Study objective: Frequent emergency department (ED) users have been the targets of health care reform proposals and hospital crowding interventions, but it is not clear that common assumptions about this group are supported by data. We review the literature pertaining to frequent ED users, their demographics, acuity of illness, and patterns of health care utilization. We seek to inform development of policies directed at frequent ED use and to highlight potential related challenges.

Methods: A systematic review of the literature on frequent ED users was performed.

Results: Frequent users comprise 4.5% to 8% of all ED patients but account for 21% to 28% of all visits. Most frequent ED users are white and insured; public insurance is overrepresented. Age is bimodal, with peaks in the group aged 25 to 44 years and older than 65 years. On average, these patients have higher acuity complaints and are at greater risk for hospitalization than occasional ED users. However, the opposite may be true of the highest-frequency ED users. Frequent users are also heavy users of other parts of the health care system. Only a minority of frequent ED users remain in this group long term. Complaints vary with age, location, and usage patterns.

Conclusion: Frequent ED users are a heterogeneous group along many dimensions and defy popular assumptions. The subgroups have not yet been sufficiently defined to allow clearly directed policy design, and many frequent users present with true medical needs, which may explain why existing attempts to address the phenomena have had mixed success at best. [Ann Emerg Med. 2010;56:42-48.]

INTRODUCTION

Because hospital emergency departments (EDs) experienced a dramatic 36% increase in patient volume from 1996 to 2006,1 increasing interest has focused on a group of individuals who contribute a disproportionate number of visits. This interest has been amplified during the recent health care reform debate in the United States, with politicians from both sides of the aisle and the lay press seizing on reducing ED use as a possible cost-saving measure.2,3 Patients with frequent ED visits are often portrayed as unscrupulous, uninsured, and unnecessarily clogging EDs by presenting with primary care complaints better treated elsewhere.4-6

Widely held assumptions about the patient population who frequently visits EDs, and their reasons for visiting, have not been, for the most part, supported by research on the topic. Although the practicing provider may regularly encounter the stereotypical frequent ED user, this snapshot may not accurately reflect the true nature of frequent ED use and may be a distraction in the development of effective interventions to improve access to health care and, where appropriate, curb heavy ED use.

This review of literature pertaining to frequent ED users aims to summarize what is known about frequent users’ demographics, degree and types of illness, access to other medical care, and utilization patterns. Our goal is to inform policy development directed at frequent ED users and at improvement of access to health care in general and to highlight potential challenges.

MATERIALS AND METHODS

A systematic review of the literature was performed, using previously described methods7 as applicable to this topic. The review was designed to capture studies describing the population of patients who demonstrate frequent use of EDs in the United States. “Frequent use” was defined by each study as no standard definition exists.

The following inclusion criteria were used:

1. Population/Setting: Studies of adult and pediatric patients presenting frequently to EDs in the United States were included.

2. Outcomes: Studies describing any of the following about the population of frequent ED users were included: demographics; access to health care, including insurance status; patterns of use of the ED and other health care
resources; severity of illness; presenting complaints and diagnoses; comorbidities.
3. Format: English-language prospective and retrospective studies published in peer-reviewed journals from 1990 to the present were considered. Earlier studies were not included because the evolution of use of the health care system in the United States has likely rendered them less relevant.

To maximize capture of relevant articles despite the lack of standardized terms for this topic, MEDLINE was searched, using a large number of relevant search terms iteratively. First, an initial set of relevant terms was used. Review of the references of these articles generated a list of additional related articles, and additional search terms were then added to capture these and other relevant articles. Asterisks were used in searches when useful to capture multiple forms of a word or multiple successive words (eg, searching for “visit*” captures visit, visits, visiting, visitor). The complete list of search terms used includes frequent emergency department, frequent ED, emergency department frequent, ED frequent, frequent use AND “emergency department,” frequent use* AND “ED,” frequent visit AND “emergency department,” frequent visit* AND “ED,” heavy emergency department *, heavy ED *, heavy use* AND “emergency department,” heavy use* AND “ED,” chronic emergency department *, chronic ED *, repeat use* AND “Emergency Department,” repeat use* AND ED, recidivis* AND “emergency department,” recidivis* and “ED.”

