Urgent Matters Webinar
Rapid Intake and Patient Segmentation
Our Journey

- Super Track – the beginning, ESI 4 and 5
- SPEED – ESI 3
- SHARP – ESI 2 and 3 patients
- TART – triage patients
ED Demographics

Christiana Hospital Emergency Department

- Level I Trauma Center, teaching hospital
- 760 licensed hospital beds
- 65 ED beds; 114,320 ED visits
- 137.5 FTE nurse; 60.5 FTE Clerk; 39.25 FTE Tech
Fast Track – 2008 Process

- Staffed from 0800-0200 daily
- 6 rooms
- 2-3 PAs, 2 nurses (RN or LPN), 2 techs and 1 clerk
- Average LOS 2.5 hours
Fast Track- 2008 Process
Lean flow operations require a layout that is close together.

Needed to move from a process-oriented to a flow-oriented layout.

Used spaghetti diagrams and process flow mapping to show waste – excess movement, over-processing, and transport.
Layout, Flow and Process

- Keep patients moving
- Reduce batching
- Synchronize and tighten up processes
- Parallel, not linear flow
- Develop clear visual cues
- Reduce hand-offs
The Future Process

Design needed to:

- Provide continuous flow
- Eliminate waste
- Increase throughput for the low acuity population
- Increase patient satisfaction
New Process

Leaned out the process by:

- Moved ST rooms closer to triage and waiting room
- 2 teams and 2 rooms – each room had 1 PA, 1 RN/LPN and 1 tech
- Synchronized approach to the patient
New Process: Super Track

Fast Track Staffing: 2 PA's/ 1 PCT/ 2 LPN or RNs/ 1 Clerk
ST New Process

Triage

- Triage nurse collects patient chief complaint
- Assigns ESI level
- Identifies appropriate ESI 4 and 5 patients using guidelines
- Chart placed in ST rack
Does the patient have any PMH that could impact their ED visit today?
   Yes    No

Does the patient have any difficulty ambulating (exclude isolated extremity injury)?
   Yes    No

Has the patient been seen for the same condition within the last 48 hours?
   Yes    No

Is the patient pregnant?
   Yes    No

Does the patient need more than one resource?

<table>
<thead>
<tr>
<th>Resources</th>
<th>Hot Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labs (blood, urine)</td>
<td>History &amp; physical (including pelvic)</td>
</tr>
<tr>
<td>ECG</td>
<td>Point-of-care testing</td>
</tr>
<tr>
<td>X-rays</td>
<td></td>
</tr>
<tr>
<td>CT/MRI-ultrasound angiography</td>
<td></td>
</tr>
<tr>
<td>IV fluids (hydration)</td>
<td>IVR or heplock</td>
</tr>
<tr>
<td>IV, IM or nebulized medications</td>
<td>PO medications</td>
</tr>
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<td></td>
<td>Tetanus immunization</td>
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<tr>
<td></td>
<td>Prescription refills</td>
</tr>
<tr>
<td>Specialty consultation</td>
<td>Phone call to PCP</td>
</tr>
<tr>
<td>Simple procedure = 1 (lac repair, Foley cath)</td>
<td>Simple wound care (dressings, recheck)</td>
</tr>
<tr>
<td>Complex procedure = 2 (conscious sedation)</td>
<td>Crutches, splints, slings</td>
</tr>
</tbody>
</table>

Yes    No

If you answered **YES** to any of the above questions, the patient is **NOT** appropriate for the low – acuity process.
ST Room
New Process

Supertrack (ST) Nurse and PA

- Synchronized approach
- Complete nursing assessment, history, and physical simultaneously
- Waiting times reduced due to less queuing
- PA orders all studies from ST room
Physician Assistant Role

- Functions as low – acuity team leader
- Adheres to strict low – acuity eligibility criteria using established screening criteria
- Makes appropriate use of alternative waiting areas for patients having CT’s or other exams with lengthy turnaround times
- Conduct H & P
- Evaluate, diagnose and treat
- Enter orders directly into PowerChart (X-ray Only)
- Review diagnostic study results in a timely manner
- Complete all required clinical and regulatory documentation
- Supports MVC clearance process when requested:
ST Nurse Role

Must be proactive and aggressive in moving patients through the process!!

