Hospital Flow Professional Development Program

Pat Rutherford

Oct 31-Nov 3, 2016
Cambridge, MA
So-Called "Flow Failures" Are Disrespectful to Patients

“The number one reason to improve the movement of patients through health care settings is because “bad flow” is disrespectful to patients and families.

Our inability to more effectively design and manage processes also wears on clinicians and staff — decreasing their efficiency and productivity, undermining joy in work, contributing to burnout, and decreasing job satisfaction. But our patients and families bear most of the burden.

We make patients wait in the wrong places. We make them seek care in the wrong units. If you were to walk through most hospitals today, you will probably find multiple problems with patient flow.”
Problem Statement for Hospital Flow

Addressing vexing issues of timely access and patient flow throughout the hospital is essential to ensure safe, high quality, patient-centered care. Delays in treatment and failure to provide the *right care, in the right place, at the right time*, puts patients at risk for potential harm and sub-optimal care.

Poorly managed patient flow in hospital settings also adds to the already taxing burden on clinicians and accelerates burnout. Improved timely access to appropriate care and hospital flow are critical levers to increase value, for patients, clinicians and health care systems.
Many health care professionals today realize that diversions and long waits and delays in the emergency department (ED) are a hospital-wide issue, not just an emergency department issue. The waits are often the result of emergency department beds being occupied by patients waiting for admission to the hospital.

Lack of inpatient capacity also results in patients being “boarded” in the post-anesthesia care unit (PACU) and often managed on “off service” units. Unfortunately, understanding the problem is one thing, but actually improving hospital-wide patient flow is another.
Effects of High Utilization and Variability in Demand

- When the Emergency Department is overcrowded –
  - Patients may be diverted to other hospitals (external diversion)
  - Patients leave without being seen
  - Patients with acute illnesses experience delays in treatment
  - Physicians, nurses and staff are overloaded (which often leads to medical errors and burnout of clinicians and staff)
  - Throughput and utilization is decreased
Effects of High Utilization and Variability in Demand (2)

- When hospital census is high –
  - Patients are “boarded” in the ED, waiting to be admitted to a hospital bed
  - Patients have overnight stays in the Post-op Recovery Rooms
  - Patients are admitted to alternative units or ICUs (internal diversions or “off-service patients”)
  - Patients may experience delays in treatment or delays or cancelations of surgery
  - Physicians, nurses and staff are overloaded (which often leads to medical errors and burnout of clinicians and staff)
  - Throughput is decreased (there are delays in transferring patients to appropriate units based on their clinical conditions and in discharging patients)
Hospital Flow: Key Learning To-Date

- Most hospitals are engaged in individual projects throughout the hospital to improve efficiencies and flow, but few have hospital-wide oversight systems to manage overall operations and patient flow throughout the hospital; there is a need for system-wide metrics to assess and manage patient flow at the macro level and in microsystems (OR, ED, ICUs, Med/Surg Units).

- Most hospitals are engaged in multiple efforts to improve flow, but few have shown quantitative results (looking for “bright spots”); need to develop design targets for “ideal” hospital operations and flow.

- Few seem to be linking the “shaping demand” concept of decreasing overutilization of hospital services as a concurrent strategy to improve patient flow through the hospital [decreasing readmissions; proactive palliative care; reducing admissions for patient with complex needs; reducing low acuity ED visits].
There is a definitive need to simplify, standardize and sequence various matching capacity and demand strategies (variability management and daily real-time capacity and demand strategies).

Current problems of patient flow in hospitals cannot be solved solely by efforts within the walls of the hospital (need partnerships with primary care, specialty practices, mental health services, community-based care settings and resources, SNFs and nursing homes);

Demonstrating a ROI for the systems moving to value-based payment models (or ACOs) should help to build will for improvement; avoiding capital expenditures is another incentive.
What are your performance goals? What would success look like?

Type into the chat box your high level performance goals for your hospital flow initiatives
What are your performance goals?

