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a life in the fast lane
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First published in September 1998 by the Audit Commission for Local Authorities and the National Health Service in England and Wales, 1 Vincent Square, London SW1P 2PN

Printed in the UK for the Audit Commission by Belmont Press

ISBN 1 86240 064 4

Illustration: Fred Van Deelen, p9
Preface

The Audit Commission oversees the external audit of the National Health Service (NHS) and local authorities in England and Wales. As part of this function, the Commission carries out studies that identify ways of improving the economy, efficiency and effectiveness of services provided by these bodies.

This is the first full report that the Commission has published on emergency ambulance services. It looks at how crews and vehicles can be deployed to optimise performance, and at what local management can do to ensure a high quality of care for patients. It goes on to describe ways of facilitating change based on relationships within a service, between separate ambulance services, and with external bodies such as purchasers. The final chapter considers how ambulance services could contribute to longer-term developments in emergency healthcare generally.

The report aims to help ambulance trusts and health authorities, among others, to assess how their service is performing, allowing for external factors such as local geography. For ambulance trusts, the report underpins the value-for-money work that their external auditors are carrying out during 1998.

This report is based primarily on visits to seven ambulance services (study sites) during 1997. However, responses to questionnaires sent to all 42 ambulance services over the period of the study enabled the study team to analyse costs and performance in detail. A postal survey of nurses in hospital accident and emergency departments in November 1997 provided other insights into the services' performance.

Health authorities have also had an important role as commissioners of emergency ambulance services. The report draws on work carried out by auditors during 1997 on the purchaser-provider relationship in both health authorities and ambulance trusts. Despite the changes the new government has made to the organisation of the NHS, commissioning bodies can still learn from the experience of the past.

The study was carried out by Geoffrey Rendle and David Bird under the direction of Joanne Shaw and Jonathan Boyce. Peter Jane of District Audit helped with the fieldwork and Ross Tristem with the statistical analysis. Information and administrative support were provided by Alan Chu, Sophia Ducran and Sandra Starling. Finally, the Commission is very grateful to managers and staff in the study sites and to the members of the advisory group (listed in Appendix 2) for their assistance.
Introduction

1. For users of the health service, an ambulance call is often the first point of contact, and the mere knowledge that the service is available is a source of reassurance to many of us. By and large this confidence is not misplaced: ambulances have served us well. But that does not mean no changes are necessary, for two reasons. First, individual ambulance trusts vary in efficiency and performance in ways that cannot be readily explained. And second, there are major changes taking place elsewhere in the NHS that will alter what is required of the ambulance service.

2. For more than 100 years, ambulance services have had to react to changing needs and workloads. As statutory provision of healthcare has been extended, and as more and more people have access to telephones, demand has grown. Experience in both world wars has also contributed to the development of the service. Until at least 1974, when ambulance services were transferred from local authority control to the NHS, they were viewed largely as a transport service. Since then, there has been increasing emphasis on their direct contribution to healthcare. Crews now have to be competent to treat patients at the scene of an emergency.

3. Today's ambulance services incur most of their costs in responding to 'emergency' calls (mostly from the general public) and 'urgent' calls (from GPs or other health professionals asking for a patient to be taken to hospital within a specified time). This report concentrates on these two areas. However, three other functions of ambulance services should be noted:

   • ambulance services take patients between hospitals; for example, for specialist investigation or treatment. These pre-booked journeys (about 7 per cent of the total operated by emergency ambulances) reduce the resources available for emergency and urgent journeys;

   • they maintain a readiness for responding to major incidents and disasters – the NHS Executive has published the requirements of this very important function (Ref. 1); and

   • they run pre-booked transport for non-emergencies such as outpatient visits, planned admissions, or discharges. Most services now operate these patient transport services (PTS) separately from their Accident and Emergency (A&E) work, and they are not considered further in this report.

---

I The phrase 'GP urgent' is sometimes used in this report and refers to urgent calls from all sources. Dentists and midwives may make such calls as well as GPs, but those from GPs predominate.

II The phrase 'A&E work' covers responses to two types of call: 'emergency' and 'urgent', as described in paragraph 3. Most, but not all, A&E ambulance work results in a patient being taken to a hospital A&E department.

III Air ambulances and hospital-run and private services are also excluded from the scope of this report.
INTRODUCTION

Key events in the history of the ambulance service

1879 Metropolitan Asylums Board (London) given powers to organise horsedrawn transport to hospital for victims of smallpox, cholera, etc.

1880 Wheeled litters introduced by Metropolitan Police to attend street accidents and sudden illness.

1883 Horsedrawn ambulance service set up at David Lewis Northern Hospital, Liverpool, following a visit to the USA by the hospital treasurer.

1906/07 City of London ambulance service set up (it could be called from 52 street telephone boxes): the London County Council was refused permission by the Home Office to set up an ambulance service on cost grounds.

1925 Public Health Act empowers local authority ambulance services to carry non-urgent cases.

1937/38 999 telephone system initiated (first in London, then Glasgow).

1948 NHS Act first places a duty on local authorities to provide free ambulance services for both emergency and non-emergency patients.

1951 Minister of Health appeals to hospitals to limit demand for ambulances.

1974 Ambulance services transferred from local authorities to NHS control.

1990 Target set of 'a paramedic on every ambulance by 1996'.

Source: Drawn largely from The London Ambulance Service (Ref. 2)

4. A&E ambulance work is high-volume and totally driven by demand. During 1997/98, over three million emergency calls were made in England and Wales, not counting the one million GP urgent calls [BOX B, overleaf]. For an average-sized service, that means approximately one call every five minutes around the clock every day of the year; and an ambulance is sent to each one, whether it is a major road traffic accident or a minor ailment in the home. Timing is crucial for members of the public and health professionals alike. Of the few public complaints that the service attracts (only 1 complaint per 5,000 incidents), the most common cause is a long wait for the ambulance to arrive. And a GP who has made an urgent call wants to be sure that the patient reaches hospital at the appropriate time.
5. Recognising these concerns, the health departments have for over 20 years set standards for ambulance response time. These targets depend on the nature of the area served [BOXC]. Most services come close to meeting the two 999 targets or exceed them, but many fall short on those for GP urgent calls [EXHIBIT 1].

6. Until 1997, all emergency calls were judged by the same response time standards. But since then, the Patient's Charter has required that services work towards an eight-minute response to immediately life-threatening situations (Ref. 3). The Government expects all services to achieve this for at least 75 per cent of calls by the year 2001, with further progress thereafter. To meet this requirement, services are introducing 'priority despatch', using one of two computer-support systems that enable call-takers to identify situations where a life may be at risk. By March 1998, 8 out of 42 services had introduced this way of working.

---

**BOX B**

**Key statistics on A&E ambulance work in England and Wales**

| 1. Number of services (as at April 1998) | 38 |
| 2. Incidents attended | |
| – emergency | 3.2 million |
| – urgent | 1.2 million |
| 3. Revenue expenditure | £470 million |
| 4. Number of ambulance vehicles | 2,900 |
| 5. Mileage operated | 70 million miles |
| 6. Number of staff employed | |
| – crew | 13,800 |
| – control | 1,500 |

*Source: (2) Returns to Department of Health and Welsh Office; (3, 4, 5, 6) estimated from Audit Commission survey of costs and workload*
BOX C

Targets for speed of ambulance service response

<table>
<thead>
<tr>
<th></th>
<th>Urban areas</th>
<th>Rural areas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Response to emergency (‘999’) calls</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50% within</td>
<td>8 minutes (England)</td>
<td>8 minutes (England and Wales)</td>
</tr>
<tr>
<td></td>
<td>7 minutes (Wales)</td>
<td></td>
</tr>
<tr>
<td>95% within</td>
<td>14 minutes</td>
<td>18 minutes (most of Wales)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19 minutes (England)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>21 minutes (very rural Wales)</td>
</tr>
<tr>
<td><strong>Response to ‘life at risk’ 999 calls</strong> (services where priority despatch introduced)*</td>
<td>8 minutes</td>
<td>same as urban areas</td>
</tr>
<tr>
<td>(by 2001) 75% within</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GP urgent requests: arrival at hospital</strong></td>
<td>15 minutes of</td>
<td>same as urban areas</td>
</tr>
<tr>
<td>95% within</td>
<td>agreed arrival time</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Under priority despatch, a first responder can count towards the 8-minute ‘life at risk’ target, but an ambulance still has to attend in 14/19 minutes.

Source: Department of Health and Welsh Office

EXHIBIT 1

Performance of ambulance services against their response time targets, 1997/98

Most services come close to meeting the two 999 targets, or exceed them, but many fall short on GP urgents.

Note: ‘999’ graphs exclude trusts operating priority despatch throughout 1997/98.

Source: Department of Health and Welsh Office
7. These response time requirements are not the only challenge faced by the ambulance service. In recent years, services have experienced a steady increase in demand, particularly since 1991 [EXHIBIT 2]. And although the workload for any particular hour or day is roughly predictable, the exact level can never be known in advance, requiring constant vigilance and preparedness. Staff often work under pressure, not least from the increasing level of violence that crews encounter. And, lastly, there is little flexibility in the way that the service is delivered:

- a fully equipped ambulance is despatched to every call, however minor (a motorbike or car is normally additional to, not instead of, the full ambulance response);
- all 999 calls receive the same priority (except for the minority of situations where life is immediately at risk); and
- patients with even the most minor conditions are routinely transported to hospital.

EXHIBIT 2
Emergency and urgent workload over 11 years
In recent years services have experienced a steady increase in demand.

Note: The figure for 1989/90 is estimated due to industrial action during the year.

Source: Department of Health statistics
Ambulance services – similarities and differences

8. In order to meet all these challenges successfully, services must perform well in four key areas [BOX D]:

- prompt and accurate handling of communications with callers, ambulance crews, hospitals and other emergency agencies;
- transport operations – organising and deploying vehicles and well-trained drivers to achieve rapid response;
- training paramedics and other crew members so that they have the clinical skills to assess and treat patients appropriately and sensitively; and
- efficient management of the whole process.

Source: Audit Commission
9. Liaison with outside bodies is also important, particularly with:
   * health authorities (most ambulance trusts have at least 2 funding authorities while the largest trust, London, relates to 16);
   * acute hospitals (the majority of services routinely take patients to at least four different A&E departments);
   * social services departments – for example, for psychiatric emergencies;
   * the local police force and fire brigade for complex and major emergencies that require more than one service to attend; and
   * neighbouring ambulance services.

10. During the 1990s, ambulance services achieved NHS trust status and accepted managerial responsibility for their own activities. They have been encouraged to generate additional income – for example, by operating message-taking services, providing training to external bodies, or maintaining other NHS vehicles in their own workshops. But this usually represents a relatively small part (3 to 7 per cent) of their income. Revenue funding of their A&E work comes chiefly from local health authorities under long-term agreements.

11. A&E ambulance work across England and Wales costs around £470 million per year. Two-thirds of this expenditure covers the cost of frontline crews (57 per cent) and vehicles (11 per cent) [EXHIBIT 3]. Capital investment is also important: most obviously to replace the vehicle fleet but, equally importantly, to update and enhance the communications and computing equipment. Every £1 million of revenue expenditure is typically supported by between £0.4 million and £0.6 million worth of vehicles and other equipment.  

12. Ambulance services are all very different. They vary in size from that in London, which serves a resident population of some 7 million (plus commuters and visitors), to the Isle of Wight service, which covers 120,000 residents (again, plus visitors). The cost of A&E work also varies (between £4 million and £20 million per year in most services). Moreover, local populations may be highly concentrated in cities or spread over wide rural areas, resulting in a fivefold variation in the average mileage needed per trip [EXHIBIT 4]. And (for reasons that deserve further research) people themselves vary in the use that they make of the A&E service [EXHIBIT 5].

---

EXHIBIT 3
Running costs of a typical A&E ambulance service

Two-thirds of the cost is that of frontline crews and vehicles.

---

Source: Audit Commission survey of 1996/97 activity and expenditure: average of participating services

---

I Two small ambulance services are part of NHS trusts that also provide acute or community services.

II Ambulance trust assets, valued before depreciation, and excluding land and buildings (information drawn from trusts’ annual accounts, 1996/97).
EXHIBIT 4

Average mileage operated per journey in different services
There is a fivefold variation in the average mileage per trip.

Source: Audit Commission survey of 1996/97 activity and expenditure

EXHIBIT 5

Ambulance responses per head of population in different services
People vary in the use that they make of the A&E service.

Source: Department of Health and Welsh Office statistics
13. This diversity makes the task of evaluating ambulance services particularly difficult. Not only do they face different geography and populations, and have different potential to benefit from economies of scale, but they have all secured different levels of revenue funding and capital investment.

14. The first four chapters of this report aim to help ambulance services and health authorities to understand this diversity and assess how their service is performing accordingly.

- Above all, users of the service want timely response. With demand increasing, can services continue to provide this at an affordable cost? Chapter 1 covers ways of optimising efficiency.

- Patients generally take the quality of care for granted. The Government is therefore requiring all NHS trust boards to pay full attention to quality assurance. Chapter 2 covers some of the implications for ambulance services.

- Quality of patient care also depends on various local agencies coordinating their work. Ambulance trusts are part of the overall system of care and cannot do their strategic planning in isolation. Much depends on local health authorities understanding the ambulance service and involving it in the plans. Chapter 3 deals with strategic change and makes recommendations to commissioning bodies.

