Tools, Techniques, and Best Practices in the Emergency Room

Sandy Yanko
Director, Management Engineering, Far West Division

Eddie Gomez
Director, Management Engineering, Delta Division

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Key points:

- Frame how our presentation will work---that we will show tools used in projects, not presenting a project from start to finish
- We use data to solve problems
- Tie to our abstract -

Objectives:

- To learn about tools utilized in ED process improvement projects
- To understand the pitfalls and keys to success
- To become familiar with ED best practices
Other statistics:
• 3 groups, 16 divisions, 6 markets
• Mention that there is 1 Management Engineer per division with responsibilities for hospitals ranging between 8-15. Some divisions have associate MEs
• Headquartered in Nashville, formed in 1968
• Strategy:
  • Putting patients first: HCA works to constantly improve the care we give our patients, implementing measures that support our caregivers, help ensure patients’ safety and provide the highest possible quality
  • Investing in our communities: HCA presently plans to invest more than $1 billion per year to keep our hospitals modern and up-to-date technologically
  • Focusing on leading hospitals in core communities: HCA focuses on communities where the company is a leading healthcare provider
  • Improving local operations through efficient use of resources: HCA employs industry leading measures that enhance the performance of the company’s local facilities, including organized group purchasing, efficient supply acquisition and distribution, shared admin & business services,
  • Building strong physician relationships: HCA values strong relationships with local physicians, working to provide them a wide array of services and modern facilities in order to help them deliver the best possible care.
State of Emergency

- In the past decade...
  - Emergency room visits up 20% 89.8M to 110M
  - The number of EDs down 15%
  - Time to treatment up 32% to 67.7 minutes
  - 54% of visits are non-urgent or semi-urgent

...which has led to increasing numbers of patients visiting the ED

What caused these changes:
- Uninsured use ED because they can’t get routine care
- Doctor’s offices are closed during peak ED hours
- Hospital closures and consolidations
- Reduced inpatient length of stay
Few patients perceive quality of care with regard to accuracy of diagnosis and treatment and therefore will judge quality on two things they do understand... 

**How long they wait and how nice the nurses and doctors are to them and their families.**

Key Points:
- ED operations impact and are affected by the entire hospital system
- The Emergency Department (ED) is the “gateway” to the hospital--The ED is where most people have their first contact with the hospital and develop their first impressions of the organization

We’ll discuss some of our best practices using this framework:
- Front end processes of triage and registration
- ED work-up and treatment
- Disposition process

Red denotes a wait/delay and green denotes value/flow
- Total Time Range (Red + Green): 126 – 1075 minutes (2.1 hours – 17.9 hours)
- Wait/ Delay Time (Red): 1 – 16 hours
- Value/ Flow Time (Green): 1 – 2.25 hours
Definition of benchmarking:

The practice of being humble enough to admit that someone else is better at something and being wise enough to try to learn how to surpass them at it.

International Benchmarking Clearing House
What is Benchmarking?

**Benchmarking IS:**
- Continuous search for a better way of doing things
- Continuous process to improve productivity, operations, patient flow, quality, or cost
- Learning/discovery/improvement process
- Adaptive
- A planning process
- Collaborative
- Others’ cost are 10% lower, what do they do differently

**Benchmarking IS NOT:**
- One time program
- Cookbook process
- Copying others
- Strictly a cost reduction program
- Spying
- Others’ cost are 10% lower, my costs should be 10% lower
To “benchmark” with other facilities, you need to first understand your own processes.

Goals of Process Improvement:
- Simplify and reduce hand-offs
- Eliminate waste and re-work
- Combine steps (wherever possible)
- Design process with alternate paths (do not force all processes to follow the same path)
- Reduce turnaround time
Benchmarking: Key Question:

- If you had to suggest 3 – 5 things to change or improve, what would they be?

*Not, “This is why I’m different...”

