Chapter 8
Ambulance Service Modernisation

Robert Till and Anthony Marsh

Introduction and Background

A significant proportion of work the modern ambulance service undertakes involves the treatment of patients at the scene of an accident or illness and if necessary the conveyance, where appropriate of the patient, to the nearest appropriate acute facility able to deal with the patient's condition. However, an increasing proportion of work involves the stabilisation of patients, delivery of more advanced treatment and complex decision-making based on comprehensive patient assessment. Ambulance services engage fully with acute and community health professionals, working alongside them to ensure rapid and effective treatment of patients in the most challenging and life-threatening situations.

In addition to modernising clinical practice, ambulance services have to reassess and modernise their finances. The King's Fund and Institute for Fiscal Studies (Appleby et al. 2010) have estimated that, with near static real-term increases in funding, the National Health Services (NHS) will have to get 4–6% more for its money year on year to do little more than maintain existing standards of care (in the face of inflation and rising demand). In 2012, Andrew Lansley, the then secretary of state for health, reaffirmed the previous government's commitment to making efficiency savings totalling £ 20 billion by 2014. Quality, innovation, productivity and prevention (QIPP) is a large-scale transformational programme for the NHS,

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P. Wankhade, K. Mackway-Jones (eds.), *Ambulance Services,*
DOI 10.1007/978-3-319-18642-9_8

involving all NHS staff, clinicians, patients and the voluntary sector. It will improve the quality of care the NHS delivers whilst making up to £ 20 billion of efficiency savings by 2014–2015, which will be reinvested in frontline care.

At the end of 2012, the Office of National Statistics (ONS) confirmed that Britain's economic growth was broadly flat (Hardie et al. 2013). Ambulance services therefore need to ensure that they find and optimise resources, organisational knowledge and talent. Ambulance services needed to meet the impact of recession and efficient services also needed to be quality services; therefore, effective leadership is critical.

In January 2013, NHS medical director, Professor Sir Bruce Keogh, announced a comprehensive review of the NHS urgent and emergency care system in England (NHS England 2013). The report released in November 2013 acknowledged that the current pressures on ambulance trusts are unsustainable. The ambulance service is still seen as the safety net for patients and increasingly picks up the patients who fall through the net of inadequate urgent and social care. The ambulance service is being asked to develop into the mobile treatment service desired by Keogh but must secure investment to allow the development and transformation into this new role. The ambulance service of the future has an enormous role to play in helping save the NHS money. Ambulance services have already started this process by working in collaboration with urgent care providers or providing 111 services, for example.

Organisational Development

An organisational development department plays a crucial role in developing a modern ambulance service. The success of a service rests on its leaders and staff. In order to be successful, an ambulance service must address skill deficits and build talent in order to future-proof it. This success can be measured in several ways, including improved quality of patient care, improved clinical outcomes and improved staff satisfaction surveys.

In the face of continuous change, an ambulance trust has to be flexible, offer employee and patient satisfaction, incremental development, and it should have the ability to attract and retain talent and strengthened ability to meet challenging new targets. Continuous change, is a given, in any progressive organisation that wishes to adapt to meet emerging needs. Appointed and current leaders need to have the strength and courage to lead innovative change that inspires and motivates staff to adopt new ways of working.

Key appointments within a trust need to focus on encouraging applications from leaders who can support the continuing development of the environment and conditions for transformational change that reward creativity and innovation. Ambulance trusts need to foster, nurture, recruit, train and retain staff at all levels. Staff need to be encouraged and empowered to exercise leadership with increasing confidence. The national QIPP agenda clearly summarises the challenges NHS leaders face. To achieve this, staff must be empowered to come up with the right ideas, and they must have the knowledge, skill and will to meet quality standards.

A key finding in the independent inquiry into Mid Staffordshire NHS Foundation Trust (Francis 2013) was that organisational culture is the key to providing good care for patients by providing a supportive working environment for staff:

> If there is one lesson to be learnt, I suggest it is that the people must always come before numbers. It is the individual experiences that lie behind statistics and benchmarks and action plans that really matter, and that is what must never be forgotten when policies are being made and implemented. (Robert Francis QC)

Understanding the organisations' culture is a vital part of the strategic process as it allows us to become aware of our perceptions, influence the way we process and interpret our experience, both as individuals and members of an organisation. Ambulance services must, through a whole system approach, seek organisational change defined as new patterns of action, belief and attitudes amongst staff.

In order to be effective, it is imperative that there is a whole system approach. This approach will ensure that any programmes, interventions or processes are aligned to a trusts vision, values and strategic goals. The focus will be on a joined-up plan which is fair, equitable, inclusive and transparent and which drives the desired organisational culture.

