Frequent attendances at emergency departments in England

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ABSTRACT

Background A small proportion of patients referred to as 'frequent attenders' account for a large proportion of hospital activity such as ED attendances and admissions. There is a lack of recent, national estimates of the volume of frequent ED attenders. We aimed to estimate the volume and age distribution of frequent ED attenders in English hospitals.

Method We included all attendances at all major EDs across England in the financial year 2016–2017. Patients who attended three times or more were classified as frequent attenders. We used a logistic regression model to predict the odds of being a frequent attender by age group.

Results 14 829 519 attendances were made by 10 062 847 patients who attended at least once. 73.5% of ED attenders attended once and accounted for 49.8% of the total ED attendances. 9.5% of ED attenders attended three times or more; they accounted for 27.1% of the ED attendances. While only 1.2% attended six times or more, their contribution was 7.6% of the total attendances. Infants and adults aged over 80 years were significantly more likely to be frequent attenders than adults aged 30–59 years (OR=2.11, 95% CI 2.09 to 2.13, OR=2.22, 95% CI 2.20 to 2.23, respectively). The likelihood of hospital admission rose steeply with the number of attendances a patient had.

Conclusion One in 10 patients attending the ED are frequent attenders and account for over a quarter of attendances. Emergency care systems should consider better ways of reorganising health services to meet the needs of patients who attend EDs frequently.

Key messages

What is already known on this subject

- A small proportion of patients referred to as 'frequent attenders' account for a large proportion of ED attendances.
- Only a few studies have been carried out on a national level, and there has been no national study of frequent use in England.

What this study adds

- In this study using Hospital Episode Statistics, a national database of all attendances at hospitals in England, we found that 9.5% of ED attenders attended three times or more in 1 year and accounted for 27.1% of the ED attendances.
- The groups with most frequent attendances in English EDs were infants and elderly people.
- Frequent ED attenders had a higher likelihood of hospital admission than less-frequent ED attenders

INTRODUCTION

Pressures on EDs are an ongoing challenge for hospitals in developed countries including the UK's NHS, placing strain on resources and health budgets, particularly during winters.[1] The NHS provides public, primary, secondary, tertiary and urgent care. In 2017/2018, there were 23.8 million ED attendances in England, an increase of 22% since 2008/2009.[2] Simultaneously, the growth in NHS England's funding has slowed significantly.[3] This growing mismatch between funding and demand requires NHS hospitals to find ways to moderate demand and spending, and to accommodate demand through increased efficiency.

The management of patients who attend EDs frequently introduces a major challenge. Reasons for frequent ED attendance often include exacerbation of clinical conditions and psychosocial factors.[4] EDs are designed to provide acute care only and are not the optimum place to manage long-term conditions. To date, the evidence on frequent ED attenders is predominantly based on single-centre studies, and only a handful[5] provide regional or national estimates, as confirmed by the latest systematic review on frequent ED use.[6–8]

In studies carried out in England on ED activity and readmissions, including frequent inpatients,[9] there are no estimates on frequent ED attenders. We aimed to provide a national estimate of frequent ED use, to help emergency care systems in considering better ways of reorganising health services to meet the needs of patients who attend EDs frequently.

METHODS

We analysed Hospital Episode Statistics (HES) data for the financial year April 2016–March 2017. HES data cover all attendances at NHS hospitals in England. We included all unplanned attendances in all major EDs (hospital-based, consultant-led 24-hour service with full resuscitation facilities for the reception of A&E patients) in all English hospitals. Attendances belonging to the same patient were matched using the patient's encrypted NHS number. Duplicate attendances of the same patient on the same date were removed. Attendances of patients with a recorded in-hospital death during the year were removed. We calculated the number of attendances per patient. Patients who

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attended three times or more throughout the year were classified as frequent attenders. The definition of frequent attendance is a subject of clinical and methodological discussion among researchers. Previous studies on frequent attenders in EDs defined a frequent user arbitrarily based on the number of attendances within a given time frame. The definitions used range from 3 to 12 attendances within a year.[10 11] The threshold was set to three attendances per year based on the assumption that clinicians would not expect more than three emergency attendances within a year . In most hospitals in England (107 out of 137 Trusts), access to ED is available only via a co-located GP-led Urgent Care Centre; hence, ED attendances reflect the higher end of clinical urgency and severity.

