

Chapter 4

Management of Emergency Demand

Bob Williams

Introduction

There is very limited academic work to explain why emergency ambulance demand continues to rise despite the changes to process, access and the public education campaigns designed to reduce it. In 2005, a bold strategic change for the ambulance service in England was outlined in the Department of Health *Taking Healthcare to the Patient* (Department of Health (DH) 2005). This proposed a raft of measures including changing the start point at which response times were calculated, reducing the number of services from over 30 to 12 and significantly up-skilling the service providers to provide a greater range of ‘hear-and-treat’ and ‘see-and-treat’ options in conjunction with significant change across the health sector.

All of this served to make the reduced number of much larger ambulance services far more efficient and effective in undertaking their core role, as illustrated in the follow-up paper *Taking Healthcare to the Patient 2* by the Association of Ambulance Service Chief Executives (2011). However, it has not slowed the rate of increase in demand for services in the emergency and urgent care setting at all. In fact, the evidence of activity levels over the past 8 years is that demand is consistently rising at an average of over 6.3% per annum nationally demonstrated in the annual national statistics return for ambulance services (Health & Social Care Information Centre (HSCIC) 2013; Fig. 4.1).

B. Williams (✉)
North West Ambulance Service NHS Trust, Ladybridge Hall, Chorley New Road,
Heaton, BL1 5DD Bolton, UK
e-mail: bob.williams@nwas.nhs.uk

999 calls to English Ambulance Services

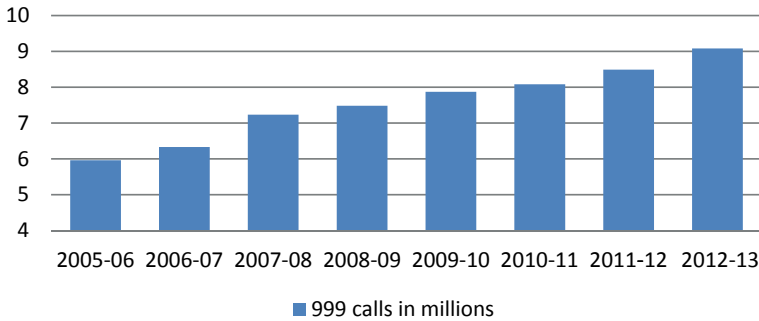


Fig. 4.1 Showing annual increase in 999 ambulance emergency calls in England. (Source: Department of Health (DH) 2012)

Evidence

So the obvious questions are why and what can be done about it? A literature review of potential contributors to rising demand for 999 ambulance services was undertaken for the National Director of Operations Group of the UK ambulance services in late 2013, a plethora of issues emerged. Table 4.1 below identifies the various factors that have been seen to be involved in the rise of service demand across the UK over the past 5 years.

This leads on to a different but challenging question—which demand are we talking about? Intellectually and strategically, we are talking about the long-term underpinning factors that affect overall demand rises for ambulance services. There are clearly many and have a number of interrelated aspects of management that can be applied (but only in cooperation with the rest of the health system and society in general). There is also the immediate tactical response to the daily demand which fluctuates hour by hour and in a longer seasonal cycle. This depends on a host of additional circumstances such as weather, hospital factors (bed availability, emergency department demand, internal processes) and primary care practices (surge created by general practitioner referrals for ambulance transport to hospital attendance).

Each of these subjects could be debated and discussed separately and there is a huge amount of anecdote and variation of opinion. However, in reality, the management of daily emergency demand is much more than an operational process matching resource to demand that is particular to the demographics, geography and funding available at local level. There are large number of documents available both in the UK (Hughes 2010; Pre-Hospital Emergency Care Council 2010) and internationally (McLeod et al. 2010; Zuidhof 2010) that set out some general guiding principles as to how to improve the planning and management at this level.

Table 4.1 Factors impacting rise in demand of ambulance calls. (Source: National Ambulance Director of Operations Group 2013)

