



8th Annual Emirates
Cardiac Society
Conference



ACC Middle East
Conference 2017



DUBAI

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Implementing & Improving Upon A STEMI System

Dipti Itchhaporia, MD, FACC, FESC
Trustee, American College of Cardiology
Assistant Clinical Professor, University of California, Irvine
Robert and Georgia Roth Endowed Chair for Excellence in Cardiac Care
Director of Disease Management
Hoag Memorial Hospital
Newport Beach, California



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Disclosure

I have no disclosures



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Time is Critical in STEMI Care

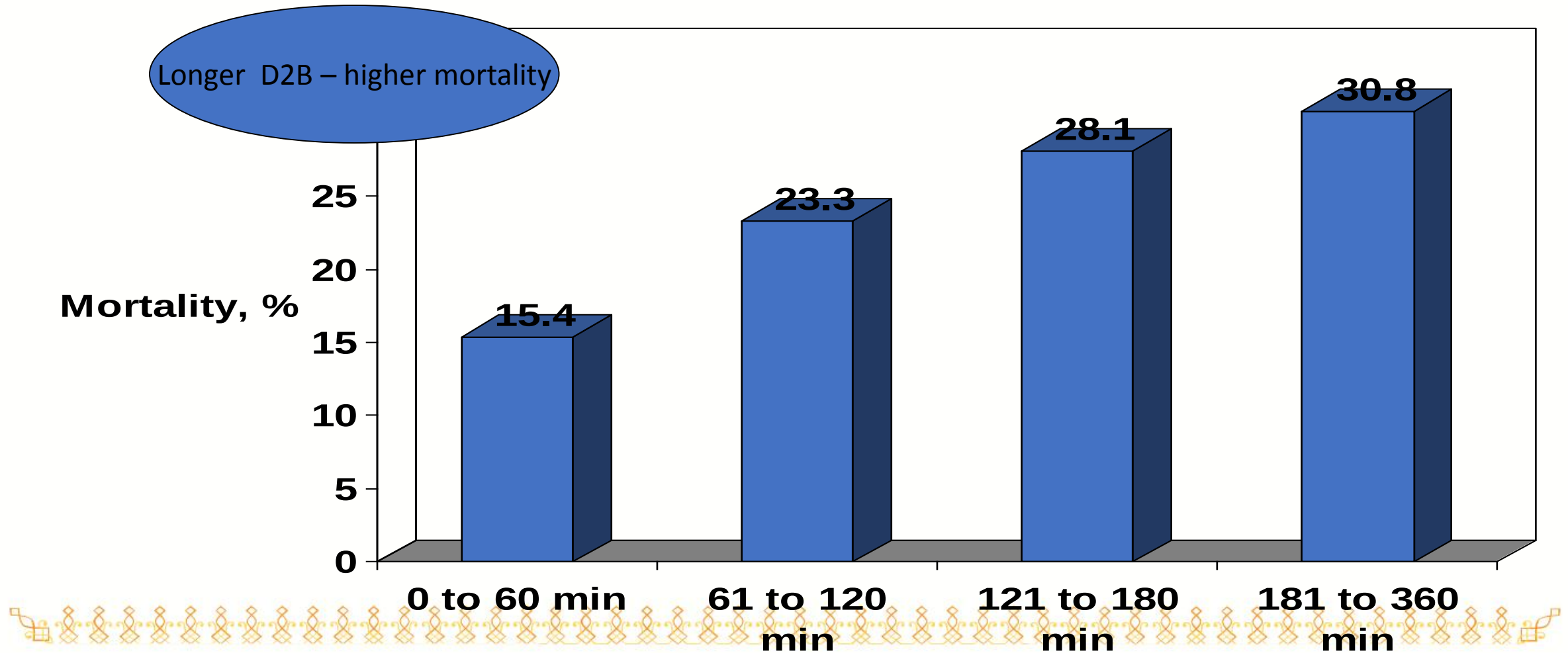
Prompt diagnosis & treatment reduces death and disability.

