The Journal of Emergency Medicine, Vol. 43, No. 6, pp. 1175–1180, 2012

0736-4679/$ - see front matter

ELSEVIER

http://dx.doi.org/10.1016/j.jemermed.2012.02.078

Brief Reports

A PROFILE OF FREESTANDING EMERGENCY DEPARTMENTS IN THE UNITED STATES, 2007

Ashley F. Sullivan, MS, MPH, Chethan Bachireddy, BA, Anne P. Steptoe, BA, Justin Oldfield, BA, Taneisha Wilson, BA, and Carlos A. Camargo Jr., MD, DRPH

Department of Emergency Medicine, Massachusetts General Hospital, Boston, Massachusetts
Corresponding Address: Carlos A. Camargo Jr., MD, DRPH, Department of Emergency Medicine, Massachusetts General Hospital, 326 Cambridge Street, Suite 410, Boston, MA 02114

☐ **Abstract—Background: Freestanding Emergency Departments (FSEDs) have emerged as an alternative to traditional hospital-based emergency care. Study Objective: We sought to determine the number, basic types, distribution, and characteristics of United States (US) FSEDs in 2007. Methods: Combining data from the 2007 National Emergency Department Inventory-USA database, the 2007 American Hospital Association Annual Survey of Hospitals, Internet searches, and telephone calls, we established an inventory of FSEDs. We define FSEDs as emergency care facilities physically distinct from a hospital. FSEDs include "satellite" Emergency Departments (EDs), which are owned by a parent hospital, and "autonomous" EDs, which lack such an affiliation. Results: We identified 80 FSEDs operating in 2007, representing 1.6% of all US EDs; 73 (91%) in 20 states were satellite EDs, and seven (9%) in three states were autonomous EDs. Most FSEDs (92%; 95% confidence interval 83–97%) were located in urban areas, which is considerably higher than the proportion for hospital-based EDs (58%). The median distance from a satellite ED to a parent hospital ED was 10.6 miles. In 2007, FSED annual visit volumes ranged from 700 to 56,545 visits. The 2007 median visit volume was 18,769 (interquartile range 11,106–23,504; n = 52). This value did not vary by geographic region and is almost identical to the 2007 median visit volume for hospital-based EDs (18,776 visits). Conclusions: FSEDs represent <2% of US EDs, with satellite EDs comprising a majority of all FSEDs. Most (92%) FSEDs are located in urban areas.** © **2012 Elsevier Inc.**

☐ **Keywords—emergency care; urgent care**

INTRODUCTION

The rising number of annual Emergency Department (ED) visits in the United States, in concert with ED closures, has increased the burden on individual EDs and thereby contributed to crowded conditions (1). Crowding is thought to negatively affect the quality of emergency care and outcomes (2).

In response to the rising demand for timely and accessible emergency care, freestanding Emergency Departments (FSEDs) have emerged as an alternative to traditional hospital-based emergency care. Although they have operated for decades, FSEDs have recently gained more attention. FSEDs attract patients by promising wait times of less than an hour and more amenities than the traditional ED setting offers (3,4). Despite media reports about their growing numbers, there is surprisingly little research on FSEDs (4).

We sought to determine the number and geographic distribution of US FSEDs. Additionally, we sought to identify types and basic characteristics of FSEDs, including their visit volume and distance to parent hospital, if applicable.

Reprints are not available from the authors.

RECEIVED: 3 November 2010; FINAL SUBMISSION RECEIVED: 21 October 2011;
ACCEPTED: 23 February 2012

MATERIALS AND METHODS

For the purposes of this study, we defined an FSED as a facility that sees all types of emergencies, is not located within a hospital, is available to the public, and is open daily, and is open at least 156 (of 168) h per week, including holidays. (The hourly requirement allows a maximum of 6 h closed per day on Saturdays and Sundays.) FSEDs can be characterized as satellite EDs or autonomous EDs. "Satellite" EDs are facilities run by a parent hospital or health system. In contrast, "autonomous" EDs have no hospital affiliation and are typically owned by private groups of physicians.

