

**BALTIMORE CITY TASK FORCE ON EMERGENCY DEPARTMENT CROWDING**

**FINDINGS AND RECOMMENDATIONS**

June 2006



June 9, 2006

Emergency department crowding, a problem nationwide, is becoming increasingly severe in Baltimore City. Crowding and ambulance diversion can stretch the EMS system, compromise patient safety, and threaten our city's emergency preparedness.

To make progress on this important issue, we wrote the chief executives of all city hospitals in early May asking for their assistance. The hospitals responded by sending expert representatives to help us review available evidence and make recommendations for change. These representatives comprised the Baltimore City Task Force on Emergency Department Crowding.

Participating hospitals included: Bon Secours Hospital, Good Samaritan Hospital, Harbor Hospital, Johns Hopkins Hospital, Johns Hopkins Bayview Hospital, Maryland General Hospital, Mercy Hospital, Sinai Hospital, St. Agnes Hospital, Union Memorial Hospital, and the University of Maryland Medical Center.

The Task Force recommended a series of steps to reduce emergency department crowding. These steps include measures to be implemented in emergency departments, measures to be implemented in hospitals, and measures to be implemented across the system.

This report is a framework for progress. We plan extensive follow-up to support its recommendations.

We thank Dr. Robert Bass and the Maryland Institute for Emergency Medical Services System for its participation and agreement to adopt some of the Task Force's recommendations immediately. We express our appreciation for the hard work of the staff for the Task Force: Dr. Gena O'Keefe of the Health Department and Rick Binetti of the Fire Department.

We especially thank all of the Task Force participants for their interest, participation, and contributions.

Joshua M. Sharfstein, M.D.  
Commissioner of Health

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## EXECUTIVE SUMMARY

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Emergency department crowding and ambulance diversion have become increasingly significant problems across the country. To review and address this concern in Baltimore city, the Baltimore City Fire Chief and Health Commissioner convened the Baltimore City Task Force on Emergency Department Crowding.

The Task Force included representatives of city hospitals with emergency departments. Participating hospitals included Bon Secours, Good Samaritan, Harbor Hospital, Johns Hopkins, Johns Hopkins Bayview, Maryland General, Mercy, Sinai Hospital, St. Agnes, Union Memorial, and University of Maryland.

The Task Force found that emergency department crowding – as measured by ambulance diversions and waiting times -- is a serious and growing problem in Baltimore City. This problem is increasing out of proportion to the increase in the number of patients handled by city ambulances or seen in city emergency departments.

From 2002 to 2005, the number of city ambulance transports increased by 8%. The total number of patients in city emergency departments has increased by 11%. Yet over the same period:

- The total number of hours that hospitals had no available EKG-monitored beds increased by 36%;
- The average time that ambulances waited at the hospital before returning to service increased by 45%; and
- The total number of hours that hospitals were placed on “re-route” status by EMS personnel increased by 165%.

The Task Force reviewed available evidence, recommendations by state and national expert panels, and research reports. The Task Force then endorsed a range of strategies and recommendations as options for policymakers and hospitals to address emergency department crowding.

These include recommendations to address patient inflow, throughput, and outflow from the emergency department. For those interventions that have already been implemented to varying degrees in city hospitals, the Task Force discussed how to make these interventions as effective as possible.

### Inflow Recommendations

1. **Change EMS Practices.** The Task Force recommended that the Maryland Institute of Emergency Medical Services Systems (MIEMMS) establish a reverse alert system to tell hospitals when EMS resources are being strained. The Task

Force also recommended that MIEMMS become more involved in directing ambulances to hospitals that are not crowded. MIEMMS has concurred with these recommendations.

2. **Establish an Emergency Department Diversion Center.** The Task Force recommended that Baltimore Substance Abuse Systems, Inc. and Baltimore Mental Health Systems, Inc. consider establishing a center for care and triage of certain patients with substance abuse and mental health problems, modeled on successful programs in Orlando and Denver.
3. **Increase Access to Primary Care.** The Task Force recognized that poor access to primary care in Baltimore City contributes to unnecessary use of the emergency department.
4. **Promote Case Management of Individuals Who Are Chronically Homeless.** The Task Force recommended expansion of the “housing first” model to prevent individuals who are chronically homeless from needing emergency services so frequently.

#### **Throughput Recommendations**

5. **Consider Triage Bypass.** The Task Force recommended this system, which brings patients directly to beds, for times when there are open beds in the emergency department.
6. **Consider Short Stay Units.** The Task Force recommended that these units be established to facilitate rapid admission and discharge for more routine medical problems.
7. **Consider Electronic Bed Tracking.** The Task Force noted that successful implementation of bed tracking may require shifting bed control to a bed flow coordinator for the hospital.
8. **Consider a Hospital-Wide Flow Team.** The Task Force found that the most effective teams have the essential and enthusiastic participation of all levels of hospital staff.
9. **Promote Increased Efficiency of Transfers to Hospital Floors.** The Task Force recommended expanded use of “tele-paks” which allow the conversion of any bed to a monitoring bed during times of crowding.
10. **Consider Adopt-A-Boarder.** The Task Force recommended that hospitals consider a system of having patients wait for beds on hospital floors, not just in the Emergency Department.

11. **Consider a Standardized Throughput Measure.** The Task Force recommended that hospitals statewide consider agreeing to a single throughput measure to improve the ability to review the efficiency of the entire system.

#### **Outflow Recommendations**

12. **Increase Efficiency of Discharge.** The Task Force recommended that hospitals adopt an early discharge policy, and that the Health Department review the availability of private ambulance units for transport to assisted living facilities earlier in the day.
13. **Increase Inpatient Bed Capacity.** The Task Force recommended that hospitals consider requesting that the city advocate with state regulators for additional bed capacity and adequate funding to finance and staff the beds.
14. **Review Elective Surgery Scheduling.** In light of evidence from other states, the Task Force recommended that hospital study whether elective surgery scheduling may be contributing to the problem of emergency department overcrowding.
15. **Increase Recruitment of Registered Nurses.** The Task Force recommended that Baltimore should consider offering incentives to nurses who work in the city.

## BACKGROUND

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Emergency department crowding and ambulance diversion have become increasingly significant problems across the country.<sup>1</sup> There is increased demand for emergency services, but there are fewer emergency departments. From 1992 to 2002, the number of emergency department visits increased by 23% across the country, while the number of hospital emergency departments decreased by 15%.<sup>2</sup>

Over at least last decade, many hospitals have reduced inpatient care capacity. Exacerbating the situation are insufficient access to primary care, growing numbers of uninsured Americans, and decreased reimbursement for uncompensated care in many areas.

Several major studies, including a General Accounting Office report in March 2003, have found that the factor most directly associated with crowding was the inability to transfer emergency patients to inpatient beds once the decision was made to admit them.<sup>3</sup> Therefore, in addition to making EMS and emergency department operations more efficient, experts have concluded that it is essential that solutions focus more broadly on hospital operations and the overall healthcare system.

