Building a System for Real-Time Demand Capacity (RTDC) Management for Hospital-wide Patient Flow
D Day and the Hospital

Photo #: NH 68713  USS Wexford County and other LSTs conducting landing practice off San Diego, Calif.

Source: J. Reinertsen, 2005
Session Objectives

- Explain the RTDC approach to improve hospital-wide patient flow
- Describe the sequence for developing RTDC in your organization
Real Time Demand Capacity (RTDC) Approach

Months: 3 6 9 12 24

Real-Time Matching of Capacity to Demand

Shift/Add Capacity to Address Large Mismatches

Identify Barriers to Accomplishing Plans

Focused Improvements on Barriers

Larger Improvement Projects

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Real Time Demand Capacity Approach

- Improves flow by more closely matching capacity and demand for at least 25% of the day

- Allows the organization to determine the key barriers causing flow delays
Real Time Demand Capacity Perspective

Hospitals require an administrative system for patient flow that:
1. **Predicts** at a unit and hospital level the capacity to accept admissions
2. **Predicts** at a unit and hospital level the demand (admissions) and **assesses** whether the capacity matches that demand (*at least within the timeframe defined by patient flow goals for ER door to floor, etc*)
3. For any unit where demand is predicted to be greater than capacity, **creates a plan** to match capacity and demand
4. Evaluates the success or failure of the documented **plan**
5. Uses the **failures or successes of plans** to develop the key improvement projects to improve flow.
The Foundation: Getting Started on Building a Real Time Demand Capacity (RTDC) System
Assemble Leadership Persons for the Flow Work

- A designated leader (preferably VP level) has assigned responsibility and time dedicated for flow in an organization where flow is a strategic goal.

- The day to day flow team leader (50% time for 6 months) reports to designated leader regularly with design efforts and results. *(Note: Someone may already be spending that degree of time on flow so shift time to RTDC)*

- A unit level person assigned the responsibility to design the infrastructure for predictions for their unit.
Accept Commonly Used Definitions

- **Available Bed** *(Cleaned staffed and ready to accept a patient)*
- **Discharge** *(Patient has left bed and will not return)*
- **Admission** *(Patient has physically been placed in a bed)*
- The interval: 8AM-2PM
Choose Where to Start Predictions and Plans

- 1st Choice: A paired unit (ICU and a step down)
- 2nd Choice: A unit or service line (Medicine)
- 3rd Choice: Willing participants (At least 5 discharges/day)
Step #1: Predict Capacity for the Time Interval
Exercise #1: Predicting Capacity Before 2PM

Today on 3South (46 bed unit) at 8am:
- There is 1 clean, empty, staffed bed
- There are 7 patients on the Potential Discharge List. One of them has a written order.

Your assignment
- Based on your experience at YOUR hospital, could what is needed for discharge for each patient be completed so the patient could be discharged by 2pm?
- What is your prediction of capacity for 3South by 2pm?
<table>
<thead>
<tr>
<th>Pt. Name</th>
<th>Rm #</th>
<th>Discharge Need</th>
<th>Discharge by 2pm Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. Jones</td>
<td>302</td>
<td>O2 evaluation for home O2</td>
<td></td>
</tr>
<tr>
<td>C. Brooks</td>
<td>312</td>
<td>Wheelchair van for home transport</td>
<td></td>
</tr>
<tr>
<td>M. Long</td>
<td>316</td>
<td>Results of INR</td>
<td></td>
</tr>
<tr>
<td>T. Top</td>
<td>328</td>
<td>GI procedure</td>
<td></td>
</tr>
<tr>
<td>D. Duck</td>
<td>330</td>
<td>Family pick up (order written)</td>
<td></td>
</tr>
<tr>
<td>L. Casey</td>
<td>334</td>
<td>Authorization for Rehab</td>
<td></td>
</tr>
<tr>
<td>M. Mouse</td>
<td>340</td>
<td>PT evaluation for authorization for skilled level of care</td>
<td></td>
</tr>
</tbody>
</table>
Predict Capacity

- Create a process to collect information on discharges by unit. For example:
  - start a discharge list at the unit level the day before
  - update the list through the night
  - conduct a unit huddle in the early morning to finalize the list and determine the number of predicted discharges for the 8am to 2pm time interval

- Base the predictions of discharges on an understanding of your current reality

- Add your predicted discharges to available beds to determine the unit capacity for the 8am to 2pm interval
Step #2: Predict Demand for the Time Interval
Exercise #2: Predicting Demand Before 2PM

