Smoothing the Path Home: Managing Transitions of Care for Patients with Acute Coronary Syndrome

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Disclosures
• Karen McConnell declare no conflicts of interest, real or apparent, and no financial interests in any company, product, or service mentioned in this program, including grants, employment, gifts, stock holdings, and honoraria.
• Paul Dobesh has served as a consultant for Daiichi Sankyo, and AstraZeneca.

The American Pharmacists Association is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education.

Learning Objectives
• Assess the medication needs of patients with acute coronary syndrome (ACS).
• Describe transition of care practices to optimize care for patients with ACS.
• Explain the pharmacist’s role in the management of patients with ACS during transitions of care.
• Identify and discuss various methods to improve pharmacists’ communications with patients and caregivers.
• Discuss transition of care models and opportunities for pharmacists to facilitate a smooth transition of care process.

Self-Assessment Question 1
A 78 year old man was discharged from the hospital post ACS on simvastatin 20 mg/day. You are evaluating his medications 2 weeks after discharge and note his LDL prior to discharge was 69 mg/dL. Which of the following is the best course of action?

A. D/C simvastatin and start atorvastatin 80 mg/day
B. D/C simvastatin and start atorvastatin 20 mg/day
C. Continue simvastatin 20 mg/day
D. D/C simvastatin; no statin is indicated.
Self-Assessment Question 2

A 65 year old man is 4 week post-ACS. His past medical history is significant for CVA. His blood pressure is 147/84 mmHg and his heart rate is 60 bpm. Before his hospitalization, his primary care physician said his BP goal is <150/90 mmHg since he is over 60. He is currently taking metoprolol succinate 50 mg/day and lisinopril 20 mg/day. He is currently asymptomatic and his electrolytes and renal function are normal. What is the best course of action?
A. BP is at goal; no change is needed.
B. BP is at goal; decrease metoprolol succinate to 25 mg/day
C. BP is above goal; increase metoprolol succinate to 75 mg/day
D. BP is above goal; add chlorthalidone 12.5 mg/day

Self-Assessment Question 3

A 60 year old woman calls you to discuss her medications. She had an MI and with stent placement 7 months ago. She is currently taking ticagrelor 90 mg twice daily and aspirin 81 mg/day, among her other medications. She asks if she could stop the ticagrelor since she is having “ugly” bruising. She is having no bleeding. What is the best response?
A. Yes, she has been on it for at least 6 months.
B. Yes, but she needs to call her doctor first
C. No, she will need to be on it for at least 12 months
D. No, she will need to take it indefinitely

Self-Assessment Question 4

When should discharge planning begin for patients admitted with an ACS event?
A. In the emergency room
B. Day of admission
C. 48 hours before discharge
D. Day of discharge

Self-Assessment Question 5

Which of the following transition of care techniques/methods can be completed by a pharmacist?
A. Medication reconciliation
B. Telephone follow up medication instructions
C. Patient medication adherence assessment
D. A and C
E. All of the above

Acute Coronary Syndrome (ACS) in the U.S.
- 15.4 million people ≥20 years old have heart disease
- A coronary event occurs every 34 seconds
- 1,141,000 discharges for ACS in 2010
  - 813,000 AMI (NSTEMI/STEMI) (71.2%)
  - 322,000 Unstable angina (28.2%)
  - 6,000 both
- Mortality rate from CHD declining
- Revascularization Procedures:
  - 954,000 percutaneous coronary intervention (PCI) procedures
  - 397,000 coronary artery bypass graft (CABG) surgeries
- Estimated cost in U.S. $204 billion

Annual ACS-Related Healthcare Costs
- Hospitalization 75%
- Outpatient Physician Visits, 16%
- Emergency Department Visits, 2%
- Prescription Drug Costs, 7%
ACS Pharmacotherapy