In recent years, Baltimore hospitals have experienced worsening emergency department crowding. Improving this situation is important to protecting patient safety and improving emergency preparedness. If city hospitals and EMS systems can reduce emergency crowding, the region will be better prepared in the event of a disaster or influenza pandemic.

The average length of stay in U.S. emergency rooms is 3.7 hours, or 222 minutes. A recent report on emergency-room times, based on about 1.5 million patient questionnaires filled out in 2005, shows wide state-to-state variations in the time between entering the hospital's emergency department and being admitted or sent home. Maryland had the second longest wait times in the country, at 246.9 minutes.<sup>4</sup>

To review and address these concerns, the Baltimore City Health Department and the Baltimore City Fire Department convened a Task Force to address emergency department overcrowding in Baltimore City hospitals.

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<sup>1</sup> J.S. Olshaker and R. Niels, *Emergency Department Overcrowding and Ambulance Diversion: The Impact and Potential Solutions of Extended Boarding of Admitted Patients in the Emergency Department*, *Journal of Emergency Medicine*, 351-356 (2006).

<sup>2</sup> Urgent Matters, *Bursting at the Seams: Improving Patient Flow to Help America's Emergency Departments* (Sept. 2004).

<sup>3</sup> General Accounting Office, *Hospital Emergency Departments: Crowded Conditions Vary Among Hospitals and Communities* (Mar. 2003).

<sup>4</sup> 'Patient' Says It All, *USA Today* (May 31, 2006).

Participating hospitals included:

- Bon Secours
- Good Samaritan
- Harbor Hospital
- Johns Hopkins
- Johns Hopkins Bayview
- Maryland General
- Mercy
- Sinai Hospital
- St. Agnes
- Union Memorial
- University of Maryland

Representatives from Baltimore City hospitals met twice, on May 19 and June 6. Staff and leadership from the Maryland Institute for Emergency Medical Services Systems were present at both meetings and reviewed a draft of the report.

The Task Force reviewed data and recommendations from expert reports. Key sources included the General Accounting Office study, which was based on a survey of 2,000 hospitals,<sup>5</sup> an April 2002 study by the American Hospital Association, which was based on a survey of 1,500 hospitals,<sup>6</sup> an April 2002 Maryland Health Care Commission report,<sup>7</sup> and a series of reports funded by the Robert Wood Johnson Foundation through its Urgent Matters Initiative.<sup>8</sup>

The Task Force then made recommendations for short-term steps and long-term solutions in Baltimore.

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<sup>5</sup> *Id.*

<sup>6</sup> The Lewin Group, *Emergency Department Overload: A Growing Crisis -- The Results of the AHA Survey of Emergency Department and Hospital Capacity* (Apr. 2002).

<sup>7</sup> Joint Work Group on Emergency Department Utilization, *Trends in Maryland Hospital Emergency Department Utilization: An Analysis of Issues and Recommended Strategies to Address Crowding* (Apr. 18, 2002).

<sup>8</sup> See <http://www.urgentmatters.org>



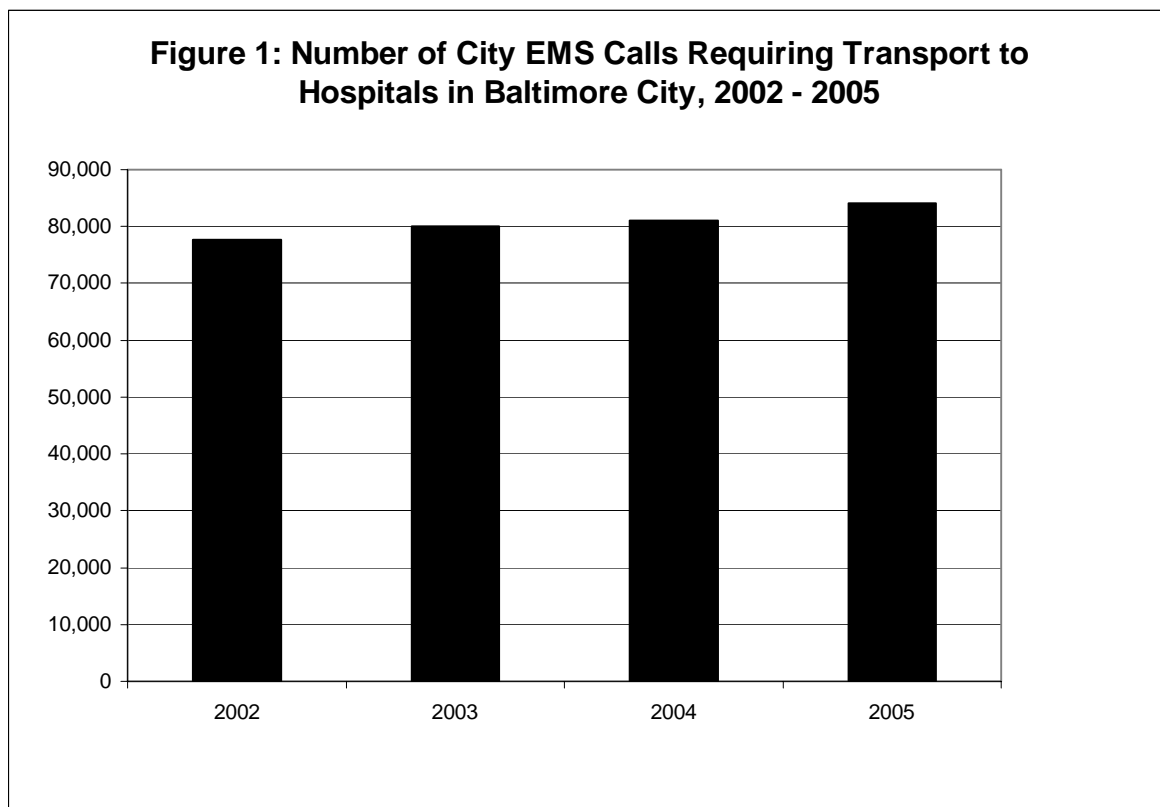
## FINDINGS

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Emergency department crowding – as measured by ambulance diversions and waiting times -- is a serious and growing problem in Baltimore City. The amount of crowding is growing out of proportion to the number of city ambulance transports and the total number of patients seen in city emergency departments.

➤ **City ambulance transports increased by 8% between 2002 and 2005**

According to an analysis of city EMS data by the Baltimore City Health Department, city ambulance transports to emergency departments increased between 2002 and 2005. In Baltimore, the number of EMS calls requiring transport to the hospital increased from 77,719 in 2002 to 84,169 – a total increase of 8%. (Figure 1.)

