



EMERGENCY SERVICES REVIEW

System Resilience: A review of NHS emergency
care performance during recent winters

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Emergency Services Review

System Resilience: A Review of NHS Emergency Care Performance During Recent Winters

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The Emergency Services Review was co-ordinated by
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Office of the Strategic Health Authorities

Thanks go to everyone involved with the project

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The Emergency Services Review has produced a set of guidance and tools. The following publication is part of this series of documents. The publications are:

- A comparative review of international Ambulance Service best practice
- Good practice guide for Ambulance Services and their commissioners
- Good practice in delivering emergency care: A guide for local health communities
- System resilience: A review of NHS emergency care performance during recent winters
- Intensive support diagnostic toolkit: Tools and user guide

These publications are all available in PDF from <http://www.osha.nhs.uk>. Please contact programmes@osha.nhs.uk for hard copies or with any queries.

1. EXECUTIVE SUMMARY

- 1.1 Although emergency care performance during winter 2008/09 followed a similar pattern to previous years, the peaks and troughs in performance were more exaggerated. This was especially the case at the beginning of December 2008 and January 2009, when the Emergency Services Review, commissioned by the Strategic Health Authorities (SHAs) in England, was initiated.
- 1.2 Winter 2008/09 was the coldest in over 10 years and saw an increase in the proportion of emergency cases associated with respiratory diseases. However, performance aggregated across the winter months was relatively good. Between January and March 2009, accident and emergency (A & E) four-hour performance was the highest on record. However, performance within the key winter months of December and January was appreciably worse in 2008/09 compared to earlier years.
- 1.3 Increased demand for emergency care services from category A ambulance incidents was found to be a key driver behind periods of lower performance at A & E departments. Other significant factors found include the prevalence of conditions such as influenza and norovirus in the community and the occupancy rates of acute beds.
- 1.4 This report concludes that the NHS needs to focus on three key issues to further strengthen emergency care system resilience during periods of additional pressure:
 - Improving management of community wide issues, such as norovirus and influenza
 - Improving planning and management of bed capacity and patient flow, especially at times of rising demand from category A ambulance arrivals and general increases in patient acuity
 - Making more proactive use of timely and relevant information on demand and supply-side factors within emergency services (e.g. bed occupancy levels)
- 1.5 It is also recommended that:
 - The Emergency Services Review (ESR) and the Intensive Support Team should develop and disseminate tools and good practice guidance relating to these issues as outlined in Recommendations, on page 16 below
 - The ESR, Strategic Health Authorities (SHAs) and the Department of Health (DH) work together to review the fitness for purpose of daily winter SITREPS and make recommendations as to how they could be improved to meet the needs of all stakeholders

2. PURPOSE

2.1 This report addresses the following key questions about NHS emergency care performance and recommends actions to strengthen performance in future years:

- **How** has performance varied in recent winters and **why**?
- **What** characterises high performing emergency care organisations or local health economies?

3. INTRODUCTION

- 3.1 Chief Executives of all Strategic Health Authorities agreed to set up a review of NHS emergency care to identify actions to improve the resilience and sustainability of emergency services.
- 3.2 The review, led by NHS Interim Management And Support (IMAS) on behalf of the Office of the Strategic Health Authorities (OSHA), was established in response to concerns that emergency care performance, particularly ambulance response times, appeared to be slipping compared to previous years and that some NHS organisations had lost some of the performance improvements gained in the last few years.
- 3.3 Work Stream One of the Emergency Services Review was set up to establish, through analysis of quantitative data sources, how well NHS emergency care services performed during the winter of 2008/9, and what the underlying factors driving variation in performance were.
- 3.4 The work stream also considered year-round performance and set out to identify factors that characterised high-performing organisations at both a national and regional level. Two separate pieces of analysis were conducted between February and May 2009 by Department of Health analysts and by Dr Foster Intelligence.
- 3.5 The Department of Health analysis looked at:
 - National data and set out to answer the two key questions of what performance was like during winter 2008/09 compared with previous years and why there was any variation in performance
 - The shape of performance during the winter months since 2006/07 and focussed on understanding the differences between years in the rapidity and timing of the annual winter performance decline, and the minima and maxima of performance
 - Possible causal relationships between poor performance over winter and demand-side (e.g. volume and rate of change of ambulance incidents and accident and emergency attendances, and case mix of admissions) and supply-side (e.g., bed occupancy) pressures were also explored
- 3.6 The Dr Foster analysis focussed on identifying the key characteristics of high performing emergency care organisations or local health communities. This analysis was conducted in two stages and used data from organisations in NHS South West and NHS East Midlands:
 - Stage 1 – Defining performance segmentation of ambulance and NHS provider trusts based on emergency services performance. This analysis enabled organisations to be grouped into quartiles based on their performance during 2007/08 and the first three quarters of 2008/09.

