ED and Hospital-wide Flow Best Practices

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The Boarding Problem

- Hospital Overcrowding and Boarding is the most serious problem we face as EDs
  - Patients tie up critical bed resources
  - More importantly, critical nursing resources

Overview

The Boarding Problem

ED Admits:
- Beds
- Physicians
- Nurses

Other Programs
The Boarding Problem

- Hospital Overcrowding and Boarding is the most serious problem we face as EDs
- Patients tie up critical bed resources
- More importantly, critical nursing resources
- Quality, Satisfaction, and flow suffer as a result
The ED length of stay appeared to increase extensively when hospital occupancy exceeded a threshold of 90%. Consultation and admission rates were not influenced by hospital occupancy.

**Conclusions:** Increased hospital occupancy is strongly associated with ED length of stay for admitted patients. Increasing hospital bed availability might reduce ED overcrowding.

20-30% increased risk of mortality associated with longer ED LOS and prolonged physician times

**Conclusions:** Hospital and ED overcrowding is associated with increased mortality. The Overcrowding Hazard Scale may be used to assess the hazard associated with hospital and ED overcrowding. Reducing overcrowding may improve outcomes for patients requiring emergency hospital admission.

**ED and Hospital Crowding Compromises Quality**

- Several studies have presented clear evidence that crowding contributes to poor quality care
- When capacity is exceeded errors are more likely to occur

**Increase in patient mortality at 10 days associated with emergency department overcrowding**

**Conclusion:** Overcrowding in the emergency department is associated with increased mortality.
The ED is the Window into the Hospital

Optimizing ED Admissions

Real Time Demand/Capacity Management

Inpatient Bed Management

- High inpatient utilization results in queuing and longer LOS, translating into misplaced patients and ED boarders
- This requires 2 countermeasures:
  - Aggressive bed management
  - Improving processes to reduce LOS
Problem: Mid-day bed crunch due to misalignment of admissions, discharges.

Contributing Factor: Lab cycles, late rounding, non-hospitalists.

Admissions

Discharges

Peak Admission Period

Peak Discharge Period

Figure compliments of Kirk Jensen

Occupancy by Day of Week and Hour of Day

Cardiac Unit: 48 bed capacity

Women plus Labor-Delivery: 33 bed capacity

Understanding Demand...
Real-time Demand Capacity Management

- Provides a framework connecting senior administration all the way to front line nurses
- Anticipate discharges to understand available capacity
- Predict demand of admissions from all sources
- Provides countermeasures for demand/capacity mismatches
- Provides for specific tasks with time targets
- Escalation Plan
- Allows for evaluation of plan and targeting of strategic initiatives

Unit Huddles

- Unit level meeting with Charge Nurse, Case Management, and Front Line Nurses
- Classify each patient based on discharge targets and gaps – goal is to establish demand needed by 2pm
- Create today’s to do list – task oriented for front line nurses to meet the anticipated 2pm demand
- Determine who can be discharged today and what needs to be done for tomorrow’s discharges

Huddle Guidelines

PATIENT ADMITTED IN LAST 12HRS

PATIENT ON “R” SHEET TO LEAVE TODAY

PATIENT POTENTIAL DC TOMORROW

PATIENT NOT IDENTIFIED FOR DC IN NEXT 48HRS

Diagnosis and Social Situation

What we need to do, can they go by 2pm?

Why not today?
What needs to be done?
Secure transportation

RN – What are we doing?
CM – Determine needs

Huddle Output – “R Sheet”

<table>
<thead>
<tr>
<th>Patient</th>
<th>Name</th>
<th>POTENTIAL DC</th>
<th>TOMORROW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jones</td>
<td>302</td>
<td>needs</td>
<td>Call RN to expedite by 10am Y</td>
</tr>
<tr>
<td>C. Brooks</td>
<td>312</td>
<td>needs</td>
<td>Call RN to expedite by 10am Y</td>
</tr>
<tr>
<td>M. Long</td>
<td>316</td>
<td>results of AM RN</td>
<td>Call RN to expedite by 10am Y</td>
</tr>
<tr>
<td>T. Top</td>
<td>329</td>
<td>needs</td>
<td>Call RN to expedite by 10am Y</td>
</tr>
</tbody>
</table>
Bed Meeting - Key Participants

