NHS

Changing **Times**

Sustaining long-term performance against
'Call Connect' for NHS ambulance services

NHS 60

This document aims to provide ambulance services with a suite of performance improvement tools and best practice examples. Its key purpose is to provide trusts with working solutions that not only aid sustainable performance improvement against the clock start measurement of 'Call Connect', but also help to further enhance the delivery of service to patients through improved quality of care.

Contents

DH INFORMATION READER BOX

Policy		Estates	
HR / Workforce		Commissioning	
Management		IM & T	
Planning /		Finance	
Clinical		Social Care / Partnership Working	

Document Purpose	Best Practice Guidance
Gateway Reference	10102
Title	Changing Times: Sustaining long-term performance against 'call connect' for NHS Ambulance Services
Author	DH Ambulance Policy
Publication Date	24 Jun 2008
Target Audience	PCT CEs, SHA CEs, Emergency Care Leads, NHS Ambulance Services
Circulation List	
Description	To provide ambulance services with performance improvement tools and best practice examples. Its key purpose is to provide trusts with working solutions that aid sustainable performance improvement against the clock start measurement of 'call connect', and helps to enhance the delivery of service to patients through improved quality of care.
Cross Ref	N/A
Superseded Docs	N/A
Action Required	N/A
Timing	N/A
Contact Details	Ambulance Policy Team Emergency Care 11th Floor, New King's Beam House 22 Upper Ground London SE1 9BW www.dh.gov.uk/publications
For Recipient's Use	

Foreword by Peter Bradley CBE

In preparing for the 'Call Connect' standard clock start point, trusts have worked hard to meet tough response time targets. We've made great progress, and should all be proud that we've removed a hidden wait for patients and further improved our world-class ambulance service.

It is important that we remember that while ambulance services are driving up performance against 'Call Connect', this is making a real difference to patients and the way we deliver patient care.

However, these changes must not be just a short-term effort. **They must be sustainable for the future.**

This document provides ambulance service staff, commissioners and other key partners with a range of tools and best practice examples from across the country to help sustain improved levels of performance. It covers a broad range of areas including accurate demand analysis, optimal control room models and good partnerships across the emergency and urgent care sector.

I would like to thank all services for their hard work contributing to the progress on performance so far, and to all those who have contributed to this guide.

I hope that trusts will find this guide a valuable resource in sustaining high performance against response time targets and providing an even better service to patients.

Peter Bradley CBE
National Ambulance Advisor

Every second counts… the 'Call Connect' journey

'Call Connect' measurement came into effect on 1 April 2008. From this date, the 'clock start' position for measuring ambulance response times changed from the point when key information is obtained from the 999 caller to the point when the call is connected to the ambulance control room. This means that ambulance services need to respond, on average, 90 seconds faster than before.

There are two key benefits that arise from 'Call Connect' for patients and the public:

- shorter response times, improving people's experience of the time taken to respond to a 999 call; and
- better clinical outcomes for patients, especially those suffering from cardiac arrest.

Increasing survival rates

'Call Connect' is expected to increase survival rates for cardiac arrest patients. Research shows that survival rates reduce by 10 per cent for every minute between collapse and commencement of emergency life support, and that after 10 minutes very few patients survive.

Under the previous method of ambulance response times, an eight-minute response time was in reality closer to 10 minutes once the time taken to answer the phone and ascertain the key information triggering the clock start had been factored in.

With 'Call Connect', eight minutes means eight minutes. For cardiac arrest patients and other patients with life-threatening emergencies, this will be crucial to maximising the chances of good clinical outcomes.

What can trusts do to improve and sustain performance?

This guide is a resource for trusts to use to support sustainable performance improvement.

It contains resources to pull out, use with staff and display on the wall in trusts to help identify ways of 'tightening up' the call cycle and improving management information.

It includes advice on management, and learning points from the visits of the Performance Improvement Team to all trusts.

It also contains case studies from across the country describing good practice in areas such as demand profiling, control rooms, clinical developments, workforce roles, urgent care etc.

All trusts have been implementing new systems to achieve their planned performance trajectories. Trusts now need to make sure that they are putting in place long-term solutions that are sustainable for the future.

Resources

Each of the three resources focuses on an improvement tool. Large pull-out versions of these resources can be found in the back of this brochure.

The call management cycle chart

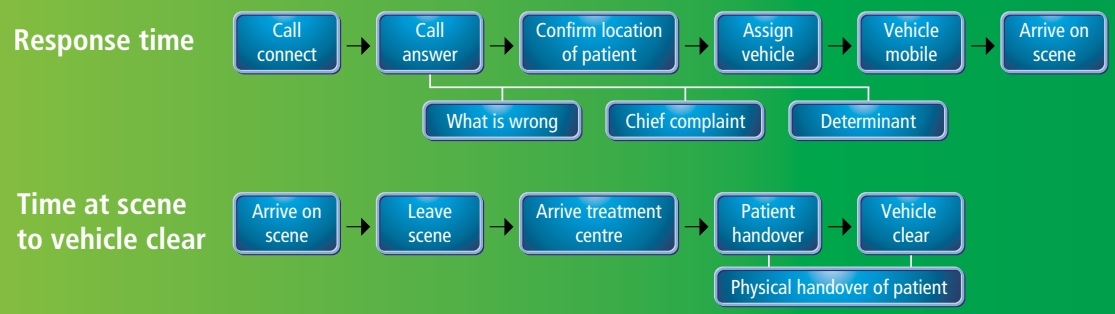
The call management cycle can be broken down into specific stages.

Each of the stages shown in the boxes may contain unnecessary delays to response time, and to the time before the vehicle is ready for the next call.

Trusts should use the chart to think through whether their service has optimised the time taken for each of these stages. Are there any hidden delays?

Outlining the **call management cycle**

The call management cycle can be broken down into specific stages. Each of the actions shown in the boxes has the potential to be hiding unnecessary delays to response time, and to the time before the vehicle is ready for the next call. Use this chart to think through whether your trust has optimised the time taken for each of these actions. Are there any hidden delays?



Key

Call connect: A call is presented to the control room telephone switchboard or electronically transferred to the computer aided dispatch (CAD) system.

Call answer: The telephone call is answered by a trained call taker.

Assign vehicle: The call sign of the responding resource is allocated to the CAD.

Vehicle mobile: The allocated resource begins travelling to the scene.

Arrive on scene: The first emergency response vehicle arrives at the scene.

