



Update Acute Coronary Syndrome

Sandra Oliver-McNeil DNP, ACNP-BC, AACC
Assistant Professor (Clinical)
Wayne State University
College of Nursing



Objectives

- The participant will understand pathology of the classifications of Acute Coronary Syndrome
- The participant will have an understanding of the definition of myocardial infarction
- The participant will have increase knowledge of the treatment strategies for ACS and MI
- The participant will be able identify the management of IHD



Classification ACS

- Patients who have obstructive atherosclerosis and systemic inflammation
- Patients who have obstructive atherosclerosis without systemic inflammation
- Patients without obstructive atherosclerosis

- Crea F, Liuzzo G. Pathogenesis of Acute Coronary Syndrome. *JACC* (2013); 61 (1):1-11.



Pathogenetic Classification of ACS

- Patients who have obstructive atherosclerosis and systemic inflammation
 - CRPs ≥ 10 mg/liter on admission
 - Widespread involvement of epicardial arteries, coronary microcirculation and myocardium
 - Activation of innate immunity
 - Activation of adaptive immunity

Crea F, Liuzzo G. Pathogenesis of Acute Coronary Syndrome. *JACC* (2013); 61 (1):1-11.



Pathogenetic Classification of ACS

- Patients who have obstructive atherosclerosis without systemic inflammation
 - Environment, Physical or Emotional stressors trigger instability in presence of venerable plaque
 - Physical-chemical alterations of plaque composition

Crea F, Liuzzo G. Pathogenesis of Acute Coronary Syndrome. *JACC* (2013); 61 (1):1-11.



Pathogenetic Classification of ACS

- Patients without obstructive atherosclerosis
 - Functional alterations of epicardial coronary arteries or coronary microcirculation
 - Coronary spasm
 - Intense constriction of microcirculation
 - Takotsubo syndrome
 - Parvovirus B19 genome

Crea F, Liuzzo G. Pathogenesis of Acute Coronary Syndrome. *JACC* (2013); 61 (1):1-11.

