Short-term Solutions/Model Practices

Short-term solutions to the crowding problem involve cooperative efforts between the ED and other stakeholders, including the various hospital inpatient units, ancillary and support services, the hospital's medial staff, administration and EMS providers. Simply expanding ED facility space and increasing hospital bed capacity are two approaches that alone are unlikely to be successful in relieving ED crowding. Likewise, any strategies that do not have the enthusiastic support of senior hospital management are doomed to failure. Most of the strategies that have been found to be successful were those that addressed primary factors external to the ED.

This list of model practices can be viewed as short-term solutions, and can be grouped under several healthcare domains having individual and shared responsibilities for alleviating crowding. These domains are EMS, ED, hospital and regional services.

EMS Model Practices

- **Medical direction.** The EMS Medical Director should develop policies and protocols for delivery of patients to appropriate hospitals, based on knowledge of the specialty capabilities of the system's facilities. The Medical Director also should be involved in the development of system-wide diversion protocols.

- **Diversion protocols.** Each ambulance within the system should carry a written protocol that defines explicit criteria for diverting patients, and includes contingency plans for alternative transport destinations. Familiarity with such diversion protocols should be part of the knowledge base for all paramedics and EMTs working in the system.

- **Regional information management system.** The use of EMSystem™ software is one example of an Internet-based tool that can help manage hospital diversion status and collect real-time information for current and future planning by EMS agencies. The ED Alert network, used in Massachusetts, is another example. The goal is to be able to direct ambulances to the nearest open and appropriate facility prior to initiation of patient transport. Information collected from these tools must also be made available to local health authorities with responsibility for planning and disaster management.

- **Regional diversion saturation override.** A process must be in place to account for times when there is saturation of all hospitals in a region, so as to not leave EMS providers without an appropriate hospital destination. In Boston and Denver, for example, at the point when the last available hospital is poised to go on diversion, all hospitals are automatically taken off diversion and re-opened to incoming ambulances.

- **Documentation.** Diversions (number, length of time, hospitals involved, reasons) and EMS turnaround times (the time intervals spent by EMS waiting at hospitals) should be tracked, tallied monthly and reported to ED medical directors, hospital administrators and regional public health authorities.

- **State Public Health Authorities**. All of the above activities should be coordinated with those agencies responsible for hospital oversight, EMS systems, disaster response, and current preparations for bioterrorism preparedness

Emergency Department Model Practices

Although the major characteristics of ED patient flow - random arrival of patients having varying degrees of acuity - is beyond the direct control of the ED staff, the ED does have the ability to influence the throughput process. The following are some recommendations:

- **Real-time monitoring of ED crowding metrics.** Through weekly measurement of Key Performance Indicators, such as ED patient volume, hospital census, boarders, staffing levels, critical care bed capacity, throughput times and ED waiting times, EDs may be able to predict in advance when diversion is imminent. The goal, of course, is to identify and correct problems *before* they get out of control and lead to hospital diversion. One example of this functionality is the "Emergency Department Demand/Capacity Management System" used at Overlook Hospital in Summit, New Jersey, which uses a color-coded matrix to define the level of ED activity (Appendix D). This is said to have reduced the admission cycle time from 129 minutes to 78 minutes in 2001, with a 13-month hiatus in the incidence of diversions.

- **Best Demonstrated Processes.** A detailed analysis of ED patient lengths of stay (LOS) in a large multihospital system leads to the identification of "best demonstrated processes" (BDP) that distinguish top-performing from bottom-performing EDs (Figure 2). The BDP methodology can then be applied to the slowest EDs in the system to improve their patient throughput times and reduce their LOS. Examples of BDPs include clear identification of a person responsible for a task, clear transfer of responsibility from one step in a process to the next, and explicit process performance expectations with a designated individual charged with monitoring each process.

- **ED automation.** The ED is amenable to multiple automated processes. Examples include patient tracking software, template charting and check-box systems, automated discharge instructions and prescriptions, on-line ordering of lab tests and imaging studies, point-of-care bedside testing, pneumatic transfer of drugs and supplies, bedside computer registration and the use of fax machines to receive stat radiology reports.