- Shorter time from door-to-balloon (PCI) leads to lower risk of mortality
- Faster treatment and lower in-hospital mortality associated with hospital “specialization” and emphasis on PCI as principal mode of reperfusion



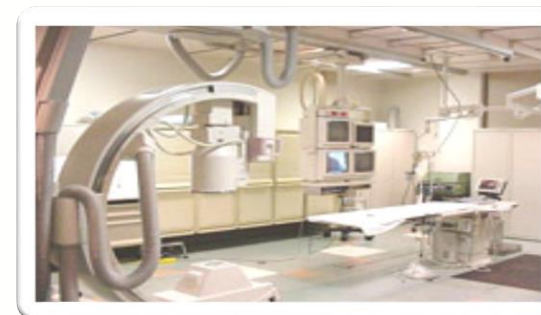
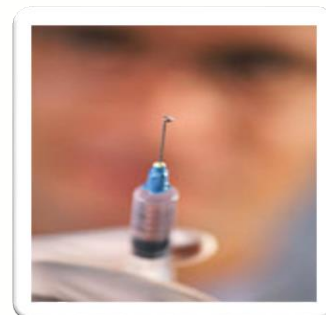
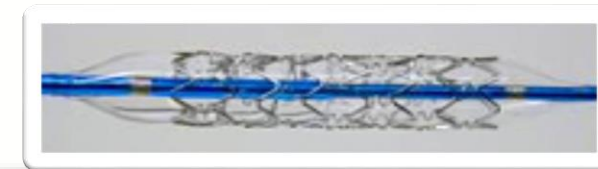
Time is Critical in STEMI Care

Time and Mortality in STEMI Patients



Barriers to Timely Reperfusion

- The patient
 - Failure to promptly recognize symptoms
 - Hesitation to seek medical attention
- Time to transport
 - Mandated delivery to the closest hospital, regardless of PCI capabilities
 - Long transport in rural areas
- Decision process on arrival
 - Clot-busting drugs vs. PCI
 - Off hours
 - Transfer to PCI facility
- Time to implement treatment strategy
 - Procedural factors
 - Team assembly



The Ideal Patient & System

- Patients and the public:
 - Recognize the symptoms of STEMI
 - Realize the importance of:
 - Activating emergency medical services (EMS) via 9-1-1 promptly
 - Getting treatment quickly
 - Are familiar with their local hospital's role in STEMI care
- The ideal system:
 - Promotes education efforts for the Emergency Medical System, the Emergency department personnel, cath lab staff, physicians and the patients.
 - Provides coordinated and patient-centered care





The Reality of Today's Patients

- Not all STEMI patients call 9-1-1
 - 50% of STEMI patients present to their local emergency department (ED)
- “Walk-in” patients
- Rapid ECG
 - CODE 10 Established – ECG in under 10 minutes from time of arrival (DOOR TIME)
 - Operational Considerations
 - CODE 10 called overhead in ED
 - multiple available ECG machines
 - process in place to mobilize ECG machine and tech
 - training/ competency of Emergency Care Techs to perform ECG
 - high priority of ED MD to read ECG



Patient to ED by Ambulance

- Coordination with Emergency Medical System
- 12 Lead ECG performed in field
 - Appropriate ECG machines on ambulance capable of transmitting clean tracing
 - Training/ competency of EMT to perform ECG
- EMS transmits to Base Hospital, BH contacts Cardiovascular Receiving Center (CVRC)
 - Our institution is both a BH and CVRC
- Radio MICN RN receives call
 - Notifies ED MD, ED RN, Activates CATH LAB – simultaneously
 - ED MD contacts ED CALL PANEL On Call Interventional Cardiologist



PROCESS

STEMI Presentation: EMS v. Walk-In

EMS

- STEMI Recognition by EMS Pre-Hospital Prior to “DOOR”
 - Education & Collaboration with EMS for timely and accurate 12 Lead ECG
- Pre-hospital activation of ED, CCU & CCL Team CODE STEMI
 - 30 minute arrival time
- ED MD interprets ECG upon pt arrival, repeats if necessary.

