Redesign the System: Reducing Length of Stay for Patients with Medical Needs

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Memorial Hermann-Texas Medical Center
University of Texas- McGovern School of Medicine

- 1100 Beds
- Busiest Level 1 Trauma Center
- 7th Largest Training Program – University of Texas Health Science Center Houston
- UT Health Science Center
Medicine Service Line

- Medicine DRGs -- discharged from Medicine units.
- Approximately 3000 patients/year
  - 10% uninsured
  - 70% admitted from ED
  - 117 Total beds
    - 16 ICU beds
    - 14 IMU beds
    - 87 floor beds (3 geographic locations)
Could we improve care and flow?

- Efficient
  - Reduce admission delays
- Timely
  - RRT team
- Safe
  - Sepsis protocol
  - Weaning protocol
  - VAP & BSI prevention
  - Family meetings
- Effective
  - Weaning protocol
- Safe
  - Complications
- Patient-centered
  - End-of-Life
  - MICU

Decreased Length of Stay

Ward
Home
Other facility
WAQI Committee -- Physician Leaders

- Physicians
- Nursing
- RT
- Physical Therapy
- Nutrition
- Case Management
- Finance
- Pharmacist
- Environmental Services
- Others as needed
Medicine Floors -- Redesign

- Family Practice
- Geriatrics Unit
- Internal Medicine
  - Non Teaching
- Internal Medicine Teaching
Floor – Redesign

Increased CMI of floor level patients from 1.36 to 1.44

Team A

Team B

Team C

Team D
## Cost reduction - Clinical Projects:

### Financial Implications in the Current System

<table>
<thead>
<tr>
<th>Impact on Quality</th>
<th>Substantial Cost Savings</th>
<th>Moderate Cost Savings</th>
<th>Negative Impact - no savings or loss</th>
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<tbody>
<tr>
<td><strong>High</strong></td>
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<tr>
<td>Sickle Cell management ($450K/year)</td>
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<td>EC – MICU admits (duplicate tests on MICU admit)</td>
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<td>Chest Pain management ($400K/year)</td>
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<td>To be evaluated: ICU days awaiting consultation, procedures, end of life discussions</td>
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<td><strong>Moderate</strong></td>
<td>ABG testing $15 K</td>
<td>Confirmatory tests</td>
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“Waste Tool” – Projects

ICU Resource Utilization Worksheet

<table>
<thead>
<tr>
<th>Date</th>
<th>Faculty initials</th>
<th>Comments:</th>
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</table>

Consider previous 24 hours. Please indicate if any of the following reasons contributed to an extra patient day in the ICU or inappropriate utilization of resources.

<table>
<thead>
<tr>
<th>Bed</th>
<th>ICU Type</th>
<th>VAP, HAP, BSI, UTI, Wound infection</th>
<th>Delay to Extubation</th>
<th>Adverse Drug Event/ or Oversedation</th>
<th>Procedure Complication</th>
<th>End-of-Life Discussion</th>
<th>Awaiting Procedure</th>
<th>Awaiting Imaging</th>
<th>Awaiting Other Test or Results</th>
<th>Awaiting Consult</th>
<th>Pending transfer - Downgraded LTAC Home</th>
<th>Unnecessary Utilization</th>
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CXR  Lab, ABG  Drugs  other
ICU Utilization Tool: 31 days

- End of life: 21 days
- Awaiting procedure: 20 days
- Complications: 13 days
- Awaiting consult: 6 days
- Adverse event: 4 days
- Delay to extubation: 3 days
- Awaiting imaging: 2 days
- Other: 1 day
IMU Utilization Tool: 31 days

- End of Life: 17 days
- **Awaiting Procedures:** 26 days
- Complications: 6 days
- Awaiting Consults: 14 days
- Adverse Events: 5 days
- Awaiting Imaging: 9 days
- Awaiting placement: 20 days
- Total days lost: **97 days**
Sepsis -- LOS, Cost

<table>
<thead>
<tr>
<th>Length of Stay in Days</th>
<th>APR-DRG</th>
<th>Illness Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-Mild</td>
<td>2-Mod</td>
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<tr>
<td>Before</td>
<td>4.7</td>
<td>7.1</td>
</tr>
<tr>
<td>After</td>
<td>3.5</td>
<td>5.5</td>
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<tr>
<td>Decrease</td>
<td>1.2</td>
<td>1.5</td>
</tr>
<tr>
<td>% Decrease</td>
<td>25%</td>
<td>22%</td>
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- $1200 cost per case reduction in direct costs
Sepsis Patients – Time to Antibiotics

ED to MICU Patients Monthly Summary – October 2015

13/14 (93%) of patients received 1st antibiotics within 3 hours of ED Arrival
General Medicine’s patient throughput on the Non-ICU level patient population has progressively declined for the last 9 years while maintaining treatment of 1,000+ cases per year.

Factoring in Case Mix Index (CMI) to account for acuity levels, the General Medicine service has shown significant improvement year over year on a CMI Adj. ALOS basis.

Increased levels of Case Mix Index are a result of both overall higher acuity patient population combined with improved outcomes from focused efforts surrounding clinical coding/documentation initiatives.
Current Results

- Ranked Number 8 in UHC in Mortality
- Ranked Number 10 in UHC overall

Medicine Service Line
- Ranked Number 5 in UHC in Sepsis Care
- 10% of patients uninsured
- 70% of admissions from ED
- 25% transferred in by air/ground
- “Profitable” on Medicare Medicine Patients
- UHC – length of stay 0.9 – O/E
Occupancy Rate went from 78% to >90%

↓ 15 floor beds
## Turn Around Time

“Bed request to Available Bed”

FY16

<table>
<thead>
<tr>
<th></th>
<th>Pre-loss</th>
<th>Post loss</th>
<th>% increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICU</td>
<td>2.0 hours</td>
<td>3.6 hours</td>
<td>80%</td>
</tr>
<tr>
<td>IMU</td>
<td>2.5 hours</td>
<td>5.9 hours</td>
<td>136%</td>
</tr>
<tr>
<td>Floor</td>
<td>1.25 hours</td>
<td>5.2 hours</td>
<td>316%</td>
</tr>
</tbody>
</table>

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[Bar charts for ICU, IMU, and Floor showing trends over fiscal periods.]
Success factors

- A new way of thinking vs “Projects”
- Reveal the next problem
- Speak the same language
- Break established rhythms
- Visual representations of data
- Real-time feedback