Using Quality Improvement to Optimize Pediatric Discharge Efficiency

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James Anderson Center for Health Systems Excellence

IHI Hospital Flow Professional Development Program
April 5, 2016
Objectives

• Describe strategies for focusing discharge planning processes around medical readiness criteria, regardless of time of day

• Describe the application of quality improvement principles to improving discharge efficiency

• Highlight the key high reliability processes used for implementing and sustaining improvement
Case

At 8am, a 3 year old female admitted with community acquired pneumonia has been stable on room air all night without respiratory distress

- Afebrile x 24 hours
- Tolerates her first oral antibiotic dose
- Drinking well
But . . .

Why does she stay until 1:00pm?

Can we eliminate this waste?
Background

• The Institute of Medicine urges us to provide care that is *timely* and *efficient*

• A recent study by Srivastava et al found that nearly 1 in 4 patients experienced a medically unnecessary prolonged hospital stay of at least 1 day

• Prior studies focused on set discharge time goals such as 11:00 am
Background at Cincinnati Children’s Hospital Medical Center (CCHMC)

In 2012, there were 7000 admissions to our 3 Hospital Medicine units

- Highest admitting units from Emergency Department and Pediatric Intensive Care Unit
- Thus, Hospital Medicine discharge delays affect flow throughout the hospital which may lead to
  - Delayed admissions or transfers
  - Canceled or delayed surgeries
Discharge Prediction

• In 2008, CCHMC began predicting the time of discharges in 4 hour time buckets to
  • Anticipate bed availability
  • Place patients on the appropriately skilled nursing unit
• These predictions took into account medical, social and system level factors
• Success defined as patient going home in the predicted bucket or the bucket prior
• By 2010, discharge predictions had improved but flow hadn’t and system delays persisted
Refocusing: Our New Theory

• We needed to address system issues to improve efficiency:
  • Lack of shared discharge goals for patients
    • Patients with the same diagnoses had goals that varied by physician
    • Goals were not shared with nursing staff or families
  • Discharge planning occurred last minute

• Shift focus to plan discharge around medical readiness, regardless of time of day
AIM

To increase the percentage of Hospital Medicine patients admitted to one of three inpatient units with one of 11 common diagnoses discharged within two hours* of meeting medically-ready criteria from 42% to 80% by June 30, 2013

*If criteria were met between 9:00 pm – 7:00 am, patients were not expected to leave until 9am.
Other Measures

- Nurse and Physician Process Measures
- Secondary Measures:
  - Length of stay (LOS)
  - Average daily census
    - Total occupied beds at 8am / number of days in the month
Balancing Measures

- 30-day Readmission Rates
- Family Satisfaction
Key Drivers

Increase the percentage of Hospital Medicine patients with one of 11 common inpatient diagnoses discharged within two hours of meeting medically ready criteria from 42% to 80% by June 30, 2013.

- Discharge Criteria Defined
- Frontline Staff Buy-in and Shared Ownership
- Discharge Barrier Identification with Mitigation Plans established
- Team Performance Transparency with Preoccupation with Failure
11 Diagnoses

- Asthma
- Bronchiolitis
- Osteomyelitis
- Hyperbilirubinemia
- Fever of Uncertain Source
- Cellulitis
- Gastroenteritis/Dehydration
- Urinary Tract Infection
- Pneumonia
- Croup
- Constipation
The Process

Physicians define criteria in EMR on admission → Patient meets medically-ready criteria → Nurse places time stamp in EMR → If patient does not leave within 2 hours, nurses document reason why
Process Measures

- Physician process measure: the percentage of admitted patients with medically-ready discharge orders

- Nurse process measure: the percentage of patients with the medically-ready time stamp placed in the electronic medical record (EMR)
### Physiologic Discharge Criteria for Pneumonia

