatre managers and theatre users' committees must take action where users regularly do not utilise their sessions well. This may mean offering extra sessions or reallocating sessions.

- Cases cancelled on the day of surgery cause problems for both patients and hospitals. Our analyses revealed high case cancellation rates in some hospitals. Hospitals must address this problem. The NHS ME should consider setting a target of 5% (the upper quartile), and hospitals should monitor performance against this target on a regular basis.

- Hospitals should set performance measures for their theatre departments. Performance against these should be reported regularly to the theatre users' committees.

- At a national level, there is little comparative information on how theatres are being utilised. The Commission recommends that hospitals use our analyses as a starting point for benchmarking.

Our findings are discussed more fully in the rest of this report.

Theatre management and staffing

Introduction

The theatre manager plays a key role in the planning and organisation of the theatre department, including non-medical theatre staff. They are often the main link between the theatre department and theatre users. Informal communication between the theatre manager and theatre users is common, with surgeons and anaesthetists engaging directly in discussions with the theatre manager about the utilisation of the theatre department. Often problems can be raised and resolved in this manner. However, while the theatre manager is accountable for the efficient running of the theatre department, much depends on how others use theatre resources. The theatre manager has no direct management control over theatre users. An effective theatre users' committee can help overcome this. These issues are explored in this section which looks at theatre management and staffing.

The theatre users' committee

A good working relationship between the theatre department and its users is vital to effective service delivery. The Bevan report recommends the establishment of a theatre users' committee to foster close liaisons. Like any other group, strong leadership, clearly defined terms of reference, the willingness of others to participate, and the authority of the group to make decisions and take action will contribute to the effectiveness of the theatre users' committee.

Seventeen of the 27 hospitals in our review have a theatre users' committee. Some of the remaining hospitals have had such a group in the past but had disbanded it because it was perceived to be ineffective. These hospitals feel that the role of the committee is filled in other ways, for example by the theatre manager speaking directly to individual consultants or clinical directors, or through regular meetings of the clinical directors. It is not clear, however, how often theatre utilisation appears on the agenda of these meetings, or how frequently the theatre manager reports to such groups.

Where hospitals do have a theatre users' committee, the organisation and effectiveness is varied. Some meet only when a major problem or development needs to be addressed, while others meet on a regular basis to discuss issues of a more general nature. Only one-third of theatre users' committees have formal terms of reference. Three-quarters of hospitals with a theatre users' committee view them as effective, though three hospitals stated that this could be improved: they see their committee as an effective forum for discussion but not adept at addressing more strategic issues or taking decisions. The theatre manager in one hospital does not report to the theatre users' committee. This is not in line with the good practice reported elsewhere. Interestingly, the theatre users' committee of one hospital is led by its medical director, and the hospital believes that this input will give the committee more standing. Another way to improve the effectiveness of theatre users' committees may be to ensure its members have the authority to implement change in user directorates.

Good practice

The theatre users' committee meets on a regular basis. It has clearly defined terms of reference and is the forum for determining how theatres are managed. All specialties are represented on the committee and the theatre manager reports regularly to it.

Sources: Bevan report[6], Scotmeg[8]

Recommendations

- *The theatre users' committee must have formal, clearly defined terms of reference which set out its role and responsibilities.*
- *The theatre users' committee must state explicitly the type and frequency of reports on theatre utilisation to be presented at its meetings.*
- *The theatre manager should report on a regular basis to the theatre users' committee on theatre utilisation.*
- *The theatre users' committee and the theatre manager should review regularly the overall utilisation of theatre sessions.*
- *The theatre users' committee must have the authority to take action where theatre resources are considered to be used inefficiently or ineffectively. This should include the power to reallocate theatre sessions, where continued poor utilisation is identified.*

Theatre policies

Formal policy documents can assist in the smooth running of a theatre department. They should clearly set out the roles, responsibilities and expectations of the various stakeholders, and be reviewed and updated on a regular basis. They are also helpful tools for staff new to the department.

In spite of the usefulness of documented theatre policies to the effective running of the department, local auditors found that five hospitals in our review do not have a theatre policy document: in another hospital each specialty has its own policy, part of which covers the theatre department.

Of those hospitals which do have documented theatre policies:

- eleven do not mention the format for theatre lists
- seven do not include the latest time for receipt of the lists in the theatre department
- seven do not mention the arrangements for notifying any changes to the lists.

The theatre department has many users of its services. A policy document which includes statements on the compilation of theatre lists, how to communicate to theatre staff the contents of the lists and any subsequent changes, and how sessions are planned, will help to ensure that activity within the department is organised well. Theatre users' committees must take an active role in developing and reviewing theatre policies.

Good practice

The theatre users' committee is responsible for developing a theatre operational manual covering basic arrangements such as starting and finishing times, allocation of sessions and arrangements for emergency operations. The manual is subject to regular review.

Source: Scotmeg[8]

Recommendations

- *A policy document should exist for each theatre department. This should explicitly state:*
  - *the arrangements for compiling the theatre lists, including the information required on individual cases*
  - *how the list should be communicated to the theatre department*
  - *the latest time for receipt of the list in the theatre department*
  - *the procedures for notifying theatre staff of changes to the list*
  - *the arrangements for reallocation of sessions in the theatre timetable, and for reallocation where poor utilisation is identified*
  - *the arrangements for booking and cancelling sessions*
  - *the role of the theatre users' committee*
  - *the arrangements for emergency cases.*
- *The theatre users' committee must be involved in developing the theatre policy document, and in any subsequent reviews.*
- *Adherence to theatre policies should be reviewed regularly.*

Management information

Without access to good quality information it is difficult to make the most effective use of theatre resources. Appropriate systems must be in place to provide the data necessary both for planning and for monitoring activity. As stated earlier in this report, auditors were unable in some sites to collect the basic data required for our analyses. This was due to a variety of reasons such as staff vacancies, data not being routinely collected, or difficulties in extracting data from computerised systems.

Five of the hospitals in our sample collect data manually. A spreadsheet package may then be used to produce reports. Obviously, this process is labour intensive and produces a limited amount of information. The other hospitals use a computerised system to record data and provide reports on theatre utilisation. Different computer packages are used: some hospitals have commercial systems while others have systems developed in-house to meet local needs. Most involve the completion of data input forms which are then entered onto computer. This paper-based system of data collection increases the opportunity for error. One hospital has a computer in each theatre, enabling detailed information relating to each procedure to be entered directly. The kind of information produced by computerised systems is similar. This includes: comparisons of session start and finish times with planned times; the number of cancelled operations; and the number of procedures performed.

Some problems with data collection and reporting were highlighted. One hospital considers its data unreliable and so does not use the reports produced by its system. Data audits can help create confidence in the data which is captured, or identify the source of any problems. Another hospital considers that meaningful reports cannot be generated from its theatre management system and so relies on another department to analyse raw theatre data and produce reports. These reports are only produced twice yearly. Others are able to produce reports by consultant but not by specialty. Two hospitals had not been able to produce any monitoring reports from their computerised system for several months due to a staff vacancy. Another has not had regular access to information on theatre activity following the abandonment of its computerised system almost two years ago.

Good practice

Periodic data audits of established theatre information systems help to ensure that clinical staff and managers have confidence in the information produced. A data audit aims to ensure data items are completely and accurately recorded. It also helps to ensure derived management information is relevant to the clinical and business needs of theatre users.

Source: NHSME[9]

Users of theatre services must take responsibility for the resources which they use. To achieve this, they must have regular information on theatre utilisation which they view as reliable, in a format which is meaningful to them. Information needs to be useful to assist in decision making. We found, however, that theatre utilisation reports are often produced but not distributed. In other cases, users are asking for reports which are not generated.

As part of their local reviews, auditors considered the extent to which theatre users are involved in reviewing theatre utilisation reports. They found this varies. In ten hospitals, there is no review of theatre utilisation reports by theatre users. In the other sites, they are reviewed regularly by:

- the trust executive group in one hospital
- the theatre users' committee in four hospitals
- clinical directors in five hospitals
- surgeons only in three hospitals
- anaesthetists only in two hospitals
- by both surgeons and anaesthetists in two hospitals.

Some reports can be produced at specialty level but not at consultant level. At one hospital, two sets of almost identical data are being captured for two groups of users. This highlights a lack of integration of systems and duplication of effort: a system which satisfies the reporting needs of both groups is now being investigated.

Theatre departments must review regularly the information which is being produced, and compare this with what is needed and in what format. This should be done on a regular basis, in conjunction with the theatre users' committee (or theatre users where such a committee does not exist).

Some hospitals do not produce reports on some aspects of theatre utilisation, stating that this is not warranted as there are no problems in these areas. We suggest that for those sites where no regular monitoring takes place a 'snapshot' is undertaken at regular intervals (agreed with the theatre users' committee) to confirm their views that no problems exist.

Recommendations

- *Theatre users must be encouraged to use theatre resources efficiently and effectively. This can be achieved through highlighting theatre utilisation at both specialty and at individual level.*
- *Theatre users should be asked what information they want on theatre utilisation and what format reports should take. The theatre manager can play a key role here.*
- *The theatre manager must review regularly how theatres are being utilised, making use of the analyses and measures developed as part of this study. Data must be collected regularly and reports presented to the theatre users' committee for discussion and action.*
- *Where routine reports on theatre utilisation are not being produced due to the belief that no problems exist, we recommend a 'snapshot' is undertaken at regular intervals to confirm this. This level of reporting should be agreed with the theatre users' committee.*

Theatre budget

Theatre costs are a significant part of the overall cost of a patient's episode of care, yet large elements of these costs are commonly outwith the theatre manager's control. To develop a greater appreciation among theatre users of the costs which they incur, theatre managers should identify high cost items, such as prostheses and internal stapling devices, and monitor their use.

Auditors reported that the theatre budget is monitored, usually by a theatre manager or business manager, on either a weekly or, more commonly, a monthly basis. In two hospitals there is no separate budget for the theatre department: in one, theatre supplies are included in the budgets of user directorates; in the other, they are included within the hospital's general supplies budget.

It is important that high cost theatre items are identified and their use monitored. Auditors established that this is generally undertaken by the theatre manager. In addition to the theatre manager monitoring their use, in seven hospitals, high cost items are recharged to the appropriate user directorate's budget. This kind of action makes users accountable for the use of high cost items over which the theatre department has no control. In another three hospitals, high cost theatre items are identified by the theatre manager and their use monitored by the user directorate. However, three hospitals reported that no action is taken to make users aware of the costs of utilising the theatre department.

Recommendation

- *Theatre users should be encouraged to be aware of the resources they consume when utilising theatre services. This may be through highlighting the consumption of theatre resources by user departments or setting up a recharge system.*

Non-medical staffing

One aim of our review was to assess the use of skilled staff resources in the theatre department. We focused on non-medical theatre staffing and looked at:

- how staff numbers for the theatre department are established
- whether systematic approaches are used to match staff numbers to workload
- how flexibly staff are used in the theatre department.

Staff establishments

The number of non-medical staff required to run the operating department must be matched to workload to ensure that the department is run as efficiently as possible. Hospitals generally follow one of two ways for establishing numbers. The National Association of Theatre Nurses (NATN) has published formulae to help theatre departments estimate non-medical staffing establishments[10]. Auditors found that twenty hospitals use the NATN guidance as a basis for calculating their nursing establishment for theatres. The others have establishments largely based on historical patterns, or use the judgement and experience of the theatre manager when calculating establishments. One hospital has a policy that the staffing establishment is reviewed each time a vacancy arises to ensure the theatre department has the appropriate skill mix and number of staff.

Staff rotas

Staff rotas should be compiled to match the expected activity within the theatre department. They are based on the planned workload (from the theatre schedule) and take account of emergency commitments. Local auditors found that all hospitals match their staff rotas to booked sessions. Two hospitals find that using staggered start and finish times for booked theatre sessions helps to ensure that there is cover at all times, including over the lunch period. This should also help in dealing with demands on the portering service.

Staff flexibility

The need for specialisation and continuity in the theatre department can conflict with the need to develop staff and give them a greater breadth of experience. The Bevan report identified four key issues regarding flexibility of staff:

- the need for staff to be able to work in a number of different theatres
- the ability to assist with major or complex procedures involving special equipment or techniques within a 'mainstream' specialty
- the ability to work in certain specialties where demands are different
- the policy of using staff across the functions of surgery and anaesthetics.

All but four hospitals in our sample have a system where nursing staff rotate between specialties, although this may not extend to senior staff to ensure their specialist skills are maintained. Rotation is a useful way of enabling staff to develop the skills and experience necessary to work in different parts of the theatre environment[11]. This is essential to ensure staff can deal with emergencies.

Good practice

Theatre staff have their own up-to-date in-service records to document training and relevant experience. The theatre manager has access to these records to ensure staff are deployed according to their competencies and skills.