<table>
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<tr>
<th></th>
<th>TOT</th>
<th>ADM</th>
<th>DCD</th>
<th>TOT</th>
<th>ADM</th>
<th>DCD</th>
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<th>LPMSE %</th>
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<th>Units</th>
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<td>59</td>
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<td>13</td>
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<td>50</td>
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<td>132</td>
<td>29</td>
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<td>32</td>
<td>11</td>
<td>83</td>
<td>22</td>
<td>83</td>
<td>17</td>
<td>2.69%</td>
<td>23.81%</td>
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<td>494</td>
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<td>27</td>
<td>95</td>
<td>16</td>
<td>3.10%</td>
<td>20.12%</td>
<td>33,115</td>
</tr>
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<td>161</td>
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<td>20</td>
<td>132</td>
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<td>84</td>
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<td>15</td>
<td>180</td>
<td>15</td>
<td>180</td>
<td>17</td>
<td>3.57%</td>
<td>23.19%</td>
<td>27,768</td>
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<td>Hospital 11</td>
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<td>204</td>
<td>440</td>
<td>72</td>
<td>22</td>
<td>212</td>
<td>33</td>
<td>95</td>
<td>16</td>
<td>3.10%</td>
<td>20.12%</td>
<td>33,115</td>
</tr>
<tr>
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<td>405</td>
<td>171</td>
<td>72</td>
<td>216</td>
<td>34</td>
<td>95</td>
<td>16</td>
<td>2.46%</td>
<td>20.03%</td>
<td>29,374</td>
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<tr>
<td>AVERAGE</td>
<td>84</td>
<td>226</td>
<td>364</td>
<td>166</td>
<td>57</td>
<td>154</td>
<td>29</td>
<td>168</td>
<td>23</td>
<td>3.57%</td>
<td>23.19%</td>
<td>29,768</td>
</tr>
</tbody>
</table>

Triage/Reg
ED Work-Up / Treatment
Dispo
Process
Arrival
To Greet
Arrival
To Leave
Arrival
To Leave
Arrival
To Leave
Arrival
To Leave
Arrival
To Leave
Arrival
To Leave
Arrival
To Leave
Arrival
To Leave
Issues and observations:
- 3% target was set for combined rates of Left Prior to Triage (LPT) and Left Prior to Medical Screening and Examination (LPMSE)
- Hospitals across the company were not meeting this target
- LPT/LPMSE rate was tied to quality and financial incentives
- Patient satisfaction issues were on the increase

Why a concern for LPMSE?
• Sentinel events
• Community not receiving proper care
• Lost revenue
• Patient satisfaction
• Threatens an ED public relations
• EMTALA

Statistics for LPMSE:
• 46% needed immediate medical attention
• 29% needed care within 24 to 48 hours
• 8% were hospitalized within 1 week

The quality incentive to reduce the LPT/LPMSE rate is to provide services to provide medical care to everyone that depends on the Emergency Department for care and do want people to leave with an undiagnosed life threatening illness.

Financially LPT/LPMSE is tied to financial incentives in two forms, one positive and one negative. The positive incentive is that LPT/LPMSE rates were tied to Premium Credit, which benefit the hospital with reduced insurance rates. The negative incentives takes the form of potential lost revenue for the hospital and the physicians.
### Financial Impact: Hospital

**Table: ED Annual Visits**

<table>
<thead>
<tr>
<th>LPT &amp; LPMSE Rate</th>
<th>25,000</th>
<th>30,000</th>
<th>55,000</th>
<th>60,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5%</td>
<td>$103,000</td>
<td>$124,000</td>
<td>$227,000</td>
<td>$248,000</td>
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<tr>
<td>1.0%</td>
<td>$206,000</td>
<td>$248,000</td>
<td>$454,000</td>
<td>$496,000</td>
</tr>
<tr>
<td>2.0%</td>
<td>$413,000</td>
<td>$496,000</td>
<td>$908,000</td>
<td>$991,000</td>
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<tr>
<td>3.0%</td>
<td>$619,000</td>
<td>$743,000</td>
<td>$1,363,000</td>
<td>$1,487,000</td>
</tr>
<tr>
<td>5.0%</td>
<td>$1,032,000</td>
<td>$1,239,000</td>
<td>$2,271,000</td>
<td>$2,478,000</td>
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<tr>
<td>8.0%</td>
<td>$1,652,000</td>
<td>$1,982,000</td>
<td>$3,634,000</td>
<td>$3,964,000</td>
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<tr>
<td>10.0%</td>
<td>$2,065,000</td>
<td>$2,478,000</td>
<td>$4,542,000</td>
<td>$4,955,000</td>
</tr>
<tr>
<td>12.0%</td>
<td>$2,478,000</td>
<td>$2,973,000</td>
<td>$5,451,000</td>
<td>$5,946,000</td>
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</table>