- **Decrease overutilization of hospital services?**
  - Relocate care to more appropriate care settings outside the hospital
  - Decreasing related medical errors and harm to patients?
  - Manage LOS “outliers”? 

- **Optimize patient placement to insure the right care, in the right place, at the right time?**
  - Reducing delays in treatment, surgery, transfers, discharge, etc.?
  - Decrease external diversions?
  - Decrease internal diversions (“off-service” patients)?

- **Maintain adequate staffing levels to maintain quality and safety?**

- **Increase clinician and staff satisfaction with hospital operations?**

- **Demonstrate a ROI for the hospital or the health system?**
  - Is your goal to have a high utilization of your hospital resources (procedures, beds and staff)? What is the right goal?
  - What are the quality and safety balancing measures?
  - When do you consider adding more bed capacity?
A hospital’s average occupancy rate measures the percent of the hospital’s inpatient staffed beds that have been occupied over the course of a year. Statewide, the median acute hospital occupancy rate is equal to the national average—both at 65%. However, both the academic medical center and teaching hospital cohorts have higher occupancy rates than other cohorts, as shown in Table 4:

<table>
<thead>
<tr>
<th>Cohort</th>
<th>FY2012 Occupancy Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Medical Centers</td>
<td>84%</td>
</tr>
<tr>
<td>Teaching</td>
<td>74%</td>
</tr>
<tr>
<td>Community</td>
<td>62%</td>
</tr>
<tr>
<td>Community-DSH</td>
<td>61%</td>
</tr>
<tr>
<td>Specialty*</td>
<td>64%</td>
</tr>
</tbody>
</table>

A national average occupancy of 78% applies to hospitals with 1,000 beds in the USA
Average Occupancy Rates (at hospital or unit levels) and the Day-to-Day Realities of Managing Patient Flow
Hospital Occupancy Rates

- Based on AHA data, overall nationwide hospital inpatient occupancy was 67.8% (AHA 1991–2011); range was from 33.6% to 74%.
- Once managed efficiently, US hospitals, on average, could achieve an 80–90 percent bed occupancy rate—without adding beds at capital costs of approximately $1 million per bed.
- As a result of “smoothing” the scheduling of elective surgeries, improving discharge efficiencies and other interventions to improve flow at CCHMC, the hospital’s quality of care improved even as the occupancy rate grew from 76 percent to 91 percent. Hospital officials also report improved overall safety for patients and reduction in stress on the doctors and nurses who treat them.

Strategies

1. **Shape the Demand** (reduce bed days; reduce ED visits and admissions; smooth elective surgeries and downstream bed utilization)

2. **Match Capacity to Demand** (reduce delays in moving patients to appropriate units throughout hospital; ensure patients are admitted to the appropriate unit)

3. **Redesign the System** (increase throughput; reduce bed days, manage LOS outliers, and reduce delays and waiting times)
Strategies to Achieve System-Wide Hospital Flow

Outcomes

• Decrease overutilization of hospital services
• Optimize patient placement to insure the right care, in the right place, at the right time
• Increase clinician and staff satisfaction
• Demonstrate a ROI for the systems moving to bundled payment arrangements

Strategies

Will

Models

Ideas

Execution

Primary Drivers

Delivering the Right Care, at the Right Time and in the Right Place is a Strategic Priority

Integrated Health Care Systems and/or ACOs (shifting from volume to value-based strategies and payment reform)

Patient Flow Improvements Result in an Avoidance of Capital Expenditures

Flow Improvements Result in a Positive ROI and Ensure Financial Viability

Shape the Demand

Match Capacity and Demand

Redesign the System

Accountable Executive Leadership Providing Oversight of System-Level Performance

Utilization of Hospital-wide Metrics to Guide Learning Within and Across Projects for Achieving Results

Data Analytics to Provide Real-time Capacity and Demand Management and Forecasting

Cooperation Across Organizational Boundaries and Clinical Settings Across the Continuum of Care

