Survey of directors of emergency departments in California on overcrowding

ABSTRACT ● **Objective** To survey the directors of emergency departments in California on their opinions of the extent and factors associated with overcrowding in emergency departments. ● **Methods** Surveys were mailed to a random sample of emergency department directors. Questions included estimated magnitude, frequency, causes, and effects of overcrowding. ● **Results** Of 160 directors surveyed, 113 (71%) responded, and 109 (96%) reported overcrowding as a problem. All (n = 21) university or county hospital directors and most (n = 88 [96%]) private or community hospital directors reported overcrowding. The 4 private or community hospital directors reporting no overcrowding serve smaller communities with populations less than 250,000. Thirty-two directors (28%) reported daily overcrowding. The most cited causes were increasing patient acuity and volume, hospital bed shortage, laboratory delays, and nursing shortage. These putative causes were similar between university or county and private or community hospital directors, except for consultant delays, which were more prevalent in university or county hospital emergency departments. ● **Conclusions** Overcrowding is perceived to be a serious problem by emergency department directors. Many factors may contribute to overcrowding, and most are beyond the control of emergency departments.

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There are more than 5,000 emergency departments in the United States, and 470 are in California. One of the key functions of the emergency department is as a public "safety net," providing care to patients who do not have access to primary care physicians and clinics.[1] Recently there has been increasing discussion regarding the ability of emergency departments to provide timely care to patients with emergency medical conditions.[2-5] The inability to provide timely service is often attributed to the overcrowded conditions that have developed in emergency departments across this country. Anecdotal evidence suggests that patients are subject to long delays compared with many years ago. The California State Department of Health has investigated some hospitals in recent years over incidents in which prolonged waits for patients have led to poor outcomes.[3]

Although overcrowding has been the topic of discussion among many emergency physicians and legislators, there are few documented studies. Overcrowding in emergency departments in some metropolitan academic centers

was described more than 8 years ago.[1,5] It is also an international problem, affecting countries with socialized health care and extensive primary care networks.[6-8] Several articles in the lay press have brought attention to the problem, but despite dramatic headlines and photos of congested emergency departments, these have been largely ignored by the state and federal government.[9,10] To further investigate the factors associated with overcrowding and estimate the extent of the problem, we conducted a survey study of directors of emergency departments in California.

Summary points

- Overcrowding is perceived to be a serious problem by California emergency department directors
- Many factors may contribute to overcrowding, and most are beyond the control of emergency departments
- Overcrowding in emergency departments may lead to poor patient outcomes
- As the population increases and ages, overcrowding will likely worsen in the future unless emergency services are expanded

METHODS

This survey study was conducted during the first 4 months of 1999. A total of 160 questionnaires was mailed to a sample of emergency department directors in hospitals in California (American Hospital Directory, Neptune, NJ) using a random number generator. Questions were asked about the demographics of the regional population, type of hospital, annual census, and bed capacity. University hospitals were included with teaching hospitals if they had a full-time residency program in 1 or more specialties. Questions were asked about possible factors that could influence any degree of overcrowding (table 1) and which time periods had the worst episodes of overcrowding. Putative causes of overcrowding were provided, and respondents were asked to rank these on a 5-point scale: 1 indicates not a cause; 3, somewhat of a cause; and 5, a major cause. Causes are listed in table 2. Respondents were also asked about the duration of the overcrowding problem and their impression of the effects this had on patients presenting to the emergency department, such as delayed diagnosis and treatment and the increased risk for poor outcomes. All responses were estimations, and the verification of responses with actual data was not requested.

RESULTS

Of 160 emergency department directors surveyed, 113 (71%) responded, and 109 (96%) said that overcrowding was a problem. There were 92 private and community (81%) and 21 university and county emergency department directors (19%) from whom surveys were collected. The 4 directors reporting no problem with overcrowding were at private facilities or those affiliated with communities and located in smaller communities serving populations less than 250,000. The directors chose from a list of circumstances defining overcrowding, and their agreement on this list is reported in table 1. Responses between private or community and university or county hospital directors were similar. The directors thought that overcrowding occurred several times per week (64%), and 28% of them reported daily overcrowding, mostly between 3 and 11 PM.

The reasons the directors gave for the perceived overcrowding are listed in table 2. A total of 90% of directors said that many patients had long waiting times, with an estimated 40% of patients being affected (table 3). Many directors reported delays in diagnosis and treatment. Several directors thought that these delays put patients at risk of poor outcomes, and there were actual poor outcomes as a result of overcrowding. The estimated effects on patients of these factors are shown in table 3. The directors also provided actual examples of poor outcomes: delays in patients receiving thrombolytic drugs after acute myocardial infarction, delay in patients being given analgesia for severe pain, delay in surgery for a patient with appendicitis, delay in a patient with severe dehydration being given fluids, and a patient with diabetic ketoacidosis who waited 2 hours for treatment. Two thirds (68%) of directors reported that overcrowding had developed within the past 5 years.