Given the topic, the literature search was not expected to identify studies involving blinding or randomization. To convey quality and comparability of the studies, a table was constructed, indicating whether the study was single center or multicenter, how patient selection was conducted, the size of the sample, and the definition of “frequent ED use” used in the study. Patterns in the results of the studies for the outcomes listed above were then summarized narratively, with quantitative data provided where relevant.

Although international studies were not formally included within this review, a convenience sample of frequently cited studies from outside the United States was included to allow comparisons within the field of emergency medicine.

RESULTS
The structured MEDLINE search yielded 25 unique results meeting criteria described above. Table 1 shows the number of relevant results for each term that produced studies meeting inclusion/exclusion criteria. Fourteen studies reviewed represented data from single sites,8-21 whereas 11 studies used multisite or population-level data (see Table 2).22-32 Overall, the EDs studied are predominantly university hospital–based or affiliated public hospitals and the data represent local-, state-, and national-level data. Research on national-level ED utilization has relied mainly on nationally administered surveys, such as the Community Tracking Study Household Survey and the National Health Interview Survey.27,32

<table>
<thead>
<tr>
<th>Search Term</th>
<th>Total Citations</th>
<th>Relevant Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequent emergency department</td>
<td>33</td>
<td>8</td>
</tr>
<tr>
<td>Frequent ED</td>
<td>52</td>
<td>14</td>
</tr>
<tr>
<td>Frequent use* AND “emergency department”</td>
<td>71</td>
<td>12</td>
</tr>
<tr>
<td>Frequent use* AND “ED”</td>
<td>41</td>
<td>13</td>
</tr>
<tr>
<td>Frequent visit* AND “emergency department”</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>Frequent visit* AND “ED”</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Heavy emergency department*</td>
<td>127</td>
<td>4</td>
</tr>
<tr>
<td>Heavy ED*</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Heavy use* AND “emergency department”</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>Heavy use* AND “ED”</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>Repeat use* AND “emergency department”</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Repeat use* AND “ED”</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Recidivis* AND “emergency department”</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>Recidivis* and “ED”</td>
<td>24</td>
<td>1</td>
</tr>
</tbody>
</table>

Definitions of frequent ED use vary from 2 visits per year to as high as 12 visits per year, depending on the goals of the study (Table 2).8-32 The threshold most commonly used to define frequent use, representing the sample mode across studies reviewed here, has been 4 or more visits per year. The authors of one large study rationalized their definition of 4 visits per year by demonstrating that this post hoc cutoff would yield a patient group that represented 25% of all ED visits, a figure they believed was administratively significant and warranting expenditure of resources for intervention.27 These authors and others admit to the arbitrariness of these cutoffs, and many clinicians would likely use a higher number of visits to define “frequent use.” However, no study has shown a threshold number at which striking differences in resources, demographics, or clinical import are observed.

Scope and Impact of Frequent ED Use
When defined as 4 or more ED visits per year, frequent users accounted for 4.5% to 8% of all ED patients.10,18,22,25,27 These patients contribute 21% to 28% of all ED visits.10,18,22,25,27 From a population perspective, 1% of all adults in Massachusetts are identified as frequent ED users, but they represent 18% of all ED visits.25

Demographics
Among sex and racial groups, women and blacks are disproportionately associated with frequent ED use.10,13-15,25,26,32 However, national data show that, in absolute numbers, the majority of frequent ED users are white (60%).27 Frequent users are more likely to be younger than 65 years, with a mean age toward 40 years.16 However, when disaggregated, a bimodal distribution is observed, with increased risks in patients aged 25 to 44 years and those older than 65 years.25,31

Insurance status has been central to discourse on ED crowding and ED “overuse.” Many studies on frequent ED use have considered the influence of insurance status and have
found this patient population to be predominantly covered.10,15,21,22,25,27,32 The uninsured represent only 15% of frequent users25 and are no more likely to be frequent users than they are to be occasional ED users (<4 visits/year).20 Among all uninsured adults, only 2% use an ED 4 or more times per year.25 What has emerged from the data, however, is that a high proportion of Medicare and Medicaid patients frequently seek ED care.20,26,29 Among those patients who can be characterized as “occasional” users, 36% are publicly insured versus the 60% of frequent users who carry Medicare or Medicaid.25 According to one national survey, the odds ratio for patients with government insurance being frequent users was 2.1 (P<.001).32