Recommendations

- *There should be a systematic approach to calculating non-medical staffing establishments for theatres, such as use of the NATN formulae.*
- *Theatre staff should be rotated between specialties to enable them to acquire the competencies and skills needed to work in different parts of the theatre department.*

Theatre activity

Introduction

The previous section looked at measures which hospitals can use to ensure the theatre department is well managed. This section looks at how theatre users and others can contribute to effective theatre utilisation through planning their own activity well. It also examines how theatre utilisation may be measured.

The theatre list

Planning the theatre list

The theatre list details the planned schedule of work for individual theatre sessions. It contains basic information such as the patient's name and date of birth, the procedure(s) to be undertaken, and the name of the consultant surgeon responsible. How theatre lists are compiled is a key part of utilising the theatre department well.

Surgeons should consider how much time they have in a particular theatre session and then estimate how many patients they can reasonably operate on during that time. This involves considering the procedures to be performed, and whether extra time is needed during the session for teaching junior staff. Some surgeons also consider the experience and abilities of other members of the theatre team in this process. However, theatre staff reported that some surgeons who do attempt this can be over-optimistic in their estimations, leading to overruns in the theatre department. Equally important, not all surgeons were reported to go through this planning process.

Good practice

When planning the theatre list, the surgeon estimates how long it takes to undertake particular procedures so that time in theatre may be used as efficiently as possible. Some computerised theatre management systems have a scheduling module which enables surgeons to plan their booked sessions in this way.

Late notification

Late notification of the theatre list limits the ability to plan theatre resources effectively. It can lead to operations being cancelled, particularly if the planned procedure requires specialist equipment or supplies to be arranged in advance. Complicated procedures may also require changes to duty rotas so that staff with specialist skills are available.

Changes to the order and content of theatre lists can also lead to potential problems such as:

- the wrong equipment and supplies being prepared and subsequently discarded
- delays, frustrations and fraught working relationships
- the wrong patient being sent for from the ward
- the wrong procedure being undertaken.

In general, the later the theatre list is submitted to the theatre department the more accurate it is likely to be. However, early notification facilitates good resource planning. The optimum timing of the theatre list therefore requires a balance between the two. Scotmeg recommended that lists are submitted to the theatre manager and the anaesthetic department by 2pm on the day before surgery. In line with this good practice, theatre departments in all the hospitals in our review require lists to be sent to them by the afternoon of the day before surgery. However, in their local reviews, auditors found that this deadline is not always met, and a list may not arrive at the theatre department until the morning of surgery. Prompt delivery of theatre lists can be achieved through the use of e-mail or fax.

Recommendation

- *Theatre users should ensure theatre lists are delivered to the theatre department in accordance with the time stated in the theatre policy.*

Allocating sessions

Theatre sessions usually last for a morning or an afternoon, although some may last for a full day. Auditors found sessions are generally allocated to individual consultants since their time in theatre needs to fit with other responsibilities within the hospital, such as outpatient clinics.

The Bevan report recommends the theatre timetable is regularly reviewed and individual sessions are rescheduled where this will facilitate a better use of resources. However, the results of local audits showed that theatre timetables are largely based on historical patterns. Alterations to session allocation are often limited to occasions when a consultant leaves or a new post is created.

Regular reviews of how individual sessions are being utilised will enable the theatre manager to examine where sessions are not being used to their full potential, such as through regular late starts or early finishes. The timetable can then be rescheduled to take account of such inefficiencies, by offering this time to specialties which are deemed to need more time in theatre, for instance, to tackle their waiting lists.

Good practice

The theatre timetable is regularly reviewed by the theatre users' committee and by management. Management should exercise the right to reschedule individual sessions where this will facilitate a better use of resources.

Source: Bevan report[6]

Measuring theatre utilisation

Nationally, basic cost information about theatre departments is currently collected and analysed by ISD. Other information on theatres, like the number of sessions held or cancelled, and how well theatre time is utilised, is not routinely collected, and there are no nationally agreed definitions of theatre utilisation.

To enable data to be collected which is meaningful for comparative purposes, we used definitions of theatre utilisation commonly accepted by theatre managers for our data collection exercise. These are listed at Appendix 7.

The Bevan report stated that only 70% of scheduled theatre time was being used, and recommended that hospitals aim to use 90% of planned theatre time. We looked at the utilisation of scheduled time in three ways:

- **Sessions held**, where data was collected comparing the number of sessions held with the number of potential sessions scheduled.
- **Utilisation of available theatre time**, where we examined in more detail the time actually used in sessions which took place and compared this with the time allocated (ie, sessions which were staffed and available).
- **Utilisation of potential theatre time**, which is an examination of the time used in held sessions with the potential time available had no session cancellations taken place (ie, it includes unused sessions).

Two further key aspects of session utilisation were also examined:

- **Starting and finishing sessions on time**, where data was collected comparing planned and actual start and finish times for individual sessions.
- **Case cancellations**, examining the proportion of cases which are cancelled.

Data relating to eight surgical specialties was collected by local auditors; our summarised findings are reported in the sections which follow. Graphs comparing each specialty's performance are shown in Appendices 2-6. Each hospital has a unique identifier, and each has been notified of their own performance in their local report. It should be noted that:

- not every hospital included in our review appears in every analysis, either because a hospital does not provide a particular specialty or because insufficient information was available locally to enable the auditor to collect the data required
- the period covered varied due to problems in data collection and reporting at some sites.

Some sites had problems in producing basic data. This points to weaknesses in monitoring and reporting. This issue has been raised by local auditors and is being addressed by the hospitals concerned.

The analyses illustrated in the following sections are at hospital and specialty level. Hospitals should also review theatre utilisation at consultant level to highlight variations in individual use. The analyses also show average utilisation rates. However, averages can disguise significant variations. For example, a specialty or consultant may achieve an average utilisation rate of 90%. On the surface, this appears to be very good. However, the 90% average utilisation may be made up of a number of sessions which have been significantly under-utilised, and others which have been significantly over-utilised. Both are wasteful of resources. Under-utilised sessions mean staff are not fully occupied. Over-utilised sessions often incur overtime payments or time which has to be given in lieu. Over-utilisation of sessions may be acceptable in short bursts (eg, where cases unexpectedly take longer or where life-threatening emergencies occur), but should not be the norm.

Recommendation

- *ISD should consider collecting and analysing data on theatre utilisation. This would enable hospitals to regularly compare how effectively they use their theatres.*
- *Theatre managers should use the definitions of theatre utilisation developed as part of this project as a basis for discussion towards the development of nationally agreed definitions. National definitions will enable meaningful and comparable data to be collected for benchmarking among hospitals of similar type.*
- *Analyses of theatre utilisation should be undertaken at three levels:*
  - *by hospital*
  - *by specialty*
  - *by consultant.*

Sessions held

The cancellation of booked theatre sessions may be unavoidable in some instances, due to staff illness, equipment failure or unavoidable catastrophes. Late cancellation of theatre sessions may result in cancelled surgery for elective patients. This can be stressful for patients who may already be anxious, and who have made practical arrangements to be in hospital.

The impact of cancelled sessions on the theatre department can be minimised by providing sufficient notice of the cancellation. This enables the session to be offered to another user.

We examined the extent to which theatre sessions are cancelled by comparing the number of sessions held with the number of potential sessions scheduled. This analysis was undertaken for eight surgical specialties (Exhibit 2). The average for all eight specialties is 87%, only slightly below Bevan's target of 90%. When each specialty is looked at individually, the average for session cancellation ranges from 84% for Ophthalmology to 88% for Urology.

Exhibit 2: Sessions held

The averages for each specialty are broadly similar, but there is wide variation among hospitals for individual specialties.

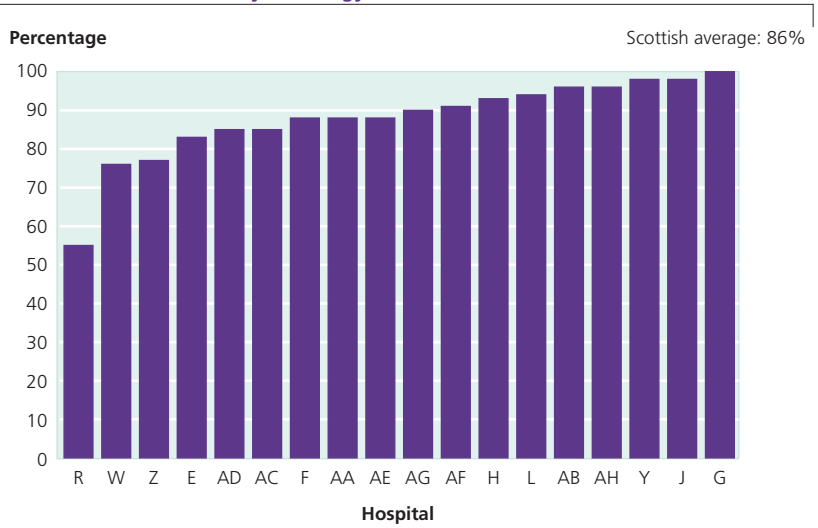
Specialty	Range (%)	Scottish average (%)	Upper quartile (%)
ENT	77-98	87	93
General Surgery	63-98	87	95
Gynaecology	55-100	86	96
Ophthalmology	68-98	84	94
Oral Surgery	82-100	87	100
Orthopaedic Surgery	62-111	86	95
Plastic Surgery	71-100	87	96
Urology	79-115	88	91
Total for specialties shown		87	

Note: In our data collection exercise, the number of potential sessions scheduled was the number of planned, funded sessions during the period under investigation, including the number of sessions which are subsequently cancelled. Some rates exceed 100% due to additional sessions being allocated at short notice.

Source: Local VFM audits

The rates in Exhibit 2 show that planned sessions are generally well utilised. However, Exhibit 2 also reveals a wide variation within some of the key specialties in how well they utilised the potential sessions scheduled. For example, the average for Gynaecology ranges from 55% in one hospital to 100% in another. This variation is depicted in Exhibit 3.

Exhibit 3: Sessions held (Gynaecology)



Source:Local VFM audits

To minimise the number of sessions cancelled, a system is needed for communicating problems to the theatre department so that reallocation can take place. Obviously, the opportunity to reallocate cancelled sessions diminishes as the notification period shortens. Local audits showed that only three-quarters of the hospitals in our sample have formal procedures in place for giving adequate notice of impending cancellation of sessions. Half the hospitals in our review do not collect information on the period of notice given to the theatre department for cancelling sessions. It is difficult to see how these hospitals are sure that sessions are cancelled with sufficient notice to enable reallocation to happen.

Good practice

To encourage early notification of session cancellation, three hospitals have introduced a formal positive booking system. This involves notifying surgeons of the theatre timetable, usually six weeks in advance. Surgeons then confirm if sessions allocated to them will be used, and must reply four weeks before the session is due to take place. This system provides the theatre department with sufficient notice for reallocation where necessary.

The most common reasons for cancelling sessions at short notice reported to local auditors were:

- surgeons' and anaesthetists' annual leave
- surgeons' and anaesthetists' study leave
- surgeons' and anaesthetists' sick leave
- surgeons' and anaesthetists' attendance in court as expert witnesses.

Annual and study leave are generally planned in advance and so it should be possible to provide adequate notice when sessions are cancelled for these reasons. Every effort should be made to co-ordinate surgical and anaesthetic leave.

Four hospitals complained of problems with the late notification of cancelled sessions, even though formal procedures are in place for notification in three of these sites. They reported problems with sessions being cancelled with less than the required period of notice, for reasons which could have been foreseen. Formal procedures are necessary, but are not sufficient alone for efficient utilisation of resources. Compliance needs to be monitored and procedures adhered to.

One hospital commented that, whilst it has no problems regarding session cancellation in general, it does have a problem with one particular specialty which reportedly cancels sessions regularly due to insufficient cases being scheduled for theatre. Clearly, this is a poor use of theatre resources and highlights the need for regular review of how theatre sessions are allocated: the theatre manager should routinely examine where there is insufficient demand for theatre services and reallocate sessions accordingly. This should be done in conjunction with the theatre users' committee.

Local auditors established that efforts are made to offer cancelled sessions to other surgeons. Four hospitals operate a system where a nominated individual is notified of a cancelled session and she or he is then responsible for reallocation. Ten hospitals reported that, provided there is still anaesthetic cover for the session, the surgeon concerned offers the session to a colleague in the same specialty. What is not clear, though, is how much effort goes into offering the session to another specialty thereafter. Ten hospitals do not have any formal policy regarding the reallocation of cancelled sessions. The remaining three hospitals in our sample of 27 reported problems with reallocation, with one commenting that cancelled sessions are rarely reallocated. Having a single person responsible for the co-ordination and allocation of theatre sessions contributes to efficient use of resources.

Good practice

Four hospitals have a nominated individual who is responsible for co-ordinating the reallocation of cancelled theatre sessions. For example, in one of these hospitals, surgeons contact the theatre manager if they cannot use a session which has been booked for them, or if extra theatre time is required (for example, to reduce the number of cases on waiting lists). The theatre manager is responsible for co-ordinating the reallocation of sessions. Surgeons find having a single point of contact useful since they do not personally go through the process of offering the session to colleagues. This procedure also helps to ensure that theatre time is allocated where demand is greatest.

