Better data, better planning: the College of Emergency Medicine sentinel sites project

This article describes the College of Emergency Medicine's initial attempt to gather high quality data from its own 'sentinel sites' rather than relying on more comprehensive national data of dubious quality. Such information is essential to inform and guide the planning of urgent and emergency care services in the future.

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Problems in urgent and emergency care in the UK are never far from the news. Everybody has a view on both the causes and the solutions. Most health-care agencies have produced one or more reports giving their analysis of the situation. The King's Fund (2014) has even published a list of 'myths' about accident and emergency departments. Unfortunately, none of the pundits has access to reliable data about emergency care. Weighty pronouncements are based almost entirely on Hospital Episode Statistics, a notoriously inaccurate and incomplete set of figures. (Hospital Episode Statistics is a records-based system of data collection that covers all NHS trusts in England.) Analysis of the data produced by the two main agencies, the NHS Benchmarking Network (2012) and the Health and Social Care Information Centre (2013), demonstrates the problems. The assertion in the Keogh report (NHS England, 2013) that 40% of patients left major (type 1) emergency departments with no treatment provided a final incentive for the College of Emergency Medicine to initiate its own data collection.

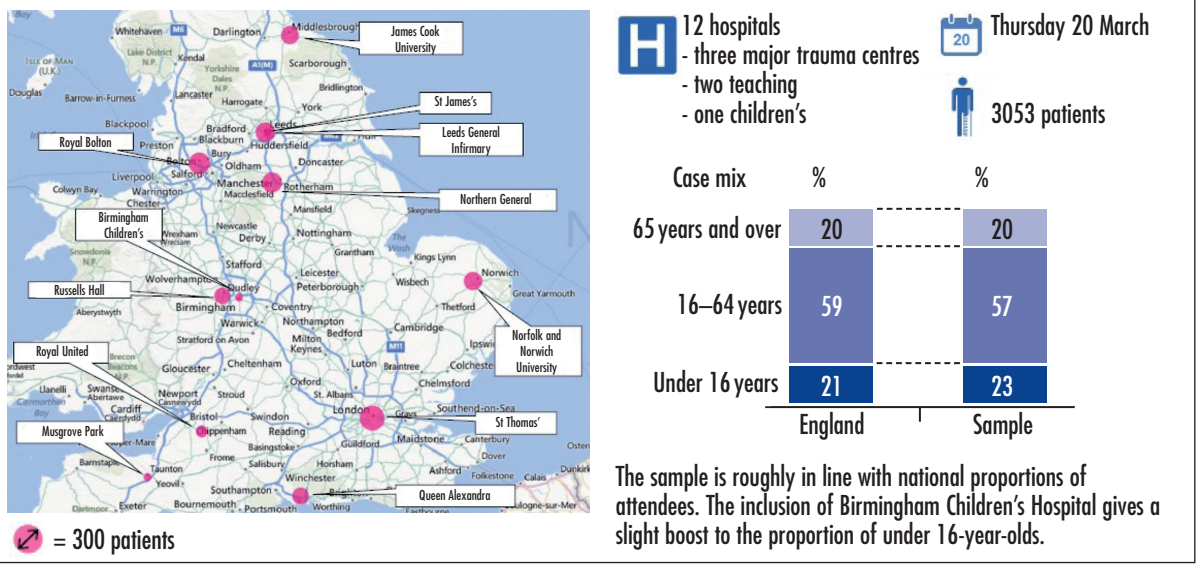
Method

A convenience sample of 12 emergency departments in England was selected (*Figure 1*). At each site, all emergency department patient records for the 24-hour period of Thursday 20 March 2014 were examined by a senior emergency department doctor. Twelve questions were answered on a spreadsheet as listed in *Table 1*. With the exception of the patient's age, all questions had a yes, no or don't know answer. Physical treatment was defined as a wide-ranging group of procedures ranging from dressings, sutures and supplying crutches at one end of the spectrum to intubation, ventilation and defibrillation at the other. All of these physical treatments were felt to be unlikely to be provided in most UK general practices at the current time. The results were collated and analysed by the independent specialist healthcare management consultancy, Candesic.