### Acuity

Frequent ED users also tend to be sicker than occasional users.10,14,15,17,22,24,25,27,31,32 The probability of hospital admission at any given visit, as well as during the course of a year, is greater for frequent versus occasional ED users.15 One study estimated the admission rate for frequent users at 51% per year during a 5-year period.15 This patients in this group are also more likely to be transported by ambulance and had greater mortality associated with their ED visits.14

Frequent users report subjectively poorer physical health, and the majority believe their complaints require immediate attention.14,30 However, there is marked heterogeneity in the predominant types of complaints of frequent ED users that is as varied as the sites reporting data. Some studies report a preponderance of exacerbations of chronic illness (eg, renal failure, chronic obstructive pulmonary disease/asthma, sickle cell disease),12,15,23,26,32 whereas others describe many visits attributable to less specific symptomatology and pain.10,24 Yet other studies have observed that many patients present with different complaints on separate visits according to their complex of comorbidities.14,22 The variation in presenting complaints observed by study site is also reflected in the differing degrees that mental health problems are associated with frequent use.8,11 For example, alcohol-related visits and psychiatric morbidity are significant predictors of frequent visits for populations studied in Boston and San Francisco15,25,30 but were not observed in several other less urban sites. Patients

### Table 2. Summary of studies included in literature review.

<table>
<thead>
<tr>
<th>Study</th>
<th>Definition of Frequent Use (Visits/Year)*</th>
<th>Sample Size</th>
<th>Sample Represents &gt;1 Hospital</th>
<th>Patient Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baillargeon</td>
<td>4</td>
<td>15,672</td>
<td>No</td>
<td>Hospital database, all uninsured ED patients</td>
</tr>
<tr>
<td>Belcher</td>
<td>3</td>
<td>4,920</td>
<td>No</td>
<td>Hospital database, all ED patients</td>
</tr>
<tr>
<td>Blank</td>
<td>12</td>
<td>66,552</td>
<td>No</td>
<td>Hospital database, all ED patients</td>
</tr>
<tr>
<td>Cook</td>
<td>4</td>
<td>771,527</td>
<td>Yes</td>
<td>Statewide database, all nonadmitted patients</td>
</tr>
<tr>
<td>Curran</td>
<td>4</td>
<td>6,865</td>
<td>No</td>
<td>Hospital database, all patients with substance abuse diagnosis</td>
</tr>
<tr>
<td>Ford</td>
<td>2 Asthma visits/y</td>
<td>375</td>
<td>No</td>
<td>Asthmatic patients presenting to ED, consent required</td>
</tr>
<tr>
<td>Freitag</td>
<td>3</td>
<td>785</td>
<td>Yes</td>
<td>Subset of clinical trial patients</td>
</tr>
<tr>
<td>Friedman</td>
<td>4 Headache visits/y</td>
<td>13,451</td>
<td>Yes</td>
<td>American Migraine Prevalence and Prevention Survey</td>
</tr>
<tr>
<td>Fuda</td>
<td>5</td>
<td>1,684,834</td>
<td>Yes</td>
<td>Statewide database, all non-VA patients</td>
</tr>
<tr>
<td>Griswold</td>
<td>6</td>
<td>3,151</td>
<td>Yes</td>
<td>Asthmatic patients presenting to ED, consent required</td>
</tr>
<tr>
<td>Hunt</td>
<td>4</td>
<td>59,725</td>
<td>Yes</td>
<td>Community Tracking Study Household Survey</td>
</tr>
<tr>
<td>Kne</td>
<td>10</td>
<td>59,051</td>
<td>Yes</td>
<td>Hospital database, all ED patients</td>
</tr>
<tr>
<td>LeDuc</td>
<td>Repeated visit within 3 mo</td>
<td>932</td>
<td>No</td>
<td>Hospital database, all ED patients</td>
</tr>
<tr>
<td>Lucas</td>
<td>4</td>
<td>134</td>
<td>No</td>
<td>Frequent ED users consenting to survey</td>
</tr>
<tr>
<td>Mandelberg</td>
<td>5</td>
<td>348,858</td>
<td>No</td>
<td>Hospital database, all ED patients</td>
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<tr>
<td>Milbrett</td>
<td>6</td>
<td>40,167</td>
<td>No</td>
<td>Hospital database, all ED patients</td>
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<tr>
<td>Pines</td>
<td>3</td>
<td>13,342</td>
<td>Yes</td>
<td>Statewide survey of asthmatic patients</td>
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<tr>
<td>Rask</td>
<td>10 Within 2 y</td>
<td>362</td>
<td>No</td>
<td>All patients presenting to ED and walk-in clinic consenting to survey</td>
</tr>
<tr>
<td>Riggs</td>
<td>4</td>
<td>35,440</td>
<td>No</td>
<td>Hospital database, all ED patients</td>
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<td>Ruger</td>
<td>3</td>
<td>71,941</td>
<td>No</td>
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<tr>
<td>Sandoval</td>
<td>3</td>
<td>168</td>
<td>No</td>
<td>Frequent and infrequent ED users identified for interview</td>
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<tr>
<td>Sun</td>
<td>4</td>
<td>2,333</td>
<td>Yes</td>
<td>ED patients with selected complaints consenting to survey</td>
</tr>
<tr>
<td>Xu</td>
<td>3</td>
<td>300,000 (Approximately)</td>
<td>Yes</td>
<td>Medical Expenditure Panel Survey</td>
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<tr>
<td>Yamamoto</td>
<td>10</td>
<td>79,049</td>
<td>No</td>
<td>Hospital database, all ED patients</td>
</tr>
<tr>
<td>Zuckerman</td>
<td>3</td>
<td>89,626</td>
<td>Yes</td>
<td>Urban Institute’s National Survey of America’s Families</td>
</tr>
</tbody>
</table>