Conduct nurse assessment and screen all potentially eligible low – acuity patients for appropriateness by obtaining the following:

- Vital signs (Pulse ox, BP, etc.)
- Pertinent Medical History (Tetanus Status)
- Provide basic first aid measures and interventions

Assure/delegate execution of additional PA orders

Provide appropriate wound preparation (i.e. clean wound and apply LET)

Identifies appropriate low – acuity patients and takes action to ensure proper placement that will achieve LOS goals for identified population

Adheres to strict low – acuity eligibility criteria using established screening criteria
ED Tech Role

- Obtains vital signs on patients at triage
- Facilitates patient movement to x ray
- Assists with discharges
- Perform continual equipment / stock re-checks;
- Monitor EDTracker for potential ST patients
- Bring patients from WR to ST rooms
Super Track: Data

Median LOS

Minutes

Fast Track

Super Track

Data:

- Median LOS for Fast Track: 122 minutes
- Median LOS for Super Track: 62 minutes

Data: 24 Months 60,000+ patients 51% Reduction
Super Track: Data

- Percent LWOT: ESI-4 and ESI-5
  - Fast Track: 4.6
  - Super Track: 2.5
Current ST Operations

- Staffed 7 days a week 0800-0200
- Continue to operate with 2 teams, 2 rooms
- Considering adding another team in near future
- Almost 30,000 pts/yr thru 2 rooms!
- Current median LOS = 69 min
The Next Step

Result:

- Waste eliminated in Super Track!
- Decrease in length of stay!
- Exposed a large number of ESI level 3 patients with long wait times at triage.
SPEED PROCESS
ESI 3
SPEED

Synchronized Provider Evaluation and Efficient Disposition

- Apply LEAN principles learned from the Super Track re-invention on a more complicated ESI level of patient.

- Create a focused process that more accurately addresses our patient’s needs.
SPEED

OBJECTIVES

– Decrease the overall Length of Stay for ESI 3 patients.
– Decrease the LWOT percentage for ESI 3 patients.
– Use Virtual Bedding.
– Decrease the amount of over-processing that a patient is subjected to.
Population Size

49% of our census is ESI level 3!!
SPEED can absorb 20% - 25% of our daily census in only 14 hours!
Team Makeup

- 1 Attending
- 1 PA
- 1 Resident (Partial Coverage)
- 6 RNs (4 Assessment, 2 Disposition)
- 2 Techs (1 Assessment, 1 Disposition)
- 1 Clerk
Provider Role

- Decrease Over-processing
  - Assess patient with RN present
  - Verbalize plan of care in room
  - Use IM and PO meds whenever possible.
  - Order imaging studies as needed.
  - Patient assessment room time: <40 minutes.
  - Quickly disposition patients when all results are available.
RN Role

Assessment Team
- Assess patient with provider.
- Initiate / complete primary work up.

Disposition Team
- Complete follow up orders.
- Alert provider when patient is ready for dispo.
- Keep patients informed on their progress.
Tech Role

Assessment Side
- Make sure that all assessment rooms stay full.
- Help with POC testing.
- Transport patients from assessment side to disposition side.

Disposition Side
- Assist with care of patients.
- Expedite discharges.
Overall ED LOS for ESI 3

36% Difference

Hours

Base
SPEED

5.5
3.5
Percent LWOT for ESI 3

63% Reduction
Door to Room/MD

- Decrease of 67%
- Decrease of 40%

- Door to Room: Base (2.3) vs. SPEED (0.75)
- Room to MD: Base (0.57) vs. SPEED (0.34)
The Next Step

Result:

- Significant advances on all of our metrics.
- Introduced a larger portion of staff to LEAN thinking.
- Better use of space!

- Exposed a large number of ESI level 2 patients waiting at triage.
SHARP PROCESS
ESI 2/3
SHARP

Synchronized Healthcare Approach and Redesign Process

- Continue implementation of LEAN principles.

- Address a more complex patient population (ESI 2 and high ESI 3 population).

- Emphasis on efficient patient care.
Goals:

– Decrease the treatment length of stay.

– Decrease the Bed Ready to Left ED time for admitted patients.

– Decrease the amount of time it takes to discharge patients.
Operating Space
Team Makeup

- 1 Attending
- 1 PA
- 4 RNs (Two teams of 2 RNs)
- 2 Techs (1 Tech on each team)
- 1 Clerk
Dual Synchronous Assessment

- Provider assesses patient with RN team.
- Both RNs participate in the assessment and workup.
  - Allows for everyone, including patient, to be on the same page.
  - Minimizes the overall time spent in the room.
  - Enables efficient patient care throughout the patient’s stay.
Clerk Role

- Communicate follow up orders.
  - Free up providers!
- Ability to post patients for admission.
  - Eliminates hidden time!
- Actively monitors lab results and inpatient bed status.
  - Real time results!
Concurrent Work Admissions

Efficiency!

– When bed status reaches “Bed Assigned”:
  - Deliver report to the floor.
  - Prepare patient for transport.
  - Copy the chart.

