



# ***Two Hospitals-One Heart: World Class Heart Care through Multi-Disciplinary Collaboration***

*American Nurses Association  
7<sup>th</sup> Annual Nursing Quality Conference  
February 18, 2013  
Session 206 8:30 am-9:30 am*

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Director of Critical Care Services  
*Schneck Medical Center  
Seymour, Indiana*



# Seymour, Indiana



# Schneck Medical Center

- 97 beds
- Not-for-profit
- Facilities
  - Main Campus
  - State-of-the-Art Cancer Center
  - Outpatient Rehabilitation Center
  - Home Services
  - Convenient Care Centers





# Objectives

- Describe the benefits of a collaborative approach to heart care
- Define measures to focus priorities for cycles of improvement





# Best in Class Door to Balloon (D2B) for ST-Elevation Myocardial Infarction (STEMI) Patients



**SCHNECK**  
better healthcare begins here



**COLUMBUS  
REGIONAL  
HEALTH**

*thinking beyond*



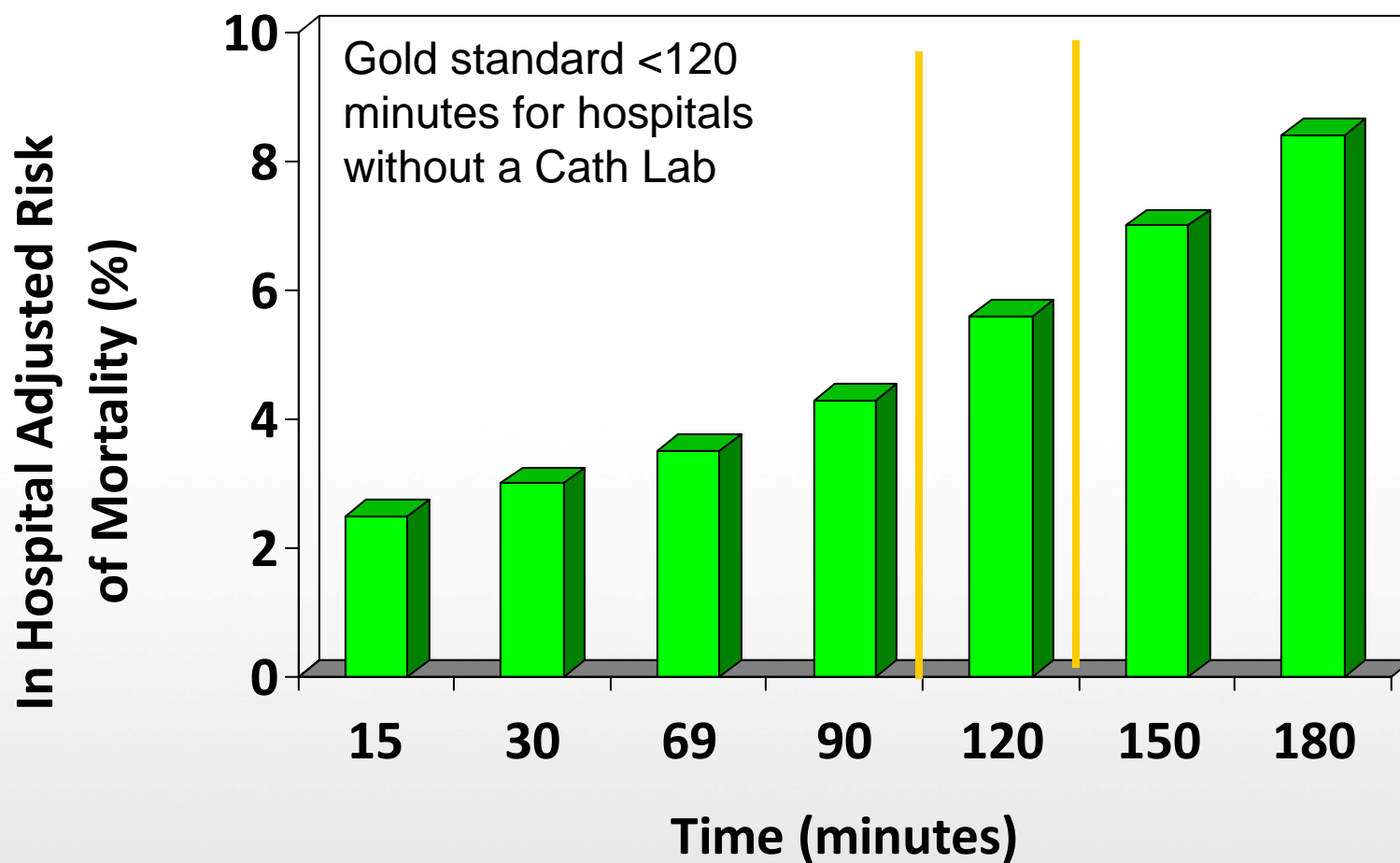
# What is a STEMI

STEMI is an acronym meaning "ST segment elevation myocardial infarction," which is a type of heart attack. This is determined by an electrocardiogram (ECG) test.

