ResearchSummary

NHS
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Organisational factors that influence waiting times in emergency departments

Waiting times in emergency departments are important to patients and also to hospitals, who are measured on how quickly they deal with attendees. But waiting times are highly variable, to the extent that there can be differences even between emergency departments that are quite similar in their size and workload. Are there any organisational characteristics that are shared by emergency departments which have shorter waiting times? This research summary presents research that addresses this question, identifying three factors that are strongly associated with shorter waiting times.

The research was commissioned by the National Institute for Health Research Service Delivery and Organisation Programme and undertaken by a team led by Suzanne Mason at the University of Sheffield.

The findings will be of interest to anyone involved in the provision of emergency care but are especially relevant to those responsible for the operational and clinical management of hospital emergency departments.

Key findings

- Waiting times are a key performance target for emergency departments, with all hospitals aiming to treat and either admit, discharge or transfer people within four hours of arrival.
- Two significant factors that influence waiting times are the size of the department and the seriousness of cases entering the department.
- Three other important factors which are associated with shorter waiting times are:
  - lower levels of sickness absence among nursing staff
  - lower expenditure on non-pay items (such as medical equipment, clinical investigations and processes)
  - a more participative leadership style by the lead consultant.
- Together these five factors account for more than a third of the variation in average waiting times between emergency departments. However, more research is needed to establish 'cause and effect' – i.e. whether these factors are responsible for lower waiting times or vice versa.
- Practitioners cite a range of working practices which they believe improve waiting times, such as more co-operative working within the emergency department and better co-ordination with primary and secondary care services. A participative leadership style may help promote such working practices.
- While waiting times have an impact on patient satisfaction, it is important also to understand and address the other factors that influence quality of patient care.

Background

The NHS Plan (Department of Health, 2000) set out proposals for the reform of the whole NHS, including emergency care. One of its key targets was a maximum waiting time of four hours from arrival to admission, transfer or discharge. This was modified in 2003 with the introduction of a 98 percent operating standard (the remaining two percent allowed for the small number of patients that clinically require more than four hours in the emergency department). In 2001 the Government published *Reforming Emergency Care* (Department of Health, 2001), which set out a strategy for achieving the new targets. This acknowledged that what happens in emergency departments is highly influenced by what is happening across the local health care system, from the availability of walk-in services for non-critical illnesses to the availability of hospital beds.

The number of people attending emergency departments has risen significantly over recent years, though the four-hour target is still being met. Data from one longitudinal study suggests that, between 1993 and 2003, the proportion of cases arriving by ambulance ('major cases') increased, as did the proportion of older patients. Waiting times increased for both major and minor cases, as did treatment time for major cases. Although the data is taken from one city between 1993 and 2003, it is comparable with Audit Commission data for a similar period, suggesting that it can be viewed as a microcosm of the situation experienced by emergency departments nationally.

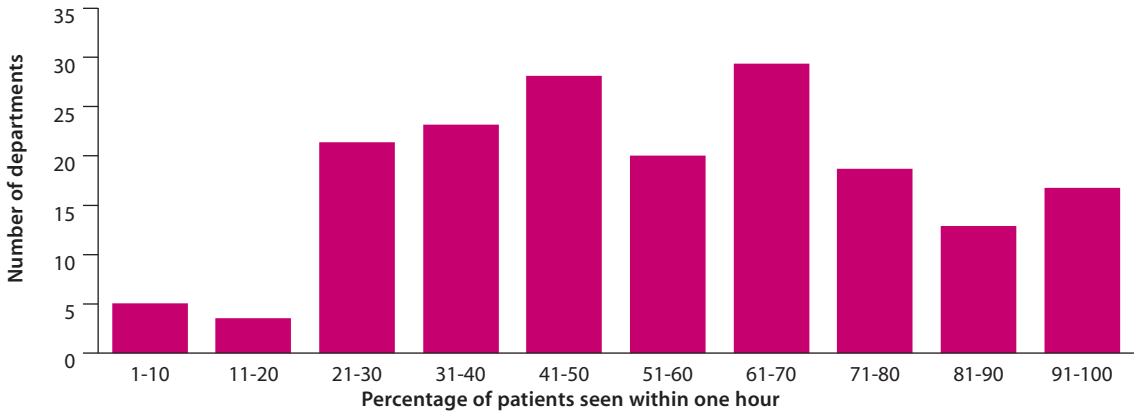
Waiting times are highly variable, even between hospitals of a similar size and case mix. Where waiting times are shorter, patients are more likely to rate the care they receive as excellent or very good. In 2000, the Audit Commission carried out a study to understand more about the variation in waiting times. This found that, across emergency departments in England and Wales, there was significant variation in the percentage of patients seen within one hour (see **Figure 1**). However it could only account for a small proportion of the variability between the shortest and longest waits. The study reported here was carried out to find out more about this variability.