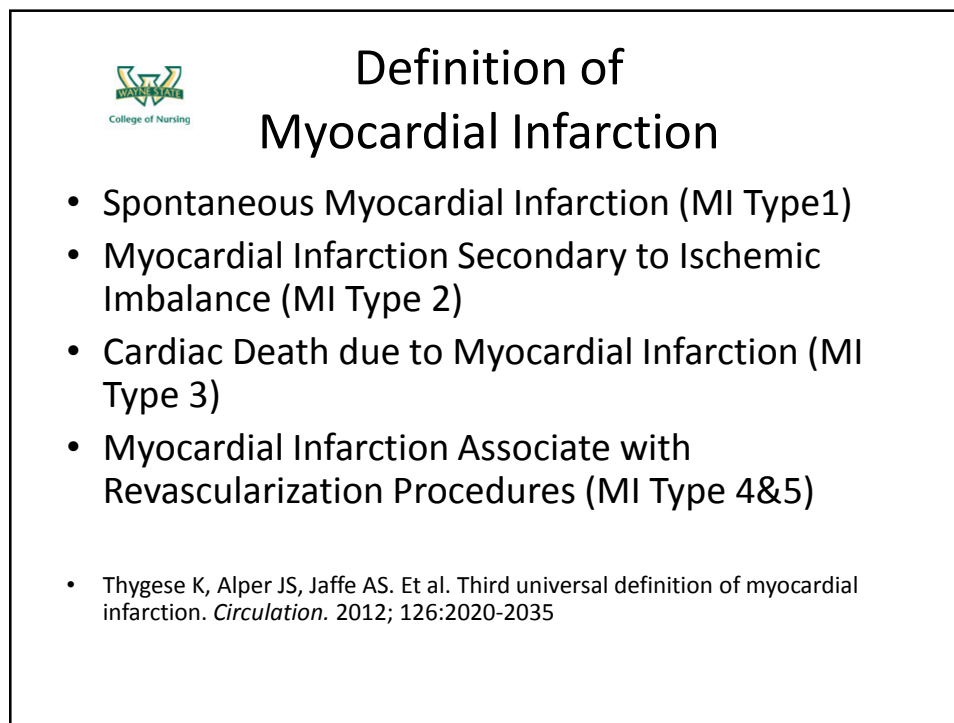
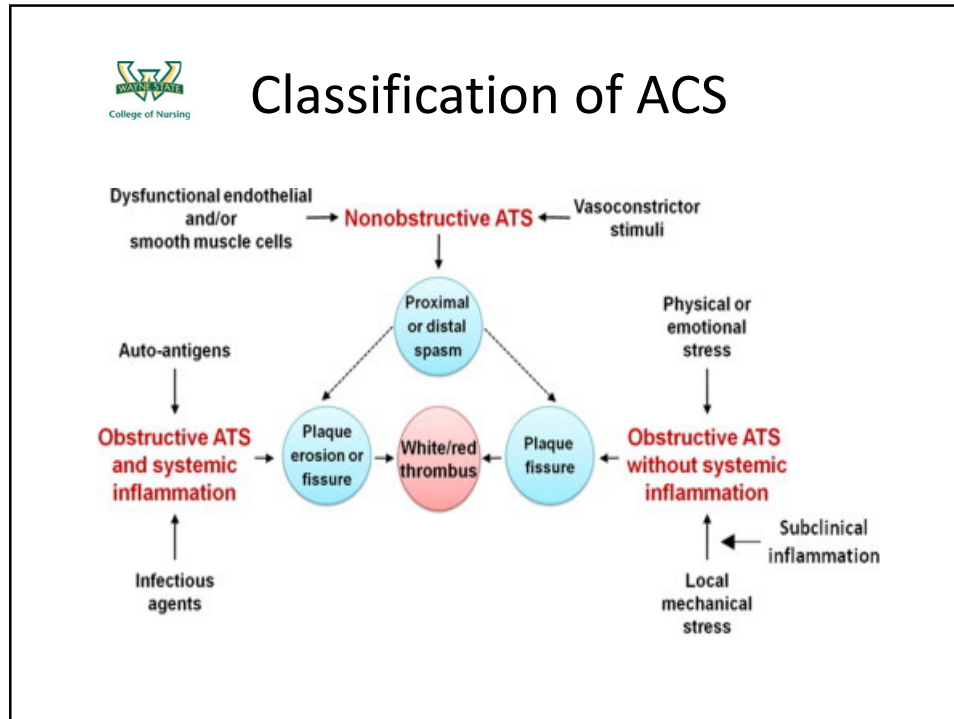
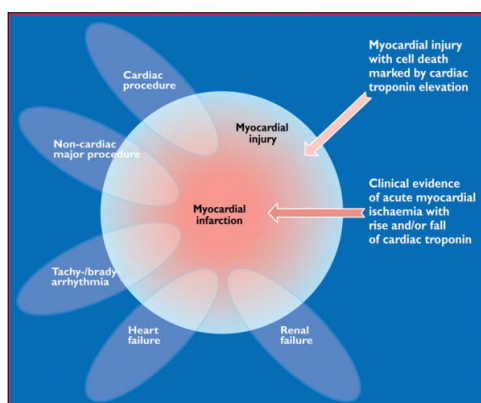


Figure 1



Third Universal Definition of Myocardial Infarction.
 Thygesen, Kristian; Alpert, Joseph; Jaffe, Allan; Simoons, Maarten; Chaitman, Bernard; White, Harvey

Circulation. 126(16):2020-2035, October 16, 2012.
 DOI: 10.1161/CIR.0b013e31826e1058

Figure 1. This illustration shows various clinical entities: for example, renal failure, heart failure, tachy- or bradyarrhythmia, cardiac or non-cardiac procedures that can be associated with myocardial injury with cell death marked by cardiac troponin elevation. However, these entities can also be associated with myocardial infarction in case of clinical evidence of acute myocardial ischaemia with rise and/or fall of cardiac troponin.



Routine Medical Therapies for ST-Elevation MI

- **Beta Blockers**
 - Oral BB within first 24 hours who are not at risk for shock, HF, low-output state, Prolong PR interval >0.24, 2nd or 3rd degree HB
 - Should be continued throughout hospitalization and after discharge.
- **Renin-Angiotensin-Aldosterone System Inhibitors**
 - Start within 24 hrs. with AAMI, HF, or EF <40%
 - Use of ARB if intolerant to ACE-I
 - Aldosterone antagonist with ACE-I & BB with EF <40%, HF, and/or DM
- **Lipid Management**
 - High-intensity statin therapy
 - Reasonable to obtain lipid profile within 24 hrs of presentation



UA/NSTMI

- Antiplatelet Therapy
 - Aspirin ASAP and continue indefinitely
 - P2Y receptors inhibitor therapy
 - Clopidogrel
 - Use with aspirin or alone in patients not able tolerate ASA
 - Concern of genetic response (CYP2C19)
 - Loading dose is uncertain
 - Several hours to achieve active metabolite-wait 5 days for OR
 - Prasugrel
 - Use with aspirin or alone in patients not able tolerate ASA
 - Higher risk of bleeding
 - Wait 7days prior to surgery
 - Ticagrelor
 - BID dosing

Jneid H, Anderson JL, Wright RS et al. 2012 ACCF/AHA Focused update of the guideline for the management of patients with USA/NSTMI. JACC; 60: 645-681



PPI's?