- Implementing change, whether operational, clinical or strategic, presents special challenges to ambulance services that most other NHS sectors do not face. They have to gain support from crews who are scattered over wide geographic areas. Many ambulance services have no clinically qualified senior staff. Some are constrained by outdated information technology (IT), including poor management information systems. And small services face disadvantages such as higher average costs. Chapter 4 suggests ways of dealing with these challenges, including recommendations for dealing with mergers.

15. The report then moves on from services’ current objectives and prerequisites for change to look at – in the final chapter – some options for the future. All forms of emergency healthcare are under pressure, resulting in new patterns of service. Telephone helplines are being introduced. General practice, community nursing and A&E departments are all taking on new roles and functions. The NHS needs to address some fundamental questions about the ambulance service, too:

- Does every call, however minor, need a fully crewed and equipped ambulance to attend?

- Should all 999 calls receive the same priority (except for the minority of situations where life is immediately at risk)?

- Need patients with the most minor conditions be routinely transported to hospital?
EXHIBIT 6
The structure of the report

The report looks first at current objectives and prerequisites for change, and then considers options for the future.

Source: Audit Commission
Optimising Costs and Response Times

Response times to emergency calls meet national standards overall, but some detailed problems still need to be resolved and services need to operate as efficiently as possible. Although much of the cost difference between services can be explained by external and immutable factors, opportunities to improve performance using existing resources do exist. They include aligning crew schedules and deployment more closely to patterns of demand, activating crews more quickly, reducing time at the scene and at the hospital, and controlling sickness and vehicle management costs.
Assessing response times

16. People who call an ambulance in an emergency want it to arrive quickly. And GPs need to be confident that an 'urgent' patient will indeed reach hospital at the time that they agree with the ambulance service (often about two hours after phoning the control room). The national targets recognise that response times matter (Box C, p7), but not all ambulance trusts meet them. In 1997/98, 9 out of 38 services reported failing the conventional 'emergency' target, and the majority (28 out of 42) failed that for GP urgent journeys.

17. In the case of GP urgents, this meant that 12 per cent of patients arrived at hospital more than 15 minutes late. One reason is that under pressure of work, most ambulance services routinely (and often daily) delay these urgent journeys so that they can respond to 999 calls. Ambulance trusts and health authorities should review the number of patients arriving more than, say, an hour later than agreed, and consider auditing the clinical consequences of such delay.

18. The percentage of emergencies that fail the 95 per cent standard is smaller (5.5 per cent). But the reported figures do not tell the whole story.

• The 95 per cent target is set for each trust as a whole, so there can be small areas of consistently poor response even when the overall target is met. Ambulance trusts should identify such areas to their commissioning health authorities and discuss solutions. It is not satisfactory for consistently poor service to be covered by the 5 per cent failure rate allowed by the national standard without clear justification.

• Reported figures do not distinguish responses that just fail to meet the target from those very occasional calls (probably fewer than 1 in 1,000) where the patient waits for half an hour or more. These long delays will inevitably occur, albeit in exceptional circumstances, and cause great concern to patients. If control staff can foresee a long delay, it is important that they forewarn the caller and give advice on any first aid that the patient requires.

• Conventional standards do not recognise the contribution made in some services by solo paramedics and other 'first responders'. A solo paramedic who reaches the casualty by motorbike or car can start life-saving treatment, but his or her arrival does not count against the standard except where priority despatch has been introduced.

• Measuring response times accurately and consistently is not straightforward. A fraction of a minute's inconsistency can affect the statistics; different definitions of when the clock starts have in some cases affected the reported performance by several percentage points. This problem has now been minimised since the Department of Health clarified the definition, with effect from April 1998 (Ref. 4).

19. A few health authorities have decided not to fund full achievement of the 95 per cent target on the grounds that other local health needs deserve priority. Yet achieving this target is a national Patient's Charter standard. Health authorities should take such a decision only after public
consultation (including with community health council (CHC) and GP representatives) and after detailed discussion with the ambulance service. Elsewhere, poor response times could be due either to under-funding or to inefficiency.

Comparing overall costs

20. But efficiency comparisons between services are difficult to make. Costs per A&E response are affected by many factors, including:

- geography: how urban or rural the area is, where hospitals are located, traffic density and the road network;
- economies of scale: the larger a trust is, or the more calls that it receives, the lower its costs per call should be, because it can spread its overheads more thinly; and
- funding levels: most health authorities have funded A&E ambulances on a historical basis; without detailed consultancy work they have no way of knowing whether they are funding generously or stringently.

The crude cost\(^1\) of providing crews, control staff and transport varies nearly threefold between ambulance trusts [EXHIBIT 7] – from £50 to £125 per ambulance response. Even greater variation occurs in the overhead cost (per response) that is allocated to the A&E service, though part of this may be due to inconsistencies in precisely how the allocation is made (Appendix 1).

---

1 The ‘crude’ cost is the cost before making any adjustment for the factors listed in paragraph 20.

EXHIBIT 7

Crude cost per response in ambulance trusts: crew, control staff and transport

Unadjusted, these costs vary nearly threefold between ambulance trusts.

Note: Two services where there are special local factors (London and Isle of Wight) have been excluded from Exhibits 7 to 10 to preserve anonymity.

Source: Audit Commission questionnaire 1996/97
21. Three measurable factors account for most of the variation: population density, average mileage per trip, and the number of call-outs per head of population. All three tend to increase unit costs in rural areas, where the population is more scattered, round trips are longer, and people tend to make less use of the ambulance service.

- Population density is very closely related to unit costs [EXHIBIT 8]. At one extreme, there can be several crews working within an urban area of only a few square miles. They can cover the area jointly so that each has a high workload. Thus, quick response times in a densely populated city can be achieved at low cost, although factors such as high-rise flats eventually limit performance. In a very rural area, by contrast, there may be only one call per hour in an area of one hundred square miles. In that situation, crews have to spend much more 'unproductive' time ready and waiting for a call in order to meet the 19 minutes target.

- Average mileage per trip has an effect on cost even after allowing for density of population. It varies according to how many hospitals receive ambulance patients, and where they are located in relation to clusters of population.

- Busier services, defined as those that deal with a higher call rate in a given type of area, also have slightly lower unit costs. As with high population densities, an area that generates more calls can be served with less time waiting for work.

**EXHIBIT 8**

Cost per response, and population density, in different ambulance services

Population density is very closely related to unit cost.

*Source: Audit Commission questionnaire 1996/97 (costs); Department of Health and Welsh Office (population density)*
22. These factors, which are largely outside's management control, explain 80 per cent of the variation in costs. Some of the remaining variation could correspond to how generously a service is funded by its health authority. For example, a few health authorities are known to have contracted for less than full national response time standards. But if funding levels were a major cause of the variation, the best response times would be expected where costs (adjusted for the three factors in paragraph 21) were high. However, no such systematic relationship between adjusted cost and response time exists [EXHIBIT 9]; there are roughly equal numbers of services in all four quadrants of the grid, and this means that services can cost either less or more than expected and still achieve either relatively poor or relatively good response times.

1 A statistical analysis of the factors associated with ambulance costs has been carried out. It shows that population density alone explains 72 per cent of the variation in total costs. Including call rate increases this to 78 per cent, and mileage to 80 per cent. The correlations are slightly lower if overhead costs are excluded. More details are given in a Technical Note that can be obtained from the Audit Commission.
23. Causes of the remaining variations in cost per response include factors that managers can influence. A trust can identify its most and least efficient aspects by analysing its total costs into components that it can compare with similar services. Various indicators were collected for this study, and an estimate made of typically how much they affect costs [TABLE 1]. In the case of sickness absence, for example, trusts with high rates would on average save £100,000 a year each, if they reduced these rates to the norm for similar services.

<table>
<thead>
<tr>
<th>Indicators underlying A&amp;E ambulance costs</th>
<th>Typical annual saving</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Productivity</strong></td>
<td></td>
</tr>
<tr>
<td>Ambulances</td>
<td>Responses per ambulance per year</td>
</tr>
<tr>
<td>Crew</td>
<td>Responses per crew member per year (net of sickness)</td>
</tr>
<tr>
<td>Control</td>
<td>Responses per member of staff per year (net of sickness)</td>
</tr>
<tr>
<td><strong>Payroll costs</strong></td>
<td></td>
</tr>
<tr>
<td>Crew</td>
<td>Payroll costs per member of staff</td>
</tr>
<tr>
<td><strong>Sickness absence</strong></td>
<td></td>
</tr>
<tr>
<td>Crew and control</td>
<td>Percentage of hours lost per year</td>
</tr>
<tr>
<td><strong>Vehicle repair/maintenance</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Costs per vehicle per year</td>
</tr>
</tbody>
</table>

Note: The final column 'typical annual saving' was calculated as follows. For each service, costs were compared with the average of a family of services having similar population density. Potential savings for each were calculated on the assumption that services with above-average costs reduced them to their family average. The final column shows the median of these estimated savings.
24. Thus many different indicators need attention from management if both efficiency and response times are to be as good as possible. The range of tasks can be divided into two broad areas:

- minimising the hours of service so that they just match demand at any time; and
- minimising the cost of making an ambulance and crew available for each hour of service.

Correspondingly, cost per response can be split into two ratios [BOX E]: the first representing how busy ambulances are when available for work, and the second the cost per hour of making the service available. These two ratios are key performance indicators for ambulance services. Services should use them for monitoring their own performance over time and consider sharing these trends with their purchasers.

---

**BOX E**

Cost per response, split into two ratios

\[
\frac{\text{Total costs}}{\text{Number of responses}} = \frac{\text{Total available hours}}{\text{Number of responses}} \times \frac{\text{Total costs}}{\text{Total available hours}}
\]
Minimising the available hours so that they just match the demand

25. The challenge for ambulance services is to provide the minimum number of available hours to deal with the workload and still meet the response time standards. There is no universal target for ‘available hours per response’; urban services can expect higher utilisation rates than rural ones, and all services tend to have lower rates in the very early morning [EXHIBIT 10]. A very busy service may reach an average of 0.6 journeys per hour, whereas a less busy one may not be able to exceed 0.2 journeys per hour without jeopardising response times. In rural areas where A&E utilisation rates are low, the emergency ambulance service is sometimes operated jointly with the non-emergency patient transport; this helps to obtain an acceptable cost overall.

EXHIBIT 10
Incidents per available ambulance hour in three services
Urban services can expect higher utilisation than rural ones, and all services tend to have lower rates in the very early morning.

Source: Three site visits (selected to illustrate the range of performance between urban and rural trusts)
26. Whatever the numerical target, any service must follow six rules in order to provide just the right number of hours for the workload:

- schedule resources to reflect variations in demand across the day and the week;
- control any deviations from the schedule;
- schedule resources to meet seasonal variations in demand;
- position ambulances where the demand is;
- activate quickly; and
- deal with each patient incident expeditiously.

Schedule resources to reflect variations in demand across the day and the week

27. There is a characteristic pattern of demand by time of day and day of week, albeit with local variations. In some services visited the scheduled crew pattern had been aligned closely to the workload variations [EXHIBIT II]. Considerable savings in overnight duties have been made as a result. The Commission’s auditors will be checking that all services have addressed this issue.

EXHIBIT II
Average daily crew schedules and incidents in one urban service
Some services (such as this one) have aligned schedules closely to the workload.

Source: Site visit
...many services do not analyse failures systematically

28. There are some times of the day and week when further adjustments would be beneficial. Many of the services visited experienced peaks in demand:

- for a few hours in the middle of the day (when GPs are doing home visits, resulting in a high demand for urgent transport);
- in the early hours of the morning; and
- (increasingly) at weekends.

At these times, ambulances are busy and failure to meet response times (‘failures’) is disproportionately high. But there are often good reasons why more ambulances are not provided at just these times. First, the short peaks of work are difficult to cover efficiently. Second, unsocial duty times (for instance, 2am finishes) have human resource implications: for example, they run counter to attempts to recruit more women – 78 per cent of ambulance staff are male (Ref. 5).

29. Despite these difficulties, services should be alert to signs that their rotas need revising. One indicator is high failure rates at certain times or places. However, many services do not analyse failures systematically for patterns in timing and location. Although many do review excessively long response times daily or weekly, the tendency often seems to be to blame the circumstances of an incident, rather than examine whether the rotas themselves are in need of adjustment.

**Control any deviations from the schedule**

30. It is not always possible to operate the service as planned, for many reasons.

- Last-minute sickness may mean a crew member works single-handed (thus he or she can assist another crew at the scene of an emergency but cannot transport patients). Alternatively, two staff pair up because both their usual crewmates are sick, and a whole ambulance is lost from the schedule.

- Vehicles have to be taken out of service due to mechanical breakdown, shortage of equipment, or to be disinfected. The effects of breakdown can be minimised by arranging for quick turnaround and by managing reserve vehicles well.

Services need to be sure that they are controlling the level of lost hours. If the level is high, they should monitor the causes and find out whether there is a problem at certain stations or administrative divisions.

**Schedule resources to meet seasonal variations in demand**

31. Most ambulance services face large seasonal variations in demand. The number of calls in winter months can be 20 per cent higher than in summer, and the impact is exacerbated by unfavourable weather affecting ambulance driving speeds. Individual peaks of demand – for example, on New Year’s Eve – can be higher still. In some areas, tourism leads to quite
Much better response times can be achieved by implementing 'dynamic standby'

different seasonal patterns. In many services, response times get longer in busy weeks and months.