**Departments**
- ED
- Transport
- PACU
- Cardiology
- Cath Lab
- EVS
- Radiology

**People**
- Nursing Supervisor
- Case Management
- Nursing Leadership
- Hospitalists

Bed Meeting - Objectives

- Understand needs of individual nursing units
- Create a global picture of the hospital at that time
- Create system-level countermeasures for demand/capacity constraints
- Draft communication of today’s demand/capacity picture

Predicting Demand

- Outputs from all Units
- Color-coded to alert of Unit or Hospital status

Predicting Demand

- Outputs from all Units
- Color-coded to alert of Unit or Hospital status
- ED Rolling average of 4 previous same days (Mondays)
- Direct admits
- Surgical schedule
- Generates a global picture
## Bed Meeting - Objectives

- Understand needs of individual nursing units
- Create a global picture of the hospital at that time
- Create system-level countermeasures for demand/capacity constraints
- Draft communication of today's demand/capacity picture
- Decide on and implement alert status

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### Bed Meeting – Key Outputs

<table>
<thead>
<tr>
<th>Output Level</th>
<th>Example Actions</th>
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</thead>
<tbody>
<tr>
<td>Unit Level</td>
<td>Call in physician to discharge, provide phone discharge, or cancel non-critical tests</td>
</tr>
<tr>
<td></td>
<td>Nurse to triage patients on telemetry to free up monitors</td>
</tr>
<tr>
<td>System Level</td>
<td>Decide which patients will overflow on which units</td>
</tr>
<tr>
<td></td>
<td>Implement “code” activities such as open PACU for boarders</td>
</tr>
<tr>
<td></td>
<td>Prioritize physician rounding based on unit needs</td>
</tr>
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</table>
Escalation

- Senior Leadership (COO, CNO, CMO) should be engaged if implementation is failing at a system level
- Examples
  - Doctors are not responding to pages or are refusing to come in (I am in clinic)
  - Discharged patients are not leaving in a timely manner
  - There are delays in bed turnover that are not being solved at the Unit Manager level
  - Resistance to patient movement during crisis times because, “we are too busy”

Hospital-wide Patient Flow

**Monthly Patient Flow Excellence Accountability Team (STAT) Dashboard**

<table>
<thead>
<tr>
<th>Category</th>
<th>Stat</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
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<tbody>
<tr>
<td>Admission</td>
<td>200</td>
<td>190</td>
<td>180</td>
<td>170</td>
<td>160</td>
<td>150</td>
<td>140</td>
<td>130</td>
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<tr>
<td>Discharge</td>
<td>210</td>
<td>200</td>
<td>190</td>
<td>180</td>
<td>170</td>
<td>160</td>
<td>150</td>
<td>140</td>
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<tr>
<td>Bed Turnover</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
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<tr>
<td>Overall Flow Efficiency</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
<td>85%</td>
</tr>
</tbody>
</table>

**Dansk Øjeblik**

HOLGER MØLLER HANSEN, 1951
Invented the fiberskopet (endoscope)
If you Don’t Have an Inpatient Problem, Look at Your Process

- Long decision to bed assignment times
- Long bed assignment to departure times
- Similar whether “crowding” or high census is present or not

Current “Decision to Admit to Bed Assignment” 140 minutes
Benchmark “Decision to Admit to Bed Assignment” 30 minutes
Current “Bed Assignment to Leave Department” 143 minutes
Benchmark “Bed Assignment to Leave Department” 30 minutes

Real Scenario

- Began working with an ED in October, 2010 associated with architecture work
- Began improvement efforts just as Winter Census was peaking (Jan/Feb 2011)
- Boarding was a major problem
- In June/July, frequently heard, “We don’t have boarding,” in fact, every day, inpatient beds were closed due to “low census.”
- What was the reality?

What’s the Answer?

In other words 78% of boarding was process-related, or system-induced

How do we fix this?