Micro-system Quality Improvement Capability and Empowerment of Clinicians and Staff
- Decrease overutilization of hospital services
- Optimize patient placement to insure the right care, at the right place, at the right time
- Increase clinician and staff satisfaction
- Demonstrate a ROI for the systems moving to bundled payment arrangements

**Outcomes**
- Shape or Reduce Demand
- Match Capacity and Demand
- Redesign the System

**Primary Drivers**
- S1 Relocate care in ICUs in accordance with patients EOL wishes
- S2 Decrease demand for Med/Surg beds by preventing avoidable readmissions
- S3 Relocate low-acuity care in EDs to community-based care settings
- S4 Prevent ED visits and acute care hospital admissions
- S5 Decrease artificial variation in surgical scheduling
- S6 Decrease demand for hospital beds by reducing hospital acquired conditions
- S7 Reduce ED visits & hospital admissions through delivering appropriate care
- S8 Oversight system for hospital-wide operations to optimize patient flow
- S9 Real-time demand and capacity management processes
- S10 Flex capacity to meet hourly, daily and seasonal variations in demand
- S11 Early recognition for high census and surge planning
- S12 Improve efficiencies and throughput in the OR, ED, ICUs and Med/Surg Units
- S13 Improve efficiencies & coordination of discharge processes
- S14 Service Line Optimization (frail elders, SNF residents, stroke patients, etc.)
- S15 Reducing unnecessary variations in care and managing LOS “outliers”

**Secondary Drivers**
- S4 Prevent ED visits and acute care hospital admissions
- S5 Decrease artificial variation in surgical scheduling
- S6 Decrease demand for hospital beds by reducing hospital acquired conditions
- S7 Reduce ED visits & hospital admissions through delivering appropriate care
- S8 Oversight system for hospital-wide operations to optimize patient flow
- S9 Real-time demand and capacity management processes
- S10 Flex capacity to meet hourly, daily and seasonal variations in demand
- S11 Early recognition for high census and surge planning
- S12 Improve efficiencies and throughput in the OR, ED, ICUs and Med/Surg Units
- S13 Improve efficiencies & coordination of discharge processes
- S14 Service Line Optimization (frail elders, SNF residents, stroke patients, etc.)
- S15 Reducing unnecessary variations in care and managing LOS “outliers”

**Driver Diagram: Ideas to Improve Hospital Flow**

- C1 Reliably identify EOL wishes and proactively create and execute advanced illness plans
- C1 Development of palliative care programs (hospital-based and community-based)
- C2 Improve transitions and reduce readmissions for high risk populations
- C3 Extended hours in primary care practices & home-based primary care?
- C3 Develop partnerships with Urgent Care and Retail Clinics
- C3 Enroll patients in community-based mental health services
- C3 Paramedics & EMTs triaging & treating patients at home
- C4 Enhanced population health care management and coordination of care for high-risk and socially complex populations
- C4 Enhanced SNF and home-based care services (HHC, Hospital at Home)
- C5 Separate scheduled and unscheduled flows in the OR
- C5 Redesign surgical schedules to create an predictable flow of patients to downstream ICUs and inpatient units
- C6 Decrease complications/harm (HAPU, CAUTI, SSI, falls with harm) and subsequent LOS
- C7 Reliably use of clinical pathways and evidence-based medicine
- C8 Assess seasonal variations and changes in demand patterns and proactively plan for variations
- C9 Daily flow planning huddles (improve predictions to synchronize admissions, discharges and discharges)
- C8 Real-time demand and capacity problem-solving (managing constraints and bottlenecks)
- C10 Planning capacity to meet predicted demand patterns
- C11 High census protocols to expedite admissions from the ED and manage surgical schedules.
- C12 Increase OR throughput through efficiency changes
- C12 ED efficiency changes to decrease LOS
- C12 Decrease LOS in ICUs (timely consults, tests and procedures)
- C12 Decrease LOS on Med/Surg Units (case management for patients with complex medical and social needs)
- C13 Initiate final discharge preparations when the patient is clinically ready for discharge
- C13 Flipped “home-based” discharge planning
- C13 Care management for vulnerable/high risk patient populations
- C14 Advance planning for transfers to community-based care settings
- C14 Enhanced community and home-based services
- C14 Cooperative agreements with rehab facilities, SNFs and nursing homes
### Draft Hospital Flow Metrics