*In a STEMI, the coronary artery is completely blocked off by the blood clot, and as a result virtually all the heart muscle being supplied by the affected artery starts to die. During an acute STEMI seconds count! There is a direct relationship between the amount of time a heart artery is blocked and the severity of the heart attack and odds of survival*

- **1.5 million Heart attacks occur in the US each year with 500,000 deaths**
- **A heart attack occurs about every 20 seconds with a heart attack death about every minute.**
- **Heart attack is a leading killer of both men and women in the United States**

# Estimated In-hospital Mortality D2B Time STEMI



1.

**Project Selection**

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2.

**Current  
Situation  
Analysis**

**PROJECT**

4.

**Project Implementation  
& Results**

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3.

**Solution Development**





# Development of “Code STEMI “

## Purpose:

Four Main Drivers Behind D2B  
Time Improvement

Patient Outcomes

CMS Guidelines

JC Guidelines

Risk Management

**Goal:** Achieve best in class door to balloon times for patients suffering from ST-segment elevation myocardial Infarctions (STEMI) by working with our competitor hospital and local EMS to implement an ideal system of care to provide seamless transitions from each stage of care to the next. The American Heart Association and the American College of Cardiology recommend that the door-to-balloon time interval be no more than 90 minutes and under 120 minutes when the patient has to be transferred to another hospital.

# DMAIC

## DEFINE

Identify scope of project & key stakeholders  
Identify stakeholder requirements

## MEASURE

Create data collection tool  
Identify key measurements

## ANALYZE

Gather and analyze data  
Median D2B time = 167 Min

## IMPROVE

Collaborate with CRH & Jackson County EMS  
Identify & eliminate barriers to implementation

## CONTROL

Implement monitoring method  
Deploy results to all key stakeholders



# Project Charter

## STEMI IMPROVEMENT PROJECT

### Project Charter

Organizations:  
Schneck Medical Center , Jackson  
County EMS, Columbus Regional  
Health,

Champions:  
Tammy Dye & Vicki  
Johnson

Process Owners:  
Matt Chandler, Susie  
Schnitker Staci Glick, Julie  
Bailey & Dennis Brasher

Project: ED STEMI: Rapid Identification and Intervention

#### Problem Statement:

In quarter one 2010 our median door to balloon time was 167 minutes. The American Heart Association and the American College of Cardiology recommend that the door-to-balloon time interval be no more than 90 minutes and under 120 minutes when the patient has to be transferred to another hospital.

#### Project Objective:

The objective of this project was to create a process that allowed 100% of STEMI patients to be reperfused with a door to balloon time under 90 minutes.

# SIPOC

Suppliers	Inputs	Process	Outputs	Customers
EMS Registration Triage Nurse Emergency Physician Dispatch	Transportation 12 Lead EKG Doctor assessment History & Physical Diagnosis Handoff Communication	<ol style="list-style-type: none"> <li>1. Onset of symptoms</li> <li>2. EMS Dispatch</li> <li>3. 12-lead ECGs</li> <li>4. Early Diagnosis</li> <li>5. Transport to SMC</li> <li>6. ED MD confirms diagnosis, pt stays in ambulance</li> <li>7. Notify CRH/Activate Cath Lab</li> <li>8. Transport to CRH</li> <li>9. Cath Team receives patient from EMS</li> <li>10. Patient treated</li> </ol>	Positive patient outcomes Pt & Family satisfaction Accurate, timely information. Accurate, timely treatment Door to Balloon time under 90 minutes	Patient Families Staff Physicians SMC, CRH, & JCEMS Dispatch



# Excellence Every Person, Every Time

- Project Impact on Key Stakeholders

Patient	<ul style="list-style-type: none"><li>• Improved outcomes</li><li>• Increase patient satisfaction</li></ul>
SMC,CRH, & JCEMS	<ul style="list-style-type: none"><li>• Increase in clinical quality</li><li>• Increase possibility for further collaborations</li></ul>
Physicians & Staff	<ul style="list-style-type: none"><li>• Streamlined processes</li><li>• Increased staff engagement</li></ul>

- **Door to balloon times under 90 minutes (best in class)**
- **Address to balloon times under 120 minutes (best in class)**
- **Improved patient outcomes**



1. Project Selection

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3. Solution Development



# STEMI Kaizen Event

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## ED STEMI Kaizen Event Agenda

Day 1 (September 27th, 2010)		Day 2 (September 28th, 2010)	
0830-0900	Training and review of current data (SZ)	0830-1015	Future state process map
0900-0930	SIPOC	1015-1030	Break
0930-0945	Break	1030-1200	Action Plan
0945-1030	Review/validate current state map	1200-1230	LUNCH
1030-1100	Affinity diagram and creation of Customer Requirement Tree	1230-1500	Implement Improvements through 5S and system re-design
1100-1200	Brainstorming of potential failure modes using Man/Machines/Materials soft tool	1500-1630	Control Plan
1200-1245	LUNCH		
1245-1400	FMEA		
1400-1415	Break		
1415-1500	FMEA		
1500-1630	Brainstorm of improvments		