<i>Population characteristics</i>	
Age/ageing population	Disproportionate use of ambulance service by older adults (increased chronic conditions, comorbidity, polypharmacy) Some services report increased use by younger age groups, for example, males aged 20–29 Falls—ageing population only accounts for small proportion of growth in demand Prevalence and number of long-term conditions (LTCs) increase with age
Population growth	Increased life expectancy in developed countries Increased birth rate and immigration in larger cities Growth in demand is rising faster than population growth
Population density	Demand correlated with population density Demand and reported inappropriate use higher in urban than rural areas
Deprivation	Demand correlated with deprivation
Car ownership	Lack of car linked to increased use of ambulance service Lower car ownership in urban areas and deprived areas
Migration	Lack of information/understanding of services available, lack of transport, lack of translation/interpretation Health risks associated with poverty and substandard housing Higher rates of some conditions (e.g. TB, HIV); specific health issues for refugees and asylum seekers
Homelessness	Rough sleeping and hidden homelessness increasing in England Greater use of ambulance service and emergency departments by homeless due to greater health needs for homeless (and also those living in substandard or overcrowded housing) and barriers in accessing primary/community care, lack of tailored services
<i>Illness characteristics</i>	
Triage/acuity of calls	Increasing proportion of potentially life-threatening calls
LTCs	Increasing number of people with LTC and multiple LTCs High comorbidity between LTC and mental health conditions
Specific conditions	Increase observed in number of calls related to breathing problems, chest pain, unconscious, traumatic falls/back injuries, psychiatric, falls (non-traumatic)
Alcohol	Alcohol-related calls account for an increasing proportion of 999 calls
<i>Societal changes</i>	
Changing expectations	Expectation of immediate and convenient access to assessment and treatment Expectation that arrival by ambulance will result in quicker treatment in the emergency department Changing opinions regarding what constitutes a medical emergency, and perceptions regarding what symptoms are urgent or serious Expectation that will receive rapid assessment and treatment from ambulance service and/or be conveyed to emergency department
Reduced social support	More people living alone and/or away from family More women employed, so less able to look after relatives
Technology	Increased technology and access to information—public more aware of potential symptoms Increased mobile phone ownership—may have lowered threshold for calling 999

The intention in this chapter is, rather, to concentrate on the strategic long-term demand for ambulance services and to promote a dialogue to share potential resolutions. So, are the UK ambulance services unique in experiencing these demand issues? Absolutely not. Not only are increases in demand being seen and discussed within the ‘Anglo-American’ model of ambulance services (Department of Health (DH) 2009; Queensland Ambulance Service 2007; Lowthian et al. 2011; IBISWorld 2014), this is also a point of debate in the ‘Franco-German’ model (Al-Shaqsi 2010) as well as further afield in Japan (Ohshige et al. 2003).

Frustratingly, two things emerge from what documentation there is. Firstly, that the underlying increase is universal with a number of similar themes emanating from socio-demographic changes of ageing and multiple illnesses combined with an urbanisation and fragmentation of communities. Secondly, that despite this being noted and documented consistently for the past 10 years across the world, there is still incredibly little clinically evidenced data for either explaining or managing the demand factors outlined above.

Analysis and Discussion

So what to do? In order to engage in a meaningful debate, some preconceived ‘fixed points’ and some underlying cultural absolutes will need to be set aside. Whether the ambulance service operation is based on the Anglo-American or Franco-German model, whether it is commercial or public funded, whether it operates as part of the wider emergency services system or the health system does not matter. In all cases, the demand is rising because of the factors outlined earlier in this chapter. The speed of action and combination of viable solutions may well be different depending on the system but the fundamental issues are the same. Where does the demand need to be managed? How is it managed? What are the implications?

Where does the demand need to be managed? At source would be an obvious answer. But where is that? Ideally, this is managed at the national level with a central message to the population about what the ambulance service is for and how it fits into the wider emergency services and health systems. If the messages are not clear or consistent and an expectation for inappropriate ambulance response becomes ingrained, then the first battle is lost. This certainly seems true in England at present where the underpinning principle of the National Health Services (NHS; being free at the point of entry for all) is taken as a right for everyone to call the ambulance service with the slightest ailment. This is often in addition to calling the telephone helpline service and/or calling a general practitioner.

So a question that should be asked first is what is the ambulance service for? In the Franco-German model, this is clear. The service is staffed with physicians and/or nurse clinicians and the intent is to assess, treat and discharge the majority of patients at scene. Emergency and urgent health care are treated separately with pre-established transportation regimes. In the Anglo-American model, the service is staffed with paramedics (of varying levels of education and qualification) who are

responsible for initial assessment and treatment prior to referral or transportation to a hospital. The mix between emergency and urgent care is fluid. The demand on a daily basis can be managed to some extent by the enhancement of 'hear-and-treat' and 'see-and-treat' activities through increased staff education and use of triage software's, but this will not affect the underlying increases but will just change the transportation consequences.

What is clear (in the Anglo-American models of care in particular) is that demand is continuing to rise predominantly because of an increase in elderly comorbidity, increase in socio-domestic issues (alcohol and mental health driven) and increased use by the rest of the healthcare system (hospital transfers/diversions and primary care referrals). Associated with these conditions is an additional factor in England where there is significant difference in the acuity of patients between the North and South of the country due to the underlying lower health and wealth in the North (Public Health England 2011).