Results

Participating emergency departments are listed in *Table 2* together with the number of new patients who attended at each site. There were 3053 patients in total; their age and arrival characteristics are shown in *Table 3*. *Table 4*

Figure 1. Map showing the 12 sentinel emergency department sites in England; case mix data.



shows the percentage of patients who had investigations performed while *Table 5* shows the frequency of treatments, admissions and referrals. The suitability of patients to be seen in primary care – both objectively and subjectively – is shown in *Table 6*. These features are related to age groups in *Table 7*.

Discussion

As can be seen from *Figure 1* and *Table 2*, there was a good geographical spread of sites throughout England, although none of the other four countries covered by the College of Emergency Medicine was included on this occasion. There was a mixture of teaching and district general hospitals, including one specialized children's unit. There was also a reasonable distribution of '4-hour target' performance across the 12 sites as can be seen in *Figure 2*. (The NHS 4-hour operational standard is a measure of the percentage of emergency department patients that are discharged, admitted or transferred within 4 hours of arrival; the target for NHS hospitals in England is currently set at 95%.)

A total of 3053 patients were included in the data. If attendance at emergency departments in England is taken to be 14.2 million people per annum, then a typical day would equate to just under 39 000 patients (House of Commons Library, 2014). This sample would therefore equate to around 7.8% of that day's work for English emergency departments – slightly lower if a correction is applied for differential attendance across the days of the week.

An investigation was performed on 60% of the emergency department patients in the survey – thus immediately suggesting that it was almost impossible for 40% to leave with no significant intervention – and in fact, two-thirds (66%) had some form of treatment, admission or urgent referral given or arranged in the emergency department. Most of these investigations and treatments are not currently available in the vast majority of primary care

Table 1. List of twelve questions answered by the assessors using the patients' individual emergency department records

Ref	Local identifier (do not enter NHS number or date of birth)
1	Age of patient
2	Did the patient arrive by ambulance?
3	Was an ECG (electrocardiogram) done?
4	Were any blood tests taken? (not stick for glucose)
5	Were any X-rays or other diagnostic imaging done?
6	Were any parenteral drugs, fluids or immunisations administered?
7	Was any physical treatment administered?
8	Were any prescriptions issued?
9	Was the patient admitted to hospital or other facility for an overnight stay?
10	Was the patient referred to a specialist, clinic or other outpatient facility?
11	In your opinion, could this patient have been dealt with by a GP working in your emergency department?
If answer to Q11 = yes, please answer question 12	
12	If you had the ability at triage to book this patient an appointment with a GP within the next 24 hours, using only the information available at triage, would this have been both safe and clinically appropriate?

Table 2. The 12 participating hospitals with numbers of new patients who attended their emergency departments on Thursday 20 March 2014

Hospital	Region	Number of patients
Birmingham Children's Hospital	West Midlands	141
Queen Alexandra Hospital, Portsmouth	Wessex	246
Royal United Hospital, Bath	South west	189
Leeds General Infirmary	Yorkshire and Humberside	304
St James's Hospital, Leeds	Yorkshire and Humberside	239
St Thomas' Hospital, London	London	365
Musgrove Park Hospital, Taunton	South west	125
James Cook Hospital, Middlesbrough	North east	279
Royal Bolton Hospital	North west	332
Russells Hall Hospital, Dudley	West Midlands	266
Northern General Hospital, Sheffield	Yorkshire and Humberside	293
Norfolk and Norwich University Hospital	East of England	274

Table 3. Characteristics of patients in the 24-hour sample

Total number of patients: 3053
Age range: 0–101 years
Arrived by ambulance: 32% (range = 11–44%)

Table 4. Investigations performed

Investigation	Yes %	No %	Not known %
ECG (electrocardiogram)	27	72	1
Blood test	37	62	1
X-ray (including all imaging)	44	55	1
Any of above	60	40	0

Table 5. Treatments, admissions and referrals

Treatment or other action	Yes %	No %	Not known %
Parenteral drug, intravenous fluid or immunisation	20	80	0
Physical treatment	24	76	0
Prescription	18	82	0
Admission	28	72	0
Immediate or urgent referral	18	82	0
Any of the above	66	34	0

facilities in the UK. To change that situation would require a massive investment in resources (such as electrocardiogram machines) together with impractical multiplication of supporting services (such as immediate access to X-ray facilities and reporting). In addition, primary care opening hours would need to be increased to mirror the round-the-clock access to major emergency departments. It could be argued that GPs could issue prescriptions in these patient groups and, when prescriptions are taken away from the treatment figure in the survey, the number of patients treated, admitted or referred falls from 66% to 59%. Only a fifth of the patients (19%) were not investigated, treated, admitted or referred and did not arrive at the emergency department by ambulance. (The latter caveat was included as very few primary care facilities in the UK accept ambulance arrivals and those that could are not open for 24 hours a day, 7 days a week.)