– When bed status reaches “Bed Ready”:
  - Request patient escort.
Concurrent Work Flow

Before SHARP

- Bed Assigned
- Bed in Progress
- Bed Ready
- Deliver Report
- Prepare Patient
- Copy Chart
- Request Escort

After SHARP

- Bed Assigned
- Bed in Progress
- Bed Ready
- Request Escort
- Deliver Report
- Prepare Patient
- Copy Chart

Effectively eliminates the time of at least 3 tasks!
Bed Ready to Left ED

Average
Baseline
Goal

33% Improvement
Synchronous Discharge

Provider never discharges a patient without a RN or Tech going along

– Before SHARP the average time for discharge: 45 minutes!

– After SHARP the average synchronous discharge time: 15 minutes!

Whoever completes the discharge immediately fills the room with another patient.
Sync DC Flow Diagram

Before SHARP

- D/C instructions printed
- Provider educates patient
- Chart left for RN / Tech to administer D/C
- Discharge completed

Multiple other tasks and distractions!

After SHARP

- D/C instructions printed
- Entire team D/Cs patient
- Discharge completed

Three steps!
Discharge Impact
Treatment LOS Impact

Average
Baseline

20% Improvement
TART PROCESS
(triage redesign)
Triage Redesign

- Internal processes running efficiently

- Still experiencing prolonged door to room time for ESI 2 & 3 patients- nurses reluctant to direct bed pts

- “TART”- Triage Assessment and Redesign Team
Key Interventions

- Queuing models used to accurately coordinate triage 1 nurse and clerical work flows
- Standard work implemented
- Direct bedding- “pull ‘til full”
- Team triage- RN + tech
  - Assessment, vitals
  - Medicate for pain
  - POC testing
TART Results

- Initially met significant resistance
  - Core nurses
  - Physicians
- Decrease in door to room, door to doctor times
- Gaining acceptance
Monitoring and Maintenance
Monitoring/Maintenance

- Essential to monitor metrics for each process regularly
- Enables early detection of performance deterioration and rapid intervention to correct backsliding
- Intermittent high level reassessment to determine future need for alterations in process
Christiana Super Track Results
For July 11, 2011

Minutes

Shift Median LOS

0700-1100: 49.5
1100-1400: 96.0
1500-1900: 61.0
1900-2300: 42.0
2300-0300: 27.0
### SHARP Shift Report

#### 6. TEAM FOR ROOMS C14, C15, C16, C17, CJ, CK

<table>
<thead>
<tr>
<th>Activity</th>
<th>1 - Not done</th>
<th>2 - Sometimes</th>
<th>3 - Usually</th>
<th>4 - Most of the time</th>
<th>5 - For entire shift</th>
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</thead>
<tbody>
<tr>
<td>Tech pulling patients to keep rooms full</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>Vitals/Assessment done when patient brought back to room</td>
<td></td>
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<td>X</td>
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<td>RN/Tech Teamwork</td>
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<tr>
<td>RN workload sharing</td>
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<tr>
<td>RN synchronous initial assessments</td>
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<td></td>
</tr>
<tr>
<td>RN prep of patient for transfer to IP bed</td>
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<td>X</td>
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</tr>
<tr>
<td><strong>Comments:</strong></td>
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<td></td>
</tr>
</tbody>
</table>

#### 7. TEAM FOR ROOMS C18, C19, C20, C21, C22, C23

<table>
<thead>
<tr>
<th>Activity</th>
<th>1 - Not done</th>
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<tbody>
<tr>
<td>Tech pulling patients to keep rooms full</td>
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<tr>
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<td></td>
<td>X</td>
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</table>
# SHARP Shift Report

## 8. UNIT CLERK

<table>
<thead>
<tr>
<th>Activity</th>
<th>1 - Not done</th>
<th>2 - Sometimes</th>
<th>3 - Usually</th>
<th>4 - Most of the time</th>
<th>5 - For entire shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed Postings</td>
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<td>X</td>
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<tr>
<td>Monitoring of test results</td>
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</tr>
<tr>
<td>Monitoring of bed ready status</td>
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</tbody>
</table>

## 9. SYNCHRONOUS DISCHARGES

<table>
<thead>
<tr>
<th>Activity</th>
<th>1 - Not done</th>
<th>2 - Sometimes</th>
<th>3 - Usually</th>
<th>4 - Most Of the Time</th>
<th>5 - For entire shift</th>
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<tbody>
<tr>
<td>DFES</td>
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<td>X</td>
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<tr>
<td>PA</td>
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<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**

## 10. General Comments For Core C

Tough day, with 1/3 rooms taken up with borders for most of shift. Started out with 15 pts out front left over from night shift since rooms closed overnight. Significantly decreased capacity. Pts had been waiting several hrs before they got to room due to above.
## Dashboard