Walk-In

- STEMI Recognition upon arrival of Walk-In CODE 10:
 - ECG within 10 min
- ED MD primary interpretation of ECG with *simultaneous* activation of IC and CCL TEAM



The Ideal Emergency Medical System (EMS)

- In an ideal system:
 - Ambulances are equipped with 12-lead ECG machines
 - EMS providers are trained to:
 - Use and transmit 12-lead ECGs
 - Care for STEMI patients
 - Provide feedback on performance and compliance with guidelines
 - Standardized point-of-entry (POE) protocols define patient transport rules
 - When there is STEMI, the cath lab is activated promptly
 - Patients transported to a STEMI-referral hospital remain on the stretcher with EMS present pending a transport decision
 - When “walk-in” patients present to a STEMI-referral hospital and require primary PCI, activation of EMS occurs
 - Hospitals close the communication gap with EMS



STEMI Treatment

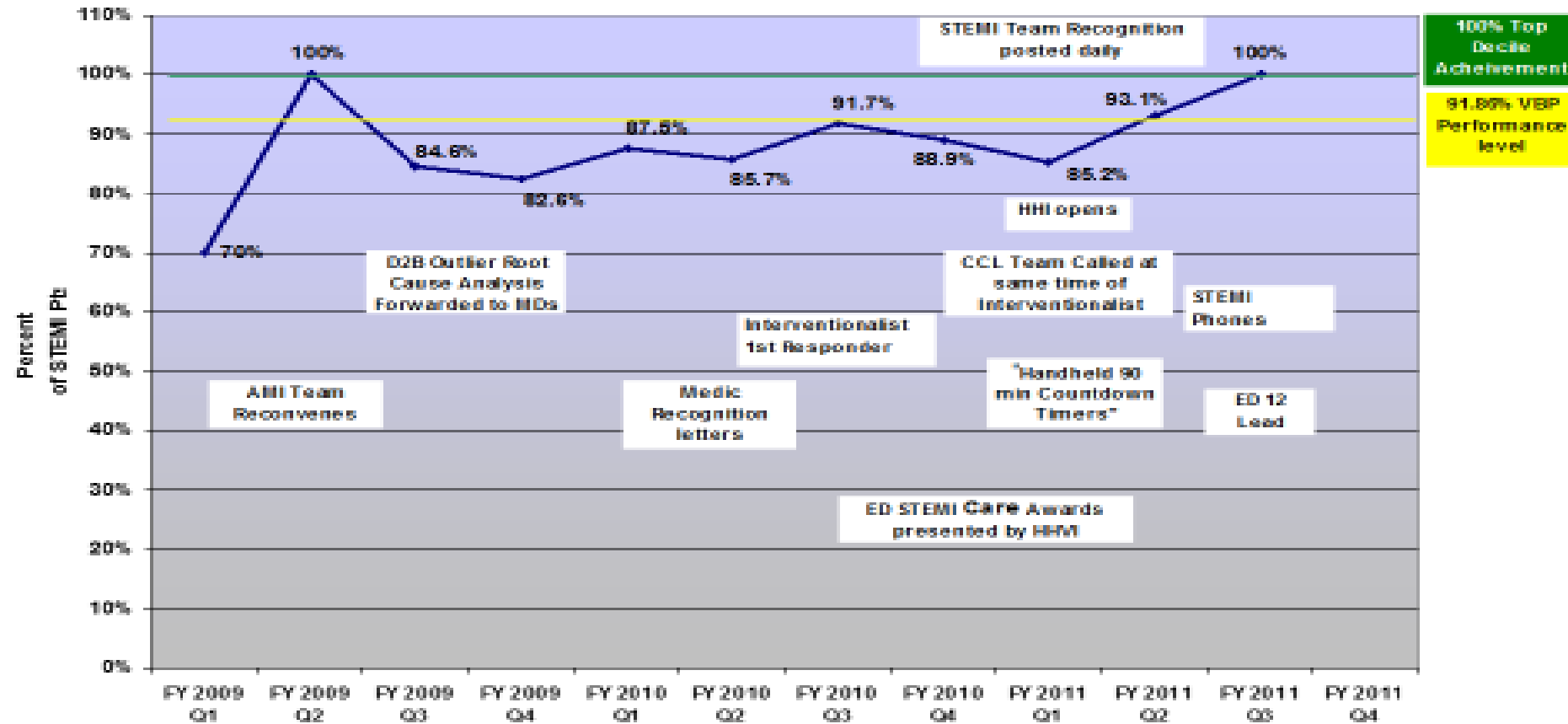
GOAL: Achieve D2B < 90 minutes <60 minutes

- Key Criteria
 - Early activation
 - Door to Data/ECG < 10 min
 - Door to Decision < 15 min
 - Door to Cardiac Cath Lab (CCL) < 30 minutes
 - CCL door to Ready for Stick < 10 min
 - CCL door to BLN < 45 min