- **Anti-ischemia Therapy**
  - Oxygen
  - Nitroglycerin
  - β-blockers
  - Morphine
- **Anticoagulant Therapy**
  - Unfractionated heparin (UFH)
  - Enoxaparin
  - Bivalirudin
  - Fondaparinux
- **Antiplatelet Therapy**
  - Aspirin
  - P2Y12 inhibitors
  - Clopidogrel
  - Prasugrel
  - Ticagrelor
- **Disease Modifying Therapy**
  - ACE inhibitors
  - Statins

Acute Care Pharmacist

- **Protocol Development**
  - Selection of appropriate medication
    - When and which GP IIb/IIIa inhibitor
    - Which anticoagulant
    - Which P2Y12 inhibitor
  - Medication timing
  - Monitoring and dose titration
- **Drug dosing**
  - UFH
  - Renal dosing
    - Epifibatide or tirofiban
    - Enoxaparin
  - Meeting performance measures
  - Transition of care procedures

Case #1

RJ is a 67 year old male who presents with significant chest pain lasting 2 hours. Upon admission he is diagnosed with non-ST-segment elevation myocardial infarction (NSTEMI). He also has a history of hypertension and diabetes mellitus type 2. Which of the following initial and long-term antiplatelet regimens would be best for this patient?

A. Aspirin 325 mg daily alone
B. Aspirin 81 mg daily with clopidogrel 75 mg daily
C. Aspirin 325 mg daily with ticagrelor 90 mg twice daily
D. Aspirin 81 mg daily with prasugrel 10 mg daily

Aspirin Recommendations

- Non-enteric-coated chewable aspirin (162 mg to 325 mg) should be given to ALL patients with NSTE ACS without contraindications as soon as possible
- Aspirin indefinitely for NSTE ACS patients treated with or without stenting
- Aspirin allergic patients with NSTE ACS treated medically (without stenting) use clopidogrel or ticagrelor for up to 12 months
- After PCI, it is reasonable to use aspirin 81 mg daily in preference to higher doses

PK/PD of Current P2Y12 Inhibitors

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Clopidogrel</th>
<th>Prasugrel</th>
<th>Ticagrelor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absorption / Bioavailability</td>
<td>80 – 100%</td>
<td>80 – 100%</td>
<td>30 – 40%</td>
</tr>
<tr>
<td>Tmax</td>
<td>2 hours</td>
<td>3 min</td>
<td>1.5 hours</td>
</tr>
<tr>
<td>Onset of Action</td>
<td>No LD: 3 – 5 days</td>
<td>No LD: 3 days</td>
<td>180 mg LD: 30 – 60 min</td>
</tr>
<tr>
<td></td>
<td>300 mg LD: 2-6 hours</td>
<td>60 mg LD: 30 – 60 min</td>
<td>30 – 60 min</td>
</tr>
<tr>
<td></td>
<td>600 mg LD: 2-4 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein Binding</td>
<td>95%</td>
<td>98%</td>
<td>99%</td>
</tr>
<tr>
<td>Metabolism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatic</td>
<td>(3A4, 2C19, 1A2, 2B6)</td>
<td>(3A4, 2B6, 2C9, 2C19)</td>
<td>(3A4/5)</td>
</tr>
<tr>
<td>Elimination</td>
<td>58% urine</td>
<td>58% urine</td>
<td>58% urine</td>
</tr>
<tr>
<td></td>
<td>46% feces</td>
<td>27% feces</td>
<td>26% urine</td>
</tr>
<tr>
<td>T%1/2</td>
<td>6 hours</td>
<td>7 hours</td>
<td>7 hours</td>
</tr>
<tr>
<td>Platelet recovery</td>
<td>~ 5 days</td>
<td>~ 7 days</td>
<td>~ 3-5 days</td>
</tr>
</tbody>
</table>

PK = pharmacokinetics; PD = pharmacodynamics
LD = loading dose

Clinical Issues with Clopidogrel

- Variability of platelet inhibition
  - Drug – Drug interactions (PPIs)
  - Up to 40% of patients are “nonresponsive”
  - Role of platelet function testing?
  - What to do with the results?
- Genetic polymorphisms in metabolism
  - Prodrug that must undergo two CYP450 enzymes conversion steps
  - CYP 2C19 loss-of-function alleles
    - Heterozygous vs homozygous
    - Connection of clinical outcomes debated