- Unit 3South (46 beds) has been told to expect 3 admissions from the ED before 2pm each day (historical trending)
- The Ortho unit needs for 3South to take an off service patient from their unit by 2pm today so their surgical patients will fit
- The ICU has a transfer ready for 3South, orders written at 8am.
- What is your prediction of demand for 3South by 2pm today?
Predict Demand

- Create a process to collect information on admissions by understanding:
  - schedules (direct admits, surgery schedule, and procedural schedules) for the day
  - transfers
  - patients currently in the ED
  - historical data

- Bring together all the admission data to predict the number of admissions during the 8am to 2pm time interval”. (This will usually be done at the hospital bed meeting.)
Prediction: The High Level Essentials

- Create a **standard process** for a unit to collect the information needed to predict discharges and admissions for the 8AM-2PM time interval.

- Make every effort to try to predict the current reality. Avoid trying to fix the system.

- Feeder departments (ED, PACU, Cath Lab etc.) need to make “feeder” predictions to their downstream units.

- Predictions are whole numbers for the 8AM-2PM time interval.

- Throughput goals (e.g. ER Door to Floor) should be considered as the prediction process for capacity starts developing reliability.
Accuracy of Predictions

- Since units will be using resources to accommodate patients before 2PM, some degree of credibility of predictions is required.

- Predictions should be reviewed after 2pm on each unit.

- The rate for predicting discharges should be calculated based on whether the patients predicted to be discharged by 2pm were actually discharged.

- The goal should be to improve the rate for predicting discharges over time.
Step #3: Develop a Plan
Step #4: Evaluate the Plan
Exercise #3: Developing a Plan

- 3South needs 5 beds for admissions by 2pm
- What was your prediction of capacity for 3South by 2pm? Does your capacity match your demand? Do you need a plan?
- Refer to the potential Discharge List from Exercise # 1. Discuss and write down with clear steps (who, what, when, where and how) a plan, based on the experience in your hospital, to match capacity and demand by 2pm for 3South.

<table>
<thead>
<tr>
<th>Pt. Name</th>
<th>Discharge Need</th>
<th>PLAN for Discharge by 2pm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
Types of Plans for RTDC

Plans for RTDC are developed when demand is predicted to be greater than capacity.

1. A **unit level plan** is developed by a unit at their bed huddle and finalized at the hospital bed meeting

2. A **system level plan** is created at the hospital bed meeting to meet predicted demand that a unit cannot meet with their own plans
## Plans

- Your discharge predictions will usually require specific actions to accomplish those discharges during the interval.

- If your capacity at the hospital bed meeting is less than demand for the 8am to 2pm time interval, you will need either an adjustment to the unit plan or a system plan.

- Action in plans need to be clearly articulated and written down (who, when, where, when, and how).

- Judge the success of your plan based on whether you accomplished what you said you were going to do (example: 1 additional discharge by 2pm by asking Dr. Resar to make early rounds on that patient) not what happens to the rest of the unit.

- Learn from both failed and successful plans.
Sometime After 2 p.m.
At the afternoon throughput huddle the Unit manager, ANM, PCC huddle to evaluate the day's predictions and plan. What did you learn today? What will you do different tomorrow?

For no more than 5-7 minutes, using the Throughput Worksheet, the Unit Manager, ANM, and PCC discuss who can be discharged/transferred the next day (capacity). Develop a plan for the evening shift to ready the patients for discharge: pending labs, discharge orders using the Throughput Worksheet the Unit Manager, ANM, and PCC

3 p.m.
Shift report (not throughput huddle)

4 p.m. – 7:30 a.m.
Evening and night shift reviews plan, follows through on steps needed to ready discharges/transfers for the am shift. Identify additional/potential discharges/transfers. Evaluate patients condition to be sure that clinical condition allows for discharge/transfer. Communicate steps completed, additional discharge prep work, and changes in condition to next shift.

7 a.m.
Shift report (not throughput huddle)

Between 7:30 a.m.-8:15 a.m.
1. At the morning throughput huddle, for no more than 5-7 minutes, using the Throughput Worksheet the Unit Manager, ANM, and PCC evaluate potential discharges/transfers, written orders and of these both, who will be discharged by, 11 am, 2 pm, after 2 pm. Decide the steps that need taken to facilitate discharge and assign responsibility.

2. Next, evaluate admissions – how many patients are coming to the unit based on what you know today (ED, OR, Procedures, Transfers) and what your history is? Develop plan to facilitate discharge and coordinate admissions.

8:15 am
At the Pre Bed Meeting Huddle, discuss admission/discharge issues with other units and develop a plan on how to support each other by managing locally

8:30 am
At bed meeting and report on day's predictions, plan for the day if red (admissions > discharges) or if yellow (admissions = discharge) to meet throughput goals.