Early Data

AMI Door-To-Balloon % Compliance within 90 Mins



Dedicated Mobile Phones in ED For STEMI Notification



STEMI

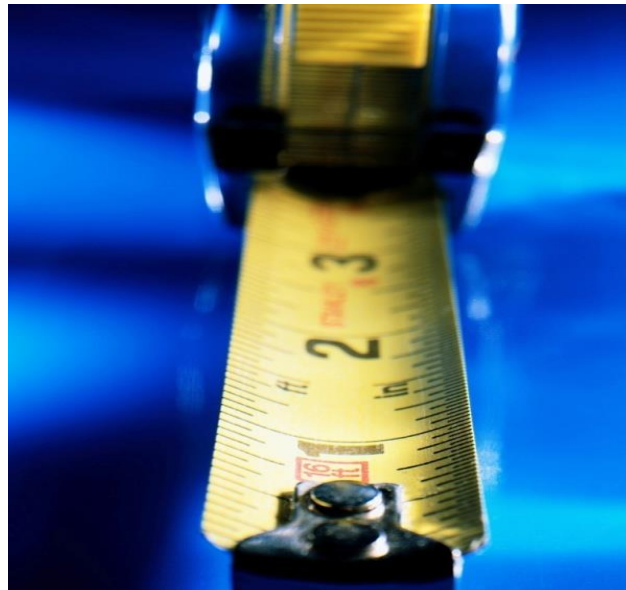
- Programmed with IC Cell Numbers
- ED MD speaks directly with IC
- Program IC's cell phones with ED Cell identifier as "STEMI"



Next Steps

Tracking Progress

Create evaluation mechanism to track progress and outcomes- and give feedback



Primary PCI Data Collection Form

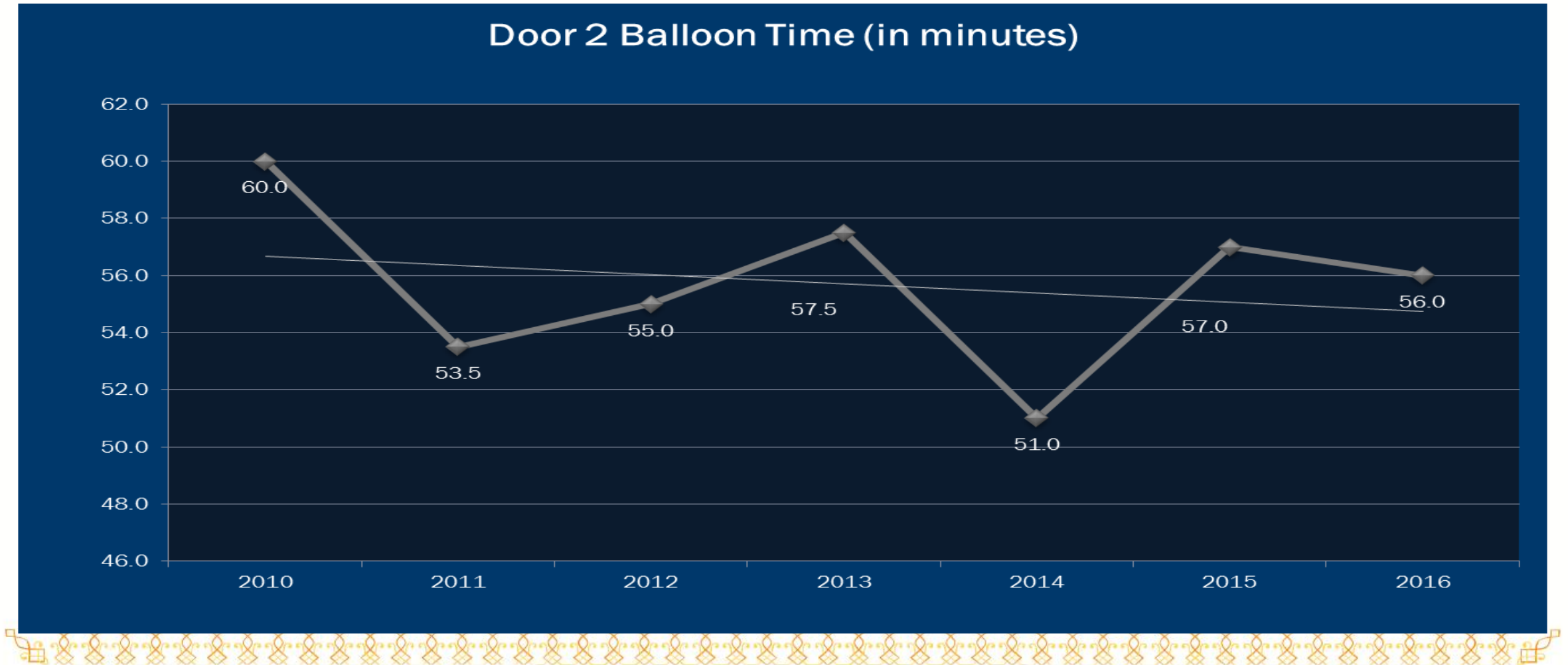
This is NOT a Permanent Part of the Patient's Record