<table>
<thead>
<tr>
<th>Hospital Macro</th>
<th>Emergency Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Average Occupancy Rate</td>
<td>• ED diversions</td>
</tr>
<tr>
<td>• Readmissions within 1 week of discharge</td>
<td>○ # of diversions</td>
</tr>
<tr>
<td>• Readmissions within 30 days after discharge</td>
<td>○ hours per month</td>
</tr>
<tr>
<td>• Patient experience (HCAHPS measures related to waits &amp; delays)</td>
<td>• Patients who “left without being seen”</td>
</tr>
<tr>
<td>• Clinician and staff satisfaction related to workload (ex. NDNQI)</td>
<td>• Visits per day</td>
</tr>
<tr>
<td>• Number of “off-service” patients</td>
<td>• Average length of stay</td>
</tr>
<tr>
<td>• Number of HACs (ex. falls with injury, VAPs, etc.)</td>
<td>○ for patients who are discharged</td>
</tr>
<tr>
<td></td>
<td>○ for patients who are admitted</td>
</tr>
<tr>
<td></td>
<td>• Door to provider time</td>
</tr>
<tr>
<td></td>
<td>• Time from decision to admit to transfer to inpatient unit</td>
</tr>
<tr>
<td></td>
<td>• Number of “ED boarders” waiting to be admitted to a hospital bed</td>
</tr>
<tr>
<td></td>
<td>• Time from decision to have emergency surgery to OR</td>
</tr>
<tr>
<td></td>
<td>• Percentage of ESI level 4 &amp; 5 patients (low acuity)</td>
</tr>
<tr>
<td></td>
<td>• Percentage of patients who were admitted</td>
</tr>
</tbody>
</table>
### Critical Care Units

- Average Census
- Average Length of Stay
- Number of “LOS outliers” per month
- Number of decedents spending 7 or more days in the ICU in the last 6 months of life
- Number of ICU diversions due to lack of capacity (# of “off-service patients”)
- Nursing Overtime
- Number of HACs
- Delays in Transferring Patients to Med/Surg Units

### Med/Surg Units

- Average Census
- Average Length of Stay
- Number of “LOS outliers” per month
- Nursing Overtime
- Number of HACs
- Median discharge time (or discharge profile)

### Operating Rooms

- Number of emergency cases by day
- Number of scheduled cases by day
- Percentage of OR utilization
- Number of changes from schedule for Elective Surgical Cases
- Actual and Scheduled Start Times for Elective Surgical Cases
- Nursing Overtime
  - OR
  - PACU
- Number of overnight PACU patients
Shape or Reduce Demand

S1 Relocate care in ICUs and Medical and Surgical Units in accordance with patients’ EOL wishes
S2 Decrease demand for Med/Surg beds by preventing avoidable readmissions
S3 Relocate low-acuity care in EDs to community-based care settings
S4 Prevent ED visits and acute care hospital admissions
S5 Decrease artificial variation in surgical scheduling
S6 Decrease demand for hospital beds by reducing harm and hospital acquired conditions
S7 Reduce demand for ED visits and hospital admissions through delivering appropriate care

Delivering safe and reliable evidence-based care
## Respecting Choices controls the per capita cost of care