# SWOT

## Strengths

Chest Pain Center Accreditation  
Engaged Stakeholders

## Weaknesses

No Cath Lab (Schneck Medical Center)  
Variances in standard of care

## Opportunities

Develop partnerships with EMS & CRH  
Standardize care every patient, every time

## Threats

Quality of care due to locums ED physicians  
Loss of market share

# Goal: Door to Balloon Time <90 Minutes

## Schneck Stats

Employees 800

Beds 113

## CRH Stats

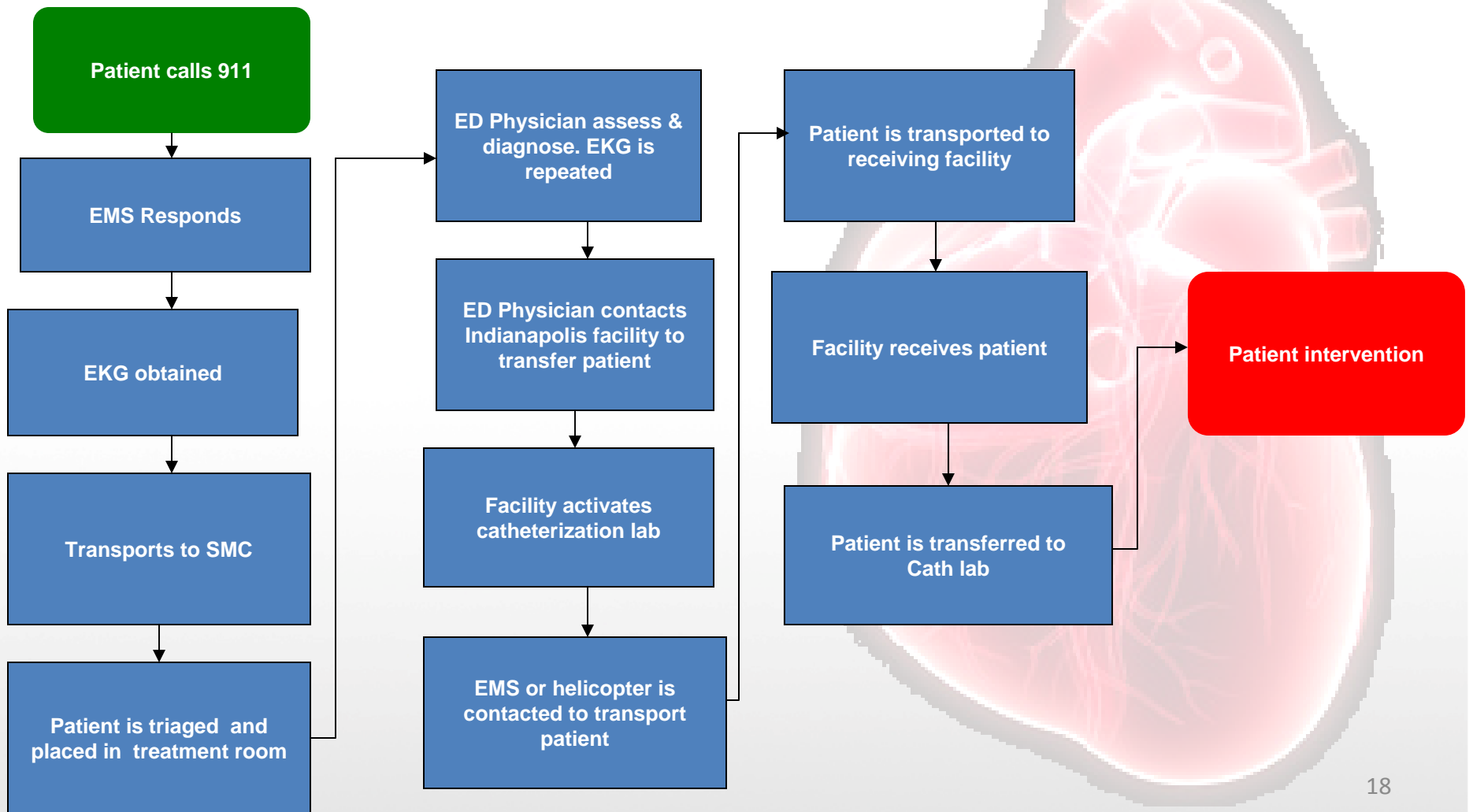
Employees 1,625

Beds 225

26.1 miles

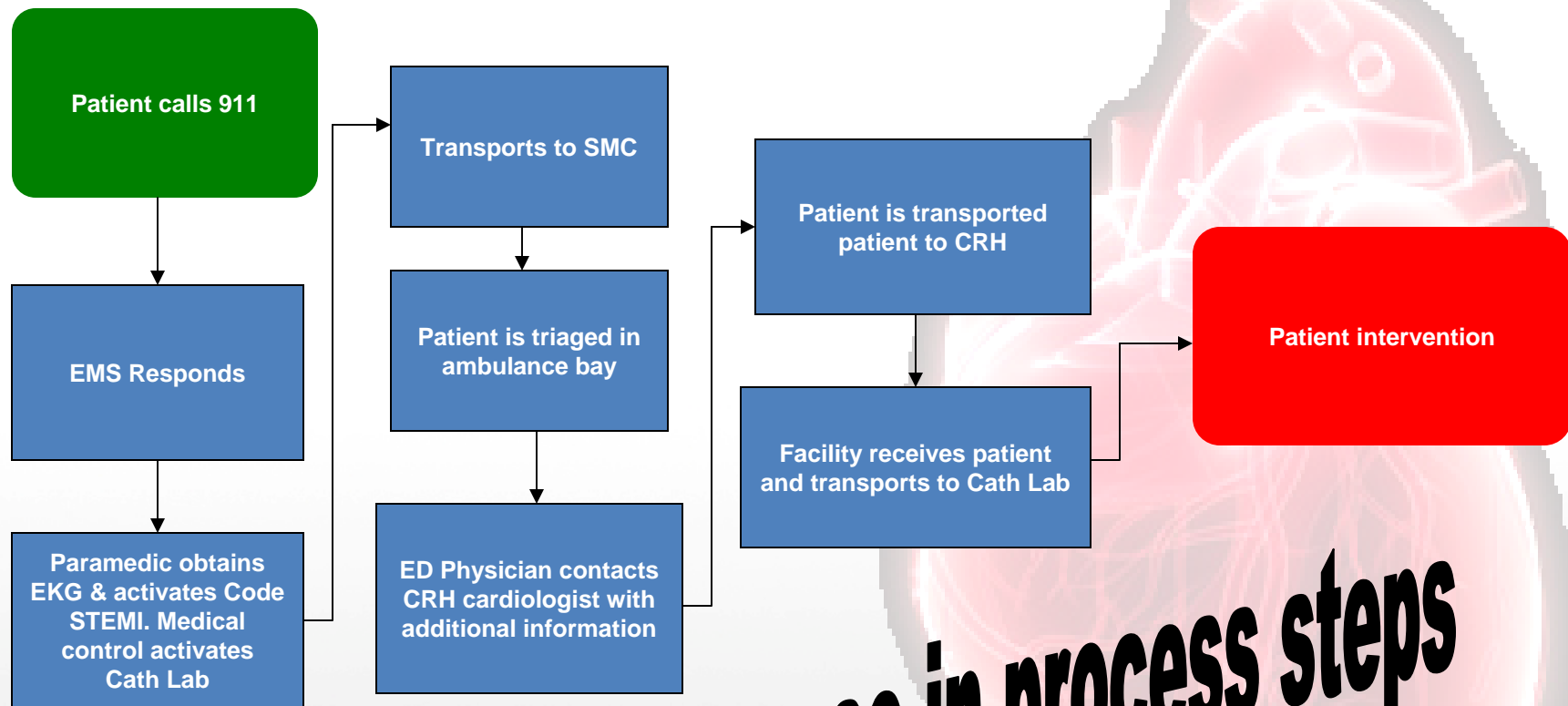


# Current State Process Map





# Desired State Process Map



**30% decrease in process steps**

# Narrowing the List of Opportunities

## Failure Mode Effect Analysis

Potential Failure Mode	SEV	OCC	DET	RPN	Actions Recommended
Lack of clinical personnel as first contact	9	10	5	450	Change process to Triage Nurse First
Clocks not synced on EKG	5	10	9	450	Sync clocks on a routine basis
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Busy	7	7	8	392	Proper triage and rapid identification of critical patients
High census	7	7	8	392	Proper triage and rapid identification of critical patients
Inaccurate history	9	6	6	324	Clinical person as first contact
Poor historian	9	6	6	324	Clinical person as first contact
Inaccurate history	9	6	6	324	Clinical person as first contact
Late diagnosis	10	4	8	320	Rapid identification and interventions of ACS patient through expedited ED process
Misdiagnosis	10	4	8	320	Change process to Triage Nurse First
Atypical symptoms	10	4	8	320	Change process to Triage Nurse First
Delayed EKG	10	6	5	300	Rapid identification and interventions of ACS patient through expedited ED process