VA, Veterans’ Administration.

*Unless otherwise noted.
younger than 65 years and receiving Medicare (chronically disabled) are associated with significantly higher rates of mental health diagnoses than any other group, whereas Medicare patients older than 65 years more commonly presented with cardiovascular, gastrointestinal, and urinary tract complaints.9,25

Use of the Health Care System
An analysis of overall health care use shows that frequent ED users heavily rely on other parts of the health care system as well.23,25,27,30,32 Frequent users are more likely than occasional ED users to have made primary care visits in the previous year (and previous month).20,24,27 Furthermore, having 5 or more outpatient visits within the year is an independent risk factor for frequent ED use. These findings underscore the important observation that most frequent users indeed have primary care physicians.10,12,14,20,29,30 One study demonstrated that 93% of this patient population had a primary care provider,10 whereas data about their ability to actually consult their primary care provider is more mixed. Compared with occasional ED users, these patients are more likely to be treated in a hospital clinic or have a change in source for their usual care. Nineteen percent reported unmet medical needs,32 another independent risk factor for ED visits. The finding that frequent ED visitors are about 6 times more likely to have been hospitalized in the preceding 3 months (odds ratio 6.1; 95% CI 4.1 to 8.9) (within the preceding 3 months) buttresses their claims of unmet need.30

Patient perception of the ED as an alternative to other sources of primary care has been hypothesized to be one of the essential drivers of frequent use.12,15 Individuals are less likely to report frequent ED use if they are satisfied with their choice of physician or are satisfied with the care they receive.27 The principal reasons given by patients for using the ED included anticipated expediency and ability to receive free care in the ED.13-15 Despite the stated preference for health care at no cost, 69% of patients respond that they would continue to use the ED if co-payments were required.30

Many Visits and Many EDs
Perhaps patient preference is most evident in the phenomenon of the very-high-frequency ED user. Ruger et al19 concluded from a dataset of 72,000 observations that distinct characteristics could be found among patients with 20 or more visits. For example, a loose bell-curve distribution for admission emerges: infrequent admissions among occasional ED users, a sharp increase for patients with more than 3 visits, and again a low admission rate for those with 20 or more visits. Indeed, the highest-frequency users more often present with lower-acuity complaints.19 Even among patients admitted, lengths of stay are shorter for the highest-frequency users compared with those with 3 to 20 visits and occasional ED users.19 Concordantly, very-high-frequency ED users incur lower hospital costs per visit: about one third the average expense.19 Virtually none of these patients are enrolled in managed care programs under Medicaid, Medicare, or commercial insurance. Seventy-two percent of these patients carry traditional fee-for-service Medicaid/Medicare and tended to be older, on average, by 7 to 8 years than all other ED users.