Where sessions are cancelled at short notice and cannot be taken up by another surgeon, procedures must be in place to make sure their staff rostered to work the session are effectively deployed. Auditors were told that theatre staff are flexible and will generally take time in lieu, annual leave or study leave.

Recommendations

- *Clear procedures for notifying the theatre department of cancelled sessions must be in place. This provides the opportunity to offer the session to another user. These procedures should be clearly stated in the theatre policy.*
- *As part of their routine monitoring, theatre departments should record the period of notice given of session cancellations. This will identify whether sessions are being cancelled with insufficient notice to enable reallocation.*
- *The theatre manager or other designated individual should reallocate theatre sessions where utilisation reports reveal insufficient demand for the allocated theatre time. This should be done in conjunction with the theatre users' committee.*
- *The theatre department should identify a key individual as having responsibility for reallocation of theatre sessions following cancellation.*

Utilisation of available theatre time

Our second measure of session utilisation looks at how well time is used in sessions which are held. There are problems in obtaining a consensus on what constitutes the utilisation of individual sessions. For example, a surgeon is likely to consider theatre utilisation in the context of their own surgical involvement; an anaesthetist is likely to include anaesthetic induction time; and other members of the theatre team may include preparation time. Nonetheless, we found the following definition of a session to be generally accepted:

'from the induction of anaesthesia of the first patient on the list, or the procedure commencement time, whichever is the earliest, until the last patient on the list leaves the operating theatre'

We analysed the time used in sessions which are actually held with the time available in these sessions. Our results show that the eight specialties attain an average exceeding Bevan's findings of 70% utilisation (Exhibit 4). The average for all eight specialties is 88%, with three specialties (Ophthalmology, Oral Surgery and Urology) exceeding Bevan's target of 90% utilisation.

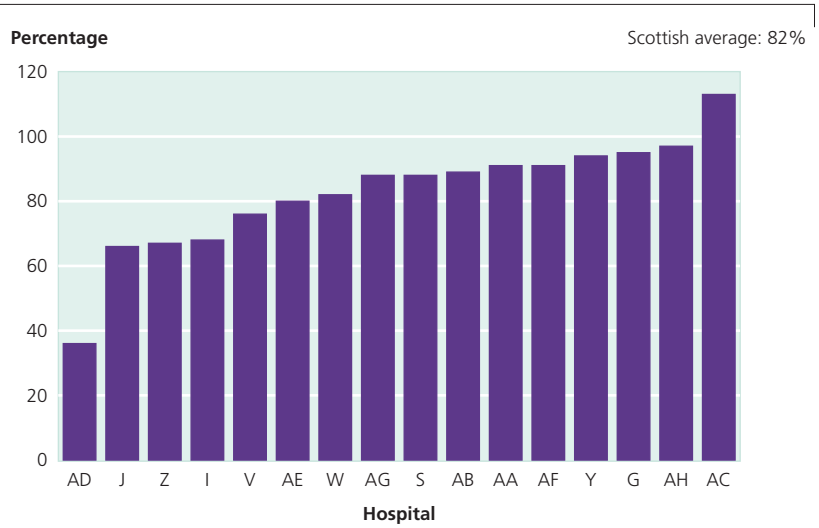
Exhibit 4: Utilisation of available theatre time

Specialty	Range (%)	Scottish average (%)	Upper quartile (%)
ENT	36-113	82	91
General Surgery	50-109	89	97
Gynaecology	57-119	87	95
Ophthalmology	69-112	94	97
Oral Surgery	61-111	92	93
Orthopaedic Surgery	63-107	87	91
Plastic Surgery	41-95	80	85
Urology	68-111	92	96
Total for specialties shown		88	

Source: Local VFM audits

Again, there is wide variation among hospitals in how available theatre time is utilised. Utilisation rates for ENT, for example, range from only 36% in Hospital AD to 113% in Hospital AC (Exhibit 5).

Exhibit 5: Utilisation of available theatre time (ENT)



Source: Local VFM audits

Auditors looked at how often the utilisation of planned theatre sessions was reviewed:

- five hospitals undertake no review
- nine review this on a monthly basis
- seven review utilisation on an ad hoc basis
- four stated that they review utilisation 'regularly'
- one reviews it on a quarterly basis and one on a half yearly basis.

Recommendation

- *Regular reviews of how individual sessions are utilised will identify where theatre sessions could be used in a more effective way. The theatre users' committee should be fully involved in any decision to change the theatre timetable.*

Utilisation of potential theatre time

The previous section looked at how well different hospitals and specialties use the time which is available to them in theatre sessions. Generally, theatres appear to be fairly well utilised. However, this examination only looks at how those sessions which have actually taken place are utilised: it disguises how effectively *potential* theatre time is utilised, that is, when cancelled sessions are also taken into account. We asked local auditors to collect data to compare how specialties in different hospitals use the time in sessions with the potential time which is available. Their findings are summarised in Exhibit 6.

Exhibit 6: Utilisation of potential theatre time

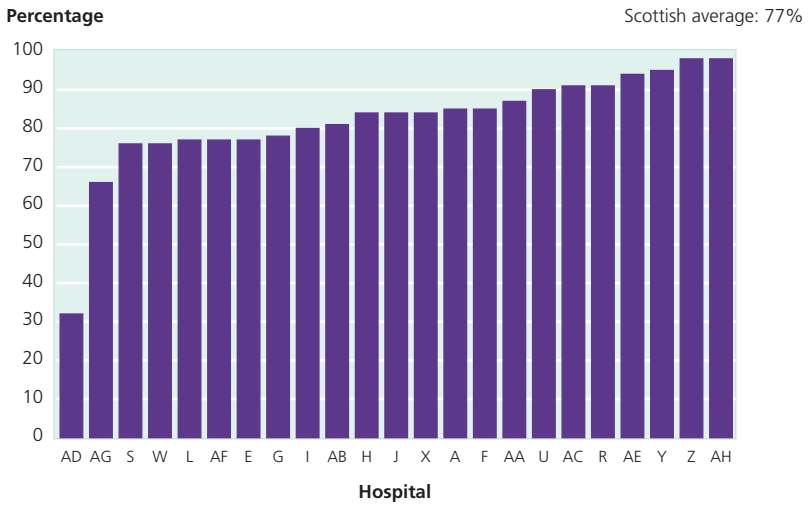
Specialty	Range (%)	Scottish average (%)	Upper quartile (%)
ENT	36-103	73	80
General Surgery	32-98	77	90
Gynaecology	58-106	75	84
Ophthalmology	55-105	83	90
Oral Surgery	35-110	85	86
Orthopaedic Surgery	46-100	79	86
Plastic Surgery	41-146	69	75
Urology	60-98	80	91
Total for specialties shown		77	

Source: Local VFM audits

Exhibit 6 shows that the utilisation of theatre time is lower when the potential time available to users is examined. There is wide variation between hospitals and between specialties in how well they use the potential theatre time available. The averages for all specialties shown fall short of Bevan's target of 90% utilisation, with the average for the eight specialties only reaching 77%.

Wide variations exist when comparing specialty groupings in individual hospitals. For example, utilisation rates in this category for General Surgery range from 32% in Hospital AD to 98% in Hospitals Z and AH (Exhibit 7).

Exhibit 7: Utilisation of potential theatre time (General Surgery)



Source: Local VFM audits

Starting and finishing sessions on time

Deviations from planned start and finish times in theatre can lead to frustrating delays. This can affect costs (in terms of overtime payments), rotas (having to organise time off in lieu) and staff morale. There are a number of reasons why sessions may not start at their arranged time. However, some of these are avoidable, for example:

- late arrival of members of the theatre team
- changes to the theatre list
- patients not ready to be collected from the ward
- over-run of the previous list.

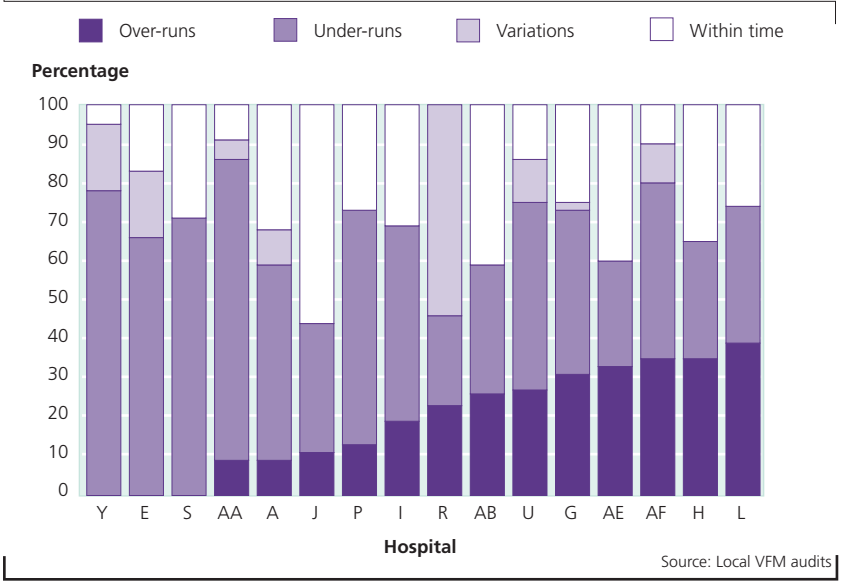
Auditors found that 12 hospitals undertake a regular review comparing actual and planned start and finish times of each theatre session, but only one hospital reported that it raises problems concerning particular surgeons and their timeliness with its theatre users' committee. Other hospitals stated that their theatre manager discusses this directly with the appropriate surgeon. Eight of the hospitals review start and finish times on an ad hoc basis, usually if it is felt that there is a problem in this area. Seven hospitals undertake no monitoring of this measure of utilisation.

Auditors collected data comparing actual and planned start and finish times for each specialty for one month. Sessions which started or finished within 15 minutes of the scheduled time were deemed to have started and finished within time. These are shown as 'within time' in Exhibit 8 and in Appendix 5. Three other categories were used:

- 'over-runs', where the sessions started within time and finished late, or started early and finished within time, or started early and finished late
- 'under-runs', where the sessions started within time and finished early, or started late and finished early, or started late and finished within time
- 'variations', where the sessions either started early and finished early, or started late and finished late.

The results for Urology are shown in Exhibit 8. Graphs showing start and finish times for the other seven specialties are at Appendix 5.

Exhibit 8: Sessions starting and finishing time (Urology)



Source: Local VFM audits

Exhibit 8 shows that often sessions do not start and finish when they are planned to do so. An analysis of this type by consultant will be of more interest at hospital level, since it will identify whether problems occur regularly with particular theatre users. Clearly, as well as identifying sessions which regularly over or under-run, the reasons behind this apparent inefficient utilisation of theatre time must be established. This will help in highlighting whether there are recurrent problems which can be rectified.

Some potential problems and solutions for sessions which do not regularly start or finish on time are given in Exhibit 9.

Exhibit 9: Dealing with sessions which regularly do not start on time

Problem	Potential solution
Surgeon arrives late because of clinic commitments.	Review theatre timetable: can another session be offered on a different day?
Patients are not ready for transport from the ward to the theatre.	Improved communication between the ward and the theatre, for example, by theatre staff notifying the ward of the times when they are likely to transport a patient to theatre.
Too many cases booked for the theatre session.	Better management of the theatre list through estimating procedure times. If too many cases are being booked in an attempt to reduce numbers on waiting list then extra theatre time may be offered.
Anaesthetist late because of pre-operative visits to patients.	Introduction of pre-admission clinics where anaesthetic assessment is made.
Patient not in the ward they are expected to be in.	Introduce a system to enable up-to-date identification of the patient's location.
Patient not, or incorrectly, prepared for theatre.	Develop protocols for patients going to theatre, audit compliance and take remedial action as appropriate.

Some of the factors limiting available operating time may be difficult for theatre managers to prevent. However, theatre managers must be aware of the problems and try to influence change; this may be achieved with the help of the theatre users' committee.

Recommendations

- *The actual start and finish times of individual sessions should be regularly compared with those planned. This should be analysed at consultant level.*
- *Where an individual regularly under or over-runs sessions then the reallocation of theatre sessions should be considered, in conjunction with the theatre users' committee.*

Case cancellations

Inevitably, some cases are cancelled once the theatre list has been finalised and sent to the theatre department. Common reasons for this are:

- emergency cases taking priority
- available staffed operating time has been used up
- the patient's condition has deteriorated and is no longer fit for surgery
- the patient did not turn up for surgery (commonly referred to as a 'Did Not Attend' or 'DNA').