32. However, one service visited achieved consistent response times throughout the year. It has successfully organised staff leave commitments and training so that the number of hours available for work is roughly proportional to demand. But it is not easy to win staff support for such changes; another ambulance service had tried to institute annualised hours but had to withdraw following unfavourable staff reaction.

Position ambulances where the demand is

33. If response time failures are plotted on a map, pockets of poor response will be apparent in most services. The usual position of these pockets may vary according to the time of day. If the area is remote and generates few calls, the commissioning health authority may have agreed that it is not cost-effective to station an ambulance nearby. However, poor response times can occur in more populous areas. Often the problem is not a shortage of ambulances, but where the crews are based while waiting for the next call.

34. In the past, crews usually returned to their base station after dealing with an incident. But that is unlikely to be the best location for the next call – partly because some stations are very poorly located. So some services have improved performance simply by relocating an ambulance station to a fast main road, or by standing ambulances at premises such as fire and police stations if these happen to be better placed. These possibilities need to be considered as part of the trust's estates strategy. But they are not likely to optimise response times in all circumstances, since the geographical pattern of demand typically varies by time of day.

35. Much better response times can be achieved by implementing 'dynamic standby': the control room directs crews to wait at points that are directly related to the likely pattern of calls over the next few hours. Identifying the most advantageous point is a difficult task. The skill of the vehicle despatchers and availability of the appropriate technology are both important. (And managers will need to devote time to arranging good facilities for crews on standby, such as hot food or access to toilets.) Only one service visited had a completely systematic approach to where crews should be based [CASE STUDY 1], taking account of hour-by-hour changes in the crews available and the likely pattern of demand; and even in this service, success appeared to depend on the personal skills of control room staff as well as on the information system. In other services, although standby points were used on occasion, there was no systematic check on how closely crew location was being matched to demand.
CASE STUDY 1

Improving response times with no extra resources

Predicting demand, standing ambulances appropriately and activating quickly are all important factors in increasing efficiency. Staffordshire Ambulance Service NHS Trust introduced the 'high performance ambulance service' concept in November 1994, a system developed in Kansas City, USA, almost 20 years ago. The concept is based on the principles of total quality management and is designed to provide remarkable response times at a lower cost than traditional services.

One of the main changes introduced by the service was to adopt a 'System Status Plan': previous calls are analysed by hour of the day and day of the week for a predetermined period to predict where the available ambulances should be positioned to react to expected demand. The system uses the technology of automatic vehicle location, mobile data, and a computer-aided despatch system that can accurately and safely determine which calls are life-threatening.

With ambulances being continually moved by control to standby positions indicated by the system, crews now spend more time in ambulances rather than at stations. This has resulted in greatly reduced activation times. Also, the Trust has been able to dispose of many of its emergency ambulance stations.

The system as a whole reduced the average response time to less than six minutes in 1996. Over a four-year period, the number of staff was reduced by 5.5 per cent, despite a 16 per cent increase in demand.

Activate quickly

36. The Department of Health used to set a target of three minutes for the time elapsing between control receiving the call and an ambulance starting to move ('activation time'). Some services still adopt this target locally. But three minutes' activation is long enough to have a significant effect on the number of calls that ambulances can reach within eight minutes.

37. Delays can arise in two places:
   • in the control room, when appropriate crews are being selected and instructions are being passed to them; and
   • the speed with which crews get the ambulance moving once alerted.

Some delay may be due to outdated technology: using pagers to contact crews is obviously quicker than relying on a phone. The time taken by the crews themselves to mobilise when based at a station can depend greatly on their morale, the station layout, and exit arrangements. Crews can
activate very rapidly if they are already on standby with their vehicle, and even more so if the ambulance is cruising in anticipation of the next call. Ambulance services should review activation times from different stations and standby points, and consider how they could be streamlined.

**Deal with each patient incident expeditiously**

38. For each patient taken to hospital the crew goes through a sequence of tasks ('the job cycle'):
   - mobilising the vehicle;
   - driving to the scene;
   - assistance at the scene;
   - journey to hospital; and
   - at hospital.

The average length of the job cycle is just under an hour in most services [EXHIBIT 12], though in very rural services, incidents in remote areas may tie up a crew for two or three hours.

39. The more quickly the cycle is completed, the sooner the crew is available for further work. The average time at the scene varied between services visited by three minutes, and the time at the hospital by six minutes. A reduction of three minutes in either component should shorten the overall job cycle and thus increase productivity by about 5 per cent. However, the quality of service must also be considered.

   - **At the scene time:** time at the scene should reflect the needs of the patient and the value of clinical intervention in that particular situation. This varies with the nature of the incident. There is some evidence that, in major trauma, it is better to get the patient to hospital as quickly as possible. A frail chronically ill patient, by contrast, needs to have time spent with them to prepare them for the journey.

   - **Time at the hospital:** handover arrangements at some hospitals cause delay to ambulances – for example, crews queuing with their patient to see the triage nurse, or having to wait to hand them over direct to a doctor rather than to a nurse. On the other hand, good patient care includes adequate handover to the hospital. The next chapter will emphasise the importance of exchanging information with hospital staff. In the Commission’s survey of A&E nurses, a few commented that pressure on crews to get back on the road made this process difficult.
EXHIBIT 12

The job cycle

The average length of the cycle is just under an hour.

Note: Data on mobilisation time was not sufficiently reliable for a meaningful average to be calculated.

Source: Average of four site visits (60,000 calls)
Minimising the cost of providing an ambulance for an hour

40. The six key rules (paragraph 26) should make the hours of service as productive as possible. But managers must also ensure that these hours are provided economically. Costs per available hour also vary between trusts [EXHIBIT 13]. Three areas contribute significantly to this (Table 1, p19);

- the staff remuneration package;
- sickness absence; and
- fleet management and, in particular, repair and maintenance arrangements.

41. Most ambulance trusts have introduced local terms and conditions. By 1997, these covered over half the front-line staff in a majority of trusts. Local pay rates for paramedics vary by over £1,000 a year (Ref. 6), reflecting market conditions as well as human resource policies.

42. To control sickness absence and vehicle costs, managers can draw on good practice outside as well as within the ambulance service. Previous Audit Commission publications (Refs. 7 and 8) and local audits have produced relevant recommendations [BOXES F and G].

Conclusion

43. Both public expectations and government requirements mean that ambulance trusts must meet response times, and at minimum cost. To do so, they need to do many general management tasks well, such as controlling sickness absence and the costs of vehicle maintenance. However, reaching the very best levels of response requires specialised skills: anticipating the likely workload, having crews ready when and where they are needed, and completing each job without delay. Even so, fast response times are only part of the story. High quality must also mean giving each patient the right care, the subject of the next chapter.

EXHIBIT 13

Costs of providing an ambulance for an hour

Costs per hour vary between trusts.

Note: Scheduled hours of service have been used as a proxy for total available hours, which could not easily be provided by some services.

Source: Audit Commission 1996/97 survey
BOX F

Good practice in managing sickness absence

- Have targets for sickness absence that are set by the board and are reported regularly to it.
- Monitor long-term sickness centrally, highlighting any frequent absenteeism and prompting line management to take action.
- Have first-line supervisors take responsibility for interviewing anyone who is suspected of abusing the system (examples include calling on absentees at home while on duty on the road; and conducting return-to-work interviews).
- Oversee the work of these first-line supervisors, and support them – for example, with training in interviewing.
- Pay attention to staff welfare – with sensitivity to staff whose problems arise from stress or injury while at work.

BOX G

Good practice in vehicle maintenance

Strategic

- Improve management information.
- Replacement policy to be influenced by whole-life costs of vehicles.
- Move towards standardising vehicles.
- Compare in-house vehicle management costs with leasing options.
- Ensure any income generation (servicing other public sector / private vehicles) is cost-effective and not to the detriment of ambulance servicing arrangements.

Operational

- Provide comprehensive and timely data to identify high-cost vehicles and types.
- Review intervals between planned maintenance (it may be cost-effective to lengthen them).
Optimising Costs and Response Times

**Ambulance trusts should:**

1. monitor their costs and efficiency via two key indicators (Box E, p20);
2. periodically review rota by time of day and day of week, considering also whether response times are consistently excessive at particular times;
3. plan leave and training commitments across the year so that the number of hours for which crews are available for work varies in line with expected monthly demand;
4. review what standby points are available, and how they are used, to ensure that current practice systematically reflects likely demand patterns;
5. review within their overall strategy whether poorly located stations should be disposed of and possibly relocated;
6. identify whether activation times from particular stations or standby points are long, and why;
7. analyse the time spent at the scene and at the hospital, to identify whether excessive delays are associated with, for example, particular stations or particular hospitals; and
8. monitor the costs of sickness absence and vehicle maintenance arrangements and review them regularly.

**Commissioning health authorities should:**

9. normally purchase full national standards of service; any decision that these response times are unaffordable should be made only after:
   - detailed discussion with the local service about its efficiency; and
   - consultation with CHCs and with GP representatives;
10. pay attention to response time performance for GP urgent calls as well as for emergencies; and
11. review response times (to both 999 and urgent calls) at health authority level or in smaller geographical areas (not just overall performance trust-wide).

**Hospital A&E departments should:**

12. minimise delays to ambulance crews.
Ensuring High-quality Care

Once the ambulance has arrived, patients should be able to take the quality of care for granted. But not all ambulance trusts have adequate quality assurance systems. Their clinical audit work needs to be strengthened, and supported by health authorities and A&E departments. Extensions to paramedic skills and education need to be evaluated. Staff need clear guidance on when to call medical assistance to the scene and where to take the patient. Communications between hospitals and incoming ambulances cause some concerns.
44. A rapid response is important for reassuring patients, and improves patient outcomes in the most serious cases. Control room staff can also affect outcomes by giving first aid advice to the caller before the ambulance arrives. Having arrived at the scene, the crew can influence the care of the patient in three crucial areas: the direct emergency clinical care given at the scene and in transit, the decision on where to take a patient, and the recording and passing on of clinical information [EXHIBIT 14].

Clinical care

45. Ambulance staff have all been trained to carry out extensive first aid, and in 1987 a national scheme was set up to train and reassess paramedics in four additional techniques [BOX H]. Prompt defibrillation at the scene was known to save lives; however, the advantages of the other techniques were more putative, being based on clinical consensus rather than on direct evidence about when these skills were effective. Nationally, a Joint Ambulance Liaison Committee (JCALC), set up in the 1980s, provides a link between the ambulance service and the medical and nursing professions. However, it is difficult to give authoritative guidance that is suitable for all circumstances; for example, there has been uncertainty over when trauma patients should be treated at the scene rather than being taken to hospital without delay. Thus, when ambulance services need detailed advice about when and how to apply their training, they have tended to rely heavily on the opinions of local hospital-based clinicians.

EXHIBIT 14
Effects of ambulance service performance on patient outcome

Having arrived at the scene, the crew can influence the care of the patient in three areas.

Source: Audit Commission
46. In recent years, pre-hospital emergency care has begun to receive direct attention: the Royal College of Surgeons of Edinburgh has introduced relevant professional qualifications for medical and non-medical staff, and the *British Medical Journal* now publishes a quarterly journal devoted to this area. Individual ambulance services have opportunities to use the growing amount of evidence (and to contribute to it) so as to make good decisions about:

- maintaining standards;
- evaluating outcomes;
- introducing new skills and drugs;
- working with other professionals; and
- deepening the understanding of patient care.

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1 *Pre-hospital Immediate Care* has been published quarterly since 1997.
Maintaining standards

47. Ambulance crews practise mostly on their own without supervision. In such circumstances, there is a danger that their skills will atrophy. For this reason, it is a national requirement that paramedics attend a reassessment course every three years, including three days' hospital secondment. Locally, all trusts should audit the care that they give. This means defining good practice, recognising where staff are falling short, and ensuring that real change takes place [CASE STUDY 2].

48. Effective clinical audit needs resources: an audit manager, not necessarily full-time but with adequate clerical and IT support. Some services have difficulty in funding this. Health authorities have funding for clinical audit, but only about half of them give their ambulance service a share (an average of £13,000 per authority in 1995/96). Health authorities should ensure that their ambulance trust can run an adequate clinical audit programme by funding it if necessary, but also by providing advice and support.

CASE STUDY 2
Defining good practice, recognising where staff are falling short, and ensuring that real change takes place

Staffordshire Ambulance Service NHS Trust, as part of its clinical audit programme, looked at outcomes for all cardiac arrest cases that it attended over the period 1995/96 and found that only 3 per cent of patients survived to discharge from hospital, although the service was reporting excellent response times – 80 per cent in eight minutes or less. Evidence from outside the UK suggested that higher rates should be achievable.

On investigation, two key factors were discovered to be delaying defibrillation and thus affecting survival from cardiac arrest. First, anecdotal evidence suggested that the appropriate equipment was not being taken to patients from the ambulance until after their initial assessment had been completed. Second, a literature search revealed a similar problem had existed in a 'high performance' ambulance service in Pinellas, Florida, USA. It had discovered the cause: crews had been delaying defibrillation and apparently spending too long attending to the patient's airway.