**Assumptions**
- 300 Current LOS (in minutes)
- $487 Average ED Net Revenue per Visit
- 40.0% Average Admission Rate from ED
- $6,778 National Average Revenue per Inpatient Admission from ED
- 5.0% Expected Admission Rate for LWBS Patients
- $826 Average LOST Revenue per LPT & LPMSE

At 30,000 annual visits: Reduction from 12% to 3% = $2.2M increased revenue

*Source: The Advisory Board, 2003 Data*
Financial Impact: Physicians

### Assumptions
- **Current LOS (in minutes):** 300
- **Average ED Physician Net Revenue per Visit:** $110

### Example:
At an annual volume of 43,000 visits, if the LPT & LPMSE rate is reduced from 12% to 3%, then the additional net revenue for all physicians is approximately:

$426,000 ($568K-$142K) annually

### Table: ED Annual Visits

<table>
<thead>
<tr>
<th>LPT &amp; LPMSE Rate</th>
<th>25,000</th>
<th>30,000</th>
<th>43,000</th>
<th>55,000</th>
</tr>
</thead>
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<tr>
<td>0.5%</td>
<td>$14,000</td>
<td>$17,000</td>
<td>$24,000</td>
<td>$30,000</td>
</tr>
<tr>
<td>1.0%</td>
<td>$28,000</td>
<td>$33,000</td>
<td>$47,000</td>
<td>$61,000</td>
</tr>
<tr>
<td>2.0%</td>
<td>$55,000</td>
<td>$66,000</td>
<td>$95,000</td>
<td>$121,000</td>
</tr>
<tr>
<td>3.0%</td>
<td>$83,000</td>
<td>$99,000</td>
<td>$142,000</td>
<td>$182,000</td>
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<tr>
<td>5.0%</td>
<td>$138,000</td>
<td>$165,000</td>
<td>$237,000</td>
<td>$303,000</td>
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<tr>
<td>8.0%</td>
<td>$220,000</td>
<td>$264,000</td>
<td>$378,000</td>
<td>$484,000</td>
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<tr>
<td>10.0%</td>
<td>$275,000</td>
<td>$330,000</td>
<td>$473,000</td>
<td>$605,000</td>
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<tr>
<td>12.0%</td>
<td>$330,000</td>
<td>$396,000</td>
<td>$568,000</td>
<td>$726,000</td>
</tr>
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</table>

At 43,000 annual visits: Reduction from 12% to 3% = $426K increased revenue
In defining a problem, we need to know how big of a problem we have. Is the trend increasing, decreasing, or unchanging?
A key assumption that has to be tested is the validity of the data. In solving this issue, depending on the diligence of data capture at the facilities, other issues were found as far as who captured the data, who revised it, and more importantly, how were people being held accountable. Particular issues were that patient was LPT/LPMSE but had been admitted through the ER, or that they became LTP/LPMSE prior to arriving.
LPT/ LPMSE Calculator

- **Benefits:**
  - Financial data to determine the cost of LPT/LPMSE
  - Visual display of times and days when LPT/LPMSE targets are exceeded, resulting in actionable items to reduce LPT/LPMSE
Issues and observations:
- Perception that more staffing means better efficiency and increased patient satisfaction
  - Some facilities exhibited heavy use of labor compared to their peers, yet still had poor indicators such as length of stay and employee satisfaction
  - Other facilities with less staffing than their peers had lower lengths of stay and higher employee satisfaction

Some of the easiest components to get are the ER visits that are expected in the ED department, with historical volumes being the most accurate.

Acuity is not so easy to keep track of unless you have set mechanisms in place. A charge system serves as a pseudo acuity system in the absence of true acuity data. Sometimes the perception is that a trauma designated ED will always require a higher staffing ratio than other Emergency Departments. The key is the number of visits by patient type, not the designation of the emergency room.
ER Staffing Model

Implementation Activities:
- Identify the factors affecting the requirement of labor utilization
  - ED visits
  - Patient acuity
  - Time for treatment (length of stay)
- Identify standards of care for particular acuity levels of ED patients
- Identify best demonstrated practices that effect throughput and quality

Important to note that the acuity capturing system is more of a pseudo acuity system since it is based on carges