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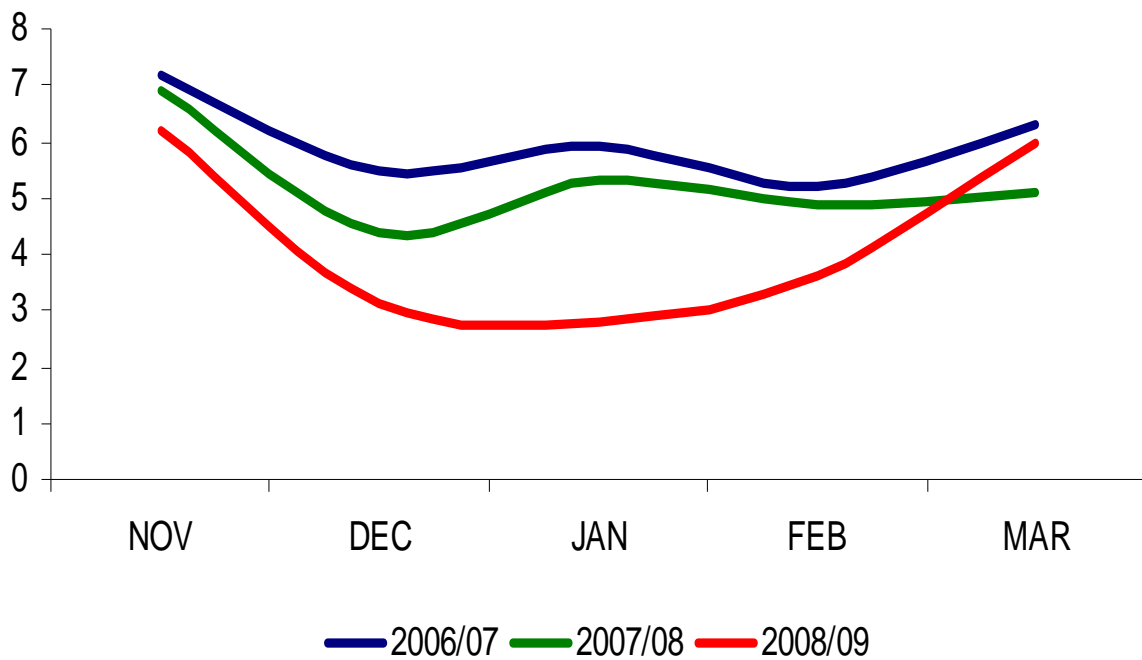
- Stage 2 – Analysis of a wide variety of indicators (for example: medical outliers; healthcare acquired infections; length of stay; delayed transfers of care) to understand the differences between high and low-performing organisations
- 3.7 Both analyses were limited by the quality; granularity; and availability of data:
- Quality – the quality of some data sources, especially voluntary data collected in SITREPs is highly variable. This may be partly due to differing interpretations of definitions between organisations and Strategic Health Authorities, and varying degrees of importance placed on data validation between organisations and Strategic Health Authorities
 - Granularity – Monthly, weekly, or even daily data does not always provide enough detail to get a real understanding of why one organisation copes well with winter pressures and another does not. For example, sufficiently granular data was not available to analyse staffing levels over the winter period, other than to note that annual growth in accident and emergency staff nationally has kept pace with overall growth in demand. Service transformation tools, such as seven day analysis, enable organisations locally to understand what is happening on an hour by hour basis, but this information was not readily available regionally or nationally
 - Availability – there is a lack of information on services outside of a hospital setting. Emergency care performance is influenced by a wide variety of factors including primary and social care provision. The lack of detailed and timely information on these and other factors is a limiting factor in understanding variance in headline emergency care performance levels

4. BACKGROUND

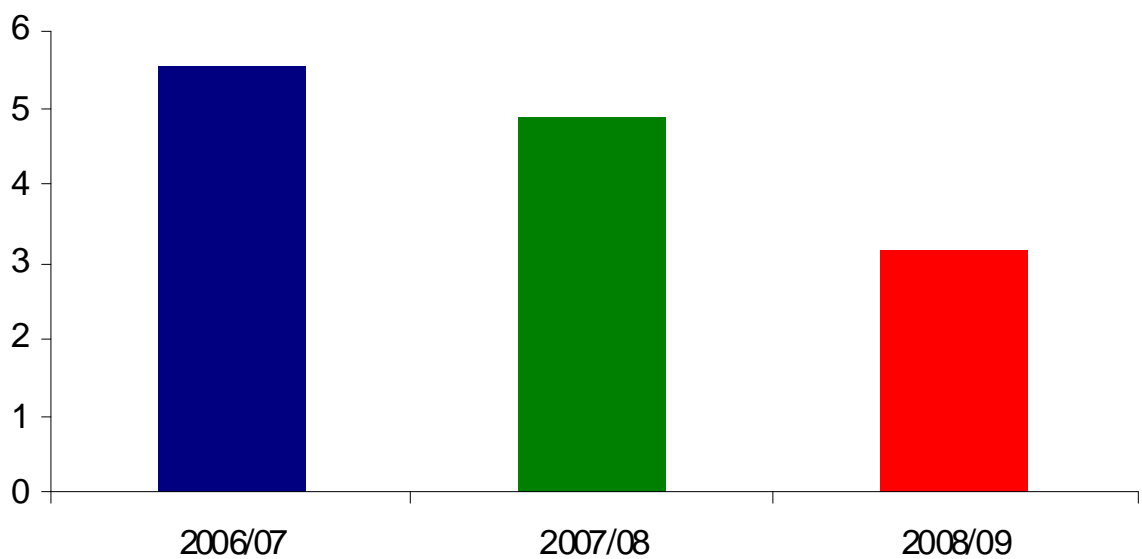
- 4.1 Winter is often the most challenging time in the year for the NHS and social care. As in previous winters, during 2009/9, every local health community and NHS organisation prepared winter plans that set out how additional pressures would be managed.
- 4.2 The NHS nationally was in a good position going into winter:
- The 18 week target had been delivered at an aggregate basis
 - There was a history in delivering the four-hour emergency care operational standard at the national level
 - Ambulance response times were on an upward trend since moving to the call connect standard of measurement, compared to shadow data collected prior to the call connect standard being implemented
- 4.3 The operational standard for accident and emergency departments is for at least 98% of patients to wait less than four hours from arrival to admission, transfer or discharge.
- 4.4 The national operational standards for ambulance response times are for Ambulance services to reach 75% of immediately life-threatening emergencies (Category A incidents) within 8 minutes. Within 19 minutes, ambulance services should respond with a vehicle capable of transporting the patient, to 95% of emergencies that are serious but not immediately life threatening (Category B incidents).
- 4.5 Historical performance against the operational standards for both accident and emergency waiting times and ambulance response times shows that performance has been consistently poorer during the winter months, compared with the rest of the year.
- 4.6 Weather conditions in recent winters have been generally mild. However, provisional data from the Met Office indicate that winter 2008/09 was the coldest in England and Wales since 1995/96, with mean temperatures for the United Kingdom 0.5°C below the 1971-2000 average. This colder weather was compounded by significant levels of snowfall in early February 2009.