- Floor unable to take patient
- MD delay
- Bed not ready
- RN busy with another patient
- Inappropriate assignment
- Change in patient status
- Ancillary care provider delay
- Patient requesting delay
- Patient not assigned to a nurse
- No one to transport patient
The Physician Handoff

The clock starts when the ED physician knows what to do with the patient

Current

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
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<tbody>
<tr>
<td>ED Doc Calls Inpatient Doc</td>
<td>45 min</td>
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<tr>
<td>Inpatient Doc Evaluates Patient</td>
<td>10 min</td>
</tr>
<tr>
<td>Admitting Orders Placed</td>
<td></td>
</tr>
<tr>
<td>Bed Requested</td>
<td></td>
</tr>
</tbody>
</table>

Ideal

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>ED Doc Calls Inpatient Doc</td>
<td>1 min</td>
</tr>
<tr>
<td>ED Doc Places Requests Bed</td>
<td>1 min</td>
</tr>
<tr>
<td>ED Doc Places Holding Orders</td>
<td>1 min</td>
</tr>
<tr>
<td>Bed Requested</td>
<td>45 min</td>
</tr>
<tr>
<td>Inpatient Doc Evaluates Patient</td>
<td></td>
</tr>
</tbody>
</table>
Early Decision To Admit

- System to admit patients as soon as need for admission known
- Must have reasonable understanding of:
  - Diagnosis
  - Destination
- Coordination with admitting physicians:
  - What types of patients are OK for quick admit and which are not
  - What labs are required for specific destinations (ICU, tele, floor)
- System to review cases where there is disagreement

The Physician Handoff - Requires

- ED Physician Engagement
  - A little more work
  - Bridging orders endorsed by ACEP and AAEM in position statements
- Collaboration between ED Docs and Inpatient Docs
  - Must see the patient in a timely manner
  - Must understand patient status may change
- Outcomes measures

Does your patient have a ticket to ride?

The American Academy of Emergency Medicine states that “The Academy believes that it is acceptable for emergency physicians to write Holding Orders, which define any necessary treatment and assessment parameters required in the interval until completion of admission orders.”

In their April 2010 policy revision, the American College of Emergency Physicians (ACEP) stated, “...in the interest of patient care and safety, an emergency physician may be compelled to write transition orders. These transition orders may include essential treatment and assessment parameters required before preparation of suitable admission orders.” (ACEP Policy “Writing Admission and Transition Orders” April 2010)

Early Admit

- Reduced ED LOS by 20 minutes on all admissions!
The Nursing Handoff

- Incentives are misaligned on both inpatient and ED sides
- Reward for doing efficient work is more work
- Worse for inpatient nurses (discharge workload and admit workload)
- Shift change and breaks
- Calling report
- “No Fly Zones”

Nurse Report Best Practice

- ED Nurse attempts to call report
- If Floor Nurse is unable to receive report, Charge Nurse should take report
- If Charge Nurse is unable to take report, then the ED Nurse waits 15 minutes for floor nurse to call.
- If there is no call, the ED nurse faxes report and the patient is transported to the floor
Approaches

- Programs
  - Full Capacity Protocol (Hallway Boarding)
  - OR Smoothing
  - Observation Units
  - Bed Ahead Process
  - Project RED (Re-engineering Discharge)
  - Improve flow in areas specifically affecting the ED

Hallway Boarding

- Peter Viccellio’s “Full Capacity Protocol”
- How do we fix it?
  - Diversion is not the answer…
    - Patient safety
    - Revenue
  - Turning pts away after MSE – no…
- Evenly distribute patients upstairs and sharing the boarding burden
  - Improves inpatient and ED throughput, safety
  - Costs nothing, revenue improves
  - Improves satisfaction, improves bed turnover

The variation associated with surgical admissions (Litvak)

Root Cause Analysis of Emergency Department Crowding and Ambulance Diversion in Massachusetts, Boston University, 2002: ED diversions study under Department of Public Health grant
http://www.state.ma.us/dph/dhcx/pdfs/Final_Report_Exec_Summary.pdf

When the scheduled demand is significant, there was much stronger correlation between scheduled admissions and diversions than between ED demand and diversions
The Impact

- ED Admissions and Elective OR patients have an equal impact on hospital crowding
- OR System-induced variation – non-random, unpredictable, must be identified and eliminated
- ED natural variability is related to clinical factors, professional factors, and flow variation

OR Smoothing

- Adjusting the OR schedule and block scheduling practices based on inpatient demand to smooth admissions over the course of the week
- Very difficult to execute
- Very helpful if successful
- Requires innovative thinking (increased weekend resources) and willing participants (enlightened) physicians