Note: A legitimate clock stop position can include the vehicle arriving at a pre-arrival rendezvous point when one has been determined as appropriate for the safety of ambulance staff in agreement with the control room.

Leave scene: The allocated resource leaves the scene to transport the patient to a treatment centre.

Arrive treatment centre: The allocated resource arrives at the treatment centre.

Patient handover: The allocated resource completes a clinical handover and is relieved of patient responsibility.

Physical handover of patient: The patient is transferred from an ambulance trolley to a hospital trolley.

Vehicle clear: The allocated resource becomes available for further work.

The call management cycle algorithm

The call management algorithm shows a range of possible high-impact changes, both operational and control room based, that trusts could make to achieve sustained performance improvement and improved patient care.

Trusts should use the poster to think about what changes they have already made, and what changes they could make, to tackle delays and bottlenecks in their services.

Call management cycle **algorithm**

The call management cycle algorithm is designed to act as a best-practice guide bringing together high-impact changes, both operational and control room based, that can bring about a real and sustained improvement in performance and patient care. These elements have been identified as 'holding' the highest impact against performance.

Response time

Time at scene to vehicle clear

Call connect, call answer	Call answer, call processing	Call answer, vehicle assign	Call assign, vehicle mobile	On scene	Time at scene to vehicle clear	Turnaround times
Display live performance data in the control room	Review telephony systems and update where necessary	Check computer aided dispatch (CAD) system for speed and functionality. Ensure that mapping software is the latest version	Consider implementing auto-dispatch procedures for community and co-responders, rapid response vehicles and ambulances	Make optimum use of CAD systems, mapping software, deployment plans and GPRS tracking	Minimise on-scene delays	Install an inbound patient CAD screen to accurately record patient handover times
Introduce Enhanced Information Service for Emergency Calls and Automatic Location Service for Emergency Calls	Measure live performance	Ensure that GPS tracking works correctly and provides consistent updates to CAD system	Eliminate the use of telephone activation at station level and activate via mobile data radio systems	Monitor live performance information, perhaps through a dashboard available electronically to all key managers from a control centre with automatic updates	Consider the use of new technology to automatically acknowledge crew arrival on scene	Install auto-reporting to automatically time-stamp the CAD record when the vehicle arrives at the healthcare facility
Introduce Automatic Call Distribution (ACD) telephony	Consider which AMPDS version is being used	Have an interface in place that loads up the call location directly into the satellite navigation system from the mobile data transfer (MDT) to the vehicle	Ensure synchronisation of time source on the CAD system, MDTs and mobile data routers	Carry out regular demand analysis reviews to ensure that resources in the control room and operations match the current demand plan	Install a CAD alarm to notify dispatchers when the on-scene time exceeds 15 minutes	Ensure that vehicle staff notify the control room of any delays over a locally agreed threshold
Display direct from the telephone switch 999 call pick-up times	Review time to get address	Check time sources on CAD systems, MDTs and mobile data routers for synchronisation	Monitor and review MDT failures	Hold frequent meetings between trust performance leads and key managers involved in performance delivery. These meetings should be based upon information received through the performance dashboard	Develop rapid handover and stand-down arrangements between rapid response vehicles and double-crewed ambulances at the scene of the incident	Deploy operational managers to the healthcare facility based on set thresholds, e.g. total number of minutes at hospital (which could be 1 ambulance at hospital for 120 minutes, or 10 ambulances at hospital for 12 minutes each)
Regularly review demand to ensure that resources match the demand profile and the distribution of calls received. The review should also apply to control room and operations staff	Review time to get chief complaint	Train staff in full CAD functionality	Introduce an alarm in the CAD system to notify dispatchers of delays above 15 seconds in vehicles becoming mobile	Ensure excellent staff involvement and communication around the design of rosters, demand analysis and any required workforce re-engineering	Activate an operational officer to any incident where it is anticipated that the on-scene time will exceed 20 minutes	Ensure regular liaison between the ambulance and the acute trust around A&E delays
Regularly review the call-taking process in the control room to ensure that calls are answered within the target time	Review total call length time (average)	Consider which electronic dispatch version – e.g. ELAN 1 or 2 – is used	Have an exception-reporting process in place for all delays above 30 seconds, and forward those with operational implications to a local sector manager for investigation and follow-up action	Use reporting tool to understand performance bottlenecks	Identify on the CAD record when it is known that the incident will have a longer on-scene time than 15 minutes, and consider deploying an operational manager to manage the incident	
Agree key performance targets for call takers, dispatchers and supervisors in the control room	Review percentage of calls converted into A, B and C to spot any individual trends	Ensure 24/7 standby planning compliance	Ensure that the control supervisor is alerted by the dispatcher to any mobilisation delays that exceed the target time			
Monitor and review (monthly) the performance of individual teams within the control room	Measure average call 'wrap-up' times (after-call work)	From the demand analysis review, update the dynamic deployment plan (which should be CAD-based) to reflect any changes to dispersion and distribution of activity	Investigate frequent patterns of mobilisation delay for root cause (e.g. technological failures or individual performance)			
Separate call handling functionality and separate supervisor call handling		Have an agreed escalation plan in place and maintain staffing levels accordingly	Review working practice on station so vehicles are immediately ready to mobilise, e.g. place phone near or en route to the exit			
		Analyse data on calls that fall outside the target response times and determine cause of delays associated with vehicle assignment to incident	Use reporting tool to understand performance bottlenecks			
		Use reporting tool to understand performance bottlenecks				
		Continue to dispatch to less urgent calls when vehicles available, and divert onto higher priority calls if necessary				

The management information checklist

This checklist is aimed at those working in operations and data management, to ensure that information is being used in the most efficient and effective way.

It contains helpful questions to make you think about the way information is used in your organisation.

Further detail is provided on pages 11–12.

Management information **checklist**

Use this checklist to ensure that the information contained in an organisation is being used in the most efficient way.
It contains helpful questions to make you think about the way information is being used in your organisation.