Data was collected for a period of one month on the number of cases cancelled after compilation of the theatre list. Our analyses reveal that case cancellations are a problem in some specialties and in some hospitals. The average case cancellation rate for the eight specialties under review is 8%, ranging from just 4% for Ophthalmology to 10% for Urology and 11% for Oral Surgery (Exhibit 10). Half the hospitals in our review do not monitor or report on case cancellation rates.

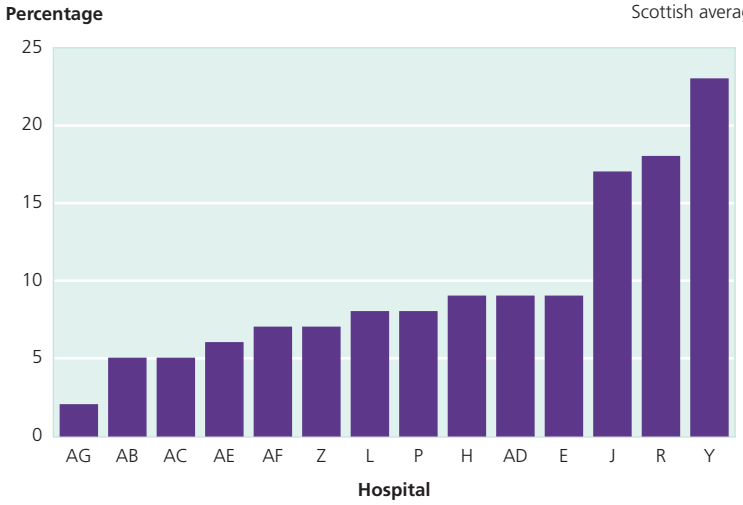
Exhibit 10: Case cancellations

Specialty	Range (%)	Scottish average (%)	Upper quartile (%)
ENT	3-22	8	6
General Surgery	1-21	9	5
Gynaecology	2-23	8	6
Ophthalmology	2-10	4	3
Oral Surgery	4-16	11	8
Orthopaedic Surgery	1-16	7	3
Plastic Surgery	5-19	7	7
Urology	2-37	10	6
Total for specialties shown		8	

Source: Local VFM audits

Like our other analyses of theatre utilisation, case cancellation rates vary from hospital to hospital. For example, the case cancellation rate for Gynaecology in Hospital AG is just 2% compared with 23% in Hospital Y (Exhibit 11).

Exhibit 11: Case cancellations (Gynaecology)



Source: Local VFM audits

There is little a hospital can do to minimise cases being cancelled because of emergency cases taking priority. However, action can be taken to reduce the likelihood of the other main reasons for cases being cancelled. Better planning of scheduled theatre time can help to reduce case cancellations due to sessions over-running (this is discussed in the previous section on theatre management and staffing). The introduction of pre-assessment clinics in some specialties has reportedly helped some hospitals to reduce the number of cases being cancelled because of the condition of the patient. Examples of ways to prevent or minimise DNAs are shown in Exhibit 12.

Exhibit 12: Examples of ways to prevent or minimise DNAs

- Giving patients at least three weeks notice.
- Requesting patients to confirm they are attending, eg, by telephoning to confirm their intention to attend.
- Telephone patients who do not reply within seven days.
- Maintaining a list of patients who do not reply within seven days.
- Replacing any selected patients who decline their offer of admission with a patient available at short notice.

Source: NHSME [9]

Good practice

The appointment letter or card sent to patients:

- explains there is a chance their operation may be cancelled if emergency cases are admitted
- because of this possibility, the patient must contact the hospital on the morning of the planned admission to check a bed is available for them
    - if the patient is unable to make the date given then they must contact the hospital.

Source: NHSME[9]

Exhibits 10 and 11 show that hospitals do have problems with the numbers of cases which are being cancelled with very little or no notice. We recommend that a target of 5% (the upper quartile) should be adopted, and that hospitals monitor their achievement against this regularly. Where hospitals are failing to meet this target then they should identify the causes, and develop measures to tackle this.

Recommendations

- *The theatre manager should collect information on the number of cases being cancelled (including the reasons) and report this to the theatre users' committee.*
- *The NHS ME should consider setting a target case cancellation rate of 5% (the upper quartile), and hospitals should monitor their performance against this target on a regular basis.*
- *Where hospitals or specialties identify case cancellation as a problem then they should consider introducing some of the measures identified in the report, including pre-assessment clinics, maintaining a list of patients who can attend at short notice, and requesting patients confirm their intention to attend for their procedure.*

Impact of unplanned theatre activity

Hospitals generally have a planned schedule of work which takes place from Monday to Friday. Operating time outwith these hours is usually the result of unplanned theatre activity, or planned theatre work over-running its allotted time.

A variety of arrangements are in place for dealing with unplanned theatre activity, including:

- 24 hour emergency theatres
- allocated sessions for emergencies during normal working hours with an on-call team outside these hours
- out of hours emergencies covered by the on-call rota.

Only two hospitals reported problems with unplanned theatre work. The first of these hospitals has an on-call team to deal with emergencies, but commented that problems can arise organising time off for staff who are called in as part of the on-call team. The second hospital has an emergency team outwith normal working hours. It stated that problems occur when theatre sessions overrun and the emergency team takes over, making them unavailable for emergency work. Better planning of scheduled sessions could help to avoid this.

Performance measures

Auditors looked at the extent to which performance measures are used in theatre departments and ascertained what review is undertaken of performance against such targets. No hospital has set specific performance measures for the theatre department, although eight claim they review performance through routine monitoring reports.

Some performance measures which are linked to theatre activity are shown in Exhibit 13. These broad categories could be used by hospitals to develop their own performance measures.

Exhibit 13: Examples of performance measures for theatres

- The number of patients and sessions cancelled each month.
- The number of patients who did not attend for their operation.
- The amount of surgery undertaken outside scheduled sessions.
- The number of emergency cases operated on within scheduled emergency sessions.
- The intensity of use of scheduled elective and emergency sessions.
- The promptness of starts to theatre sessions.
- The delays within theatre sessions.
- Regular early finishes to theatre sessions.
- The extent of over-running of theatre sessions.
- Monthly expenditure on pay and non-pay items.

Source: NHSME [9]

Recommendation

- *The theatre users' committee should discuss setting performance measures for the theatre department. This should become part of the theatre manager's regular reporting to this group.*

Benchmarking

Benchmarking is a useful tool, enabling organisations to compare their own performance in chosen areas with their peers. Ten Scottish hospitals, of similar size and providing a range of similar services, have formed a benchmarking group. One of the group's benchmarking exercises has been a review of theatres where representatives from each hospital met to discuss common definitions and measurements of theatre utilisation, and then collected basic data for inter-group comparisons. This was reported to have been a very useful exercise.

Recommendations

- *Theatre managers should consider setting up benchmarking clubs with hospitals of a similar type. This will lead to discussions around how theatre utilisation may be meaningfully measured, enabling the development of performance measures and comparisons with other hospitals against these measures.*
- *Hospitals should consider making use of our analyses and measures of theatre utilisation as a starting point for benchmarking.*

Conclusions

Clinical governance emphasises the need for good planning, organisation and management of services in order to support the delivery of high quality care. Providing theatre services to a wide range of theatre users, each with their own competing expectations and demands, is challenging. This review of theatre utilisation found that, in general, hospitals are performing well in the delivery of theatre services. Overall, communication between theatre departments and their users is good: theatre users' committees have been established and theatre policies documented. However, there is scope for improvement, particularly around the collection of data and the use of information.

Recommendations have been made at various points in the report. They are summarised in the next section for ease of reference.

Summary of recommendations

The theatre users' committee

- *The theatre users' committee must have formal, clearly defined terms of reference which set out its role and responsibilities.*
- *The theatre users' committee must state explicitly the type and frequency of reports on theatre utilisation to be presented at its meetings.*
- *The theatre manager should report on a regular basis to the theatre users' committee on theatre utilisation.*
- *The theatre users' committee and the theatre manager should review regularly the overall utilisation of theatre sessions.*
- *The theatre users' committee must have the authority to take action where theatre resources are considered to be used inefficiently or ineffectively. This should include the power to reallocate theatre sessions, where continued poor utilisation is identified.*

Theatre policies

- *A policy document should exist for each theatre department. This should explicitly state:*
  - *the arrangements for compiling the theatre lists, including the information required on individual cases*
  - *how the list should be communicated to the theatre department*
  - *the latest time for receipt of the list in the theatre department*
  - *the procedures for notifying theatre staff of changes to the list*
  - *the arrangements for reallocation of sessions in the theatre timetable, and for reallocation where poor utilisation is identified*
  - *the arrangements for booking and cancelling sessions*
  - *the role of the theatre users' committee*
  - *the arrangements for emergency cases.*
- *The theatre users' committee must be involved in developing the theatre policy document, and in any subsequent reviews.*
- *Adherence to theatre policies should be reviewed regularly.*

Management information

- *Theatre users must be encouraged to use theatre resources efficiently and effectively. This can be achieved through highlighting theatre utilisation at both specialty and at individual level.*
- *Theatre users should be asked what information they want on theatre utilisation, and what format reports should take. The theatre manager can play a key role here.*
- *The theatre manager must review regularly how theatres are being utilised, making use of the analyses and measures developed as part of this study. Data must be collected regularly and reports presented to the theatre users' committee for discussion and action.*
- *Where routine reports on theatre utilisation are not being produced due to the belief that no problems exist, we recommend a 'snapshot' is undertaken at regular intervals to confirm this. This level of reporting should be agreed with the theatre users' committee.*

Theatre budget

- *Theatre users should be encouraged to be aware of the resources they consume when utilising theatre services. This may be through highlighting the consumption of theatre resources by user departments or setting up a recharge system.*

Non-medical staffing

- *There should be a systematic approach to calculating non-medical staffing establishments for theatres, such as use of the NATN formulae.*
- *Theatre staff should be rotated between specialties to enable them to acquire the competencies and skills needed to work in different parts of the theatre department.*

The theatre list

- *Theatre users should ensure theatre lists are delivered to the theatre department in accordance with the time stated in the theatre policy.*

Measuring theatre utilisation

- *ISD should consider collecting and analysing data on theatre utilisation. This would enable hospitals to regularly compare how effectively they use their theatres.*
- *Theatre managers should use the definitions of theatre utilisation developed as part of this project as a basis for discussion towards the development of nationally agreed definitions. National definitions will enable meaningful and comparable data to be collected for benchmarking among hospitals of similar type.*
- *Analyses of theatre utilisation should be undertaken at three levels:*
  - *by hospital*
  - *by specialty*
  - *by consultant.*

Sessions held

- *Clear procedures for notifying the theatre department of cancelled sessions must be in place. This provides the opportunity to offer the session to another user. These procedures should be clearly stated in the theatre policy.*
- *As part of their routine monitoring, theatre departments should record the period of notice given of session cancellations. This will identify whether sessions are being cancelled with insufficient notice to enable reallocation.*
- *The theatre manager or other designated individual should reallocate theatre sessions where utilisation reports reveal insufficient demand for the allocated theatre time. This should be done in conjunction with the theatre users' committee.*
- *The theatre department should identify a key individual as having responsibility for reallocation of theatre sessions following cancellation.*

Utilisation of available theatre time

- *Regular reviews of how individual sessions are utilised will identify where theatre sessions could be used in a more effective way. The theatre users' committee should be fully involved in any decision to change the theatre timetable.*

Starting and finishing sessions on time

- *The actual start and finish times of individual sessions should be regularly compared with those planned. This should be analysed at consultant level.*
- *Where an individual regularly under or over-runs sessions then the reallocation of theatre sessions should be considered, in conjunction with the theatre users' committee.*

Case cancellations

- *The theatre manager should collect information on the number of cases being cancelled (including the reasons) and report this to the theatre users' committee.*
- *The NHS ME should consider setting a target case cancellation rate of 5% (the upper quartile), and hospitals should monitor their performance against this target on a regular basis.*
- *Where hospitals or specialties identify case cancellation as a problem then they should consider introducing some of the measures identified in the report, including pre-assessment clinics, maintaining a list of patients who can attend at short notice, and requesting patients confirm their intention to attend for their procedure.*

Performance measures

- *The theatre users' committee should discuss setting performance measures for the theatre department. This should become part of the theatre manager's regular reporting to this group.*

Benchmarking

- *Theatre managers should consider setting up benchmarking clubs with hospitals of a similar type. This will lead to discussions around how theatre utilisation may be meaningfully measured, enabling the development of performance measures and comparisons with other hospitals against these measures.*
- *Hospitals should consider making use of our analyses and measures of theatre utilisation as a starting point for benchmarking.*

References

1 *Better by the day? Day surgery in Scotland,* Accounts Commission, 1997.

2 *Managing hospital admissions and discharges,* Accounts Commission, 1998.

3 S. Craig, personal communication.

4 *Scottish health service costs year ended 31 March 1998,* Information and Statistics Division, 1998.

5 *Use of operating theatres in the National Health Service,* National Audit Office, 1987.