Subjective opinions have less reliability but it was felt by the emergency medicine assessors that only 15% of patients could be sent away from triage to see a GP within 24 hours. This decision depended on safety only and did not take account of patient experience, convenience or cost-effectiveness. However, this figure rose by nearly a half to 22% of patients who it was thought could be seen immediately by a GP working on site. Such a doctor would, of course, have complete access to all the considerable facilities available in a major emergency department.

When related to age groups (*Table 7*), it is seen that two-thirds of patients over 65 years old arrived by ambulance, 94% were investigated, treated or admitted and only 12% of this group were thought to be suitable for a GP working in the emergency department. A third of children, on the other hand, were deemed suitable for a primary care practitioner based in the emergency department. This seems objectively supported by the fact that 40% of patients under 16 years old left with no specific intervention.

Overall, it is shown yet again that a significant proportion (but not 40%) of all emergency department patients can be seen in primary care. The subjective figure by experienced assessors is relatively low at 15% but, objectively, only 19% of patients did not require significant investigation or treatment and did not arrive by ambulance. This

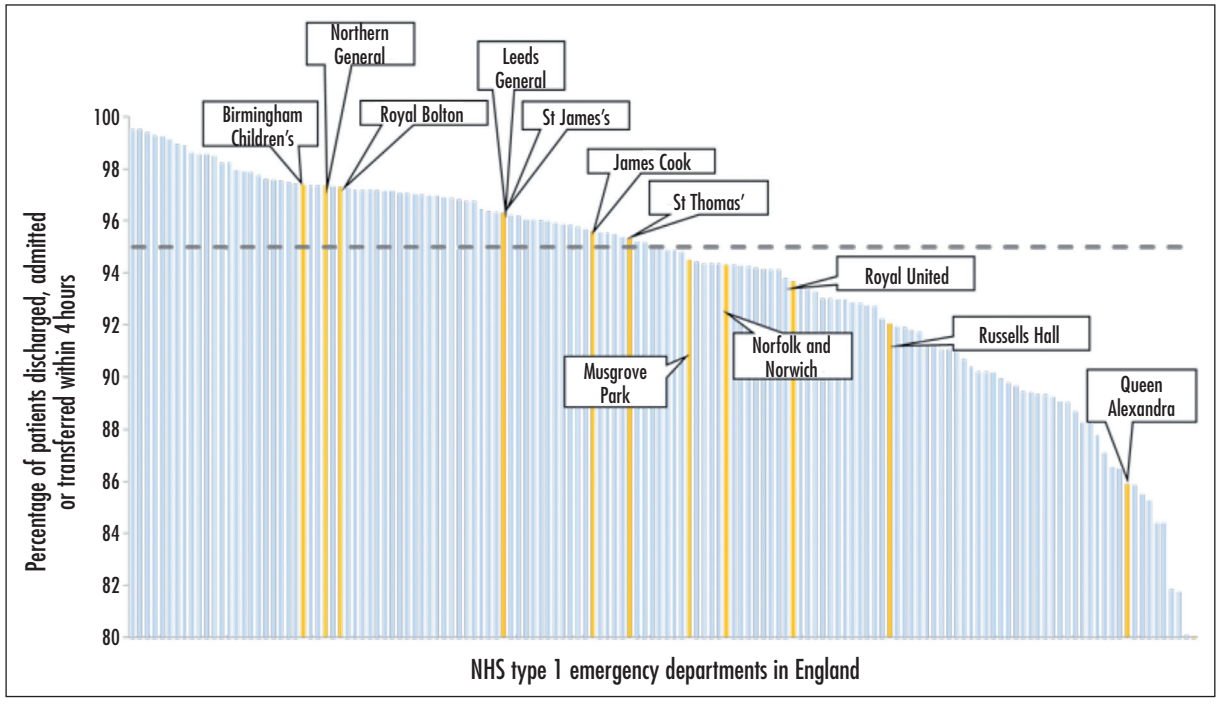
Table 6. Suitability of patients for primary care

