Emergency Department Strategic Design Considerations

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• Director of Clinical Operations, EMP
• Associate Clinical Professor, Wright State University Department of Emergency Medicine
ED Operations and Health Systems

- Relate ED project to the overall hospital mission
- How does form change in the ED lead to operations change for the entire system?
- Does the ED design fulfill hospital system marketing priorities?
- Will ED expansion expose other hospital issues?
- Is the “specialty ED” part of the hospital system future, or of our competitors?
- Will the ED project be consistent in fit/finish with other hospital areas?
How do other facilities and providers get to Focus?

Send the Unfocused to the ED!!!
The Patient Count: Americans Vote With Their Feet
Not Only More ED Visits in the Senior Age Brackets

- More Population Enters those Age Groups Each Year

Graying of the ED
NHAMCS Helps Predict Future Patient Flows

• 2.3% more patients per year for about the last 17 years

• Injury is 34% of ED Patient Load
  – Highest injury rates are over age 75

• ECF Patients Most Frequent ED Use
  – 2.5 m visits in 2008
  – 49% admission rate
  – Conservative Cost: $5B
The Patient Mix

- Important and Unrecognized Issues
  - The Reduction in Burn, Trauma, Injury and Cardiac Arrest
- What should we have known?
  - Prevention Works!
  - When prevention works, people are alive to get ill
- Trauma population ages
Predictable Change in ED Patient Mix

- Mental Health
- Injury
- Illness
ED Benchmarking Alliance

- Started 1994 for “Big EDs”
- Charlie Reese, MD is President
- ED Operations leaders in leading hospital. Nurses, admins, docs
EDs Operate in Stairsteps

ED Operations reflect Volume Cohorts around 20K
20 Numbers Needed to Manage an ED

1. Patients Per Day
2. High Acuity (Physician level code 4, 5, or critical care)
3. % Pediatric patients under age 2, and age 2 and 18
4. % admitted
5. % of total hospital admissions through the ED
6. % transferred to another hospital
7. % arrived by EMS
8. % EMS patients admitted
9. Median length of stay (MLOS) for all patients
10. MLOS Treat and Release Patients
    Fast Track Patients (if you have one)
20 Numbers Needed to Manage an ED

1. Median time “Door to Bed” and “Door to “Doctor”
2. % of patients Leave Before Treatment Complete
3. Admitted patient “decision to movement time”
4. EKGs per 100 patients seen
5. Plain X-rays per 100 patients seen
6. CT and MRI scans per 100 patients seen
7. Patient Satisfaction Score
8. Revenue per Patient
9. Financial Contribution to Hospital
10. ED Staff Satisfaction
EDBA Survey 2010

• 500 EDs serving 19 million patients
• Volume was down 3 to 5% versus 2009
• Patient acuity higher, and more patients admitted. Acuity up due to lower volume, no viral (H1N1 or other) outbreaks in 2010
• Continued increase in EKG utilization
• Plateau in use of CT
EDBA Survey 2010

• EDs are improving throughput, walkaway rates have decreased
• About 17% arriving by ambulance and are admitted at an increasing rate
• Payor mix worsened
• Space utilization around 3.6 visits per square foot
• Bed Utilization around 1600 visits per patient care space
The EDBA Annual Data Survey

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Figure 1. Median ED LOS BY PPD in different facilities

Statistics provided by: Emergency Department Benchmarking Alliance
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The IOM Report

- Regional Accountable Emergency Systems (RAES)
- “The Hope of RAES”
- Unscheduled Care System
- Take care of right patient in the right place at the right time
- Eliminate unnecessary movement and cost (LEAN)
The Hospital or System Board

• How does ED project relate to hospital mission?
• Fulfill accountability to community and business? (Particularly relevant to hospitals that have community boards of directors)
• Will ED expansion expose hospital issues?
• How does form change in the ED lead to operations change for the entire system?
• Does ED design fulfill hospital system marketing priorities?
To facilitate the ED’s mission statement and marketing program, a facility update is necessary. The design will fulfill the mission to provide unscheduled care; improve care to all patients with more patient amenities; improve staff satisfaction, productivity, and effectiveness; and maximizes access to care for critically ill or injured. The design will reflect our commitment to the community we serve, and the overall mission of the hospital and health system.
Hospital Boards expect: Benchmarking

• The practice of being humble enough to admit that someone else is better at doing something
• AND
• Wise enough to learn how to match or surpass them at it
• And…. Cost-Effectiveness
The ED Design should Anticipate

- Older, sicker, medical patients
- More need to greet promptly
- More Workup - EKG, Complex Imaging, telemetry
- Access to old records
- More need to stay clean
- More family
- Greater demand for safety
The ED Design should Anticipate

• Learning from L&D
• Provide care in a dedicated patient space for each patient, meaning no hallway care
• No Diversion
• Focus on Flow
• Beautiful
• Volume planned well ahead
Typical Board Directions for ED Design

- Customer friendly
- Streamline process of evaluation, treating and discharging patient
- Implement new technology
- Enhance staff productivity and retention
- Accommodate changing ED patient population and role of the ED in the hospital
- Cost efficient
Growing Business Standard: Lean Models of ED Process

- Patient greeting gives critical first impression
- Consider an intake area
- Patients arriving ambulatory ushered by "greeters"
- May also be access point for non-critical EMS traffic
- Certain EDs will benefit from a physician greeting process at busy times of day
Appropriate ED design will decrease our average lengths of stay in the ED. Those who need to spend more time in the ED would have a more comfortable setting in which to stay.