2. Also share the success from the prior day's predictions – if it wasn't successful – that's ok – what did you learn to do differently?

Kaiser Santa Clara

Revised: 5/12/09

Real Time Throughput Managing Admissions and Discharges

Note: Involve physicians where necessary
Are We Matching Capacity and Demand?

- In addition to measuring the accuracy of predicting discharges, it is advisable to track by unit whether capacity matched or exceeded demand by 2pm each day (yes/no)

- The percent of days where capacity matched or exceeded demand by 2pm should increase as predictions and plans improve
Building a Real Time Demand Capacity System

Based on A Day in the Life of UPMC Mercy
In 1843, Mother Frances Warde led six Sisters to the United States from Ireland

Founded the first Sisters of Mercy congregation in Pittsburgh, PA

Opened the first Pittsburgh hospital and first Catholic hospital in the United States on January 1, 1847
In 2006, Mercy Hospital decided to seek a strategic partner to strengthen and preserve its faith-based care.

UPMC acquired Mercy Hospital on January 1, 2008.

UPMC is a $10 billion global health enterprise with more than 65,000 employees.

Integrates 22 hospitals, 400 MD offices, outpatient sites, health insurance services division, international and commercial services.
UPMC MERCY WAS POISED TO BEGIN A TREMENDOUS PERIOD OF GROWTH....

PROCESSES AND INFRASTRUCTURE HAD TO BE RAPIDLY BUILT TO ALLOW THIS GROWTH TO OCCUR WITHOUT INCURRING UNACCEPTABLE DELAYS IN PATIENT CARE
### UPMC Mercy – Evidence of Need for Change

<table>
<thead>
<tr>
<th>Key Statistics</th>
<th>CY2007</th>
<th>FY2012</th>
<th>Variance CY07 vs. FY12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Admissions &amp; Observations</td>
<td>18,580</td>
<td>29,338</td>
<td>↑ 58%</td>
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<tr>
<td>Average Daily Census</td>
<td>260</td>
<td>420</td>
<td>↑ 62%</td>
</tr>
<tr>
<td>Emergency Room Visits</td>
<td>44,808</td>
<td>72,008</td>
<td>↑ 61%</td>
</tr>
<tr>
<td>Surgeries</td>
<td>12,554</td>
<td>20,521</td>
<td>↑ 63%</td>
</tr>
<tr>
<td>Operating Margin</td>
<td>($21.2M)</td>
<td>$3.9M</td>
<td>↑ $25.1M</td>
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</tbody>
</table>

- Maintained Mercy’s Catholic mission; uncompensated care increased by 17%
- Preserved existing jobs - increased employment by 16%
- $25 million financial improvement since January 2008 merger
- ~$90 million in capital invested in new programs/infrastructure improvements
Managing Capacity

- Needed a plan to accommodate an increase in volume in both the ED and Inpatient Units
  - Needed to connect the patient with the provider more timely
  - Need to separate the patient streams
  - Needed to review the bed request process
  - Needed to adapt a model to create inpatient capacity
Inpatient Capacity Management

- Needed to create a model where beds were ready when patients needed them in a hospital that ran >95% full, with 93% semi-private rooms.

- “Bed Ahead” would not solve our problems

- Adopted Real Time Demand Capacity Management
Step #1: Predict Capacity
“Daily Flow” of Real Time Demand Capacity

Potential Discharge List
## Potential Discharge List

<table>
<thead>
<tr>
<th>Pt Name</th>
<th>Rm #</th>
<th>DC Need</th>
<th>“R” Name</th>
<th>Action to be taken</th>
<th>Time</th>
<th>2pm DC y/n</th>
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<tbody>
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</table>
Potential Discharge List

Start tomorrow’s “potential discharge list” today.

Process:

- Case Manager on each unit responsible to begin tomorrow’s potential discharge list for their unit in the afternoon and hand it off to the evening charge nurse before leaving for the day
- Evening and night charge nurse on unit responsible to update the list with additions/deletions throughout the evening and night shift
- Night charge nurse hands off the list to the day charge nurse in the AM for the unit-based huddle
# Predicting Capacity - Now