Which brings us back to my earlier question about what is the purpose of the ambulance service? Have we reached a point in time in the UK where a two- or three-tiered system may be required? Trauma responses are now of such small volume (in comparison to the overall activity) that they could potentially be handled by a small expansion of the hazardous area response team/urban search and rescue (HART/USAR) model that has been in place for some time with a paramedic-based skill set with dedicated trauma paramedic ambulances in order to retain competence. The significant majority of the current workload is medical, social and minor injuries and this may be best looked after by an ambulance service remodelled to mirror the principles of the Franco-German model to assess, treat and discharge at scene. This could be done by continuing to increase the education and skill sets of paramedics as well as introducing the nurse/clinician skill mix as in Europe. The third element is the 'transportation' requirements of the rest of the health system both from primary care settings and the increase in inter-hospital transfers resulting from reconfigurations of pathways of care and reductions in capacity which could be done by a separate cohort of resources, potentially as a step-up/step-down model for the other tiers.

Whatever the model is, there is a need for a national understanding with consistent messaging about what the ambulance service is for and how it fits in to the overall emergency and healthcare systems. This needs to emanate from the central government. Too much conjecture and uncertainty about the future format and function of the ambulance service that arises because of conflicting messages (around potential mergers with fire and police services and the integral role within the emergency and urgent healthcare system outlined in the Keogh report, NHS England 2013) is creating confusion. This lack of clarity is currently resulting in the ten English ambulance services determining their own visions and starting to go down very different avenues for future models of delivery. Whilst this may be entirely appropriate in terms of the local demographics, geography and health system infrastructure, it could have consequences for national cohesion in terms of education syllabus, transferability of staff and the resilience of national ambulance service infrastructure.

How can the demand be managed? Two recent papers in the UK (Strategic Health Authorities 2009; Imison and Gregory 2010) have both established the same requirement for effective management—that it can only be done in coordinated collaboration with the rest of the system the ambulance service operates within. There are two principle reasons for this. Firstly, that the paramedic skill set of the Anglo-American model is based on onward referral for the most part—thus there need to be services available for referral to. Secondly, because a significant proportion of the ambulance demand is driven by the failure of healthcare system itself (through a perceived lack of access to primary and alternative care by the public) and transport requests within the healthcare community, these must be addressed.

One simple, but potentially controversial, factor is the current use of the 999 system by the public. The intention was for 999 to be used for emergencies only. But just like the ambulance service, the term emergency has drifted far from its origins and has now become a catch-all for people who do not know how to or cannot be bothered to sort their own care issues out. So how can emergency demand be managed when an emergency is in the eye of the caller not the service provider? With the implementation of the NHS 111 number for all urgent care requirements, there is the potential to re-educate the public about the use of 999. So all health-related issues could be fielded through the 111 system (as the police are doing with 101) and only potential tri-service emergencies, such as road traffic collisions or house fires, fielded through 999. Would that delay a response to a cardiac arrest? Potentially no! When 999 is dialled, the first answer is from the telephone service operator who asks what number is being used for the call and which service is required before connecting to the ambulance service that then goes through its protocol for location, number etc. When 111 is dialled, the call is connected immediately to the health system and if cardiac arrest is identified, the local ambulance service gets the incident directly to its dispatch station with the location verified. A logical model for the ambulance service would be to manage the 111 system as the single gateway for immediate health concerns and utilise the full potential of ‘hear-and-treat’ as originally envisaged within *Taking Healthcare to the Patient* (Department of Health (DH) 2005). This would potentially reduce the number of immediate ambulance responses significantly.

The second element to managing the demand is what happens when the ambulance service do attend a patient. Again, the same principles of ‘see-and-treat’ should be explored to the full. The question for the future is can this be done with an extended paramedic knowledge base if enough alternative referral pathways are available or does it require an adjustment to incorporate the Franco-German modelling with nurse and/or clinician skill sets to treat and discharge?

What are the implications? Whatever is done to manage the demand as ambulance services see it, there will be a consequential divergence from current public expectation. This will have to be handled within the context of the overall changes to the healthcare system in England but absolutely needs a national education programme to support it.

For the past 10 years, the ambulance services in England have been developing their staff and their process to follow the principles of *Taking Healthcare to the*

Patient. This has led to something of a divergence between the established existing workforces, who are in-house ‘trained’ within a command and control culture, and the emerging workforce, which is Higher Education Institute (HEI) educated and asked to take individual accountability for decisions taken within the scope of their practice. A significant part of the demand management opportunity rests entirely within the ambulance service itself or more precisely with the decision-making capacity, capability and confidence of its predominant paramedic workforce. It is also a logical consequence that if the function of the ambulance service is to change, then the likelihood is that form change will follow to ensure the service is efficient and effective.