PPIs = proton pump inhibitors.
P2Y12 Inhibitor Recommendations

<table>
<thead>
<tr>
<th>ACC/AHA</th>
<th>COR</th>
<th>ACO</th>
<th>LOE</th>
</tr>
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<td>LOE</td>
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</table>

A P2Y12 inhibitor (clopidogrel or ticagrelor) in addition to aspirin should be administered for up to 12 months to all patients with NSTE ACS without contraindications who are treated with an ischemia-guided strategy.

It is reasonable to use ticagrelor in preference to clopidogrel for P2Y12 treatment in patients with NSTE ACS who undergo an ischemia-guided strategy.

In patients receiving a stent (BMS or DES) during PCI for NSTE ACS, P2Y12 inhibitor therapy (clopidogrel, prasugrel, or ticagrelor) should be given for at least 12 months.

It is reasonable to use prasugrel or ticagrelor over clopidogrel for P2Y12 treatment in patients with NSTE ACS treated with an early invasive strategy.

Prasugrel should not be administered in patients with a prior history of stroke or TIA.


TRITON-TIMI 38 Trial

Net Clinical Benefit by Subgroup

Prasugrel vs. Clopidogrel by Subgroup

Prior Stroke or TIA

HR 1.54 (1.02 – 2.32); p=0.04 3.8%

≥ 75 Years of Age

HR 0.99 (0.81 – 1.21); p=0.92 16%

Weight ≤ 60 kg

HR 1.03 (0.69 – 1.53); p=0.89

80% of patients in TRITON-TIMI 38 demonstrated a significant reduction in CV death, MI, or stroke without an increase in bleeding.


PLATO Study Design


PLATO Results – Major Bleeding

Non-CABG and CABG Related


PLATO Overall

United States

≥300 mg (n=679)

>100-<300 mg (n=39)

≤100 mg (n=541)

Non-US

≥300 mg (n=319)

>100-<300 mg (n=1,095)

≤100 mg (n=14,812)


Other Adverse Effects

Dyspnea, %

Any 13.8 7.8 <0.001

With D/C of study treatment 0.9 0.1 <0.001

Ventricular pauses, %

First week

≥ 3 seconds 5.8 3.6 0.01

≥ 5 seconds 2.0 1.2 0.10

At 30 days

≥ 3 seconds 2.1 1.7 0.52

≥ 5 seconds 0.8 0.6 0.00

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ACS Treatment Plan

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</thead>
<tbody>
<tr>
<td>Antithrombotic therapies</td>
</tr>
<tr>
<td>Beta blockers</td>
</tr>
<tr>
<td>ACE inhibitors/ARBs/aldosterone antagonists</td>
</tr>
<tr>
<td>Calcium channel blockers</td>
</tr>
<tr>
<td>Statins</td>
</tr>
<tr>
<td>Plan for antithrombotic management in case of surgical or medical procedures</td>
</tr>
<tr>
<td>Inappropriate use of NSAIDS</td>
</tr>
<tr>
<td>Use of proton pump inhibitors</td>
</tr>
</tbody>
</table>

J Am Coll Cardiol. 2014; doi:10.1016/j.jacc.2014.09.017

P2Y₁₂ Inhibitor Recommendations

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</tr>
<tr>
<td>Prasugrel should not be administered in patients with a prior history of stroke or TIA</td>
<td>III B</td>
</tr>
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Polling Question

• The 12 month duration of dual antiplatelet therapy after ACS is undisputed

A. True
B. False

DAPT trial

• The risk and benefits of DAPT beyond 1 year was uncertain
• After stent placement and DAPT initiation, patients were enrolled, and 12 months later randomized
  – Continue clopidogrel or prasugrel x18 additional months
  – Or d ticlopidine and start placebo for 18 months
• Co-primary efficacy end points during 12 to 30 months
  – Stent thrombosis
  – Major adverse cardiovascular and cerebrovascular events (a composite of death, myocardial infarction, or stroke)
• Primary safety end point: moderate or severe bleeding.