Practical findings

A note on definitions

- *The NHS Plan* defines waiting time as the time from arrival to admission, transfer or discharge. The Government target is that this should be no longer than four hours for 98 percent of cases.
- Earlier definitions such as 'time from arrival to initial assessment' have been shown to be misleading. For example the Audit Commission found that some departments with the shortest waits for initial assessment had some of the longest waiting times to see a doctor (Audit Commission, 1998).
- The definition of waiting times used in this research study is: 'mean time from arrival to seeing a decision-making clinician'. This is the period that is most influenced by the organisation of the emergency department. Other measures, such as total time spent in the emergency department, are influenced by wider factors such as the availability of beds elsewhere in the hospital.

Figure 1. Variation in patients' waiting time



New factors to predict waiting times

Previous research has established that the size of the emergency department and the types of cases it is treating both have an impact on waiting times. To some extent these are 'givens' which are beyond the control of the department itself. This study is the first to compare the significance of such factors with organisational factors such as the way individuals work together or manage practice across health care boundaries (Mason, 2006). It has found that there are three organisational factors which are also significant in predicting how long a person will wait in an emergency department. These are:

- levels of nursing sickness within the department
- levels of spending on non-pay items
- the management style of the lead clinician.

Nursing sickness: Emergency departments with lower levels of nursing time lost to sickness had a lower average waiting time. This may appear self-evident, given that the department would therefore be under-staffed or staffed with people drafted in from agencies or other areas of the hospital who would be unfamiliar with working practices. However, when addressing staff sickness levels, it is important to look at the broader picture, for example job satisfaction, stress levels within departments, how nursing and medical staff work together and at management and leadership styles within the department.

Spending on non-pay items: Emergency departments that spent less on facilities, medical equipment, clinical investigations and other items (excluding staff pay) also had a lower average waiting time. This may reflect the clinical ethos of those departments – for example they may spend less because they adhere to strict protocols and are more prescriptive in their response to the presenting condition. Alternatively, their general philosophy may encourage quick initial assessment and then referral to the appropriate facility thereby minimising investigations within the department itself. Both of these would tend to reduce waiting times. It was not within the scope of the study to compare clinical outcomes between low and high spending departments, and further work would be necessary here.

Management style: Where the lead clinician had a more participative management style, waiting times were also lower. This is defined as a style which increases co-operation and collaboration both within the emergency department and with other agencies, and involves being proactive and being able to work across clinical boundaries. One reason it is a factor in lower waiting times may be because it reduces individual autonomy and requires staff to work co-operatively, resulting in a more 'streamlined' or coherent service for patients.

These three factors were derived from a statistical modelling exercise using data from a national survey and the Healthcare Commission. Together with size of department and case mix, these organisational factors accounted for just over 35 percent of the variability in waiting times. Size of department and case mix alone accounted for 14 percent of the variability. (See ***About the study*** on page 6 for more information on the statistical modelling exercise.)

Participative leadership

The emergence of leadership as a significant factor prompted a re-examination of the interview data to see what kind of behaviours might be characteristic of participative leadership. Though they are not conclusive, there appears to be a link between a participative management style and:

- the inclusion of ancillary staff and allied health professionals in staff meetings
- higher levels of support and feedback on work performance for doctors, nurses, administrative staff and managers
- greater collaboration with other departments within the trust
- a more positive view of staff morale
- lower levels of personal autonomy and discretion among staff, in the interest of co-operation with others.

These findings were reinforced by in-depth interviews in eight emergency departments. This part of the study found that, in departments with higher waiting times, staff experienced higher levels of psychological strain alongside higher levels of autonomy and control over their own work. This may appear counter-intuitive since independence and discretion tend to be associated with lower levels of stress. However, it could show that too much personal autonomy hinders a team from achieving collective goals. Conversely, a reduction in personal autonomy in favour of a more collective approach can promote a more harmonious working environment.

In the in-depth study, team working was not as prevalent as it was reported to be in the national survey. However, it did show that higher performing departments were more proactive in encouraging team working. They prioritised specialist areas where doctors and nurses might work together (for example a 'see and treat' policy where a doctor and nurse work together to minimise treatment time for patients). The study found that these departments also used training and development opportunities to reflect on waiting time breaches, with the aim of improving future performance.