<table>
<thead>
<tr>
<th>Per capita cost of care</th>
<th>La Crosse Wisconsin</th>
<th>Statewide Wisconsin</th>
<th>National Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduces unwanted hospitalizations—percent hospitalized at least once during last six months of life(^{29})</td>
<td>59.5% (below 10th percentile)</td>
<td>67.5%</td>
<td>71.5%</td>
</tr>
<tr>
<td>Reduces costs of care in last two years of life due to elimination of unwanted treatment(^{29})</td>
<td>$48,771</td>
<td>$67,443</td>
<td>$79,337</td>
</tr>
<tr>
<td>Decreases hospital care intensity in last two years of life(^{29})</td>
<td>0.49 (half the national average)</td>
<td>0.72</td>
<td>1.00</td>
</tr>
<tr>
<td>Reduces inpatient days in last two years of life(^{29})</td>
<td>10.0 days (below 10th percentile)</td>
<td>13.2 days</td>
<td>16.7 days</td>
</tr>
<tr>
<td>Reduces hospital deaths(^{29})</td>
<td>20.4%</td>
<td>20.9%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Reduces percent of decedents seeing 10 or more different physicians during last six months of life(^{29})</td>
<td>22.7% (well below 10th percentile)</td>
<td>31.0%</td>
<td>42.0%</td>
</tr>
<tr>
<td>Reduces percent of decedents spending seven or more days in ICU/CCU during last six months of life(^{29})</td>
<td>3.8% (well below 10th percentile)</td>
<td>6.8%</td>
<td>15.2%</td>
</tr>
<tr>
<td>Reduces percent of decedents admitted to ICU/CCU in which death occurred(^{29})</td>
<td>9.5% (well below 10th percentile)</td>
<td>13.1%</td>
<td>18.5%</td>
</tr>
</tbody>
</table>

Reduces healthcare costs: for each dollar spent on ACP the cost of healthcare is reduced by $2. The ROI is $1 for every dollar spent.\(^{12,30}\)
30 Day Readmissions: Primary & Secondary Heart Failure 65+

30 Day Readmissions
Primary & Secondary Heart Failure
UCSF Medical Center Heart Failure Program

Annual Averages
2009 = 24%
2010 = 19%
2011 = 13%
2012 = 12%

Goal Line:
Reducing Non-Urgent Emergency ED Services

- Use of Telemedicine in Emergency Departments
- Urgent Care Centers (many now part of health care systems)
- Retail Clinics
- Paramedics and Emergency Medical Services managing non-emergency calls*
- Community Health Workers connecting frequent ED users with community-based services*
- Coordinated, Intensive Medical, Social, and Behavioral Health Services*

Atrius Health ACO: Reducing ED Visits & Admissions

Utilization of emergency rooms, hospitals and drugs tends to be lower than average:

- With Medicaid, demonstrated 39% fewer admits/1000 on hospital (medical) admissions and 37% fewer Emergency Room visits/1000 as compared with the health plan's network.

- With Medicare Advantage, demonstrated 12% fewer Emergency Room visits/1000 and 5% fewer SNF admits/1000 as compared with the plan's network.

- For a commercial PPO product, 30-day readmission rate that is half of the plan's network rate, and 25% fewer Emergency Room visits/1000.

- For a commercial HMO, demonstrated 8% fewer inpatient admits/1000 and 9.5% less Rx scripts/1000.
Separate Flows for Elective and Non-Elective Surgical Cases

Mayo Clinic Florida

- Surgical volume and surgical minutes increased by 4% and 5%, respectively;
- Prime time use increased by 5%;
- Overtime staffing decreased by 27%;
- Day-to-day variability decreased by 20%;
- The number of elective schedule same day changes decreased by 70%;
- Staff turnover rate decreased by 41%. Net operating income and margin improved by 38% and 28%, respectively

Cincinnati Children’s puts the patient at the center when redesigning complicated systems issues. This drives them to think in innovative ways. For example, in most hospitals, to book an operation, a surgeon’s office calls the operating room, and they book the OR time. That’s it.

At Cincinnati Children’s, teams have studied every step in the process for standard surgical procedures. They use data to predict and map out a typical patient’s journey throughout a hospitalization, so they have data on how much time the patient will likely be in the OR, in the PACU, or in the ICU. They know what types of equipment they’ll need, and what tests, supplies, and medications they’ll use.
So-Called "Flow Failures" Are Disrespectful to Patients (2)

Everyone, from pre-op through to the discharge team, can see every step of the child’s journey and this coordination helps greatly with flow. They partner with their surgeons and clinicians to predict any unique needs, and individually customize the standardized care as needed.