DAPT trial – Results

• Over 9,900 patient enrolled
• Efficacy: Continued DAPT
  – Reduced the rates of stent thrombosis (0.4% vs. 1.4%; HR 0.29 (95% CI 0.17 to 0.48); P<0.001)
  – Reduced rates of major adverse cardiovascular and cerebrovascular events (4.3% vs. 5.9%; HR 0.71 (95% CI 0.59 to 0.85); P<0.001)

DAPT trial - Results

- Safety
  - Death from any cause:
    - 2.0% in the group that continued thienopyridine therapy
    - 1.5% in the placebo group
    - HR 1.36 (95% CI, 1.00 to 1.85); P = 0.05).
  - Moderate or severe bleeding was increased with continued thienopyridine treatment (2.5% vs. 1.6%, P = 0.001).
  - An elevated risk of stent thrombosis and myocardial infarction was observed in both groups during the 3 months after discontinuation of thienopyridine treatment.

Case #2

- A 61 year old woman presents to clinic for follow-up post ACS. Her BP is 105/60 mmHg and HR is 80 bpm. Her EF is 55%, her A1c is 5.5% and her GFR is 65 ml/min. She is currently taking carvedilol 25 mg BID, atorvastatin 40 mg/day, aspirin 81 mg/day, clopidogrel 75 mg/day. She is asking if she should start an ACE inhibitor, as her husband starting taking one after his heart attack. What is the best response?
  A. Yes, an ACE inhibitor has a Class I indication
  B. Could consider, ACE inhibitors are a Class IIb indication for her
  C. No, an ACE inhibitor is not indicated for her

Renin-Angiotensin-Aldosterone Inhibitors

- Class I
  - ACE inhibitors should be continued indefinitely in all patients with LVEF <40% and in those with HTN, DM or stable CKD (unless contraindicated)
  - ARBs are recommended in patients with HF or MI with LVEF <40% when ACE inhibitors are not tolerated
  - Aldosterone antagonists are recommended in patients post-MI with LVEF <40%, DM or HF and without:
    - Significant renal dysfunction (Cr >2.5 mg/dL in men or >2.0 in women)
    - Hyperkalemia (K >5.0 mEq/L)

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Blood Pressure and Beta Blockers

<table>
<thead>
<tr>
<th>Goal: Blood Pressure Control &lt;140/90 mm Hg</th>
<th>AHA/ACC</th>
<th>COR</th>
<th>LOE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with BP&gt;140/90 mm Hg should be treated, as tolerated with BP medications, initially with beta blockers and/or ACE inhibitors*</td>
<td>I</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Beta blockers should be used in all pts who have EF ≤ 40% with HF or prior MI. Use carvedilol, metoprolol succinate or bisoprolol.</td>
<td>I</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Beta blockers should be started and used for 3 years in all patients with normal LV function who have had ACS or MI.</td>
<td>I</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>It is reasonable to continue beta blocker therapy beyond 3 years in all patients with normal LV function who have had an MI or ACS</td>
<td>IIa</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>It is reasonable to give beta blockers to all patients with EF&lt;40% without HF or prior MI.</td>
<td>IIa</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Continue beta blocker therapy for 3 years in all patients with normal LV function who have had ACS or MI.</td>
<td>IIb</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Consider as chronic therapy for all patients with CAD or other vascular disease</td>
<td>IIb</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

* Similar recommendations are in 2013 AHA/ACC Guideline on Lifestyle Management to Reduce CV Risk and Science Advisory from the AHA/ACC and CDC (Hypertension published online November 15, 2013)

Statins

- Class I
  - High-intensity statin therapy should be continued in all patients post-ACS (with no contraindications present)

