THE RIGHT CARE, RIGHT SETTING, AND RIGHT TIME OF HOSPITAL FLOW

March 9, 2017

Dial In: 877.668.4493
Code: 662 657 398
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Madge Kaplan, IHI’s Director of Communications, is responsible for developing new and innovative means for IHI to communicate the stories, leading examples of change, and policy implications emerging from the world of quality improvement — both in the U.S. and internationally. Prior to joining IHI in July 2004, Ms. Kaplan spent 20 years as a broadcast journalist for public radio – most recently working as a health correspondent for National Public Radio. Ms. Kaplan was the creator and Senior Editor of Marketplace Radio’s Health Desk at WGBH in Boston, and was a 1989/99 Kaiser Media Fellow in Health. She has produced numerous documentaries, and her reporting has been recognized by American Women in Radio and Television, Pew Charitable Trusts, American Academy of Nursing and Massachusetts Broadcasters Association.
Patricia Rutherford, RN, MS, Vice President, Institute for Healthcare Improvement (IHI), is responsible for developing and testing innovations and new models of care in innovations in patient-and family-centered care; improving access to the right care, in the right place, at the right time; Transforming Care at the Bedside; optimizing care coordination and transitions in care; and clinical office practice redesign (in primary care and specialty practices). She was Project Director for the Transforming Care at the Bedside initiative, funded by the Robert Wood Johnson Foundation, and she served as Co-Investigator for the STate Action on Avoidable Rehospitalizations (STAAR) initiative, funded by the Commonwealth Fund. Her skills include knowledge of process improvement, innovation, and idealized design; coaching clinicians, staff, and senior leaders in organizations on process improvement; and management of all aspects of large-scale performance improvement initiatives.

You can reach pat at Prutherford@IHI.org
What are your performance goals?

- **Decrease overutilization of hospital services?**
  - Relocate care to more appropriate care settings outside the hospital
  - Decreasing 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 diagnostic testing, treatments, surgery, transfers, discharges, 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?
  - When do you consider adding more bed capacity?
### 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**
  - Delivering the Right Care, at the Right Time and in the Right Place is a Strategic Priority
  - Mutuality between Physicians and Hospital Executives with Aligned Incentives
  - 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

- **Ideas**
  - Shape the Demand
  - Match Capacity and Demand
  - Redesign the System

- **Execution**
  - 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
 Strategies to Achieve System-Wide Hospital Flow

Building Will

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Ideas: Shape or Reduce Demand

- 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
Ideas: Match Capacity Demand

- S7 Data-driven operational management system for hospital-wide patient flow
- S8 Real-time demand and capacity management processes
- S9 Early recognition of high census and surge planning

Match Capacity and Demand
Ideas: Redesign the System

- S10 Improve efficiencies, LOS and throughput in the OR, ED, ICUs and Med/Surg Units
- S11 Improve efficiencies & coordination of discharge processes
- S12 Reducing Length of Stay for Patients with Complex Needs
<table>
<thead>
<tr>
<th>Section</th>
<th>Shape Demand</th>
<th>Match Capacity and Demand</th>
<th>Redesign the System</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hospital (Macro)</strong></td>
<td>Reduce readmissions</td>
<td>Hospital-wide oversight system for hospital operations</td>
<td>Single rooms</td>
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<tr>
<td></td>
<td>Reduce admissions for patients with complex needs</td>
<td>looking at seasonal variation and changes in demand patterns</td>
<td>Seasonal Swing Units</td>
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<tr>
<td></td>
<td>Proactively shift EOL care to Palliative Care Programs</td>
<td>Daily and weekly hospital-wide capacity and demand management</td>
<td>Service Line Optimization (frail elders, SNF residents, stroke</td>
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<td></td>
<td></td>
<td>Surge planning</td>
<td>patients, etc.)</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</td>
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<tr>
<td></td>
<td>Enroll patients in mental health programs</td>
<td></td>
<td>discharged and for patients being admitted)</td>
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<td></td>
<td>Cooperative agreements with SNFs</td>
<td></td>
<td>Separate flows in the ED</td>
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<tr>
<td></td>
<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</td>
</tr>
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<td>Shift EOL care to Palliative Care Programs</td>
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<td>weaning and ambulation protocols)</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</td>
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<td></td>
<td>Reduce Readmissions</td>
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<td>medical and social needs)</td>
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<td></td>
<td>Proactively shift EOL care to Palliative Care Programs</td>
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<td>“Lean” the discharge processes</td>
</tr>
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<td></td>
<td>Cooperative agreements with rehab facilities, SNFs and nursing homes</td>
<td></td>
<td>Stagger discharges throughout the day</td>
</tr>
<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>
</tr>
<tr>
<td></td>
<td>Separate flows for scheduled and emergency OR cases</td>
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</tbody>
</table>
Uma R. Kotagal, MBBS, MSc, is the senior executive leader for Cincinnati Children’s Population and Community health efforts. In this role, she collaborates internally across teams, and externally with local partners, to improve the health of children in the Greater Cincinnati Region. She also serves a broader role as a Senior Fellow at Cincinnati Children’s Hospital Medical Center, where she consults on behalf of and is an ambassador for Cincinnati Children’s with other organizations. She formerly served as Senior Vice President for Quality, Safety and Transformation and Executive Director of the James M. Anderson Center for Health Systems Excellence at Cincinnati Children’s Hospital Medical Center. As director of the Anderson Center, Dr. Kotagal oversaw the transformation of the health care system in Cincinnati and supported the development of Learning Networks. Dr. Kotagal has also served as director of the neonatal intensive care units at the University Hospital and at Cincinnati Children’s. Dr. Kotagal is a Senior Fellow of the Institute for Healthcare Improvement, serves on the Board of Directors of the Ohio Children’s Hospital Association, and chairs the Quality Improvement Committee of the Children’s Hospital Association. Previously, she served as a member of the advisory committee of the Toronto Patient Safety Center and as an associate editor of BMJ Quality and Safety. She is a member of the National Academy of Medicine.