Staffordshire Ambulance Service subsequently re-trained all its staff so that they responded to their cardiac arrest patients adequately equipped, and defibrillated them with minimum delay. The result was an increase of survival from 3 per cent to 9.2 per cent, equivalent to 26 more lives saved over the previous year.
49. As well as resources, clinical audit requires commitment throughout the organisation, and ideally from outside agencies, too [EXHIBIT 15]. Those responsible for clinical audit require support from different groups:

- crews should fill in documentation comprehensively for as many patients as possible – for example, it is important to record vital measurements (such as blood pressure, blood sugar level, as appropriate for each patient) both initially and following treatment;
- the training school must ensure that audit findings actually affect staff practice (and communication direct to the crews can also be valuable);
- local clinicians who understand the difficulties of working in out-of-hospital settings are needed to review protocols and audit findings; and
- members of the trust board should underline the importance of the programme, and ensure that they are properly exercising their responsibility for clinical governance.

50. As well as ensuring that general standards are high, it is important to identify any occasional instances of potentially dangerous practice (perhaps due to equipment faults or to an individual who habitually takes a short-cut). This aspect of clinical risk management should complement the broader clinical audit programme. Some hospital departments have a systematic approach to reviewing 'adverse incidents' that are based on reports by staff, and such systems could be more widely used in ambulance services. The aim should be not simply to avoid litigation, but to avert clinical disasters before they happen.

EXHIBIT 15
Prerequisites for clinical audit
Clinical audit requires commitment both throughout the organisation, and from outside.

Source: Audit Commission
Proper evaluation of clinical care requires an examination of clinical outcomes

Evaluating outcomes

51. Maintaining standards by ensuring compliance with protocols is important, but on its own is not sufficient. Proper evaluation of clinical care requires an examination of clinical outcomes. But such evaluation poses problems:

• inadequate care by the ambulance service may manifest itself as increased morbidity or mortality some days or even weeks later, so it is not enough to measure outcomes at the point of handover to the hospital; and

• joint studies are difficult to organise: for example, there may be problems matching hospital information to ambulance records for individual patients. And communication between sectors is sometimes poor: ambulance staff, for example, do not feel that they get enough feedback from hospitals about what happens to patients.

Moreover, the co-operation of trusts in joint audits does not solve the problem of trying to isolate the relative contribution to outcomes of many different causal factors. In other words, the later that outcomes are measured, the harder it is to direct some recommendations to ambulance crews and others to hospital staff.
52. Despite these difficulties, there have been some joint studies:

- many services have looked at the proportion of cardiac arrest patients who leave hospital alive (as in Case Study 2, p34) and with good brain function; and
- others have carried out retrospective studies of particular diagnostic groups to assess the care given by ambulance crews (as in Case Study 3). How often, for example, is asthma or diabetes diagnosed in the A&E department but not recognised as such by ambulance crews?

Co-operation between two or more services and a number of hospitals can provide particularly valuable information about effectiveness [CASE STUDY 3].

CASE STUDY 3

Clinical audit – research on effectiveness of pre-hospital care

Nine ambulance services in the south-east of England are undertaking a collaborative audit of the emergency pre-hospital care of hypoglycaemic patients who are attended by each service. A specialist working group including consultants in A&E medicine, a consultant diabetologist, a nurse and ambulance personnel was set up to provide advice and support and also the specialist knowledge and audit skills required. An attempt was made to include a patient with diabetes, but this was unsuccessful.

Services can participate at different levels depending on their resources. The most basic level consists simply of auditing adherence to protocols. Higher levels involve one or more local A&E departments as well.

The objectives of the audit are:

- to measure accuracy of diagnosis by emergency crews;
- to evaluate appropriateness of the treatment given by crews;
- to measure adherence to local protocols; and
- to attempt to merge data and look at regional patterns.

The group of trusts is also exploring variations between services in treatment protocols, compliance rates, appropriateness of care, and interim health outcomes – with a view to drafting a common treatment protocol for use (subject to local agreement) in all services.

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1 Hypoglycaemia occurs when blood sugar levels become unacceptably low. It commonly happens to people with diabetes because medication can sometimes overcompensate for their body’s excessive blood sugar production.
Introducing new skills and drugs

53. One difficult task is to decide which changes should be introduced, given the limited evidence on effectiveness. Local Ambulance Paramedic Steering Committees (PSCs), which must advise on any local innovations, have largely represented the opinions of local hospital consultants. Some services have adopted a wider range of skills and drugs than others [EXHIBIT 16]. Discussions with PSC chairs and medical advisers suggest that the cause of this variation does not lie in the working of the PSCs themselves. Rather, services appear to have very different aspirations, depending on the personalities of key individuals such as the medical adviser. One service visited was keen to make paramedics competent in Advanced Trauma Life Support (ATLS) skills, and on this basis had introduced rarely needed procedures of last resort, such as intubation of young childrenI and needle cricothyroidotomy. II Another service that was well advanced in operational innovations was nevertheless quite cautious in introducing new clinical techniques.

I All paramedics are taught to intubate unconscious patients: that is to say, to introduce an artificial airway via the mouth into the throat in order to maintain air supply to the lungs. This procedure is particularly difficult in children and requires a range of small tubes to be carried.

II In needle cricothyroidotomy, air supply to the lungs is maintained by introducing a needle through the front of the neck. The procedure is life-saving when it is impossible to admit an artificial airway from the mouth or nose, perhaps due to obstruction by a foreign body, or swelling due to burns.

EXHIBIT 16
Local extensions to paramedic training
Some services have adopted a wider range of skills and drugs than others.

Source: Survey of Paramedic Skills in the UK and Channel Islands (Ref. 9)
54. To be fully effective, some paramedic innovations rely on hospitals working in new ways too. One example is the introduction of special cardiac monitor/defibrillators that monitor the heart through 12 leads instead of the usual 3. Derbyshire Ambulance Service was one of the first to obtain this equipment and train paramedics to diagnose myocardial infarction (heart attack) from the ECG trace. Such patients need thrombolysis quickly; so local Coronary Care Units have set up paramedic beds, allowing patients to be admitted and treated directly without going through the A&E department. This reduces the time to thrombolysis by one hour on average, saving an estimated 23 lives per thousand.

55. All this diversity need not be a problem; indeed it could be a strength, provided that:

- the more advanced services arrange to audit and review the use made of new interventions; and
- there is effective interchange of information so that other services can share the benefits.

For example, two ambulance services have authorised their staff in intraosseous infusion, whereby fluids are administered into the bone marrow, a technique that can occasionally be a useful substitute for the usual route into a vein. Although guidance from JCALC is that this technique ‘is not generally recommended for routine use at the moment’, the experience of the two services will allow this to be reviewed in due course.

**Working with other professionals**

56. Other health professionals can contribute to emergency care; for example, GPs and hospital doctors who specialise in emergency care and are members of the British Association of Immediate Care Schemes (BASICS). Many of the BASICS doctors contacted for this study felt that ambulance control should call on them more often, especially to road accidents and other trauma. When a casualty is trapped, pain relief and fluid replacement are vitally important; a doctor can treat each patient appropriately to the situation, where a paramedic can act only according to protocols. The frequency or speed with which ambulance services call on a local BASICS scheme appears to be a matter of attitudes among a group of individuals, with no objective documented basis for whatever practice they adopt. Services should have a protocol that is justified, for example, by reference to the training and experience of local BASICS doctors. The decision to adopt it should be reviewed by the local PSC and endorsed by the ambulance trust board.

**Deepening the understanding of patient care**

57. Clinical care can be improved considerably by underpinning basic training with the use of standard protocols. But there will be limitations to the level of decision that can be taken on the basis of such skills. If ambulance staff are to have an extended role in future and make
There are...patients who might safely and appropriately be left at home

decisions such as whether or not to take a patient to hospital at all, then they will require a much greater depth of understanding of basic medical sciences.

58. Many ambulance staff and managers believe that their statutory obligation is to take all patients to hospital, and in practice this is what happens (with exceptions – if a doctor is present, or the patient refuses to travel, for example). But, in fact, there is no such obligation and services could, if they wish, allow their staff to use their discretion. There are at least two classes of patients who might safely and appropriately be left at home. The first is those with the most superficial injuries and complaints; the second comprises some of those with chronic conditions such as diabetes. In the case of chronic conditions, paramedics would need a protocol to identify which patients need not be transported to hospital. Only one service visited in the course of this study had such a protocol.

59. However, if ambulance services are to extend this approach, then protocol-based training will have to be enhanced by a higher level of education. Some services are already encouraging the more able of their paramedics to undertake such study, either at a local university or by using distance learning. As more and more do so, ambulance services will be able to be increasingly flexible in the way that they handle risk; this has important implications, not just for the future of the ambulance service, but for the wider organisation of primary and community care.

Where the patient is taken

60. The presumption is generally that patients will be taken to the nearest hospital. For example, the Department of Health’s guidelines in 1978 (Ref. 10) referred to patients being taken ‘normally to the nearest hospital or treatment centre where the necessary treatment can be obtained’. However, the guidance has since been revised (Refs. 11 and 12), omitting the phrase ‘normally to the nearest hospital’. Indeed, with growth in specialisation and reconfiguration of hospital services, the nearest hospital may no longer be able to deliver the best treatment. Other options may be more appropriate for at least three types of patient:

• patients with minor injuries may be dealt with in minor injuries units (MIU), especially in rural areas. Although some of these units (14 out of 58, according to one survey (Ref. 13)) do not accept ambulance patients at all, the ambulance service has in many cases negotiated access for certain categories. There are many benefits to this practice: the ambulance becomes free sooner, and the patient has a shorter journey home and probably a shorter wait in an MIU than in a full A&E department;

• patients already in the care of an NHS consultant, such as expectant mothers and those with chronic conditions like asthma, may already be under hospital care. It will usually be better if they attend the same hospital, even if it is not also the nearest; and
patients with conditions requiring highly specialist skills – such as those with burns or major trauma – may need to be taken to a specialist centre rather than a local A&E department. The decision, which is largely a clinical one, hinges on the rate of deterioration in the patient’s condition, the relative time of the two journey options, the likelihood of specialist skills being needed and the consequences if they are not available. Ambulance crews increasingly have to make such complex judgements.

61. Despite this revision in the guidance, few trusts formally review their practice, and some staff are even unaware of these changes. Elsewhere, crews can exercise their judgement and ask permission from the control room to take a patient to a more distant hospital, but this can put the crew in a difficult position if the patient's condition deteriorates en route. Some services are introducing protocols so that crews are not left with the responsibility for these difficult decisions [CASE STUDY 4].

CASE STUDY 4

Formal review of policy on 'nearest hospital'

The Northumbria Ambulance Service (NAS) NHS Trust was concerned that trauma patients were being unnecessarily delayed in small community hospitals that were ill-equipped to deal with their condition before finally being transported on to a major hospital centre where more advanced treatment was available. The historic emphasis on taking these patients to 'the nearest hospital with an A&E department' thus seemed inappropriate.

Aiming to improve quality of patient care and to maximise the efficient use of resources, a trial scheme was introduced in the north of the area which allowed crews, working to a strict protocol approved by the Medical Advisory Group, to bypass the small community hospital and go direct to the most appropriate hospital for the patient's treatment.

The scheme, closely monitored during its first three months, was clearly demonstrated to achieve both its aims. Such has been its subsequent success that following requests from hospitals, it is now to be extended to include the west of the area.
Recording and passing on clinical information about patients

62. Health professionals have a responsibility to document the care that they have given and pass this information on to colleagues. This exchange is essential, not just for the care of the patient but also so that there can be evaluation and learning for the future. For ambulance services, information is important in the following circumstances:

• to give hospital A&E departments information about a seriously ill or injured patient before they arrive so that preparations can be made;
• to pass over information both orally and in writing on arrival at the A&E department; and
• to provide information later, once the crew has left the hospital, both for patient care and also for purposes such as audit.

63. Ambulance crews are generally good at passing on information [EXHIBIT 17]. (In most services, control room staff are also involved in passing messages on between crews and A&E departments.) This view is corroborated by an Audit Commission survey of senior hospital A&E nurses. Most agreed that they received adequate notice of the impending arrival of serious cases, and that they received the information that they needed. A minority of respondents criticised the clarity, accuracy and comprehensiveness of the information, and in such circumstances extra guidelines and training may be needed for control room staff and crews.

EXHIBIT 17
Senior A&E nurses’ views of aspects of ambulance services
Ambulance crews are generally good at passing on information.

Source: Audit Commission postal survey: responses from 212 A&E departments, November 1997
64. However, one aspect of communications does receive widespread criticism. Hospital A&E staff report that it is often difficult to contact incoming crews in return – perhaps to get extra information or to clarify a message that they received. Most A&E staff do not normally make direct contact with ambulances: in nearly 90 per cent of departments, they most frequently rely on ambulance control (which may simultaneously be busy with other calls) to pass on any messages. The solution may lie with new technology: most new systems allow the A&E voice channel to be linked to a 'fixed mobile' in a hospital department. And there are plans to introduce digital technology into the emergency services around the turn of the century; with more radio channels available, these systems should improve the communication of less urgent messages.

65. Good communication depends on hospital staff, too; they must see that information about an incoming patient is passed on and acted on, and (less commonly) provide crews with clinical advice at the scene or in transit. Most of the services visited said that these arrangements worked well; what ambulance control managers criticised was hospital staff's radio procedures.

