Real Time Demand Capacity Surge Planning

Katharine Luther, RN, MPM

April 6, 2016
Theoretical Frameworks

Queuing Theory

Compression wave
Framework

**Four Steps of Real-Time Demand Capacity Management**

1. Predicting Capacity (Step 1)
2. Predicting Demand (Step 2)
3. Developing a Plan (Step 3)
4. Evaluating the Plan (Step 4)

*Figure 1. The four steps of real-time demand capacity management are depicted.*

RTDC Flow
(Real Time Demand Capacity)

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 (ie: 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
<table>
<thead>
<tr>
<th>Unit</th>
<th>Beds</th>
<th>Empty</th>
<th>Discharges</th>
<th>D/C by 2:00</th>
<th>Yesterday Predicted/ Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 South</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3 North</td>
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</tbody>
</table>
## RTDC Discharge Prediction “R” Sheet

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>In</th>
<th>Room Number</th>
<th>Needs</th>
<th>This for a Discharge Today</th>
<th>This “R” Person</th>
<th>Will</th>
<th>Accomplish These Specific Tasks</th>
<th>By</th>
<th>Time</th>
<th>D/C By 2PM? Y/N</th>
<th>Did D/C Occur By 2PM?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In</td>
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<td>Needs</td>
<td></td>
<td>Will</td>
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</tbody>
</table>

**Totals**
# Unit Summary Worksheet for RTDC

## Capacity vs Demand

<table>
<thead>
<tr>
<th>Day/Date</th>
<th>Avail Beds</th>
<th>Total Disc</th>
<th>DCs By 2pm</th>
<th>Total Admits</th>
<th>Admits By 2pm</th>
<th>PLAN</th>
</tr>
</thead>
</table>

**S U C C E S S F U L**
Example Results -- 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

All Teach All Learn

Real Time Demand Capacity Implementation

Marianne Walston
Director of Critical Care and Emergency Services
Setara Healthcare

Suffolk, Virginia
Surge Planning
# Table Exercise: Surge Plan

<table>
<thead>
<tr>
<th>Do you have a surge plan?</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Who manages it?</td>
<td></td>
</tr>
<tr>
<td>How often is it implemented?</td>
<td></td>
</tr>
<tr>
<td>How good is it?</td>
<td></td>
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<tr>
<td>Do you debrief to learn after implementation?</td>
<td></td>
</tr>
</tbody>
</table>
Matching Demand to Capacity

Linda Kosnik, RN, MSN
Chief Nursing Officer
Overlook Hospital
Summit, NJ 07902
## Surge Plan Basic Concepts

### Categories

- **Census**
  Those indicators which describe what that unit “counts” to determine its workload.

- **Acuity**
  Criteria which determine the level of stress specific to that population, procedures or specimens measurable in time. This category often measures turn-around time.

- **Other**
  Criteria specific to information systems and supplies.

- **Staff**
  Indicators specific to the status and matching of staff to be matched for the
# Basic Concepts

<table>
<thead>
<tr>
<th>Status</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>
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<tr>
<td>Other</td>
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<tr>
<td>Staff</td>
<td></td>
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</tbody>
</table>

- **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.
**Basic Concepts**

- **Criteria=Indicators**
  - A criterion is a variable with a certain spectrum of ‘valid’ values.
  - For every criteria there must be Intervention(s).
  - For every criteria there must be a call to action or it will not be a valuable criteria for the category.

<table>
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<tbody>
<tr>
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### Surge Plan -- Example

<table>
<thead>
<tr>
<th>EC Level 1</th>
<th>EC Level 2</th>
<th>EC Level 3</th>
<th>EC Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capacity Leader</strong></td>
<td><strong>EC Teams</strong></td>
<td><strong>EC Leadership</strong></td>
<td><strong>EC Teams</strong></td>
</tr>
<tr>
<td><strong>EC Actions:</strong></td>
<td><strong>EC Actions:</strong></td>
<td><strong>EC Actions:</strong></td>
<td><strong>EC Actions:</strong></td>
</tr>
<tr>
<td>- Identify any patient waiting for non-EC level care.</td>
<td>- Notify nursing units of EC Level 3. Consider any additional resources needed.</td>
<td>- Notify other departments of EC Level Alert status.</td>
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</tr>
<tr>
<td>- Initiate RME process in MSE holding area.</td>
<td>- Assign EC CNL and EC Educator (business hours) to triage</td>
<td>- Notify EC of need for additional resources.</td>
<td>- Notify EC of need for additional resources.</td>
</tr>
<tr>
<td>- Request hospital leadership round in ED waiting area.</td>
<td>- Move patients awaiting admission to alternative areas.</td>
<td>- Request EC supply tech check for stock levels of essential supplies.</td>
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</tr>
<tr>
<td>- Assign EC Tech assigned to transport admissions to inpatient areas.</td>
<td>- Re-notify QMH to order additional patient beds.</td>
<td>- Inform house supervisor and Bed Management to coordinate resources.</td>
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</tr>
<tr>
<td>- Evaluate situation, identify any resource needs, and contact ED leadership.</td>
<td>- Bed Management, Administration and/or Administrator on call.</td>
<td>- Request EC physicians facilitate disposition of current patients.</td>
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</tr>
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**CAPACITY ASSESSMENT & COMMUNICATION**
- Records status every 6 hours.
- Department policy.
- Responsibility: EC NCM

**EC Levels**
- EC Level 1: Admitted patients waiting. The Capacity Leader and/or Medical Director, Administrator, Administrator on Call, Chief of Staff and AOD (BT Admin Executive Team) will assess and deploy resources.
- EC Level 2: Admitted patients waiting for inpatient bed. Total 15 floor admits (EMR=Request for Hospitalization) Admitted patients waiting for inpatient bed Total 15 + admitted patient waiting. The Capacity Leader will call the unit(s) directly.
- EC Level 3: Shock Rooms > 15 Waiting Room > 80 patients. The Capacity Leader (Evening Shift) will call the unit(s) directly.
- EC Level 4: Shock Rooms > 20 (≥10 floor admits) + admitted patient waiting. The Capacity Leader will call the unit(s) directly.