You can reach Uma at uma.kotagal@cchmc.org
Hospital Flow - Challenge of Team

Multiple Sites – All Interactive / Interdependent
System Level Measures

**ACCESS, FLOW, PRODUCTIVITY**
- 3rd next available appointment
- % of patients delayed: ED, PICU, PACU
- Touch Time for care givers

**PATIENT AND EMPLOYEE SAFETY**
- Adverse drug events
- Bloodstream infection rate
- Surgical site infection rate
- Infection rates: VAP
- Serious Safety Events
- OSHA recordable injury rate

**CLINICAL EXCELLENCE, OUTCOMES**
- Codes outside the ICU rate/1,000 days
- MRT preventable codes outside the ICU
- Standardized PICU Mortality Ratio – Expected/Actual
- % use of Evidence-Based Care for eligible patients
- Clinical and Functional Outcome Improvement

**TEAM WELLBEING**
- Staff Satisfaction
- Nursing turnover rate

**PATIENT AND FAMILY EXPERIENCE**
- Overall Rating: Patient Satisfaction (best possible)
- Patient Satisfaction (0-6)
Clinical Systems Improvement

- Provides strategic priority setting, resource allocation, organizational alignment
- Serves as champions/coaches to the Clinical Systems Improvement Teams and Sub-teams
- The Clinical System Improvement reports to the Patient Care Committee of the Board

Comprised of Patient Services, Faculty, Administrative and Community Physician Leadership
- Develops, reviews & acts on System Level Measures

Develop, monitor & act on a dashboard of measures

Microsystems: Monitor & act on a dashboard of measures
“Flow” as a Safety Initiative

• Prediction Framework for Safety

• Getting the “Rights” Right
  • Right Diagnosis and Treatment
  • Right Patient in Right Bed – Location
  • Right Nursing Staff and Staffing Expertise
  • Disease Specific Expertise
  • Equipment Expertise

• Requires ability to “Predict” future needs, and manage present capacity - control variability

• Operations Management techniques to understand and manage variability are the key to success
Some things to think about that are unique about Flow

- Oversight for Flow Team
- Where to Start
- Capability Building
- Data Analytics
- Project Management
Frederick C. Ryckman, MD has been a practicing surgeon at the University of Cincinnati / Cincinnati Children’s Hospital Medical Center since 1984, where he is presently a Professor of Surgery. His interest in operating room management led to a collaboration to re-engineer safety, flow management, and care delivery in the OR at CCHMC. Application of this methodology led to substantial improvements in access, utilization, and safety. He is very interested in how effective teamwork and inter professional partnerships, in the operating rooms and clinical spaces, enhances safety and excellent patient care. In Dr. Ryckman’s present role as Senior Vice President – Medical Operations, he’s at the crossroads of patient safety, hospital wide patient flow, and daily operations management. He has had the pleasure of being the Surgical Director of solid organ transplantation leading the liver, small intestine, and multi-visceral transplant services since 1985, and has also served as the ACGME Fellowship director for Pediatric Surgery, and the Clinical Director for Pediatric Surgery Division for eight years.

You can reach Dr. Ryckman at Frederick.Ryckman@cchmc.org
Traditional Block

• Reactive System
• Urgent Emergent Cases placed within Block Time as needed
• Elective Case Plan disrupted, prolonged waiting time for elective patients
• Inefficient (Unsafe) Access for Urgent Cases
• Push complex Elective Cases into the late hours
  • Overtime
  • Wrong Team in OR
Block with Urgent Access Assured

- Predictive system
- Urgent Cases in Defined Rooms with Scheduled Teams
- Resources needed can be modeled
- Care based on Urgency / Medical Need

INITIAL MODEL

TWO CASE SCHEDULING TYPES

SCHEDULED CASES
85-90% of all Cases

EMERGENCIES
10-15% of all Cases

DAILY SCHEDULE

95% of all OR time allocated to Doctor Specific Blocks

Emergencies done at end of the day, or forced into slots between scheduled cases.