Graphs 1 and 2: Winter 2008/09 mean temperatures in degrees Celsius

Mean temperatures, by month, England



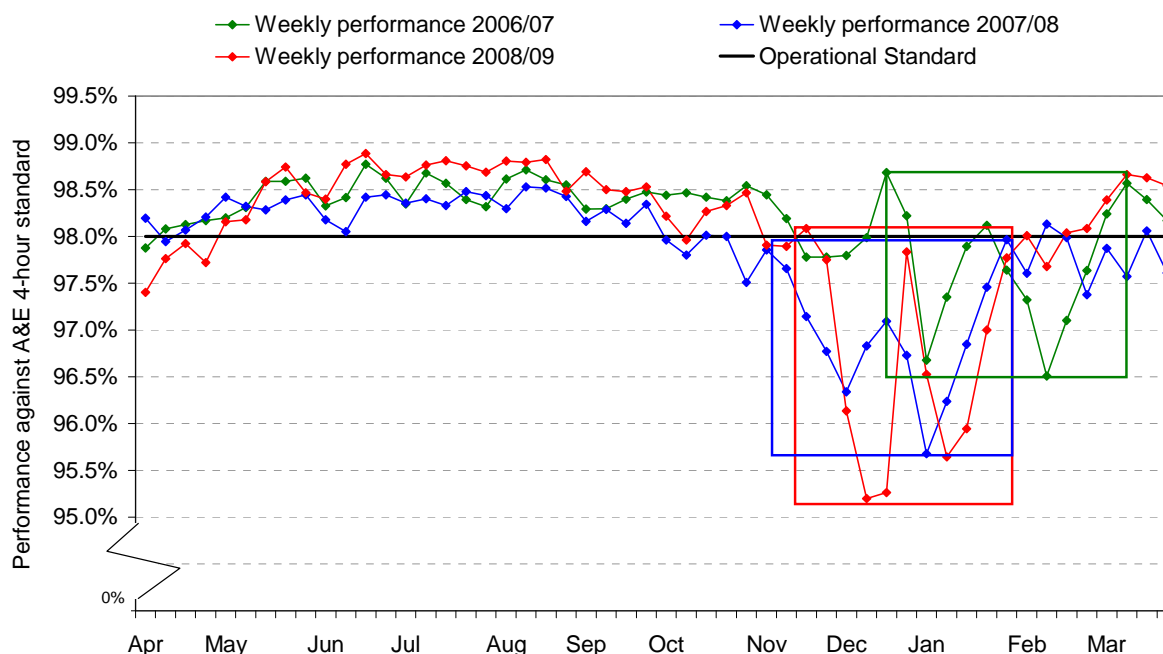
Mean winter temperature (Nov-Feb), England



5. REVIEW OF PERFORMANCE

- 5.1 Despite the weather conditions, the NHS coped well and achieved its best performance over the January to March period in the last three years, with 97.7% of patients treated within four hours of arrival at A&E from January to March¹.
- 5.2 Category A ambulance performance also continued the upward trend exhibited in recent years, compared to shadow data collected prior to the introduction of the call connect standard in April 2008.
- 5.3 However, performance aggregated over the whole winter period masks a number of underlying performance issues and regional variation. Winter accident and emergency performance is typified by a “W” shaped pattern – an initial drop in performance, followed by a short recovery period then a further drop in performance before recovering back up to pre-winter levels.
- 5.4 The “W” shaped pattern and timing of accident and emergency four-hour performance during winter 2008/09 was similar to that of 2007/08. However, the initial decline in performance in both years was significantly earlier and more severe than in the relatively warmer winter of 2006/07 as shown in Graph 3.

Graph 3: Profile of weekly accident and emergency performance for all types of A & E, England²