Utilizing data from the 2007 National Emergency Department Inventory (NEDI)-USA, the 2007 American Hospital Association (AHA) Annual Survey of Hospitals, Internet searches, and telephone calls, we established an inventory of all FSEDs in the United States (5,6). NEDI-USA 2007, which contains data on all US EDs for the year 2007, is created through original data collection and integration of information from a variety of sources (e.g., the Verispan Hospital Market Profiling Solution, American Hospital Association Annual Survey Database, Flex Monitoring Team, and Association of American Medical Colleges). We extracted hospital-based ED characteristics from NEDI-USA 2007. The 2007 AHA Annual Survey of Hospitals contains hospital-specific data on all hospitals in the United States in the year 2007. The 2007 AHA Annual Survey includes a variable indicating the presence of a satellite ED. It should be noted that neither the AHA Annual Survey nor NEDI-USA includes autonomous EDs.

Internet searches and telephone calls were used to identify new FSEDs and to verify the existence and location of each possible FSED identified in the AHA survey. Keywords used for Internet searches to identify new FSEDs included "freestanding emergency department," "satellite emergency department," "emergency department opening," and "24/7 care." Facilities were excluded from our FSED inventory if they did not adhere to our definition of an FSED. If the facility met our criteria, we interviewed FSED staff on how long the FSED has been in operation, its address, its 2007 visit volume, and if there were other FSEDs in the surrounding area. We interviewed FSED staff or, in the case of satellite EDs, staff in central administrative offices of the parent hospital.

Geographic regions (Northeast, South, Midwest, and West) were defined according to US Census Bureau boundaries (7). FSEDs in US territories and outlying areas (e.g., Puerto Rico, Guam, US Virgin Islands) were excluded from this study. All FSEDs were categorized at the county level by Urban Influence Codes (UIC). UICs were developed by the US Department of Agriculture and categorize counties according to economic, commuting, and population data from the 2000 Census (8). We collapsed the 13 categories of the UIC into three groups: urban, large rural, and small rural (9). Urban areas contained counties within metropolitan areas, defined as counties containing $\geq$1 cities with population $\geq$50,000 and adjacent outlying counties economically tied to the core, with $\geq$25% commuting to the central county (UIC categories 1 and 2) (8). Large rural areas contained counties within micropolitan areas, rural counties with an urban cluster of between 10,000 and 50,000 people, and economically tied adjacent counties (UIC categories 3, 5, and 8). Small rural areas contained all non-metropolitan and non-micropolitan counties (UIC categories 4, 6, 7, 9, 10, 11, 12, and 13) (8). We used Google Maps (www.maps.google.com) to calculate distances between satellite EDs and the nearest hospital in the parent health system.

Data were analyzed using descriptive statistics. We also employed a variety of statistical tests, including the Kruskal-Wallis test to determine whether there were significant regional differences in median visit volume; Fisher's exact test to determine whether there were significant regional differences between those satellite EDs that gave visit volume information and those that did not; and chi-squared to determine whether, among facilities purported to be satellite EDs in the AHA survey, there were significant regional differences between facilities that were actually satellite EDs and those that were not. All statistical analyses were performed using STATA 10.0 (StataCorp, College Station, TX).

The Massachusetts General Hospital Human Research Committee reviewed this study and classified it as exempt.

RESULTS

We identified a total of 80 US FSEDs in 2007. Of these, 73 (91%) were satellite EDs and seven (9%) were autonomous EDs. All FSEDs were open 24 h a day, 7 days a week. Several facilities that did not meet our FSED criteria advertised themselves as FSEDs. In the 2007 AHA Survey, only 56 (29%) of 191 US hospitals listed as owning a satellite ED actually had one, by our definition. This confirmation rate did not vary by region: 28% Northeast, 30% South, 28% Midwest, and 32% West. Fifty (63%) of the 80 FSEDs operating in 2007 opened after the year 2000, demonstrating the rapid growth of the FSED model in recent years. In 2007, 10 hospital systems had more than one satellite ED and accounted for 34% (25/73) of all satellite EDs.