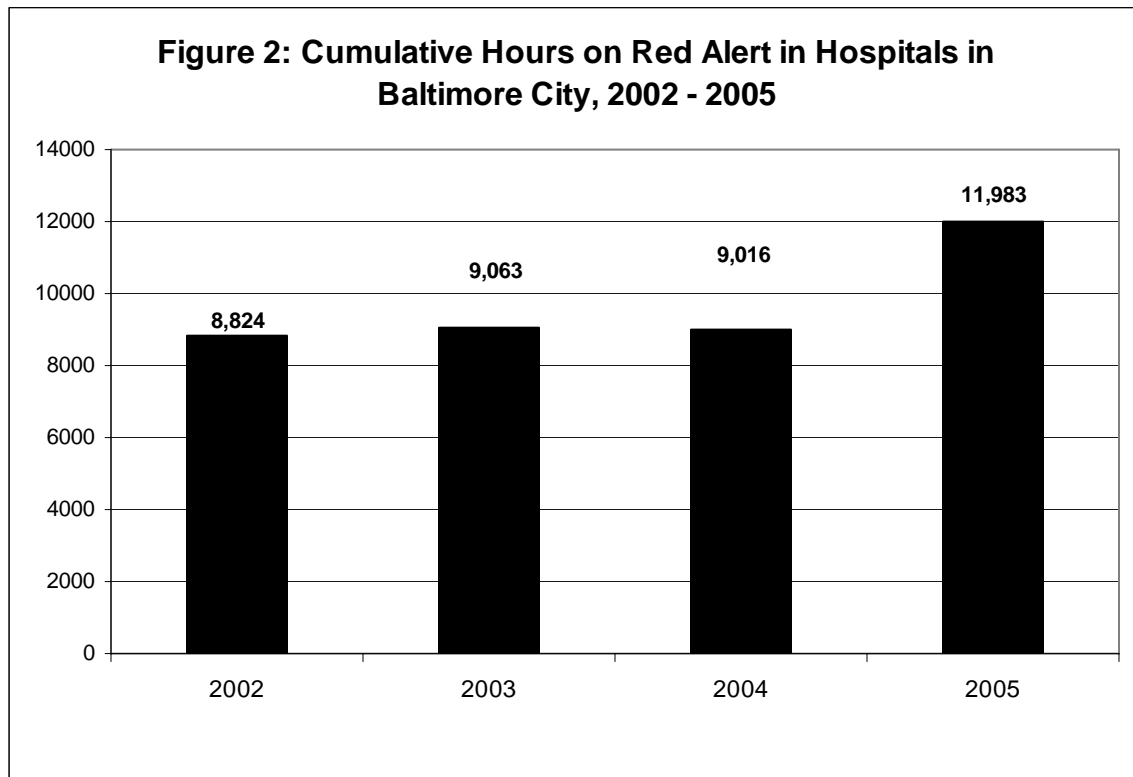


- **Patient visits to emergency departments increased by 11% between 2002 and 2005**

According to an analysis of the Hospital Services Cost Review Commission data set by the St. Paul Computer Center, the number of patient visits to city emergency rooms increased from 552,299 in 2002 to 611,345 in 2005 – an increase of 11%.<sup>9</sup>

- **Over the same period, the total hours of hospital time without available EKG-monitored beds increased by 36% between 2002 and 2005**

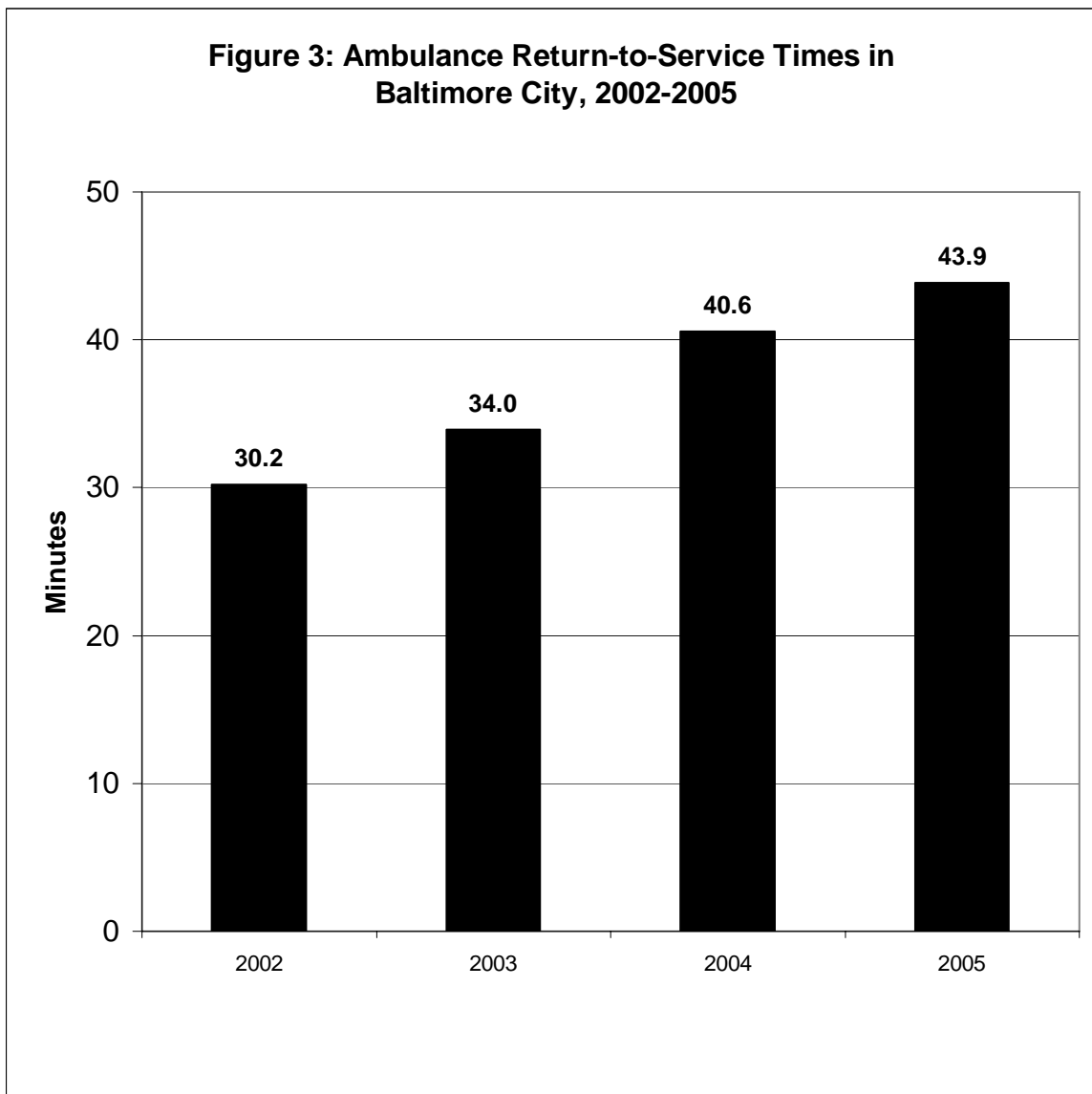
Hospitals go on “red alert” status when there are no beds available that are equipped with EKG monitors. According to an analysis by the Baltimore City Health Department, city hospital red alerts increased from 8,824 total hours in 2002 to 11,983 total hours in 2005 – a 36% increase. (Figure 2.)