Routine, CONT starting Today at 1144 Until Specified

<table>
<thead>
<tr>
<th>Questions</th>
<th>Prompt</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Fever trending downward</td>
<td>for at least 12 hours</td>
</tr>
<tr>
<td>2.</td>
<td>Antibiotic regimen confirmed</td>
<td>Yes</td>
</tr>
<tr>
<td>3.</td>
<td>Oxygen saturations greater than or equal to</td>
<td>91% on room air for 6 hours</td>
</tr>
<tr>
<td>4.</td>
<td>No evidence of respiratory distress</td>
<td>Yes</td>
</tr>
<tr>
<td>5.</td>
<td>Additional discharge criteria</td>
<td></td>
</tr>
</tbody>
</table>

Comments (F6): [Click to add text]

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**Discharge Criteria**

<table>
<thead>
<tr>
<th>Start</th>
<th>12/08/13 0923</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physiologic Discharge Criteria</strong> CONT, Routine</td>
<td></td>
</tr>
<tr>
<td>Comments:</td>
<td>Able to sleep overnight without oxygen</td>
</tr>
<tr>
<td>Duration:</td>
<td>Until Specified</td>
</tr>
<tr>
<td><strong>Question</strong></td>
<td></td>
</tr>
<tr>
<td>O2 sats greater than or equal to 91% on room air or home oxygen level</td>
<td></td>
</tr>
<tr>
<td>No evidence of respiratory distress</td>
<td></td>
</tr>
<tr>
<td>Fever trending down</td>
<td></td>
</tr>
<tr>
<td>Antibiotic regimen confirmed</td>
<td></td>
</tr>
<tr>
<td>Tolerating PO antibiotic without emesis</td>
<td></td>
</tr>
</tbody>
</table>

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Time Stamp Documentation

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## Nurse Documentation of Failure Reasons

<table>
<thead>
<tr>
<th>Anticipated Discharge Date</th>
<th>Anticipated Discharge Time</th>
<th>All physiologic discharge criteria met</th>
<th>Reasons for discharge &gt;2 hrs after</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/14/11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1526</td>
<td>1217</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Selection Form

- Interpreter delay
- Meds-flu shot
- Meds-pharmacy delay
- Meds-script not written/faxed
- Nursing delay
- Patient/parent delay
- Physician delay
- Status change/not improving

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Baseline Failure Reasons

Medically-Ready - Hospital Medicine Units
Discharge Failure Reasons

- Medication: 21%
- Consult: 14%
- Patient/Parent: 11%
- Physician Delay: 11%
- Goals Not Clearly Defined: 10%
- Unknown: 9%
- Transportation: 9%
- Other: 5%
- Rounds: 5%
- Home Health: 3%
- Interpreter: 2%
Optimizing Discharge Efficiency
% Discharged within 2 Hours of Medically Ready

Week Start Date (Patients Discharged)
Optimizing Discharge Efficiency

% Discharged within 2 Hours of Medically Ready

Key Intervention Period for General Medical Teams

% Discharged within 2 Hours

Week Start Date (Patients Discharged)
Key stakeholder buy-in and shared ownership
Standardization of Discharge Criteria

- Based on available evidence and expert consensus
- Diagnosis-specific goals
  - For example, stable without supplemental oxygen for 6 hours for patients with bronchiolitis
- Did not include non-medical items
  - For example, medications filled by pharmacy
- Embedded in physician admission order sets
  - Modifiable
## EMR Discharge Criteria: Physician View

### Physiologic Discharge Criteria for Pneumonia

**Routine, CONT starting Today at 1144 Until Specified**

<table>
<thead>
<tr>
<th>Questions</th>
<th>Prompt</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fever trending downward</td>
<td>for at least 12 hours</td>
<td>for at least 24 hours</td>
</tr>
<tr>
<td>2. Antibiotic regimen confirmed</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>3. Oxygen saturations greater than or equal to</td>
<td>91% on room air for 6 hours</td>
<td>91% on room air for 12 hours</td>
</tr>
<tr>
<td>4. No evidence of respiratory distress</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>5. Additional discharge criteria</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments (F6): [Click to add text]