Figure 1 shows the geographic distribution of FSEDs in the United States in 2007. Of the 73 satellite EDs in

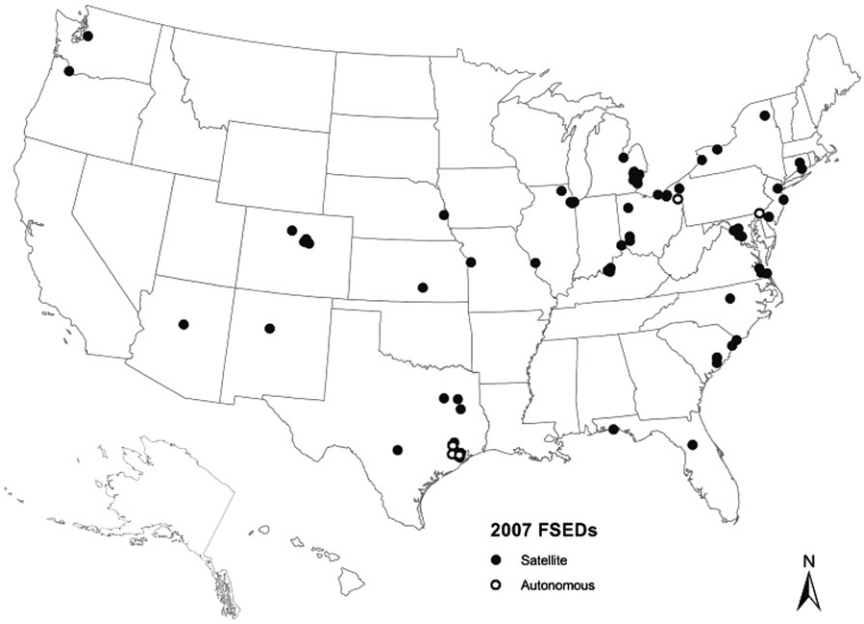

Figure 1. Geographic distribution of freestanding Emergency Departments (FSEDs), 2007.

2007, 26 (36%) were located in the Midwest, 9 (12%) in the Northeast, 29 (40%) in the South, and 9 (12%) in the West. Among the seven autonomous EDs, one (14%) was located in the Midwest and the remaining 6 (86%) were located in the South. Restricting the sample to satellite EDs, the distance to the nearest hospital in the affiliated health system ranged from 1.5 to 77.6 miles, with a median of 10.6 miles (interquartile range [IQR] 7–16.7; n = 73).

Table 1 compares the characteristics of traditional, hospital-based EDs vs. FSEDs in 2007. The regional distribution of FSEDs did not differ greatly from hospital-based EDs. However, FSEDs were much more likely than hospital-based EDs to exist in urban areas. Among the 73 satellite EDs, 67 (92%) were located in urban areas, three (4%) in large rural areas, and three (4%) in small rural areas. All autonomous EDs were located in urban areas. In 2007, FSEDs made up 1.6% (95% confidence interval 1–2%) of all EDs operating in the United States.

Figure 2 shows the FSED annual visit volumes in 2007. All autonomous EDs declined to provide visit volume, citing privacy issues. Twenty-one satellite EDs either declined to provide 2007 annual visit volume or did not have this information available. Although a few of the FSEDs refused to provide information, most reported that they did not have the information available. Either way, we found no significant regional differences between FSEDs that provided visit volume information and those that did not. Excluding the 28 sites with missing data, 2007 FSED visit volumes ranged from 700 to 56,500 visits per year. The 2007 median visit volume

Table 1. Comparison of Hospital-based Emergency Departments and Freestanding Emergency Departments in 2007

Characteristics	Hospital-based Emergency Departments	Freestanding Emergency Departments
Total # of facilities	4837	80
Median visit volume (IQR)	18,776 (7722–35,456)	18,769 (11,106–23,504)
Facilities by US region (%)		
Midwest	29	36
Northeast	14	12
South	38	40
West	19	12
Facilities by Urban Influence Code type* (%)		
Urban	58	92
Large rural	17	4
Small rural	25	4

IQR = interquartile range; US = United States.
* Urban Influence Code type collapses the 12 categories of the Code into 3 categories. Please refer to the Methods section for more details.