<sup>9</sup> At the request of the Baltimore City Health Department, the St. Paul Computer Center analyzed the Health Services Cost Review Commission Data Set.

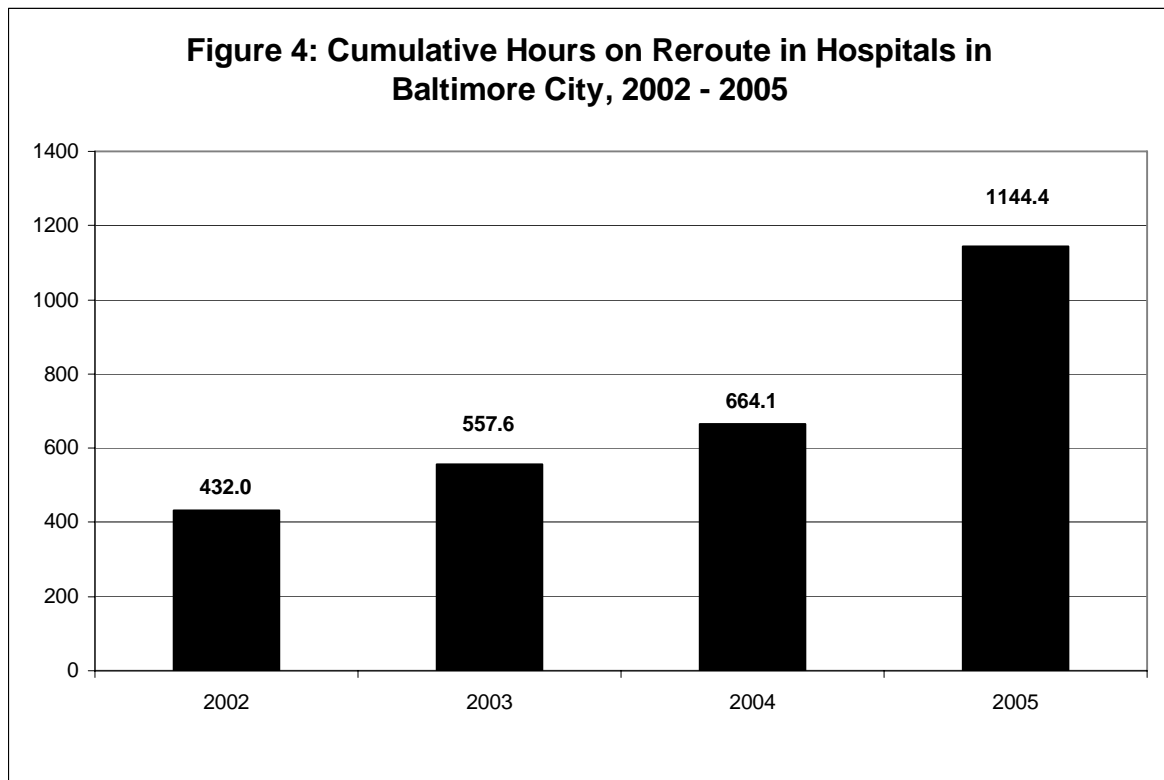
- **The time that ambulances have waited at hospitals to return to service has increased by 45% between 2002 and 2005**

The length of time required to transfer a patient from an ambulance to the care of the hospital and return to service rose between 2002 and 2005. According to data from the Maryland Institute for Emergency Management Services Systems, this time period increased by 45% from a mean of 30.20 minutes in 2002 to 43.86 minutes in 2005. (Figure 3)



- **The total hours that the EMS system placed hospitals on “re-route” status increased by 165% between 2002 and 2005**

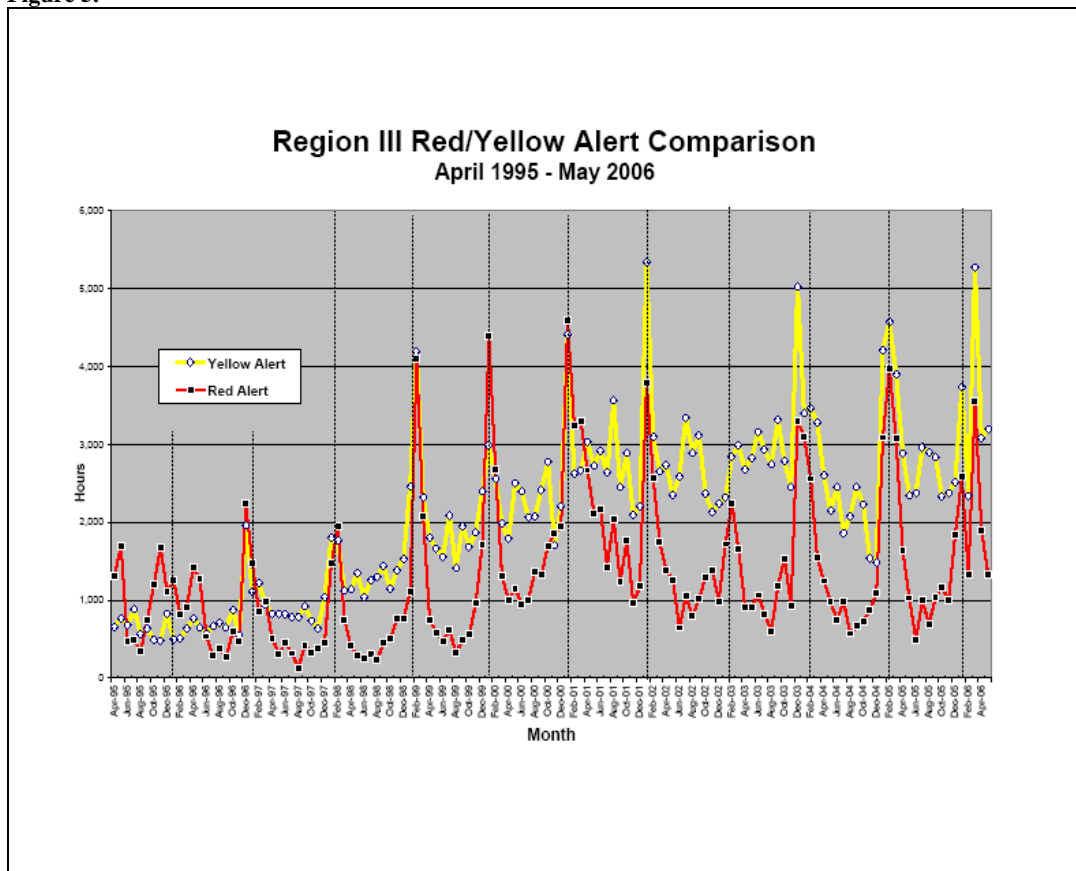
The EMS system places a hospital on “re-route” status when an EMS team reaches a hospital and discovers that the patient drop-off area is crowded with ambulances, delaying patient transfer. According to an analysis by the Baltimore City Health Department, the cumulative hours on reroute increased from 432 hours in 2002 to 1144 hours in 2005 – an increase of 165%. (Figure 4). This sharp increase may reflect increased willingness of EMS to place hospitals on “re-route” status over this time period.