Patient category	% of patients
No investigation	40
No treatment except prescription and no admission or referral	41
Neither of the above (no investigation and no treatment except prescription)	22
Neither of above and did not arrive by ambulance	19
Seen or could be seen by GP in emergency department (opinion)	22
Could be sent safely from triage to see GP within 24 hours (opinion)	15

Table 7. Features related to age groups of patients

	Under 16 years	16–64 years	Over 65 years
Ambulance arrival	14%	27%	67%
No investigation, treatment, admission or referral	40%	21%	6%
Could be seen by GP in emergency department (opinion)	33%	22%	12%

Figure 2. Four-hour target performance figures for the 12 sentinel sites in the week ending 23 March 2014 (showing performance in type 1 emergency departments only). From NHS England (2014b).



latter figure varies nearly seven-fold with age. However, the assessors felt that over a fifth of patients could be seen by a GP who was available immediately on site with access to all of the hospital's facilities. This finding is not new. The 'problem' of primary care patients attending UK emergency departments was first brought to prominence by emergency medicine doctors in the 1990s and was then encapsulated by Dale in an editorial in 1992. Estimates of the size of this group of patients vary greatly but most careful studies (such as that by Thomson et al in 1995) have produced figures in the region of 20%.

It is often said that emergency departments over-investigate patients and this criticism could be levelled at the findings of this study. Nevertheless, there is little real evidence that under-investigation is of benefit to patients (rather than just cheaper) and the number of patients who arrive at emergency departments with poorly diagnosed conditions suggest that this is yet another undesirable facet of NHS health care. Moreover, it would be interesting to compare the percentage of patients leaving an emergency department with 'no treatment' with the number leaving a fracture clinic or other outpatient facility in a similar situation. NHS 111 also provides consultations that result in no actual investigation or treatment, thus suggesting that this is not a ubiquitous gold standard for the effectiveness of urgent care.

The use of high quality sample data to inform NHS planning is certainly not new. Before 1987, only a 10% sample of admitted patient records was collected nationally. By comparison, Hospital Episode Statistics aims to collect a detailed record for each 'episode' of patient care that is delivered or commissioned by the NHS in England (Health and Social Care Information Centre, 2014). However, the aim for completeness of data inevitably involves a sacrifice of quality. The simplicity of gathering data using reference or sentinel sites has been clearly shown in this study. It may be that the NHS should return to using a carefully collected sample of urgent care information to better inform service planning in the future.

KEY POINTS

- The College of Emergency Medicine performed a national survey of attendances at 12 emergency departments in England during a 24-hour period in March 2014.
- The survey findings were: 3053 patients attended, an investigation was performed on 60% of these patients and two-thirds required treatment, admission or referral.
- Overall, only 19% left with no significant intervention in their care; this proportion was much smaller in patients over 65 years old.
- Experienced assessors felt that just 15% of patients could be safely diverted away from the emergency department to an urgent appointment with a GP, while over a fifth of patients could be seen by a GP working in the emergency department with access to all of its facilities.
- In the absence of effective strategies to change patient behaviour, provide costly diagnostic facilities for all GPs' surgeries and increase the out-of-hours availability of primary care, the co-location of urgent care services on a single site seems to be the logical option.
- In order to acquire accurate information to plan urgent and emergency care services in the future, it may be necessary to revert to a system of collecting data from a controlled sample of NHS sites rather than using Hospital Episode Statistics.

Conclusions

In this sample of 3053 attendances at 12 English emergency departments on a single day in March 2014, 15% of patients were thought to be suitable for delayed management (but within 24 hours) by a primary care practitioner; this figure increased to 22% for immediate care by a GP working in the emergency department. Objectively, 19% of the patients had no investigation or treatment except for a prescription and did not arrive by ambulance. These figures would equate to between 2.1 and 3.1 million patients per year for England alone. Unsurprisingly, the elderly seem to require the facilities of a hospital much more than do children. To gain the combined benefits of patient behaviour, ambulance arrival, 24/7 opening and cost-effective use of staff and resources, the co-location of urgent care facilities on a single site for each urban area would thus seem to be logical. This arrangement of services is, in fact, supported by many influential bodies of opinion including the NHS Confederation (2014) and NHS England (2014a). In order to acquire information that facilitates rather than impedes urgent care planning, it may be necessary to revert to a system of collecting highly accurate data from a carefully selected sample of NHS sites. **BJHM**

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