- Proton Pump Inhibitors and Dual Antiplatelet Therapy
 - Use of PPI increased risk of death or rehospitalization in VA data looking at 8,200 cases
 - Recommendation ACCF does not prohibit the use in appropriate clinical settings, risk/benefit needs to be determined.



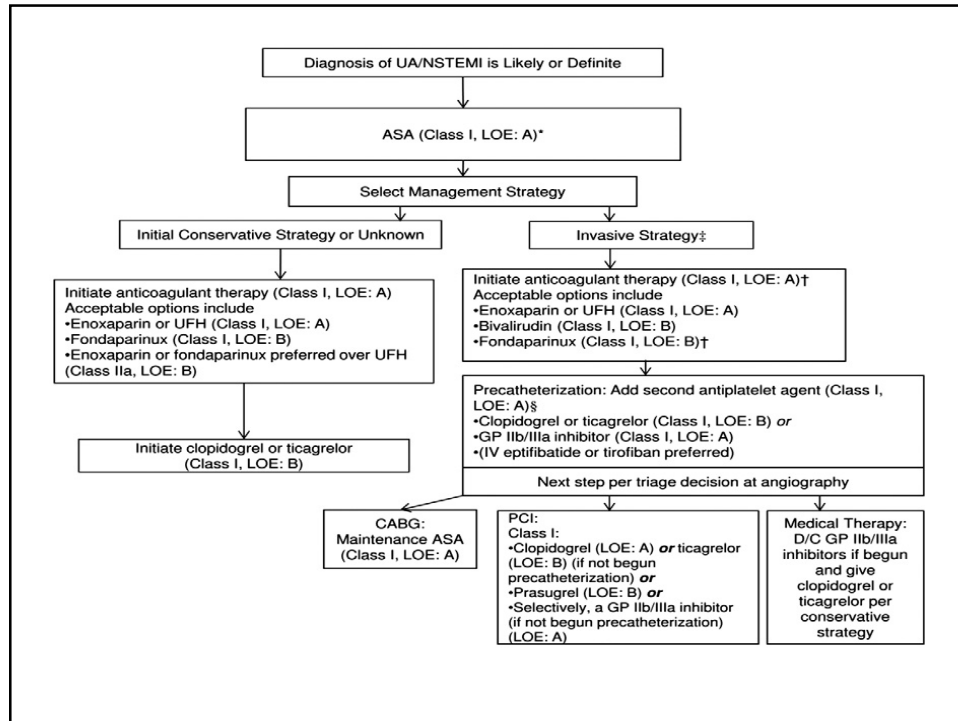
Glycoprotein IIb/IIIa Receptor Antagonists

- High Risk Patients Undergoing PCI
 - Elevated Cardiac Troponin Biomarkers
 - Diabetes
 - Significant ST-segment depression
 - Undergoing revascularization



Glycoprotein IIb/IIIa Receptor Antagonists

- Secondary agent in combination dual anti-platelet therapy
- “Upstream”= As preparation for PCI
- “Deferred”= At time PCI
- Increase risk of bleeding



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Selection Treatment Strategy

- Invasive Strategy
 - Recurrent angina or ischemia at rest or with low level activities despite medical therapy
 - Elevated cardiac biomarkers
 - New ST segment depression
 - S/S of HF or new/worsening MR
 - High-risk findings Noninvasive testing
 - Hemodynamic instability
 - VT
 - PCI within 6 mo
 - Prior CABG
 - Mild/mod renal dysfunction
 - DM
 - LVEF <40%



Selection Treatment Strategy

- Conservative
 - Low risk
 - Patient or physician preference in the absence of high-risk features