66. Once ambulances arrive at hospital, the crews need to give information orally and follow it up with documentation. Each service has its own form for recording the patient's condition and the treatment given. However, these are not always properly used, and one service visited had no records at all for 70 per cent of the patients. This failure to record information not only undermines clinical audit work, but leaves the trust very vulnerable to litigation. Ambulance trusts should monitor the completion of these forms, and be prepared to share data on completion rate with the commissioning health authorities.

Conclusion

67. During 1999, all NHS trusts are to introduce clinical governance arrangements so that boards can exercise responsibility for the quality of patient care. Within ambulance trusts, a wide variety of topics should be addressed systematically. The work of ambulance crews is only one stage in a chain of care that extends into acute hospitals and sometimes also involves community staff. The next chapter describes how health authorities can ensure that the wider contribution of the ambulance service is both recognised and fostered.
Ensuring High-quality Care

Ambulance services should:

1. make clinical audit effective by:
   - ensuring that patient report forms are fully completed for as many patients as possible;
   - reviewing how findings are communicated to front-line staff;
   - co-ordinating their programmes with those of other services and sharing the findings; and
   - setting up joint audits with local acute hospitals wherever practicable;

2. obtain board agreement to any decision not to call on local doctors with pre-hospital emergency care qualifications;

3. review practice on where to transport the patient, and introduce protocols empowering crews not to use the nearest full A&E department where this is in the patient's interest; and

4. give control room staff any necessary training to pass on clinical messages between receiving hospitals and ambulance crews.

Hospital A&E departments should:

5. set up systems for giving feedback to ambulance crews about particular patients and their treatment; and

6. participate in joint clinical audit with the ambulance service wherever practicable.

Commissioning health authorities should:

7. ensure that the ambulance trust has the funding and support to run an adequate clinical audit programme;

8. encourage joint audits between the ambulance service and hospital departments (especially A&E); and

9. ensure that minor injuries units do not exclude suitable ambulance-borne patients purely on funding grounds.

The NHS Executive and Welsh Office should:

10. issue guidance (or, if necessary, commission research) on whether protocols could enable paramedics to leave appropriate patients safely at home after immediate treatment.
Strategic Change and the Commissioning Role

Ambulance services are one part of local health provision. Commissioning health authorities have had potential to involve them in local strategic planning, but in practice commissioning has been fragmented and sometimes poorly informed. In some places, consortium and lead purchaser arrangements have helped to build expertise, which should not be lost. Good commissioning is still needed – for example, to enhance the patient focus and understanding of clinical effectiveness within services.
... ambulance trusts cannot make their plans in isolation

68. As well as dealing with internal issues (relating to efficiency, response times, and quality of care) ambulance services have to take account of changes in the NHS as a whole. When an A&E department closes, round-trip times increase and more ambulances are needed to provide the same service. Conversely, when a hospital acquires its own MRI scanner, it no longer needs to transfer frail patients for scans. The ambulance service can actively contribute to service improvements, too. For example, crews can be trained and equipped to take appropriate cardiac arrest patients direct to the coronary care unit: patients receive treatment sooner and pressure on the A&E department is reduced.

69. All this means that ambulance trusts cannot make their plans in isolation. The commissioning health authority, which co-ordinates local strategies, should be keeping ambulance trust managers involved. In principle, commissioners can also help their providers to work on clinical effectiveness and respond to users’ views. However, to date not all health authorities have performed this function well. Auditors examining the authorities’ purchasing role in 1997 found that:

- of those authorities where A&E rationalisation was a live issue, only one-third involved the ambulance service as an active contributor to discussions;
- few authorities made references to ambulance issues in their purchasing plans; and
- annual contract negotiations often dealt just with the issues of funding and response times.

Problems in commissioning

70. There are a number of reasons why health authorities have not paid more attention to their ambulance services.

- Commissioning is fragmented. Ambulance services usually operate over several health authority areas, and so funding responsibility on average is divided between 2.3 authorities (excluding London, where 16 authorities cover the 1 trust). To a typical health authority, the yearly cost of an A&E ambulance service is only 1 per cent to 2 per cent of its total budget. It is often convenient not to pay much attention to this small slice of expenditure. Auditors found that one-quarter of the health authority managers responsible for the £5 million ambulance contract were devoting less than 5 per cent of their time to it. Moreover, one-quarter of the managers had less than one year’s experience in post, perhaps because of mergers and reorganisations of authorities.

- Providers have a monopoly. Hardly any health authority has more than one emergency ambulance service operating in its area. As a result, most commissioning staff have no direct experience of any other provider. (By contrast, a very competitive market has developed in non-emergency PTS in some parts of the country.)
Performance is difficult to assess. Health authorities have been hampered by the dearth of information on clinical effectiveness or on stakeholder views, and by the difficulty of comparing costs between providers. By contrast, purchasers of hospital services have generally had at least some performance information to help them to plan change.

Arrangements for PTS complicate the task. Emergency ambulance services and non-emergency PTS are both provided by NHS ambulance trusts; but the funding mechanisms are quite separate. Non-emergency transport is purchased by hospital and community trusts on behalf of the patients under their care. Such an arrangement requires:

- agreement on exactly what work is to be charged to each purchaser;
- and
- clarity about how the overheads are apportioned.

Ambulance trusts have adopted different practices on charging and costing, complicating the tasks of both emergency and non-emergency purchasers. More details about these important technical issues are provided at the end of this report (Appendix 1).

Towards more effective commissioning

There are a number of measures that commissioning bodies should consider. The task of commissioning services from an ambulance trust can be shared between the health authorities that it serves. Individual staff can be given a 'specialist' ambulance role. And they should start to use the increasing amount of information now available about clinical effectiveness and stakeholder concerns. Finally, inconsistent approaches to costing can complicate the task of commissioning; guidance from the NHS Executive on how to apportion overheads for different purposes could be helpful.
Sharing the task

72. Health authorities that all deal with the same ambulance provider should work together in some way, if only to avoid making inconsistent requirements. In some areas, one authority takes a lead on behalf of the others; elsewhere they all meet the provider together as a consortium. Both models can work well, and allow the authorities to bring a range of knowledge and skills to bear [CASE STUDY 5]. But in 1997, 11 out of 78 health authorities examined by auditors generally worked independently of their co-purchasers. These authorities should consider setting up joint purchasing arrangements.

CASE STUDY 5

Consortium and lead purchasing arrangements

The London Lead Purchaser Forum was set up by the 16 health authorities covered by the London Ambulance Service (LAS) NHS Trust and meets roughly every four to six weeks. Four of the sixteen act as lead purchasers and each appoints a manager to meet with LAS senior staff in the Forum. The four groups of authorities corresponded broadly to LAS’s four organisational divisions at the time that the Forum was set up. This enabled lead purchasers to work closely with local divisional directors.

Lead purchasers have different ways of relating to the non-lead authorities. One of the four has its own subgroup, where specialists in finance, information, and public health – one from each non-lead authority – discuss issues with the lead commissioning manager.

Much of the agenda is London-wide – for example, the investment in central control and the programme of clinical audit. So there are benefits from having a London-wide forum. Between about October and March its agenda has concentrated on issues for the contract such as funding, workload, and response times. For the other half of the year, the forum has had both the time and expertise to consider complex issues such as the priorities for research and clinical audit, and the management of winter pressures (higher levels of emergency hospital admissions) among the many hospitals in the London area.

There can be tensions within the Forum since financial constraints, response times and growth in demand pose different problems in different member health authorities. It is important to keep chief executives of all the authorities informed. Despite these tensions, all parties continue to value the Forum as a constructive opportunity to develop the service further.
there is a risk that... the expertise built up by individuals within health authorities might be dissipated.

73. One benefit of shared commissioning is that one individual can devote more time to getting to know the service for which he or she is responsible. Authorities can then encourage the ambulance specialist to take practical steps such as:

- spending time with the local service, both in the control room and going out as an observer with a front-line crew;
- attending conferences and visiting other ambulance services (perhaps with a provider counterpart) to get new perspectives on service delivery; and
- being involved in purchasing other services that impinge on emergency ambulances (such as hospital A&E).

74. As the new arrangements for primary care groups and Welsh local health groups come into effect, there is a risk that purchasing might again become fragmented and the expertise built up by individuals within health authorities be dissipated. Commissioning ambulance services must remain a health authority responsibility, especially for smaller authorities. Even this may not be enough. The proposed regional specialised commissioning groups (Ref. 14) for specialist hospital services may provide a useful model for shared commissioning, with their balance between general management and public health input.

Developing clinical effectiveness

75. Evidence on clinical effectiveness of pre-hospital care is becoming more available and accessible in published literature and clinical audit databases. Ambulance services have important contributions to make to some topics of national importance (Refs. 15, 16) such as reducing cardiac-related deaths and accidents. Some ambulance trusts need greater awareness of the issues, and some need help with introducing evidence-based protocols and clinical audit. For those that already do these things well, the health authority’s role may be facilitating joint work with hospitals and GP groups.

Acting on the views of stakeholders

76. Commissioning authorities can also help to ensure that attention is paid to the views of those who rely on the service: patients and carers, the wider public, GPs and hospital staff. Obtaining local stakeholders’ views directly can be difficult or expensive, but some issues have arisen elsewhere that health authorities should be on the lookout for:

- response times are often the first topic of concern to both GPs and patients. The Department of Health sets targets for a whole ambulance trust for a whole year, but good performance in aggregate can mask pockets of poor response; for instance, in isolated rural areas, in winter, or to GP urgent calls. Health authorities should find out (from ambulance trust statistics and complaints, and by talking to CHCs and GPs) whether such ‘black spots’ exist locally. The service may be able to deal with them by deploying ambulances better; but if
extra resources are needed, the authority must decide whether these are affordable and, if not, how GPs and others are being affected;

- the next most common cause of complaints from patients is probably ambulance staff attitudes to patients (the total number of complaints is small: approximately 1 in every 5,000 journeys in 1996/97). Because crews have to attend a wide range of people in stressful circumstances, some trusts have addressed issues around particular groups of patients such as those with disabilities or from ethnic minorities. Health authorities can encourage this approach [CASE STUDY 6]; and

- hospital departments are affected by ambulance service performance, and health authorities should become more aware of their specific concerns, such as those mentioned in the previous chapter.

**CASE STUDY 6**

**Taking the requirements of minorities into account**

Southern Derbyshire Health Authority specifies standards and criteria in its ambulance service contract in relation to a number of categories of patients.

For example, the standards for black and minority ethnic people require the trust to ensure that such patients, their relatives and carers are ‘kept informed at all stages of the care’ and that they ‘have access to appropriate interpreting services’.

In response, the trust describes current achievements (it has a language line, utilised by the control centre, and a staff awareness programme), as well as proposed developments. The latter include the preparation of language packs to be carried on-vehicle, and a training programme to show staff how to deal sensitively with patients from differing religious and cultural backgrounds.

This work is being carried out in conjunction with the Multicultural Centre and Racial Equality Council in Derby.

The contract also requires the ambulance service to address the needs of disabled patients through an audit of specific service standards. The ambulance trust response again describes its current training and awareness programmes, and how it would like these to develop in future.
Clarity on costing and service agreements

77. Ambulance trusts operate non-emergency PTS services under contract to NHS trusts, as well as A&E services for the health authority. Inconsistent charging policies and unclear specifications complicate financial planning in both providers and commissioning bodies (Appendix 1). These problems are particularly difficult where ambulance trusts are in competition with the private sector for non-emergency PTS contracts. Resolving this issue would require input from the NHS Executive. Central guidance could therefore be helpful on how to apportion overheads both for internal NHS management information and (perhaps less prescriptively) when bidding for PTS work against private sector competitors.

Conclusion

78. Although no health authority has had the resources to devote much attention to its ambulance service, some have successfully helped the service to plan and develop alongside other changes in the NHS. The value of this support must not be lost as health authority roles change and as detailed commissioning gradually passes to primary care groups. Emergency care should develop within an overall strategy, and well-informed commissioning is needed if ambulance trusts are to play their full part in NHS changes. But ambulance trusts will need to manage changes themselves, too; these requirements are discussed in the next chapter.
Strategic Change and the Commissioning Role

**Commissioning bodies should:**

1. set up joint commissioning arrangements with any other authorities that commission from the same provider;

2. give the individuals involved in commissioning the time and encouragement to develop their knowledge of the ambulance service;

3. try to broker joint approaches to significant unresolved problems between hospitals and the ambulance service;

4. keep the ambulance service appropriately involved in local service planning; and

5. agree and document a strategy for future ambulance service development.

**The NHS Executive should:**

6. consider how the costing of ambulance services might be standardised and policed in view of the continuing competition to provide non-emergency transport; and

7. ensure that commissioning of emergency ambulance services remains a health authority function.
Implementing Change

Implementing change in ambulance services poses special challenges, such as how to win support from a geographically scattered workforce. In some trusts, innovation proceeds slowly because access to clinical advice is limited and management information is poor. Finally, smaller ambulance services have few headquarters staff, making specialist projects hard to manage. Possible solutions include joint working with the other emergency services or with neighbouring ambulance trusts, or mergers to form larger NHS trusts.
79. Changing the way that an ambulance service works is a different challenge from achieving change in most other NHS organisations, for several reasons. Front-line staff are scattered over large areas away from headquarters, mostly working without direct supervision. Often trusts do not employ any medical or nursing professionals. Management information tends to be restricted to the data that the main control room system can provide. And most ambulance trusts are much smaller organisations than hospital or even community trusts; while this may have some advantages (smaller spans of control for example), it makes it harder to generate economies of scale or build teams to run projects effectively. So the challenges include:

- gaining staff support for change;
- obtaining adequate clinical input;
- generating the information that management needs;
- collaborating with other services; and
- making a success of mergers where this is the chosen approach.