**Emergency Center**
- Every 2 hours while on EC Saturation/Divert no direct admits of any kind.
- All EC Level 4, EC Level 3 actions will notify nursing units of Level Alert status.

**Nursing Units**
- Nursing and physician care of emergency patients as per ED management. Consider and plan for ED priority change evaluators.
- Identify any patient needing non-EC level care. Consider other areas identified to lend staff resources and/or personnel. Paging Overhead: Lync IM (Instant Messaging), VRC, Overhead, Paging, Lync/Slack/IM (Instant Messaging), Lync/BayCare.

**Code Purple**
- Code Purple activation will be effective for a 4 hour period of time since this deems an EC Diversion activated. Evaluation on call, Chief of Staff and AOD will continue and EC Diversion activated.

**APPROACHING TRIGGER LEVEL**
- CALL 911. (Not busy/Busy)
- Code Purple Activation will be effective for a 4 hour period of time since this deems an EC Diversion activated. Evaluation on call, Chief of Staff and AOD will continue and EC Diversion activated.

**HEALTHCARE TEAM**
- Medical Director assigned to EC. Collaborate with physician on status for potential admit or direct patient care duties or critical care transport assist. Paging Overhead: Lync IM (Instant Messaging), VRC, Overhead, Paging, Lync/BayCare.

**Miscellaneous**
- EC Level 1: Admitted patients waiting for inpatient bed. Total 15 floor admits (EMR=Request for Hospitalization) Admitted patients waiting for inpatient bed Total 15 + admitted patient waiting. The Capacity Leader will call the unit(s) directly.
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**HARRIS HEALTH SYSTEM**
- Ben Taub Hospital
- Texas Medical Center
- 586 beds
- Level 1 Trauma Center
- 106,000 ED visits

**Harris Health, Houston TX**

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Claire Lauzon-Vallone, MBA, RN, CPHQ
Administrative Director of Quality and Health Outcomes

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Ben Taub Hospital
Texas Medical Center
586 beds
Level 1 Trauma Center
106,000 ED visits
Operations Center
Your Mission Control
An Essential Element In Healthcare System Striving For High Reliability

Paul B. Davenport RN, EMTP, BSN, MBA, CMTE
Melanie K. Morris, MSN, RN, NREMT-P, CMTE
CARILION CLINIC
AT A GLANCE

Carilion Clinic is a not-for-profit healthcare organization based in Roanoke, Virginia. Through our comprehensive network of hospitals, primary and specialty physician practices, and other complementary services, we work together to provide quality care close to home for more than 870,000 Virginians. With an enduring commitment to the health of our region, we also seek to advance care through medical education and research, help our community stay healthy, and inspire our region to grow stronger.

Our Physicians
- 650 physicians representing more than 70 specialties
- 220 practice sites

Our Hospitals
- Carilion Roanoke Memorial Hospital
- Carilion Clinic Children’s Hospital
- Carilion Roanoke Community Hospital
- Carilion Franklin Memorial Hospital
- Carilion Giles Community Hospital
- Carilion New River Valley Medical Center
- Carilion Clinic Saint Albans Hospital
- Carilion Stonewall Jackson Hospital
- Carilion Tazewell Community Hospital

Service Area
- Carilion Clinic serves the more than 870,000 residents of western Virginia.

Community Benefit (FY '13, per IRS guidelines)

$138.8 MILLION
total community benefit

INCLUDING:

$72.1 MILLION
in charity care

PLUS

$38.9 MILLION
in other uncompensated care

$22.3 MILLION
in professional health education

$4.2 MILLION
in community outreach

$1.3 MILLION
in funding for research

ALL DATA IS FROM FISCAL YEAR 2014 UNLESS OTHERWISE NOTED.

QUICK STATS

Employees
11,700

Primary Care Visits
877,000

Licensed Beds
1,026

Admissions
48,659

Emergency Department Visits
168,964

VelocityCare Visits
54,125

Prescriptions Filled
207,549

Hospice Care Days
35,551

Net Revenues
$1.5 BILLION
Mission Control Center
What Does A Typical Transfer “Feel Like”

- Multiple calls
- Information is segmented
- Human error designed system
- Dependent on phone communication, electronic methods….zero face to face (or line of sight)
- Variation on processes by section
What It Should Feel Like
Mission Control = Mission Accomplished!

“If you build it, they will come”
Consistency in processes is key
Seamless transfer process ensures customer loyalty

- Declined transfers: service recovery
  - Thorough review monthly via Transfer Center software
  - Trends: know who you said “no” to
    - Focused marketing and outreach
    - Patient follow-ups

- Excellence in customer service for EVERY call
Summary

- Designed for 100% reliability and unexpected event identification (HRO)
- Situational awareness (HRO)
- Actionable information (Information based organization) (HRO)
- “One Call Does it All” philosophy
- Seamless patient entry into the system
- Collaboration of key departmental operations
- Transfer acceptance and patient transportation model
- Centralized throughput command center
- Source of truth regarding all throughput information
- Overall goal: “Right patient, right physician, right bed, and right mode of transport”=optimal patient outcomes
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