## Potential Discharge List

<table>
<thead>
<tr>
<th>Pt Name</th>
<th>Rm #</th>
<th>DC Need</th>
<th>“R” Name</th>
<th>Action to be taken</th>
<th>Time</th>
<th>2pm d/c Y/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. Jones</td>
<td>in 302</td>
<td>needs</td>
<td>O2 eval for home O2</td>
<td>Staff RN</td>
<td>Call RT to expedite</td>
<td>by 10AM</td>
</tr>
<tr>
<td>C. Brooks</td>
<td>in 312</td>
<td>needs</td>
<td>w/ c van for home transport</td>
<td>SW</td>
<td>Enter transport request into ECIN</td>
<td>by 9AM</td>
</tr>
<tr>
<td>MLong</td>
<td>in 316</td>
<td>needs</td>
<td>Results of AM H&amp;H test</td>
<td>Staff RN</td>
<td>Call attending with results &amp; get dc order</td>
<td>by 10AM</td>
</tr>
<tr>
<td>T. Top</td>
<td>in 328</td>
<td>needs</td>
<td>PFTs</td>
<td>CM</td>
<td>Ensure pt on schedule today</td>
<td>by 9AM</td>
</tr>
</tbody>
</table>

**Note:** The table continues with additional rows that are not fully visible in the image.
“Daily Flow” of Real Time Demand Capacity

- Potential Discharge List
- Unit Bed Huddle
Unit Bed Huddle

- Used to finalize today’s discharge list, **not to discuss all the patients on the unit**

- Huddles should be attended by Unit Mgr/Charge RN; Care Manager; Social Worker, Unit Secretary, PT/RT (if appropriate)

- Should occur at a consistent time each day, prior to the Hospital Bed Meeting
Unit Bed Huddle

The goal of the unit bed huddle is to review today’s potential discharge list

- The Care Manager, as the consistent liaison between MDs, consultants, therapists and nursing staff, is most suited to drive the huddle
- **Has anything occurred overnight that might affect today’s discharge?**
- What specific action needs to be taken for each patient on the list so that discharge will happen? Can these actions be accomplished by 2pm?
- Who will take the responsibility for seeing that action through to completion or escalation if necessary?
- Scripting will ensure this does not become bedside clinical report
## Potential Discharge List

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>Room #</th>
<th>DC Need</th>
<th>“R” Name</th>
<th>Action to be taken</th>
<th>Time</th>
<th>2pm DC Y/N</th>
<th>Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. Smith</td>
<td>in 302</td>
<td>needs</td>
<td></td>
<td>will</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T. Jones</td>
<td>in 310</td>
<td>needs</td>
<td></td>
<td>will</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R. Brown</td>
<td>in 326</td>
<td>needs</td>
<td></td>
<td>Will</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Unit Bed Huddle – Scripting Example

- Mr. Smith is on the list today to go home with self care
  - “Is he still stable? Any issues since yesterday?”
  - “Are there any outstanding tests, results or lab work necessary for discharge?”

- Mr. Jones is going home with home care
  - Is the Home Care order written?
  - Has the hospital bed he needs been delivered to his house?
  - Do we have all of the necessary scripts?
  - When will Mr. Jones’s family be here?
  - Since family will not be here until 3pm, please get the home care consult and scripts by noon, he will be an after 2pm discharge
Mr. Brown is going to a skilled facility

- Have we secured an authorization and bed for him?
- Has transportation been set up?
- Since transportation has been set up for 4pm, we need to have the discharge order entered by 2pm and we will list him as an “after 2pm” discharge
<table>
<thead>
<tr>
<th>Patient Name</th>
<th>Room #</th>
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<th>Time</th>
<th>2pm DC Y/N</th>
<th>Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. Smith</td>
<td>in</td>
<td>302 needs</td>
<td>Scripts and Discharge Order</td>
<td>Staff RN will Call Hospitalist</td>
<td>by</td>
<td>1P</td>
<td>Y</td>
</tr>
<tr>
<td>T. Jones</td>
<td>in</td>
<td>310 needs</td>
<td>Home Care Consult and Scripts</td>
<td>Staff RN will Obtain Home Care consult &amp; scripts</td>
<td>by</td>
<td>12P</td>
<td>N</td>
</tr>
<tr>
<td>R. Brown</td>
<td>in</td>
<td>326 needs</td>
<td>Discharge Order</td>
<td>Staff RN Will Obtain discharge order</td>
<td>by</td>
<td>2pm</td>
<td>N</td>
</tr>
</tbody>
</table>

**Patient going home with self care**

**Patient going to Home with Home Care**

**Patient going to a skilled facility**
Unit Bed Huddle

- Number of available beds is determined

- Unit’s “CAPACITY” (available beds + discharges) before 2pm is predicted by the end of the bed huddle
Unit Bed Huddle
“I think I’ll have 4 discharges today”
Devil is in the detail

