

UC Irvine

Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health

Title

Ten Solutions for Emergency Department Crowding

Permalink

<https://escholarship.org/uc/item/8743k8t4>

Journal

Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health, 9(1)

ISSN

1936-900X

Authors

Derlet, Robert W
Richards, John R

Publication Date

2008

Copyright Information

Copyright 2008 by the author(s). All rights reserved unless otherwise indicated. Contact the author(s) for any necessary permissions. Learn more at <https://escholarship.org/terms>

Peer reviewed

Ten Solutions for Emergency Department Crowding

Robert W. Derlet, MD
John R. Richards, MD

University of California, Davis School of Medicine, Department of Emergency
Medicine

Submission history: Submitted June 4, 2007; Accepted October 29, 2007.
Reprints available through open access at www.westjem.org
[WestJEM. 2008;9:24-27.]

INTRODUCTION

Over the past decade, emergency department (ED) crowding has occurred and progressed. It has become a major topic of discussion at emergency medicine (EM) conferences, such as those held annually by the Society for Academic Emergency Medicine and the American College of Emergency Physicians. There has been much recent media coverage, such as the *Newsweek* article, "Code Blue for the ER."¹ Recently the Institute of Medicine published an extensive report on the topic.² While there is no question that many EDs are crowded, the myriad causes of and solutions to crowding have been widely debated. In our opinion, multiple factors contribute to ED crowding, and the relative contribution of each factor varies between EDs. Circumstances differ between urban and rural hospitals, as well as between county, academic, and private hospitals.³ We believe multiple simultaneous steps are necessary to solve ED crowding. We present 10 putative solutions with commentary on actions at our institution to counter the problem.

1) Expand Hospital Capacity

In 1946, at the end of World War II, the United States Congress addressed concerns with deficiencies in hospital bed capacity and health services by passing the Hill-Burton Act.⁴ This provided billions of dollars for hospital construction across the country, with the goal of five inpatient beds per 1,000 persons. This wave of hospital construction attracted more people to careers in healthcare. Major funding ended in 1966, when the Medicare and Medicaid programs became law. By providing increased hospital capacity for its citizens, communities successfully attracted physicians, nurses and ancillary staff.

Since 1970, the ratio of inpatient hospital beds per population has declined in the U.S. Unfortunately, with increasing numbers of uninsured and a requirement that hospitals run profitably, the number of hospital beds per 1,000 persons has diminished over the past 20 years. According to the California Healthcare Association, 70 hospitals closed in California between 1993 and 2003. California's population grew by 13% during that time while acute care hospital bed

capacity dropped by 14%. Today in California there are only 1.9 beds per 1,000 persons.⁵ As a result, many hospitals are perpetually full with admitted patients boarded in the ED. Boarding of inpatients in the ED is unquestionably the leading cause of crowding. At times the ED at the University of California, Davis has more boarded patients than new, ambulatory patients. We have contacted legislative staff locally and nationally about resurrecting the Hill-Burton Act to expand hospital capacity. This might be more appealing to Americans rather than radical reform of the healthcare system, advocated by some. Many health systems would welcome federal support to make this possible.

Some might argue that increasing the number of hospital beds is not needed because of decreased length of stay for patients admitted to hospital more recently. We believe this is offset by the aging population and the number of complex medical conditions not considered and/or treated shortly after World War II. These includes chronic renal failure/dialysis, transplants, Hepatitis C, Acquired Immune Deficiency Syndrome, cancer chemotherapy, acute coronary syndrome and coronary artery bypass grafts, pacemakers, and many others. Many patients who would have died quickly or at home decades ago are kept alive for days to months, only to die in hospitals today.