One of the key priorities an ambulance service has to consider is their workforce. We have highlighted some of the key elements next.

Workforce Planning

Having the right roles populated by people with the right knowledge, skills and attitudes is vital to organisational success. Ambulance services are presented with many challenges including varying physical environments, patient demographics and ways of working (born from historical services).

Workforce planning needs to be strategically positioned and informed by and aligned to the Trusts Integrated Business Plan (IBP). The process involves forecasting, on a 5-year rolling basis, area by area, likely presenting conditions and emergencies of patients and the roles, competencies and skills needed to respond effectively. This forecasted plan will inform the organisational learning needs analysis and plan to ensure that we have the capability and capacity to respond.

Succession Planning

Succession planning can be broadly defined as identifying future potential leaders to fill key positions. Once key roles and competencies have been identified through workforce planning, there needs to be an effective process through personal development reviews (PDRs), team and personal development plans (PDPs) and effective knowledge management, to ensure the right people are in the right posts.

To ensure a continuous flow of staff, there needs to be process in place from a number of pipelines into a trust. These can include work experience, engagement with universities, schools and colleges, internal and external career events and, more recently, being a key stakeholder in a university training college.

Going forward, Health Education England (HEE) must take more responsibility for working with trusts to develop national workforce planning and ensuring that this is funded appropriately and not left to local regional ambulance trusts to fund. There is a need to ensure that existing staff are developed to take on new roles and some of this must be provided by HEE and their local education and training boards.

Filling senior roles in ambulance trusts, especially operations roles and CEO posts, is an ongoing problem and more must be done to offer development opportunities for talented staff to move into these roles in time.

Improving Clinical Care and Outcomes for Patients

Paramedics are called to attend patients with critical medical conditions or traumatic injuries as well as primary care complaints such as patients with infections, rashes and long-term care needs. Ambulance services have adapted and are introducing new systems to ensure patients get the best level of care. This is demonstrated in the next few subsections.

Critical Care

Ambulance services play a vital part in the successful treatment of patients experiencing a stroke, trauma, heart attack or cardiac arrest. In recent years, the networks for these patients have identified the most appropriate hospitals for treatment, which may not always be the closest healthcare facility. Ambulance services have had to adapt by giving frontline clinicians extra training to be able to facilitate the longer transfer times. Ambulance services may also need to consider adjusting resourcing levels in order to continue to provide quality patient care as the extra journey time to hospital impacts the amount of vehicles that are available to respond to emergencies.

Paramedics are trained to ensure that patients receive optimum clinical care and are conveyed to the most appropriate treatment centre for their presenting condition. In order to be able to care for patients during longer transfer times, paramedics have been given extra training and equipment. In trauma cases, this equipment includes extra drug therapies, intraosseous devices, dressings which contain clotting agents and pelvic splints.

Paramedics based in the ambulance control room maintain contact with crews to offer clinical advice, give support regarding the treatment of patients and advise on the most appropriate destination hospital. They are also able to put crews in contact with an experienced pre-hospital doctor who will be able to speak to them, offering advice and support 24 h a day, 365 days a year.

An example of a critical care network is the trauma network. Patients are identified as needing to attend a specialist trauma centre by the use of a 'trauma tool scoring system'. Injuries and vital signs fall into various categories which will decide which type of hospital a patient is taken. This could be a regional trauma centre, trauma unit or local hospital.

When a patient is considered to be 'trauma tool positive', the ambulance crew will contact the trauma desk in the emergency operations centre (EOC). This desk is staffed by senior paramedics who will have expert advice to offer both clinically and in regard to where the patient should be taken. As this desk coordinates trauma within the whole region, they have update information on where recent patients have been taken by other ambulance crews. This is important as not to overload the same trauma centre with multiple patients at the same time. Clinicians on scene, hospital trauma team leaders and the trauma desk are able to undertake a conference call to determine the best care for the patient.

To deliver the highest level of care to trauma patients, medical emergency response incident teams (MERIT) have been created. The team, made up of an experienced pre-hospital doctor and a critical care paramedic, are available 24 h a day. During daylight hours, the team crew an air ambulance, during the hours of darkness they will respond using a land vehicle.

Primary Care

At the other end of the spectrum, ambulance services work closely with primary care to reduce the number of patients conveyed to hospital by ambulance. Provision of a high standard of diagnostic equipment allows paramedics to assess and diagnose a number of conditions which can be treated either in the home or through the referral of a patient to a minor injury unit or walk-in centre. In some areas, community paramedic schemes are working alongside general practitioners (GPs) to devise and deliver care plans which allow patients with long-term conditions or at the end of life to remain safely within their own homes.