- Who is going?
- What do they need?
- Who will do it?
- When does it need to happen by?
### Predicting Capacity - Now

#### Potential Discharge List

<table>
<thead>
<tr>
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<td>in</td>
<td>needs PFTs</td>
<td>CM</td>
<td>Ensure pt on schedule today</td>
<td>by</td>
<td>N</td>
</tr>
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</table>

- **R** means the nurse who will take the action.
- **DC Need** indicates the discharge needs.
- **Action to be taken** describes the specific action that needs to be taken.
- **Time** indicates the time the action is scheduled.
- **2pm d/c Y/N** indicates if the discharge is scheduled for 2pm and if approved (Y) or not (N).
Predicting Capacity - Now

S. Jones in room 302
- Needs eval for home O2
- RN will call RT to expedite evaluation
- RN needs to contact them by 10am
# Unit Summary Worksheet for RTDC

<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>
<th>SUCCESSFUL</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/17</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td></td>
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</tbody>
</table>
Every Discharge is Important

- Discharges by 2pm
  - These will keep the ED, PACU and CCL moving
  - Should decrease or eliminate overcrowding and surge alerts during late afternoons
  - “Managing Flow in Hours”

- Discharges after 2pm
  - Will help to decrease your overall LOS
  - “Managing Flow in Days”
Any Questions on Step #1: Predict Capacity
Step #2: Predict Demand
“Daily Flow” of Real Time Demand Capacity

Potential Discharge List

Unit Bed Huddle

Review Admissions
Determining Unit’s Demand for the Day

Prior to the house-wide bed meeting:
• Unit Directors/Charge RNs should review elective schedules for the day’s demand (surgical)
• Based on historical trending – determine average number of ED and direct admissions per day (medicine)

At the house-wide bed meeting:
• ED will provide admissions waiting for placement. These admissions MUST be a priority. Look for capacity by 11am to absorb this demand.
• Unit Directors/Charge RNs must connect prior to discuss transfers, admissions, and the synchronization of patient movement from all areas
Predicting Demand: A Medicine Unit Example

Prior to the house-wide bed meeting

- **ED**: Historical trending indicates that the ED requests 12 medicine beds by 2pm each day. Therefore, each of the 4 Medicine units are asked to create capacity for **3 ED patients by 2pm** each day. They should also expect an additional 2 admits after 2pm.

- **Directs**: The hospital receives an average of 8 directs per day from MD offices and clinics. On average, 4 of them are requested by 2pm. Therefore each of the 4 Medicine units are asked to create capacity for **1 direct admit per day by 2pm** and 1 direct admit after 2pm.
Predicting Demand: A Medicine Unit Example

At the house-wide bed meeting

- **MICU**: There will be 1 transfer to this unit today. Patient will not be ready until 4pm
- **Lateral Transfer**: There is a patient who must transfer to this medicine unit for peritoneal dialysis and should be there by noon today.
- **ED**: 0 patients waiting for placement
# Unit Summary Worksheet for RTDC

<table>
<thead>
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<th>DCs By 2pm</th>
<th>Total Admits</th>
<th>Admits By 2pm</th>
<th>PLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/17</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>9</td>
<td>5</td>
<td>S U C C E S S F U L</td>
</tr>
</tbody>
</table>
Any Questions on Step #2: Predict Demand
Step #3: Develop a Plan
Assessing a Unit’s Status

- Based on predictions from Step 1 and Step 2, the assessment of whether demand and capacity will match for a specific time period can now be made.

- If predicted demand is greater than capacity – a plan to achieve a match is developed.

- Finalize RTDC Unit Summary Form at house-wide bed meeting.
“Daily Flow” of Real Time Demand Capacity

Potential Discharge List

Unit Bed Huddle

Review Admissions

Hospital-wide Bed Meeting
Hospital-Wide Bed Meeting

- Each unit is responsible for reporting the assessment of their demand and capacity at the bed meeting.

- Status of each unit with respect to demand and capacity should be displayed for all to see. Use white boards, poster paper, electronic projection, ...

