Long-Term Management Of the ACS Patient: State-of-the-Art

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Disclosures

• I have no disclosures.
Case Study

• 45 y/o male admitted to your hospital in October with an ST-elevation MI (STEMI)
• Chest pain for 2-3 days
• PCI within 60 minutes of arrival
  – Given oral antiplatelet agent in ED
  – Drug-eluting stent (DES) placed to LAD
  – ASA + BB given within 24 hours of arrival
  – EF = 36% (ACE-I for EF < 40%)
Case Study

• Medical History:
  – Hyperlipidemia (LDL now 85 on statin)
  – Hypertension (controlled on HCTZ)
  – Overweight (BMI = 29.2)
  – Sedentary

• Family History: Father had MI at age 54

• Social History: Married, two children
  – Quit smoking 6 months ago (25 pack year)
  – Works as a software engineer
Case Study

• Admission Medications:
  – Atorvastatin 20 mg PO daily
  – Hydrochlorothiazide 25 mg PO daily
  – Acetaminophen PRN pain (NTE 3 grams/day)
  – ASA 81 mg PO daily QD (his dad said he should take this)

• Admits that he doesn’t always take all of his medications every day

• No influenza vaccine yet - “It’s too early”
ARS Question 1

How long should this patient be on low dose ASA and an oral antiplatelet after a drug-eluting stent (DES)?

1. 1 month
2. 6 months
3. 12 months
4. Indefinitely
Epidemiology: Cardiovascular Disease

- >2150 deaths in US each day from CVD
  - 1 death every 40 seconds
- ~635,000 new MIs every year
- ~280,000 recurrent MIs every year
- Total cost of ASCVD in US in 2009 was estimated to be $312.6 billion.
  - More than any other diagnostic group
  - Costs of all cancer was $228 billion in 2008

http://circ.ahajournals.org/content/127/1/e6.full.pdf+html
Incidence of Myocardial Infarction: Age, Sex, Race
Hospital Discharges for Coronary Heart Disease
CMS Readmission Reduction

- **19% Readmission Rate**
  - 1.9 million readmits
  - $17.5 billion

- **CMS Reduction in Payments**
  - 1% penalty yr/1 (2012)
  - 2% penalty yr/2 (2013)
  - 3% penalty yr/3 (2014)

- **Target Diagnoses**
  - 2013: AMI, HF, Pneumonia
  - 2014: COPD, THA, TKA
  - Future: ?!?!
Why Focus on Readmissions?

- Indicator of presence/lack of care coordination amongst providers and across continuum of service.
- Stimulates hospitals to reach beyond their walls into the community and build collaborative relationships.
- Stimulates the development of integrated care systems.
- Is a precursor to **bundled payments and shared risk models of reimbursement**.
- Hospitals are a costly and at times even dangerous venue for care.
Readmission Causes

- Medication Reconciliation and Management Challenges
- Inadequate Transition Planning (e.g. No Home Health, SNF, Hospice)
- Delayed/Absent Follow Up with Primary Care
- Lack of Knowledge of Disease Process
- Lack of Follow up on Tests & Treatments
- Lack of Communication Between Providers and/or Family/Caregivers
Post-hospital systems of care designed to prevent hospital readmissions should be used to facilitate the transition to effective, coordinated outpatient care for all patients with STEMI.

A clear, detailed, and evidence-based plan of care that promotes medication adherence, timely follow-up with the healthcare team, appropriate dietary and physical activities, and compliance with interventions for secondary prevention should be provided to patients with STEMI.

Secondary Prevention

Areas of Intervention

- Smoking
- Blood pressure control
- Lipid management
- Weight management
- Type 2 diabetes mellitus management
- Antiplatelet agents
- RAAS blockers
- $\beta$-blockers
- Influenza vaccination
- Depression
- Cardiac rehabilitation
- Physical activity
Secondary Prevention

Areas of Intervention

- Smoking
- Blood pressure control
- **LIPID MANAGEMENT**
- Weight management
- Type 2 diabetes mellitus management
- **ANTIPLATELET AGENTS**
- RAAS blockers
- β-blockers
- **INFLUENZA VACCINATION**
- Depression
- **CARDIAC REHABILITATION**
- Physical activity
Secondary Prevention

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AHA/ACCF Secondary Prevention and Risk Reduction Therapy for Patients With Coronary and Other Atherosclerotic Vascular Disease: 2011 Update

A Guideline From the American Heart Association and American College of Cardiology Foundation

Endorsed by the World Heart Federation and the Preventive Cardiovascular Nurses Association

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Just When You Thought You Had It…

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Statin Treatment: Treatment Targets

The panel makes no recommendations for or against specific LDL-C or non–HDL-C targets for the primary or secondary prevention of ASCVD.
Secondary Prevention: Statins

High-intensity statin therapy should be initiated or continued as first-line therapy in women and men ≤75 years of age who have clinical ASCVD*, unless contraindicated.

*Clinical ASCVD includes acute coronary syndromes, history of MI, stable or unstable angina, coronary or other arterial revascularization, stroke, TIA, or peripheral arterial disease presumed to be of atherosclerotic origin.