Standards for length of stay and hours of care required came from ENA standards
### ER RN Staffing Model

**Required data:**
- Total annual volume
- % of visits by E/M level

**Assumptions:**
- Length of stay for different acuity levels

#### ER Volume

<table>
<thead>
<tr>
<th>Acuity Level (E/M Level)</th>
<th>%</th>
<th>LOS (Bed-Discharge)</th>
<th>Volume</th>
<th>1st HR</th>
<th>Each Hr</th>
<th>Total Hour &gt; 1</th>
<th>Total Hours</th>
<th>RN Std</th>
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<tr>
<td>1</td>
<td>21.06%</td>
<td>60</td>
<td>9,146</td>
<td>15</td>
<td>7.5</td>
<td>0</td>
<td>2,287</td>
<td>0.250</td>
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<tr>
<td>2</td>
<td>19.90%</td>
<td>140</td>
<td>8,643</td>
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<td>12</td>
<td>16</td>
<td>4,465</td>
<td>0.517</td>
</tr>
<tr>
<td>3</td>
<td>24.26%</td>
<td>200</td>
<td>10,536</td>
<td>30</td>
<td>15</td>
<td>35</td>
<td>11,414</td>
<td>1.083</td>
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<tr>
<td>4</td>
<td>17.08%</td>
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<td>7,418</td>
<td>45</td>
<td>30</td>
<td>110</td>
<td>19,163</td>
<td>2.583</td>
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<tr>
<td>5</td>
<td>17.70%</td>
<td>280</td>
<td>7,687</td>
<td>60</td>
<td>45</td>
<td>165</td>
<td>28,827</td>
<td>3.750</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>43,430</strong></td>
<td><strong>66,156</strong></td>
<td></td>
<td></td>
<td><strong>1.523</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How many RN FTEs are needed to satisfy these volume requirements?

This particular hospital had X nurses, how many would you need to reduce in order to meet the productivity standards?
The tool is not meant to be the final word in staffing, it is designed to allow the Emergency Department to gain a sense of how they compare to best practices in terms of roles of staff and the inclusion of specialized staff. For example, after the Hurricane Katrina, several mental health facilities closed or reduced services. Patients from these institutions are making it to the emergency room, requiring that Psychiatric nurses or other support staff at these facilities, meaning that they are Best Practice for dealing with this patient population.
At a 43,000 visit a year ED, there were issues pertaining to quality, staffing, and satisfaction of employees and physicians. At first glance, the model output suggests that the budgeted staffing might be lower than what is required. Using the logic that if we were to increase the target model recommended levels, everything would be perfect. However, the actual run rate, which is close to the staffing model suggest that there are other issues than just staffing as there seems to be enough.
Benefits of simulation:

- Customization in a day, rather than weeks
- Sophisticated, deep, ED-specific outputs and analysis
- Ease of use
  - Non-simulationist can easily use for ongoing analysis
  - Department Managers, Directors, Physicians, and staff
Initial Scenario Experiments

- Reduced Triage Time by 25%
- Reduce Doctor-to-Disposition by 20%
- Reduce Disposition-to-Departure by 20%
- Reduce Admission Time by 50%
- **Reduce Doctor-to-Disposition-to-Departure by 20% (Combined Scenario)**

Scenarios In-Progress:
- Adjusted Staffing Patterns
- Adjusted Fast Track Hours
- Adjusted Lab-Ordering Profile
- Faster Lab Turnaround Times
- Fast Radiology Turnaround Times
Focused on the dispo-to-depart. Reduction of 8%
Process Changes Made

What did they do:

- Re-assigned duties in bed control to create a bed “czar”
- Implemented ED tracker
- Re-assigned an RN to be a flow facilitator to assist with discharging patients
Simulation

**Benefits:**
- Quantitative analysis of current state and recommended changes
- Demonstrated impacts of flow constraints such as beds, staffing, lab, and rad
- Instant “on the fly” testing of scenarios to examine optimal staffing patterns, new processes and volume changes
Best Practice:
Cross Training Registration and Unit Secretaries

- Issues and observations:
  - Silohed job responsibilities between registrars and unit secretaries
  - Different staffing patterns
  - Different reporting relationships
  - Lack of communication
Once the registrar is hired and trained on Patient Account Services duties, they are then cross-trained on unit secretary duties including: order entry, physician paging, telephone coverage, and ED chart analysis and breakdown

