Quality Improvement

Zachary Shields, Enrique Alvarez-Ventura

HCA MEDICAL CITY HEALTHCARE
UNT-TCU Graduate Medical Education Program
Emergency Medicine
Arlington, TX
Our mission

Above all else, we are committed to the care and improvement of human life.
Agenda

- Introduction
- Problem Statement
- Review of the literature
- Project Charter
- Study Design
- Results Overview
- Conclusion
- References
Impact of Vertical Zone Redesign: One Hospital's Experience

• Overcrowding in the Emergency Department

• Increasing times to disposition
Impact of Vertical Zone Redesign: One Hospital's Experience

• Overcrowding is a growing problem, growing at least $\frac{1}{3}$ in a 15 year timeframe$^1$

• Overcrowding leads to delayed service, poor quality of care, and inefficiency$^4$

• Poor patient flow is a factor for overcrowding which leads to worse outcomes$^3$

• Previous methods have been hospital wide$^5$

• Vertical Split Flow has been shown to improve efficiency$^2$
Impact of Vertical Zone Redesign: One Hospital's Experience

**Aim:**
- Reduce length of stay of patients compared to previous year

**Scope:**
- 11 months post application compared to previous year

**Implementation:**
- Restructure rooms 5-9 for vertical zone, outline tasks and management

**Stakeholders:**
- Nurses, Providers, Techs, Ancillary Staff, Patients, Administrators, Hospital
Impact of Vertical Zone Redesign: One Hospital's Experience

- Poorly organized work processes
  - Providers
  - Ancillary staff

- Vertical track for level 4/5
  - Procedures allowed/ not allowed in vertical zone
  - Delays in Diagnostic tools

- Room for triage for level 1/2
  - Electronic Medical Records
  - Room Turnover

- Standardized Protocols
  - Overcrowding
  - Wait times

- Equipment availability/procedure
  - Higher wait times for patients

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.
Impact of Vertical Zone Redesign: One Hospital's Experience

Gaps

• Accurate triage

• Appropriate assessment and work up

• Available Staff to manage tasks

• Available inpatient beds (ED and Inpatient)
Overview of Emergency Severity Index Triage Algorithm
Impact of Vertical Zone Redesign: One Hospital’s Experience

 Pt. arrives at ED

 Does pt meet criteria for vertical zone?

 Exclusion criteria:
1. AMS, numbness, weakness
2. CODE Pt. (Sepsis, Neuro, STEMI, Trauma)
3. Obvious deformity/dislocation (except to digits) requiring procedural sedation
4. Mental Health Evaluation
5. Active vomiting/diarrhea (in the past 1-2 hours)
6. Severe pain as determined by Provider
7. New onset or unusual headache
8. Chest Pain, Palpitations – possible cardiac etiology
9. Respiratory distress
10. Unstable Vital Signs (following ESI-5 Level Triage Danger Vital Signs algorithm)

 Pt. Inclusion Criteria
1. > 3 months; <65 yrs unless minor presentation
2. Ambulatory (unless isolated extremity injury)

 Approved Procedures:
1. Lac repair
2. I and D
3. Pelvic exams
4. Splints

 Y

 Pt. enters VZ

 Concierge or Triage RN:
1. Pt entered in Meditech
2. Obtain O2 and HR

 N

 Horizontal zone – Standard Triage
Impact of Vertical Zone Redesign: One Hospital's Experience

Vertical Zone Process Map

Pt arrival via paramedic or walk in

Meets VZ criteria

Concierge or Triage RN:
1. Pt entered in Meditech
2. Obtain O2 and HR

Escorted to appropriate area by one of the following:
- Paramedic
- Registration
- Concierge

Labs received; return to providers in VZ; elevate to HZ as needed

Results pending RN

Diagnostics

Diagnostic waiting area

Pts seen and treated by the following groups who may also order diagnostic labs:
- Team A/B Provider
- Team A/B RNs

Informed discharge

Horizontal zone

Charge RN
- Communicate with Vertical Zone staff to move admits
- Communicate with RNs and providers to determine bed ahead in horizontal zone
- Facilitate flow in all areas

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.
Impact of Vertical Zone Redesign: One Hospital’s Experience

Approach

Nurses and a Paramedic staffed the Zone

- Low acuity triage - Provider and Nurse with orders
- Patient in Zone with labs drawn and orders pending
- Two rooms for waiting (infectious and Non-Infectious)
- Discharge in specific room with instructions
## Results Table

<table>
<thead>
<tr>
<th></th>
<th>Low Acuity LOS</th>
<th>Discharge LOS</th>
<th>Arrival to Greet</th>
<th>Admit LOS</th>
<th>Patient Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Implementation</td>
<td>81.45 ± 8.5</td>
<td>158.09 ± 14.22</td>
<td>6 ± 0.77</td>
<td>315.45 ± 82.85</td>
<td>33667 ± 215.02</td>
</tr>
<tr>
<td>Post Implementation</td>
<td>71.64 ± 3.96</td>
<td>141.18 ± 6.78</td>
<td>5.55 ± 0.52</td>
<td>243 ± 18.09</td>
<td>33949 ± 126.11</td>
</tr>
<tr>
<td>Difference</td>
<td>9.81</td>
<td>16.91</td>
<td>0.45</td>
<td>72.45</td>
<td>-282</td>
</tr>
<tr>
<td>t-score</td>
<td>8.23</td>
<td>8.27</td>
<td>2.89</td>
<td>13.8</td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td>0.0005</td>
<td>0.0004</td>
<td>0.81</td>
<td>0.000006</td>
<td></td>
</tr>
</tbody>
</table>
Summary

• The emergency department was redesigned

• Data was compared for 11 months before and after implementation

• The average low acuity length of stay and total discharge length of stay decreased

• Impact of Covid 19 Pandemic
Questions?
References

1. Emergency Department Crowding: High Impact Solutions, Emergency Medicine Practice Committee May 2016

This research was supported (in whole or in part) by HCA Healthcare and/or an HCA Healthcare affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA Healthcare or any of its affiliated entities.