Success in Door to Balloon (D2B) times at Swedish Medical Center

Tim Dewhurst MD FACC
Where we started..

- DBT under 90 minutes 32.1 %

Rolling Data
Percentile rank of NCDR participants
Past attempts

Improvement Workshop Held

July 2002 Through July 2006

Best/ Worst Cases Posted Weekly/Monthly With Recognition
Median D2B times by quarter

Nat'l Median 105 minutes
Goal = 90 minutes
Workshop 10/06
Month by month 2006 to present
Swedish Medical Center

- Non-profit Community Hospital organization
- Urban Setting;
  2 other Hosp cath labs within 3 minutes
- 3 Acute Care Hospitals
- Free-Standing ED
Swedish Heart & Vascular Institute
Cardiology

- Consolidated into one program 5/06
- 55 active staff
- 3 call groups covering four ERs and 2 in-patient campuses
- SSG, MSG, hospital employed group
- Majority interventionalists
Escalating Interest in D2B & External Visibility

- JCAHO Core Measures
- CMS Hospital Compare
- Leapfrog Group
- Various Payers
- GAP-D2B
- Washington State COAP
SMC Compared With Washington State
Median Door-to-Balloon

<table>
<thead>
<tr>
<th>Year</th>
<th>SMC</th>
<th>Washington State (COAP)</th>
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<tbody>
<tr>
<td>2004</td>
<td>107</td>
<td>95</td>
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<tr>
<td>2005</td>
<td>110</td>
<td>87</td>
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SMC: Swedish Medical Center
Washington State (COAP): Washington State Comprehensive Orthopedic Acute Program
STEMI Workshop

- Session focused on redesigning the D2B process using internal and external best practices

- Members of workshop
  - Cardiac Cath Lab staff
  - Cardiologists
  - Emergency department physicians
  - Emergency department staff
  - Rapid Response Team
  - Administration
Workshop Goals

- Develop a shared goal and vision
- Create a sense of urgency
- Improve the Door to Balloon Time
- Limit initial scope
- Come up with immediately implementable ideas
Plan-Do-Study-Act
PDSA

- Plan: Determine Goals/Targets
- Do: Identify Methods & Measures
- Study: Educate on Methods
- Act: Implement Plan

- Improve
- Correct
- Maintain
- Review Methods Used
- Examine Results Achieved
New Resolve for Improvement

- Focus first on main SHVI campus
- Leverage new leadership
- Involve front line staff
- Incorporate known best practices
Problems Commonly Identified
In Every Medical Center
(and at Swedish Medical Center)

- Delay in performing EKG in ED and reviewing result with physician (delayed diagnosis)
- Delayed physical evaluation of patient by ED physician
- Unwillingness of cardiologist to accept Medic or ED diagnosis
- Cardiologists require phone consultation with ED physician prior to calling cath lab
- Late arrival to ED or cath lab by cardiologist
- Late arrival of cath lab staff
- Slow transfer of patient from ED to cath lab
Strategies That Work

1. Activate STEMI Team based on pre-hospital EKG
2. Activate w/single call
3. Expect Cath team to arrive in 20-30min.
4. Activate Cath Lab by ED physicians
5. Notify interventionalist first
6. Provide data feedback to ED/lab
7. Provide data feedback to EMS
SMC Baseline Performance
Jan05 – Oct06
n = 106

Average “Door to Balloon” Time = 108 minutes
SHVI Goals Identified

**SHVI Goals for D2B Clinical Initiative**

- To achieve by Qtr 2 2007, a median door-to-balloon time of $\leq 90$ minutes for similar population of patients

- To achieve by Qtr 4 2007, a median door-to-balloon time of $\leq 60$ minutes for similar population of patients
1. Pt arrives in ED, EKG is completed, ED MD diagnoses STEMI
2. ED calls operator to page on-call cath lab staff & interventionalist
3. ED stabilizes pt, initiates MI protocol, communicates with cath lab
4. Cath lab staff and interventionalist go to and arrive at cath lab
5. ED transports patient to cath lab
6. Final check & written consent
7. Catheterization & PCI

JACC 2005;46:1236–41
Important steps common to all successful initiatives

■ Select a strategy and use it:
  ➢ Uniform treatment approach of MI patient
  ➢ Streamlined treatment pathway

■ Rapid communication and response

■ Continuous review of results
Processes Needed for Implementation

- **Activation of the cath lab by the ED**
  - Single call to interventionalist and cath lab team

- **Use of in-hospital rapid response team members, and agreement by cardiologists to move the patient rapidly to the cath lab**
  - Call system in place “Code STEMI”
  - RRT Medication Box for STEMI’s
Call-to-ED departure

- Integrate Rapid Response Team into the process
  - Code STEMI
  - Assist with stabilizing
  - Assist with transport to cath lab in parallel with cath lab team responding to call
1. ED staff trained in the expeditious preparation of the patient.
   - **Expectation** ➔ Adequate but limited assessment and preparation performed.
   - **Expectation** ➔ Orders standardized wherever possible (IV access, groin shave, Heparin, Aspirin, etc.)
   - **Opportunity** ➔ RRT potential to prep patients if ED staff engaged (?)

2. Transport to cath lab can occur even before entire cath lab staff or cardiologist is present.
   - **Expectation** ➔ Cardiologist will briefly assess patient at the door if missed in ED.
   - **Opportunity** ➔ When 2 out of 3 Cath Lab staff are present, the patient can come to the cath lab
   - **Opportunity** ➔ Identify the critical steps and staff needed to have patient “ready” for procedure while reserving noncritical steps for postcath
What Is a Rapid Response Team?

- A Rapid Response Team – known by some as a Medical Emergency Team – is a team of clinicians who bring critical care expertise to the patient bedside (or wherever it is needed).

- The IHI goal: To prevent deaths in patients who are failing outside intensive care settings.
Arrival in Cath Lab to Balloon Inflation

- Designate one room for all after-hours STEMI care
- Prepare room at night for possible emergency
- Review prep technique with cath lab team
Results

- Performance was immediately improved, and with only 5 months of this project done we have improved D2B time to a current median of 66 minutes.

- Marked reduction of data to cath lab time from a median of 70 minutes in 2005 to only 27 minutes in Q1 2007.

- Increase in number of medic patients brought in by 300% over the last two months.
Swedish Medical Center
Median D2B
July 2002 Through April 2007

[Graph showing median D2B times from QRT 3Q02 to 1Q07 with data points ranging from 65 to 126, and sample sizes (n) for each quarter from 11 to 24.]
% of Patients with Time to PCI under 90 or 120 minutes

Target: 80%

Jul02 - May07 (n=283)
AMI - Time to Treatment - 40 Minutes
1/4/07 Providence Campus ED Arrival Time 1041

1017
EMS EKG

1031
EMS called ED

1032
Interventionalist Contacted

1032
Cath Lab Team Contacted

1041
ED arrival

No ED EKG

ED: CARLISLE     Cardiologist: WESTCOTT
Median D2B by MD

Pre-Workshop (January 2005 Through September 2006) and Post-Workshop (October 2006 Through April 2007)
What worked?

- Letting ER call Cath lab
- Taking non-interventionalists out of loop, trying to keep interventionalists out of ER
- Use of RRT
- More standardized cath lab procedures
- Showing early successes
Work to be done

- Expand process internally and externally
- In-hospital code STEMI
- Transfer plan and education plan for the other campuses: Issaquah, First Hill, Ballard
- Physician-specific data
- Discussions with EMS
Thank you

Remember, keep your eyes on the ball