They are then positioned throughout the ED for bedside registration and “hot seat”/unit secretary duties

Because the “hot seat” position is so fast paced and mentally challenging, the registrars rotate coverage every 4 hours

How it works:
The staff is recruited and hired by PAS. Once hired, the staff completes PAS orientation and trains on the PAS duties for the ED. Once all PAS competencies are met, the employee cross-trains on typical ED unit secretary’s duties including: order entry, physician paging, telephone coverage, and ED chart analysis and breakdown. The cross-trained staff members are positioned throughout the ED for bedside registration and “Hot Seat”.

“Hot Seat”
• “Hot Seat” duties include: all physician paging, telephone coverage and order entry for the ED.
• Because this position is so fast paced and mentally challenging, the registrars rotate coverage every 4 hours.

All ED staff members have Motorola radios with ear buds for communication; therefore, a registrar at the bedside can also enter orders as requested by physicians or nurses via the radio.

All ED cross-trained registrars/unit secretaries also perform simple ED tech functions when needed such as: transporting from triage, stocking, cleaning rooms between patients, etc.
Best Practice: Cross Training Registration and Unit Secretaries

- Implementation activities:
  - Developed cross-trained job description
  - Designed training program
  - Created HR policy regarding implementation of the new program and options for existing staff
  - Created pay scale
  - Trained staff
  - Communicated program to ED staff and physicians (inside and outside of the ED)
**Best Practice: Cross Training Registration and Unit Secretaries**

**Position Summary**

Responsible for timely and accurate patient registration as well as a variety of clerical and receptionist functions in the Emergency Department. Professionally interacts with patients, physicians, nurses and other hospital staff.

<table>
<thead>
<tr>
<th>Weight</th>
<th>Principle Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>70%</td>
<td><strong>Patient registration and insurance verification</strong></td>
</tr>
<tr>
<td>1.1</td>
<td>Interviews patients to obtain all necessary account and registration information</td>
</tr>
<tr>
<td>1.2</td>
<td>Verifies all insurance and obtains recertification/authorization</td>
</tr>
<tr>
<td>1.3</td>
<td>Searches MPI completely and ensures correct medical records and account number are assigned to the patient</td>
</tr>
<tr>
<td>1.4</td>
<td>Knowledgeable on all policies regarding services, charges, insurance billing and payment of accounts</td>
</tr>
<tr>
<td>10%</td>
<td><strong>Unit operations</strong></td>
</tr>
<tr>
<td>2.1</td>
<td>Assumes primary responsibility for ensuring 95% accuracy of physician data/order entry</td>
</tr>
<tr>
<td>2.2</td>
<td>Prepares charts with proper information in a timely manner</td>
</tr>
<tr>
<td>2.3</td>
<td>Process patient charts according to paperwork flow needs and established productivity standards</td>
</tr>
<tr>
<td>10%</td>
<td><strong>Customer service and professionalism</strong></td>
</tr>
<tr>
<td>3.1</td>
<td>Answers questions and explains policies clearly</td>
</tr>
<tr>
<td>3.2</td>
<td>Serves as a liaison between the ED and other hospital departments</td>
</tr>
<tr>
<td>3.3</td>
<td>Escorts patients to his/her destination and/or refers patient to available escort</td>
</tr>
<tr>
<td>3.4</td>
<td>Adheres to the “Code of Conduct” and the “Mission, Vision, and Values”</td>
</tr>
<tr>
<td>5%</td>
<td><strong>General office/clerical</strong></td>
</tr>
<tr>
<td>4.1</td>
<td>Acts as a resource for the computer or printer as needed</td>
</tr>
<tr>
<td>4.2</td>
<td>Prices, key and detail all patient charges</td>
</tr>
<tr>
<td>4.3</td>
<td>Acknowledge, file and send MOX messages via Meditech</td>
</tr>
<tr>
<td>4.4</td>
<td>Routes telephone calls to the appropriate individual and takes messages accurately</td>
</tr>
</tbody>
</table>

5%  **Other duties as assigned**
## Best Practice: Cross Training Registration and Unit Secretaries