1. Project Selection

4. Project Implementation & Results

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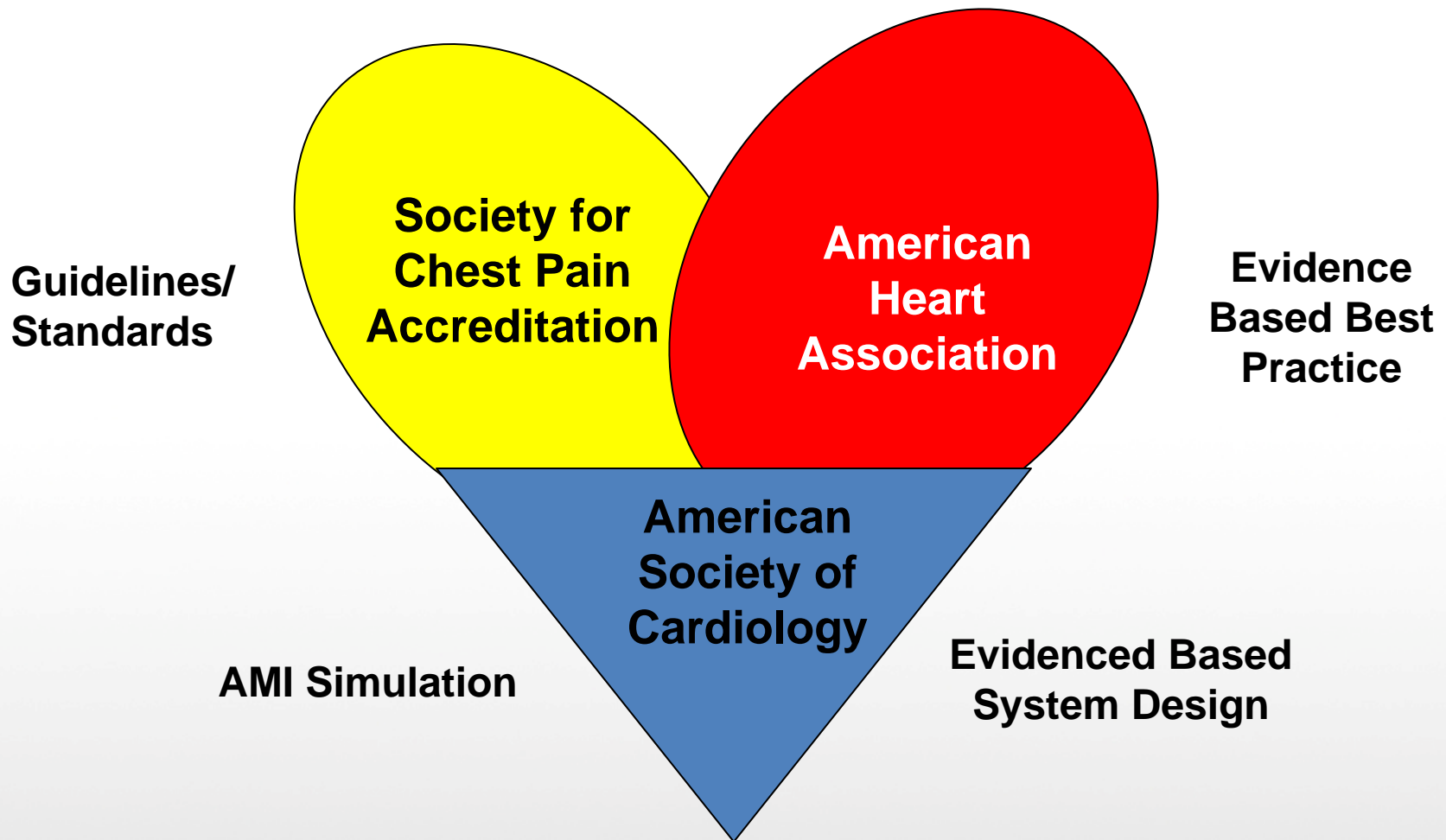


2. Current Situation Analysis

PI

3. Solution Development

# Solution Development





# **Solution Development**

**Grant Application and Recipient:**

**Simulation for Improved Teamwork in Myocardial Infarction**

**SIM-FIT MI**

**An in situ Educational Initiative Tailored to Individual Hospital Needs**

**April 13, 2011**

**Taped and analyzed by**

**The American College of Cardiology**





# Solution Development

- EMS performs 12 lead EKG and field activates one call process to cath lab for positive STEMI EKG's
- SMC ED physician and nursing team assesses and stabilizes patient in ambulance for transport to CRH
- Developed similar process for walk in STEMI patients
- Standardized equipment between all providers
- Data collection and rapid feedback to everyone involved in the process
- Collaboration & coordination of resources
- Mock code event to identify waste in process
- Training & education to Dispatch, EMS, SMC ED Staff, CRH ED Staff, Cath Lab Staff