Careful with LEAN efforts. Many ED patients need some time in the ED for “Watchful Waiting”. Time in ED alone is not the correct parameter.
ED “volume bands” ED leaders should take design cues from EDs that are in the next volume band up from the current ED.
For many community hospitals, an outpatient medical mall
Minimal patient and visitor movement in all critical patient groups
Design flexibility for future department and outpatient growth
Large lobby area directly on hallway to main hospital waiting area
Fast Track area in front of ED, including critical relationship with Xray Departmental Xray should be adjacent to intake area and Fast Track
Maximize ability of nurse and physician staff to view patients, but the patients not to view each other. Particularly, resuscitation and cardiac patients should be out of line of sight of other patients.
Resuscitation area with access to CT, elevators to surgery and units. Cath lab in ED is NOT a proven concept.
Mental health patient care area isolated in an auditory sense, but visual observation available by staff. Area should not be convenient for patients to escape to interior of hospital or out lobby doors.
Nursing stations adjoined by supply corridor
IS support of Clinical Practice

- Computer integrated
- Early implementation patient registration, tracking, and discharge
- Real time QA for nurses and physicians
- NextGen = incorporation passive tracking functions for people and equipment
Communication system supports bedside clinical work. A separate telephone system supports patient and visitor communication needs.
Tracking system widely accessible and supports single chart location near the bedside
Materials management supports all units, using user-friendly design and recycling
All patient care areas can access warm blankets and cold water.
Signage performs wayfinding without using staff time
Food service to support patients, visitors, staff, EMS & police
Specific design components critical to success

- Efficient traffic patterns for ambulances approaching the hospital
- Consider overall campus traffic flow. The ED must have accommodating parking and patient offload areas
- Accommodating administrative and staff support area
- Construction process must allow the ED to continue to provide service to existing patients, and provide appropriate growth
Traditional ED Greeting

Patient Enters the ED

Message = Finances First
Time = 5-20 mins

Clerk Greeting

Go Sit

This is my caretaker, Right?

5-20 mins

Nurse Triage

Go Sit

Unknown time

Room Assignment

Chart in Rack

Unknown time

Doctor

Help Me!!

Push or Pull System?

Why am I Waiting?
What Happens when Nobody Manages the ED?

Waiting Room
Consumer Flows

The License Bureau

Medicaid Office

Department Store

Hotel

INTAKE

PROCESS

EXIT

Get Me Out Of Here!!
Funnel Options For The ED

- **The Typical ED**
- **The Constipated ED**
- **The Turnstile ED**
- **The Open ED**

**ED GREET**

**WORKUP**

**DISCHARGE**

- *Get Me Out Of Here!!*

- *Pay Arrangements As You Leave*
Future Intake System Design

HOME
Or iPhone

Call in by patient or doctor to EDP

"We heard you were coming!"

Patient Care Area

We heard you were coming!

Work Up Initiated

Physician, Nurse, Tech Care

DISPOSITION
Intake Doctor

Sniff Analyzer

Workup Room
For as short a time as possible

Intake Specialists

DC Out

Payment Office

EM S

Walk-In
The Mass Media Attraction

Making the ED Attractive to Staff: What Other Medical Specialty is so Attractive to TV Shows
Volume Increasing

Traffic Access to the ED Becomes More Critical
Clinical Decision Unit(s)

• Improve Flow
• Improve ED Control over Boarding
• Good Patient Care!
Current Definition
Admit Decision to Departure Time
Time Interval beginning when “Admit Decision” is made until the actual departure time of the patient from the ED

Proposed as a CMS Hospital Inpatient Quality Measure for public reporting in 2013
Reducing Decision to Admit Time

The “Upstairs” Challenge for the “Downstairs” Staff

- A CMS Mandate in next 2 Years
  - Headboard Management
  - In-flow Management
  - Bed Command Center
  - Care Initiation Unit
  - Clinical Decision Units
  - PACU’s
Great Ideas That Work!

• The Good, the Bad and the Ugly of ED design
Concepts

Above 30-35K, do Physician in Triage at appropriate times of day

Open the Front End

Families at bedside

Add patient chairs as efficient patient care spaces
Focus on Intake Area

- Who is aware that patients are dying in the waiting room?
  - TJC
  - CMS, OIG
  - State Regulators
  - Prosecutors
New Unscheduled Care Solutions

- Flexible
- Portable
- Cross platform decision support
- Opportunity to become front door of healthcare and personal health platform
ED in Real-Time

• Is the ED the right place for care?

