National Audit Office

Department of Health

Transforming NHS ambulance services

Methodology

JUNE 2011

Methodology

Introduction

1 This document accompanies *Transforming Ambulance Services*, a report published by the Comptroller and Auditor General in June 2011. It adds further detail to the description of the methodology included in the main report at Appendix One.

2 This study examines whether ambulance services provide a cost-effective service to patients seeking urgent and emergency care. It also considers whether they and other parts of the emergency care system operate in such a way as to minimise the costs to the wider health service. The ambulance service cannot achieve these objectives in isolation from the rest of the NHS; it requires action:

- within ambulance services;
- requiring collaboration between ambulance services and with the wider NHS; and
- by the wider NHS.

3 **Figure 1** sets out our view of the requirements for a cost-effective ambulance service, against which we have assessed value for money. Good value for money is the optimal use of resources to achieve the intended outcomes.

4 We assessed the extent to which different aspects of performance represent value for money by comparing between ambulance services and by comparing the ambulance service as a whole against NHS-wide performance. We have not assessed the value for money of individual services. This report does not cover patient transport services, air ambulance services or ambulance services on the Isle of Wight, which are provided by the primary care trust. We have worked within the current consensus on clinical good practice in emergency care.

Figure 1
Requirements for a cost-effective ambulance service

	Inputs	Processes	Outputs	Outcomes
Within ambulance services	Good understanding of demand Good understanding of staff, skills requirement and capabilities	Optimal deployment of resources to meet demand Optimal response model to manage demand through the call cycle	The Department of Health's targets are met cost-effectively	Appropriate clinical outcomes for patients are achieved High levels of customer satisfaction
Between ambulance services	Consistent, accurate and timely data (for example, measures of resource utilisation, costs, outputs and outcomes) to manage and improve performance, and to allow commissioners to benchmark and performance manage ambulance services Good practice is understood, agreed and applied in a consistent manner			
The wider NHS (some require collaboration with ambulance services)	Commissioning of, and funding for, ambulance services incentivises the delivery of cost-effective ambulance services Accurate data on availability and capacity of alternative services is available	Processes of other providers enable optimal ambulance service performance – for example, hospital handovers	Ambulance output targets that are consistent with cost-effective delivery of outcomes	Timely, accurate data on outcomes at individual patient level to allow ambulance services to improve is available

Source: National Audit Office analysis

5 Our methodology consisted of six main elements:

- data analysis of existing data relating to the ambulance service and data requested from ambulance services by the National Audit Office;
- interviews with key members of staff at all 11 ambulance services;
- interviews with key stakeholders;
- review of key documents;
- international comparisons; and
- modelling work, undertaken by Deloitte, to identify the potential benefits to the ambulance service and the wider NHS from changes to its response model.

6 We undertook our fieldwork between December 2010 and March 2011.

Data analysis

7 We drew on existing data sets relating to the ambulance service and a data request that we sent to all 11 ambulance services. The data sets were analysed to identify patterns within and across ambulance services regarding funding, expenditure, staffing, performance against targets and performance across the call cycle.

Existing data sets

8 The existing data sets used in our analyses included:

- national annual data sets showing volumes of activity, performance and workforce data produced by the NHS Information Centre;
- data on patients arriving at accident and emergency departments from Hospital Episode Statistics;
- performance and financial data on the ambulance services from the Department of Health; and
- data on patient safety incidents produced by the National Patient Safety Agency.

Data request

9 We issued a data request to the 11 ambulance services in December 2010. The data request was developed in liaison with two ambulance services. We requested quantitative data on call cycle times and volumes of activity, sickness and turnover rates, and utilisation rates. The data request also asked for qualitative information, which helped to inform our visits to ambulance services and to put the quantitative data into context, on:

- cost improvement plans;
- initiatives to reduce call cycle times;
- initiatives to make better use of clinically qualified ambulance staff;
- initiatives to increase staff availability;
- the database of services used; and
- information collected on clinical outcomes.

10 Data requests were returned by all ambulance services in January 2011. The National Ambulance Information Group coordinated a set of clarifications for the data request to ensure services interpreted the request in the same way. Some ambulance services had issues with interrogating their data systems historically. As a result, ambulance services responded to the data request with varying levels of completeness. Where we used data that are not complete or where there were data quality issues, these are highlighted in our report.