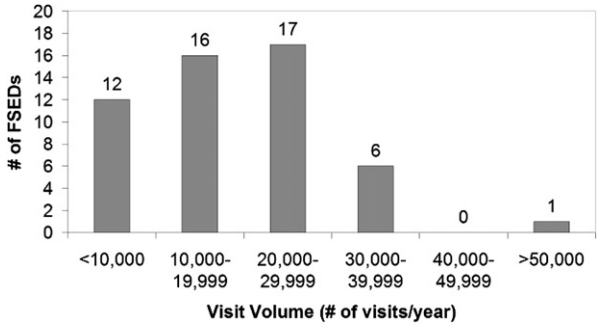

Figure 2. Number of freestanding Emergency Departments (FSEDs) by annual visit volume, 2007.

was 18,769 (IQR 11,106–23,504; n = 52). This is very similar to the 2007 median visit volume for all US hospital-based EDs (18,776 visits) (10). FSED median visit volume did not vary significantly between regions.

DISCUSSION

To our knowledge, this is the most accurate, nationwide profile of FSEDs in the United States. FSEDs have gained widespread media attention as they provide an alternative to the often-crowded hospital-based ED (4). However, despite media coverage and recent growth, our results indicate that FSEDs still account for a very small fraction (1.6%) of all US EDs. Our inventory of FSEDs indicates that the frequently cited numbers of satellite EDs from the 2007 AHA survey are considerable overestimates. Because the AHA survey depends largely on hospital self-reporting, the discrepancy between projected and actual number of satellite EDs is likely due to uncertainty about how to define these uncommon types of EDs. Indeed, many facilities that fit our criteria as FSEDs categorized themselves as urgent care centers, and several urgent care centers that did not meet our FSED criteria advertised themselves as FSEDs.

Our data show that a large majority (91%) of all FSEDs operating in 2007 were satellite EDs; autonomous EDs represent a small subset (9% of FSEDs). The small number of autonomous EDs may be attributed to both strategic and regulatory concerns. Many hospitals support even profit-losing satellite EDs because of their putative benefits: satellite EDs enhance access to care, capture market share, and test for the feasibility of a new hospital (3). The support of a full hospital system can contribute significantly to the stability and success of a satellite ED (11). The small number of autonomous EDs recorded also may be a byproduct of the lack of a national data source for autonomous EDs and the difficulties associated with identifying these facilities.

Our data demonstrate that FSEDs, as compared to hospital-based EDs, are much more likely to be located in urban areas (Table 1). Carr et al. demonstrated decreased access to emergency care in rural settings, and our findings reflect this pattern and suggest its applicability to both FSEDs and hospital-based EDs (12). Increased FSED placement in urban areas may also reflect greater financial sustainability of urban placement (11). Urban areas usually place the FSED closer to the parent hospital, as the higher population density of urban areas allows for an extension, rather than duplication, of services. Furthermore, rural FSEDs face considerable financial, staffing, and regulatory demands that are difficult to address without the support of an affiliate health care facility (11). Such issues may explain why no autonomous EDs currently operate in rural areas. Despite these challenges, our finding that median visit volumes did not vary regionally suggests that FSEDs may still help to improve emergency care access in a wide variety of settings.

FSEDs have been controversial. With the sudden growth of FSEDs over the past few years, many states have begun passing legislation to regulate FSEDs, and future research should examine state regulations. Inconsistent and sometimes limited regulation of FSEDs has raised doubts about their safety and their ability to handle high-acuity cases. For example, most FSEDs do not have surgery capabilities (3). There also have been concerns about the distance between FSEDs and parent hospitals; the outcomes of many emergent conditions are time dependent, and some experts fear that, during high-acuity episodes, patients will waste precious time in transit between the FSED and the hospital (4). To mitigate this problem, FSEDs should clearly advertise their medical capabilities to the public and establish transfer relationships with nearby hospitals to handle high-acuity cases. Efforts to more clearly define FSEDs represent an important first step in providing greater understanding of how FSEDs may fit safely and effectively into the emergency care landscape.