- Plans have been discussed at the unit huddles when demand exceeds capacity. Units should indicate at bed meeting if they will need system level assistance with their plans.
Multi-Disciplinary - Key Participants

- Nursing Units
- Nursing Leadership
- Nursing Supervisor
- Case Management
- PACU
- ED

- Radiology
- Cardiology
- Cath Lab
- Infection Control
- EVS
- Transport
Hospital-Wide Bed Meeting

- Not just about staffing
- Attendance is not optional
- Each unit submits RTDC Management Form
- Status displayed for all to see
<table>
<thead>
<tr>
<th>Unit</th>
<th>Current Census</th>
<th>Blocked Beds</th>
<th>Available Beds</th>
<th>DC's</th>
<th>Transfers off Unit</th>
<th>DC / Tsfs by 2pm</th>
<th>DEM, TBAs, CCL, DIRECTS, etc</th>
<th>Transfers from other Units</th>
<th>Admits by 2pm</th>
<th>Status at 2pm</th>
</tr>
</thead>
<tbody>
<tr>
<td>12E</td>
<td>39</td>
<td>3</td>
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<td>1</td>
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</table>
Developing a Plan: An Example

<table>
<thead>
<tr>
<th>Day/Date</th>
<th>Avail Beds</th>
<th>Total DCs</th>
<th>DCs By 2pm</th>
<th>Total Admits</th>
<th>Admits By 2pm</th>
<th>PLAN</th>
<th>S U C C E S S F U L</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/17</td>
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<td>4</td>
<td>2</td>
<td>9</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Available beds: 1
- Predicted discharges by 2pm: 2
- Predicted admissions by 2pm: 5
- Need to create 2 additional beds by 2pm
# Potential Discharge List

<table>
<thead>
<tr>
<th>Pt Name</th>
<th>Rm #</th>
<th>DC Need</th>
<th>“R” Name</th>
<th>Action to be taken</th>
<th>Time</th>
<th>2pm d/c Y/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. Jones</td>
<td>in</td>
<td>needs</td>
<td>Staff RN</td>
<td>Call RT to expedite</td>
<td>by</td>
<td>N</td>
</tr>
<tr>
<td>C. Brooks</td>
<td>in</td>
<td>needs</td>
<td>SW</td>
<td>Enter transport request into ECIN</td>
<td>by</td>
<td>Y</td>
</tr>
<tr>
<td>MLong</td>
<td>in</td>
<td>needs</td>
<td>Staff RN</td>
<td>Call attending with results &amp; get dc order</td>
<td>by</td>
<td>Y</td>
</tr>
<tr>
<td>T. Top</td>
<td>in</td>
<td>needs</td>
<td>CM</td>
<td>Ensure pt on schedule today</td>
<td>by</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>needs</td>
<td>will</td>
<td></td>
<td>by</td>
<td></td>
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<tr>
<td></td>
<td>in</td>
<td>needs</td>
<td>will</td>
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<td>by</td>
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<tr>
<td></td>
<td>in</td>
<td>needs</td>
<td>will</td>
<td></td>
<td>by</td>
<td></td>
</tr>
</tbody>
</table>
Types of Plans for Step #3 to Match Daily Demand with Capacity

**Unit Level**
What a unit can do on their own without impacting others

**System Level**
Made by a centralized person, since more than one area may be vying for a shared resource
### Examples of Possible Unit Level Actions for Plans

<table>
<thead>
<tr>
<th><strong>Issue</strong></th>
<th><strong>Action</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Need discharge order on patient with late rounding attending</td>
<td>Unit Manager contacts attending to allow Resident to d/c patient</td>
</tr>
<tr>
<td>No available beds due to beds being blocked</td>
<td>Either cohort if possible or move blocked patient to a private room</td>
</tr>
<tr>
<td>Family available for pick-up early (by 11am) but RN not able to complete discharge</td>
<td>Unit manager reassigns discharge to charge RN or another staff RN and family contacted</td>
</tr>
</tbody>
</table>
## Examples of Possible System Level Actions for Plans

<table>
<thead>
<tr>
<th><strong>Issue</strong></th>
<th><strong>Action</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit will not fit specialty</td>
<td>Nursing supervisor identifies a unit to which the right number of off-service patients can be moved</td>
</tr>
<tr>
<td>Unit needs 2 more discharges by 2pm</td>
<td>Nursing supervisor asks hospitalist to round on that unit first</td>
</tr>
<tr>
<td>Unit in need of resources to expedite discharges, transport a patient, etc.</td>
<td>Nursing supervisor allocates swat nurse to that unit</td>
</tr>
<tr>
<td>Day/Date</td>
<td>Avail Beds</td>
</tr>
<tr>
<td>----------</td>
<td>------------</td>
</tr>
<tr>
<td>8/17</td>
<td>1</td>
</tr>
</tbody>
</table>

• Have RT do O2 assessment by 10am & escalate home O2 setups
• Check with PFT lab - dc patient and send to lab for outpt testing
Unit Huddles and Bed Meetings

- Crucial components to RTDC
- Allows everyone to visualize where capacity problems exist
- Sets plans in place with specific actions early in the day
- Care Managers and Staff RNs are key
“Daily Flow” of Real Time Demand Capacity

1. Potential Discharge List
2. Unit Bed Huddle
3. Review Admissions
4. Hospital-wide Bed Meeting
5. Implementation of the Plan
Implementing the Plan at the Unit Level

- After the bed meeting, the outcome of the bed meeting is relayed & displayed to the key stakeholders on the unit.