¹ QMAE data, Department of Health

² Sourced from SitRep data, Department of Health

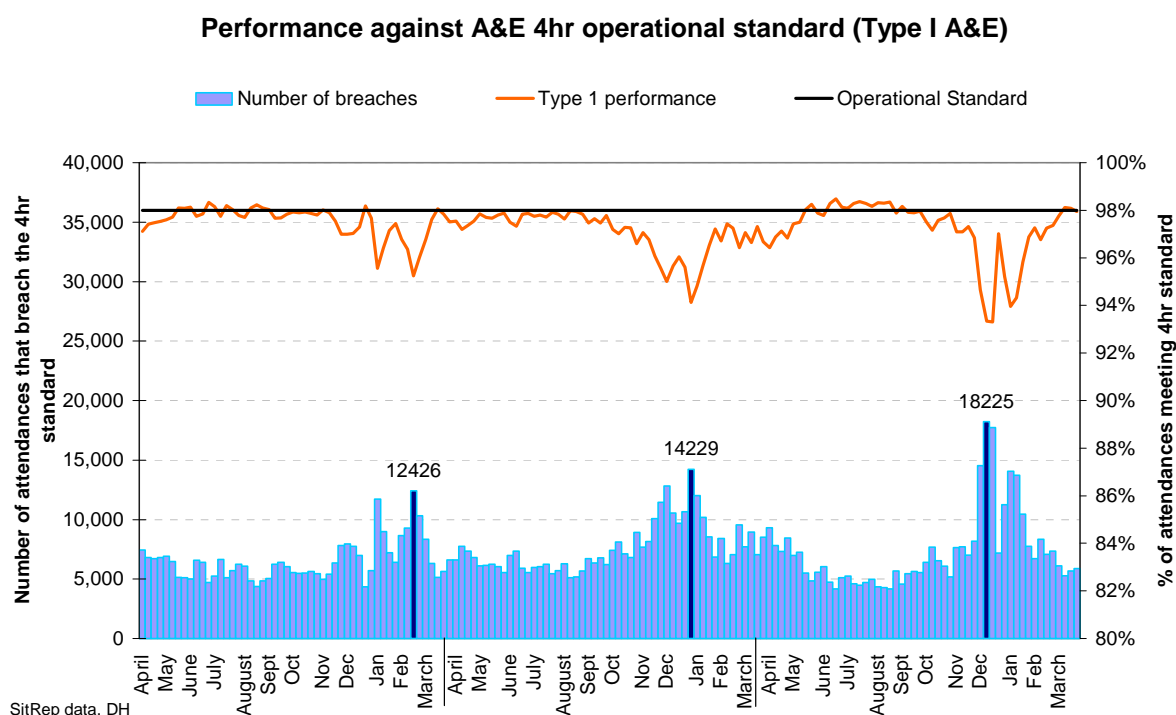
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5.5 Graph 3 shows that the week-on-week variation in four-hour accident and emergency performance levels was significant this winter, with the peaks and troughs of performance being more exaggerated than both 2007/08 and 2006/07³. Especially:

- The middle two weeks of December 2008 and the second week in January 2009 when performance levels were at their lowest
- The last week in December 2008 when recovery increased significantly above corresponding 2007/08 levels

5.6 Although performance against the operational standard was little more than half a percentage point lower in December 2008 compared with December 2007, the effect was that 4,000 more patients waited over four hours during the minima performance week in 2008 compared to 2007, with an additional two weeks in December 2008 surpassing the highest number of weekly breaches observed in December 2007. This is illustrated in Graph 4.

Graph 4: accident and emergency performance and breaches, England

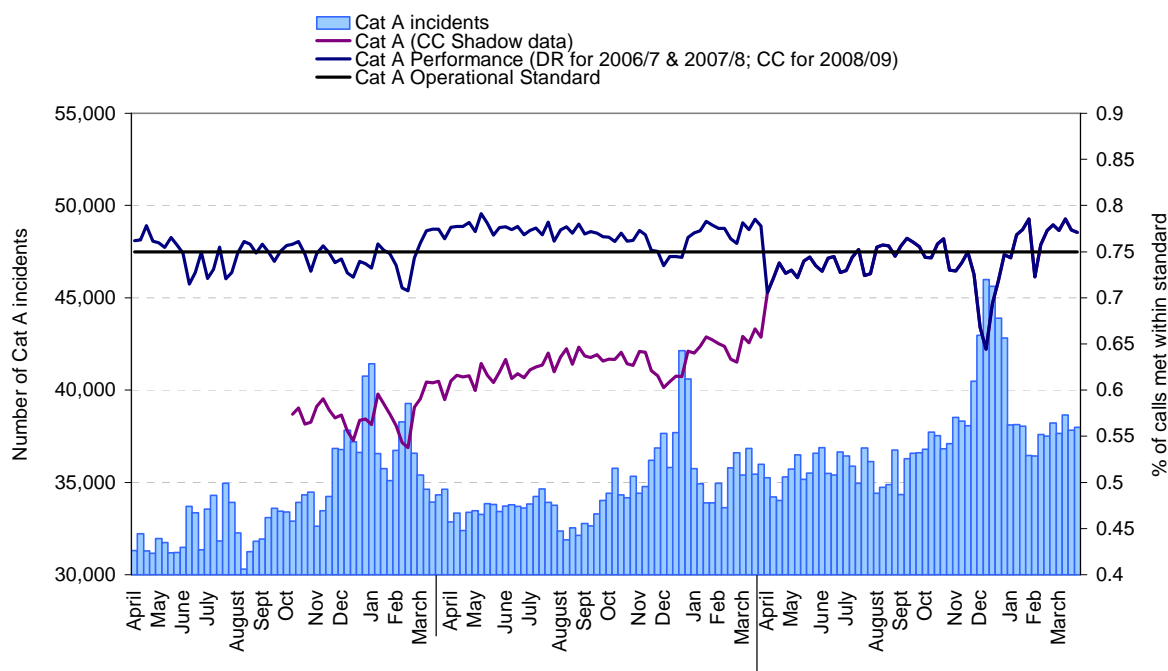


³ The operational standard for all types of accident and emergency departments in aggregate is for at least 98% of patients to wait less than four hours from arrival to admission, transfer or discharge. Where performance is portrayed separately for Type I, II or III A&E's it should be noted that the 98% operational standard has been charted for illustrative purposes only.