People and processes		Technology
Are the right people involved in making the decision about what information is produced? Have you identified any bottlenecks that may be holding up the process? Are the users happy with the information that is produced? Are you producing the right level of information?	**Information audit** Take stock of the information system currently in place to find out where improvements can be made.	Is the data accurate, relevant and timely? Is the software suitable for the analysis produced? Are you making full use of the technology available? Is the information in a format that suits the user and gets the message across?
Is the information available at all levels of the organisation from front-line staff to management? Does the information help you meet the objectives of your organisation? Does every piece of information add value and have a specific purpose?	**Information requirements** What information will help you achieve the objectives at each level of the organisation?	Do you have all the data you need to give the full picture? Can users tailor the information to meet their specific requirements? Is the information available in different formats?
Is the information produced in a timely manner in order to be used for effective decision making? Do you have a good communication channel in place? Do you involve staff at all levels of the organisation in the decision-making process?	**Information flow** An efficient information flow will ensure that the right people see the right information in a form that they find useful.	Are users able to access the information themselves rather than going through a third person? Does the system allow staff to access the information at a time convenient to their needs?
Do you have a good feedback loop in place? Are changing priorities communicated through all levels of the organisation? Are staff able to use the system you currently have in place?	**Continuous improvement** A good information system will be regularly audited to ensure that it is still fit for purpose.	Is there flexibility to make changes to the system? Is your technology still fit for purpose as priorities change and new information is required?

Managing your information

The performance of an organisation can be greatly improved by understanding and enhancing the contribution of information, and ensuring that the right people see the right information at the right time.

A good management information system will:

- control the flow of information from data source to knowledge, and the use of that information by managers and staff in the organisation;
- integrate information activities and enable staff to use all information quickly and effectively to make efficient business decisions;
- promote communication throughout the organisation, and encourage a culture of innovation and knowledge sharing; and
- ensure that all staff are made aware of opportunities and threats, enabling a timely and appropriate response.

The management information process

The first step in building an effective management information system is to take stock of where the organisation is at present.

- What information is held?
- Where it can be found?
- Where does it go?
- Who uses the information?
- How does it get to them?

By doing this, the organisation can see where any problems lie – for example, is work being duplicated, or is there a bottleneck in the system which prevents information being received in a timely manner?

In order for the management information system to work effectively, the information produced must increase knowledge, reduce uncertainty and be usable for its intended purpose.

The organisation should determine the appropriate information and then define how it is to be analysed, disseminated and used to improve performance. Take an objective-led approach – state what the required results and objectives are, and then work through to find out what data will help produce these results.

The information must then be made accessible to the people who need to use it, in a form appropriate to them. Front-line staff and managers will have expert insight into the way the service is run, and giving them access to the information will allow them to diagnose problems and suggest solutions not previously considered.

Staff in many organisations risk 'information overload', so it is important that they are able to discern the important message rather than losing it in a large volume of less relevant information. The development of thresholds for key performance measures, with defined actions to be taken once they are breached, is also important.

The final stage is continuous improvement – as the priorities of the organisation change, so will the needs of the staff. A good management information system must be continually audited and updated to ensure that it is still fit for purpose.

Performance Improvement Team visits

Led by Lis Nixon (National Ambulance Performance Implementation Lead)

The Department of Health's Ambulance Performance Improvement Team was established to provide support for all ambulance trusts in meeting targets against the new 'Call Connect' measurements. The purpose of these visits was to take a snapshot across a range of service areas, and to understand the issues that trusts were facing in preparing for 'Call Connect'.

Short diagnostic visits were undertaken to review progress towards the new measurements, to review plans and programme management arrangements, and to offer advice on areas that individual trusts needed to focus on in order to deliver against the measurements.

A key objective of the team was to highlight best practice and share this with other trusts facing similar issues or challenges. Additional support was provided for some trusts on particular topics that were affecting progress towards 'Call Connect'.

Most trusts were focusing on similar operational priorities such as reducing the overall duration of the call cycle, planning the implementation of new staff through additional investment, and refining the basics such as reconfiguring cover/rosters and revising strategic standby and deployment plans.

The team also reflected on the strategic direction and vision of the organisations. Again similarities were identified, such as overall leadership capability, middle management engagement and capacity, communications, and performance management systems and structures.

A range of critical success factors emerged, and trusts that focused on these areas were having a greater level of success.

Critical success factors

Robust and embedded programme management

Plans should contain a realistic number of objectives/deliverables, with top-level support and ownership by local managers and managers/leads from other non-operational directorates.

Accurate review of activity and demand

Resources should be effectively matched to demand. Trusts have used a range of in-house tools and external consultancy. Processes such as 'unit hour methodology' have been used successfully in driving efficiency.

Understanding of the key components of the call cycle

To enable each component part to be reviewed, benchmarks should be established and performance monitoring mechanisms and triggers put in place.

Adoption of an alternative response/service model

Particularly in urban areas, the traditional service model based around ambulance delivery should be remodelled to a more front-loaded model (FLM) to improve operational efficiency and productivity. This has been supported by workforce changes that have led to more patients receiving care in the most appropriate setting.

Visible, effective and empowered leadership

Key leaders should feel empowered to effect change and develop local solutions, and should feel able to integrate the 'Call Connect' plans into operational delivery and link achievement of 'Call Connect' with clinical benefits.

Creating high-performing control centres

Trusts should introduce a range of systems and processes designed to achieve reduced delays in call answering and call processing to dispatch; improved dispatch processes, through automating the process or reducing the ratio of resources to dispatchers; effective performance management; effective use of technology; and effective and inclusive leadership. Clinical involvement and triage within the control environment is also critical in ensuring that the patient receives the appropriate resource.

Robust, real-time management information

The ability to provide front-line managers, in both operations and control, with a range of real-time management information is crucial to decision making and planning key future service changes.

Robust performance management arrangements

Structures should be in place to support key elements of the service model; managers/ leaders should have clear levels of accountability and there should be processes that measure both individual and team performance, reducing variation in both systems and people.

Effective engagement with staff

More progress was evident where trusts had effective and meaningful relationships with staff representatives and effective communications with front-line staff.

These critical success factors are underpinned by a range of other important factors, such as:

- having a clear strategic vision, led by the executive team and understood by all staff and managers;
- being able to communicate effectively across all parts of the organisation and out to key stakeholders;
- carrying out workforce planning to enable the establishment of a professional, clinically focused team;
- focusing on managing key components of operational management, such as lost unit hours and deployment of rapid response vehicles;
- reducing turnaround delays through effective collaboration with acute trusts;
- using technology to support changes to control centres; and
- establishing close links between the internal directorates – for example, between operations and the control room, and operations and fleet management.