Ambulance services have traditionally always triaged emergency calls to enable control staff to prioritise calls. This triage is now developing and in order to provide the most appropriate care for the patients an ambulance response is not always required.

Trained call assessors use a medical triage system to categorise a call. The highest priority of call will require the ambulance service to arrive on scene within 8 min 75 % of the time. If the triage highlights the patient does not require an ambulance response, then alternate pathways of care will be suggested. The patient may be asked to contact their GP within 24 h or perhaps make their own way to an emergency department.

In some cases, the patient may be put through to or called back by a paramedic or nurse to further assess their needs. This clinical input may lead to an ambulance being sent to the patient, but within a given timeframe rather than immediately with the use of blue lights and sirens.

This system has now been adopted by the 111 service of which some ambulance services are the provider. 111 is a service which identifies and puts patients in contact with the most appropriate care for their needs. Using the triage system, patients will be signposted to local healthcare providers such as out-of-hours services, dentists, community care and, in the event of an emergency, the 111 service will automatically create and send an emergency call directly into the ambulance services dispatch system ensuring there is no delay.

Paramedic Education and Development

In recent years, paramedic education has moved into higher education with foundation degree-level qualifications, structured and intensive post-qualification training and continued professional development. Providing paramedics with such high levels of training will undoubtedly assist in ambulance services continuing to provide the best clinical care possible. Through the increased skills of our paramedics and better integration with primary care, ambulance crews are able to diagnose and treat more patients at the scene. Between 2009–2010 and 2012–2013, West Midlands Ambulance Service reduced the number of patients conveyed to hospital from 70% to less than 58% and anticipates reducing further to 50% by 2015 (West Midlands Ambulance Service, WMAS 2013).

The Paramedic Evidence-Based Education Project (PEEP) study conducted by the Allied Health Solutions recently (Lovegrove and Davis 2013) was carried out to develop the strategic direction of the standardisation of education and training for paramedics. It concluded that there should be a standardised approach to education and training for paramedics with a nationally agreed approach to commissioning and funding. It identified the need for paramedic students to have access to bursaries in-line with the students of other nonmedical professions. The report suggests that the academic award for paramedic preregistration should be reviewed and brought in-line with allied health professionals leading to the discontinuation of the current foundation degree. The report reviewed the current content of paramedic training and suggested knowledge and skills could be enhanced by including training in clinical leadership, end of life care, integrated care and dementia and mental health awareness. In order to carry this out, the report highlights the need for HEE and NHS England to appoint a national lead for education and training of paramedics.

Need for Information, Demand and Performance Mapping

Analysing and predicting an ambulance trusts demand and performance is essential to developing ways to improve the service to patients. Creating a specialist department consisting of business intelligence developers, informatics and operational

Fig. 8.1 Performance cell process. (Source: West Midlands Ambulance Service 2011)

managers is one way of doing this. This department is referred to as the performance cell in this chapter.

This hybrid of skills allows for data-driven decisions to be made with the security that actions could be tested before they are fully deployed to benefit patients. It enables service delivery managers to have the confidence to move forward with plans that will deliver not only real results to the level of care for patients but also on the most efficient basis possible (Fig. 8.1).

Ambulance services have advanced information systems which collect data by time and date and can predict emergency activity with a high degree of accuracy. The sharing and use of this data is invaluable in capacity and resource planning to ensure that emergency departments are equipped to cope with demand.

The performance cell provides feature-rich information to the service delivery team to enable them to develop and refine the operational model to provide a high level of stable performance. Its aim is to help model future service developments to ensure an ambulance trust becomes a high-performing, cost-effective and stable NHS Foundation Trust. It has four key components (see Fig. 8.2):