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- 5.7 Graph 5 shows there was also a significant fall in category A ambulance response times during the first two weeks of December 2008, corresponding with a peak in demand. Early February 2009 also saw a drop in performance below the 75% operational standard but without an obvious peak in demand at national level. This suggests that weather/snow rather than demand might have had a greater effect on performance against the ambulance response time standards over this period.

Graph 5: weekly incident volumes and performance against Category A ambulance response times, England



SitRep data, DH

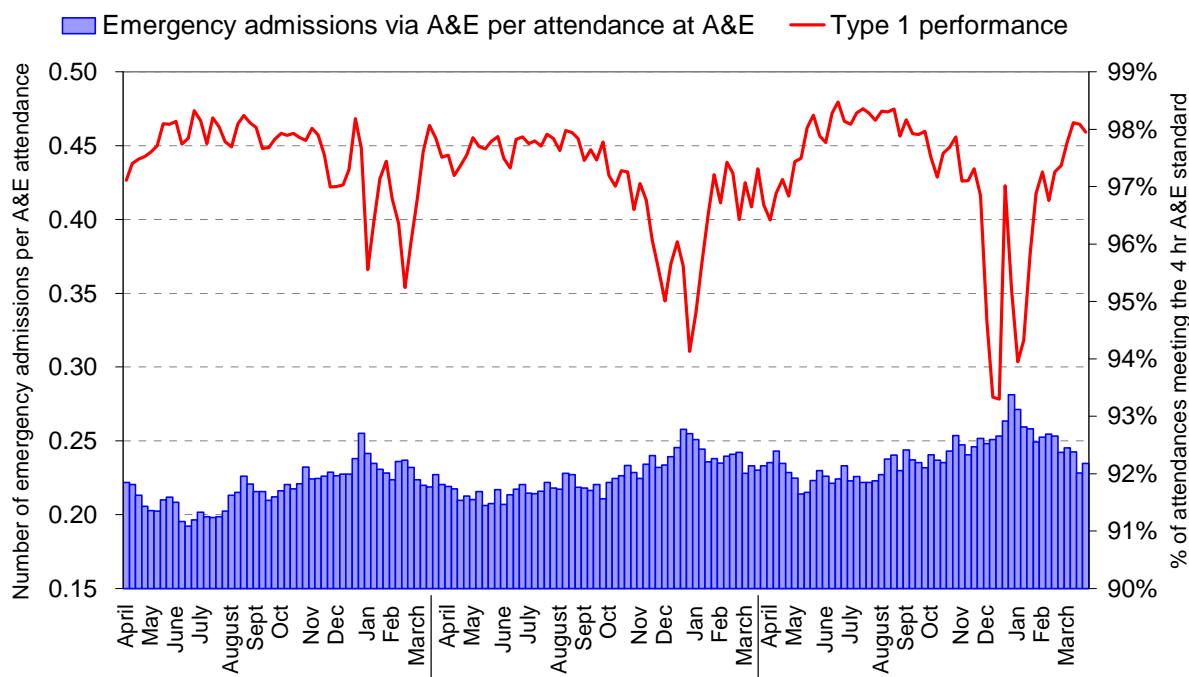
- 5.8 Year round performance in 2008/09 and shadow data collected in 2007/08, suggest the introduction of the 'call connect' standard did not lead to a year-round step change decrease in ambulance performance in 2008/09, though the stricter performance criteria will exacerbate existing challenges to meeting performance standards.
- 5.9 Analysis has found that, in addition to meteorological conditions, there are three key issues which correlate with periods of poorer accident and emergency four-hour performance over the past three years. These are: level of demand, prevalence of influenza and norovirus in the community, and bed occupancy levels.

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6. RATE OF DEMAND

- 6.1 Accident and emergency performance is strongly linked to two key areas of demand:
- The ratio of admissions to attendances in Emergency Departments
 - Category A ambulance call volumes
- 6.2 There was a significant increase in attendances at accident and emergency departments this winter, especially in December 2008 (6.8% increase compared to December 2007). However, on a weekly basis, the peaks in attendances do not correlate with the dips in performance. Performance dips are more closely associated with increases in the volume of emergency admissions and category A ambulance incidents.
- 6.3 Graph 6 shows that admissions via type one accident and emergency departments as a proportion of attendances was higher this winter. The relationship between the ratio of admissions to attendances and performance can also be clearly seen. Dr Foster analysis also found that high performing emergency care organisations typically have less weekly variation in the number of attendance and admissions.

Graph 6: Type 1 accident and emergency performance and admission to attendance ratio, England