Risks and lessons learnt

A number of issues, pitfalls and potential risks were also identified through the Ambulance Performance Improvement Team and diagnostic visits:

- lack of staff engagement with change;
- poor programme management, with little or no project management capacity released to drive changes;
- poor state of fleet and equipment;
- too much reliance on recruiting key groups of staff, and trying to recruit too many new staff in one go;
- poor training and induction for new staff;
- lack of leadership, management and monitoring in control rooms, 24 hours a day;
- poor communications – this issue needs executive team involvement;
- suboptimum use of first responders, especially cars, bikes etc;
- poor systems for integrating community responders, determining their availability and contacting them for calls;
- lack of focus at all levels;
- inability to translate the 'Call Connect' measurement into clinical gain/ improved outcomes when talking to staff;
- poor performance management data and information;
- lack of performance management governance structures and meetings;
- resistance to learning from other organisations as to what works and what doesn't – feeling that the trust is somehow different from others;
- poor external relationships with key commissioners, acute trusts etc; and
- failure to recognise ambulance trusts' potential role in the wider health economy.

Sustaining achievement of 'Call Connect'

The challenge for ambulance trusts is to ensure that the changes made are sustainable in the longer term.

For many trusts this will involve doing the important (basic) things very well, all day, every day to reduce the variation seen in performance delivery on a daily and weekly basis. There will need to be a process of embedding the changes, processes and systems and constantly reviewing developments to ensure that the benefits are being realised.

A key factor in maintaining performance delivery is the impact of demand for services. Many trusts are changing the profile of their workforce in line with the recommendations of the ***Taking Healthcare to the Patient*** report, which has clear benefits for patients by delivering more appropriate and locally provided care. This will also have a positive impact on continued delivery of targets through more effective use of resources and the releasing of core resources to meet high priority demand.

As highlighted in ***Taking Healthcare to the Patient***, more care and advice can be provided during the first contact with patients in control centres. There are opportunities to offer alternative care pathways and advice to patients and their carers, in order to release much-needed resources to respond to patients with life-threatening conditions. As trusts invest in more clinical support within control centres, the opportunities for responding differently to patients are increased.

Technology has a crucial role to play in supporting further improvements in operational efficiency. Technology capable of automating much of the dispatch process is already in use, and provides real opportunities to reduce delays in the call taking/processing cycle and to reduce variation in application. There are also opportunities to realise benefits from key national projects such as the ambulance radio replacement programme (ARRP).

Case studies

Focus on: Good communication

London Ambulance Service NHS Trust: awareness campaigns

Recognising that communication is key to increasing awareness about 'Call Connect', ambulance trust communication leads collectively developed a framework that could be adapted by all ambulance services to share messages around 'Call Connect'.

The London Ambulance Service NHS Trust (LAS) built on this framework to ensure that staff understood the changes, and launched an external awareness campaign to help alleviate demand on the 999 services.

The LAS's objectives were to:

- raise awareness among staff of the changes to the Government's Category A target and the impact this would have on the LAS; and
- raise awareness among Londoners of the need for them to use their ambulance service wisely, in a bid to reduce call rates.

Key messages of the work with both staff and the public were as follows:

- "Because of changes to the way that response times to our most serious calls are recorded, we will have to reach patients almost two minutes sooner than we have in the past.
- "This means that our response will better reflect our patients' experience – eight minutes means eight minutes, and we will get life-saving treatment to them more quickly than ever before.
- "We would urge Londoners to use us wisely and only call us in an emergency, so that we can focus on those people who genuinely need our help.
- "There are other healthcare options available, such as calling NHS Direct, visiting your GP or local pharmacist, or going to an NHS walk-in centre."

Different strategies were adopted for the internal and external campaigns.

Use existing internal communication channels to inform staff about the changes to response time recording.

'Call Connect' was first raised with over 1,500 staff during a series of consultation meetings with the chief executive during April–June 2007, almost 12 months before the changes came into effect. These messages were shared over the following months at business conferences with middle and senior managers, and through articles in the LAS's staff magazine and staff bulletins.

'Call Connect' was also given as the reason for heightened operational activity in the latter part of the 2007–08 financial year, and the LAS's real-time performance against the new target was visible on the home page of its intranet.

Use external communications to launch an awareness campaign urging the public to use their ambulance service wisely, only calling 999 in the event of a genuine emergency.

Advertisements featuring the image of an ambulance in a fire alarm box were placed in the *Metro*, *London Lite* and *The London Paper* free daily newspapers, and also for two consecutive weeks in more than 50 weekly papers across London.

As well as encouraging the public to "use your ambulance service wisely", the advertisements outlined the range of other healthcare options available to those with less serious illnesses or injuries.

Posters adapted from the advertisements were displayed in the London Underground during the first two weeks of June 2008, with smaller versions distributed to ambulance stations for display in ambulances and local public buildings.

The challenge will be to sustain this message throughout 2008, and the LAS's communications department is now developing a longer-term plan to ensure that the "use your ambulance service wisely" message is conveyed during pressure points (e.g. during the hot weather and the festive season) as well as through other innovative means such as ambulance-related programmes, including a six-part series on the LAS to be broadcast on ITV London later in the summer.

It is estimated that over 6.5 million readers of London papers will have seen the advertisement during April.

It is anticipated that the number of people who will see the campaign posters on the London Underground will be around two million. And if the message about use of the LAS is conveyed through the ITV London programme, experience from a previous series tells us that this will be shared with up to 350,000 residents.

There are plans to enable other ambulance services to adapt the "use your ambulance service wisely" branded campaign for their own areas.

The campaign is still in its early stages, but evaluation will be carried out later in 2008 to examine whether it has had an impact on call rates.

East of England Ambulance Service NHS Trust: Your Shout

The East of England Ambulance Service NHS Trust (EEAS) employs nearly 4,000 members of staff spread across six counties and about 100 premises, mostly working shifts. Getting effective, regular feedback is not an easy task.

EEAS had used the traditional methods to communicate 'Call Connect' – newsletters, frequently asked questions, sections on the intranet and an email address for people to make suggestions and ask questions. It had also asked its local managers to feed back typical questions or suggestions.

However, none of these methods had proved any more successful for 'Call Connect' than they had in the past, with the email address and feedback via managers giving a disappointing response.

So EEAS set up Your Shout, an online feedback form which staff can access via the intranet. Staff select a category and submit a question, which is then posted on a 'responses' section. The answer to each question is posted below it.

Since Your Shout's launch in mid-May, EEAS has received nearly 100 questions on topics including mobilisation, hospital turnarounds, auto attend, ambulance/ emergency care support workers, equipment, uniform, IT, estates and drugs.