2) Stop regulating hospitals to the extreme

Legislative mandates in California have decreased flexibility of hospital's ED operations. In California, AB 394, mandated a fixed patient:nurse ratio of 4:1 in the ED in 2004. In our opinion, enforcement of this fixed ratio has been harmful rather than helpful to ED patients. In the past, during periods of extreme crowding, ED patients might have been "doubled up" in some treatment areas to provide the safest environment for monitoring. Now, with a rigid 4:1 patient:nurse ratio, patients are placed in hallways with no direct nursing observation during periods of crowding. Indeed, some patients who are very ill must remain in the waiting room. We believe this rule should be relaxed when applied to the ED to allow for flexibility during periods of crowding. Some hospital administrators have promised to "float" more nurses

down to the ED during periods of crowding. However, this has not been consistent, as it depends on nurses' acceptance. Most inpatient nurses refuse to work in the ED out of personal preference. Other mandates have placed undue emphasis on certain medical conditions at the expense of others. For example, the requirement of early administration of antibiotics for patients with pneumonia is notable.⁶ Naturally this results in more focus on patients with pneumonia; however, an elderly person presenting with abdominal pain or potential sepsis may be pushed further to the back of the triage line as a result. Finally, requirement of state approval of construction projects within hospitals results in increasing delay and expense. Small changes in a hospital's physical structure to enhance patient flow are made prohibitively expensive because of a gauntlet of lengthy state reviews. Furthermore, attempts to modify existing parts of an ED to enhance capacity trigger comprehensive review by the Office of Statewide Planning and Development. This, in turn, requires the entire department to be brought up to current code standards, making minor modifications difficult or impossible because of added expense.

3) Provide care only to patients with emergencies

Prior to the Emergency Medical Treatment and Active Labor Act (EMTALA) in 1986, many individuals with bona fide medical emergencies were turned away from the ED or transferred with incomplete care because they did not have insurance. As a result, EMTALA was created to ensure all patients with true emergencies were appropriately evaluated and stabilized. Over the past 20 years, this intent has been progressively over-interpreted by numerous regulators throughout the Centers for Medicare & Medicaid Services (CMS) districts in the United States. The requirement that all patients presenting to an ED must have a medical screening exam has been interpreted by many as all patients must be treated as well. With many of the population aware of such a mandate, patients who have no access to general primary medical care are now utilizing the ED, despite long waits. Some might debate whether the "Safety Net" philosophy of the ED has increased the number of patients in the ED, while in our experience this has definitely been the case.

We believe that EDs should exist for true emergencies, similar to the notion that fire departments exist to extinguish fires. We think a more cost-effective, appropriate, and efficient method of treating non-emergent medical problems occurs in urgent or primary care clinics, provided these are available. At one time, our ED actually referred out persons who presented with non-emergent medical conditions. At our ED, we devised a system whereby over five years we referred over 32,000 patients to ambulatory clinics after a medical screening exam (MSE) by the triage nurse that determined these patients did not have an emergency medical condition.⁷ In subsequent years after the implementation of this referral

system, referral clinics accepting non-funded patients became nearly nonexistent, making it difficult to refer patients out. We have also conducted a survey on how the general public defines a bona fide emergency and concluded most believe the ED should be reserved for patients with true emergencies.⁸ In order to successfully treat non-emergent patients, additional primary care clinics must be built within most communities. These clinics must be able to provide services for patients with and without health insurance in order to share the patient load that currently leans heavily on the ED. A number of Federally Qualified Health Centers (FQHC)-designated clinics have opened in communities to assist with this effort, but many more are needed.

4) Provide alternatives for primary care of the uninsured

Many county health departments do not have adequate ambulatory clinic facilities for their uninsured patients. It is common knowledge these patients will receive care in the local ED. Many uninsured and/or indigent patients do not even bother using these clinics, but instead use the ED for primary care. With their less acute triage categories these patients frequently have waits as long as 12 hours. We have attempted to form a healthcare consortium of the major health systems in the Sacramento area with the assistance of our county health department to provide appropriate clinic facilities and care for patients without insurance.

5) Stop boarding admitted patients in the Emergency Department

Limited hospital bed capacity results in the boarding of admitted patients in the ED. Patients are placed in hallways, storage rooms, and annexes. Some of these ED hallway patients are sicker than admitted patients already occupying inpatient beds. Boarding of patients in the ED results in significant ED congestion and is associated with poor outcomes.¹⁰⁻¹²

In some academic centers "door to floor" time exceeds 21 hours for 90% of admitted patients. It would make sense then to move admitted patients from ED hallways up to the hallways of the inpatient areas when the hospital is full. Such a proposal is not novel and, in fact, is used extensively on the East Coast. This has been championed by Dr. Peter Viccellio of the State University of New York at Stony Brook.⁹ In that model, during periods of ED crowding patients are automatically moved to inpatient hallways. One of the benefits is that inpatient staff quickly accommodates these patients into appropriate inpatient beds as soon as these become available.