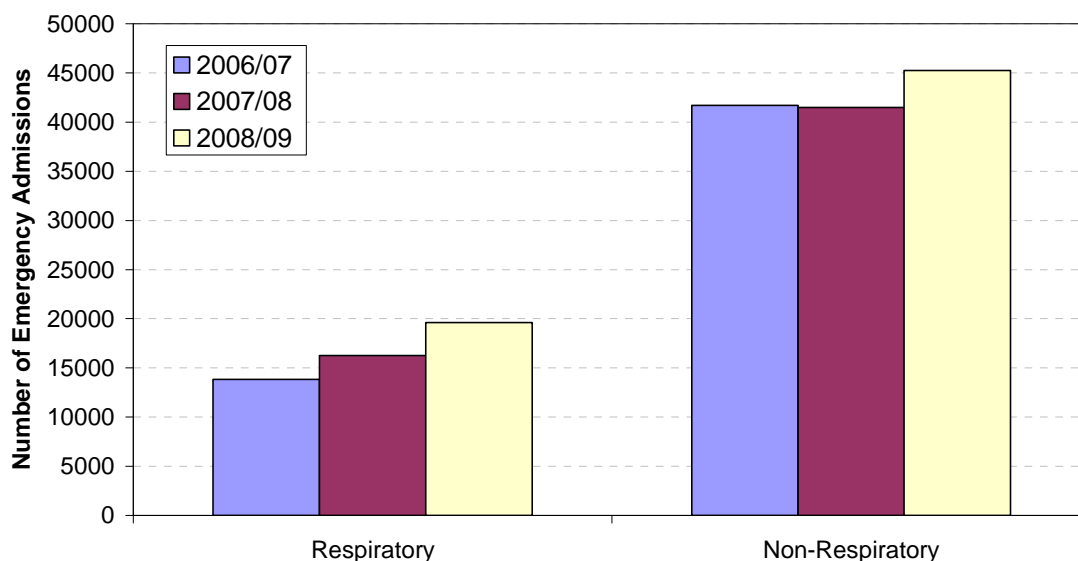


SitRep data, DH

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- 6.4 Performance against the A & E operational standard was poorest in Type I (major) A&E departments, compared to Type II (specialist) and Type III (minor) A&E's. However, the proportion of attendances at Type I, II and III remained largely the same. Similarly, the ratio of emergency admissions via A&E compared to GP referrals remained largely constant. This would suggest that there has been no significant change nationally of patients choosing to attend emergency departments over alternative options, such as walk-in centres, and potentially that the level of acuity amongst patients was higher this winter.
- 6.5 Analysis of emergency admissions by individual Health Resource Groups (HRGs) has identified that while the general proportions of emergency admissions by condition type has stayed broadly the same, there has been a noticeable trend for an increasing proportion of cases with respiratory diseases (e.g. chronic obstructive pulmonary disease or bronchitis) over the last 3 years, as shown in graph 7.

Graph 7: Number of emergency admission for the 20 HRGs with the highest volume of admissions over the two weeks of minima winter performance against the A & E operational standard, split into respiratory and non respiratory HRGs, England.

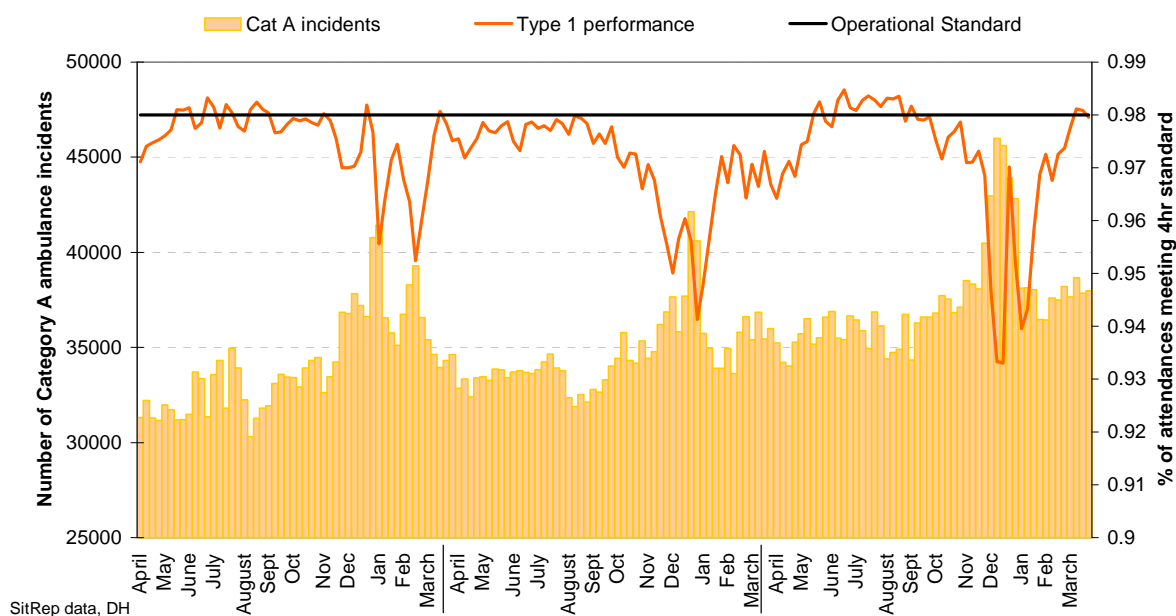


Hospital Episode Statistics (HES), NHS Information Centre for Health and Social Care

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6.6 Graph 8 shows that category A demand increased significantly this winter and was associated with poorer A & E performance, in addition to the poorer ambulance performance set out in Graph 5. However it should be noted that robust time series are not available to convert ambulance incidents explicitly into conveyances to, and attendances at, A & E. The colder weather may have played a significant part in the increase. We have not, however, attempted to analyse the underlying reasons for this increase in demand, as this is being addressed through a separate Department of Health/NHS project, due to report in September 2009 and will be reported separately to the Emergency Services Review board. We did, however, find a detrimental link between weather conditions (number of days of air frost) and category A performance.