11 An update for some of the quantitative data was requested in March 2011, and received in April 2011, in order to present up-to-date information for the whole of 2010-11 in the report. Before the request, the team met with the National Ambulance Information Group in order to ensure that ambulance services would interpret the requests in the same way.

Visits to ambulance services

12 We visited all 11 ambulance services to interview key members of staff, including chief executives, directors of operations, finance and human resources and those responsible for putting the data return together.

13 We conducted semi-structured interviews, tailoring questions to each ambulance service depending on the information provided in their returns.

14 Questioning covered the following areas:

- key challenges faced by the ambulance service;
- call cycle performance patterns over time and the impact of meeting the response targets on internal organisation and the response model;
- maximising staff availability and utilisation;
- the nature and capacity of services to which ambulance services take, or refer, patients and how ambulance services work with the providers of these services;
- forward planning – cost improvement plans, the Quality, Innovation, Productivity and Prevention programme and efficiency improvements;
- lessons learned from the foundation trust application process;
- involvement in major initiatives such as NHS Pathways and 111; and
- commissioning arrangements.

15 The interviews aimed to identify reasons for performance trends identified by our analyses and good practice in delivering cost-effective services, reducing demand, managing performance and moving towards a more clinically-led service.

Interviews with key stakeholders

16 We carried out interviews with key stakeholders in order to gain an understanding of key challenges faced by the ambulance service and incentives within the system that drive value for money improvements.

17 Interviews were carried out with the Department of Health, commissioners of ambulance services, the Audit Commission, the Care Quality Commission, Monitor, NHS Direct, the Ambulance Service Network (part of the NHS Confederation) and the College of Paramedics.

Review of key documents

18 We reviewed a range of documents written by the Department of Health, ambulance services and other key stakeholders, as well as academic literature in order to gain an understanding of key challenges faced by the ambulance service and incentives within the system that drive value for money improvements.

19 Key documents reviewed included:

- annual reports of all ambulance services;
- *Taking healthcare to the patient: Transforming NHS ambulance services*, Department of Health, 2005 and a draft of the follow-up document, yet to be published;
- other Departmental publications, such as ambulance policy, operating frameworks and good practice guides; and
- academic literature on ambulance services.

International comparisons

20 We reviewed a document produced by the Office of Strategic Health Authorities in 2009[1] which compared ambulance service best practice internationally. We also reviewed information on the ambulance service in the Netherlands.

21 Direct comparisons of performance with other countries are difficult because ambulance services in other countries have different performance targets and commissioning arrangements. Scotland and Wales have some similarities to England but also key differences. Each operates a single national service covering large areas which are very sparsely populated, which would require heavy qualification of any comparison of high-level data. We conducted interviews with key members of staff at the Scottish Ambulance Service. The interviews covered initiatives to improve service efficiency, to improve information on patient outcomes, to increase staff availability and to triage patients away from accident and emergency departments.

1 Office of Strategic health Authorities, *A comparative review of international ambulance service best practice*, 2009.

Modelling work

22 We commissioned a piece of work, from Deloitte, examining on the financial implications for ambulance services and others in resolving emergency calls at three critical points: when the call is received, when the vehicle arrives at the scene, and when deciding which destination would be most appropriate for the patient. Their report is available on our website (www.nao.gov.uk).

23 To inform their work, Deloitte used the National Audit Office's data request, data they had previously collected and data provided by the NHS Information Centre, conducted interviews with staff in three ambulance service areas (East Midlands, East of England and South Western) and commissioners in two primary care trusts (Derbyshire County and Nottinghamshire County). Deloitte also sent out a request to ambulance services about forecasts for the proportion of patients treated through 'hear and treat', 'see and treat' and convey to alternative destinations. Not all ambulance services could provide forecasts and therefore the assumptions used by Deloitte are based on the forecasts provide by the other ambulance services.

24 Deloitte conducted financial and non-financial analysis to calculate the savings and identify benefits for the sector. They created a number of scenarios, based on implementing 'hear and treat', 'see and treat' and conveying to alternative destinations to various levels. A range of assumptions had to be used, for example in the average cost of an emergency admission, with varying degrees of uncertainty. Deloitte used their discussions with key stakeholders to test the reasonableness of these assumptions. Further details of the assumptions used can be found in Deloitte's report on our website.

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