RESULT

Long Add-On List at the conclusion of the day

Long Waiting Times for parents and children with urgent needs

Often doing complex cases in evening or at night when resources were limited
B-E Case Access - % Successful

Add-on Case Access to the OR w/ Accepted Time "B-E" Cases MAIN CAMPUS ONLY System

OR Renovation
1 Add-On Room Closed

Last update: 08/07/2015 by: Amy Anneken
“A” Case Access Times – Target 30 Minutes
Sample Output – Probability of Full Unit

**YEAR 2-7 Forecasted PICU Bed Needs - Mid-Range/Most Likely**

Bed Needs for PICU - Probability of a Full Unit

20 Replications of a 425 Period (30 Day Warmup) - Mean Probability

**POPULATION:** Unscheduled Medical/Surgical, BMT, ENT Airway ICU Elective Cases+ OR CAP=3

- Models future status
- Allows for Safety Considerations
- Construct “right size” units

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**PICU BED CAPACITY**

- YEAR 2: Probability of a Full Unit at X Beds
- YEAR 5: Probability of a Full Unit at X Beds
- YEAR 7: Probability of Full Unit at X Beds
# Staffing Prediction – Proactive Planning

- Data to Front Line Leaders – Updated daily
- Right Staff for the Right Patients
  - Correct Number and Competency
  - Flexible with Changing Environment
  - Prediction of Needs – Be Prepared – Be Resilient

## Weekly Census Prediction Report

<table>
<thead>
<tr>
<th>Wednesday</th>
<th>PICU</th>
<th>HI</th>
<th>NICU</th>
<th>Complex Airway</th>
<th>TCC</th>
<th>CBDI</th>
<th>Medical</th>
<th>Surgical</th>
<th>Overflow</th>
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<tbody>
<tr>
<td>10/12/2016</td>
<td>BSCC</td>
<td>B6HI</td>
<td>A6C</td>
<td>B4</td>
<td>BSCA</td>
<td>A3S</td>
<td>BMT</td>
<td>HemOnc</td>
<td>A4C1</td>
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<td>Total Capacity (Bed Capacity)</td>
<td>35</td>
<td>25</td>
<td>17</td>
<td>59</td>
<td>11</td>
<td>24</td>
<td>36</td>
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<td>Actual Midnight Census</td>
<td>31</td>
<td>24</td>
<td>17</td>
<td>55</td>
<td>10</td>
<td>23</td>
<td>25</td>
<td>32</td>
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<td>Predicted Admissions</td>
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<td>OR electives</td>
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<td>2</td>
<td>0</td>
<td>10</td>
<td>1</td>
<td>0</td>
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<tr>
<td>OR add on</td>
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<td>Other</td>
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<tr>
<td>Predicted Demand</td>
<td>34</td>
<td>27</td>
<td>18</td>
<td>55</td>
<td>20</td>
<td>26</td>
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<tr>
<td>Predicted Unit Occupancy</td>
<td>24</td>
<td>25</td>
<td>17</td>
<td>59</td>
<td>11</td>
<td>24</td>
<td>25</td>
<td>31</td>
<td>11</td>
</tr>
</tbody>
</table>
Discharge when Medically Ready

All Units

Managing Discharge when Medically Ready

% Discharged within 2 hours of Medically Ready

Week Start Date (Patients Discharged)

GOAL Median UCL LCL % Discharged 2 hrs

Last Updated 9/20/2016 by S. Neogi, James M. Anderson Center for Health Systems Excellence
Upcoming Programs on Flow:

Hospital Flow Professional Development Program

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

May 1-4
Cambridge, MA

For more information, visit IHI.org/Hospital-Flow

**What You'll Learn**

- Make sense of the variety of hospital-wide strategies and approaches needed to deliver the right care, in the right place, at the right time
- Assess the current state of patient flow and identify major opportunities for improvement
- Implement actionable strategies, skills, and data analytics that help ensure that hospital capacity can meet the demands for hospital services — daily, weekly, and seasonally — to:
  - Prevent diversions and overcrowding in EDs
  - Eliminate waits and delays for surgical procedures, treatments, and admissions to inpatient beds
  - Redesign surgical scheduling to improve throughout and to improve patient flow to intensive care units (ICUs) and inpatient units
  - Reduce the need for regular surge plans and excessive overtime
  - Increase the number of patients admitted to the appropriate inpatient unit, based on a patient’s clinical condition
  - Utilize case management strategies to reduce the length of stay for "outliers"
  - Decrease inpatient volume by implementing proactive palliative care programs and strategies to reduce readmissions
  - Calculate the return on investment
  - Leverage opportunities to collaborate with expert faculty and successful hospital leaders to develop or refine a detailed, customized plan
Thanks to everyone who makes WIHI possible!
Next up on WIHI:

- March 23, 2017
  - What We’re Learning about Patients with Complex Needs

- April 6, 2017
  - Who’s Your Healthcare Proxy?

- April 20, 2017
  - Creating Age-Friendly Health Care Systems