	Data Element	Time	Benchmark Time or Goal REFERENCE
Emergency Department Responsibility	Date AND Time ED notified of patient arrival: Arrival by: EMS ☐ BLS ☐ Walk-In ☐ OCS-EMS Identification (run) #: _____ Medical Record #: _____ Patient Age: _____ Male ☐ Female ☐		Please copy and attach: 1.) EMS field ECG, 2.) EMS run Sheet, 3.) ECG(s) from ED, 4.) ED triage sheet
	Date & time patient first arrives to Hoag: ED Physician: _____		"Door" ie.: Arrival to hospital
	Initial ECG obtained: EMS ☐ Hoag ☐ Time 1st ECG obtained _____		"Door to Data" National Goal = 10 minutes Hoag Goal < 10 minutes
	STEMI? Yes ☐ No ☐ If EMS ECG, was the field interpretation confirmed? Yes ☐ No ☐		
	ED calls Perfect Serve to activate Call Team ED calls Interventional Cardiologist Interventional Cardiologist: _____		"Door to Decision" Hoag Goal < 15 minutes
	Call Team arrival time to hospital: _____		Hoag Goal = < 30 minutes following notification
	Cardiologist arrival time to hospital: _____		Hoag Goal = < 30 minutes following notification
	Patient ready for transport to CCL: _____		ED arrival to CVL arrival Hoag Goal = < 40 minutes
	Patient arrives in CCL from ED (Please document if room not available.)		"ED to lab" Hoag Goal < 5 minutes
	Patient ready - prepped & draped		"CCL door to ready" Hoag Goal < 10 minutes
Cardiac Cath Lab Responsibility	Local		"Lab ready to Stick Time" Hoag Goal = 0 minutes
	Artery Open (time of 1st balloon inflation)		"CCL arrival to balloon"
	Culprit artery: _____		Hoag Goal = < 45 minutes
	Immediate post-procedure pt disposition &/or location: _____		
	Total ED door to balloon (D2B) time = _____ Total EMS to balloon (E2B) time = _____		ACC Middle East Conference 2017 Goal D2B = < 90 minutes Goal E2B = < 90 minutes

Primary PCI Data Collection Form

- Initiated Dec 2010
- Completed by designated CCL RN's
- Reviewed and reported by AMI Team Leaders
- Immediate, real-time feedback for all

Door 2 Balloon Time (in Minutes)



Partners for Success

- Patients and care givers
- EMS providers
- Physicians, nurses and other providers
- STEM-referral (non-PCI) hospitals
- STEMI-receiving (PCI-capable) hospitals
- Health systems
- Departments of health
- EMS regulatory authority / office of EMS
- Quality improvement organizations
- State and local policymakers



Reference :

- Patrick T. O'Gara, Frederick G. Kushner, Deborah D. Ascheim, Donald E. Casey Jr, Mina K. Chung, James A. de Lemos, Steven M. Ettinger, James C. Fang, Francis M. Fesmire, Barry A. Franklin, Christopher B. Granger, Harlan M. Krumholz, Jane A. Linderbaum, David A. Morrow, L. Kristin Newby, Joseph P. Ornato, Narith Ou, Martha J. Radford, Jacqueline E. Tamis-Holland, Carl L. Tommaso, Cynthia M. Tracy, Y. Joseph Woo, David X. Zhao **2013 ACCF/AHA Guideline for the Management of ST-Elevation Myocardial Infarction: Executive Summary, A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines Journal of the American College of Cardiology. JACC [Volume 61, Issue 4, January 2013](#)**