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Leveraging of Nursing Performance Management System

• A pay-for performance managerial system to plan, evaluate and reward individual employee performance
  • Goals align with strategic priorities

• In Oct 2011, one unit included the discharge outcome as the unit’s goal
  • That unit’s performance improved from 34-60%
Unit A - Impact of Performance Management on Outcome Measure

Performance management goals set for unit
Unit B - Impact of Performance Management on Outcome Measure

% Discharged within 2 Hours

Date (Patients Discharged)

- % Discharged 2 Hrs
- Median
- Goal

Performance management goals set for unit
Optimizing Discharge Efficiency
% Discharged within 2 Hours of Medically Ready

Key stakeholder buy-in and shared ownership

Second and third unit performance management

Week Start Date (Patients Discharged)
Discharge Barriers Defined and Mitigation Plans Established

• Focused on the top 2 failure reasons:
  • Subspecialty Consult timeliness
  • Medication Delays

• Accounted for 35% of the failures
Optimizing Discharge Efficiency

% Discharged within 2 Hours of Medically Ready

- Timeliness of consults
- Key stakeholder buy-in and shared ownership
Subspecialty Consult Timeliness

- Many patients admitted with asthma exacerbations receive an asthma team consult
  - Staffed by pulmonary medicine or allergy/immunology attendings
  - Help with medication adjustment, diagnostic testing and outpatient follow-up
Asthma Team Consult Timeliness Interventions

- Prioritized consults based on predicted discharge time
- Instituted a brief consult note with asthma team recommendations
Key stakeholder buy-in and shared ownership

Timeliness of consults

Pharmacy process optimization

Optimizing Discharge Efficiency
% Discharged within 2 Hours of Medically Ready

Week Start Date (Patients Discharged)
Pharmacy Process Optimization

- On admission, nurses documented the families’ preferred pharmacy in the EMR

- At CCHMC Pharmacy:
  - Filling prioritization based on predicted discharge time
  - Pharmacist start time shifted to 7 am
  - Delivery of medications Mon-Fri from 8 am to 5 pm
Pharmacy Process Optimization

- Flu shot
  - Order modified to eliminate “upon discharge” phrase
  - Stocked on the floor
Key stakeholder buy-in and shared ownership

Timeliness of consults

Pharmacy process optimization

Preoccupation With Failure

Optimizing Discharge Efficiency

% Discharged within 2 Hours of Medically Ready

Week Start Date (Patients Discharged)
Preoccupation with Failure

- Daily automated reports generated from the EMR:
  - Detailed all the process and outcome failures from the day prior

- Allowed for:
  - Identification & mitigation of physician process failures
  - Learn about outcome failures
## Daily Report

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Denominator</th>
<th>Encounter CSN</th>
<th>MRN</th>
<th>Patient Name</th>
<th>Admission Time</th>
<th>Discharge Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>Jun 12 2015 4:50PM</td>
<td>Jun 13 2015 1:31PM</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>Jun 11 2015 11:27PM</td>
<td>Jun 13 2015 10:15AM</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>Jun 7 2015 11:47AM</td>
<td>Jun 12 2015 4:04PM</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>Jun 10 2015 9:02PM</td>
<td>Jun 12 2015 1:57PM</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>Jun 11 2015 12:34AM</td>
<td>Jun 12 2015 12:09PM</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>Jun 11 2015 12:03AM</td>
<td>Jun 12 2015 11:48AM</td>
</tr>
</tbody>
</table>

- **Numerator for the outcome measure**
- **Denominator for the outcome measure**
- **Time the patient left the hospital**
### Daily Report