# Intended Benefits

- Intended Benefits

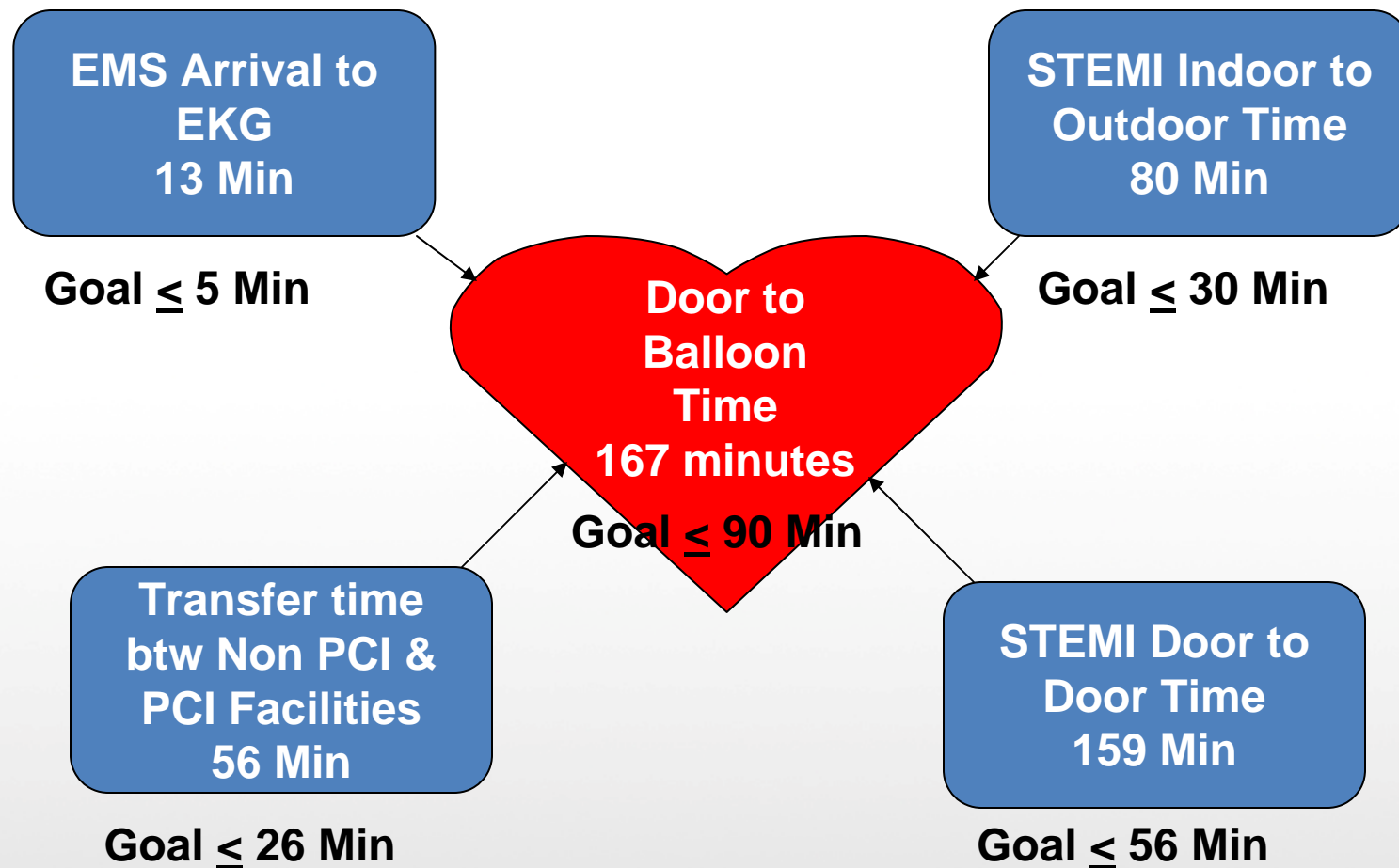
- Tangible

- Improve door to balloon times
    - Improve patient outcomes

- Intangible

- Increase stakeholder satisfaction with transition of care processes
    - Increase engagement of staff in the success of the initiative
    - Look for opportunities to collaborate on other initiatives

# Data Pre-Implementation



1. Project Selection

4. Project Implementation & Results

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2. Current Situation Analysis

PROJECT

3. Solution Development

# Implementation

## Standardized Processes & Procedures

### EMS Transfer and Treatment

Time	IV's/Medications	Initials	Comments
	o NKA or Allergic to:		
	NS KVO w/extension tubing		
	Nitro 0.4mg SL (optional, give if needed)		
	Other Meds:		
	Start second IV if time allows		

Time	Pulse	Resp	B/P	O2 Sat/LPM	Pain	Rhythm

Time	STEMI Checklist	Initials	Comments
	Arrived at CRH		
	Report off to CRH Cath Lab Staff		

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

\*\*\*Call report to CRH Cath Lab when 10 min. out 812-376-5040\*\*\* (If no answer, leave a message and CRH will call back)

Signature/Initial \_\_\_\_\_

Signature/Initial \_\_\_\_\_ Pt Label

Update 5-12-55

### STEMI FLOWSHEET

Time	STEMI Checklist	Initials	Comments
	Arrived at SMC: Ambulance Car		
	STEMI Identified: <b>One call activated 812-375-3777</b>		
	EKG (performed within 5 minutes) or review EMS EKG		
	Call ambulance for stat transfer 358-3800 if needed		
	Remove all clothing from patient/put on gown		
	ID Band on		
	Zoll Defibrillator Pads on		
	Copy EMS EKG & STEMI flowsheet (if applicable) give back to EMS		
	Time out to address all items are completed		
	Fax face sheet to 812-376-5956 ASAP		
	Fax face sheet and EKG ASAP to 812-375-3488		
	Fax finished chart and labs to 812-375-3488		
	Time Departed SMC via JCEMS		
	Report called to 812-376-5040 (if no answer, leave a message and CRH will call back)		
	Notify patient's family of transfer		

Time	IV's/Medications	Initials	Comments
	IV gauge, site:		
	Hang NS KVO w/extension tubing		
	o NKA or Allergic to:		
	Aspirin 4-81 mg's chewed		
	Heparin 5,000 Units IVP		
	Nitro 0.4mg SL (optional, give if needed)		
	Other Meds:		
	Start second IV if time allows		

Time	Pulse	Resp	B/P	O2 Sat/LPM	Pain	Rhythm

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Signature/Initial \_\_\_\_\_