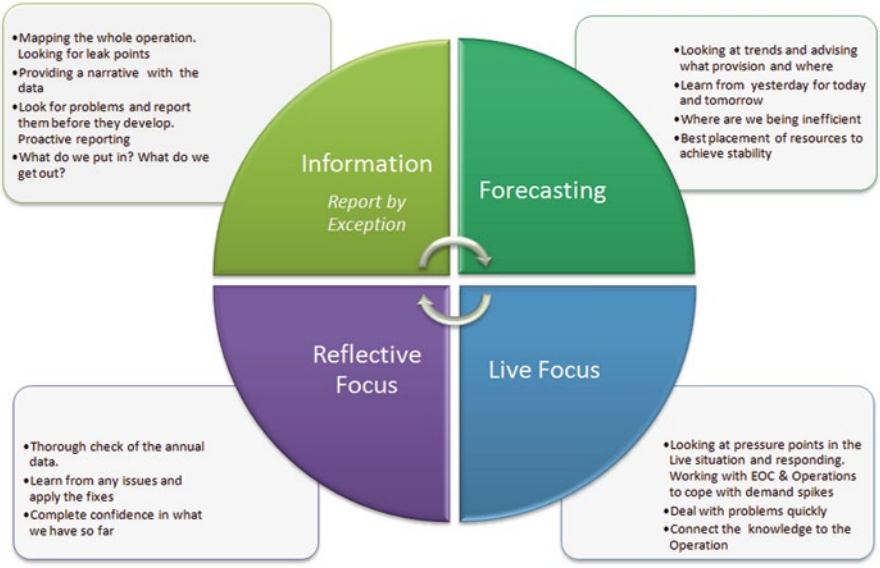

Fig. 8.2 Performance cell key components. (Source: West Midlands Ambulance Service 2011)

1. *Information*—Once the information has been produced, it is used to identify and rectify problems with the operating model that require short- to medium-term fixes. This includes issues such as reduction in lost hours, delays at hospital, efficiency metrics and national clinical indicators.
2. *Forecasting*—The performance cell produces demand profiles that allow service delivery to place on duty the correct level of resources and ensure a safe and high-performing trust. This resource plan is dynamic and takes into account seasonal variation in activity and special events.
3. *Live focus*—This information includes the live feed of activity, performance and resource information from the computer-aided dispatch system (CAD). This information is displayed on large screens to ensure visibility of key trust information that may require immediate action in the event of problems. This includes activity, resource levels, hospital delays and meal break allocation.
4. *Reflective focus*—The performance cell works closely with other departments to ensure that lessons are continually learnt and we are able to develop a high performance service. This is done through accurate ongoing analysis of the function of the trust and the development of an evidence-based decision-making model.

Outcomes of the performance cell are described below:

Results

The production of high-quality and consistent reporting and analysis measures allow for evidence-based decisions to be made that can ensure operational stability and improve performance in service delivery. The development of an accurate demand forecast for ambulance services and introduction of demand-focused rotas result in resources being on duty at times of peak activity and increased efficiency that results in a reduction in the overtime costs within a trust. Bringing together the expertise of the analysts with the data and experienced senior operational managers means an ambulance trust can react to changes in the demand profile quickly and effectively and can ensure both a safe and high-performing service are maintained.

The information and analysis processed by the performance cell has to become an intrinsic part of a services decision-making process. Any changes to an operating model should be completed following detailed analysis of the effects by the performance cell and review of the effects after the changes have been made. This change in culture will allow for significant changes to the model to be completed safely and will not risk to patient care.

Cost Effectiveness

Through the output of accurate data and forecasting intelligence, ambulance services can have the confidence in utilisation and activity modelling. This allows a

more resilient response model as well as achieving a reduction in resources required through more efficient use of those available and the targeting to times of high demand. The data and reports produced have been used to identify new service delivery models and efficiencies that can be achieved safely and alongside improvements in performance. Detailed analyses and reporting of a set of key efficiency measures means that an ambulance trust is able to confidently develop its plans to ensure it can achieve the savings it requires with a 5-year plan in place. The result of these services offered by the performance cell will mean the saving achieved by other departments will be far higher than the cost of the cell and can be achieved in a safe manner.

Urgent Care: The Future

In addition to the work that is currently being undertaken, there are other opportunities for ambulance services to contribute to the improved functioning of urgent care systems. Paramedics are able to triage effectively and have the skills and training to treat a wide range of illness and injury. Several ambulance services have had success with mobile paramedic units that can be located in areas of high footfall and incidence of injury—for example a city centre on Friday and Saturday evenings. Through this experience, it is clear that paramedics could be well placed to provide minor injury and urgent care services in alternative locations alongside other health professionals.

The Keogh report (2013) proposes a fundamental shift in the provision of urgent care and advocates a system-wide transformation over the next 3–5 years, with more extensive services outside hospital and patients with more serious or life-threatening conditions receiving treatment in centres with the best clinical teams, expertise and equipment.

The report calls for the development of 999 ambulance services so that they become mobile urgent treatment services, noting that paramedics now have the skills and equipment to deliver treatments that would only have been done by doctors 10 years ago. The report also highlights that by working closely with improved community services, ambulance staff can safely manage many more patients at scene by either treating them in their own home or referring them on to other appropriate community-based services. The report adds that there are also opportunities for extending the training of paramedics to allow them to assess, prescribe for and manage patients with exacerbations of chronic illnesses, working more closely with GPs and other community health services.