Conclusion

In England, there has been a continual rising demand for ambulance services created by a combination of elderly comorbidity, socio-domestic issues and use by the rest of the healthcare system. This, combined with a current lack of clarity from the national departments about the future role and format of the ambulance service, has resulted in a lack of public awareness and is resulting in divergence of service provision at regional level. The current operational model, skill mix and resource funding within the English ambulance service is incompatible with the public expectation and long-term activity modelling.

With the most significant change to the NHS healthcare system in a generation currently taking place, there is the opportunity for the ambulance service to play a central, constructive role in helping the transition succeed. To do that, there needs to be central recognition that the ambulance service is a fundamental part of the NHS dealing with the medical and social demand as its core business now, as it is in Scotland. The ambulance service still needs to retain a core ability to respond to trauma and major incidents coordinating and cooperating with the other blue light services, but separate from them. There needs to be open debate and honest discussion about the emergency demand requirements being made on the ambulance service so that the correct education, skill sets, operational models and functionality can be identified for the next 10 years.

References

- Al-Shaqsi, S. (2010). Models of International Emergency Medical Service (EMS) systems. *Oman Medical Journal*, 25(4), 320–323.
- Association of Ambulance Chief Executives. (2011). *Taking Healthcare to the patient 2: A review of 6 years' progress and recommendations for the future*. London: AACE.
- Department of Health (DH). (2005). *Taking healthcare to the patients: Transforming NHS Ambulance Services*. London: Department of Health.

- Department of Health (DH). (2009). *Tackling demand together: A toolkit for improving urgent and emergency care pathways by understanding increases in 999 demand*. London: Department of Health.
- DH (2012). <http://www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators/ambqi-2012-13/>
- Health & Social Care Information Centre. (2013). *Ambulance Services, England 2012–2013. National Statistics KA34 report*. London: HSCIC.
- Hughes, G. (2010). The strategic health authorities' emergency services review. *Emergency Medicine Journal*, 27, 2.
- IBISWorld. (2014). *Ambulance services in the US: Market research report*. NAICS 62191.
- Imison, C., & Gregory, S. (2010). *Approaches to demand management: Commissioning in a cold climate*. London: The Kings Fund.
- Lowthian, J. A., Jolley, D. J., Curtis, A. J., Currell, A., Cameron, P. A., Stoelwinder, J. U., & McNeil, J. J. (2011). The challenges of population ageing: accelerating demand for emergency ambulance services by older patients, 1995–2015. *The Medical Journal of Australia*, 194(11), 574–578.
- McLeod, B., Zaver, F., Avery, C., Martin, D. P., Wang, D., Jessen, K., & Lang, E. S. (2010). Matching capacity to demand: A regional dashboard for Canadian ambulance services paper. *Society for Academic Emergency Medicine*, 17(12), 1383–1389.
- Ohshige, K., Masako, I., Kazumitsu, N., Shunsaku, M., & Tochikubo, O. (2003). Quantitative analysis of the demand for emergency medicine in Yokohama City, Japan. *Japanese Journal of Public Health*, 50(9), 879–889.
- Pre-Hospital Emergency Care Council. (2010). *Demand analysis and tactical deployment of Ambulance Services in the National Ambulance Service Southern Region (UK)*. A report for the Pre-Hospital Emergency Care Council & the National Ambulance Service.
- Public Health England. (2011). *Living longer lives*. London: Public Health England.
- NHS England. (2013). *Transforming urgent and emergency care in England: Urgent and emergency care review, phase 1 report*. Leeds: NHS England.
- Queensland Ambulance Service. (2007). *Audit Report-2007*. <https://ambulance.qld.gov.au/index.html>.
- Strategic Health Authorities. (2009). *Emergency services review: Good practice in delivering emergency care*. London: NHS Office of the Strategic Health Authorities.
- Zuidhof, G. M. (2010). *Capacity planning of ambulance services: Statistical analysis, forecasting and staffing*. Masters Dissertation, University of Amsterdam.

Bob Williams is the Chief Executive of the North West Ambulance Service NHS Trust, UK. Bob began his ambulance career at Northamptonshire Ambulance Service in 1985, becoming one of the country's first paramedics in 1987. He subsequently moved to South Yorkshire Ambulance Services in 1990, working in a number of training and management roles. During the early 1990s, he spent 3 years in a hospital management role where he also undertook a master's degree in Business Administration. He later returned to the ambulance service in Derbyshire as a senior manager and helped to introduce AMPDS as the first live service. Following a move to West Yorkshire as a director of service delivery (integrating ambulance operations and NHS Direct services) for 3 years, he went onto private industry as a senior consultant alongside running his own personal training/sport massage business for a year. Bob returned to the ambulance service as deputy chief executive of NWSAS following the formation of the Trust in August 2006, a position he held until taking up the role of acting chief executive for the Trust in November 2012. In October 2013, Bob was appointed as the Trust's chief executive.