In other words, much of this is predictable. Analyzing data can help organizations determine the resources and the care hours patients will need. At Cincinnati Children’s, they book the OR time, and then everything else they anticipate a patient will need is put into place.
ICU Bed Admission Smoothing

Maximum Daily Allowance Based on Simulation Model
Controlled at Scheduling

Short: 61% cases, 27% days

Medium: 28% cases, 37% days

Long: 11% cases, 36% days
Match Capacity Demand

- S8 Oversight system for hospital-wide operations to optimize patient flow
- S9 Flex capacity to meet hourly, daily, and seasonal variations in demand
- S10 Real-time demand and capacity management processes
- S11 Early recognition for high census and surge planning
Flex Capacity to Meet Seasonal, Day of the Week and Hourly Variations in Demand

- Can you predict a surge in admissions for patients with medical conditions in the winter months?
  - Use seasonal flex units to manage increases in medical patients during the winter months
- Can you anticipate which units need more bed capacity? (clue – which services consistently have a large number of “off-service patients”)
  - Use data analytics to quantify needs of each service
- Do you have a regular surge of activity mid-week with the hospital census regularly reaching >95% occupancy?
  - Smooth elective surgical schedules (particularly for patients who will require ICU care post-op)
What nurse staffing is needed to consistently provide safe and quality care?

Staffing for >95% census/occupancy

Staffing for > average census/occupancy

Eugene Litvak, PhD, Institute for Healthcare Optimization
Nurse Staffing, Hospital Operations, Care Quality, and Common Sense

1. Staff hospitals 24/7 according to the peaks in both bed occupancy and admissions.

2. Be "creative" by introducing dynamic PNRs that will fluctuate in a synchronous manner with census and admissions.

3. Legislate PNRs

4. Preserve the status quo and do nothing.

5. Change hospital patient flow management.

Litvak E, Laskowski-Jones L; Nurse staffing, hospital operations, care quality, and common sense; Nursing, August 2011.
Real Time Demand Capacity (RTDC) Management

4-5PM before CM leaves:
1. Huddle with Charge RN
2. Review today’s predicted d/c’s – who remains, what needs to be done
3. Start tomorrow’s “R” sheet

Day to Night
Shift report
Charge RN to Charge RN
Update “R” Sheet If Needed

7:30p – 7:00a:
1. Evening / Night shift to complete tasks for the following day (i.e.: teaching wound care w/ family, update changes in condition, communicate discharge w/ family)
2. Update “R” sheet (update pending/confirmed discharge list, add approximate time of dc

9:15a – Return to Unit
1. Review assignment of specific tasks for discharges before 2PM
2. If Unit plan needed discuss w/ Charge RN & Unit Secretary and team

8:30-9:00AM - Hospital Wide Bed Meeting
1. Review demand/capacity #’s from each unit
2. Plan for red units with mismatches
3. Review previous day’s plans and successes

7AM-8:30 Unit Based Huddle
1. Review pending discharge list; identify needs
2. Assign responsibility for specific discharge tasks
3. Decide on whether the discharge will occur before 2PM

Night to Day
Shift report
Charge RN to Charge RN
Update “R” sheet if needed
Results at UPMC

Monthly Accuracy of Discharge Predictions, January 2007–November 2009

Percentage of Patients Who Left Without Being Seen (LWBS), January 2006–September 2010

Cardiothoracic (CT) ICU to 3 Main Transfer Time, January 2006–September 2010

Emergency Department (ED) Median Length of Stay (LOS) for Admitted Patients, July 2005–July 2010

### Surge Plan Concepts

<table>
<thead>
<tr>
<th>—all</th>
<th>Green</th>
<th>Yellow</th>
<th>Orange</th>
<th>Red</th>
</tr>
</thead>
<tbody>
<tr>
<td>Census</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acuity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### STATUS

- **Green**
  Reflects an optimally functioning system, a state of equilibrium, homeostasis. Staff describe it as, a good day.