• ED wait times

• Site

• “Schedule an Appt.”

• Register yourself
Color code storage, and carts
Build a subwaiting area
Numbers matter. Build a good data system
Look at L&D for system and designing cues
Design team should be multidisciplinary
Go somewhere else, traveling together, to look at several EDs
Get design elements together before you get off the plane
Look up at the next volume band
Economic Considerations
Consider nationalized medicine system
Let Board/C-suite know you have maximized process, need facility
Many ED leaders need to focus on renovation, rather then rebuild
Some EDs not amenable to renovation (asbestos)
Attempt to get CEO to understand the application of less expensive personnel (not management by FTE count)
Some Hospitals and EDs have Utilized Discharge Areas
Solutions to the Admitting Issues

• Admitting Process is recreated with every patient?? Apply Bed Ahead planning
• Design PUSH + PULL systems to get admissions processed correctly
• The Sunday Night Work Plan
Admission Flow Solutions

- Hospitalists
- Headboard Management
- Care Initiation Unit
- Clinical Decision Units
- PACU’s

Bed Command Center near ED
Disasters

• Design for The Prepared ED

• Staff Prep Area
• Negative Pressure
• Greeting Areas
• Communications
• Command Ctr
## Using the EDBA Data

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<td>2010 results</td>
<td>63%</td>
<td>18%</td>
<td>18%</td>
<td>16%</td>
<td>43%</td>
<td>156</td>
<td>135</td>
<td>259</td>
<td>1.6%</td>
<td>13</td>
<td>29</td>
<td>23</td>
<td>44</td>
<td>22</td>
<td>66%</td>
<td>3.7</td>
<td>19</td>
<td>1750</td>
<td>120</td>
</tr>
<tr>
<td><strong>Under 20K EDs</strong></td>
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<tr>
<td>2010 results</td>
<td>59%</td>
<td>20%</td>
<td>15%</td>
<td>13%</td>
<td>39%</td>
<td>135</td>
<td>118</td>
<td>222</td>
<td>1.3%</td>
<td>9</td>
<td>24</td>
<td>20</td>
<td>44</td>
<td>20</td>
<td>69%</td>
<td>2.5</td>
<td>11</td>
<td>1450</td>
<td>NA</td>
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<td><strong>Pediatric EDs</strong></td>
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<tr>
<td>2010 Results</td>
<td>45%</td>
<td>100%</td>
<td>13%</td>
<td>9%</td>
<td>35%</td>
<td>157</td>
<td>136</td>
<td>284</td>
<td>1.9%</td>
<td>23</td>
<td>36</td>
<td>3</td>
<td>31</td>
<td>5</td>
<td>66%</td>
<td>3.7</td>
<td>NA</td>
<td>1955</td>
<td>50</td>
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<td><strong>Adult, Specialty EDs</strong></td>
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<tr>
<td>2010 Results</td>
<td>70%</td>
<td>3%</td>
<td>27%</td>
<td>21%</td>
<td>49%</td>
<td>228</td>
<td>191</td>
<td>333</td>
<td>2.8%</td>
<td>17</td>
<td>36</td>
<td>31</td>
<td>45</td>
<td>27</td>
<td>60%</td>
<td>3.3</td>
<td>35</td>
<td>1419</td>
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</table>
### In Our ED Today

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>130</td>
<td>Patients to be seen, although 3 want to leave</td>
</tr>
<tr>
<td>40</td>
<td>Will be in Fast Track</td>
</tr>
<tr>
<td>56</td>
<td>Will need Monitors</td>
</tr>
<tr>
<td>23</td>
<td>Will be Admitted 26% Of Patients in Main ED</td>
</tr>
<tr>
<td>6</td>
<td>Will have Dental Problem</td>
</tr>
<tr>
<td>991</td>
<td><strong>Orders will be Entered in CPOE, or 7.6 per patient, and 21% of all orders Entered in the Hospital Today</strong></td>
</tr>
<tr>
<td>25</td>
<td>Will Arrive by EMS</td>
</tr>
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</table>
## In Our ED Today

<table>
<thead>
<tr>
<th>Count</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Will Arrive by EMS and be Admitted</td>
</tr>
<tr>
<td>25</td>
<td>Will be Injured</td>
</tr>
<tr>
<td>64</td>
<td>Xray procedures will be Performed</td>
</tr>
<tr>
<td>25</td>
<td>CT Procedures will be Performed</td>
</tr>
<tr>
<td>39</td>
<td>Will need EKGs</td>
</tr>
<tr>
<td>51</td>
<td>Will need IV start</td>
</tr>
<tr>
<td>98</td>
<td>Will need lab work</td>
</tr>
</tbody>
</table>
Go Home With Some Numbers

• Plan forward with hard data

• Know, understand and share your numbers

• Compare to cohorts

• Make sure all staff know numbers

• Tell your story effectively in developing a new system