A complete list of questions and answers is forwarded to managers once a week to ensure that everyone is aware of consistent messages. Message posters have the choice of leaving their name or remaining anonymous. The quality of questions has been very high with a number of salient points made, and improvements to estates have been implemented as a direct result of feedback via the form.

Answering the questions has involved a lot of time and effort but, in an environment where it is always difficult to bring groups of people together, Your Shout has proved a very successful means of encouraging staff engagement and genuine two-way communication.

Checklist

- Are you engaging effectively with staff and the public on the patient and staff benefits of 'Call Connect'?

Focus on: Demand analysis/profiling

The London Ambulance Service NHS Trust (LAS) commissioned some modelling work on control rooms. The aim of the study was to assess call taker deployment levels by hour and by day, with a particular focus on being resilient to the variability and peaks in hourly and daily demand.

Strategy

Analytical and modelling techniques were used to determine the required level of call takers by hour and by day in the control room, to ensure that the LAS standard of answering 95 per cent of calls within five seconds was met on a consistent basis.

The control room was monitored over a 13-week period, which was then compared with other periods to ensure that it was representative of normal demand levels and fluctuations.

The sample data were analysed to compare the inputs and outputs for model preparation and validation. This was done using resource data, call management system half-hourly data and detailed call-logging data over the 13-week period.

The analysis – which incorporated incoming and outgoing calls – measured the different rates by hour and by day, the different times spent on the phone for the various categories of call and the call-answering time distributions.

A model of the control room call-taking function was then prepared and validated based on the analysis. The model was used to find optimum staff deployments to meet the LAS 95 per cent five-second call-answering standard for various call levels.

Results

These results were transformed into daily and hourly staffing levels based on the average and the 95th percentile of demand levels in the sample period used. Staff levels were then adjusted to meet certain specific rostering constraints as well as rest break and screen break requirements.

A roster review was then conducted and changes implemented to ensure that it was possible to roster staff in the control room to match the profile produced.

Evaluation

The final stage is yet to occur. This is the implementation of a new call-answering system, which will allow closer monitoring of call handlers' logging in/out times to ensure that the actual available time matches the plan.

Early indications are that the staffing plan is more accurate as a result of the study, as call-answering performance is being achieved. More importantly, the fluctuations in performance, especially at weekends, have been reduced. Thus performance is being met not just on an average basis but on a consistent basis.

Checklist

- What time of day/day of the week sees the highest level of demand? Do the available resources reflect these trends?
- Consider the types of patients who use the service. How does the make-up of patients change over time? Do the resources match the changing needs of patients?
- Are you able to investigate the effect of different combinations of staff types to manage any changes to the type of patients using the service?

Focus on: Performance monitoring – hospital turnaround and ambulance delays

South Central Ambulance Service NHS Trust (SCAS) has been striving for optimum performance in both clinical and non-clinical care, and considers it important to control as many of the external variations and pressures on its resources as possible. An area of particular importance is SCAS's ability to turn around front-line ambulance resources at major hospitals, where a good practice standard of 20 minutes needs to be achieved.

Many major hospitals across South Central were failing to achieve this, often as a result of capacity shortages which led to ambulance crews/resources being held.

To address this problem, SCAS has been developing new procedures through local partnership working which can be adapted to local variations within each division of SCAS, as well as to hospital management practices. Included in the procedures are the divisional situation report and the trigger/escalation plans, which are provided to assist in the decision-making process set out in the procedures.

A number of key managers are involved in applying the procedures – the duty control manager, the attending officer for liaison with hospital and medical staff, and the trust's duty director, all of whom have specific actions to take. It is necessary to establish whether ambulance delays at hospitals are due to an influx of vehicles (e.g. 3 ambulance resources in 20 minutes) or a lack of hospital capacity.

To support front-line crews further, SCAS has issued them with an operational directive; this will ensure that they work to a clear framework and process which supports both the ambulance service and the acute trusts on key actions required when the procedures are invoked. The directive covers the patient handover procedure and the booking of patients into accident and emergency department reception areas, to reduce ambulance delays.

SCAS already has good working partnerships with many of its acute NHS trust and PCT colleagues; however, developing the procedures further will protect its ability to respond to patients by reducing the incidence of queuing. During their development, the procedures have been approved in consultation, with staff side and managerial involvement and with trust board ratification.

For more detailed information, please refer to the SCAS document ***Operations Policy and Procedure on Hospital Queuing***.

To obtain a copy of this document please contact SCAS: www.southcentralambulance.nhs.uk

Checklist

- Is the performance information up to date and in real time?
- Do staff at all levels of the organisation have access to the performance information?
- Are users able to drill down into the performance data to incident level?
- How do users access the performance information? Are they able to access the information themselves, or do they need to go through a third person?

Focus on: Workforce development

The West Midlands Ambulance Service NHS Trust (WMAS) has identified workforce development as one of its top priorities.

WMAS recognised that, in order to deliver the highest possible standards of care and treatment in pre-hospital emergency medicine, clinical development and leadership were paramount.

Increasingly, the emphasis is shifting from the creation of brand new roles to the integration of staff into the overall workforce strategy, enhancing staff competencies to increase flexibility within and across the organisation.

Summarised below are some examples of WMAS's initiatives around clinical workforce development and the benefits they offer:

Emergency care practitioners

- Emergency care practitioners (ECPs) are experts in providing alternative care pathways following their assessment of patients, and have ultimately had a significant effect on the reduction of hospital patient admissions. They are used predominantly on rapid response vehicles to allow fast assessment and triage of the patient without the unnecessary callout of a 'traditional' ambulance in the early stages of the incident.
- ECPs throughout the region have proven to be a particular asset, both in the advanced delivery of emergency care and for their enhanced patient assessment/ triage skills.
- Not only may patients treated by an ECP be able to avoid a hospital admission, they can also be referred to an appropriate treatment centre directly (e.g. X-ray, a GP, a nursing unit or occupational therapy). They can get prescription-only medications directly from the ECP.

Control room triage

- Ambulance paramedics work within WMAS control rooms to operate a 24-hour triage desk.
- These staff, who can offer the best and most appropriate advice to the patient or caller directly, intercept incidents that are deemed appropriate for them.

Control room doctors

- WMAS has utilised the expert skills of doctors within its control rooms. This has resulted in a significant benefit – a reduction in hospital admissions – by providing alternative care pathways for patients where hospital admission is not the most appropriate course of action.
- During times of expected high demand (bank and public holidays, religious festivals, large-scale events etc) there has been an increase in the number of doctors within control rooms, with further positive results.
- This facility also supports paramedic and ECP clinical decision making in both control rooms and operations.