- **Yellow**
  Reflects the state of early triggers which identifies and allows the system to initiate early interventions.

- **Orange**
  Reflects escalating demand without readily available capacity. In this state aggressive action required to avoid system overload and ultimate gridlock.

- **Red**
  Reflects a state of gridlock as a result of system overload. The system should respond by using its organizational Disaster Plan.
Redesign the System

- S12 Improve efficiencies and throughput in the OR, ED, ICUs and Med/Surg Units
- S13 Improve efficiencies & coordination of discharge processes
- S14 Service Line Optimization (frail elders, SNF residents, stroke patients, etc.)
- S15 Reducing unnecessary variations in care and managing LOS “outliers”
Emergency Department: Median Door to Provider Time (min)

Cambridge Health Alliance

New ED
Partially Open

New ED Fully Open

Patient Partner

Rapid Assessment
## KP Sacramento ED Flow

<table>
<thead>
<tr>
<th>Measure</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours on Divert per year</td>
<td>450</td>
<td>0</td>
</tr>
<tr>
<td>Percent LWOBS</td>
<td>6.6%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Door-to-Doc (minutes)</td>
<td>55</td>
<td>19</td>
</tr>
<tr>
<td>LOS – Treat &amp; Release (hours)</td>
<td>4.5</td>
<td>2.4</td>
</tr>
<tr>
<td>LOS – Treat &amp; Admit (hours)</td>
<td>8.0</td>
<td>6.0</td>
</tr>
</tbody>
</table>

(c) Murrell 2015
Managing Discharge when Medically Ready
% Discharged within 2 Hours of Medically Ready
Includes patients on A6C, A6N, A6S, LA1W, B5CA, A3N, A4N, and A6S
16-Bed MICU
We need more beds!

Reduced EC – ICU admit time

Emergency Center

Efficient

Weaning protocol

Sepsis Management

Reliable

VAP, CR-BSI bundles

Stabilization

Complications

End-of-Life

RRT team

Standardize family meetings

Family meetings

Ward Home

Other facility

Reduced EC – ICU admit time

RRT to reduce floor codes

Timely

Safe

Effective

Safe

Patient-centered

Decreased Length of Stay

Bela Patel, MD and Khalid Almoosa, MD
We have plenty of beds

Thank You!

- VAP/BSI rates Zero - $54,000/$ 35,000
- EC- ICU 53% to 75% in 4 hrs
  - Hospital LOS decreased 1.5 days $$
- Floor codes decreased 50%
- End of Life –ICU stay –decreased 3.3 days
- Mortality decreased by 13%, CMI up 15%,
- Occupancy decreased from 94.5% to 85.5%
- Monthly admissions: from 89.4 to 104.6
- $5.1 Million saved
# Waste Project: Medicine Service Line

## Value 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>
</tr>
</thead>
</table>
| **High**          | • Sickle Cell management ($450K/yr)  
                     • Chest Pain management ($400K/yr)  
                     • To be evaluated: ICU days awaiting consultation, procedures, end of life discussions |                           | • EC – MICU admits (duplicate tests on MICU admit) |
| **Moderate**      | ABG testing $15 K          | • Confirmatory tests  
                     • Repeat tests  
                     • Supplies     |                                    |
What are Your Current Projects to Improve Hospital Operations and Patient Flow?