➤ **The increase in emergency department crowding is part of decade-long trend.**

Hospitals go on “yellow alert” when crowded to request that ambulances divert most patients to other institutions. According to data analyzed by the Maryland Institute for Emergency Medical Services Systems for the Baltimore region, red alerts and yellow alerts have steadily increased over the last decade. After each peak season, the baseline level of red and yellow alert shifted upward. (Figure 5, from MIEMMS).

**Figure 5.**



## **STRATEGIES AND RECOMMENDATIONS**

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The Task Force discussed a variety of recommendations to address the serious and growing problem of emergency department crowding. Many of the best practices are currently in use to varying degrees in Baltimore in some or all hospitals. In these cases, the Task Force added discussion of how to make the interventions as effective as possible.

These recommendations are not intended as requirements, but rather as options for hospitals and policymakers to consider in addressing this problem.

The recommendations are organized in three groups:

- Inflow: Reducing number of patients coming to emergency departments.
- Throughput: Increasing the speed of moving patients through emergency departments.
- Outflow: Increasing the capacity of the system for discharged and hospitalized patients.

### **Inflow Recommendations**

#### **1. Change EMS Practices**

Regions and states that regularly review EMS practices have had success against emergency department crowding. Five of the six sites reviewed by the General Accounting Office had developed standard policies or guidelines regarding diversion and operated or participated in electronic systems for tracking ambulance diversion.<sup>10</sup>

In 1998, the Massachusetts Department of Public Health created a Boston Area Diversion Task Force, made up of state health officials, emergency department physicians, hospitals administrators, and EMS officials. The Task Force developed definitions for types of diversion and uniform guidelines for each. Similar task forces were created for the Los Angeles area in 2001 and for the Phoenix area in 1995. In all cases, the task force helped improve communication among hospitals and EMS providers. Hospitals could request to be on diversion and that status was communicated to other area hospitals and to ambulance dispatchers and drivers.<sup>11</sup>

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<sup>10</sup> General Accounting Office, *Hospital Emergency Departments: Crowded Conditions Vary Among Hospitals and Communities* (Mar. 2003).

<sup>11</sup> *Id.*

One of the six sites visited took a different approach. The largest EMS provider in the Miami – Dade County area decided in 1999 to stop formally honoring hospital requests to go on diversion. Instead, ambulances bring patients to the nearest appropriate hospital.<sup>12</sup>

Several hospitals in the Urgent Matters Learning Network created community-wide standard definitions and policies for when a hospital can go on and off diversion.<sup>13</sup>

**Recommendations.** The Task Force agreed that ongoing discussion between EMS providers, hospitals, and the state of Maryland would help create a more efficient system. Three immediate areas for progress were identified:

- Establish a “reverse alert” system. Currently, hospitals tell EMS providers when they are crowded, but EMS systems do not tell hospitals when their resources are strained. Such an alert would help the hospitals prioritize freeing up additional ambulances.
- Manage the EMS system during peak hours. Currently, ambulances generally go to the nearest hospital. In a metropolitan area with many hospitals nearby, directing ambulances to particular hospitals during peak times may reduce crowding.
- Maintain an emergency request system. Currently, EMS supervisors can call or visit hospitals to request that ambulances be freed. This direct request system should be maintained and made more formal, with records kept on hospitals ability to respond.

The Task Force is pleased that the Maryland Institute for Emergency Medical Services Systems (MIEMMS) concurs with these recommendations and is moving forward to convene statewide discussions on implementation.

## **2. Establish an Emergency Department Diversion Center**

The limited capacity of community health systems to provide emergency psychiatric care and substance abuse treatment services results in patients turning to the emergency department for appropriate services. The Maryland Health Care Commission’s April 2002 report lists psychoses as the second leading cause of hospitalization for emergency department patients.<sup>14</sup> One potential solution to this problem is to establish a diversion center for appropriately selected mental health or substance abuse treatment patients outside of the hospital. This center can be used for detoxification, assessment, triage, and treatment.

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<sup>12</sup> *Id.*

<sup>13</sup> Urgent Matters, *Bursting at the Seams: Improving Patient Flow to Help America’s Emergency Departments* (Sept. 2004).

<sup>14</sup> Joint Work Group on Emergency Department Utilization, *Trends in Maryland Hospital Emergency Department Utilization: An Analysis of Issues and Recommended Strategies to Address Crowding* (Apr. 18, 2002).

The city of Orlando, Florida, established a Central Receiving Center so that police bringing a patient in on emergency petition (for mental health or for substance abuse) go directly to the center, which then triages people to various inpatient treatment centers. A February 23, 2006 article in the Orlando Weekly quoted Belvin Perry, chief judge of the Orange-Osceola Judicial Circuit and chairman of the center's board, "If you look at emergency rooms, the statistics show that over 5,800 [people] were diverted from ERs" in the 2 ½ years since the center opened.<sup>15</sup>

Denver Health's comprehensive addictions rehabilitation and evaluation services, known as Denver CARES, is a 100-bed, non-medical, clinically managed residential detoxification facility with a mission to provide a safe detoxification and to provide assessment, education and motivational counseling. Denver CARES operates 24-hours-a-day, 7-days-a-week, with a staff of registered nurses, licensed practical nurses, psychiatric technicians and addiction counselors. Licensed clinical social workers are also available through Denver Health Medical Center. The system handles over 2000 admissions each month. Not only does DenverCARES offer more appropriate care, jail costs and emergency department costs are ultimately more costly to the community.

**Recommendation:** A shared, off-site treatment center could have a substantial impact on ED flow. As a long-term solution to this problem, Baltimore Mental Health Systems, Baltimore Substance Abuse Systems, and others are considering the formation of a diversion center. Hospitals should consider offering medical advice and other financial and in-kind resources during the planning, implementation, and operations stages of such a project.

### **3. Increase Access to Primary Care**

While detailed discussion is beyond the scope of this report, there is inadequate access to primary care in Baltimore City. When people do not have health insurance, or are not able to get timely appointments with their primary care providers even when they do have health insurance, they go to the emergency department, regardless of the level of acuity of their complaint.