Gaining staff support

80. Some services’ attempts to revise standby locations, hours of work, or terms of employment (all important ingredients of high performance) have faltered because of resistance from staff. To be successful, any changes must have the support of operational staff. Geography is one factor that can make such support difficult to obtain. Not only are crews based at stations often many miles from headquarters; they are increasingly being located away from their stations at standby points in the intervals between attending calls. Services use various conventional methods of communicating with crews, such as staff newsletters, team briefings, and senior managers visiting workplaces, but each of these methods provides only limited opportunities to get through to the staff and to respond to individuals’ concerns. One alternative, teamworking, can help to bring together the everyday work of crews and the plans of management more closely [CASE STUDY 7].

81. Geography is not the only obstacle to getting support from staff for proposed change. Cultural differences, especially between the three main staff groups – crews, control room staff and managers – can add to the problem. The nature of their work puts different pressures on each group, so that each sees the issues from a different perspective. There is almost bound to be some tension between crews and control, since it is control room staff (not their line managers) who give crews their hour-by-hour instructions by phone or radio. Services need to be aware of what different staff groups feel about major change – for example, whether staff are ‘ready, willing and able’:

- ready to accept the need for change, recognising any new external factors that are driving the proposals and the reasoning underlying the trust’s response;
- willing personally to accept change; and
- able in terms of feeling adequately trained, equipped and capable of coping with new ways of working.
Teamworking

Teamworking can help to bring together the work of crews and the plans of management. In Staffordshire Ambulance Service, crews have been organised into 'teams' of ten individuals headed by a team leader and a team trainer. Staffordshire has disposed of its small ambulance stations, so that teams can normally be made up of crew who all sign on at the same base. There are various tasks within the team:

• the team leader is responsible for briefing the team on management's plans and for acting as first-line supervisor;
• the team trainer works with each team member in turn, helping them to keep to a high standard of care, and to put any new procedures into practice;
• the whole team is responsible for planning who will cover each duty about three weeks in advance, within the constraints set by the personnel function; and
• the team system also allows managers to listen to crews and take account of their recommendations – for example, on the design of emergency ambulances.
82. In one ambulance service, a survey\footnote{As an optional element of the audit approach, the Commission developed this survey package to quantify factors such as ‘ready’, ‘willing’, and ‘able’.} showed several important differences between managers, crews and control [Exhibit 18].

- **Ready?** On balance, all three staff groups accepted that the service could and should work more efficiently and develop clinical practice. But while managers were nearly unanimous on this, opinion was divided among the crews.

- **Willing?** When asked about whether crews were willing to change the way that they work, it was control room staff who were the most sceptical; the crews themselves were more positive.

- **Able?** All three groups expressed concern about the trust’s ability to adapt to change and whether the necessary training was in place. For example, all – especially managers themselves – doubted whether management would be able to lead change successfully.

Findings like these could be used to focus a service’s internal communications. There are limited opportunities to put messages across, and the trust needs to understand what most concerns particular groups of staff in order to make the most of them.

83. Ability to adapt and change is a particular concern for older crews as the pressure of emergency work increases. There are few alternative posts suitable for them elsewhere in the ambulance service. Yet many ambulance staff, unlike their police and fire colleagues, have to work beyond age 60 to earn full retirement pensions. In fact, three-quarters of retirements in 1993/94 and 1994/95 were early, on ill-health grounds (Ref. 17).

84. Finally, management style is crucial to winning the support of staff. One study that compared the causes of stress within a fire service and an ambulance service concluded that stress-related dissatisfaction and illness were high in the ambulance service, in particular, because ‘management is failing to develop working relationships which are strong enough to initiate and encourage change’ (Ref. 18). In a few places, individual crews suggested to the study team that middle management is too ready to find someone to blame, instead of supporting staff doing a difficult job. Many services, however, have clearly been able to motivate their staff by reinforcing the sense of a job well done.
EXHIBIT 18
Staff attitudes to change in one service

One survey showed important differences between managers, crews and control.

85. Ambulance services rightly emphasise their part in the clinical care of patients. This raises the question: what clinical input do local managers need and how should it be provided? As a minimum, each service is required to establish a local ambulance PSC with consultant and nurse representation. Some services have gone further and appointed a medical adviser, or employed a doctor or nurse within their organisation. A few have given a medical director a seat on the board of the trust. Different models have brought different benefits [TABLE 2, overleaf].

86. Each trust’s board will need to decide how to obtain clinical input into the service. The decision will depend on how much the trust has already achieved – for instance, in introducing protocols and clinical audit – and on who is available locally (for example, whether there are local clinicians qualified in pre-hospital emergency care). Simply relying on informal relationships with the PSC is not likely to be adequate, however. Services should aim to have a clinician with a recognised qualification in pre-hospital emergency care, not just to give advice but with right of access to the board.
### TABLE 2

<table>
<thead>
<tr>
<th>How clinical input is obtained</th>
<th>At how many study sites</th>
<th>How organised</th>
<th>Benefits obtained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory committee only</td>
<td>2</td>
<td>These services obtained clinical input mainly through the working relationship between the training manager and the PSC. The training managers felt this gave them ready access to clinical advice and support.</td>
<td>Members of one committee help to train paramedics. However, their involvement is limited to the time that they can spare; and PSCs do not necessarily include anyone qualified specifically in pre-hospital emergency care. These services had few protocols and did very limited clinical audit.</td>
</tr>
<tr>
<td>Medical adviser appointment</td>
<td>3</td>
<td>Tasks can be defined in a service agreement. Appointment can carry status, so that the adviser can follow up decisions rather than simply advise.</td>
<td>Tasks included: • developing or adapting protocols for the service; • contributing personally to the training of staff; and • giving occasional advice to crews or 999 callers.</td>
</tr>
<tr>
<td>Clinician employee</td>
<td>2</td>
<td>Nursing professionals (in the sites visited) employed in management positions.</td>
<td>Roles included: • maintaining extensive clinical audit programmes; and • interfacing with local hospitals and purchasers.</td>
</tr>
<tr>
<td>Clinician executive director</td>
<td>1*</td>
<td>Membership of the board ensures that the clinician can influence the output of all the directorates. A medical director, being accountable to the chief executive, is also the natural choice to lead on the new clinical governance arrangements.</td>
<td>Roles included: • maintaining extensive clinical audit programmes; and • interfacing with local hospitals and purchasers.</td>
</tr>
</tbody>
</table>

* but the number of such appointments is increasing

Source: Study sites
87. Services cannot implement change effectively unless they are able to monitor and analyse their own performance. Chapters 1 and 2 have identified a number of important indicators for the trust and commissioning bodies. The most important of these should be produced and reviewed regularly:

- the direct costs of having a crew and vehicle on the road, per hour worked;
- the workload covered per hour on the road; and
- the percentage of calls that fail response time standards in different geographical parts of the area served.

Other indicators may be required only for exception reporting,¹ or they may be required only for special projects or audits. Examples are:

- time spent by crews at hospital;
- time spent by crews at the scene for specific types of incident;
- reasons why patients are not transported to hospital; and
- the location of incidents (particularly life-threatening situations) in relation to the service's stations and standby points.

88. Modern command and control systems are likely to include software that is capable of producing a wide range of management information, and which has been built up from data collected for operational use; but, as already noted, a number of services have lacked such investment. Nor is numerical information the only problem. For example, mapping software has been more readily available in recent years, but many ambulance services have yet to obtain it.

¹ ‘Exception reporting’ means that information is made available when, and only when, indicators move outside their 'normal' range, suggesting that an underlying problem may exist.
Collaborating with other services

Work with other ambulance services

89. Ambulance services are small organisations compared to other NHS trusts. In 1996/97 three-quarters of English ambulance services had incomes of less than £20 million (compared with £40 million to £80 million for most general hospital trusts, and £40 million to £60 million for most community trusts). Their central directorates have to be proportionately smaller to meet managerial cost targets. Thus, one average-sized ambulance trust, with a total of 450 employees, has four main headquarters functions that employ about ten staff each, including clerical and secretarial posts [EXHIBIT 19]. It is not easy for the smaller services to find the resources and expertise to introduce new projects in addition to dealing with routine administration.

90. In many cases, innovation comes from services working together. Joint working can take several forms:

- *one service leads on behalf of others*: for example, a few services have taken a lead in writing protocols for clinical care, with other services adapting these (to fit in with the preferences of local hospital clinicians) rather than 're-inventing the wheel';

- *several services co-ordinate their approaches to a shared task* such as clinical audit, allowing results to be compared (Case Study 2, p34); and

- *several services work jointly on a project*: for example, services could agree to share a training school or (in principle) a single control centre. Although such arrangements are far from simple to set up, they offer potential benefits such as lower costs and easier access to modern technology.

EXHIBIT 19
Managerial resources in one average-sized ambulance trust

The four main headquarters functions employ only about ten staff each.

Source: Site visit to one ambulance trust
Work with non-ambulance agencies

91. Collaboration with other emergency services can also bring benefits.

- Training is one example. In 1997, 18 ambulance services were training fire officers in extended first aid, and 14 were considering using fire staff as first responders (Ref. 19). In some places, not only fire officers but police officers, coastguards or lifeguards frequently reach a casualty before the ambulance can arrive. In a number of instances they have been equipped and trained to use a portable automatic defibrillator to save lives. Under the new prioritised response time arrangements, an ambulance service that calls these 'first responders' to the scene within eight minutes can count that as fulfilling its response time target.

- There are opportunities to share infrastructure with other emergency services [CASE STUDY 8].

CASE STUDY 8

Ambulance and fire services sharing control facilities

Warwickshire Ambulance Service NHS Trust runs a joint operations centre with the county Fire and Rescue Service. The decision to share facilities was taken only after an 18-month comprehensive option appraisal and extensive consultation with stakeholders.

The fire brigade adapted its existing control and training centre to house the new joint control room and headquarters, which went live in November 1997. This initiative enabled the ambulance service to sell its headquarters, thus freeing up capital to purchase a much-needed telecommunications system and five fully equipped emergency ambulances. The end result is a more cost-efficient and effective ambulance service as well as a source of income for the fire service.

Currently, each service has its own independent command and control system in the operations centre. Each service's control staff can talk directly to the crews using the other's system when necessary. There is also greater staffing flexibility and resilience when sickness absence is high. Experienced ambulance control operators can give life-saving information directly to fire crews, or (in some parts of Warwickshire) quickly deploy fire crew as 'first responders'. Another immediate benefit is that calls are passed more quickly between the services when both attend the same call or a major incident.

In the medium term it will be possible to integrate the two services' control and radio systems completely, subject to consultation with employees and the local community. Such partnership would bring economies of scale and further improve operational efficiency. For both services it seems a logical and attainable goal.
The Home Office has encouraged such possibilities through its recent consultation paper (Ref. 20) that seeks to identify areas where fire/ambulance collaboration might yield savings and operational benefits. And the Secretary of State for Health has very recently (August 1998) called for 'greater local flexibility and experimentation in...sharing emergency control functions, technology and other facilities'.

92. Opportunities for collaboration with other services, both ambulance and non-ambulance, vary from area to area. Working with non-ambulance agencies can be particularly difficult because of different management cultures, financial frameworks and accountability arrangements. But there is little doubt that appropriate collaboration can bring tangible benefits, and should be encouraged and rewarded throughout all the emergency services.

Making a success of mergers

93. Since neighbouring ambulance services can gain by working together, it is natural to consider merging them. Several mergers have already taken place; since 1990 the number of services in England has dropped from 46 to 37, and in Wales from 9 to a single trust. Further mergers are being considered. Merger proposals should include an evaluation of potential risks and benefits, some of which will vary according to local circumstances.

94. The benefits are both financial and non-financial:
• financially, management costs contain a small fixed overhead element that larger trusts can absorb more easily [EXHIBIT 20]. Larger trusts also tend to have higher control room productivity [EXHIBIT 21]. There may also be opportunities to save on training school costs and on serving the geographical boundary between the old services (although the setup costs must be recognised – relocations and redundancies, in particular, may be significant); and
• there are non-financial benefits, too. Larger trusts bring together a 'critical mass' of expertise among their staff; they can afford to have a specialist in clinical audit or management information systems, which in a smaller trust may have to be someone's secondary responsibility.

95. But size also has drawbacks for stakeholders and staff. Stakeholders such as hospital clinicians, GPs and CHCs understandably worry that their voice may no longer be heard once their local ambulance service headquarters relocates. And when the local control room is closed, concerns are often acute. Staff in the merged control room will inevitably have less personal knowledge of the whole area covered, and must rely more on IT such as computerised gazetteers. Also, it will be harder to keep a good working relationship between crews on the road and a distant control room, as there is less opportunity for them to meet and understand one another's work situations.
EXHIBIT 20

Management costs by size of ambulance trust

Management costs contain a small fixed overhead element.

Note: Management costs are calculated on the NHS Executive's M2 formula.