Clinical group station managers/clinical leadership

- Across the trust, WMAS employs several group station managers whose principal responsibilities are to ensure the effective operation of a group of ambulance stations. Resource and staff management, alongside all other managerial duties, combine to form the day-to-day work.
- The trust has recognised the need for an additional role: the clinical group station manager. These managers will be tasked with ensuring that their staff are fully compliant on all clinical issues. They will offer full clinical support to staff, and enhance training, assessment and governance, in a 'grass roots' setting.

Medical advisors

- Under the management of a medical director, the trust also employs four medical advisors.
- Clinical governance is high on the agenda, alongside development of new clinical initiatives.
- This team is also proactive in directly responding to and supporting patients within the WMAS region.

Patient triage, treatment and assessment unit

- This relatively new initiative was first seen in operation during the Christmas and New Year period of 2007 and subsequently over the 2008 Easter bank holiday weekend.
- A purpose-staffed patient triage, treatment and assessment unit was established within Birmingham city centre to allow for the initial assessment, triage and treatment of patients who would have required a hospital attendance had the unit not been functioning.
- The unit was staffed with paramedics, doctors and nurses, along with the voluntary ambulance services and community first responders to support them. It also boasted its own control room.
- Since its inception, several hundred patients have benefited from the services offered.

Checklist

- What staff are currently available and how are they being deployed?
- Does the mix of staff available meet the demand placed on the service? Consider using modelling to investigate the effect of different combinations of staff types to best meet demand.
- Analysis completed at this stage may have links with demand profiling and resource planning.
- Consider absences at all levels of the workforce. How are resources managed to deal with planned and unplanned absences?

Focus on: Control rooms

The East Midlands Ambulance Service NHS Trust (EMAS) recognised that an important factor in delivering 'Call Connect' was the effectiveness of its control rooms.

The key changes implemented are set out below.

Reconfiguration of the management tier to strengthen leadership within control centres

Internal restructuring took place to ensure that the appropriate leaders with the right skills were in place to support staff and drive the changes necessary to improve efficiency and productivity.

This resulted in the creation of a team of performance delivery managers who are responsible for shift performance, project management and logistical support.

Dedicated support and supervision for driving call-answering performance allows the performance delivery manager team to focus on dispatch performance monitoring and on the management and support of staff through the key performance indicator system.

Reconfiguration of dispatch points to improve efficiency

The trust increased the number of dispatch points to reduce the ratio of resources to dispatchers and increase tactical thinking time.

All available resources (with the exception of community first responders) are assigned to a dispatch point, and the trust has moved from one dispatch point per county/ divisional area to two. In the Lincolnshire division, this increases to three at peak times.

This has reduced the number of resources typically being managed by a dispatcher from circa 45 to circa 25 at peak, down to circa 12 off-peak. Each dual dispatch desk for each county has a radio/support role, equating to a three-person configuration per county.

There is also a dedicated 24/7 community first responder desk at the trust's Nottingham and Lincoln sites, and support from a clinical triage and advice service in each of the control rooms.

Implementing technology to support the new dispatch model

Technical support has been increased. Early Location and Notification (ELAN) provides dispatchers with the address of the emergency before the call taker has answered the phone. This has reduced allocation times by an average of 10 seconds.

Introduction of a clinical triage and advice service

The trust has established a nurse-led clinical triage and advice desk, supported by TAS (telephone advice system) decision support software. A 24-hour service operates from the Nottingham control room and a 12-hour service from the Lincoln control room.

The nurse advisors triage over 40,000 Category C calls each year, and through the 'hear and treat' model they save 20,000 ambulance responses and potential attendances at A&E departments. The clinical triage system will be expanded as part of the trust's move to a new control room later in 2008.

Providing additional logistics support

Additional call centre staff have been recruited and trained.

A key change was to provide additional support to enable dispatchers and performance delivery managers to focus on performance. To achieve this, all non-urgent telephone traffic was diverted away from dispatch points to a resource desk.

A resource manager (RM) role was introduced to field all non-urgent enquires. The RM is a seconded, rotational role undertaken by all operational support managers (area managers), and operates for 16 hours, 7 days per week. The RM's key responsibilities are to support dispatchers in dealing with operational issues, and to monitor response exceptions and delays in turnaround at acute sites.

To manage fleet-related issues and downtime, a fleet coordinator operates daily from the control room, providing a conduit between station team leaders and operational managers and the fleet department/service centres. The RM and fleet coordinator have been instrumental in driving down lost unit hours attributed to vehicle issues, equipment and replenishment issues, and in reviewing missed responses.

EMAS, along with all other trusts, has increased its control room staffing to meet the call answer element of 'Call Connect'. The trust has used its internal modelling approach to scope the call handler numbers required to meet the hourly demand, and has also used Working Time Solutions software to translate the required cover into flexible rosters to meet service requirements and individual needs.

This has resulted in a combination of full-time and part-time staff to meet the fluctuations in hourly demand, and a tier of staff without Advanced Medical Priority Dispatch System (AMPDS) training to meet the non-999 call demand.

Checklist

- How do you currently match the resources available to the demands placed on the control room?
- Is the performance information readily available to the staff working in the control room?
- What is the average time at each stage of the call for those incidents that meet the standard? How does this differ for the incidents that miss the standard?
- Is it possible to look at performance by staff member to help identify training needs?
- How do you backfill resource gaps caused by planned and unplanned absence?

Focus on: Urgent care

Business planning and associated corporate objectives within South Western Ambulance Service NHS Trust (SWAS) are shared by all directorates to ensure the best use of resources.

The purpose of this is to reduce inappropriate admissions to acute care and ensure that patients receive appropriate care closer to home. The clinical directorate plays a vital role in achieving 'Call Connect' by managing the trust's clinical hubs and urgent care service.

Clinical hubs

SWAS operates a clinical hub in St Leonards and another in Exeter, with each shift being overseen by clinical supervisors. Hub functions include:

- receipt of 999 calls;
- requests for transport from other healthcare professionals;
- dispatch of resources; and
- operation of a two-way link to NHS Direct, which enhances capacity.

The out-of-hours service for Dorset and Somerset is managed from the clinical hub in St Leonards. Healthcare professionals including GPs, nurse practitioners, emergency care practitioners (ECPs) and paramedics operate triage systems to ensure that the appropriate resources are dispatched, and also provide a 'hear and treat' service to callers.