6 *The management and utilisation of operating departments,* NHS Management Executive VFM Unit, 1989 (The Bevan Report).

7 *NHS MEL (1998) 75, Clinical Governance,* The Scottish Office Department of Health, 1998.

8 *Operating theatres,* Scottish Health Management Efficiency Group, 1990.

9 *Good practice in operating theatre management,* NHS Management Executive, 1994.

10 *Staffing in the operating department,* National Association of Theatre Nurses, 1995.

11 *On a knife edge,* Edge J, Health Service Journal, pp 28-29, 12 November 1998.

Appendix 1: Study sites

1 Aberdeen Royal Infirmary

2 Ayr Hospital

3 Borders General Hospital

4 Crosshouse Hospital

5 Dumfries and Galloway Royal Infirmary

6 Falkirk and District Royal Infirmary

7 Gartnavel General Hospital

8 Glasgow Royal Infirmary

9 Hairmyres Hospital

10 Inverclyde Royal Hospital

11 Law Hospital

12 Monklands District General Hospital

13 Ninewells Hospital

14 Princess Margaret Rose Orthopaedic Hospital

15 Queen Margaret Hospital

16 Royal Alexandra Hospital

17 Royal Hospital for Sick Children, Glasgow

18 Royal Infirmary of Edinburgh

19 St John's Hospital at Howden

20 Stirling Royal Infirmary

21 Stobhill General Hospital

22 Stracathro Hospital

23 Vale of Leven District General Hospital

24 Victoria Hospital, Kirkcaldy

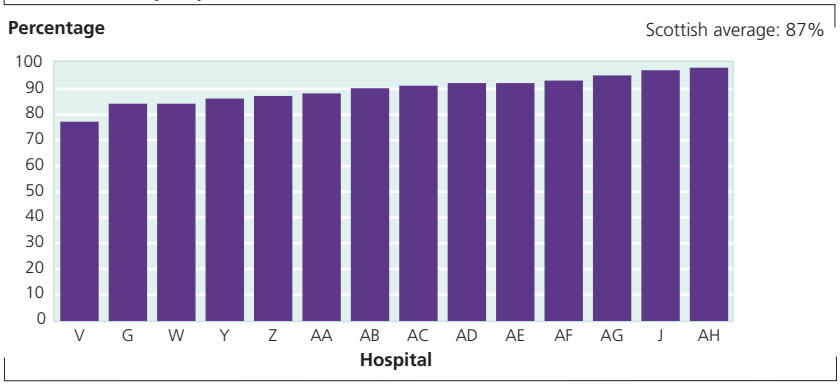
25 Victoria Infirmary, Glasgow

26 Western General Hospital, Edinburgh

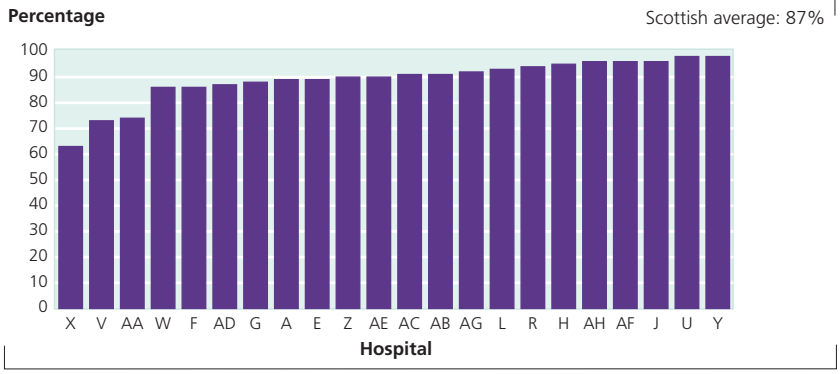
27 Western Infirmary, Glasgow

Appendix 2: Sessions held

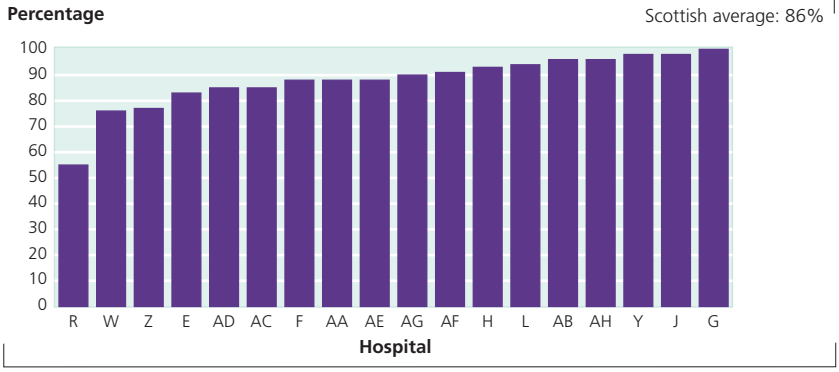
Sessions held (ENT)



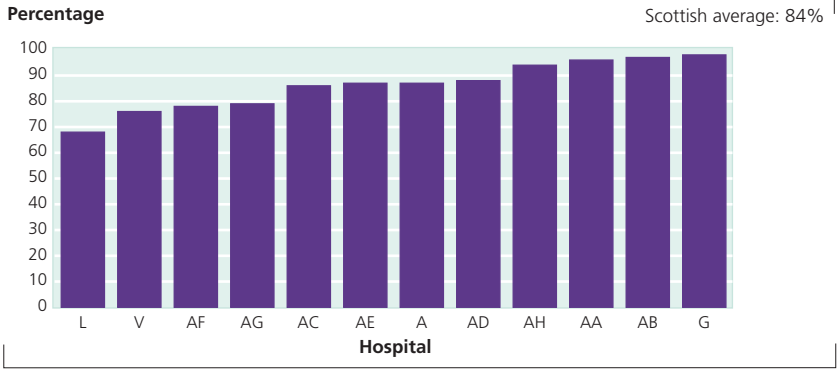
Sessions held (General Surgery)



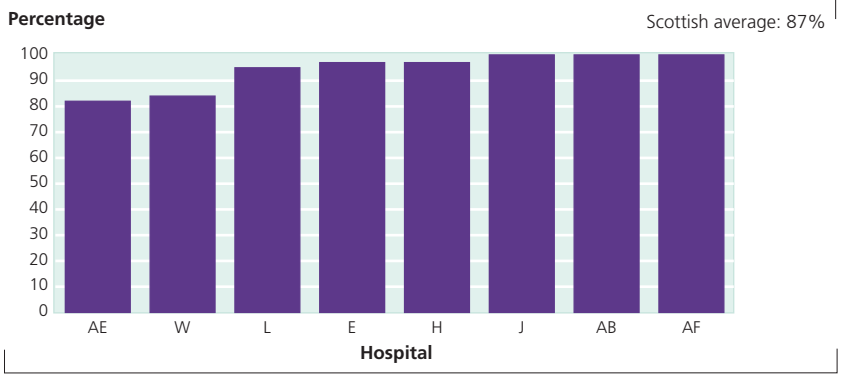
Sessions held (Gynaecology)



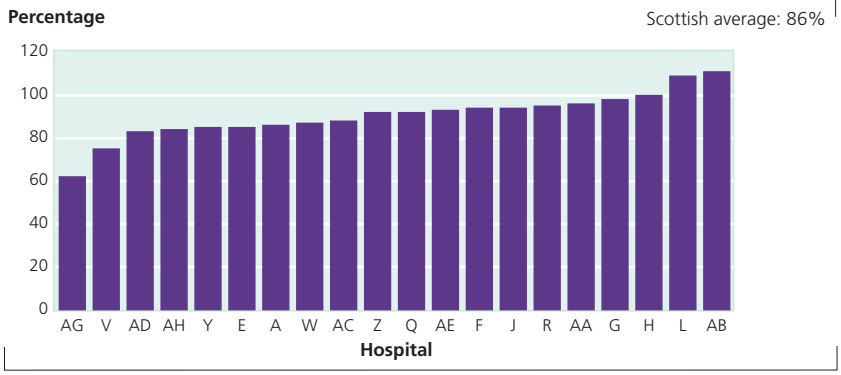
Sessions held (Ophthalmology)



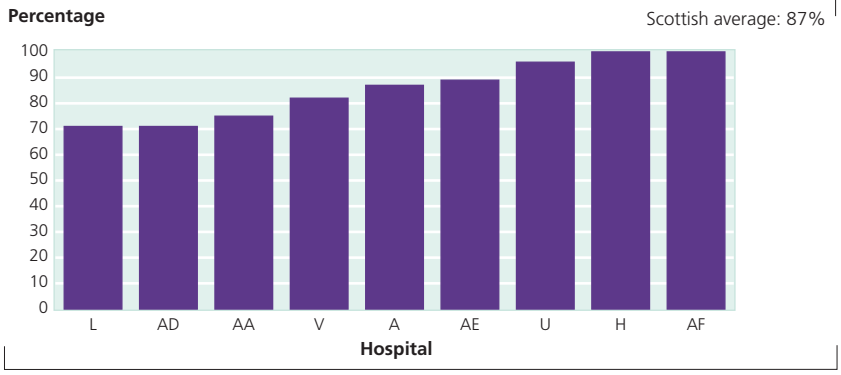
Sessions held (Oral Surgery)



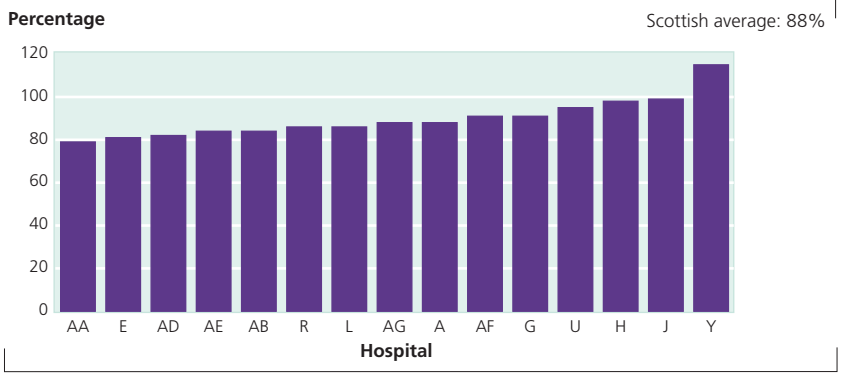
Sessions held (Orthopaedic Surgery)



Sessions held (Plastic Surgery)

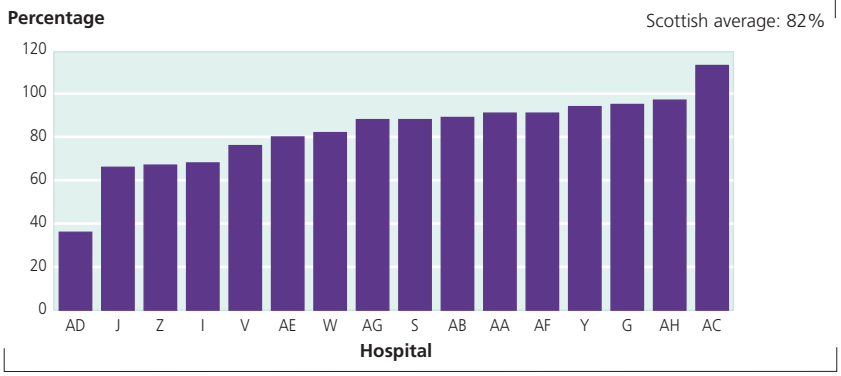


Sessions held (Urology)

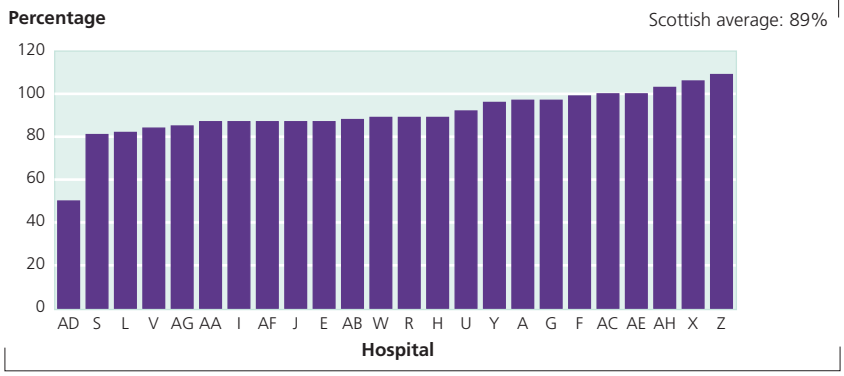


Appendix 3: Utilisation of available theatre time

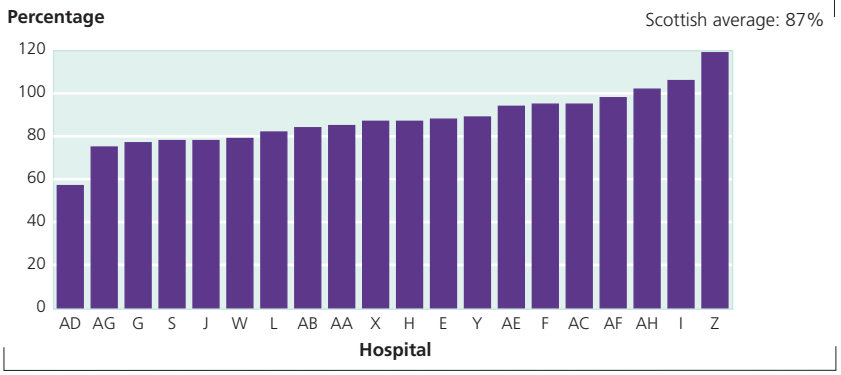
Utilisation of available theatre time (ENT)