Pull Systems (Bed Ahead)

- Beds identified as available only when clean, unoccupied, and staffed
- Each Unit identifies the next available bed (Med-Surg, ICU, Telemetry, etc)
- Bed Czar or Nursing Supervisor informs Unit to get next admission
- Charge nurse informs nurse to get next admission
- Bed available upon request without delay
Admitting and ED Holding Units

- Allow for decompression of crowded EDs
  - Stable ED patients are immediately moved with transition orders to await admission or to wait for bed placement
  - Allows for ongoing decision-making and more efficiency for admitting physicians
  - Decreases resistance from floor nurses for taking patients because the work has already been done
- Can be just another bottleneck if not careful
- Why not just make these additional inpatient beds and avoid the extra transfer?

Streamlining Processes - ICU

- Based on established criteria, patients are identified in the ED and immediately taken to the ICU to be cared for by the intensivist, goal 30 minutes
- Examples:
  - Sepsis
  - Acute Respiratory Failure
  - Status-post Cardiac Arrest
  - Hemodynamic Instability
  - Intracranial Hemorrhage
- ICU should be able to provide similar level of care

Observation Units and CDUs

- Markedly shorten the inpatient length of stay
  - Standardized pathways
  - Reduced consultation
  - Evidence-based practice
- Are good from the patient’s perspective
  - There are better, more efficient ways to do things
  - Which essentially means same outcome, less waste from the patient’s perspective
- Involve standardizing clinical and non-clinical practices
11 AM Discharges

- Hard to do
- Questionable impact
- Current thinking – discharge them when they are ready

Improving Patient Flow Through a Better Discharge Process

- Giving patients an expected length of stay before admission
- Set target discharge dates on admission
- Promote communication to keep an overview of the patient’s progress towards a satisfactory discharge.
- Senior nursing staff were empowered to discharge patients based on pre-established pathways
- Patients who were waiting for transport were transferred to the discharge lounge before 10:00 AM
- Encouraging Saturday and Sunday discharges

Reduced the average LOS for 80 percent of patients from 13 days to 4 days!

Project Red (Re-engineered Discharge)

- Explicit delineation of roles and responsibilities
- Patient education must occur throughout the hospitalization
- Information must flow easily between the PCP and the hospital team
- Information should be captured throughout the hospital stay
- Every discharge must have a written, comprehensive discharge plan addressing: medications, therapies, lifestyle modifications, follow-up care, patient education, and instructions about what to do if the condition worsens.
- This discharge plan should be completed before the patient leaves the hospital.

Project Red (Discharge Plan)

- Patients at high risk of rehospitalization should be contacted by the hospital team after discharge.
- All information about the admission must be organized and delivered to the PCP within 24 hours.
- Waiting until the discharge order is written before beginning the discharge process is likely to increase the risk of errors.
- Efficient and safe hospital discharge is significantly more difficult to achieve if the case management staff works only the 7 a.m.–3 p.m. shift.
- All patients should have access to their discharge information in their language and at their educational level.
Summary

- Mastering Hospital-wide flow requires an understanding of your bed utilization and process capability.
- In order to achieve flow, your organization must optimize bed management, and patient handoffs between nurses and between physicians.
- There are other programs to fix certain situations and everyday tools to employ to optimize flow.

References

Real-Time Demand Capacity Management and Hospital-Wide Patient Flow

The Definitive Guide to Emergency Department Operational Improvement

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Managing Patient Flow in Hospitals: Strategies and Solutions, Second Edition

Thom Mayer, MD, FACEP, FAAP
Kirk Jensen, MD, MBA, FACEP

Hardwiring Flow: Systems and Processes for Seamless Patient Care

Chapter 8

Improving Hospitalwide Patient Flow at Northwest Community Hospital

Leadership for Smooth Patient Flow: Improved Outcomes, Improved Service, Improved Bottom Line

The Hospital Executive's Guide to Emergency Department Management

The role of the book in helping organizations maximize the "Three Es": Efficiency, Effectiveness, and Execution

Why it's important to engage physicians in the flow process (and how to do so)

How to apply the principles of better patient flow to emergency departments, inpatient experiences, and surgical processes
The Improvement Guide and Rapid-Cycle Testing

Langley GL, Nolan KM, Nolan TW, Norman CL, Provost LP.