6) Use evidence-based guidelines to address imaging over utilization

When we first began practicing EM, the availability of computed tomography (CT) was limited to patients with severe head and thoraco-abdominal trauma. Today it seems

we collectively order CT scans on 50% of all patients during a shift, including those with minor head trauma, abdominal pain, headache, and soft tissue complaints. We do believe the increased availability and speed of CT has resulted in improved outcomes. However, a number of studies have suggested that focused use of CT scans and other imaging tests can be achieved without a negative impact on outcome.¹³ Indiscriminate ordering of CTs may even be deleterious. It has been estimated that one cancer death occurs for every 1,000 CTs performed on children.¹⁴ Patients waiting for abdominal CT with oral contrast can occupy an ED bed for an additional four to six hours in some institutions.

This is progressing now with routine magnetic resonance imaging (MRI) for patients with symptoms of transient ischemic attack and/or cerebrovascular accidents. Patients are now queued up for our MRI scanner, further occupying beds and increasing waiting time for those not yet evaluated. We believe careful criteria should be established for imaging, in particular the use of abdominal CT for non-specific abdominal pain.

7) Change admitting patterns

One means of decreasing demand for scarce hospital and intensive care unit (ICU) beds is to change admitting patterns. Some hospitals have established services to provide specialty evaluation of patients with chest pain who otherwise might be admitted. These patients may undergo same-day exercise treadmill testing and be sent home if their results are normal. Intravenous (IV) antibiotic infusion centers and home health nursing care may also help decrease admissions. Additional measures may help preserve an even greater shortage of telemetry and ICU beds. Some hospitals have adapted criteria that standardize telemetry and ICU admissions. In addition, some patients who may have required ICU care at the initial onset of the ED presentation may, in fact, need lower level of care after ED treatment and stabilization. Many changes in admission patterns have occurred in the past 20 years, but some of these do not help the flow of ED patients. For example, in years past, most patients with asthma were admitted, whereas now patients often receive intensive treatment in the ED for six to 12 hours. This again prolongs the time to be seen for patients in the waiting room.

8) Expand the role of ancillary ED staff and hallway care

A number of plans have sought to increase productivity of ED staff, including physicians, nurses, and technicians, to counter crowding. An increase in physician hours and coverage has limited benefit because the rate-limiting factor has been nursing coverage. Strict adherence to the 4:1 patient:nurse ratio obviates any advantage to increased physician coverage. Increasing nursing coverage during

a nursing shortage is difficult. Expanding utilization of licensed vocational nurses (LVN) may be helpful. Not all hospitals use LVNs, and nursing organizations have argued that nurses provide better patient safety. The addition of family nurse practitioners and physician assistants to the ED staff could also help reduce crowding. At our ED we now use the hallway as a major patient-care area. To not do so would result in complete gridlock of the ED when designated ED patient-care areas are filled with admitted patients and the hospital is full. Patients who have been waiting hours to be seen are often grateful to be evaluated regardless of location. However, in our opinion and experience, hallway evaluations are by nature less complete for lack of privacy and space and may have the potential for poor outcomes.

9) Call the nurse first

A number of companies, agencies, and healthcare institutions have developed nurse assistance phone services to help triage patients to the ED or clinic. A number of studies have shown these services are efficient and safe.¹⁵ However, these services are expensive to operate. A study group from Kansas City showed that in a closed point-of-service population, potential ED visits were diverted, thereby saving the health system money even when the cost of the service was factored in.¹⁶ A large multi-city study of mixed patient populations would be helpful to determine the utility of this approach to ED crowding. If it is acceptable to advise a patient over the phone that ED care is not necessary, why is so difficult to allow a registered nurse in ED triage to assess a patient personally, and make the same conclusion?