**Physician process measure: medically ready order place**

**Time the patient MET medically ready criteria**

**Failure reason**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Medicine</td>
<td>Jun 12 2015 8:29PM</td>
<td>Jun 13 2015 12:45PM</td>
<td>POE, CLARICE</td>
<td>Jun 13 2015 12:51PM</td>
<td>POE, CLARICE</td>
<td></td>
</tr>
<tr>
<td>Hospital Medicine</td>
<td>Jun 11 2015 1:33AM</td>
<td>Jun 12 2015 1:45PM</td>
<td>GUENTHER, STEPHANIE</td>
<td>Jun 12 2015 1:45PM</td>
<td>GUENTHER, STEPHANIE</td>
<td></td>
</tr>
<tr>
<td>Hospital Medicine</td>
<td>Jun 11 2015 6:35AM</td>
<td>Jun 12 2015 8:25AM</td>
<td>KNECHT, JANE</td>
<td>Jun 12 2015 8:25AM</td>
<td>KNECHT, JANE</td>
<td>Transportation - ride not available</td>
</tr>
</tbody>
</table>
Optimizing Discharge Efficiency
% Discharged within 2 Hours of Medically Ready

- Timeliness of consults
- Process Expansion
- Preoccupation With Failure
- Pharmacy process optimization
- Key stakeholder buy-in and shared ownership

Week Start Date (Patients Discharged)
Expansion to all diagnoses

• Challenging for frontline providers to remember which patients qualified

• Shift from work by exclusion model to an all inclusive model
  • In Nov 2012, we applied the processes to ALL HM patients
  • General admission order set
## General Admission Order set

### Discharge

**Note:** You must select at least one criterion from the list or write additional discharge criteria of your own. If no criteria are selected, patient will be discharged at 1607 today.

- **Physiologic Discharge Criteria**
  
  ROUTINE, CONT starting Today at 1607 until specified

<table>
<thead>
<tr>
<th>Questions</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. O₂ sats greater than or equal to 91% on room air</td>
<td><strong>X 6 hours</strong></td>
</tr>
<tr>
<td>2. No evidence of respiratory distress</td>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td>3. Fever trending down</td>
<td><strong>For at least 12 hours</strong></td>
</tr>
<tr>
<td>4. Afebrile (&lt;36.0)</td>
<td><strong>For 12 hours</strong></td>
</tr>
<tr>
<td>5. Pain controlled with PO pain meds</td>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td>6. Blood culture observed for</td>
<td><strong>36 hours</strong></td>
</tr>
<tr>
<td>7. Sufficient rehydration complete as evidenced by improved clinical status or weight gain</td>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td>8. Intake exceeds losses</td>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td>9. Antibiotic regimen confirmed</td>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td>10. Tolerating PO antibiotic without emesis</td>
<td><strong>Yes, at least one dose</strong></td>
</tr>
<tr>
<td>11. Observed on monitors without events</td>
<td><strong>X 12 hours</strong></td>
</tr>
<tr>
<td>12. Documented weight gain</td>
<td><strong>X 24 hours</strong></td>
</tr>
<tr>
<td>13. Additional discharge criteria</td>
<td><strong>24 hours</strong></td>
</tr>
</tbody>
</table>

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Transparency of Data

• Feedback to physician teams:
  • Weekly emails to attendings
  • Poster in resident conference rooms with team compliance
  • Daily emails about outcome failures