Table 1 *Selected circumstances defining emergency department (ED) overcrowding and level of agreement between directors of different facility types (n = 113)*

Specific circumstance	Total	Private or community hospital	University or county hospital
		% answering yes	
Patients wait >30 min to see physician	33	23	54
Patients wait >60 min to see physician	74	80	61
All ED beds filled >6 h/day	81	73	100
Patients placed in hallways >6 h/day	84	80	92
Emergency physicians feel rushed >6 h/day	81	83	77
Waiting room filled >6 h/day	58	77	92

DISCUSSION

In our study, emergency department directors overwhelmingly reported overcrowding as a problem in California hospitals. The problem is apparently not limited to county and teaching hospitals, but affects private hospitals as well. Discussion in the early 1990s provided evidence that overcrowding was primarily limited to teaching hospitals serving cities and urban areas.[5,10] Surprisingly, most of the

Table 2 *Perceived causes of overcrowding and comparison between facility types**

Reason	All hospitals (n = 113)	Median	Private/community hospitals (n = 92)	Median	County/university hospitals (n = 21)	Median
Managed care authorization calls	2.3 ± 1.3	2	2.3 ± 1.4	2	2.3 ± 1.0	3
Triage nurse too busy	2.8 ± 1.1	3	2.7 ± 1.1	3	3.0 ± 1.4	3
Increased volume	3.3 ± 1.5	3	3.4 ± 1.4	4	2.7 ± 1.6	3
Increased patient acuity	4.3 ± 0.9	5	4.4 ± 0.9	5	4.1 ± 0.9	4
Space limitations	3.2 ± 1.5	3	3.2 ± 1.5	3	2.9 ± 1.3	3
Nursing staff shortage	3.3 ± 1.3	3	3.2 ± 1.3	3	3.7 ± 1.3	4
Physician staff shortage	2.1 ± 1.1	2	2.1 ± 1.0	2	2.0 ± 1.0	2
Radiology delays	3.3 ± 1.1	3	3.3 ± 1.1	3	3.3 ± 1.1	3
Laboratory delays	3.4 ± 1.2	3	3.3 ± 1.2	3	3.7 ± 1.0	4
Consultation delays	3.3 ± 1.2	3	3.1 ± 1.1	3	4.1 ± 0.9	4
Hospital bed shortage	3.8 ± 1.2	4	3.7 ± 1.3	4	4.1 ± 1.0	4

*Directors answered on a 5-point scale: 1 = not a cause; 2 = minor; 3 = moderate; 4 = major; and 5 = severe. Data are given as mean ± SD.

directors of emergency departments serving communities of less than 250,000 reported overcrowding.

No simple definition exists that succinctly describes overcrowding, and the reasons for it are complex. Many of the factors leading to delays in patient care are associated with services beyond the control of the emergency department (table 2). One of the most cited contributors to overcrowding was shortage of hospital beds. When all hospital beds are full, patients who need admission must wait in the emergency department. This may limit their evaluation and treatment. As the population ages and life expectancy increases, a higher number of patients with several concomitant medical problems, such as congestive heart failure and chronic obstructive pulmonary disease, will be seen in emergency departments. This is thought to be a major contributor to overcrowding.[11] Another factor cited was the increasing volume of patients that need to be seen. As the population of California grows, the demand on emergency services will grow accordingly. In the early 1990s, shortages of nursing staff in emergency departments were thought to be a major contributor to overcrowding.[12] Nursing, laboratory, and radiology services in university or county hospitals are frequently overused and understaffed. Several directors also commented on the survey forms that overcrowded conditions in the emergency department were damaging the morale of nursing staff.

Directors of emergency departments reported that issues with managed care were a factor in overcrowding. California has led the nation in the development of managed care systems.[13] Managed care and health maintenance organizations discourage patients from using emergency services.[14] Several organizations have refused or delayed payments to emergency departments.[15] Managed care "gatekeepers" may call the emergency department and demand to speak with the emergency physician before authorizing care for a patient. This reduces the time emergency physicians are able to spend caring for patients.

Long waiting times cause frustration and may prolong pain and suffering. Delays may also occur in the diagnosis and treatment of serious medical conditions.

This study has limitations. The answers to the survey questions reflect the knowledge, experience, and opinion of the directors who responded and may have led to an overestimation of the problem. We assumed that directors have a good sense of how their emergency departments operate. We did not ask for verification of their responses because they may not have had access to such data. Causes of overcrowding were measured using an integer scale with adjectival descriptions such as minor, moderate, and major, which may represent only a perception of the overcrowding problem.

CONCLUSIONS

According to emergency department directors, overcrowding is a serious problem in California's university, county, and private hospital emergency departments in both urban and rural settings. Many factors appear to contribute to overcrowding, such as increasing patient volume and medical complexity, delays in laboratory and radiology

Table 3 *Estimated effects of overcrowding on emergency department patients and comparison between facility types**

Effect	Total	Private or community hospital	University or county hospital
Long patient waits	40.0 ± 26.7	36.9 ± 27.4	46.3 ± 25.1
Delayed diagnosis and treatment	27.1 ± 23.9	25.3 ± 24.8	31.0 ± 22.7
Extended pain and suffering	17.1 ± 15.9	14.7 ± 14.4	21.9 ± 18.2
Risk for poor outcomes	11.1 ± 13.1	11.9 ± 14.9	9.5 ± 8.7
Actual poor outcomes	1.9 ± 2.2	1.7 ± 2.2	2.6 ± 2.3

*Data are given as mean ± SD percentage.

services, and lack of empty hospital beds; these are beyond the control of the emergency department. Overcrowding may result in long waiting times for patients, increase the risk of adverse outcomes, and result in actual poor outcomes.

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