Case #3

- A 55 year old man s/p ACS has continued to have angina symptoms 1 month after his recent stent placement. A cath confirms the stent is patent. He is unable to titrate his metoprolol dose due to symptomatic bradycardia. Currently, his BP is 150/95 mmHg. What would be the next best anti-angina to add for him?
  A. Diltiazem ER 120 mg/day
  B. Isosorbide mononitrate 30 mg/day
  C. Amlodipine 5 mg/day
  D. Ranolazine 500 mg BID

Anti-Anginal Medications

- Beta blockers – lower HR and BP
- Calcium channel blockers
  - Dihydropyridines – lower BP
  - Non-dihydropyridines – lower HR and BP
- Nitrates – can lower HR and BP
  - Long-acting
  - Short-acting
- Ranolazine – does not affect HR or BP
  - Mechanism of action unknown
  - Beneficial for patients with low BP and HR
  - Can prolong the QTc interval

Use of Medications at Discharge

- Class I
  1. Continue anti-angina medications
     - No or incomplete coronary revascularization
     - Recurrent symptoms after revascularization
  2. Prescribe for quick acting NTG (sublingual, spray). Use if angina lasts >1 minute, call 911 if it does not subside in 3-5 minutes
  3. Prior to discharge, education about symptoms of ischemia and how to seek emergency care (change in pattern or severity)
  4. Prior to discharge, education each medication
     - Type and purpose
     - Dose, frequency and duration
     - Potential adverse effects

Case #3

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  C. Amlodipine 5 mg/day
  D. Ranolazine 500 mg BID
Health Maintenance Recommendations

- **Class I**
  - Patients should be referred to a comprehensive CV rehabilitation program either prior to discharge or during first outpatient visit
  - Patient education
  - Appropriate lipid, blood pressure, smoking cessation and lifestyle management
  - Revascularization does not decrease the need for lifestyle changes
  - Pneumococcal vaccine
    - Patients 65 years of age and older
    - High risk patient with CVD
  - Influenza vaccine annually

Other Medications - NSAIDs

- **Class I**
  - Pain treatment, if needed, should begin with APAP, non-acetylated salicylates (e.g., salsalate), tramadol, or small doses of narcotics

- **Class IIa**
  - Reasonable to use non-selective NSAIDs, such as naproxen, if initial therapy is insufficient

- **Class IIb**
  - If intolerable pain persists, NSAIDs with increasing degree of COX-2 selectivity may be considered (lowest effective dose, shortest time possible)

- **Class III (Harm)**
  - Do not administer COX-2 selective NSAIDs when other therapy provides acceptable pain relief

Relative Safety of NSAIDs

- **Headline**
  - FDA Advisory Panels Against CV Safety Claim for Naproxen

  - The 16–9 vote against changing the label to highlight a lower CV risk profile with naproxen as compared to other NSAIDs. A meta-analysis published in 2013 in Lancet that showed the risk for CV events was present for both nonselective and COX-2 selective NSAIDs, but the risk might be lower for those treated with naproxen.

  Newer guidelines do not address this issue

Other Medications

- **Hormone Therapy**
  - **Class III (Harm)**
    - Estrogen should not be given for secondary prevention of CVD
    - Estrogen should not be continued after ACS unless benefit outweighs estimated risk

- **Antioxidant Vitamin and Folic Acid**
  - **Class III (No benefit)**
    - Vitamins E, C or beta carotene should not be used for secondary prevention
    - Folic acid, Vitamin B6 and B12 should not be used for secondary prevention

Transitions of Care

- **Transitions of Care (TOC)** refer to the movement of patients between healthcare locations, providers, or different levels of care within the same location as their conditions and care needs change

  - Specifically, they can occur:
    - Within settings; eg, primary care to specialty care, or intensive care unit (ICU) to general ward
    - Between settings; eg, hospital to sub-acute care, or ambulatory clinic to senior center
    - Across health states; eg, curative care to palliative care or hospice, or personal residence to assisted living
    - Between providers; eg, generalist to a specialist practitioner, or acute care provider to a palliative care specialist
    - Errors can occur in each of these transitions
Three Transitions of Care

- 3 transition care points at a large health care system
  - Time 1: hospital admission to discharge
  - Time 2: hospital discharge to skilled nursing facility (SNF)
  - Time 3: SNF admission to discharge home or long term care (LTC)
- Discrepancies: any unexplained documented change in the patients' medication lists between sites
  - Unintentional discrepancies: any omission, duplication, or failure to change back to original regimen when indicated
- 44 patients, 132 transitions, 1696 medications

JAMDA 2013;14:668-72.