Graph 8: Volume of category A ambulance incidents and performance against accident and emergency performance, England

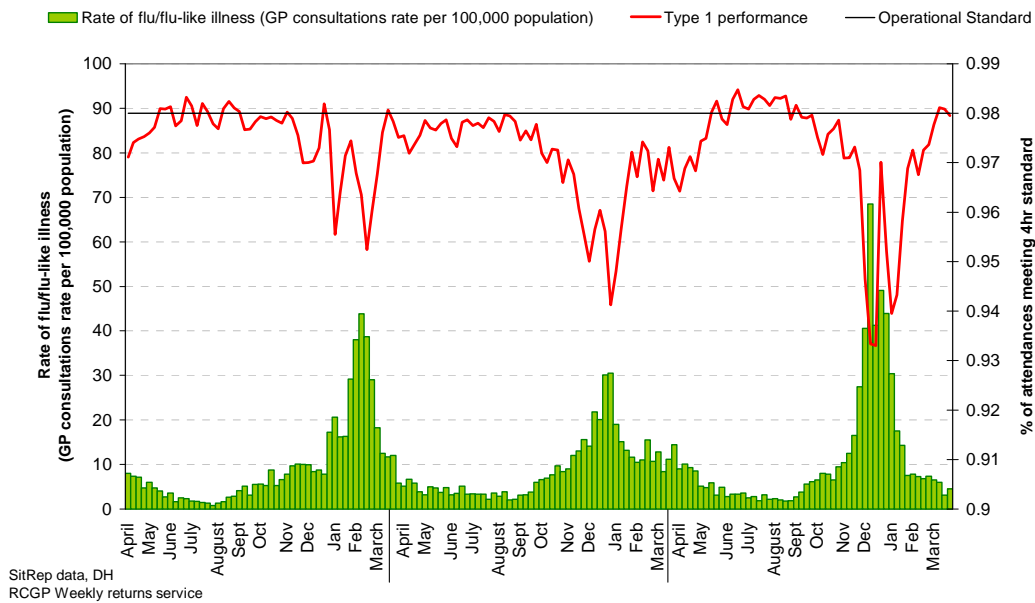


6.7 The increase in category A demand also appeared to coincide with an increase in the number of ambulance handover delays greater than 15 minutes. Although the data on handovers is not considered robust enough to draw any firm conclusions, it is thought to provide a barometer of how well emergency departments and ambulance services are coping with additional pressures. Delays in the handover of care between ambulance and hospital staff will have a detrimental effect on the patient's overall experience of their care, the four hour performance, and the availability of ambulances for incoming calls.

7. INFLUENZA AND NOROVIRUS

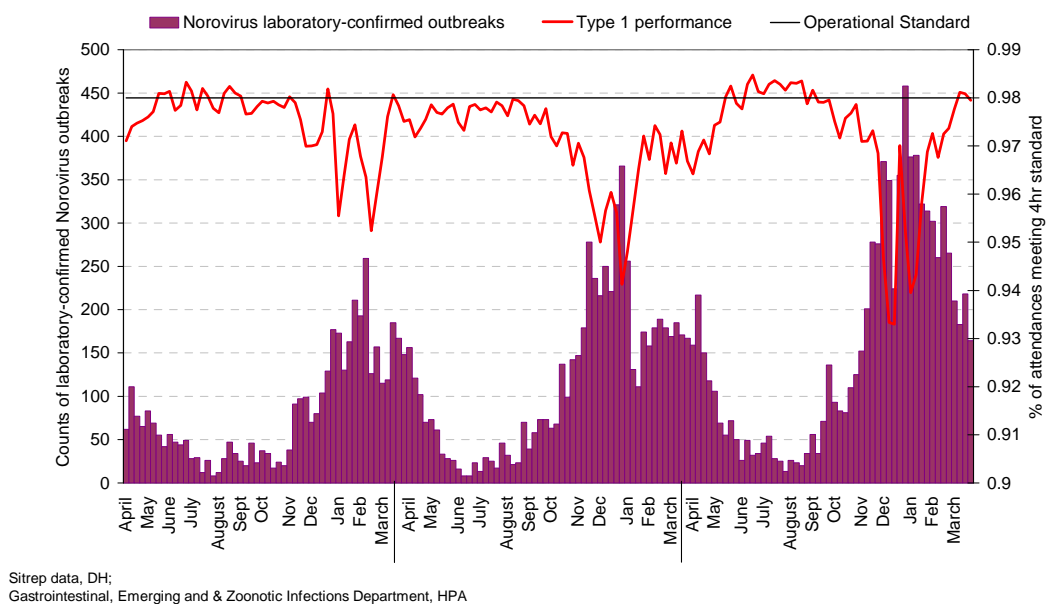
7.1 Influenza appears to have been more prevalent in the community this winter compared with the last two years. Clearly this will have had some impact on demand for acute and ambulance services. However, a further issue is thought (anecdotally) to be the impact that higher levels of influenza will have had on staffing levels. Graph 9 shows a strong correlation between GP reported consultations for flu-like illnesses and performance against the four-hour standard.

Graph 9: rate of flu-like illness related GP consultations, England



7.2 This winter also appeared to see an increase in norovirus outbreaks, which, as Graph 10 shows, are also strongly correlated with accident and emergency performance.