**Recommendation:** Primary care access in Baltimore City should be improved.

### **4. Promote Case Management of Individuals Who Are Chronically Homeless**

While detailed discussion is beyond the scope of this report, programs that provide housing and intensive case management to chronically homeless individuals can substantially reduce use of emergency departments. The San Francisco "housing first" program, for example, has saved many ambulance visits and considerable resources by providing support up front to the homeless, rather than waiting for them to suffer illness.

**Recommendation:** Baltimore should expand its "housing first" program.

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<sup>15</sup> Nada Taha, *A Helping Hand*, Orlando Weekly (Feb. 23, 2006).



## Throughput Recommendations

### 5. Consider Triage Bypass

Triage bypass assumes that patients do not need to be triaged in the traditional sense when beds are open and available -- ambulatory and ambulance patients can be treated the same. If there is an open bed, the patient is taken to the treatment area and the initial triage occurs at the bedside instead of in the waiting room. When beds are not available in the emergency department, staff activate the traditional triage process. It is at that time that triage serves a vital function. The triage nurse decides which patients get immediate treatment and which ones can and must wait.

St. Joseph Medical Center in Towson, Maryland, built a bigger, state-of-the-art emergency department in November 2004 in hopes of solving their throughput problems, but patient flow indicators did not improve. Urgent Matters describes how triage bypass improved crowding.<sup>16</sup>

Dr. Joseph Twanmoh of the University of Maryland School of Medicine, explains that the triage bypass initiative helped improve patient flow in St. Joseph's emergency department. "Triage Bypass is an effective mechanism to expedite patient flow into the ED, but is not a stand alone solution. Any project like this should be a part of a bigger plan to improve patient throughput, with the support of senior management being vital to success. Hospitals need to look at all aspects of patient flow throughout the system, not just the ED."<sup>17</sup>

Inova Fairfax Hospital reduced wait times and increased patient satisfaction by implementing early care at triage. Other hospitals in the Urgent Matters Learning Network developed accelerated triage and registration processes to triage more efficiently based on the patient's acuity and to reduce patient waiting times by re-organizing or combining triage and registration processes.<sup>18</sup>

**Recommendation:** Hospitals that do not use a triage bypass system should consider implementing such a system. The best time to use this system is when there are empty beds in the emergency department. For successful implementation such a system, all staff must see the benefits and contribute to making it work.

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<sup>16</sup> Urgent Matters, *Triage Bypass to Improve Door-to-Bed Times* (2005).

<sup>17</sup> *Id.*

<sup>18</sup> Urgent Matters, *Bursting at the Seams: Improving Patient Flow to Help America's Emergency Departments* (Sept. 2004).

## 6. Consider Short Stay Units

A New York study concluded that quick transfer of admitted patients from the emergency department to a hospital bed had the single greatest impact on the problem of crowding. A short-stay inpatient unit was created to reduce the time from admission decision to departure from the emergency department. The unit successfully shortened the throughput time for admitted and discharged patients.<sup>19</sup>

Johns Hopkins Hospital studied the benefits of a managed acute care unit located remotely from the emergency department. The unit had 14 beds and accepted patients requiring extensive evaluation or management likely to take longer than 4 hours, and patients who were to be admitted to the hospital but for whom there was no bed yet. The unit had a significant impact, helping to reduce the monthly ambulance diversion hours by 40% over a 6-month period.<sup>20</sup>

Grady Hospital created a new seven-bed Care Management Unit designed to provide both clinical and case management services to a core group of patients - including those with diagnoses of asthma, chest pain, heart failure and hyperglycemia. The goals were reducing hospital admissions and increasing utilization of community resources for patient care.<sup>21</sup>

The General Accounting Office noted that more than two-thirds of the hospitals visited were expanding or had plans to expand,<sup>22</sup> and the MHCC report showed that the state of Maryland increased the number of emergency department beds by 25% from 1999-2004.<sup>23</sup>

**Recommendation:** Hospitals that do not already have a short stay unit should consider establishing such a unit. The most successful short stay units are run like admission units in the emergency department. The Task Force advised that units that are run like an inpatient unit do not have the quick turnover necessary to have an effect on crowding. One potential barrier to successful implementation is availability of trained nurses to staff the beds.

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<sup>19</sup> S. Schneider, et al., *Rochester, New York: A Decade of Emergency Department Overcrowding*, Academic Emergency Medicine, 1044-50 (Nov. 2001).

<sup>20</sup> G. Kelen, J. Scheulen, and P. Hill, *Effect of an Emergency Department Managed Acute Care Unit on ED Overcrowding and Emergency Medical Services Diversion*, Academic Emergency Medicine, 1095-11100 (Nov. 2001).

<sup>21</sup> Urgent Matters, *Bursting at the Seams: Improving Patient Flow to Help America's Emergency Departments* (Sept. 2004).

<sup>22</sup> General Accounting Office, *Hospital Emergency Departments: Crowded Conditions Vary Among Hospitals and Communities* (Mar. 2003).

<sup>23</sup> Joint Work Group on Emergency Department Utilization, *Trends in Maryland Hospital Emergency Department Utilization: An Analysis of Issues and Recommended Strategies to Address Crowding* (Apr. 18, 2002).

## 7. Consider Electronic Bed Tracking

The Electronic Bed Board Application is a tool that is used to keep track of patients in beds, the status of each bed, and the availability of beds. The use of color-coding in the application allows the user, at a quick glance, to see the status (empty, dirty, arrived, isolation, pending admit, pending transfer, pending discharge, discharge for death, closed, out of service, etc.) of each bed and bed availability throughout the hospital. Once the patient has arrived, the unit clerk controls the movement of the patient by performing transfers, discharges and patient updates on each patient. The unit clerk updates bed status for each bed as needed.

The Institute for HealthCare Improvement ([www.ihl.org](http://www.ihl.org)) has extensive resources – tools, success stories, etc. – for improving patient flow. IHI lists electronic bed tracking as a useful tool, especially in combination with a flow team.

**Recommendation:** City hospitals have implemented electronic bed tracking to varying degrees of success. Successful implementation requires a hospital-wide culture change. Hospitals should consider shifting exclusive responsibility of bed control from floor nurses to a bed flow coordinator.

## 8. Consider Hospital-Wide Flow Team

A hospital-wide team to participate in decisions and changes to patient flow is a critical factor for success, and involves employees from most if not all departments of a hospital. Urgent Matters highlights the importance of including appropriate representatives from the inpatient side of the hospital to increase the efficiency of transfer from the emergency department to inpatient bed and to increase the efficiency of discharge.<sup>24</sup>

St. Joseph’s Hospital and Medical Center in Phoenix created a hospital wide team to help alleviate emergency department crowding. The team initiated a “capacity” code to signal when the hospital had reached maximum capacity and was about to go on diversion – representatives from patient care, housekeeping, transportation, lab, radiology, social work, etc. all worked together to expedite discharges and make more room available. As a result fewer patients have left without being seen in the emergency department, and the improved efficiency of discharge has increased hospital occupancy by 5 percent.<sup>25</sup>

**Recommendation:** Hospitals that do not have flow teams should consider establishing them. The most effective teams have the essential and enthusiastic participation of all levels of hospital staff – including housekeeping supervisors, bed control coordinators, nursing supervisors, and hospital vice presidents. Improvements can be achieved through consistent and frequent meetings, constant communication, and hard work of team members.

