

Emergency Department Visits in Wisconsin 1998-2002: Trends in Usage and Accuracy of Reported Data

James E. Svenson, MD, MS

ABSTRACT

Introduction: There is a paucity of data regarding the utilization of emergency departments (EDs) across Wisconsin. It is unknown if national trends in increased utilization are consistent within our state. Several years ago, mandatory reporting of ED visits to the Department of Health and Family Services was instituted and, if accurate, may provide a method for tracking ED usage.

Methods: We conducted a survey of existing EDs to study the trend in patient visits for the 5-year time period 1998-2003. Data reported in the surveyed departments were compared to those reported to the state database.

Results: On average, all EDs reported a consistent yearly increase in patient visits over the time period (an average overall increase of 10%). On average, this increase was larger for smaller hospitals. Growth was consistent over the time period, but the yearly rate steadily slowed down. Data reported to the state consistently underreported the actual census.

Conclusion: All sizes of EDs across Wisconsin continue to show increases in ED utilization. The growth rate is consistent but may be slowing. This has implications for planning for ED resources. Reported data have many discrepancies and need to be independently checked before they can be utilized in any research or planning.

INTRODUCTION

Utilization of emergency department (ED) services continues to rise. Over the time period 1992-1997,

Doctor Svenson is an associate professor in the Section of Emergency Medicine, University of Wisconsin, Madison, Wis. Please address correspondence to: James Svenson, MD, MS, Associate Professor, Department of Medicine, University of Wisconsin, F8/175 Clinical Science Center, 600 Highland Ave, Madison, WI 53792; phone 608.265.5808; fax 608.262.2641; e-mail jes@medicine.wisc.edu.

ED utilization increased by 14% in the United States.¹ Some of this increase is related to increases in population, but these do not account for all of the observed trends.^{2,3} Other factors include the aging of the population, insurance coverage, and differential utilization between different populations.^{1,2,4}

Despite this increased volume of ED visits, there has been no rise in the number of hospital EDs to accommodate the demand. In fact, because of the increasing demand for ED care without corresponding revenue, many hospitals have had to close their ED.^{5,6} This trend, in addition to decreasing nursing availability and demand for limited inpatient services, has led to an increase in ED overcrowding. Overcrowding is no longer unique to teaching hospitals, but has now spread to many community, suburban, and rural hospitals.⁷

There is little hard information about trends in Wisconsin ED volumes. A few years ago, Wisconsin mandated reporting of ED visits, and, under this mandate, hospitals began reporting in 2002.⁸ The inaccuracy of electronic data in various settings has been investigated.⁹

We conducted a survey of EDs around Wisconsin to determine trends in ED volumes and the accuracy of reported information for the first reporting year.

METHODS

All hospitals in Wisconsin reporting emergency department visits were identified using data from the Department of Health and Family Services (DHFS). Volumes for 2002 that had been reported under Chapter 153, Wisconsin Statutes, and HFS 120, Wisconsin Administrative Code were downloaded from the Web site.⁸ A survey was sent to medical directors of all the EDs of these hospitals, asking them to report ED volumes for the last 5 years, 1998-2003.

Results were tabulated and compared. For the purpose of comparison, EDs were classified as small, me-

dium, or large. Those EDs with an annual volume of <15,000 were classified as small. Medium-sized EDs had volumes of between 15,000 and 30,000 patient visits per year. Larger EDs were those with volumes >30,000 patients visits per year.

Population estimates for each county were obtained using information from the Wisconsin state government census Web site.¹⁰ ED volumes per 1000 population were calculated on the basis of these census data. Statistical analyses were performed using linear regression analysis.

RESULTS

In Wisconsin, 123 hospitals reported ED visits to DHFS for the year 2002. We received responses from 89 (72%) of the EDs. For the year 2002, ED volumes for those responding ranged from 932 to 60,373 visits. Of these visits, 58 (65%) were at small EDs, 20 (22%) were at medium-sized EDs, and 11 (13%) were at large EDs. There were 198 patient visits/1000 population, with a range from 7 to 738 visits/1000 population.

There was a 10% average increase in patient volumes over the time period 1998-2002. On average, all hospitals experienced an increase in volume regardless of size: 16% for small EDs, 14% for medium EDs, and 6% for large EDs. When adjusted for changes in the population that occurred over the time period, the increase in patient volumes was essentially the same (14% for small EDs, 10% for medium EDs, and 8% for large EDs). Thus, the increase in patient volumes was virtually independent of increases in population densities.

There was a steady increase in ED volumes over the time period 1998-2002, but in general the rate of growth slowed each year ($P=.007$) (Figure 1). Smaller hospitals experienced a larger and more sustained yearly change than larger hospitals ($P=.05$). However, the rate of change slowed consistently over the time period, regardless of ED size.

