Emergency department (ED) crowding is a world-wide problem that impacts quality, patient safety, and hospital finances. Crowding in the ED can occur when there are inefficiencies in patient input (e.g. prolonged waits to see a provider), throughput (e.g. prolonged lab and imaging turnaround times), and output (e.g. boarding of admitted patients in the ED). The ED at Washington Hospital Center (WHC) experienced significant crowding due to inefficient processes within the ED (patient input and throughput) as well as from inefficient processes from sources external to the ED (throughput and output). Commonly followed performance (e.g. door-to-doctor times, patients who leave the ED without being seen by a physician, ED length of stay), quality (e.g. door-to-antibiotic time for admitted patients with pneumonia) and financial measures (e.g. revenue) may be adversely impacted by crowding.

Patients who leave without being seen (LWBS) are a patient safety and risk management concern and the % LWBS is often considered a marker for inefficient processes-both internal to the ED and external to the ED (i.e. boarding). The %LWBS for our ED ranged between 6-8+% per month and our door-to-doctor times were excessive, averaging nearly 2.5 hours. The ED length-of-stay for discharged patients was prolonged and we had problems getting timely antibiotics to patients diagnosed with pneumonia, in part, because of prolonged door-to-doctor times. From a financial perspective, our billable patient rate dropped primarily due to the high %LWBS.

Our ED was organized into 3 patient care teams-Red, Green, and Blue. Each patient care team could be considered a “mini-ED” with an emergency physician, 3-4 nurses, an ED tech, and assigned space/rooms. In addition to these primary teams, we began to schedule a Gold Physician during peak hours to assist in the early management of patients. This physician, however, was effectively “alone” in trying to care for patients who were waiting to be seen on one of the primary patient care teams. The majority of these waiting patients fit into an ESI triage category=3, meaning that testing and resources would be required. Without nursing and tech support to assist in specimen collection and testing, the Gold Physician was ineffective and inefficient.
**PROCESS:**

The solution we developed was founded in ideas presented at an educational session on ED crowding at the national meeting for the American College of Emergency Physicians in 2008. A physician-nurse-tech care team (Gold Team) was created to evaluate and care for triaged patients who were waiting to be seen by one of three primary ED care teams. A collaborative physician-nurse leadership group met regularly over two months to develop and operationalize the Gold Team. In addition to developing this operational plan, it was important to develop a business plan.

A business plan was developed and presented to hospital leaders who needed to approve hiring additional nurses and ED techs to round out the physician-nurse-tech Gold Team. The plan set goals for reducing %LWBS, reducing door-to-doctor times, and reducing ED length of stay for discharged patients. In addition, it was anticipated that the hospital would experience improved financial performance of the ED (reduced LWBS results in increased billable patients) that would more than make up for the cost of hiring nursing and tech personnel ($670,000/year).

**SOLUTION:**

The nurse and tech staffing proposal for the Gold Team was approved for a 13-week trial which began on January 12, 2009. The Gold Team was now operational 10am-midnight weekdays. By the halfway point of the trial, it was clear that the Gold Team was a success. In fact, the additional nursing and tech positions were permanently approved just 2 months after the trial began. Receiving approval for additional personnel was quite an achievement given the overall economy was in the midst of the most significant downturn since the Great Depression.

The success of the Gold Team exceeded all expectations. To demonstrate this, we retrospectively compared results from April through September for consecutive years when clinical space and personnel were equal except for the presence of the Gold Team (see Outcomes and chart below). The Gold Team facilitated our ability to see more patients (+3077 or +8%) yet we were able to significantly decrease the number and percent LWBS, decrease door-to-doctor (D2MD) times by 32%, and decrease in ED length of stay (LOS) for discharged patients by 7.5%. In addition, the presence of the Gold Team impacted quality and finances. It was associated with a 20% reduction in door-to-antibiotic time (D2Abx) for ED patients admitted with pneumonia and resulted in a 9% increase in revenue (incremental $1,678,500 or 9% increase).
Results continue to be tracked in real-time and presented at departmental staff meetings, as well as incorporated into hospital reports. The ED Benchmark Alliance allows us to compare our performance in commonly followed metrics with a similar cohort—high volume, high acuity, tertiary care referral center ED. Since the Gold Team began, our results are no longer outlier results when compared to similar facilities but are leading the way. The WHC ED leadership team of physicians and nurses truly believes the Gold Team is successful because it is a healthcare team (physicians + nurses + techs).
OUTCOMES:

<table>
<thead>
<tr>
<th></th>
<th>Visits</th>
<th>#LWBS</th>
<th>%LWBS</th>
<th>D2MD hrs</th>
<th>LOS hrs</th>
<th>D2Abx hrs (n)</th>
<th>Billable Visits</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/1/08-9/30/08</td>
<td>39787</td>
<td>2745</td>
<td>6.9</td>
<td>2.2</td>
<td>4</td>
<td>3.8 (338)</td>
<td>35,117</td>
<td>$18,058,500</td>
</tr>
<tr>
<td>4/1/09-9/30/09</td>
<td>42664</td>
<td>1422</td>
<td>3.3</td>
<td>1.5</td>
<td>3.7</td>
<td>3.05 (424)</td>
<td>40,214</td>
<td>$20,107,000</td>
</tr>
<tr>
<td>Difference</td>
<td>3077</td>
<td>1323</td>
<td>3.6</td>
<td>0.7</td>
<td>0.7</td>
<td>0.75 (20%)</td>
<td>4,097 (11.3%)</td>
<td>$1,578,500</td>
</tr>
</tbody>
</table>

Results in black indicate an increase in value from 2008 to 2009 study period.
Results in red indicate a decrease in value from 2008 to 2009 study period.
D2MD= door-to-doctor time
LOS= ED length of stay for patient discharged from ED
D2Abx= door-to-antibiotics for patients admitted to the hospital with an ED diagnosis of pneumonia

SUMMARY

There are many interventions to improve ED performance (e.g. feedback, initiatives to reduce boarding) and address overcrowding. Implementation of the Gold Team was associated with significant improvement in commonly followed performance, quality, and financial metrics. We have concluded that the Gold Team is indeed, “worth its weight in gold.”