Signature/Initial \_\_\_\_\_ Pt Label

date 5-12-55



# Implementation

**STEMI TRANSFERS**

**Columbus Regional  
Hospital**

**ONE CALL: 812-375-3777**

**This call connects you directly to ED physician who will  
accept the transfer immediately**

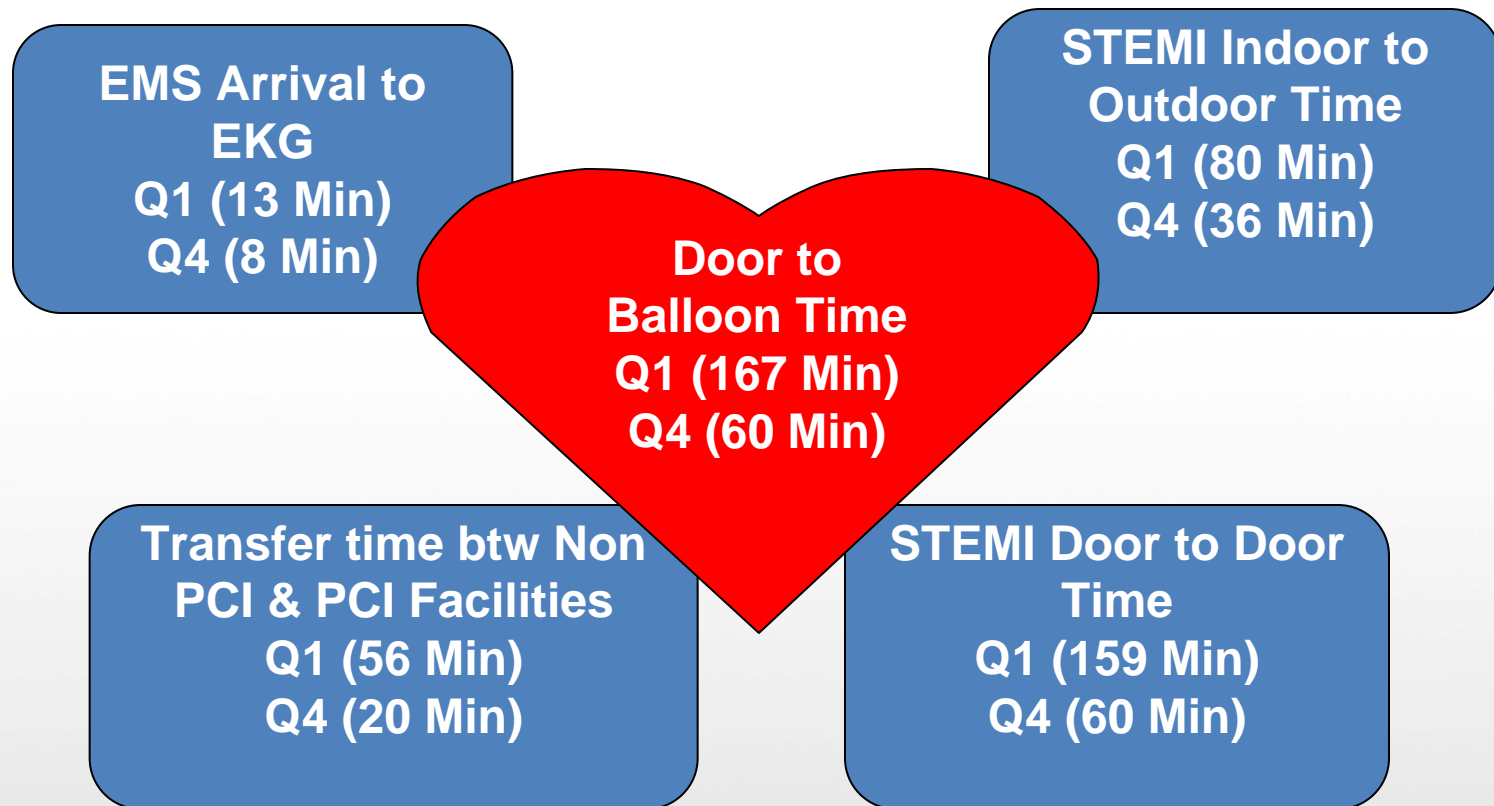
# Implementation

## EMS/ED/Transfer Performance Measures

Description	Benchmark	January	February	March	Q1 Roll-up	April	May	June	Q2 Roll-up
Pt. Return rate within 48 hours	0%	0%	0%	0%	0%	0%	0%	0%	0%
Pt. Return rate within 72 hours	0%								
Onset of Pain to Dispatch	-	58	186	45	96	244	96	160	167
Disptach to EMS EKG Time	-	28	18	15	20	14	13	12	13
Dispatch to ED Transport Time	-	34	38	36	37	34	32	33	33
EMS arrival to EKG Time	5	23	9	7	13	6	7	7	7
EMS Time on Scene	10	NA	NA	NA	NA	NA	15	14	15
Total time with EMS	-	30	94	67	64	27	26	28	27
EMS contact to PCI	-	NA	NA	NA	NA	NA	NA	118	118
SMC Door to EKG time	5	7	9	11	9	8	7	5	7
EMS identified STEMI in the field	100%	NA	NA	NA	NA	NA	100%	100%	100%
Biomarker Turnaround Time	30	43	50	44	46	44	37	26	36
Door to Biomarker result time	-	68	74	65	69	76	57	41	58
Door to Needle time	<30	NA	NA	NA	NA	NA	NA	NA	NA
SMC STEMI In-door to Out-door Time	≤30	NA	106	87	97	47	37	40	41
STEMI Transfer time between non-PCI & PCI facilities	26	NA	57	68	63	44	28	25	32
STEMI Door to Door Time (i.e., SMC indoor to PCI indoor)	≤56	NA	163	155	159	91	65	65	74
First STEMI EKG to Cath Lab	≤51	NA	105	137	121	85	62	61	69
STEMI Door to Balloon Time	<90	NA	142	192	167	137	96	92	108