*Type into the chat box your current projects*

*What parts of hospital operations need more efforts to accelerate your progress in achieving hospital-wide flow?*
<table>
<thead>
<tr>
<th>Department</th>
<th>Shape Demand <em>(reduce bed days &amp; ED visits)</em></th>
<th>Match Capacity and Demand <em>(reduce delays in moving patients to appropriate units; ensure patients are admitted to the appropriate unit)</em></th>
<th>Redesign the System <em>(reduce bed days, LOS and delays/waiting times)</em></th>
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</thead>
<tbody>
<tr>
<td><strong>Hospital (Macro)</strong></td>
<td>Reduce readmissions</td>
<td>Hospital-wide oversight system for hospital operations looking at seasonal variation and changes in demand patterns</td>
<td>Single rooms, Seasonal Swing Units, Service Line Optimization (frail elders, SNF residents, stroke patients, etc.)</td>
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<td></td>
<td>Reduce admissions for patients with complex needs</td>
<td>Daily and weekly hospital-wide capacity and demand management</td>
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<td></td>
<td>Proactively shift EOL care to Palliative Care Programs</td>
<td>Surge planning</td>
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<tr>
<td><strong>Emergency Dept</strong></td>
<td>Move patients with low acuity needs to community care settings</td>
<td>Improve predictions of admissions for various units</td>
<td>ED efficiency changes to decrease LOS (for patients being discharged and for patients being admitted)</td>
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<td>Enroll patients in mental health programs</td>
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<td>Cooperative agreements with SNFs</td>
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<td>Cooperative agreements with EMS</td>
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<tr>
<td><strong>Critical Care Units</strong></td>
<td>Decrease complications/harm (Sepsis)</td>
<td>Improve real-time capacity and demand predictions</td>
<td>Decrease LOS (timely consults and procedures; aggressive weaning and ambulation protocols)</td>
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<td>Shift EOL care to Palliative Care Programs</td>
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<td>Improve real-time capacity and demand predictions</td>
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<tr>
<td><strong>Med/Surg Units</strong></td>
<td>Decrease complications/harm</td>
<td>Improve real-time capacity and demand predictions</td>
<td>Decrease LOS (case management for patients with complex medical and social needs)</td>
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<tr>
<td></td>
<td>Reduce Readmissions</td>
<td></td>
<td>“Lean” the discharge processes</td>
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<td>Proactively shift EOL care to Palliative Care Programs</td>
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<td>Stagger discharges throughout the day</td>
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<td>Cooperative agreements with rehab facilities, SNFs and nursing homes</td>
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<tr>
<td><strong>Operating Rooms</strong></td>
<td>Decrease variation in surgical scheduling</td>
<td>Improve predictions re: transfers to various units</td>
<td>OR efficiency changes to improve throughput</td>
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<td>Separate flows for scheduled and emergency OR cases</td>
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</tbody>
</table>
Hospital Flow Professional Development Program

Delivering the right care, in the right setting, at the right time

October 31 -- November 3, 2016
Cambridge, MA

Participants will learn from:
• Expert faculty
• Case study presenters
• Other program participants

Participants will have opportunities to engage in:
• Pre-work and data collection
• Working sessions with team members
• Exchange of ideas with other program participants & faculty
• Ad hoc faculty coaching sessions

More information at ihi.org/hospital-flow
Who should attend?

This program is designed for teams who are responsible for implementing and maintaining operational efficiencies, throughput, and optimizing patient flow in acute care hospitals. Team participants may include: Chief Operating Officers, Chief Nurse Executives, Medical Directors, Nursing Directors, Service Line Leaders, Financial Analysts, Quality Improvement Leaders.

While individual participants will gain value from this professional development program, IHI strongly recommends that hospitals and health care systems consider sending teams of 4 or 5 individuals (those who have accountability for outcomes related to delivering the right care, in the right place, at the right time) to this program.

More information at ihi.org/hospital-flow
Hospital Flow Professional Development Program

What you will learn
Designed for a team or individuals who are tasked with hospital operations, throughput, and ensuring optimal patient flow in the acute care hospital, this intensive IHI program helps participants:

• Make sense of the variety of approaches needed to achieve timely, efficient person-centered care
• Gain actionable strategies, skills, and tools that help ensure that demand for hospital service matches capacity — daily, weekly, and seasonally
• Prevent diversions and overcrowding in EDs
• Eliminate waits and delays for surgical procedures, treatments, and admissions to inpatient beds
• Increase the number of patients admitted to the appropriate inpatient unit (based on the patient’s clinical condition)
• Identify opportunities to collaborate with expert faculty and successful hospital leaders to develop or refine a detailed, customized plan of action
• Calculate return on investment

More information at ihi.org/hospital-flow