A range of resources is available to respond to the needs of patients. These include ambulances, ECP rapid response cars, paramedic rapid response cars, paramedic motorcycles and the air ambulance.

Innovation is major tool in achieving the trust's targets, and it is currently developing a model for urgent care delivery.

Urgent care – a model for the future

Phase one

The island of Portland in Dorset has 15,000 residents and attracts lots of tourists. It generates significant 999 activity, and the trust initially experienced difficulties in meeting all category calls. This was due to the fact that the island was serviced by Weymouth Ambulance Station, 10 miles away.

In order to improve performance, a community ECP scheme was developed. The ECPs were based in the minor treatment unit (MTU) on the island alongside the three existing nurse practitioners. This enabled the cross-fertilisation of skills and, importantly, the achievement of targets for all categories of 999 calls.

This required GPs to undertake some additional management duties, and the MTU had some issues with maintaining staffing levels, leading it to close on occasions.

The transfer took place in 2004 and the MTU has not closed since. Further, SWAS was able to integrate the MTU into its out-of-hours service. This has provided valuable services to patients delivered by the trust's nurse practitioner/ECP team.

Approximately 4,000 patients are seen annually at the MTU, and there is no doubt that this has contributed to a reduction of inappropriate admissions to the A&E department 20 miles away.

Phase two

The neighbouring town of Weymouth has approximately 70,000 residents and an annual transient tourist population of approximately 3.5 million. Owing to the success achieved on Portland, the trust has now assumed managerial responsibility for Weymouth minor injuries unit (MIU). The MIU has 15 staff and sees approximately 12,000 patients per year.

Six ECPs are based alongside the nurse practitioners in Weymouth. This has increased the trust's capacity, enabling it to see and treat patients with minor ailments as well as minor injuries.

Importantly, SWAS also bases its out-of-hours ECP and GP at Weymouth MIU. This has improved collaboration between out-of-hours services and the MIU, enabling SWAS to make best use of its resources. In addition, the trust has been able to integrate the Weymouth MIU and Portland MTU into a team that supports its urgent care and 999 services.

Phase three

Since 2005, ambulance journeys to A&E departments across the trust's area have fallen from 70 per cent to just over 65 per cent. The trust's approach to the better utilisation of MIUs is a contributory factor. In order to capitalise on this, the next phase of the project is now under way.

SWAS is collaborating with commissioners, local GP leads and local healthcare professionals in order to make a case for a healthcare centre in Weymouth. The proposed centre will incorporate its MIU, ECPs and out-of-hours service. It will be GP-led, provide diagnostics such as phlebotomy and X-ray, have assessment beds and incorporate other health and social care professionals.

It is envisaged that this multidisciplinary approach will significantly reduce the number of avoidable attendances to the A&E department in Dorchester, 10 miles away. Initial studies have indicated that ambulance journeys from the Weymouth and Portland areas could be reduced by over 30 per cent. This represents a reduction of approximately 120 patient journeys per month.

Such innovation is designed to ensure that patients are treated closer to their homes in a more appropriate setting. Further, the reduction in patient journeys will enable valuable emergency resources to be redeployed to target 999 performances.

In addition to this, the trust is engaged with each commissioning PCT in order to play an active role in setting up healthcare centres.

Checklist

- Is your trust engaging with other local services on delivery of urgent care?
- Does your trust have a clear vision for the contribution it wants to make on urgent care?

Focus on: Clinical improvements, developments and outcomes

The South East Coast Ambulance Service NHS Trust's (SECAmb) vision of being innovative means spotting the technologies, techniques and practices of the future and fast-tracking them into implementation so that patients across the South East Coast area feel the benefits as quickly as possible.

Two paramedic development opportunities have been developed in response to changing patient needs and service reconfiguration.

Advanced paramedic roles

These staff are experienced paramedics who crew ambulances and response cars across the SECAmb region. They are equipped with specialist skills and deliver intensive treatment to the small minority of patients who are seriously ill and injured or suffering from trauma. Their task is twofold:

- to provide response or co-response to serious cases of illness and injury (retrieval); and
- to transfer serious cases between hospitals (critical care transfer).

These personnel are also being trained to staff the trust's helicopter units. Currently the trust has one fully qualified member of staff in post, but another 12 are in training with more identified to progress along this career pathway.

Paramedic practitioners

SECAmb operates a second group of advanced trained paramedics who are directed to cases of undifferentiated medical need. These paramedic practitioners (PPs) provide an effective first response to all categories of call; they are specially trained to have greater assessment skills and will be able to treat patients with long-term conditions and other minor ailments at home or in the community, keeping patients out of hospital wherever possible.

Where PPs are unable to treat patients, they will be able to refer them to the most appropriate healthcare professional (e.g. GP, district nurse or mental health worker).

Both these roles have been developed within the NHS Allied Health Professionals paramedic career structure.

Of course, innovations are not isolated to clinical practices. They can also be found in the use of new technology like the brain acoustic monitor, as well as changes in the workforce and the role of ambulance clinicians.

That is why, since its formation, the trust has developed two training and education programmes in conjunction with the University of Hertfordshire, Kingston University and St George's University of London. These programmes allow paramedics to specialise in particular areas of urgent and emergency care.

Adopting innovative technologies

SECAmb has worked hard to horizon-scan for technologies, techniques and practices, and to fast-track them to the implementation stage so that patients get the benefits of innovation as soon as possible.

The emergency mainstream analyser (EMMA) – a small, self-contained emergency device used to aid respiratory rate monitoring and ensure proof of successful intubation – is one example of this. It enables clinical staff to maintain a constant watch on how a patient is breathing, and whether their condition is improving or deteriorating.

A clinical field evaluation of EMMA is already under way, with SECAmb being the first ambulance service in the country to be using it. If the evaluation is successful, it is planned to roll out the use of EMMA throughout the trust.

Checklist

- Do you have processes in place for reviewing innovative clinical developments and technologies to see whether they could be effective (and cost-effective) in your service?
- Do you have the right clinical specialists as part of your workforce?

Focus on: Delivery of a new service model – the front-loaded model

In preparation for meeting 'Call Connect' targets, the East Midlands Ambulance Service NHS Trust (EMAS) has introduced a new service delivery model (named locally the mobile response model or MRM).

This is based on the concept, developed by a consultancy firm, commonly referred to as the front-loaded model. The main feature of the model is to expand solo units and use these as the main resource to attend Category A calls. This means that traditional ambulances are targeted more towards the transport of Category A cases and the treatment and transport of Category B cases.

