Current Trends in Coronary Artery Disease Myocardial Infarction 2015
Financial Disclosures

None
2013 ACCF/AHA Guideline for the Management of ST-Elevation Myocardial Infarction

A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines

Developed in Collaboration With the American College of Emergency Physicians and Society for Cardiovascular Angiography and Interventions
Heart Attack: Start to Finish
One Patient’s Experience
2000s = Myocardial infarction
2015 = “STEMI”

- ST - segment of ECG
- E - elevation
- M - myocardial
- I - infarction

vs “NSTEMI”
Patient: Mr. I. M. Dian

55 yo man with sudden onset of chest pain, nausea, sweating, shortness of breath and low blood pressure at home
ECG on arrival to ER

Inferior injury pattern

Abnormal ECG

When compared with ECG of 05/JUL/2013 15:40, ESR pattern in V1 is no longer present.

Questionable change in initial forces of Anterolateral leads.
STEMI 2015

- Cardiac arrest in transit: 1 in 300
- EMS arrival has faster treatment in ER
- First Medical Contact (FMC)
STEMI 2015

- Aspirin 325 mg - chew and swallow
- Nitroglycerin
- IV (antiarrrhythmics, vasopressors)
- ECG
Plaque Progression

Thrombus
Plaque Progression

Lipid-Rich Necrotic Core

Thrombus

Thin Fibrous Cap

July 4

July 5
Risk Factors

Smoking
Diabetes
Male over 45
Weight
Sedentary
Second Hand Smoke
Family History
Blood pressure
Cholesterol
Treat or Transfer?

First Medical Contact (FMC) to Device (PTCA)

More than 120 minutes: Treat
Less than 120 minutes: Transfer
<table>
<thead>
<tr>
<th>Treat</th>
<th>Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspirin 325 mg + clopidogrel: 300 mg (&lt;75 yo) 75 mg (&gt;75 yo) + Fibrinolytic (tPA, rPA, TNK-tPA)</td>
<td>Aspirin 325 mg + clopidogrel 600mg or prasugrel* 60 mg or ticagrelor** 180 mg</td>
</tr>
</tbody>
</table>

* w/o prior CVA/TIA  
** ASA<100mg
ER

ECG

STEMI Time Tracker

Date: 2-5-2012
Day of the Week: Friday
Time Begins: 1540
Mode of Arrival: MEMS

EKG Transmitted from Field Circle One: Y N

ED Physician: Ac C W Lyle
Cardiologist(s): Ac Minton / Ac Orsm

Emergency Department

ECG Time

1541 Time ECG shown to ED physician.
(ED physician date/time/sign ECG)

1541 Time Interventionalist paged.

1531 Time Interventionalist returned page.

1531 Time Cath lab paged/called.

Time of arrival of Cath lab to ED.

1545 Time of arrival of the Cardiologist to ED

Circle One: Interventionalist --- OR --- Diagnostic

1547 Time patient left ED.

Catheterization Lab

1549 Time Patient arrived to Cath Lab

1549 Time Cardiologist arrived to Cath Lab.

Circle One (Interventionist): OR --- Diagnostic

1555 Time Case Started.

Diagnostic Study Circle One: Target Vessel Focused --- OR --- Complete

1558 Time diagnostic study complete

1549 Time of Interventionalist arrival if Diagnostic Cardiologist performed Cath

1602 Time of first intervention.

60 minutes is up at 1640

90 minutes is up at 1710
Emergency Room

- IV - Ambulance
- ECG - second
- Lab
- Groin preparation
- Consent – Not required for emergency
- Family
- Paper work
- Electronic chart (insert moan)
- Personal belongings
ER Admit

ER Exit

ER time: 7 min
Right Coronary Artery

Occluded  Angioplasty  Open
Door to Intervention "DTI"

ACCF/AHA Goal < 90 minutes
Door to Intervention

ER exit to Cath Lab

Door

Cath Lab

Intervention

DTI Avg

59 minutes

DTI Best

16 minutes

1540 Time Begins

1541 ECG Time

1542 Time ECG shown to ED physician.

1543 Time Interventionalist paged.

1544 Time Interventional returned pager.

1545 Time Cath lab paged/called.

1547 Time patient left ED.

ED Physician: [Name]

Cardiologist(s): [Name]
Coronary Stent

Insert

Inflate

Deployed
Coronary Stents

- Drug Eluting Stent (DES) - 75%
- Bare Metal Stent (BMS) - 25%
- Don’t “collapse” - Restenose
- Patency 99% (DES) 90% (BMS)
- Nonallergenic
- All MRI compatible
- No antibiotics needed
- Thrombosis rate < 0.5% over 3 years
- Dual Antiplatelet Therapy (DAPT)
## Dual Antiplatelet therapy (DAPT)

<table>
<thead>
<tr>
<th>Lifelong</th>
<th>One Year</th>
</tr>
</thead>
</table>
| Aspirin 81 mg  
(No added benefit w/ 325 mg) | clopidogrel  
or  
prasugrel*  
or  
ticagrelor** |

* w/o prior CVA/TIA  
** ASA < 100 mg
Right Coronary Artery

Before

After
STEMI Support 2015

- Aortic balloon pump
- Impella
- Hypothermia
- Emergent/Staged CABG
Follow Up

- Small heart attack
- Peak CPK 871
- Home on Sunday
- Echo at 1 month – Normal
Medications

- Ticagrelor – 1 year
- Aspirin 81 mg - Lifelong
- ACE-I - w/i 24 hrs – (EF < 40%)
- Beta blocker – w/i 24 hrs & lifelong
- Statin
How to avoid the Plumber

- Smoking – Doubles MI risk - STOP
- Blood pressure - CAD: 130/80
- Diabetes – A1C below 7%
- Cholesterol - Statin
- Aspirin - 81 mg
- Weight – Waist = ½ of Height
- Exercise – Best bargain in medicine
  - 2 miles in 30 minutes 5 days/week
Questions?