### Average Door To Room

<table>
<thead>
<tr>
<th>Time</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>20:00</td>
<td>10</td>
</tr>
<tr>
<td>00:00</td>
<td>20</td>
</tr>
<tr>
<td>04:00</td>
<td>30</td>
</tr>
<tr>
<td>08:00</td>
<td>40</td>
</tr>
<tr>
<td>12:00</td>
<td>50</td>
</tr>
<tr>
<td>16:00</td>
<td>60</td>
</tr>
</tbody>
</table>

*Now: 134 minutes*

### Median Room To Physician/PA

<table>
<thead>
<tr>
<th>Time</th>
<th>Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>20:00</td>
<td>40</td>
</tr>
<tr>
<td>00:00</td>
<td>50</td>
</tr>
<tr>
<td>04:00</td>
<td>60</td>
</tr>
<tr>
<td>08:00</td>
<td>70</td>
</tr>
<tr>
<td>12:00</td>
<td>80</td>
</tr>
<tr>
<td>16:00</td>
<td>90</td>
</tr>
</tbody>
</table>

*Now: 55 minutes*

### Arrivals

<table>
<thead>
<tr>
<th>Time</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>20:00</td>
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<tr>
<td>00:00</td>
<td>10</td>
</tr>
<tr>
<td>04:00</td>
<td>15</td>
</tr>
<tr>
<td>08:00</td>
<td>20</td>
</tr>
<tr>
<td>12:00</td>
<td>25</td>
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<tr>
<td>16:00</td>
<td>30</td>
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</tbody>
</table>

*Now: 11 patients*

### Boarding

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>20:00</td>
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<tr>
<td>00:00</td>
<td>2</td>
</tr>
<tr>
<td>04:00</td>
<td>3</td>
</tr>
<tr>
<td>08:00</td>
<td>4</td>
</tr>
<tr>
<td>12:00</td>
<td>5</td>
</tr>
<tr>
<td>16:00</td>
<td>6</td>
</tr>
</tbody>
</table>

*Now: 7 patients*
Summary of Our Journey

- **Super Track- ESI 4/5**
  - Reduced LOS by 51%; reduced LWOTs by 46%; improved patient satisfaction by 36%

- **SPEED- ESI 3**
  - Reduced LOS by 36%; reduced LWOTs by 63%

- **SHARP- ESI 2/3**
  - Reduced LOS by 20%; reduced “bed ready to left ED” by 33%

- **TART- triage**
  - Improved door to room and door to doctor times
The Final Frontier?
Improvement Tools and Techniques
Improvement Tools and Techniques

- Value Stream / Process Mapping
- Concurrent / Synchronous Work
- Segmentation
- Standard Work
- Queuing / Process Variation
- Demand / Capacity Matching
ESI 123 Patient Queuing Model

Exam Room Waiting (Hours)

Treatment Length Of Stay
(In Exam Room To Discharge/Dispo)
Demand / Capacity Matching

CHRISTIANA PATIENT ARRIVALS - TRIAGE123 - WEDNESDAY - JanMar_2011

Number of Patient Arrivals

Hour of Day

ESI 4 and 5 patients redirected to ESI 1, 2, 3 from 0200 to 0800

Average
50th PCT
75th PCT
Provider Patient Capacity
Lessons Learned
Process Redesign

- Application of process improvement principles (such as Lean) in a complex health care environment works
- Create a project charter with clear goals and improvement measures.
- Provide “just-in-time” training to get you moving faster
Process Redesign

“Start from need” - design with the patient in the center

Go to the Gemba (the place where value is delivered to the patient)

Rapid-cycle testing provides a quick way to test new ideas – and overcome resistance to try new things

Adding Information Technology resources to the design team help facilitate transformation
Change is Hard - Be Prepared for Resistors

50 Reasons Not To Change

- I'm not sure my boss would like it.
- It's too expensive.
- We'll catch flak for that.
- That's someone else's responsibility.
- We've always done it this way.
- It's too complicated.
- It's too political.
- We're doing OK as it is.
- We don't have the staff.
- We tried that before.
- This is just a fad.
- Maybe. Maybe not.
- We've never done that before.
- It needs committee study.
- No se puede.
- It needs more thought.
- It's not my job.
- It can't be done.
- It's against tradition.
- There's not enough time.
- Another department tried that.
- We're waiting for guidance on that.
- It won't work in this department.
- There's too much red tape.
- We have too many layers.
- They're too entrenched.
- We don't have consensus yet.
- It's contrary to policy.
- They won't fund it.
- It's too radical.
- It will take too long.
- It's hopeless.
- We can't take the chance.
- It's impossible!
- No one asked me.
- We didn't have the equipment.
- It won't fly.
- It's not ambitious.
- We don't have the authority.
Leadership

- Inspire Staff Engagement
- Publicly acknowledge those that are functioning as change agents
- Provide opportunities for nay-sayers to participate
- Market the process
- Share results freely
- Ask for feedback from all levels of staff
QUESTIONS?