- Identify a “key” individual on the unit to monitor flow - your air traffic controller, manage the “R” sheet. (Charge RN, Unit Secretary)
Escalation

- Escalation may be required if a plan goes awry
- At first hint of barrier, staff need escalation path
- “Oh well, I tried” should not be the outcome
- Sr. Leadership must be prepared to step in
Escalation Examples

- Resident response – 2 strikes
- Move up transport times
- Covering MDs
Any Questions on Step #3: Develop the Plan
Step #4: Evaluate the Plan
Feedback

- Provide consistent feedback (daily)
- Reward and recognize (Whoo Hoo Moments)
Feedback

**DATE:** October 14, 2008

<table>
<thead>
<tr>
<th>ED</th>
<th>MICU</th>
<th>ED R-A</th>
<th>A-O</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSU</td>
<td>3P</td>
<td></td>
<td>31m</td>
</tr>
<tr>
<td>PACU</td>
<td>3E</td>
<td>DC %</td>
<td>92.9%</td>
</tr>
<tr>
<td>CT</td>
<td>4E</td>
<td>MTD %</td>
<td>90%</td>
</tr>
<tr>
<td>MS</td>
<td>5M</td>
<td>PACU</td>
<td></td>
</tr>
<tr>
<td>3M</td>
<td>6M</td>
<td>R-A</td>
<td></td>
</tr>
<tr>
<td>2P</td>
<td>BY 2</td>
<td>A-O</td>
<td></td>
</tr>
</tbody>
</table>

**PLAN**

- NSW Push D.C
  - 2 MOO 2 medics
  - by 2 RN
  - happen

- NSW NICU
  - 6-7P

- 5P
- 7M
- 7W
PATIENT FLOW OUTCOMES
6/23/10

GREEN
12E, 10E, 8E, 6A, ICU, 5F
8F, 6E, 7E, 6F, TBC, 7A
96% of all discharges predicted by 9am 😊😊
13 medicine beds by 2pm
59% of PACUs assigned within 1hr
65% of PACUs left PACU within 1hr of assignment /RTM

RED
7F/NCCU, 11E
9E, 5A, 8A, CVICU
From: Miliauckas, Melissa  
Sent: Tuesday, August 12, 2014 2:52 PM  
To: MHP_ALL MANAGERS; Mercy Clinical Supervisors; MERCY CM Utilization; Dembowski, Shannon; Kudyba, Sheila; Jansen, Donald  
Subject: Discharges by 2:30

Total: 22

<table>
<thead>
<tr>
<th>UNIT</th>
<th>Capacity Needed by 2pm</th>
<th>Actual Capacity by 2pm</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>12E</td>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>11E</td>
<td>2</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>10E</td>
<td>5</td>
<td>4</td>
<td>-1</td>
</tr>
<tr>
<td>9E</td>
<td>4</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>8E</td>
<td>6</td>
<td>21</td>
<td>15</td>
</tr>
<tr>
<td>7F</td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>5F</td>
<td>5</td>
<td>2</td>
<td>-3</td>
</tr>
</tbody>
</table>

There are currently no patients ready to move without an assignment at this time.

We still have 21 pending and 21 confirmed on the board.

Thank you and have a great rest of your day!

Melissa Miliauckas  
Patient Placement Coordinator  
UPMC Mercy  
Phone: 412-232-9029  
Fax: 412-232-5697
2:30 Status Results

Patients without Bed Assignment

- Feb-14
- Mar-14
- Apr-14
- May-14
- Jun-14
- Jul-14
- Aug-14

Patients without Bed Assignment
Feedback

- Look at failed plans as opportunity
- Same plan day after day should be a red flag
## Unit Worksheet for RTDCM

<table>
<thead>
<tr>
<th>Day/Date</th>
<th>Avail Beds</th>
<th>Pot DCs</th>
<th>DCs By 2pm</th>
<th>Total Admits</th>
<th>Admits By 2pm</th>
<th>PLAN</th>
</tr>
</thead>
</table>
| 8/17     | 1          | 4       | 2          | 7            | 5             | • Have RT do O2 assessment by 10am & escalate home O2 setups  
• Check with PFT lab - dc patient and send to lab for outpt testing |
Evaluate the Plan