• Feedback to nursing units:
  • Run charts posted on the unit
  • Discussions at monthly staff meetings
<table>
<thead>
<tr>
<th>Week Start</th>
<th>HM Team #1</th>
<th>HM Team #2</th>
<th>HM Team #3</th>
<th>HM Team #4</th>
<th>HM Team #5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% Orders</td>
<td>% Discharged 2 Hr</td>
<td>% Orders</td>
<td>% Discharged 2 Hr</td>
<td>% Orders</td>
</tr>
<tr>
<td>1/6/2013</td>
<td>100%</td>
<td>70%</td>
<td>82%</td>
<td>100%</td>
<td>38%</td>
</tr>
<tr>
<td>1/13/2013</td>
<td>100%</td>
<td>70%</td>
<td>92%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>1/20/2013</td>
<td>100%</td>
<td>90%</td>
<td>92%</td>
<td>100%</td>
<td>80%</td>
</tr>
<tr>
<td>1/27/2013</td>
<td>89%</td>
<td>71%</td>
<td>96%</td>
<td>75%</td>
<td>100%</td>
</tr>
<tr>
<td>2/3/2013</td>
<td>80%</td>
<td>92%</td>
<td>100%</td>
<td>56%</td>
<td>70%</td>
</tr>
<tr>
<td>2/10/2013</td>
<td>81%</td>
<td>90%</td>
<td>92%</td>
<td>77%</td>
<td>100%</td>
</tr>
<tr>
<td>2/17/2013</td>
<td>83%</td>
<td>75%</td>
<td>86%</td>
<td>56%</td>
<td>100%</td>
</tr>
<tr>
<td>2/24/2013</td>
<td>70%</td>
<td>70%</td>
<td>95%</td>
<td>60%</td>
<td>95%</td>
</tr>
<tr>
<td>3/3/2013</td>
<td>88%</td>
<td>83%</td>
<td>93%</td>
<td>60%</td>
<td>89%</td>
</tr>
<tr>
<td>3/10/2013</td>
<td>78%</td>
<td>75%</td>
<td>93%</td>
<td>92%</td>
<td>94%</td>
</tr>
<tr>
<td>3/17/2013</td>
<td>79%</td>
<td>100%</td>
<td>85%</td>
<td>63%</td>
<td>91%</td>
</tr>
<tr>
<td>3/24/2013</td>
<td>93%</td>
<td>67%</td>
<td>100%</td>
<td>81%</td>
<td>85%</td>
</tr>
<tr>
<td>3/31/2013</td>
<td>80%</td>
<td>77%</td>
<td>92%</td>
<td>67%</td>
<td>70%</td>
</tr>
<tr>
<td>4/7/2013</td>
<td>79%</td>
<td>83%</td>
<td>100%</td>
<td>89%</td>
<td>64%</td>
</tr>
<tr>
<td>4/14/2013</td>
<td>71%</td>
<td>50%</td>
<td>93%</td>
<td>73%</td>
<td>92%</td>
</tr>
<tr>
<td>4/21/2013</td>
<td>92%</td>
<td>25%</td>
<td>100%</td>
<td>63%</td>
<td>83%</td>
</tr>
<tr>
<td>4/28/2013</td>
<td>92%</td>
<td>69%</td>
<td>100%</td>
<td>71%</td>
<td>88%</td>
</tr>
</tbody>
</table>

Green: 70-100%
Yellow: 50-69% of patients
Red: 0-49% of patients
Optimizing Discharge Efficiency
% Discharged within 2 Hours of Medically Ready

- Timeliness of consults
- Process Expansion
- Second and third unit performance management
- Transparency of Data
- Key stakeholder buy-in and shared ownership
- Preoccupation With Failure
- Pharmacy process optimization

Week Start Date (Patients Discharged)
Discharge Failure Reasons Comparison

![Medically-Ready - Hospital Medicine Units Discharge Failure Reasons](chart)

- **Medication**: FY11-Q1: 21%, FY13-Q3: 17%
- **Consult**: FY11-Q1: 14%, FY13-Q3: 11%
- **Patient/Parent**: FY11-Q1: 11%, FY13-Q3: 19%
- **Physician Delay**: FY11-Q1: 19%, FY13-Q3: 11%
- **Goals Not Clearly Defined**: FY11-Q1: 0%, FY13-Q3: 10%
- **Unknown**: FY11-Q1: 4%, FY13-Q3: 9%
- **Transportation**: FY11-Q1: 9%, FY13-Q3: 23%
- **Other**: FY11-Q1: 5%, FY13-Q3: 11%
- **Rounds**: FY11-Q1: 0%, FY13-Q3: 5%
- **Home Health**: FY11-Q1: 0%, FY13-Q3: 3%
- **Interpreter**: FY11-Q1: 0%, FY13-Q3: 2%
Optimizing Discharge Efficiency
% Discharged within 2 Hours of Medically Ready
General Medical Teams