Source: NHS Executive

EXHIBIT 21

Productivity of control room staff and total calls handled

Larger trusts tend to have higher control room productivity.

Source: Audit Commission survey, 1995/96
96. None of these problems is insuperable, but all need action by management. The opportunity costs of managers’ time can be enormous. Some question whether it is worth it, especially since:

- services formed from recent mergers do not, on average, perform any better than others in the cost and response time analysis (Exhibit 9, p18); and
- experience in the NHS and elsewhere indicates that the benefits of a merger may take time to achieve. The Commission’s paper, *Less Dangerous Liaisons* (Ref. 21), deals with public-sector mergers generally and makes recommendations to the managers involved [BOX I].

NHS Executive regional offices should therefore review the outcome of recent mergers to ensure that benefits are being obtained and any risks avoided.

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**BOX I**

**Managing organisational mergers is very complex**

**Getting started**

- Early on, appoint board members who will make good leaders.
- Consult staff and stakeholders to learn what problems the merger should address.

**The benefits of the new organisation**

- Communicate the benefits – are they purely financial?
- Only make promises (such as better service or facilities) that can definitely be kept.

**Handling staff changes**

- Ensure that the new posts are filled by the best people.
- Help others whose posts have been made redundant to leave with dignity.

**Critical information and finance systems**

- These must be ready in time.

**Geographical differences in organisational culture**

- Identify different ways of working that may cause conflicts.
- Use facilitators to put the most appropriate working methods and processes in place.
Implementing Change

**Ambulance trusts should:**

1. formalise their arrangements for obtaining clinical input, either by employing medical or nursing staff at a senior level, or through a formal service agreement with an external clinician (drawing on local staff with a pre-hospital emergency care qualification whenever possible); and

2. give a medical adviser or employee right of access to the trust board.

**Ambulance trusts and other emergency services should:**

3. encourage and reward those responsible for successful inter-service working.

**NHS Executive regional offices and the Welsh Office should:**

4. review the outcome of recent mergers to ensure that benefits are being obtained and any risks avoided.
Options for the Future

Ambulance service workload continues to increase. There seems little prospect of influencing demand directly, unless telephone helplines divert significant numbers of potential 999 callers to another appropriate service. A sensible next step may be to assess emergency calls and provide a range of responses that recognise patients’ differing needs. Success will depend on more research, education, multi-agency working, and perhaps investment in communication technology. Public confidence in the 999 service must not be jeopardised.
Growing demand

97. Historically, ambulance services have given the same type of response to all 999 calls, despite some being far more serious than others. Priority-based despatch, based on the urgency of the call, is to be welcomed because it tailors the response to the needs of the patient. Further tailoring may be possible, given evidence suggesting that some callers would be more appropriately treated by a different agency and that a few callers have problems that many people might expect to deal with themselves [EXHIBIT 22]. If growth in demand continues (about 40 per cent since 1990), services will find further efficiency improvements harder and harder to make. So it is vital to consider whether some 999 calls could receive a different response.

98. The ambulance service is not alone in facing considerable growth in demand coupled with some inappropriate use (as judged by the professionals involved). The other health agencies to which people turn in emergency – particularly hospital A&E departments and general practice – face similar problems. They are radically changing the way that they work as a result – for example, setting up minor injuries units and primary care centres. The Chief Medical Officer’s (CMO’s) report in 1997 (Ref. 23) showed that the various emergency health services should be considered together as a whole system. Commissioning bodies have to ask how this system functions locally and how people access it.

EXHIBIT 22
Ambulance crews’ rating of calls attended

Ambulance crews judge that some callers would be more appropriately treated by a different agency.

Source: London Ambulance Service survey of 2,705 calls attended (Ref. 22)
99. Ambulance responses are a relatively expensive part of the emergency healthcare system; a recent study showed that in a rural county they accounted for about one-quarter of the costs of all out-of-hours calls (Ref. 24). For this reason alone, it is important that ambulances be used appropriately and effectively. How might their role change? There are two possible strategies:

- to try to influence demand directly, probably by helping some potential callers to find a more appropriate source of help for their needs; or
- to offer a wider range of responses to those who call for an ambulance.

100. One response to ‘inappropriate demand’ would be to try to influence people not to call the emergency services for what appear to be trivial needs. However, the study team found no evidence that publicity can do this effectively. Since each of us only calls an ambulance once every 16 years, on average, it is not surprising that it is difficult to affect this behaviour. And totally inappropriate calls – although a cause of real frustration to the service – are relatively few in number; in London, crews felt that only 2 per cent of calls should have been dealt with by the patient or family (Exhibit 22, p67).

101. A second response is to help people to decide where to seek assistance: should I dial 999? Phone my GP? Can this safely wait till the morning? Do I need professional help at all? Telephone helplines are one approach to enabling the public to get the level of healthcare and advice that they need. Following the recommendations of the CMO’s report in 1997, helplines are being piloted in three areas, and the Department of Health is committed to covering the whole of England by the year 2000. Trained staff can direct the caller to any one of a number of options, ranging from giving telephone advice where that is safe and straightforward, to calling out a full emergency ambulance response without delay. Ambulance services are well placed to operate these helplines [CASE STUDY 9].
Better tailoring of responses to individual needs can both be more efficient and serve all patients better

CASE STUDY 9

Telephone helpline run by an ambulance service

Northumbria Ambulance Service (NAS) is one of three ambulance services that is currently a pilot site for the evaluation of an emergency care telephone helpline, known as 'NHS Direct'. The aim is to provide comprehensive healthcare advice to callers over the telephone and to meet the needs of the call in the most appropriate way.

Partnership and collaboration are fundamental to this work. In bidding for the work, NAS could point to its continuous relationships with the public, acute and community trusts, GPs, and social services. It already had the necessary communications and computer technology, and can quickly re-route any callers with an emergency need to ambulance control.

NHS Direct operates 24 hours a day and employs a total of ten call-takers and nine nurses to deal with calls. Approximately 85 per cent of callers to the helpline present symptoms and are referred to the nurse. The remaining 15 per cent require simple information which is given by the call-takers.

NAS is currently seeking approval to extend its service to taking calls made by the public to GPs' surgeries and hospital A&E departments. In future, some of the least serious 999 ambulance calls might possibly be transferred to NHS Direct.

Offering a wider range of responses to those who call for an ambulance

102. Priority-based despatch was introduced following a report in 1996 by an NHS Executive steering group (Ref. 25). This group also recommended that:

‘for minor calls [not life-threatening or serious], local health authorities and ambulance services should be free to make whatever response is right for the patient's clinical need, by ambulance or otherwise ... subject to local protocols and standards agreed with local health professionals and CHCs and which enjoy the confidence of the public’.

At the time, the Government did not accept this recommendation, but it should now be re-examined. Better tailoring of responses to individual needs can both be more efficient and serve all patients better. Over the next few years, ambulance services could appropriately be allowed to:

• relax the response time standards for some of their least serious calls;
• choose who to send to each type of emergency, what skills they need and whether only one person need attend; and
• treat some patients at home instead of transporting them to hospital.
The patient’s own home may be the best setting for their treatment

Relaxing the response time standards for less serious calls

103. The present 95 per cent response time standards have a perverse effect. They penalise a control centre for not despatching an ambulance without delay even to what is clearly a relatively non-serious call. If this happens on an exceptionally busy day when most ambulances are already occupied, or in a sparsely populated area where demand justifies only one ambulance, there is a risk that a far more serious call might be received before control can redeploy ambulances appropriately.

Choosing who to send to the emergency

104. Ambulance services are currently obliged to send a fully equipped ambulance and crew of two to every call. If they were released from this obligation, a number of alternative responses would become possible. An experienced ambulance person working solo could attend appropriate minor emergencies and assess the situation: whether the patient needs transport to a treatment centre but not necessarily in a fully equipped ambulance; or whether the patient need attend for further emergency treatment at all. And the control room could be free to refer selected calls directly to an agreed alternative agency, such as community nursing or a social services mental health team.

Transporting to hospital less often

105. The patient’s own home may be the best setting for their treatment [CASE STUDY 10]. For example, if an elderly person being nursed at home finds that their catheter has become blocked, is taking them to hospital really the ideal solution if their catheter could be unblocked there and then? Benefits might also be felt more widely in the NHS: for example, a recent report suggested that ambulance services could help the NHS cope with high levels of emergency admissions by stabilising certain categories of patients at home rather than having them attend hospitals (Ref. 26).
CASE STUDY 10

Treatment at home

The London Ambulance Service (LAS) is undertaking a project aimed at providing more appropriate care to specific groups of 999 callers in parts of Barnet Health Authority (BHA). It is keen to ensure that patients are treated in the most appropriate setting and that clinically inappropriate cases are not taken to the hospital A&E department.

A steering group was established for the project comprising representatives from BHA, LAS, local GPs, healthcare trusts, and the local borough council. The area chosen has a deprived population and healthcare provision there needs to be enhanced. It has been estimated that approximately one-third of the one thousand calls per month for an ambulance might be handled without conveying the patient to A&E.

A list of conditions that might be handled through the project was prepared by LAS in consultation with BHA public health department and a GP representative. Following initial consultation on the list, a subgroup was established to develop the treatment protocols for ambulance crews to use. The subgroup narrowed the list of conditions down to 12. Of these, 3 might be referred to the 24-hour district nursing service: blocked catheter, dressing problems and problems with post-operative wounds. The other nine conditions are: cold and flu symptoms, sore throat, non-traumatic nose bleeds, removal of splinters, emotional and hysterical reactions, boils, toothache, minor bites, stings and allergic reactions, and constipation.

The protocols, which are being approved by the LAS Medical Director, the health authority and local GPs describe the signs and symptoms of these conditions and advise crews of what to do in these circumstances. They specify four types of action:

- treating patients at home;
- advising patients to attend an urgent treatment centre at a local community hospital;
- referring patients to the district nursing team; and
- advising patients to make an appointment with their GP in normal surgery hours.

LAS plans to implement the new procedures in November 1998 following negotiations with staff and the completion of all necessary training. The project will then be evaluated for the safety of the decision-making, and the numbers of cases dealt with through the project. This will enable decisions to be made about the advisability of covering a wider geographical area and a larger number of conditions.
Prerequisites for change

106. These options represent a radical change for ambulance services. Bringing in such change successfully would require:

- more understanding of demands and needs for emergency care, and more evidence on what care is effective;
- deeper clinical knowledge on the part of at least some ambulance staff; and
- multi-agency working to be accepted and funded.

Progress will also depend on investment in communications technology; and, most importantly, there would need to be public confidence in the new arrangements.

Understanding demands and needs

107. Relatively little detail is known about what has caused the recent growth in demand or about the clinical characteristics of emergency ambulance patients. Control room data shows that call rates are higher among urban services, in deprived areas, and among elderly people. Calls are recorded into categories such as 'falls' and 'collapses', but there are many possible causes of falls and collapses. Most ambulance service information does not help to categorise those patients whose needs might be met in different ways into different groups. The CMO's final report on Developing Emergency Services in the Community concluded that 'research is needed into how people handle and react to illness and in particular consultation behaviour in emergencies' (Ref. 23). A greater understanding of demands, needs, and capacity to benefit would be helpful in this context, including those who might benefit from an ambulance attending, but do not call one promptly.

Deepening clinical understanding

108. Current ambulance practice consists of specific skills and interventions that are taught on the basis that patients will normally be passed on to the care of other clinical professionals with the minimum of delay. Substantial changes will be necessary if front-line staff are to take professional responsibility for decisions about how, where, and how quickly a patient is to be treated. This level of decision-making will involve a transition from training to education, emphasising not only techniques but also clinical judgements based on a deeper understanding of the patient's condition. Possible ways to make such skills available to the ambulance service in the future include:

- more extensive, degree-level paramedic education (as discussed in Chapter 2);
- recruiting nurses into service and building on their experience; and
- broadening the range of work – for example, allowing staff to spend time employed within hospitals or in industry.

A further development might then be to introduce generic emergency care workers.
Multi-agency working

109. Involving agencies such as an on-call community nurse or a 24-hour mental health service would benefit selected patients, but the agencies themselves are likely to be under as much pressure as the ambulance service. Funding will inevitably be a major issue. And treating more patients at home rather than taking them to hospital will need the co-operation of local GPs. Despite the difficulties, progress can be made [CASE STUDY 11].

Communications technology

110. The kind of radical change proposed here would need crews to have access to immediate medical opinion and advice more readily than at present. Since it is often not practicable to call out a doctor who has pre-hospital care qualifications, more opportunity for ambulance-based staff to communicate directly with a hospital-based doctor would be helpful in some circumstances. This communication could take a number of forms:

• automatic transmission of diagnostic information (for example, sending an ECG trace direct to the cardiology department);
• digital radio systems that allow much more voice communication directly between the hospital and the incident; or
• a televisual link that allows hospital-based staff to watch the incident and give advice to crews at the scene (Lancashire Ambulance Service is currently piloting and evaluating such a system).

Technology may well be part of the solution, but proper evaluation of its costs and benefits must be carried out.

CASE STUDY 11

Multi-agency working

In the London Borough of Kingston, the London Ambulance Service (LAS) started a joint project with GPs and other local agencies to review how people seek help from health and social services. A steering group, which has been set up to oversee the review, is made up of representatives of local GPs, the health authority, the local acute trusts, a social services department, and relevant community health councils.