We used a logistic regression model to predict the odds of being a frequent attender by age group. The age groups were designed to represent different life course stages. We also did a descriptive analysis of the likelihood of admission by age groups. An admission was counted if the patient was admitted to hospital bed or became a lodged patient of the same hospital. This analysis was done to provide insight about the consequences of frequent attendances. For this paper, a patient was considered as 'admitted' if he or she was admitted at least once to a hospital following any of theirED attendances.

RESULTS

There were 15 445 940 unplanned attendances in all major EDs in England during the year by 10 264 966 visitors. 14 829 519 attendances made by 10 062 847 patients who attended at least once were left after the removal of duplicate attendances and attendances of patients with a recorded in-hospital death. A total of 202 119 were removed due to in-hospital death, which were 1.97% of the entire population included in the dataset (10 264 966). They had a mean visit rate of 1.95 (SD=1.64) visits and the mean age was 78 years (SD=14.38). During the year studied, most attenders (73.5%) attended only once and accounted for 49.9% of the total attendances. Another 17% attended twice and accounted for 23.1% of the total attendances. While only 9.5% attended three times or more, they contributed to 27.1% of the total departmental attendance load. While only 1.2% attended six times or more, their contribution was 7.6% of the total(table 1). The median number of visits per patient was 7 and the IQR was 2–78. Fifteen patients attended more than 150 times each throughout the year. The groups with the most frequent attendances were infants and adults aged over 80 years (table 2). A decision to admit to hospital was more often made for frequent ED attenders than less-frequent ED attenders (figure 1). Even though infants and the elderly had a fairly similar rates of frequent attenders within their age group (15.8% and 16.4%, respectively; table 2), the elderly had greater likelihood of admission for any given number of attendances they had (figure 1).

Table 2 Frequency of frequent attenders* by age groups (n=10 062 847 patients)

Age group	Total attenders	Frequent attenders* (%)	OR (95% CI)
Infant (<12 months)	316 657	49 913 (15.8)	2.11 (2.09 to 2.13)
Preschool (1–4 years)	738 343	68 375 (9.3)	1.15 (1.14 to 1.16)
School (5–15 years)	3 354 631	273 397 (8.2)	0.80 (0.79 to 0.80)
Young adult (16–29 years)	1 220 614	80 400 (6.6)	1.14 (1.14 to 1.15)
Adult (30–59 years)	2 026 853	186 466 (9.2)	Reference group
Older adult (60–79 years)	1 588 398	166 096 (10.5)	1.32 (1.31 to 1.33)
Elderly (>80 years)	817 351	134 318 (16.4)	2.22 (2.20 to 2.23)
Total	10 062 847	958 965 (9.5)	

*Patients attended three times or more in 1 year.

DISCUSSION

These figures are comparable with estimates from the USA, reporting that frequent ED users comprise 4.5%–8% of all ED patients but account for 21%–28% of all attendances.[12] For example, only 1% of Massachusetts residents were frequent ED users, but they made 17.6% of all ED attendances.[5] Such comparisons might be only partially informative for the UK setting due to different measurement methods and different emergency care systems.

The groups with the most frequent attendances were infants and adults aged over 80 years. Frequent attendances of the elderly can be explained by deterioration of health, alongside psychosocial problems or lack of care home or supported living. Among the elderly population in Europe, presence and severity of physical illness are consistently associated with frequent attendance.[13] Frequent attendances in young children may be driven by other factors. Young children have many acute episodes of ill health, but most are self-limiting and may not be appropriate for ED attendance. Alternatively, poor access to primary care is associated with higher ED attendance rates in young children,[14] and failure to provide a whole system response to medical needs can drive up hospital admissions.