Limitations

The study has several potential limitations. Our inventory is from 2007 and may not reflect the FSED profile in more recent years. Additionally, we cannot be absolutely certain that our inventory of autonomous EDs is comprehensive. Neither NEDI-USA nor the AHA Survey has information on autonomous EDs, so we relied on Internet searches and telephone calls to locate and verify autonomous EDs. Because the number of autonomous EDs in 2007 was very small, missing some of these facilities could have changed our results. We are unable to test this possibility because, to our knowledge, our data represent the first effort to create a national inventory of autonomous EDs and comparable data are not available. Likewise, because the AHA Survey includes data on satellite EDs affiliated with hospitals and there is no source of data on autonomous

EDs, the reported discrepancy between the number of satellite and autonomous EDs may be due, in part, to sampling bias. We believe, however, that our data on autonomous EDs are complete and that they provide a useful "baseline" for future monitoring. We relied on self-report to verify each FSED's years of operation and visit volume. Moreover, we were limited in our statistical analysis by the small sample size (n = 80), particularly for autonomous EDs (n = 7), especially given that some facilities declined or were unable to share information.

CONCLUSIONS

FSEDs represent <2% of US EDs, with satellite EDs comprising a majority of all FSEDs. Most (92%) FSEDs are located in urban areas. Though this study provides the first national data on FSEDs, it also demonstrates the need for additional research to better understand these facilities. Future studies should focus on FSED capabilities, and safety issues, particularly during high-acuity episodes. It also will be important to measure the effect of FSEDs on overall access to care, as FSEDs play a small but growing role in providing emergency services.

Acknowledgments—The authors would like to thank Janice Espinola, MPH, for the guidance she provided on statistical matters related to this project.

REFERENCES

1. Burt CW, McCaig LF, Valverde RH. Analysis of ambulance transports and diversions among US emergency departments. Ann Emerg Med 2006;47:317–26.
2. Bernstein SL, Aronsky D, Duseja R, et al. The effect of emergency department crowding on clinically oriented outcomes. Acad Emerg Med 2009;16:1–10.
3. Rogers JL. Freestanding emergency departments: brief overview and considerations. Ann Arbor, MI: Karlsberger Knowledge Paper Series; 2006.
4. Appleby J. More emergency rooms open away from hospitals. USA Today. April 24, 2008.
5. Emergency Medicine Network. National Emergency Department Inventory 2007. Available at: http://emnet-usa.org/nedi/nedi.htm. Accessed April 21, 2009.
6. American Hospital Association. Annual survey database documentation manual. Chicago, IL: American Hospital Association; 2007.
7. U.S. Census Bureau. Census 2000 geographic definitions. Available at: http://www.census.gov/geo/www/geo_defn.html#AttachmentC. Accessed March 15, 2009.
8. United States Department of Agriculture - Economic Research Service. Measuring Rurality: 2003 Urban Influence Codes. Available at: http://www.ers.usda.gov/Briefing/Rurality/UrbanInf/. Accessed August 18, 2009.
9. Ginde AA, Sullivan AF, Camargo CA Jr. National study of the emergency physician workforce, 2008. Ann Emerg Med 2009;54:349–59.
10. Emergency Medicine Network. National emergency department inventory 2009. Available at: http://emnet-usa.org/nedi/nedi.htm. Accessed June 1, 2011.
11. Avery S. A limited-service rural hospital model: the freestanding emergency department. J Rural Health 1999;15:170–9.
12. Carr BG, Branas CC, Metlay JP, et al. Access to emergency care in the United States. Ann Emerg Med 2009;54:261–9.

ARTICLE SUMMARY

1. Why is this topic important?

Freestanding Emergency Departments (FSEDs) have emerged as an alternative to traditional hospital-based emergency care. Although they have operated for decades, FSEDs have recently gained more attention; however, little research exists on FSEDs.

2. What does this study attempt to show?

We sought to show the number and geographic distribution of US FSEDs. Additionally, we sought to identify types and basic characteristics of FSEDs, including their visit volume and distance to parent hospital, if applicable.

3. What are the key findings?

FSEDs represent <2% of all US EDs, with satellite EDs comprising a majority of all FSEDs. Most (92%) FSEDs are located in urban areas.

4. How is patient care impacted?

FSEDs play a small but growing role in providing access to emergency services. Our research provides a first look at the distribution and basic characteristics of FSEDs. There have been concerns about FSED's impact on the quality of patient care; however, the lack of research on the features and attributes of FSED has limited the ability to gather data on these potential concerns. The research presented here lays the groundwork for future work on FSED capabilities and safety issues.