Another subgroup warranting attention are the patients who use multiple EDs. The data reveal a dichotomy between frequent users who repeatedly use a single ED and those who present to many EDs.25 Overall, 58% of frequent users visit 2 or more EDs in a 12-month period, whereas an outlier group of users of 4% were treated at 5 or more EDs.25 Compared with serial users of a single hospital, patients visiting multiple EDs have more total ED visits and are more likely to be “self-pay”/uninsured.22 Multiple ED users tend to present with the same complaint, whereas serial users who visit the same ED tend to present with multiple complaints.22 One study in Utah elucidated that these singular complaints are commonly injury related (sprains, back problems) or headaches.22

Attrition and Chronic ED Use
Attrition also appears to be a hallmark of frequent ED users.25,22,29,28 An individual who has 4 or more visits in a given year is only 28% to 38% likely to be a frequent user the next year.19 The result is a constantly shifting patient population, many of whom will cease their recurrent visits without intervention. It is unclear from the published studies whether this remission is due to a decreased medical need, a change in insurance or access, or even death. It was found, however, that after 2 years of fitting criteria as a frequent ED user, 56% of patients continued this pattern of ED use.15 Therefore, another subgroup could be defined as chronic frequent users: those who are not lost by predicted attrition and for whom intervention may be more effective.

Pediatric Frequent ED Users
A final interesting subset of frequent users are the pediatric patients. Although the presenting complaints and diagnoses may be different from the larger population of adult frequent users, there are striking similarities in terms of insurance and access. In one study, 80% of parents cited the lack of availability of their PCP as the main reason for using the ED, a finding correlated with more visits during evening and weekend hours.13,16 But akin to the adult data reviewed here, most pediatric frequent users do in fact have an assigned PCP (about 95%) and are more likely to have government insurance.21 Demographic predictors include very young age (<1 year) and minority ethnicity (Hispanic, black, Pacific Islander). Diagnoses differ by study site, but the most common categories include respiratory, neurologic, and ear, nose, and throat complaints.13,21 About three quarters of frequent-use children are identified as having chronic conditions and subsequently even more likely to have a primary pediatrician. Although no difference was observed in the rate of Medicaid coverage between chronically ill and healthy children, patients with chronic conditions who sought care for unrelated complaints were more likely to be publicly insured.21
International Perspectives

The problem of frequent ED use has been observed internationally and studied, notably, in Canada, New Zealand, Taiwan, Sweden, Ireland, and France. Similar to the experience in the United States, investigators in these countries describe concurrent high use of primary care, increased risk of repeated ED visits after business hours, predominant patient perception of medical need, and high turnover in the frequent-users population. Where differences may be found, however, lies largely in the ages and case mix of presenting complaints. In our convenience sample of articles, most non-US observers emphasized the association of frequent ED use with younger age, lower-acuity visits, and psychiatric comorbidity.

DISCUSSION

First, the data from these studies challenge the common assumption that frequent ED use is a problem of uninsured, ethnic minority patients inappropriately seeking basic primary care in the ED. Although black patients are at higher risk of being frequent users, the majority of these visits are attributable to white patients. Most frequent users are either publicly or privately insured, and, perhaps surprising to some, frequent users also have concurrently high utilization of primary care and health care in general. Lack of affiliation with a primary care physician does not appear to be as much of a challenge as the ability to obtain timely, quality care. Therefore, the question of appropriateness should take into account the unmet need of many of these patients. Furthermore, much of the frequent ED use is not for primary care. Although some patients certainly use the ED multiple times for low-acuity complaints, the consensus in the literature is that frequent users often are sick patients with chronic illness associated with high admission rates and high mortality.