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<sup>24</sup> Urgent Matters, *Bursting at the Seams: Improving Patient Flow to Help America’s Emergency Departments* (Sept. 2004).

<sup>25</sup> *Id.*

## 9. Promote Increased Efficiency of Transfers to Hospital Floors

One hospital in Boston developed “Code Help ER” in which all available staff resources are called upon to expedite admissions and discharges when the hospital’s emergency department load is particularly high.<sup>26</sup> Code Help ER has been adopted as a best practice by the state of Massachusetts and is in use at other hospitals.

One Phoenix hospital implemented “Code Purple” (similar to Code Help ER), and streamlined their registration process.<sup>27</sup>

A hospital in Atlanta formed a “bed briefing group” that meets several times a day to discuss the types of patients in the emergency department waiting for transfer to inpatient and the types of inpatient beds expected to become available.<sup>28</sup>

*Urgent Matters* highlights University Hospital in San Antonio, which reduced its inpatient bed turnaround time from more than 160 minutes to less than 30 minutes, a decrease of 81 percent. The hospital’s housekeeping staff came up with a low-cost, simple strategy to help turn over beds with greater efficiency.<sup>29</sup>

**Recommendation:** Hospitals should consider adopting or expanding the “Code Help ER” approach. The code could include use of “tele-paks” which allow conversion of any floor bed to a telemetry bed – as long as a hospital has enough nurses to cover, more inpatient telemetry beds would increase capacity and speed emergency department-to-floor transfer. It also could involve implementing the “bed-ahead” or “preemptive bed” model that allows staff to look for available beds for likely admits before a patient work-up is complete.

## 10. Consider Adopt-A-Boarder

Adopt-a-Boarder is an approach to move patients from the hallway of the emergency department to the appropriate in-patient unit hallway until an in-patient bed is clean and ready.

According to *Urgent Matters*,<sup>30</sup> if the hospital is overcrowded with admissions, placing patients in upstairs hallways is an acceptable temporary solution. As evidenced at Stony

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<sup>26</sup> General Accounting Office, *Hospital Emergency Departments: Crowded Conditions Vary Among Hospitals and Communities* (Mar. 2003).

<sup>27</sup> *Id.*

<sup>28</sup> *Id.*

<sup>29</sup> *Urgent Matters, Bursting at the Seams: Improving Patient Flow to Help America’s Emergency Departments* (Sept. 2004).

<sup>30</sup> *Urgent Matters, Perspectives: Adopt-a-Boarder* (Mar. 2004).

Brook University Hospital and Medical Center<sup>31</sup> and at Inova Fairfax Hospital,<sup>32</sup> patients get moved into a bed more quickly when boarding on in-patient units than when boarding in the emergency department. Diversion hours go down, and revenue goes up. Patients in upstairs hallways are a visible index of the state of overcrowding and a stimulus for change.

The Massachusetts Department of Public Health recently endorsed this method of preventing emergency department crowding and boarding for all hospitals in the state. A transfer to ward policy requires that an admitted patient be transferred within one hour of bed assignment – the result is a significant decrease in the time from admission decision to departure from the emergency department.<sup>33</sup>

**Recommendation:** Hospitals should consider “adopt-a-boarder” policies for times of emergency department crowding in a manner compatible with quality patient care. The EMS system should also consider implementing a mandate that a hospital cannot go on diversion unless it is implementing adopt-a-boarder.

## **11. Consider a Standardized Throughput Measure**

Common measures that best reflect the problem of emergency department overcrowding can facilitate system-wide improvement. Two common measures are 1) time from emergency department door to decision to admit and 2) time from decision to admit to transfer out of emergency department (to inpatient bed or other treatment facility).

**Recommendation:** Hospitals should adopt standardized throughput measures that, over time, would inform policy. Task force participants agreed that it would be very good for hospitals to have a standard measure for overcrowding, and recommend the “decision to admit → transfer from emergency department (to inpatient bed or other treatment facility)” timeframe. Hospitals should consider adopting a computer-based tracking system for easier implementation.

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<sup>31</sup> Dr. Peter Viccellio at Stony Brook University Hospital and Medical Center has pioneered and promoted the concept of In-House Hall Bed Placement with the Emergency Department Full Capacity Protocol.

<sup>32</sup> Dr. Thom Mayer and colleagues at Inova Fairfax Hospital are also implementing this policy as part of their *Urgent Matters* Demonstration Project.

<sup>33</sup> S. Cardin, et al., *Intervention to Decrease Emergency Department Crowding: Does It Have an Effect on Return Visits and Hospital Readmissions?*, *Annals of Emergency Medicine*, 173-185 (Feb.2003).

## Outflow Recommendations

### 12. Increase Efficiency of Discharge

Shifting discharge distribution to as early in the day as possible, or creating a discharge unit increases the capacity of the system for incoming patients.

The 2005 Benchmarking Project Field Brief “Managing Patient Flow Information” published by the University Health System Consortium describes several successful strategies to improve the discharge process.<sup>34</sup>

- University of Iowa Hospitals and Clinics –  
Discharge rounds precede teaching rounds, are conducted 6 days a week at 7 am  
Multidisciplinary rounds at 11am alert staff to the next day’s potential discharges
- Froedtert Memorial Lutheran Hospital –  
Daily late afternoon rounds identify potential next day discharges
- University of Washington Medical Center –  
The first 15 minutes of morning rounds are used for pending discharges and new admissions; social workers and nursing coordinators then leave rounds to discharge patients
- The Ohio State University Medical Center –  
Initiated discharge rounding regularly; Physicians see and discharge patients between surgeries
- The Nebraska Medical Center –  
Instituted a multidisciplinary, daily team meeting to discuss each patient’s progress (30 patients in 30 minutes)

In its March 2003 report on emergency department crowding, the General Accounting Office describes one Miami hospitals program called “Think Noon!” to encourage doctors and hospital staff to discharge patients from inpatient beds before noon of the discharge day.<sup>35</sup> These efforts resulted in earlier placement of admitted emergency department patients in inpatient beds.<sup>36</sup>

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<sup>34</sup> University Health System Consortium, *Managing Patient Flow Implementation 2005 Benchmarking Project Field Brief*. See [www.uhc.edu](http://www.uhc.edu).

<sup>35</sup> General Accounting Office, *Hospital Emergency Departments: Crowded Conditions Vary Among Hospitals and Communities* (Mar. 2003).