The current plan is to research the use that the over-75s make of all emergency care – but concentrating particularly on those who fall – and how they might be encouraged to access the most appropriate agency for their particular need.
Public confidence

111. It is essential that public confidence in the 999 system is not undermined by any changes such as longer response time targets for minor calls. Obtaining public acceptance of any changes should be as integral to their implementation as the clinical research and public consultation that will need to precede it. A number of concerns must be addressed. How does telephone triage affect people with learning difficulties or speech impairment, or whose first language is not English? Could too much emphasis on ‘dealing with growth in demand’ deter some people from calling an ambulance who would genuinely benefit from doing so? Research into public attitudes might help to answer these questions.

The way forward

112. Decisions about the way forward will require support from national bodies and will also need to be worked out locally. Any radical change would not only need the permission of government health departments, but their active support. It would have to rely on clearer evidence from UK research into the needs of the community and how to address them most effectively. But local discretion would also be important: urban and rural areas have different problems; hospital configurations vary; priority despatch is being introduced at different rates. So it must be local ambulance services and commissioning bodies, working together with other emergency health services, that decide what further change is appropriate for their area and how fast it can be introduced. Maybe they will find that 999 demand stops growing as people turn to ‘NHS Direct’ helplines for minor emergencies; or maybe the twin pressures of demand and finance will make it more urgent to review the response to 999 calls. Radical change is not a short-term solution, but the groundwork should start now.
Options for the Future

The NHS Executive and Welsh Office should:

1. reconsider whether, for some of the least serious 999 calls, it would be safe to relax:
   - ambulance response time targets; and
   - the requirement to despatch a fully crewed, fully equipped ambulance to all calls; and

2. consider whether pre-hospital needs and patterns of care are represented sufficiently in research and development programmes.
Appendix 1

Costing and charging for ambulance services

Ambulance trusts are expected to recover the costs of their emergency work through agreements made direct with their health authority. Non-emergency transport, by contrast, is to be funded by the NHS trust where the patient is being cared for (Ref. 27). These arrangements, originally laid down under the internal market, remain in force. Two tasks must be carried out because of this separation of funding:

• apportioning costs between the two types of work; and
• distinguishing emergency from routine PTS work.

Both issues become especially important when (as continues to happen) NHS trusts put their non-emergency transport out to competitive tender.

Apportioning costs

Many of the overhead costs of ambulance services support both types of work. Particular examples are headquarters and premises costs. In many parts of the country, non-emergency services have been (and may continue to be) subject to competitive tender, which creates an incentive for ambulance services to allocate overhead costs to the emergency work where providers are much closer to having a monopoly.

Guidance from the NHS Executive forbade cross-subsidy in the internal market (Ref. 28). But there is no one right way to apportion overheads, and no costing methodology has ever been promoted as standard by the Executive.

A good example is that of premises costs. Some services allocate premises costs between A&E and PTS roughly in proportion to the income that they derive from each area of activity. But most allocate a lower proportion to the non-emergency service [EXHIBIT A1]. While it is possible that these A&E services genuinely occupy more costly premises, it is also possible that some of the trusts are giving confusing signals to the different purchasers.

PTS can still be put out to competitive tender, obliging ambulance services to compete with private sector firms that are free to allocate costs however they wish. In cases where an ambulance service loses a PTS contract, the PTS share of the overhead costs will fall on the health authority funding stream in the short-term until the staff concerned can be redeployed and the assets disposed of.

One approach would be for the NHS Executive to endorse a standard costing approach that all services would be expected to follow, at least for management information purposes. Inconsistencies in apportionment complicate the task of comparing costs between ambulance trusts. But a standard approach would disadvantage ambulance services when they are obliged to compete for PTS work against the private sector. Therefore, consideration should be given to allowing ambulance trusts some freedom in how they apportion overheads under competitive tendering.
EXHIBIT A1

Allocation of premises costs

Some services allocate a much lower proportion to the non-emergency service.

Source: Returns to the Audit Commission relating to financial year 1995/96

Distinguishing emergency from routine work

The separate arrangements for emergency and non-emergency patient transport presuppose that it is clear which journeys fall into which category; otherwise, two problems can arise. First, in those places where A&E and PTS services are provided by different bodies, disputes have arisen over which is due to provide the transport; and second, any provider must know who will pay for the work. Usually these responsibilities are clear, but there are three types of work where problems have to be resolved.

- Non-emergency patients sometimes travel by emergency ambulance, typically from hospital A&E departments during the evening. These patients have been seen in the department and are ready to go home, but are too frail to travel by themselves. It would be appropriate for them to travel by the non-emergency service, but in many areas this closes at the end of the afternoon. These patients may end up going home by emergency ambulance. The result is added pressure on the resources available for true emergency work.

- Patients with a genuine need for non-emergency transport which neither organisation is willing to fund. Examples include patients needing transport to nursing homes and hospices, or outside the area normally served. If no hospital provider will pay, the cost can fall only on the health authority’s emergency ambulance contract, resulting in pressure on the funding for emergency ambulance work.
• Patients on the borderline between high-dependency (so needing the care and skills en route offered by the emergency service) and routine transport. Severely disturbed psychiatric patients may fall in this group. If funding responsibility for these journeys has to be resolved one at a time, the work involved is frustrating for the managers concerned and ultimately represents an unproductive use of their time.

About one-quarter of ambulance services reported problems in these areas (according to auditors’ 1997 feedback on the contracting process). Many other services had resolved the problems by negotiation, and one estimates that it now collects £50,000 per year of income for what had previously been unpaid extra-contractual referrals. Resolving these remaining problems will test the new collaborative ethos which is to replace the internal market.
Appendix 2

Site visits and study advisory group members

The Audit Commission is very grateful to all those managers and staff who helped the study team on site visits, and to all members of the advisory group.

Site visits

Avon Ambulance NHS Trust
London Ambulance Service NHS Trust
North Wales Ambulance Service NHS Trust
Northumbria Ambulance Service NHS Trust
Royal Berkshire Ambulance NHS Trust
South Yorkshire Metropolitan Ambulance Service NHS Trust
Staffordshire Ambulance Service NHS Trust

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Health Services and Management Division, Welsh Office

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General Practitioner, representing British Association of Immediate Care Schemes (BASICS) and Joint Royal Colleges Ambulance Service Liaison Committee (JCALC)

Gron Roberts  
Chief Executive, Essex Ambulance Service NHS Trust and Ambulance Adviser to the Department of Health

Roy Saunders  
Director, Ambulance Service Association

Sir Ronald Watson, CBE  
Commissioner, Audit Commission
Glossary

 Activation time

The time between ambulance control receiving the call and the ambulance starting to move to the incident.

 Advanced Trauma Life Support (ATLS)

A system of care, originating in the USA, which alerts staff to identify likely injuries in serious accidents, and also gives them additional skills to treat the patient.

 Annualised hours

Staff are contracted to work a set number of hours over a year. When the hours are actually worked is dependent on the demand created by the workload.

 BASICS

British Association of Immediate Care Schemes: a national voluntary organisation that co-ordinates the provision of all the various aspects of skilled medical help at the scene of an accident, medical emergency, or during transportation to hospital.

 Community health council (CHC)

A local body within the NHS representing the interests of individual patients and the general public.

 Clinical governance

Initiative to assure and improve clinical standards at a local level throughout the NHS. This includes action to ensure that risks are avoided, that adverse events are rapidly detected, openly investigated and lessons learned, that good practice is rapidly disseminated and that systems are in place to ensure continuous improvements in clinical care.

 Computerised gazetteer

Computer software used in modern control rooms which lists and describes places and usually projects the associated detailed maps onto a screen.

 Defibrillation

The process of passing electric shock through the heart to restore normal rhythm.

 Dynamic standby

A system whereby ambulances are moved around at any time so as to be close to expected / predicted emergency calls.

 ECG (electrocardiogram)

A record of the electrical impulses resulting from heart muscle activity.

 First responder

A qualified person who is authorised by the ambulance service, and requested by it, to attend life-threatening emergency incidents.

 Hypoglycaemia

A medical condition where a patient's blood sugar becomes abnormally low.

 JCALC

The Joint Royal Colleges Ambulance Service Liaison Committee consists of ambulance representatives together with representatives of most of the medical and nursing Royal Colleges outside Scotland.

 Major incident

A major incident for health services purposes is one which, because of the number and severity of live casualties that it produces, requires special arrangements.

 Mapping software

Computer software that manipulates data and presents findings in the form of a map.
### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Minor injuries unit (MIU)</strong></td>
<td>A small unit, often run by nurse practitioners, that provides swift, high-quality, local treatment for patients who do not need the full expertise and facilities of an acute hospital.</td>
</tr>
<tr>
<td><strong>MRI scanner</strong></td>
<td>Magnetic resonance imaging (MRI) scanners produce very detailed diagnostic images without the use of X-rays. At a hospital that does not have its own scanner (often because of the high cost), inpatients may need ambulance transport in order to undergo MRI scanning.</td>
</tr>
<tr>
<td><strong>National response time standards</strong></td>
<td>The target times set by the health departments in which an emergency ambulance should reach the patient (Box C, p7).</td>
</tr>
<tr>
<td><strong>Paramedic</strong></td>
<td>A&amp;E ambulance personnel who have been trained in accordance with a nationally defined syllabus. A proposal for registration of paramedics is under consideration.</td>
</tr>
<tr>
<td><strong>Paramedic steering committee (PSC)</strong></td>
<td>A local committee that must include consultants, a nurse and an ambulance service paramedic trainer. Its purposes include monitoring and auditing standards of paramedic training and practice, approving arrangements for training and examining paramedics, and approving local protocols and procedures.</td>
</tr>
<tr>
<td><strong>Patient transport services (PTS)</strong></td>
<td>Services for transporting non-urgent patients (such as outpatients and discharged patients) between their homes and hospital.</td>
</tr>
<tr>
<td><strong>Primary care centre</strong></td>
<td>Diagnostic and treatment facilities provided by some large general practices for their patients.</td>
</tr>
<tr>
<td><strong>Priority despatch</strong></td>
<td>A system of prioritising calls according to the apparent urgency of the call, with 'life-threatening situations' receiving priority over others.</td>
</tr>
<tr>
<td><strong>Protocols</strong></td>
<td>Instructions and rules regarding the action to take in particular circumstances.</td>
</tr>
<tr>
<td><strong>Response time failures</strong></td>
<td>Failure to meet the national targets set for reaching an emergency patient. See also national response time standards.</td>
</tr>
<tr>
<td><strong>Specialist centre</strong></td>
<td>A hospital which specialises in treating particular clinical conditions – for example burns, head injuries and cardiac problems.</td>
</tr>
<tr>
<td><strong>Standby point</strong></td>
<td>A designated place, away from a station, where an emergency ambulance is positioned while awaiting a call.</td>
</tr>
<tr>
<td><strong>Training school</strong></td>
<td>Facilities for training ambulance personnel in all aspects of their work that are approved and accredited nationally.</td>
</tr>
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The Audit Commission has produced a number of studies covering issues related to health service management, hospital services, police and fire services, and inter-agency working. The following may be of interest to readers of this report:

**Stepping Out Together**
Working in Partnership

**Promising Beginnings**
A Compendium of Initiatives to Improve Joint Working in Local Government

**Taking the Initiative**
A Framework for Purchasing under the Private Finance Initiative

**A Stitch in Time**
Facing the Challenge of the Year 2000 Date Change

**The Doctor’s Bill**
The Provision of Forensic Medical Services to the Police

**Local Authority Performance Indicators 1996/97 – Police Services**

**Anaesthesia Under Examination**
The Efficiency and Effectiveness of Anaesthesia and Pain Relief Services in England and Wales

**Higher Purchase**
Commissioning Specialised Services in the NHS

**Finders Keepers**
The Management of Staff Turnover in NHS Trusts

**By Accident or Design**
Improving A&E Services in England and Wales

**Goods for Your Health**
Improving Supplies Management in NHS Trusts

**Form follows Function**
Changing Management Structures in the NHS and Local Government

**Streetwise**
Effective Police Patrol

**In the Line of Fire**
Value for Money in the Fire Service – the National Picture

**For Your Information**
A Study of Information Management Systems in the Acute Hospital

**Setting the Records Straight**
A Study of Hospital Medical Records

**Taken on Board**
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An ambulance is never more than a phone call away from anyone in any sort of health emergency. Drawing on communications technology, transport management and paramedic skills, ambulance trusts offer patients not just a rapid response and swift transport to hospital, but often a valuable first stage in their clinical care. And GPs also rely on the ambulance service to provide safe and punctual transport for patients who need urgent admission to hospital.

The volume of emergency work has been growing continuously since 1990, at around 5 per cent a year. Under pressure to meet demanding national targets for response times, ambulance services must combine operational efficiency with effective patient care. Joint working with other service providers and with health authorities offers mutual benefits, but is not easy to set up. And, at present, ambulance services have little flexibility in the response that they are allowed to give, even to callers with quite minor health problems.

A Life in the Fast Lane describes practical examples of how services are tackling these problems. The report is therefore recommended reading for staff and board members in ambulance trusts, and for anyone concerned with pre-hospital emergency care, including staff in health authorities, hospitals and the primary sector. It also contains important messages for health service policymakers about how ambulance services need to develop now and in the future.