2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults.
Secondary Prevention: Statins

In individuals with *clinical ASCVD*\* in whom high-intensity statin therapy would otherwise be used, when high-intensity statin therapy is contraindicated† or when characteristics predisposing to statin-associated adverse effects are present, moderate-intensity statin should be used as the second option if tolerated.

†Contraindications, warnings, and precautions are defined for each statin according to the manufacturer’s prescribing information.
In individuals with clinical ASCVD >75 years of age, it is reasonable to administer moderate-intensity statin therapy.
Secondary Prevention: Statins

In individuals with clinical ASCVD >75 years of age, it is reasonable to evaluate the potential for ASCVD risk-reduction benefits and for adverse effects, drug-drug interactions and to consider patient preferences, when initiating a moderate- or high-intensity statin. It is reasonable to continue statin therapy in those who are tolerating it.

2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults.
# Intensity of Statin Therapy

**Table 5. High- Moderate- and Low-Intensity Statin Therapy (Used in the RCTs reviewed by the Expert Panel)**

<table>
<thead>
<tr>
<th>High-Intensity Statin Therapy</th>
<th>Moderate-Intensity Statin Therapy</th>
<th>Low-Intensity Statin Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily dose lowers LDL-C on average, by approximately ≥50%</td>
<td>Daily dose lowers LDL-C on average, by approximately 30% to &lt;50%</td>
<td>Daily dose lowers LDL-C on average, by &lt;30%</td>
</tr>
<tr>
<td><strong>Atorvastatin (40†)–80 mg</strong></td>
<td><strong>Atorvastatin 10 (20) mg</strong></td>
<td><strong>Simvastatin 10 mg</strong></td>
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<tr>
<td><strong>Rosuvastatin 20 (40) mg</strong></td>
<td><strong>Rosuvastatin (5) 10 mg</strong></td>
<td><strong>Pravastatin 10–20 mg</strong></td>
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<td><strong>Simvastatin 20–40 mg†</strong></td>
<td><strong>Lovastatin 20 mg</strong></td>
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<td><strong>Pravastatin 40 (80) mg</strong></td>
<td><strong>Fluvastatin 20–40 mg</strong></td>
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<td><strong>Lovastatin 40 mg</strong></td>
<td><strong>Pitavastatin 1 mg</strong></td>
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<td><strong>Fluvastatin XL 80 mg</strong></td>
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<td><strong>Fluvastatin 40 mg bid</strong></td>
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<td><strong>Pitavastatin 2–4 mg</strong></td>
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</tbody>
</table>
Case Study

• Last year, Framingham Risk was 17% with multiple risk factors.
  – Age 44 years
  – Family History
  – Smoker
  – BP 146/88 without medications
  – TC 240, LDL 140, HDL 41, TG 71

• Target LDL was < 130, with medication and some dietary changes down to 85
Why Not Continue to Treat to Target?

• Current RCT data do not indicate what the target should be
• Unknown magnitude of additional ASCVD risk reduction with one target compared to another
• Unknown rate of additional adverse effects from multidrug therapy used to achieve a specific goal
• Therefore, unknown net benefit from treat-to-target approach

Secondary Prevention

Areas of Intervention

• Smoking
• Blood pressure control
• Lipid management
• Weight management
• Type 2 diabetes mellitus management
• **ANTIPLATELET AGENTS**
  • RAAS blockers
  • β-blockers
  • Influenza vaccination
• Depression
• Cardiac rehabilitation
• Physical activity
Aspirin Recommendations

Start (and continue indefinitely) aspirin 75 to 162 mg/d in all patients unless contraindicated.

For patients undergoing CABG, aspirin (100 to 325 mg/d) should be started within 6 hours after surgery to reduce saphenous vein graft closure.

In post-PCI-stented patients, it is reasonable to use 81 mg of aspirin per day in preference to higher maintenance doses.

P2Y\textsubscript{12} Receptor Inhibitor Recommendations

- **B (Level I)**: Clopidogrel 75 mg/d for patients allergic or intolerant to aspirin.

- **A (Level IIa)**: A P2Y12 inhibitor (plus aspirin) for patients post ACS or post PCI with stent placement.

- **A (Level IIa)**: For patients receiving a bare metal or drug eluting stent during PCI for ACS, a P2Y12 inhibitor should be given for at least 12 months:
  - Clopidogrel 75 mg daily or
  - Prasugrel 10 mg daily or
  - Ticagrelor 90 mg twice daily

Medication Adherence

• **What is Adherence?**
  – The extent to which a person’s behavior—taking medication, following a diet, or making healthy lifestyle changes—corresponds with agreed-upon recommendations from a health-care provider

• **Medication Adherence:**
  – The patient’s conformance with the provider’s recommendation with respect to *timing, dosage, and frequency of medication-taking during the prescribed length of time*

http://apps.who.int/iris/bitstream/10665/42682/1/9241545992.pdf
Medication Adherence: Impact on Outcomes