Operating Model

As previously mentioned in the chapter entitled 'Dealing with Austerity', some ambulance services have chosen to completely change their operating model. This move has seen traditional ambulance stations be replaced by large central reporting hubs which facilitate crew change over, fleet maintenance, local management and training, and community ambulance stations, which is where a community paramedic is based. These can often be found in fire stations, police stations, medical establishments and shared office buildings.

This change in operating model was developed to positively improve the following:

- Improved working conditions with better facilities in each hub location
- Reduction in health and safety issues
- Improved Disability Discrimination Act 2005 compliancy

The organisation will also be a significant beneficiary (see below):

- Maximise vehicle cleanliness
- Minimise cross-infection
- Improvement in medicines management
- Maximise unit hour utilisation (UHU) through effective readiness
- Minimise unit hour (UH) wastage, whilst resources are in operation
- Maximise vehicle availability
- Minimise the critical vehicle failure rate (CVFR), fleet and equipment related
- Reduce costs by reducing the number of locations medical equipment/consumables and materials are stocked and sorted
- Ensure vehicles are only stocked to a required standard and level
- Provide assurance regarding asset control and medical equipment servicing routines
- Provide readiness arrangements for major incident assets and ensure ancillary staff exists to deploy and manage the physical assets whilst at an incident site or in training mode

This operating model works in conjunction with a system status management plan. This plan is produced by collating historical data regarding 999 calls, then by applying a formula the increased activity is accounted for. The end result is a prediction of the number of incidents which require responding to in a specified area. The plan can be fixed (areas will always present in the same priority) or dynamic (priority changes every hour). This gives staff in the control room an order to which to send vehicles to standby in priority of the predicted busiest areas. This will ensure that the time it takes to respond to life-threatening 999 calls is kept to a minimum and therefore improving clinical outcomes of patients.

By having the large central hub facilities and smaller community stations, ambulance crews do not have to be returned to a specific station and therefore the ambulances should be in the correct places to respond to 999 calls.

Located at the central hub is the 'make ready' facility which employs Ambulance Fleet Assistants (AFA). These staff are responsible for the cleaning, restocking and checking of vehicles before they are used for frontline duty. This role enables vehicles to turn around more quickly and therefore be available more quickly to respond to 999 calls. Traditionally, paramedics have had to check and stock their ambulance at the start of the shift, which can take 20–30 min. Under the 'make ready' scheme, when an ambulance crew report for duty they will have a fully stocked ambulance available to them that has been checked and can be used immediately. Likewise, if during the shift the ambulance requires restocking or cleaning because of an incident they have attended, instead of that ambulance being unavailable whilst the crew clean and restock it, the AFA will have prepared a spare ambulance, so the crew simply report back to the central hub and exchange vehicles.

Experience and Expertise in Ambulance Services

Ambulance services have developed regional, robust mechanisms for receiving calls, triaging them quickly where necessary and sending speedy responses. Call handling and response times are amongst the best in the world. With this technology and training, ambulance services are well placed to contribute more to the development of both NHS 111 and out-of-hours services, ensuring the best use of technology in the streamlining of these services.

The ambulance service is the most trusted brand in the NHS and has an excellent reputation and high satisfaction rates are expressed by our patients. The ambulance service has much more to offer in the future if commissioners can be convinced to invest in it.

Conclusion

The Association of Ambulance Chief Executives (AACE) offers an infrastructure to move forward as a sector and take a national view in a way that is perhaps unique across the NHS. They have the ability to share best practice, agree and deliver changes for the benefit of patients and the promotion of equality across all ten ambulance trusts and therefore across the country. Similarly, the way in which they work together to provide national resilience and emergency preparedness demonstrates a high level of national uniformity and resilience which could be well used to quickly implement high impact changes in the urgent and emergency care arena.

At a time of reduced public confidence in the NHS and confusion about the services that are available, ambulance services continue to be held in very high regard by the public. Patient surveys, general feedback and stakeholder engagement all show that ambulance services and paramedics as a professional group are trusted to deliver high-quality patient care and to help patients effectively navigate around

the healthcare system. This position could be exploited by ensuring that ambulance services have, and are recognised to have, a central and pivotal role in agreeing and implementing improvements and developments across the spectrum of urgent and primary care, including out of hours, NHS 111 and the provision of care closer to home to avoid unnecessary hospital admissions.

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