Diabetes

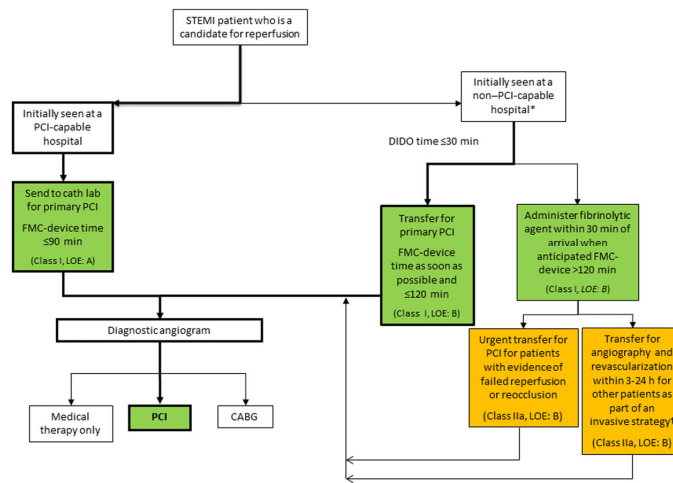
- Insulin infusion to control hyperglycemia
 - Risk of increase mortality due to hypoglycemia
- Benefit early invasive approach

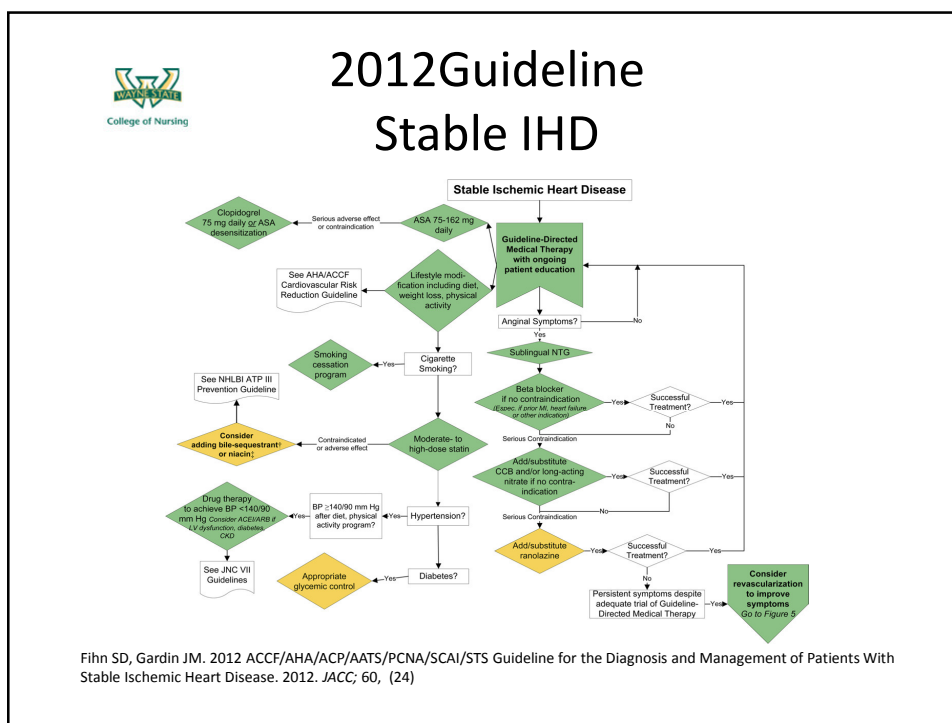


Chronic Kidney Disease

- Creatinine clearance should be estimated and renally cleared medication should be adjusted
- Prior to cardiac catheterization with receipt of contrast media should receive preparatory hydration
- Calculation of contrast volume to creatinine clearance ratio to prevent contrast induced nephropathy

Kushner FG, Ascheim DD, Casey DE et al. ACCF/AHA Guideline for the management of ST-Elevation MI: Executive Summary. 2013, JACC; 61: 485-510





References

- 1) Crea F, Liuzzo G. Pathogenesis of Acute Coronary Syndrome. *JACC* (2013); 61 (1):1-11.
- 2) Thygesen K, Alper JS, Jaffe AS. Et al. Third universal definition of myocardial infarction. *Circulation*. 2012; 126:2020-2035.
- 3) Jneid H, Anderson JL, Wright RS et al. 2012 ACCF/AHA Focused update of the guideline for the management of patients with USA/NSTEMI. *JACC*; 60: 645-681
- 4) Kushner FG, Ascheim DD, Casey DE et al. ACCF/AHA Guideline for the management of ST-Elevation MI: Executive Summary. 2013, *JACC*; 61: 485-510
- 5) Fihn SD, Gardin JM. 2012 ACCF/AHA/ACP/ AATS/PCNA/SCAI/STS Guideline for the Diagnosis and Management of Patients With Stable Ischemic Heart Disease. 2012, *JACC*; 60 (24):