Skill mix

A re-analysis of the Audit Commission's data from its 2000 study found that skill mix also has an impact on waiting times. In particular, it found that the number of senior nurses has a negative impact on performance while the number of unqualified nurses has a positive

impact. This could be explained by a number of factors:

- senior nurses have other responsibilities which may divert them from activities which help to reduce waiting times
- senior nurses may be undertaking extended or nurse specialist roles and the adverse effect on waiting times may derive from this role
- unqualified staff may have the flexibility to carry out a range of basic tasks, as and when required, to assist in the smooth operation of the emergency department.

Practitioner views on how to improve waiting times

In-depth interviews with practitioners from eight emergency departments revealed a range of mechanisms which people felt could help reduce waiting times. In all, 13 areas of improvement were mentioned. The most common included:

- new ways of working such as 'see and treat'
- reducing inappropriate use of the emergency department, primarily through raising public awareness of when to use it and what alternatives are available
- training, development and maintaining staff skills, for example training in understanding particular issues associated with elderly, mentally ill or aggressive patients
- understanding and ownership of waiting time targets at trust level, so it becomes a strategic issue rather than just an issue for the emergency department
- proactive co-ordination of the emergency department with the services offered in the primary and secondary care sectors, for example greater flexibility in out-of-hours provision
- improved access to patient communication, including systems to communicate with other agencies such as GPs and NHS Direct.

Many emergency departments were already putting these suggestions into practice. However, many of the initiatives mentioned did not emerge in the modelling exercise as significant factors for predicting waiting times. That said, many of them could be seen as dependent on participatory leadership, which did emerge as a significant factor, in particular those practices which require cross-boundary working.

In addition, the survey showed that no areas were focusing on developing leadership skills or other strategic aspects of management (for example representing the emergency department at trust level and to partner agencies across primary and secondary care).

Limitations of these findings

The study showed that there is no such thing as a 'standard' emergency department. Attendances ranged from 15,000 to over 130,000 and the percentage of cases arriving by ambulance ranged from 1 percent to nearly 40 percent. Although the study did factor in these differences when identifying the three organisational factors, such variations are likely to have implications both for trying to standardise performance in emergency departments and also for predicting performance.

The study has identified a range of factors that are associated with lower waiting times. However further work is needed to establish whether they are the cause of lower waiting times, or whether they are a consequence of lower waiting times. This would need to take the form of intervention studies to identify the effect of changing the organisation or performance.

In view of these findings, there is a lack of consistency between the mechanisms currently available to reduce variation and those found to be important in the modelling exercise. Further work is required to identify mechanisms which will reduce variation in waiting times and which can be applied across all emergency departments, given the wide differences in their scope and structure across the country.

This study only examined factors influencing waiting times within emergency departments themselves. It did not extend to the wider trust or community, so was not able to consider factors which influence the in-flow or exit of patients from emergency departments. Practice has shown that these can cause bottlenecks which have a significant impact on waiting times.

Finally, the study did not examine waiting times in the context of outcomes for patients. It focused solely on the relationship between waiting times and factors that relate to the way the emergency department is organised and managed. We therefore do not know what the outcomes are for patients in hospitals with shorter waiting times, compared with longer waiting times.

Conclusions

This study has contributed new knowledge to the field of emergency medicine by showing that there are three factors associated with lower waiting times which are related to the way that an emergency department is structured and managed.

The causal relationship between these factors and lower waiting times is not yet clear, however there is strong evidence from a range of sources to demonstrate the importance of these three factors, and to recommend practice developments in a number of areas:

Self-reflection: All emergency departments should examine the three factors identified in this study and consider them in the context of their own working practice, with a view to identifying areas that would be amenable to change.

Leadership training: Management and leadership are not the most common areas of development for emergency medicine specialists. Many of them are already operating in a participative way, but the current training is not equipping all practitioners with these important skills. A broad programme that addressed managers from primary and secondary care services would be a useful vehicle to foster and develop co-operative behaviour.

Co-operative working: High-performing departments demonstrated co-operative leadership strategies in which the head nurse and lead clinician worked together. It would be helpful to look at ways of developing and extending co-operative working styles such as this.

Taking a patient-centred approach: It is important to remember that a patient's journey begins not on arrival at the emergency department but when they decide to seek help for a health problem. Taking a patient-centred perspective will not only include the experience of the emergency department, but that of contact with local health services in general. It is important to explore cross-boundary working between primary and secondary care services, for example through the development of pathways of care in relation to individual conditions.