% Discharged within 2 Hours

Week Start Date (Patients Discharged)

- % Discharged 2 Hrs
- Centerline
- Goal
- Control Limit
- Control Limit

Increase in Medically Clear Mental Health Patients Admitted to General Medical Teams

Desired Direction of Change

Last Updated 03/02/2016 by S. Neogi, James M. Anderson Center for Health Systems Excellence
Other Measures
Physician Process Measure - Medical
Managing Discharge when Medically Ready
Includes patients on selected Medical Units

- Desired Direction of Change
- Expansion to all diagnoses
- Incorporated into new intern orientation
- Daily Feedback reports
- Feedback provided to all physician teams

Week Start Date (Patients Admitted)

Week Start Date (Patients Admitted)

- % With Physician Orders
- Median
- Goal
Nurse Process Measure - Medical
Managing Discharge when Medically Ready
Includes patients on Medial Service on Selected Units

% Patients with Discharge Criteria Met: Button Pushed

Week Start Date (Patients Discharge Date)

- % Medical Button Pushed (All Patients)
- Medical Median (All Patients)
- Goal

- Desired Direction of Change
- Performance Management on all Units
- Performance Management Goals reestablished on all Units
- Expansion to All Diagnoses
- Daily Feedback Reports
Secondary Measures

- Median Length of Stay significantly decreased from 1.57 to 1.44 days ($p=0.01$)
  - Asthma was the only individual admission diagnosis with a statistically significant improvement in LOS
  - Exclusion of asthma patients still demonstrated a significant decrease in LOS for the remaining compiled diagnoses

- Average daily census increased from 36.4 to 42.9 (17.5% increase in occupancy)
Balancing Measures

• Readmission rates remained similar for individual diagnoses and overall (4.60% to 4.21%; p=0.24)

• Family satisfaction remained high
Lessons Learned

- Discharge prediction was the framework for our study but didn’t improve flow

- Decreasing clinical variability in discharge criteria was an essential first step

- Taking advantage of habits and patterns was necessary

- Multidisciplinary collaboration was key to our success
Where are We Now?

- Improving discharge efficiency:
  - Focusing Hospital Medicine complex patients with chronic conditions
  - Spread to other services and units

- Working on consistent modification of the medically ready orders based on clinical course

- Working on improving the timeliness of the EMR timestamp
Optimizing Discharge Efficiency in HM Complex Care Patients

% Discharged within 2 Hours of Medical Readiness

- Desired Direction of Change
- Needs Assessment Tool
- Weekly Multidisciplinary Care Coordination Rounds
- Medication Pathway
- Group Patients on Complex Care Team
- Creation of Complex Care Admission Order Set
- Role Assignments

Bi-Weekly Start Dates (Number of Patients)
Secondary Outcomes

Median LOS: 3.1 days to 2.2 days (p = .13)

Readmission rates: 31% to 22% (p = .23)
# Medically Ready for Discharge: Spread Plan

<table>
<thead>
<tr>
<th>Division</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Medicine (incl Adol Med, Gen Peds)</td>
<td>A6N/S LA4-2</td>
</tr>
<tr>
<td>Hi/Cardiology</td>
<td>A6C</td>
</tr>
<tr>
<td>GI: Lumen</td>
<td>A4S</td>
</tr>
<tr>
<td>GI: Liver</td>
<td>A4N</td>
</tr>
<tr>
<td>Nephrology</td>
<td>A4N</td>
</tr>
<tr>
<td>Endocrinology</td>
<td>A7C</td>
</tr>
<tr>
<td>Neurology</td>
<td>A7NS</td>
</tr>
<tr>
<td>Neonatology</td>
<td>B4</td>
</tr>
<tr>
<td>Pulmonary-Non TCC</td>
<td>A7C</td>
</tr>
<tr>
<td>Pulmonary-TCC</td>
<td>A3S</td>
</tr>
<tr>
<td>Rehab</td>
<td>A4C1</td>
</tr>
</tbody>
</table>