During the year 2002, the first year of reporting under the Wisconsin mandate, reported ED volumes were significantly less than those reported by ED medical directors. On average, volumes were underreported by almost 33% (Figure 2). These errors were independent of ED size ($P=.027$) owing to the wide variability in errors, but the underreportage was, in general, greater for smaller hospitals.

DISCUSSION

Emergency departments across Wisconsin experienced an increase in utilization over the time period of this study independent of increases in the population of each

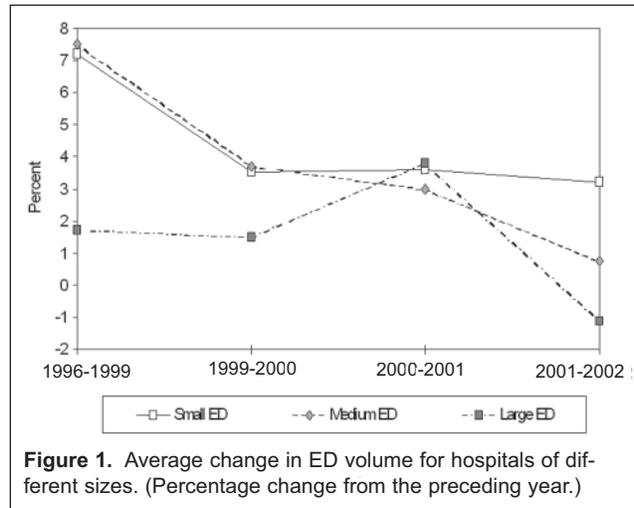


Figure 1. Average change in ED volume for hospitals of different sizes. (Percentage change from the preceding year.)

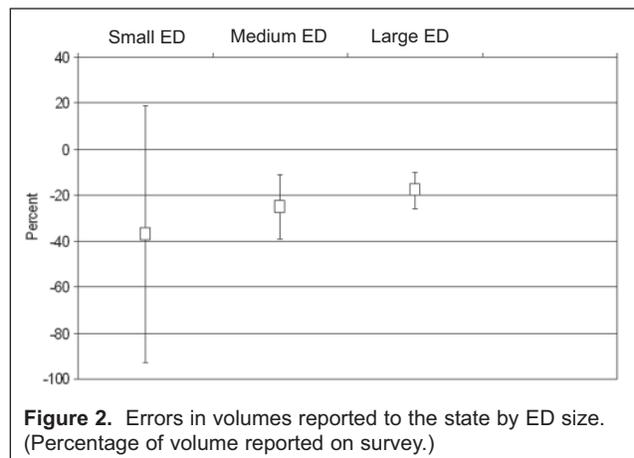


Figure 2. Errors in volumes reported to the state by ED size. (Percentage of volume reported on survey.)

county during the period. All sizes of EDs experienced similar changes in utilization, but the change was most marked in small EDs.

Small EDs are least able to accommodate these increases in utilization. Lack of resources for these EDs has led to many small departments closing. These increased volumes may well strain limited resources even further.

Recent trends in ED utilization have shown consistent increases in ED volumes over the 1990s. These increases have a major impact on planning for staffing, space, and other resources. However, if these increases are not being sustained, then planning for ED resources may need to be revisited. Although the data we collected show a continuing increase in ED utilization, the change was slowing, and in larger EDs volumes seemed to be plateauing. Allocation of resources based on projections of continuing increases may have significant errors.

These data are limited by lack of information regarding insurance status, acuity, and age of patients making

up the increases in volume to Wisconsin EDs. Reeder et al, in their study of changes in ED utilization in Pitt County, NC, showed a significant increase in average age, patient acuity, and insurance coverage over the time period studied.² Increasing use of EDs by sicker, older patients requires a different utilization of resources and increased length of stay. It should be determined whether these changes are similar in Wisconsin EDs.

As has been reported, electronic data—whether submitted by mandate or voluntarily—are subject to significant errors.⁹ Data on ED usage submitted to the state significantly underreported census data reported by ED medical directors at each hospital. This was the first year that ED visit data were submitted. Data coding and reporting practices vary among hospitals. Hospitals may have reported data only from patients who came to the ED and were discharged home. Some hospitals excluded ED visits that resulted in inpatient admissions or treatment by the hospital's ambulatory surgery center. How much these things contribute to the reported discrepancies is not known. As reporting becomes more standardized, its accuracy and completeness will hopefully improve. However, the accuracy of the data should be independently confirmed with each iteration, especially before these data are used in any types of analyses.

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