- **Benefits and results:**
  - Increased staffing flexibility to meet patient demands
  - Increased ED physician satisfaction from 3.42 to 3.56
  - Increased registrar satisfaction from 3.60 to 3.65
  - Increased productivity from 2.1 to 2.0

- **Risk constraints:**
  - Ability of staff to be proficient at all duties
  - Potential of reporting relationships to be blurred (ED director and PAS director must support each other)
Best Practice: ED Visual Cueing

- Issues and observations:
  - Lack of timely communication of lab and radiology results caused unnecessary patient delays
  - Lab knew when orders were entered but had little control of when samples were received into the lab
# ED Visual Cueing

<table>
<thead>
<tr>
<th>RN</th>
<th>PATIENT NAME</th>
<th>ER DOC COMPLAINT</th>
<th>CHEMON PREG</th>
<th>UA</th>
<th>RAO</th>
<th>US</th>
<th>CT</th>
<th>STA</th>
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<td>C</td>
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<td>E</td>
<td>C</td>
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<tr>
<td>2</td>
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<td>C</td>
<td>C</td>
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<tr>
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</table>

Push vs Pull
Imaging Visual Cueing

![Imaging Visual Cueing Image]
ED Visual Cueing

- Tracker can be placed in key locations around the hospital
ED Visual Cueing

- **Cost:**
  - Plasma/LCD screens
  - Installation costs for computers and screens
- **Implementation activities:**
  - Pre-installation implementation checklist
  - Training the users
  - Identify measurable data points

Pre installation screens assigned responsibility to staff at the facility for procurement and installation of equipment

End user training
**Best Practice: Rapid Medical Exam**

- **Issues and observations:**
  - Wait times for higher acuity patients (4’s and 5’s) have been increasing
  - LPT and LPMSE rate is rising

Appropriate people in the ED
Best Practice:
Rapid Medical Exam

- How it operates:
  - Design & location: 2 stretchers, located adjacent to the triage
  - Staffing: PA, RN, and tech from 11a-11p
  - If ED beds are not available, the lower acuity patients are triaged to RME
  - If appropriate care can be provided in the RME (splinting, sutures, etc.) the patient is discharged directly from the RME once the care has been provided.

How it operates:

• If ED beds are not available, the lower acuity patients are triaged to RME.
• The RME area is typically staffed with a PA, a nurse, and one tech from 11 AM to 11 PM. The RME area is adjacent to Triage and contains two (2) stretchers.
• If appropriate care can be provided in the RME (splinting, sutures, etc.) the patient is discharged directly from the RME once the care has been provided.
Best Practice: Rapid Medical Exam

- **Costs:**
  - May involve adding a physician assistant
  - May involve modest facility modifications and equipment purchase

- **Benefits and results:**
  - Significant decrease in LPT and LPMSE from 9% to 2%
  - Overall LOS decrease from 180 minutes to 165 minutes
  - Patient satisfaction improved from fourth quartile to second quartile
Keys to Success

Themes:
- Customer service/patient satisfaction
- Facility leadership involvement and commitment
- Physician involvement
- Staff involvement
- Decisions using data
- Measuring and tracking results

Customer service:
• Be proactive
• Communicate time expectations

Commitment from senior leadership
• Any project in the ED with outside assistance requires executive commitment and buy in
• Alignment of goals with senior management
  • Quality
  • Financial
  • Strategic
Keys to Success

Testing for commitment:
- Has a link been made between flow issues and business goals?
- Have strategic goals that rely on improving flow been established?
- Are flow issues on the agenda of administrative team meetings?
- Is the Medical Executive Committee tracking flow issues?
Lessons Learned

- Push vs. pull
- Adding a new lane to the freeway only gets you to the traffic jam faster

• Pulling the patients through with Rapid Medical Exam and any open bed
• Simulation helps alleviate bottlenecks
Lessons Learned

- Make decisions based on data not perception
- The quality of data at a facility can be the source of a perceived issue
- More staffing does not always lead to better throughput
- Having the right roles for the volume of the department can help in the department throughput
Questions
Contact Information

- Sandy Yanko
  Director, Management Engineering
  Las Vegas, NV
  W: 702-938-9619
  sandy.yanko@hcahealthcare.com

- Eddie Gomez
  Director, Management Engineering
  New Orleans, LA
  W: 504-988-7021
  eduardo.gomez@hcahealthcare.com