**Spread Status**

- **MR Team**
- **Service**
- **EPIC Team**
- **And Ctr**
- **Service**
- **Service**

**Key Phases**

- Project Identified
- Discharge Criteria Created & Reviewed by Team
- EPIC Request Submitted
- Criteria Live in EPIC
- Nursing Education Complete
- Daily Feedback Reports Created
- Run Chart Completed
- Baseline Period Complete
- Intervention Period Complete
- Sustain

**Notes**

- Discussing how to do criteria
- Neuro approving screenshots
- Ready to create for Neuro
- Ready to create for Pulmonary-Non TCC

*Updated 2016-02-25*
Cardiology: Patients Discharged Before Noon

Desired Direction of Change

Last Updated 02/11/2016 by Smriti Neogi, James M. Anderson Center for Health Systems Excellence

* due to construction on A6C, April 2015
data is from med ready population

% Discharged before noon

Baseline Period

I2S2 Project

RCIC project

Month & Year (Total Patients Discharged)

Centerline

Control Limit

Control Limit
Next Steps

• Shifting focus of interventions to address:
  • Parent/patient concerns
  • Transportation

• Continue spread to other services, units and hospitals

Thank You to Our Team

- Angela Statile, MD, MEd
- Denise L. White, PhD, MBA
- Amanda Schondelmeyer, MD
- Dena Elkeeb, MD
- Karen Tucker, MSN, MBA, RN
- Stephen D. Warrick, MD
- Denise M. Warrick, MD
- Matthew Carroll, MD
- Paul Yelton, MSCS
- Shelly Miller, Family Member
- Julie Hausfeld, BSN, RN
- Pamela Kiessling, MSN, RN
- Michael Farrell, MD
- Uma Kotagal, MBBS, MSc
- Frederick C. Ryckman, MD
- David Mayhaus, MS, PharmD
- Melissa Healy, RPH
- Karen McDowell, MD
- Patrick Brady, MD, MSc
Questions or Comments?
Resources

Iantorno S, Fieldston E. Hospitals are not hotels: high-quality discharges occur around the clock. *JAMA Pediatr* 2013;167(7):596-97


### Physiologic Discharge Criteria for Complex Care

**Routine, CONT starting Today at 2242 Until Specified**

<table>
<thead>
<tr>
<th>Prompt</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever trending downward</td>
<td>for at least 12 hours, for at least 24 hours</td>
</tr>
<tr>
<td>O2 sat greater than or equal to 91% on room air or home oxygen level</td>
<td>x 6 hours, x 12 hours, x 24 hours, overnight</td>
</tr>
<tr>
<td>No evidence of respiratory distress</td>
<td>yes</td>
</tr>
<tr>
<td>Blood culture observed for</td>
<td>36 hours, 48 hours</td>
</tr>
<tr>
<td>Pain well controlled with enteral meds</td>
<td>yes</td>
</tr>
<tr>
<td>Tolerating home enteral feed regimen</td>
<td>x 12 hours, x 24 hours, x one bolus feed</td>
</tr>
<tr>
<td>Intake exceeds losses</td>
<td>yes</td>
</tr>
<tr>
<td>Urine output &gt; 1 mL/kg/hour</td>
<td>x one shift, x 24 hours</td>
</tr>
<tr>
<td>Wound care plan in place</td>
<td>yes</td>
</tr>
<tr>
<td>Antibiotic regimen confirmed</td>
<td>yes</td>
</tr>
<tr>
<td>Tolerating enteral antibiotic</td>
<td>yes, at least one dose</td>
</tr>
<tr>
<td>Observed on monitors without events</td>
<td>x 12 hours, x 24 hours</td>
</tr>
<tr>
<td>Seizure frequency at baseline</td>
<td>yes</td>
</tr>
<tr>
<td>Additional discharge criteria</td>
<td></td>
</tr>
</tbody>
</table>