The international experience supplies an important perspective for health care reform in our own country because the ubiquity of repeated ED use even among industrialized countries with more nationalized health care systems sheds light on its root causes. In a sense controlling for insurance status, these findings suggest that the phenomenon of frequent use may be related to the quality and accessibility of health care separate from insurance status, the nature of the diagnoses being observed, or some intrinsic psychosocial characteristics of the patients themselves. With movement in the United States toward broader insurance coverage, we should not expect enrollment of more individuals into health plans to sufficiently address the 21% to 28% of ED visits made by frequent ED users. In fact, because a frequent user is more likely to be covered by government insurance than to be uninsured, if having public insurance somehow increases ED visits, then universal insurance may actually increase the number of frequent ED users.

Far from being a homogenous group, frequent ED users likely represent a number of different distinct groups that have yet to be thoroughly defined. Though most frequent ED users are insured, the highest-frequency ED users often are not. The distribution of age appears to be bimodal and associated with differing chief complaints. There is a split among those patients who can be characterized as “serial users” of a single ED and have a variety of complaints and those who visit multiple EDs and have a single complaint. Complaints seem to be site specific, with urban areas demonstrating a greater burden of substance abuse and mental health morbidity. Some authors highlight that their site data are discordant with the experiences of other regions.

Thus, although subgroups of the frequent-user population exist, the results of existing studies fall short of characterizing the discrete groups, at least in ways that are useful in developing policy. There may be sharp differences among frequent users with and without chronic illness or with and without psychiatric or substance abuse issues, and possibly differences based on age, geography, or other demographic characteristics. More work is needed to fully understand these distinctions and how much each group contributes to the overall phenomenon. Although some literature has appeared within individual diagnostic groups (psychiatric patients, sickle cell patients, etc.), as we have demonstrated, much of the overall picture still needs to be filled in.

Although a thorough evaluation of interventions is out of the scope of this review, the efforts of several trials to reduce repeated ED use in the United States and elsewhere have yielded mixed results. Approaches have included individualized care plans and case management, partnerships with primary care, patient home follow-up, and managed care—level interventions. To date, study designs that have used case management have been the most successful in reducing both the number of visits and ED costs. Issues that can be expected to complicate implementation would include, first, the observation that frequent users often use more than one ED and, second, the high turnover in this group. Therefore, case management would be expected to be limited in preventing the influx of new patients who become frequent users and may miss the patients who visit multiple hospitals.

Efforts to divert patients from the ED are widely derided because many of these visits are indeed warranted according to demonstrable medical need. Furthermore, patients have expressed their preference for emergency care, often because of unavailability of their PCP and despite higher ED co-payments. Among those patients who are more likely to present with low-acuity complaints, as the described highest-frequency users, intervention may yield lower financial returns, given the relatively smaller sum total of costs incurred. However, the chronically ill patient, for whom we hypothesize a greater burden of frequent ED use, likely contributes a significant financial effect on emergency care. In Oregon, frequent users represent about 50% of the Medicaid dollars spent on ED care.

Research on this aspect of emergency care utilization will continue as health care reform and ED crowding remain foci of attention within and beyond emergency medicine. The research to date has been limited in part by one of 2 constraints: (1) that site-specific data have produced a large degree of heterogeneity and pursuant difficulties in generalizability, and (2) that national data sets are deficient in key demographic variables and...
objective process, outcome, and cost data. These issues have been best addressed in the state-level studies that offer a combination of population data sets linked to hospital information resources.

A helpful new direction would be analysis that explicitly stratifies the subgroups within Medicaid and Medicare to assess the influence of public insurance on repeated ED use in the United States, especially given recent proposals to expand these programs. The bimodal age distribution suggests that the elderly sick represent a large burden of visits, the extent of which is poorly defined. Because the stereotype of the psychiatric, drug-seeking, or nonurgent frequent user pervades, it would be enlightening to know the significance of this subgroup in terms of size, resource consumption, and effect on ED crowding. As access to care emerges at the core of ED crowding and frequent use, greater attention should be placed on the conditions conventionally treated in the ambulatory care setting. Future research on frequent ED use should now explore the wide heterogeneity in patients described here. Because interventions will undoubtedly use large, systems-based approaches, understanding this heterogeneity will be key.

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