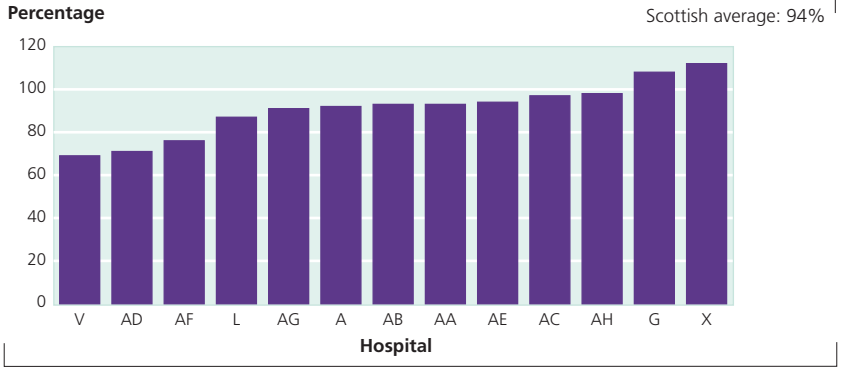
Utilisation of available theatre time (General Surgery)



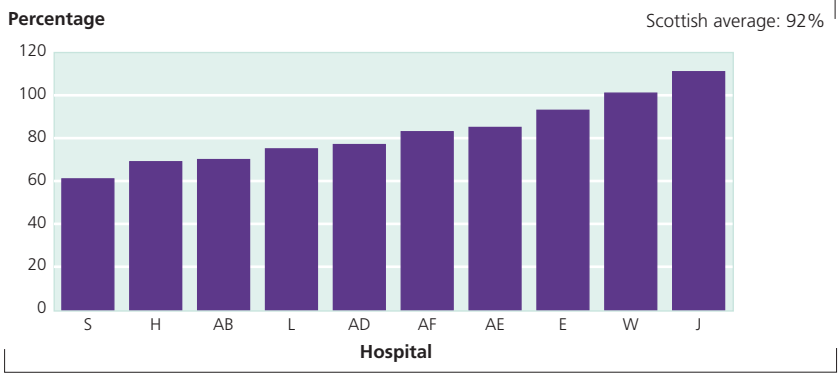
Utilisation of available theatre time (Gynaecology)



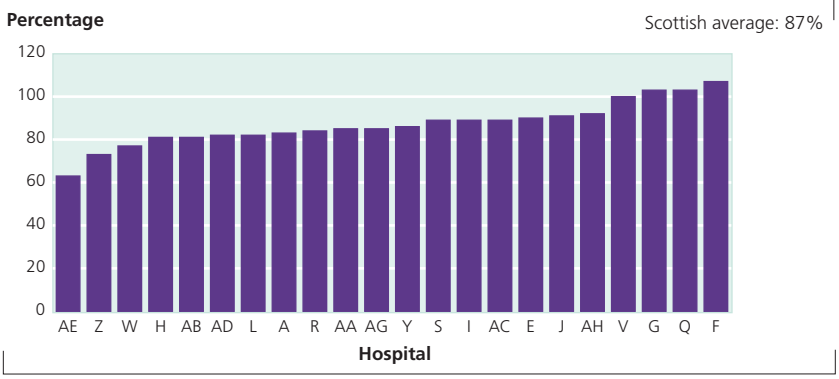
Utilisation of available theatre time (Ophthalmology)



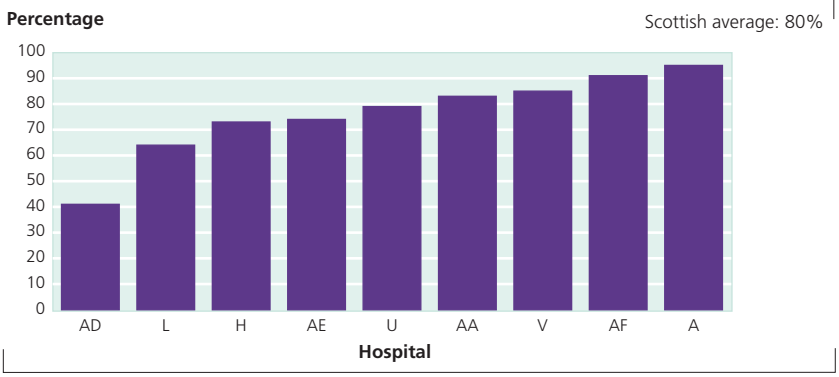
Utilisation of available theatre time (Oral Surgery)



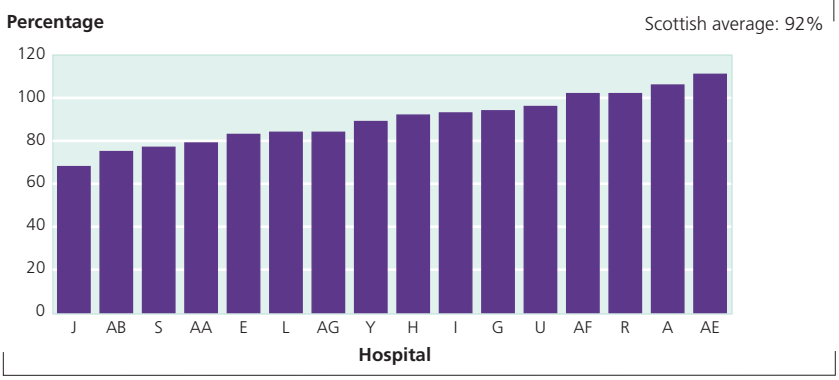
Utilisation of available theatre time (Orhthopaedic Surgery)



Utilisation of available theatre time (Plastic Surgery)

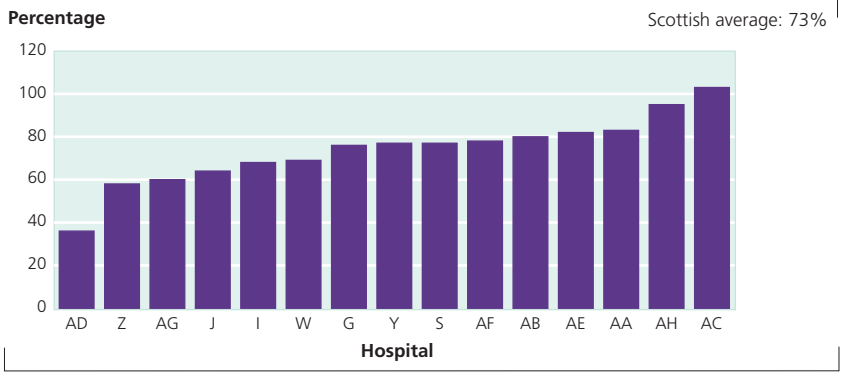


Utilisation of available theatre time (Urology)

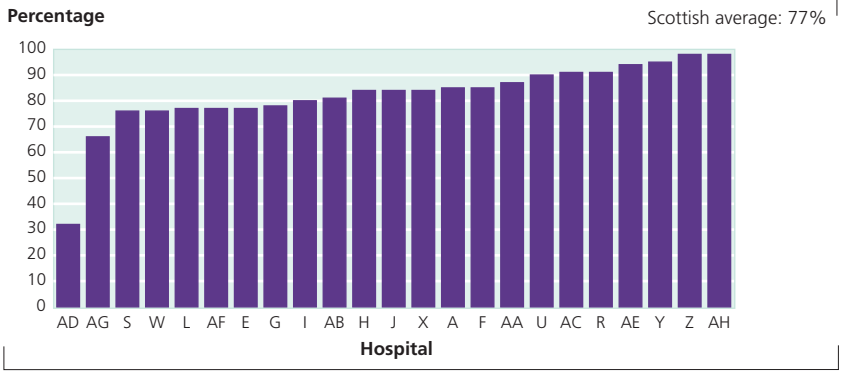


Appendix 4: Utilisation of potential theatre time

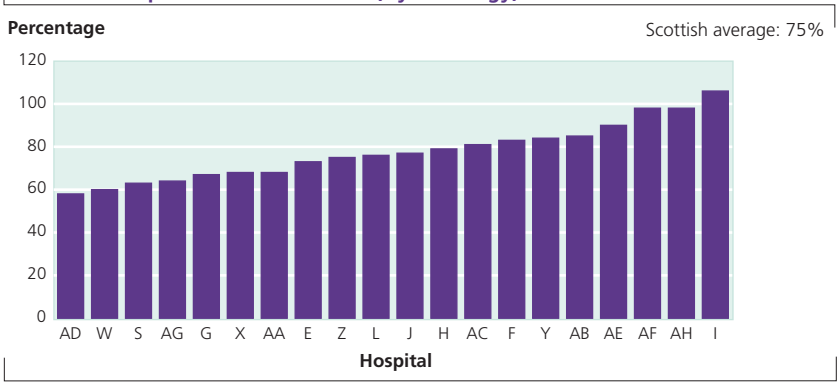
Utilisation of potential theatre time (ENT)



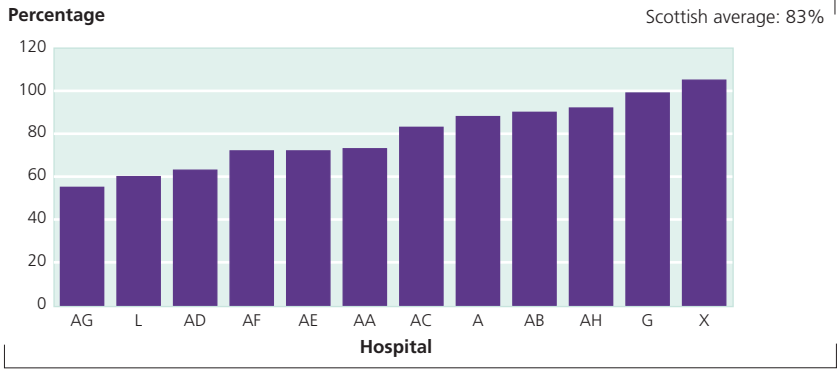
Utilisation of potential theatre time (General Surgery)



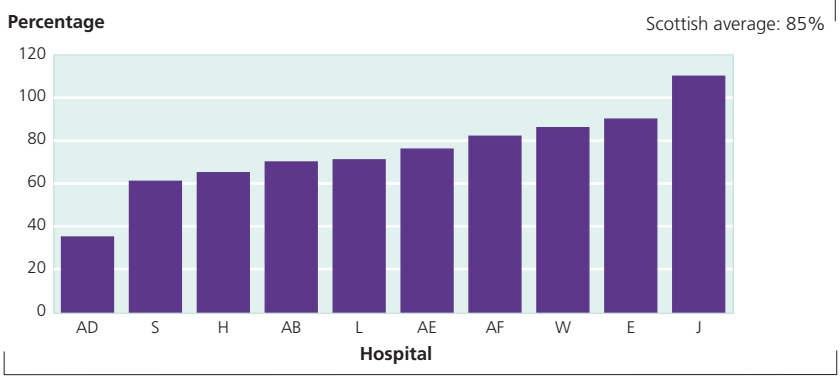
Utilisation of potential theatre time (Gynaecology)



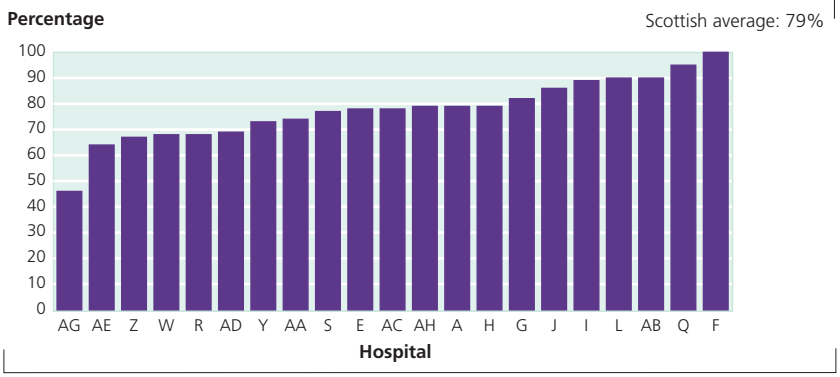
Utilisation of potential theatre time (Ophthalmology)