Looking at the wider health community: The in-flow and exit of patients are acknowledged as key challenges when tackling waiting times, which suggests that greater strategic planning would be valuable between the emergency department and other agencies in primary and secondary care. This would draw on the same proactive and participative management approach which characterises effective leadership within the emergency department itself.

Future research

- A more detailed exploration of the link between organisational factors and waiting times should be conducted. This would involve developing hypotheses for empirical testing through intervention studies. Such studies would require changes to the way that emergency departments operate and deliver their service, and could therefore be challenging and costly to carry out. However, there are significant benefits to be gained from such an approach.

- This study found that proactive, participative leadership is important. Training and development activities should be examined to support the development of these leadership behaviours. It is also important to be able to identify these behaviours and measure them. A fruitful area of research would examine the transfer of leadership skills within health care and examine leadership across primary and secondary care boundaries.

- It would also be helpful to examine different ways of evaluating department performance, and evaluating the effect that the wider health community has on emergency department performance.

- The Healthcare Commission have started to examine quality of care in conjunction with the British Association for Emergency Medicine. A number of clinical standards have been audited to compare departments not only in relation to the environment, but also to the service provided. These are an important step in acknowledging quality as a key measure of service to patients. However, other quality issues need to be examined, in particular how quality is measured effectively and linked with performance and patient outcomes.

- Two other key areas for future research are:
  - how quality is measured effectively
  - the relationship between service quality and outcomes for patients and performance.

About the study

The study set out to answer the question: 'What are the organisational factors that influence waiting times in emergency departments and what mechanisms are available to improve waiting times?'

How the research was carried out

There were four aspects of the study:

- a review of policy and published literature
- a re-analysis of the data from an Audit Commission study of emergency departments carried out in 2000
- an analysis of data gathered from the emergency departments in one large English city between 1993 and 2003
- a survey of emergency departments in England and Wales carried out in two phases
  i) structured interviews with the lead clinician, head nurse and business manager in each emergency department, along with analysis of routine patient data and Healthcare Commission data
  ii) an in-depth study of eight of the emergency departments surveyed.

The statistical modelling exercise

The survey was the main element of the study as it generated the data which informed the statistical modelling exercise. It gathered data on waiting times in emergency departments in England and Wales and used this to establish an average waiting time for each department. At the same time, it gathered information on a wide range of organisational factors, for example:

- staffing levels and availability of experienced staff
- staff sickness levels
- leadership style
- frequency of staff meetings
- working practices including practices to manage waiting times
- availability of additional facilities such as a walk-in centre.

Because these characteristics vary from hospital to hospital, it was possible to map them against the average waiting times and use a statistical technique ('regression') to identify which of them have the strongest association with low waiting times. The findings from this study suggest that there are three significant factors: nursing sickness, levels of non-pay spend and the management style of the lead clinician.

Members of the research team

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Occupational psychologists led by Dr Angela Carter advised at every stage of the study and conducted the in-depth analysis.

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References

Audit Commission. 1998. *By accident or design: A review of progress in accident and emergency*. London: Audit Commission

Department of Health. 2000. *The NHS plan: A plan for investment, a plan for reform*. London: Department of Health.

Department of Health. 2001. *Reforming emergency care: First steps to a new approach*. London: Department of Health.

Mason S, Locker T, Carter A, Walters S, Stride C and Casson J. 2006. *What are the organisational factors that influence waiting times in emergency departments?* Report for the NIHR Service Delivery and Organisation Programme. London: NCCSDO.

Further information

The full report, this research summary and details of current SDO research in the field can be downloaded at: www.sdo.lshtm.ac.uk

For further information about anything included in the report, please contact Suzanne Mason at the School of Health and Related Research, Sheffield University (s.mason@sheffield.ac.uk).

Feedback

The SDO Programme welcomes your feedback on this research summary. To tell us your views, please complete our online survey, available at: www.sdo.lshtm.ac.uk/researchsummaries.html

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- commissioning research and producing research evidence that improves practice in relation to the organisation and delivery of health care; and
- building capacity to carry out research amongst those who manage, organise and deliver services and improve their understanding of research literature and how to use research evidence.

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Addendum

This document was published by the National Coordinating Centre for the Service Delivery and Organisation (NCCSDO) research programme, managed by the London School of Hygiene and Tropical Medicine.

The management of the Service Delivery and Organisation (SDO) programme has now transferred to the National Institute for Health Research Evaluations, Trials and Studies Coordinating Centre (NETSCC) based at the University of Southampton. Prior to April 2009, NETSCC had no involvement in the commissioning or production of this document and therefore we may not be able to comment on the background or technical detail of this document. Should you have any queries please contact sdo@southampton.ac.uk