EMAS has adopted this approach, and a feature of its model is a robust 'hear and treat' system supported by solo responders equipped with additional assessment, treatment and referral skills.

A key element of establishing the MRM was the underpinning demand analysis work. The trust used a product called Working Time Solutions to translate unit hour cover requirements into the most optimal roster options. This enabled managers to consider a range of roster solutions which met the operational needs of the service balanced against local needs of staff.

The majority of teams now operate on annualised/self-managed rosters, utilising ProMis software to manage local rostering and the unit hour utilisation approach to optimise daily/weekly cover.

To support the new model of delivery, a series of control deployment processes has been put in place to ensure that the right vehicle is sent to the right call.

This model has had an impact on the non-conveyance rate from scene to hospital, which has increased from 28 per cent to 35 per cent in the last 18 months; there is a trust target to increase this to 40 per cent during 2008/9. The trust will be making further adjustments to the MRM during 2008/9 following a review of the delivery model in relation to performance achieved at the end of the first quarter.

The effect of the MRM on the Leicestershire division

The MRM has moved the trust from a typical model of a 85:15 ratio of ambulances to cars within its divisions to a ratio closer to 65:35. For example, the MRM Leicestershire division now operates 33 ambulances and 20 cars (comprising 3 emergency care practitioner (ECP) and 17 community paramedic cars) at peak periods. This has changed from the original profile of 37 ambulances and 6 cars.

Additionally, the skills mix of those ambulances has changed. For example, ambulances on duty at peak times in the Leicestershire division comprise 23 core staffed vehicles (paramedic/technician or emergency care support workers), and 10 which are intermediate resources (staffed by emergency care support workers or equivalents).

Checklist

- Do you have a clear understanding of the benefits the front-loaded model can bring to your service?
- Have you aligned your clinical governance and staff mechanism with your use of the front-loaded model?

Focus on: The use of technology for improved call handling and dispatch

Within the North West Ambulance Service NHS Trust (NWAS), the four emergency control centres have focused on the use of technology to improve the speed with which 999 calls are answered and translated into an emergency response.

As calls are received through the telephony switch, they are distributed to the first available emergency medical dispatcher (call handler) through the use of an automatic call distribution (ACD) system.

Simultaneously, information related to the caller is extracted from BT and Cable and Wireless databases (Enhanced Information Service for Emergency Calls (EISEC) and Automated Locations for Service Emergency Calls (ALSEC)).

The combination of these two systems reduces the time taken to answer the 999 call and to verify the location of the emergency.

A computer aided dispatch (CAD) system presents the caller information to a resource dispatcher as soon as it is available. In association with an automatic vehicle location system, the CAD then identifies the nearest available emergency response to the location of the incident and provides this information to the dispatcher. The combination of these two systems reduces to a minimum the time taken to identify the most appropriate ambulance response to any incident.

Data transfer systems enable the information about an incident to be transmitted to an ambulance service response without delay. This information is sent to a data screen in the cab of an ambulance or rapid response vehicle and simultaneously populates a vehicle satellite navigation system. The combination of these two systems ensures that operational ambulance personnel have information about the location of an emergency and directions to that location in as short a time as possible.

The use of geo-fencing linked with the automatic vehicle location system and the CAD system ensures that responders are recorded as being at the scene of an incident as soon as they arrive.

Overall the harnessing of technology systems and their incorporation into the call handling and dispatch process have helped to contribute to a considerable reduction in emergency response times in the North West.

Focus on: IT solutions – performance improvement software

Great Western Ambulance Service NHS Trust (GWAS) was formed on 1 April 2006, following the merger of services in Avon, Gloucestershire and Wiltshire. A workforce of about 1,000 front-line staff and a fleet of some 100 ambulances and 70 response cars provide ambulance cover across the region.

The creation of GWAS and rationalisation of the three command and control systems coincided with increased regulatory emphasis on meeting target response times.

The underperformance challenge

The GWAS trust has taken a new approach to performance, as it used to be one of the worst performing ambulance services in the UK.

A key concern was its poor response to Category A callouts. Performance had dipped to just 68 per cent of emergencies being reached within the target eight minutes against the old measure of clock start.

At the time, estimated figures measured to the new 'Call Connect' standard were just 54 per cent.

Taking a new approach to underperformance

Consultancies were appointed to implement their performance software within GWAS, and to provide advice and support.

Use of the performance software has given GWAS a performance management framework which helps to identify issues that slow down response times, and to focus on ways of improving them.

All levels of the organisation make use of this software. Three tiers of weekly meetings cover different levels of staff, from trust directors and general managers to supervisors and operational teams.

The system was up, running and producing results within a few weeks, without any requirement for operational staff to change the ways they record data. The approach draws on information extracted from existing systems.

GWAS will continue to use the software on its own in the longer term for continued performance improvements.

Using performance software to achieve continuous performance improvement

- The performance software enables GWAS staff to analyse every aspect of performance, from how emergencies are handled in the control room to the time it takes the assigned team to reach the scene, get the patient to hospital, complete the handover and be ready for the next job.
- The information helps each team to make informed decisions about where the bottlenecks are and what ideas may prove beneficial, such as changes to where vehicles wait or the provision of specific training.
- Results are immediate – an idea can be tried for a week or two and the outcome is available for initial discussion by the next week's meeting.

Key benefits

GWAS's responses have improved every month since it began using the software, and its results are now in line with other trusts.

- Use of the software achieved immediate improvements in performance, and the response rates achieved by GWAS have continued to rise steadily since its introduction to management meetings in July 2007.
- The latest performance figure against the new 'Call Connect' standard is 71 per cent – a huge improvement over the rating of 54 per cent prior to this work.
- GWAS is set to replace its weekly information updates with a real-time feed, enabling minute-by-minute monitoring of performance and immediate action to deal with any problems.

Checklist

- Are your staff well informed about the drivers of performance?
- Is your performance software user-friendly enough for everyone in the team to use it?
- How do you use performance information to understand where to invest and prioritise funding?
- How do you use performance information as evidence to support positive change in your trust?

Additional information

For information on work being taken forward to develop ambulance staff as part of implementing ***Taking Healthcare to the Patient***, please visit: www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4114269

For further information about the ambulance service, please visit: www.dh.gov.uk/en/Healthcare/Emergencycare/Modernisingemergencycare/DH_4063824

Many thanks to all who have contributed pictures and case studies to this guide.