10) Prevent disease and injury

What is the role of the ED in the global view of public health? A patient's visit to the ED is often at the end of a cascade of adverse health events, many of which are preventable. Regular visits to primary care could mitigate the number of patients presenting to the ED for uncontrolled diabetes, hypertension, obesity, and hyperlipidemia. ED physicians regularly treat patients with sexually transmitted diseases, prenatal, and perinatal problems, which could more easily be addressed at ambulatory clinics. Coronary artery and neurovascular disease is related to lifestyle and smoking, as well as genetics, and national education campaigns have been helpful to educate the public. The incidence of cancer is increasing; often a new diagnosis of cancer is made by the ED physician in their evaluation of patients with common complaints. Routine screening for colorectal, breast, cervical and ovarian cancer, among others, should be expanded. One example of positive change has been safety improvements in automobiles such as seatbelts, airbags, dashboards, and frame design. These changes have prevented death and disability for patients involved in motor vehicle collisions. The role of alcohol in vehicular trauma is well recognized,

and recent interventions to reduce impaired driving have had limited success. Trauma patients with serious injuries have the potential to consume enormous ED resources. Intubation, chest tubes, fracture management, and wound care performed in the ED often takes hours to complete. Imagine how crowded our EDs would be without these improvements?

CONCLUSION

In summary, a number of different solutions to ED crowding should be considered and applied. Eliminating ED crowding will take the collective involvement of healthcare workers, business leaders, politicians, the press, and the public.

Address for correspondence: Robert W. Derlet, M.D.
Department of Emergency Medicine, U.C. Davis Medical Center,
4150 V Street #2100, Sacramento, CA 95817, Email: rwderlet@ucdavis.edu

REFERENCES

1. Newsweek. <<http://www.msnbc.msn.com/id/18598633/site/newsweek>>.
2. Institute of Medicine. *Hospital-based emergency care: at the breaking point*. Washington, DC: The National Academies Press; 2007.
3. Vieth TL, Rhodes KV. The effect of crowding on access and quality in an academic ED. *Am J Emerg Med*. 2006; 24:787-794.
4. Clark LJ, Field MJ, Koontz TL, Koontz VL. The impact of Hill-Burton: an analysis of hospital bed and physician distribution in the United States, 1950-1970. *Med Care*. 1980; 18:532-550.
5. Everett L. California's hospitals closing, more cuts ahead. *Executive Intelligence Review*. 2004; 38: http://larouche.pub.com/eirtoc/2004/eirtoc_3138.html.
6. Pines J, Hollander J, Localio R, et al. The association between ED crowding and time to antibiotics for pneumonia. *Acad Emerg Med*. 2007; 14:S160-161.
7. Derlet RW, Kinser D, Ray L, Hamilton B, McKenzie J. Prospective identification and triage of nonemergency patients out of an emergency department: a 5-year study. *Annals of Emerg Med*. 1995; 25:215-223.
8. Derlet RW, Ledesma A. How do prudent laypeople define an emergency medical condition? *J Emerg Med*. 1999; 17:413-418.
9. Viccellio P. Emergency department crowding: an action plan. *Acad Emerg Med*. 2001; 8:185-187.
10. Fatovich DM, Nagree Y, Sprivilis P. Access block causes emergency department crowding and ambulance diversion in Perth, Western Australia. *Emerg Med J*. 2005; 22:351-354.
11. Trzeciak S, Rivers EP. Emergency department crowding in the United States: an emerging threat to patient safety and public health. *Emerg Med J*. 2003; 20:402-405.
12. Olshaker JS, Rathlev NK. Emergency department crowding and ambulance diversion: the impact and potential solutions of extended boarding of admitted patients in the emergency department. *J of Emerg Med*. 2006; 30:351-356.
13. Blackwell CD, Gorelick M, Holmes JF, Bandyopadhyay S, Kuppermann N. Pediatric head trauma: changes in use of computed tomography in emergency departments in the United States over time. *Ann Emerg Med*. 2007; 49:320-324.
14. Rice HE, Frush DP, Farmer D, Waldhausen JH; APSA Education Committee. Review of radiation risks from computed tomography: essentials for the pediatric surgeon. *J Pediatr Surg*. 2007; 42:603-607.
15. Marklund B, Strom M, Mansson J, Borgquist L, Baigi A, Fridlund B. Computer-supported telephone nurse triage: an evaluation of medical quality and costs. *J Nurs Manag*. 2007; 15:180-187.
16. O'Connell JM, Johnson DA, Stallmeyer J, Cokingtin D. A satisfaction and return-on-investment study of a nurse triage service. *Am J Manag Care*. 2001; 7:159-169.