- Non-adherence causes ~30% to 50% of treatment failures and 125,000 deaths annually
- Non-adherence to statins increased relative risk for mortality (~12% to 25%)
- Non-adherence to cardioprotective medications increased risk of cardiovascular hospitalizations (10% to 40%) and mortality (50% to 80%)
- Poor adherence to heart failure medications increased the number of cardiovascular-related emergency department (ED) visits

# Medication Adherence: Barriers and Solutions

<table>
<thead>
<tr>
<th>BARRIERS</th>
<th>SOLUTIONS</th>
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<tbody>
<tr>
<td>Inadequate Health Literacy</td>
<td>Simple instructions, Teach Back</td>
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<tr>
<td>Cultural or Religious Beliefs</td>
<td>Translator, Open Discussion</td>
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<tr>
<td>Financial Constraints</td>
<td>Discuss options/programs</td>
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<tr>
<td>Depression/Anxiety</td>
<td>Screen for depression/anxiety</td>
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<tr>
<td>Lack of Education about Importance</td>
<td>Start education early and often</td>
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<tr>
<td>Side Effects/Impact on daily life</td>
<td>Shared Decision Making</td>
</tr>
</tbody>
</table>
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- RAAS blockers
- β-blockers
- **INFLUENZA VACCINATION**
- Depression
- Cardiac rehabilitation
- Physical activity
Influenza Vaccination

Patients with cardiovascular disease should have an annual influenza vaccination.

Influenza Vaccination

- Meta-analysis of six international RCTs
- 6735 patients, 1/3 with ASCVD, 8 months
- Influenza Vaccine led to:
  - 36% lower risk of cardiovascular events
  - 55% lower risk of major adverse cardiovascular events in patients with a recent ACS
- Treat eight ACS patients with vaccine to prevent one major cardiovascular event

Influenza Vaccination

• Study with 550 patients
  – Hospitalized patients with MI compared to outpatients with no MI
  – Patients with MI were 2X as likely have had flu
    • 12% MI group vs 7% non MI group
    • MI group was half as likely to have been vaccinated

• Flu vaccination is protective against MI and had cut MI risk by 45%

Influenza Vaccination

• Less than one-third of North Americans and less than 50% of high-risk patients get vaccinated each year.

• "One of the most consistent and relevant findings of operational research is that recommendation for vaccination from physicians and other healthcare professionals is a strong predictor of vaccine acceptance and receipt among patients."

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- Depression
- **CARDIAC REHABILITATION**
- Physical activity
Cardiac Rehabilitation
Referral Recommendations

• ACC/IHI Hospital-2-Home (H2H) Initiative
  – Address the challenge of creating a coordinated health care team across different settings of care
  – Provide reliable, safe and health-enhancing transition for patients

• “See You in 7”
  – All patients discharged with HF/AMI to have follow-up appointment scheduled/cardiac rehab referral made within 7 days of hospital discharge.

http://cvquality.acc.org/Initiatives/H2H.aspx
Cardiac Rehabilitation Recommendations

Patients with ACS, post CABG, or post PCI should be referred to a comprehensive outpatient CR program either prior to hospital discharge or during the first follow-up outpatient visit.

* CMS to cover patients with EF < 35%, Class II-IV, with 6 weeks optimal medication therapy (starting 02/2014).


*Centers for Medicare and Medicaid Services National Coverage Determination, February 27th 2014.*
Cardiac Rehabilitation Recommendations

Outpatients with diagnosis of ACS, CABG, PCI, or PAD within the past year should be referred to a comprehensive outpatient CR program.

A home-based CR program can be substituted for a supervised, center-based program for low-risk patients.

Evidence for Cardiac Rehabilitation

- Participation in CR after PCI was associated with a significant decrease in all-cause mortality (hazard ratio 0.53 to 0.55; P<0.001).
- Patients (>65 years) who attended 36 sessions had 47% lower risk of death and a 31% lower risk of MI than those who attended 1 session.
- Only 14-35% of MI survivors and ~ 31% of patients after CABG participate in cardiac rehabilitation.

Hammill BG et al. Circulation. 121(2010); pp 63-70.
Suaya J et al. Circulation 2007;116;1653-1662
Case Study…Continued

• It has been ~48 hours since admission
• Transferred from the ICU last night
• You are preparing the discharge paperwork and provide education to this patient with newly diagnosed ASCVD/PCI
ARS Question 2

What are some key interventions that should be addressed prior to discharge?

<table>
<thead>
<tr>
<th></th>
<th>1. ACE/ARB for EF &lt; 40%</th>
<th>2. BB for EF &lt; 40%</th>
<th>3. Referral to Cardiac Rehab</th>
<th>4. Influenza Vaccine</th>
<th>5. All of the above</th>
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<td>20%</td>
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ARS Question 3

Which of the following is true about the right dose of statin for this patient admitted with ACS?

1. Keep it the same - his LDL was at 85
2. Increase atorvastatin to 80 mg
3. Simvastatin 40 mg PO daily
4. Pravastatin 80 mg PO daily
Questions