A decision to admit to hospital was more often made for frequent ED attenders than less-frequent ED attenders. The rate of frequent attendances ending up in hospital admission may provide some insight into the nature of the frequent attendances. Elevated likelihood of hospital admission subsequent to an ED attendance may be a signal of ill health. While infants and the elderly had a fairly similar rates of frequent attenders within their age group, the elderly had greater probability of admission for any given number of attendances they had. However, still quite a few frequent attendances did not end in admission (eg,

Table 1 Distribution of attenders and attendances by the number of attendances (14 829 519 attendances made by 10 062 847 patients)

	Attendances			Patients		
No. of ED attendances within a year	n	%	Cumulative %	n	%	Cumulative %
1	7 393 401	49.9	49.9	7 393 401	73.5	73.5
2	3 420 962	23.1	72.9	1 710 481	17.0	90.5
3	1 604 097	10.8	83.7	534 699	5.3	95.8
4	825 160	5.6	89.3	206 290	2.1	97.8
5	463 695	3.1	92.4	92 739	0.9	98.8
>=6	1 122 204	7.6	100.0	125 237	1.2	100.0
Total	14 829 519	100.0		10 062 847	100.0	

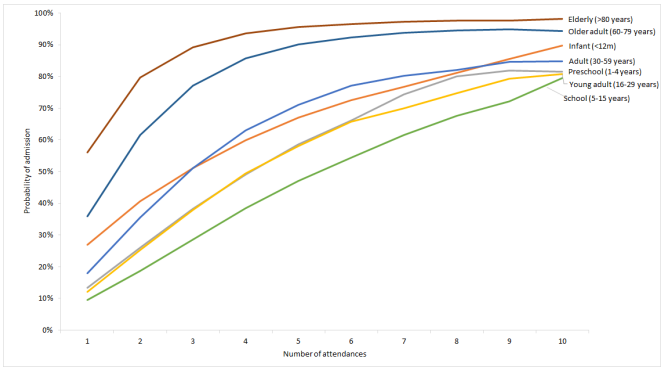

Figure 1 Probability of hospital admission per number of attendances.

about 30% of the 30s–59s were not admitted after their fifth attendance); however, this analysis is unable to provide reasons for frequent attendances nor subsequent admissions.

There are some limitations to this study. This study aims to give a sense of scale of the problem, but do not refer to potential reasons for frequent attendances. Due to limited data available in the HES A&E dataset on diagnoses, it is difficult to assume the reasons and clinical condition severity for attendances and admissions. We assumed hospital admissions as a proxy to clinical severity. Likewise, it is known that frequent attendance is associated with demographic, behavioural, cultural and health system determinants that may impact the likelihood of frequent attendances, which are not described in this study.

Further examination of the underlying causes for high rates of frequent attendances, particularly among young children and the elderly, could help devise innovative service reconfigurations to provide better care for frequent attenders. Some insights gained from a single-site exploration of children who are frequent attenders indicated two large groups of children: those with acute illness on a background of underlying long-term or complex condition and those with minor self-limiting illness. Both of these may be amenable to further health and social care interventions.[15]

These data highlight an opportunity for substantial reduction in ED attendances supposing we are able to provide alternative and possibly more suitable pathways to patients who attend ED frequently. There is currently inconclusive evidence on the effectiveness of ED attendance reduction programmes,[16] yet case management seems a promising approach to reduced ED costs and to improve social and clinical outcomes.[17]

Current strategies across the UK, such as the NHS 10-year plan and the *Keogh Review of Urgent and Emergency Care Services* in England, the *National Unscheduled Care Essential Actions Improvement Programme* in Scotland and *The Right Time, The Right Place* in Northern Ireland, should consider ways of reorganising health services to meet the needs of patients who attend EDs frequently.

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Patient consent for publication Not required.

Ethics approval We have approval from the Secretary of State and the Health Research Authority under Regulation 5 of the Health Service (Control of Patient Information) Regulations 2002 to hold confidential data and analyse them for research purposes (CAG ref 15/CAG/0005). We have approval to use them for research and measuring quality of delivery of healthcare, from the London - South East Ethics Committee (REC ref 15/LO/0824).

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