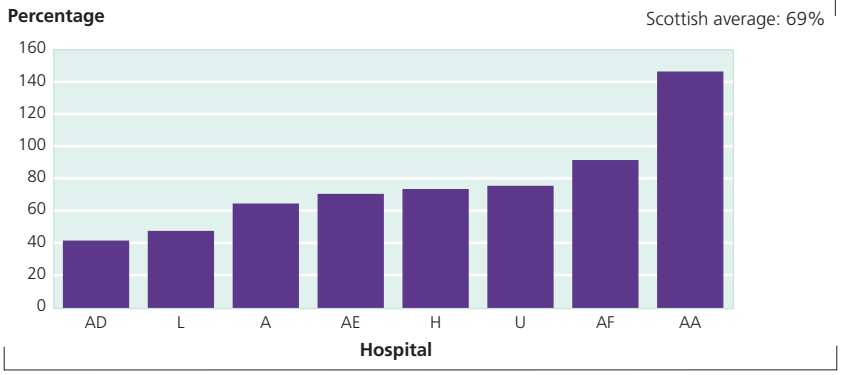
Utilisation of potential theatre time (Oral Surgery)



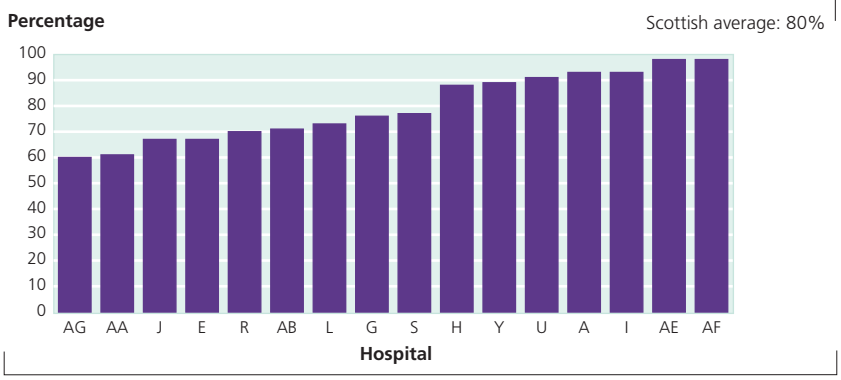
Utilisation of potential theatre time (Orthopaedic Surgery)



Utilisation of potential theatre time (Plastic Surgery)

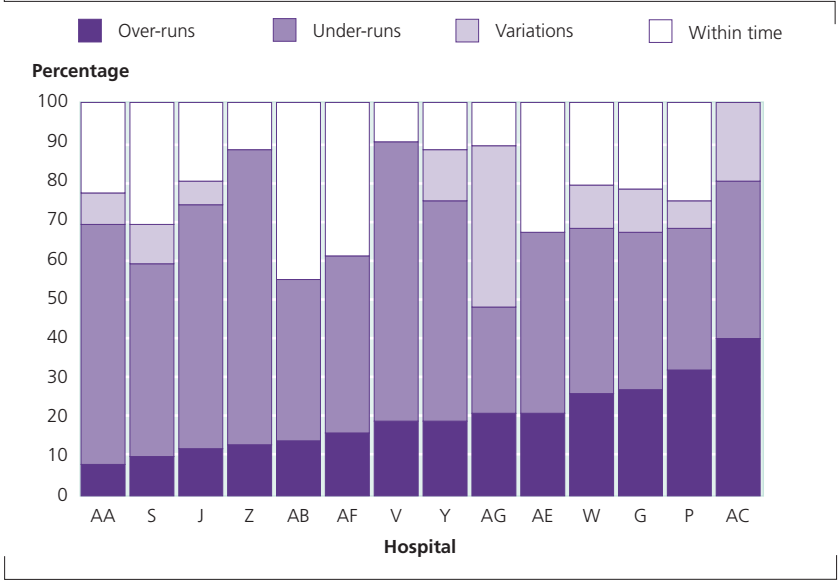


Utilisation of potential theatre time (Urology)

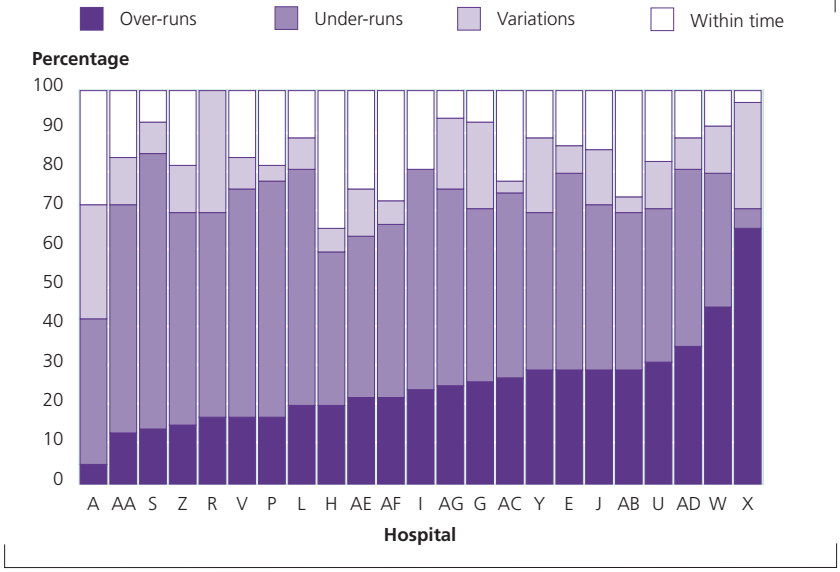


Appendix 5: Sessions starting and finishing on time

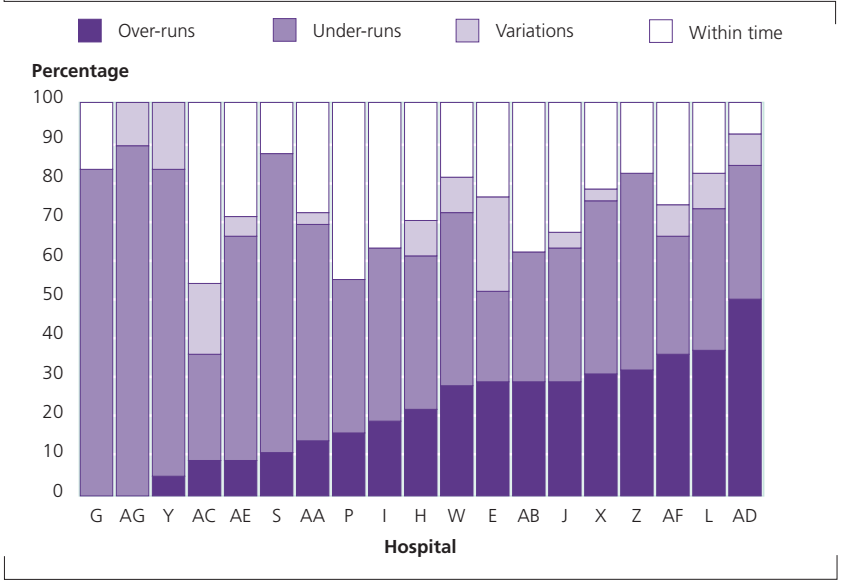
Sessions starting and finishing on time (ENT)



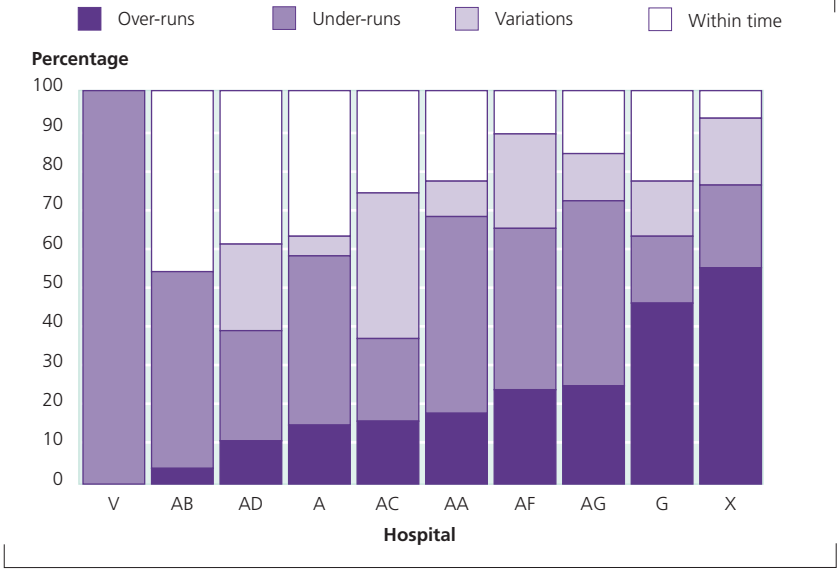
Sessions starting and finishing on time (General Surgery)



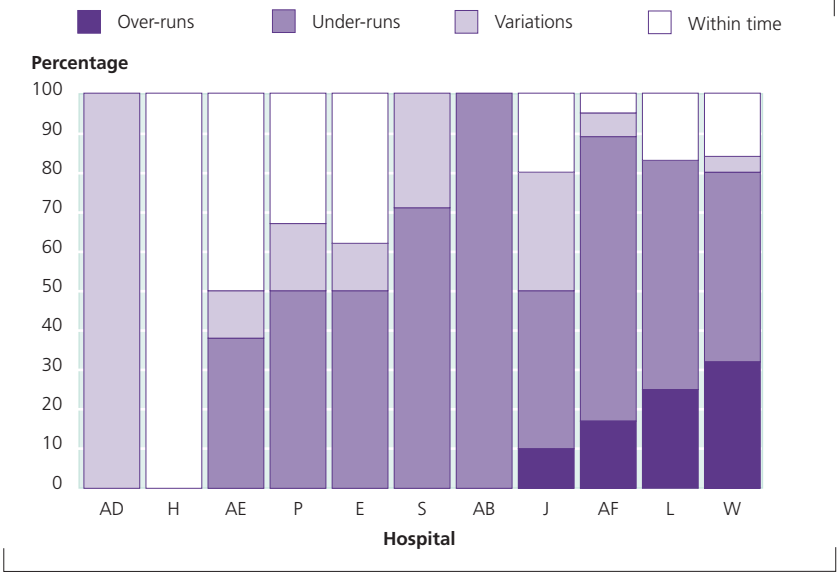
Sessions starting and finishing on time (Gynaecology)



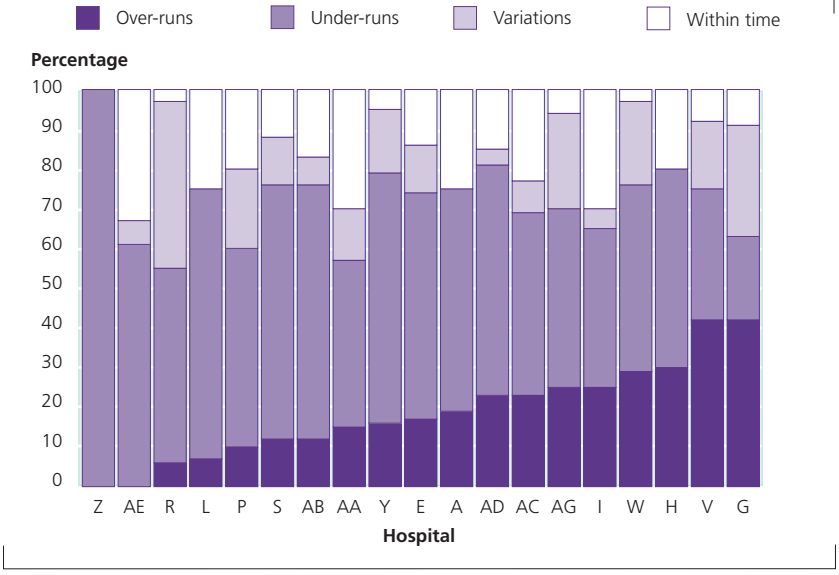
Sessions starting and finishing on time (Ophthalmology)



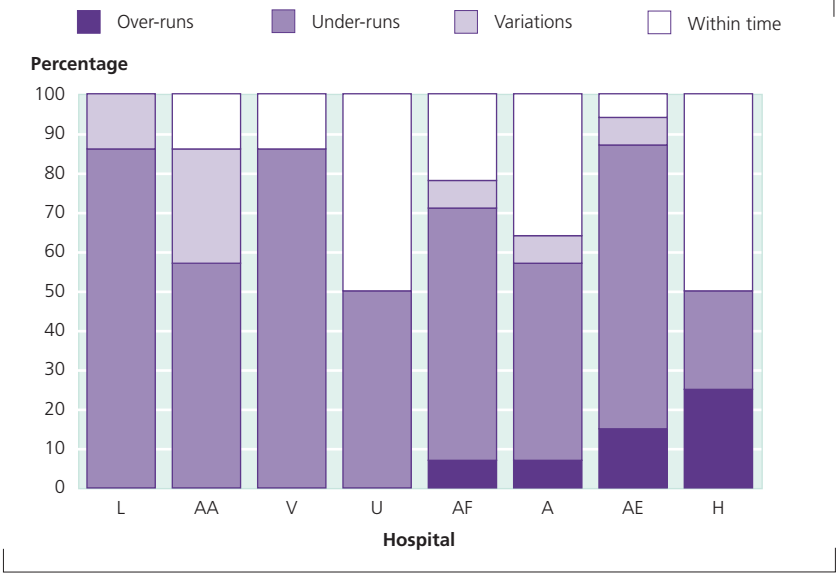
Sessions starting and finishing on time (Oral Surgery)