# Data Post-Implementation

## Faster TAT in every key process





# Implementation – Confirmed Benefits

- Intended Benefits

- Tangible

- Improved door to balloon times
    - Improve patient outcomes

**62% Improvement**

**Door to Balloon Times**

- Intangible

- Increase stakeholder satisfaction with transition of care processes
    - Increase engagement of staff in the success of the initiative
    - Look for opportunities to collaborate on other initiatives



# Implementation



## Goal:

***Best in Class  
Performance***

- Door to balloon times under 90 minutes (best in class)
- Address to balloon times under 120 minutes for non PCI hospital (best in class)



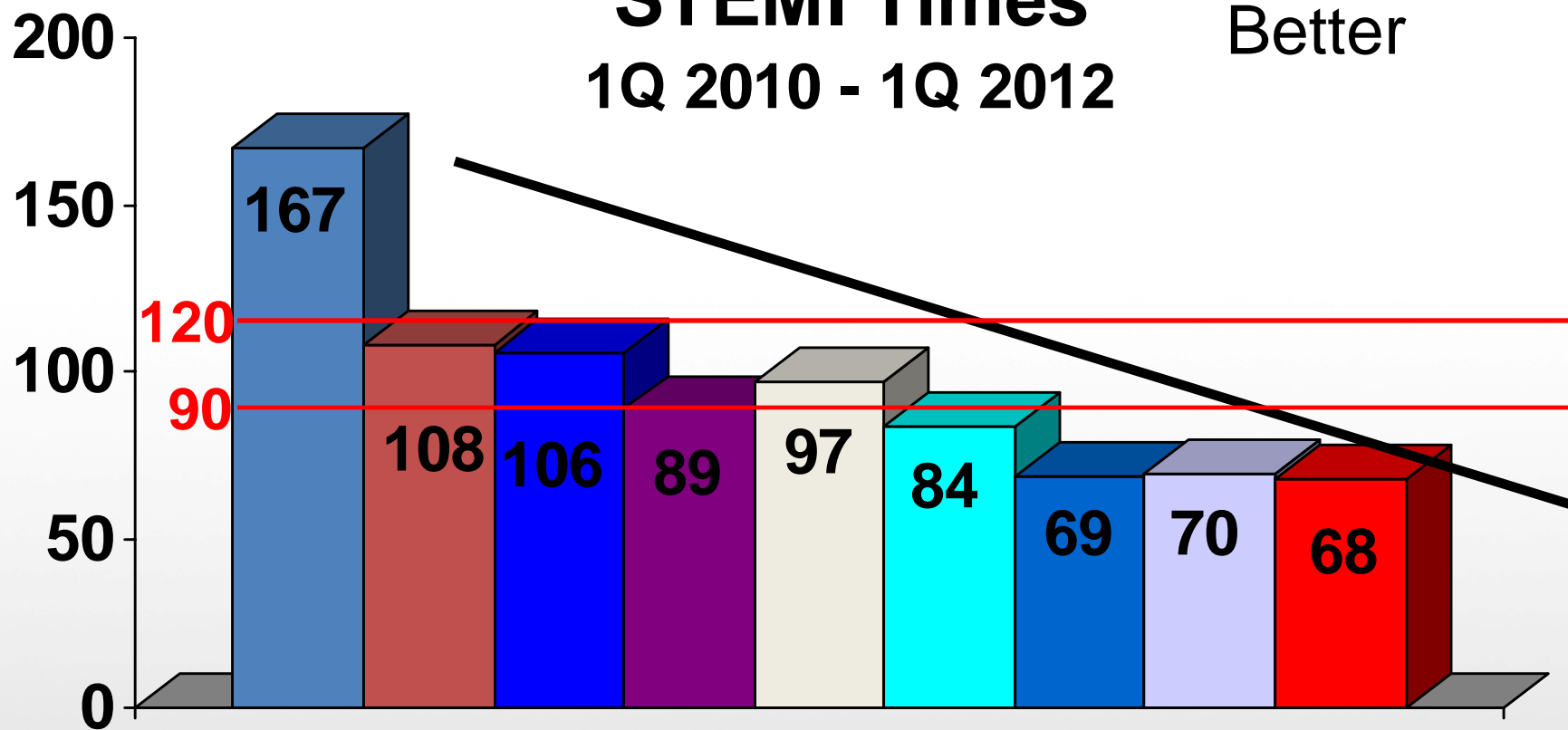
## Results

- Door to balloon times  $\leq$  60 minutes (best in class), outperforming hospitals that have a catheterization lab!

# Results

## STEMI Times 1Q 2010 - 1Q 2012

↓  
Better





**Thank you for allowing me to share our story of how we have broken down barriers and worked together to put the people of our communities first in everything we do.**

*Contact information:*

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*sschnitker@schneckmed.org*



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