<sup>36</sup> *Id.*

A hospital in Atlanta formed a “bed briefing group” that meets several times a day to discuss the types of patients in the emergency department waiting for transfer to inpatient and the types of inpatient beds expected to become available.<sup>37</sup>

The Task Force endorsed the idea of early discharge, but noted that success of early discharge is limited by 1) the longstanding culture surrounding rounds and orders, 2) the timeliness of work-up tests that must be completed before discharge, and 3) the limited availability of private ambulance units for transport of discharged patients to nursing homes.

**Recommendation:** Hospitals should consider adopting an early discharge policy. The Health Department should review availability of private ambulance units for transport of discharged patients to nursing homes earlier in the day.

### **13. Increase Inpatient Bed Capacity**

The General Accounting Office report concluded that the factor most commonly associated with crowding was the inability to transfer emergency patients to inpatient beds once the decision was made to admit them.<sup>38</sup> Solutions could include strategies to increase inpatient bed capacity either by increasing the number of staffed beds or by improving the efficiency of the admissions and discharge process.

**Recommendation:** Hospitals should consider requesting that the city advocate with state regulators for additional bed capacity and adequate funding to finance the beds.

### **14. Review Elective Surgery Scheduling**

Root cause analysis study performed at two hospitals in Massachusetts, a large tertiary academic hospital and a medium-sized acute care community hospital, concluded in both cases that the availability of inpatient hospital resources is the primary determinant of emergency department diversions.<sup>39</sup> Further analysis by day of the week revealed that emergency department diversion is not a completely random event – the rising census of scheduled admissions, particularly elective surgeries, helps explain increased diversions on certain days of the week.

Another recent study demonstrated an association between the number of daily elective surgical cases performed in the operating room and mean throughput time in the

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<sup>37</sup> *Id.*

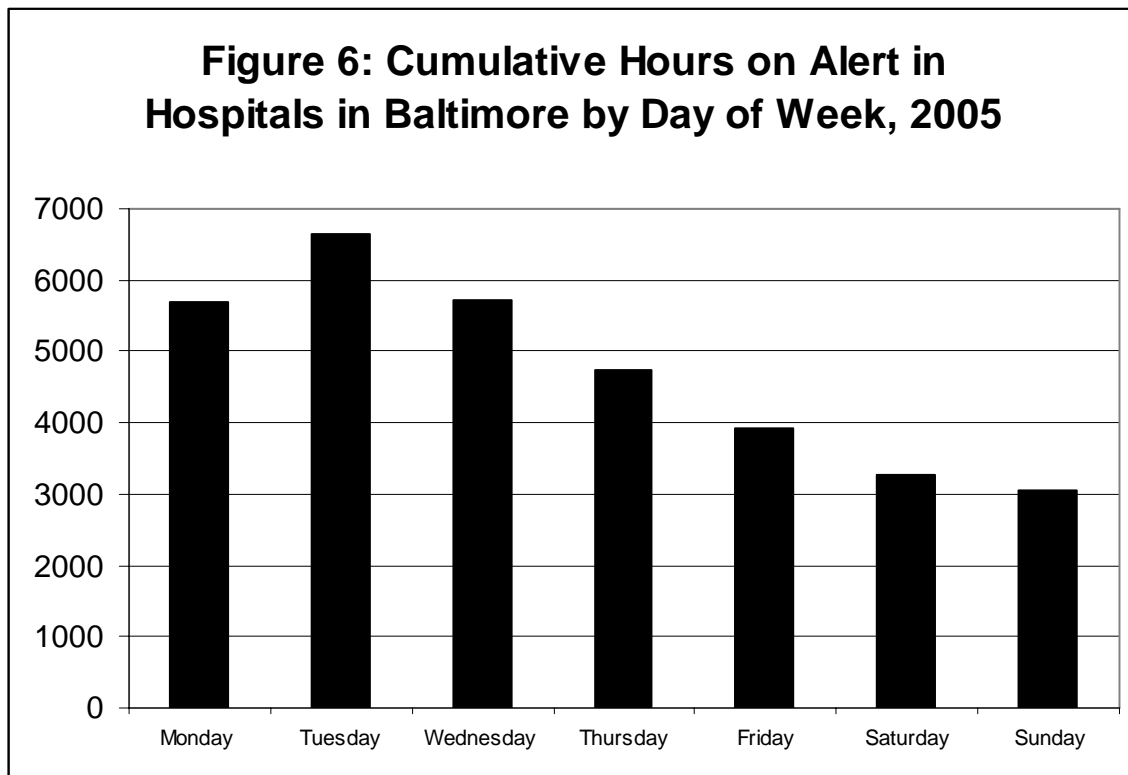
<sup>38</sup> *Id.*

<sup>39</sup> Boston University, *Root Cause Analysis of Emergency Department Crowding and Ambulance Diversion in Massachusetts* (Oct. 2002).

emergency department.<sup>40</sup> Boston Medical Center determined that careful scheduling of elective surgery - initially cardiothoracic and vascular surgery - can effectively "smooth" a facility's patient flow and ultimately reduce ambulance diversions.<sup>41</sup>

In Baltimore, it is not known whether the pattern of scheduling elective surgeries contributes to emergency department overcrowding. Some evidence suggests that the day of the week may play a large role in determining the extent of crowding in hospital emergency rooms. According to a preliminary analysis by the Baltimore City Health Department, alert hours fell disproportionately on Tuesday in 2005. (Figure 6).

One possible explanation for these data is poor distribution in elective surgery scheduling. Other factors include the fact that physicians often do not come in on weekends for discharge, the limited availability of work-up tests on weekends, and the significant number of patients who come to the hospital on Mondays. One Baltimore hospital reviewed its data and found that elective surgery admissions do not correlate with crowding.



<sup>40</sup> N. Rathlev, et al., *Effect of the Elective Surgical Schedule on Daily Emergency Department Throughput Time*, *Annals of Emergency Medicine*, S29 (2004).

<sup>41</sup> Urgent Matters, *Perspectives: Adopt-a-Border* (Mar. 2004).



**Recommendation:** The potential role of elective surgery scheduling on emergency department crowding should be further studied. Hospitals should report a measure of their variability of elective surgeries requiring ICU or inpatient care. Where such variability is an important predictor of emergency department crowding, hospitals should consider strategies to smooth out these admissions over the course of the week.

#### **15. Increase Recruitment of Registered Nurses**

While detailed discussion is beyond the scope of this report, recruiting qualified nursing staff to handle fluctuating levels of demand has been a challenge for hospitals around the country. One task force participant noted the draining international pool of nurses, and the shortage of nursing instructors that limits expansion of nursing schools.

**Recommendation:** Baltimore should consider offering incentives to nurses who work in the city.

### **CONCLUSION**

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Emergency Department crowding is an important and growing problem in Baltimore City. The Baltimore City Health Department and Baltimore City Fire Department requested expert advice from a Task Force comprised of hospital representatives. After reviewing evidence and previous reports, the Task Force recommended the consideration of a variety of measures covering inflow, throughput, and outflow of patients from the emergency department.