- Plans are reviewed by the Charge RN or the Unit Managers in real time or the following day
  - *Was RT able to assess O2 needs by 10am?*
  - *Was patient’s discharge completed in time for PFT appointment?*

- Successful plans are documented
  - *RT did O2 assessment as requested by 10am*
  - *We are able to contact Home Health and schedule an urgent delivery of home O2 earlier in the day than planned, if early discharge is dependent on it.*
  - *This information shared with all Care Managers*
Evaluate the Plan

- If patient was not discharged, we ask why?
  - Patient received PFT, but was returned to room because discharge instructions not completed

- Failed plans
  - Unit makes every attempt to rectify things in their control i.e. follow the standard process
    Communication issue between Care Mgr and Staff RN addressed regarding need to complete all discharge instructions and send belongings with patient to PFT Lab

  - If the same issue comes up more than a couple times, we consider a change to a work process
    For example: Surgical patients who must tolerate lunch before discharge, do no receive lunch trays until 12:45pm
**NOTE:** Even if the plan was successful, inaccurate predictions can cause capacity to not match demand, resulting in a waste of energy and surprise discharges. Therefore, inaccurate predictions need to also be studied.

### RTDC Management Form

<table>
<thead>
<tr>
<th>Day/Date</th>
<th>Avail Beds</th>
<th>Total DCs</th>
<th>DCs By 2pm</th>
<th>Total Admits</th>
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<tbody>
<tr>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Check with PFT lab - dc patient and send to lab for outpt testing</td>
</tr>
</tbody>
</table>


Any Questions on Step #4: Evaluate the Plan
What to Expect Down the Road

- Real Time Demand Capacity Management focuses your efforts on achieving identified discharges for today within a specific time period
  - *Although RTDC focuses on patients discharging today, some form of communication on a daily basis about the discharge plan should occur.*

- Unit Huddles and Bed Meetings Seven Days/Week
  - A natural evolution will also be to eventually move your RTDC model to seven days per week
  - Adjustments in the process will need to be made because of staffing but weekend discharges will increase.
So …… what are the outcomes?
Floor Care RN Manager focusing on RTDC rather than insurance authorizations
UPMC Mercy: ED Median LOS for Admits

Chart showing median ED length of stay (LOS) for admissions from January 2012 to May 2014. The chart indicates a decline in LOS with a goal line at 250 minutes, showing improvements over time.
UPMC Mercy: LWBS Rate

Goal
UPMC Mercy: PACU Transfer Time

Goal
A Real Life Example

- 6am census of 461 (7th highest census in 4 years, highest August census ever)
- 15 overnight boarders in the ED
- 106% capacity
A Real Life Example

- 6am census of 461 (7th highest census in 4 years, highest August census ever)
- 15 overnight boarders in the ED
- 106% capacity
Business as Usual

- 8:15am huddles on all units
- ONE bed meeting at 9am
- Plans put in place that predicted 55 discharges by 2pm
- 103 discharges predicted total for the day
- All non-essential meetings cancelled
The Results

- 44 discharges by 2pm
- 111 total discharges
- ZERO boarders in the ED; last boarder assigned by 7pm
Financial Impact

- Increased revenue (ER and admissions) from reduced LWBS
- Casuasls and premium pay for RNs reduced at UPMC Mercy
How RTDC Changed UPMC Mercy

- Each inpatient unit took control of their patient flow
- Nursing Supervisors now support efficient patient flow vs being entirely responsible for patient flow
- No longer are there surprises of not enough or too many beds at 5pm
- Units manage patient flow, it does not manage them
How RTDC Changed UPMC Mercy

“Busy days” are now just regular days with more plans to put into effect.

- Barriers in the day to day management of demand and capacity drive the hospitals improvement projects, not board room meetings.

- Precious resources are now working on projects that are known to have a direct affect on patient flow.
UPMC Shadyside:
Median ED LOS for Admitted Patients

Graph showing the median emergency department length of stay (LOS) for admitted patients, with data from July 2005 to November 2011. The line graph displays fluctuations in LOS, with a goal line indicating desired LOS values.
UPMC Shadyside:
Median ED LOS for Admitted Patients

Goal
UPMC Shadyside: % of Patients Who Left Without Being Seen (LWBS)
UPMC Shadyside: % of Patients Who Left Without Being Seen (LWBS)
UPMC Presbyterian

**Medians ED LOS for Admitted Patients**

- 240 min.

**% Left Without Being Seen**
UPMC McKeesport

Median ED LOS for Admitted Patients

% Left Without Being Seen

240 min.
Questions?