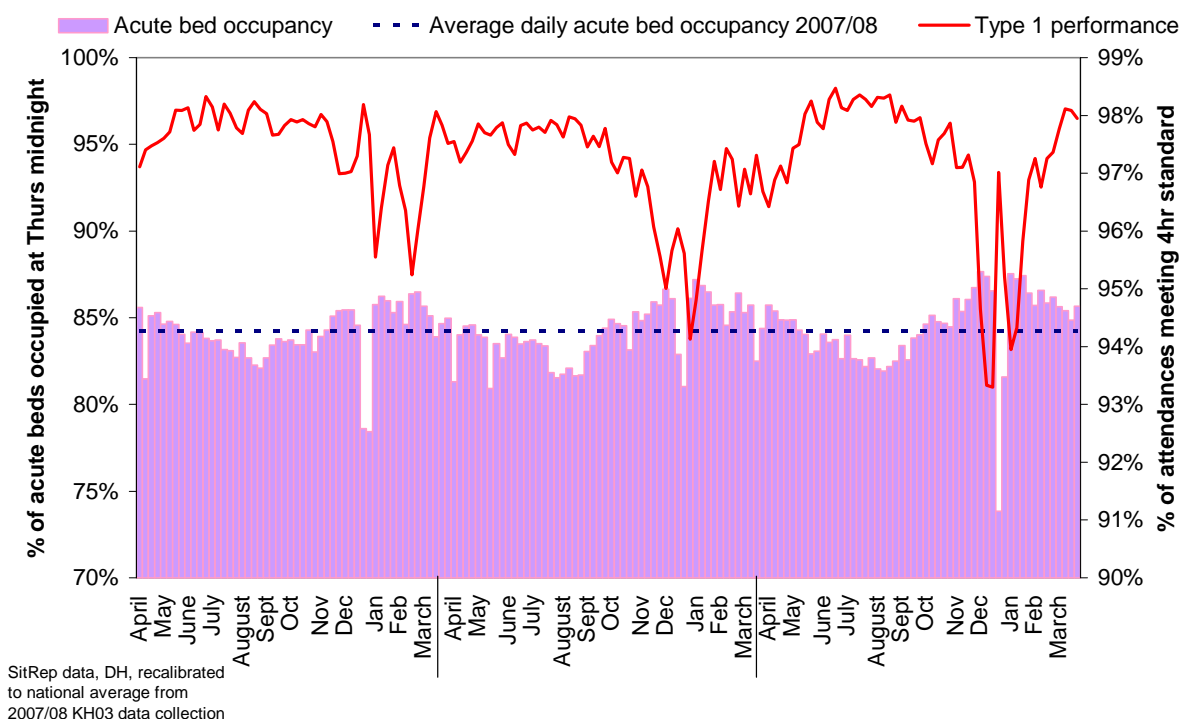
Graph 10: Norovirus outbreaks, England



8. BED OCCUPANCY

8.1 In 2000, the National Audit Office reported that “hospitals with higher levels of average bed occupancy cancel significantly higher proportions of elective operations and keep emergency patients waiting significantly longer in Accident and Emergency departments”. Recent research indicates that hospitals with average occupancy levels above 85 per cent can expect to have regular bed shortages and periodic bed crises (http://www.nao.org.uk/publications/9900/inpatient_admissions_and_bed.aspx). Graph 11 illustrates the link between higher occupancy levels and A & E performance. It shows that occupancy rates typically increase during the winter period and that occupancy levels were higher this winter than in previous years.

Graph 11: Bed occupancy and four hour performance, England



8.2 This evidence is supported by Dr Foster analysis of data from two Strategic Health Authorities, which found that higher performing organisations were characterised by lower bed occupancy rates.

9. OTHER FACTORS

- 9.1 Whilst the analysis conducted has identified three key factors influencing emergency care performance, there are a number of other issues that are likely, to a greater or lesser extent, to affect performance.
- 9.2 These include factors such as bed availability and discharge processes; urgent care and out of hours provision of primary care; effective links with social care and the scheduling of elective workload.
- 9.3 Over winter, achieving an appropriate balance between elective activity and emergency admissions can be challenging. This winter, the NHS was working towards delivery of the 18 week target by 31 December 2008. Many NHS Trusts maintained a high level of elective activity over winter in order to deliver and then maintain the standard. For example, our analysis shows that whilst there was a 9% increase in emergency admissions between December 2007 and December 2008, there was also a 5% increase in elective activity.
- 9.4 At a national level, the incidence of healthcare acquired infections (HCAIs) such as MRSA and C-Difficile have been decreasing over time and were not correlated with performance against the operational standards. However, the Dr Foster analysis found potential for regional differences in drivers behind good or poor performance. For example, in the South West, it was found that better accident and emergency performance correlated with less variation in attendances and fewer healthcare acquired infections. This correlation was not strong in the East Midlands, where higher numbers of short stay admissions were found to be more directly related to better performance. There was also a link between better emergency care performance and shorter average elective waits and more favourable list shapes.

10. RECOMMENDATIONS

- 10.1 The analysis has identified a number of factors which correlated with periods of poorer emergency care performance. It is therefore recommended that the Emergency Services Review, SHAs and the Department of Health take the following actions to support the NHS in improving the resilience and sustainability of emergency services.
- 10.2 Promote good practice around:
- Managing community conditions such as norovirus and influenza
 - Capacity planning for emergency care in an environment of shorter elective waiting times
 - Managing capacity, especially during surges in demand, to ensure that optimum bed occupancy levels are achieved; numbers of medical outliers limited; and throughput of patients throughout the health care system maintained
 - Using real-time information to effectively predict and react to peaks and troughs in demand
- 10.3 Develop a tool to enable local NHS organisations to understand the key analyses conducted nationally at a local level.
- 10.4 Attempt to develop a model at SHA level linking breaches in performance to known correlating factors (flu, norovirus, etc) to forecast extra capacity needed to offset potential breaches in performance.
- 10.5 Develop dashboards for use at Strategic Health Authority/Department of Health level to provide early warning of pressure building.
- 10.6 Review the fitness for purpose of daily winter SITREPs and make recommendations as to how they could be improved to meet the needs of all stakeholders.

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