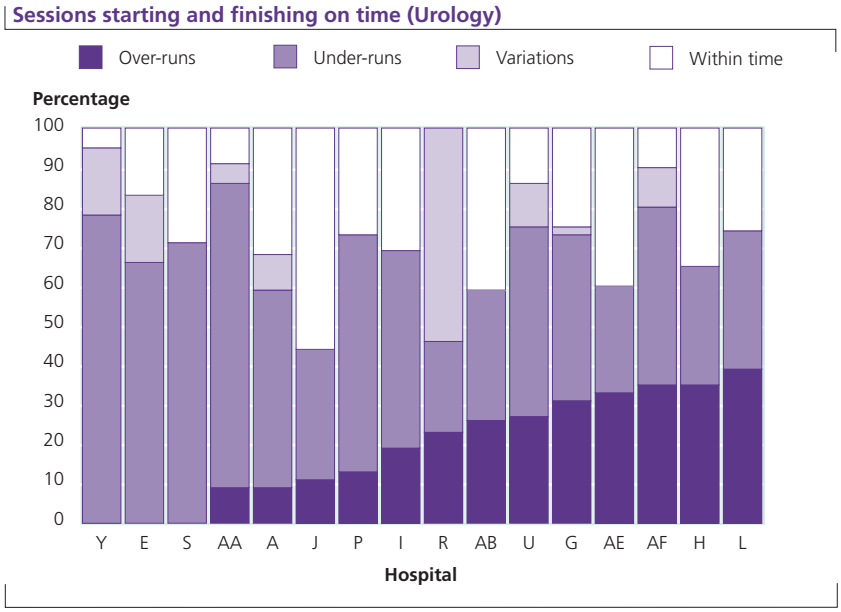
Sessions starting and finishing on time (Orthopaedic Surgery)



Sessions starting and finishing on time (Plastic Surgery)

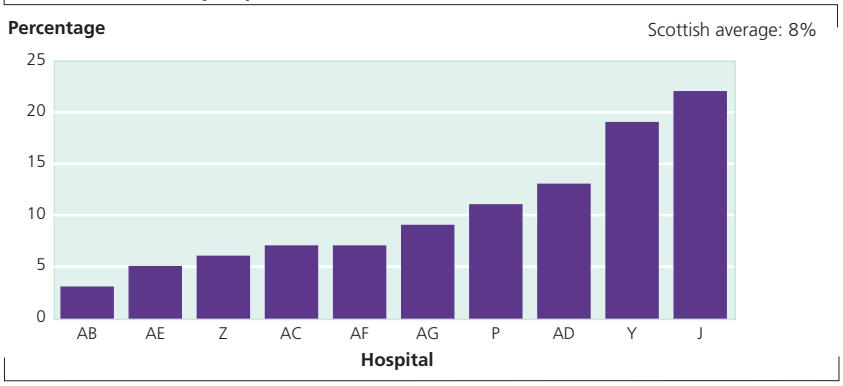


Sessions starting and finishing on time (Urology)

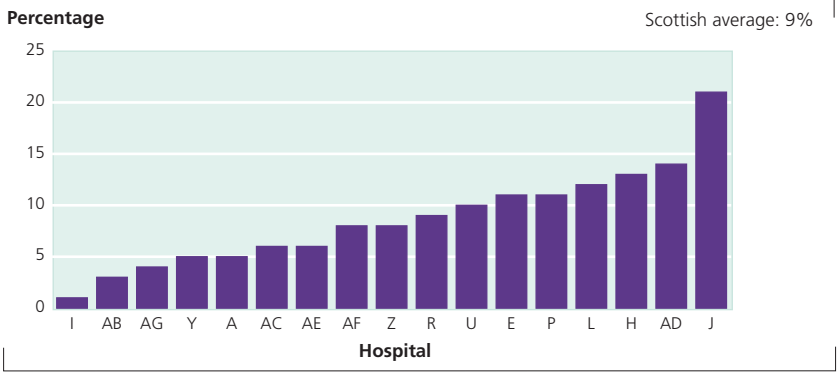


Appendix 6: Case cancellations

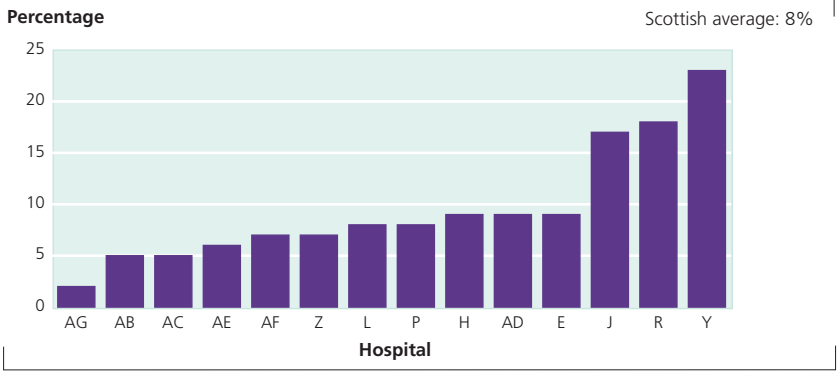
Case cancellations (ENT)



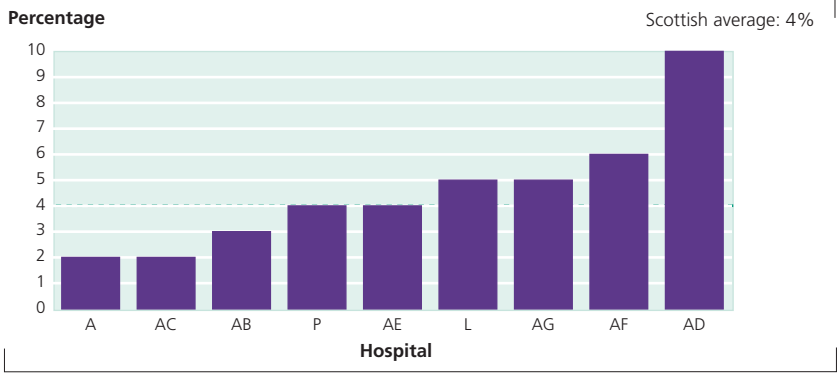
Case cancellations (General Surgery)



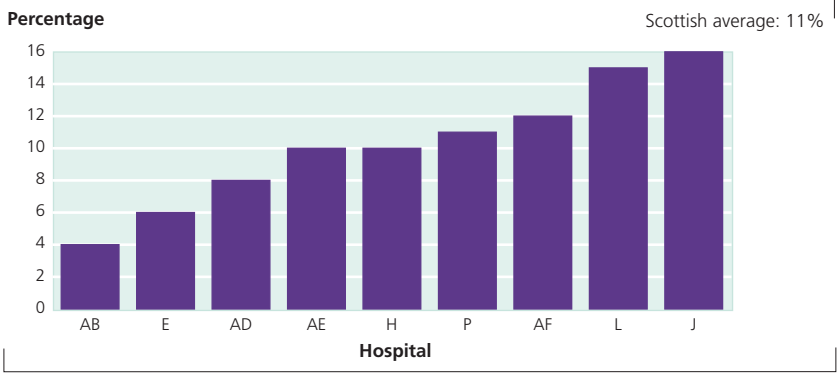
Case cancellations (Gynaecology)



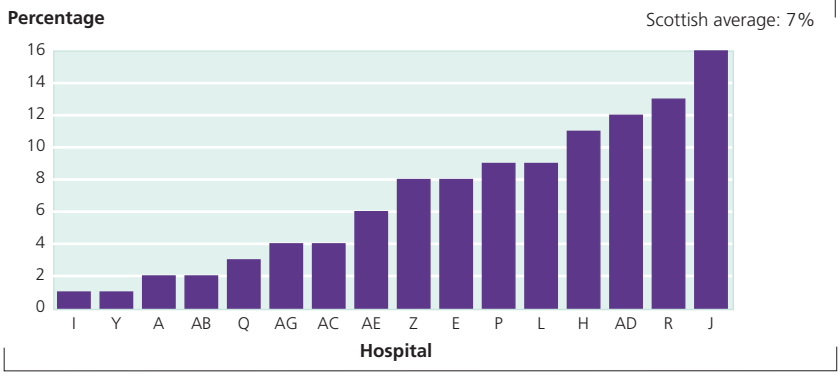
Case cancellations (Ophthalmology)



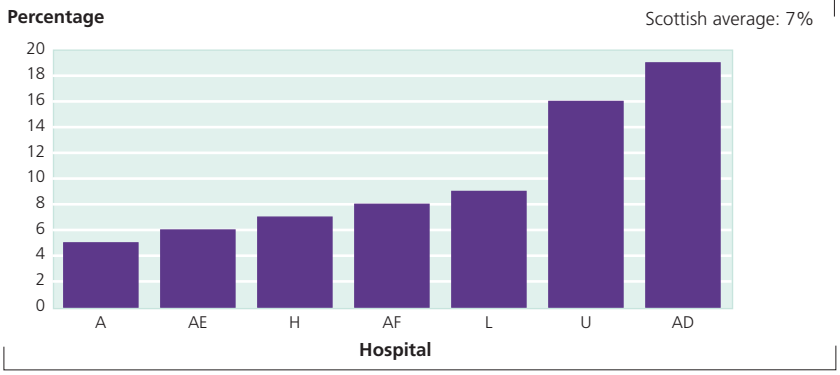
Case cancellations (Oral Surgery)



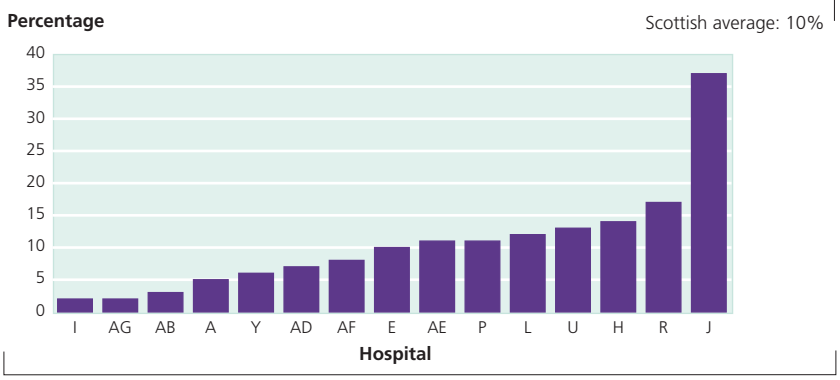
Case cancellations (Orthopaedic Surgery)



Case cancellations (Plastic Surgery)



Case cancellations (Urology)



Appendix 7: Definitions used in the audit

Session held A planned, resourced period of theatre activity which takes place.

Additional sessions held Additional theatre sessions which may be held for a variety of reasons (eg, to clear a backlog of patients). They may be arranged at relatively short notice and may or may not always be funded. (A funded session is one where there is money allocated to pay for the staff and supplies used to do the extra work.)

Session cancelled A planned, funded period of theatre activity which does not go ahead.

Theatre cancellation with adequate notice Planned theatre sessions which are cancelled with four or more weeks' notice.

Theatre cancellation with inadequate notice Planned theatre sessions which are cancelled with less than four weeks' notice.

Theatre cancellation without notice When the expected list does not go ahead and no notice is given.

Available time The sum of the time available for surgery.

Potential available time The sum of the total potential time available for surgery, that is, including scheduled sessions which are actually held as well as those which are cancelled. It excludes public holidays and weekends if the theatres are not expected to have elective sessions.

Time utilised The sum of the time used for surgery.

There is no national data set requirement for theatre departments therefore utilisation statistics are presented in a variety of ways, depending on local arrangements. However, the following definition of time utilised during a theatre session is generally accepted by theatre managers:

> *The induction of anaesthesia for the first patient on the list, or the procedure commencement time, whichever is the earliest, until the last patient on the list leaves the operating theatre.*

% utilisation There are three levels used in this audit:

- Number of sessions held as a % of the number of sessions scheduled.
- Actual time used as a % of time available in held sessions.
- Actual time used as a % of potential time available in scheduled sessions.

18 George Street Edinburgh EH2 2QU

Telephone 0131 477 1234

http://www.accounts-commission.gov.uk

publications@scot-ac.gov.uk

ISBN: 0 906206 69 7