Three Transitions of Care

- All patients experienced discrepancies
  - 86% had at least 1 unintentional discrepancy.
- Average medications/patient
  - Time 1: Increased from 6.5 to 10.7 (P < .001)
  - Time 2: Increased from 10.7 to 12.6 (P < .0174)
  - Time 3: Decreased from 12.6 to 8.9 (P < .001).
- Average medication discrepancies
  - Time 1: 8.1 medications
  - Time 2: 7.2 medications
  - Time 3: 7.6 medications
- Unintentional group: CV drugs had highest number of discrepancies (26%).

JAMDA 2013;14:668-72.

Cost of Inadequate TOC

- Patient and caregiver confusion
  - 51% not taking the right medications
  - 59% of patients had a misunderstanding about the directions (reason, dose, frequency)
- Adverse Drug Events
  - 19% of discharged patients experience an adverse event; most are adverse drug events
- Lapses in care and follow-up
  - 60% of Medicare beneficiaries didn’t see their physician between discharge and rehospitalization
  - Increase resource utilization


Challenges Leading to Inadequate TOC

- No standardized processes
- Incomplete sharing of medical information
  - Prescriptions not transmitting
- Inadequate communication
  - Medications that should be discontinued
- Financial limitations
- Staffing shortages


Variations in Pharmacy-Based TOC

- Survey of pharmacy directors (393 respondents)
  - Medication histories upon admission
    - RNs – 56%
    - Pharmacists – 27%
  - Most indicated that pharmacists do not routinely
    - Provide patients with tools to facilitate medication adherence before hospital discharge
    - Follow-up with patient after discharge
  - 56% responded that pharmacists provide specific medication education

Am J Health-Syst Pharm. 2014; 71:648-56

Variations in Pharmacy-Based TOC

- 70% indicated that pharmacists spent <10% of their time devoted to TOC
- 44% indicated that pharmacists were not involved in TOC
- 89% either agreed or strongly agreed “It is important for pharmacists to be involved in TOC activities for hospitalized patients
- Barriers
  - Lack of staff resources (91%)
  - Insufficient recognition of the value of pharmacists for TOC (41%)
  - Lack of leadership support (38%)
  - Insufficient technology (30%)

Am J Health-Syst Pharm. 2014; 71:648-56
Recommendations to Expand Pharmacists’ TOC Activities

1. Reallocate pharmacy resources to take medication histories upon initial presentation
2. Ambulatory care clinics should aim to improve TOC
3. Involve pharmacy students and residents in TOC
4. Perform formalized pharmacy consultations documented in the medical record

Challenging Transition Post-ACS

- Multiple simultaneous changes increases risk of transitional care failure
  - 5+ new medications
  - New diet and exercise plans
  - Smoking cessation
  - Cardiac rehab
  - About 20% of patients hospitalized with acute myocardial infarction are readmitted within 30 days

ACS Transitions Critical Facts

- Secondary preventative therapies after ACS reduce deaths attributable to heart disease more than any other intervention
- The highest rate of nonadherence happens within the first month after discharge
- Nonadherence with guideline recommended therapy in this first month is associated with increased mortality at 12 months

ACS TJC Core Measures and Secondary Prevention

- Aspirin* + P2Y12
- Statin*
- Beta-blocker*
- Angiotensin Blockade*
- +/- Aldosterone Antagonism
- Nitroglycerin
- Smoking Cessation pharmacotherapy*

  * TJC Core Measure at Discharge

Adherence to Dual Antiplatelet Therapy (DAPT)

- PREMIER Registry
  - Approximately 1 in 7 patients (13.6%) have stopped P2Y12 Inhibitor therapy within 30 days of DES placement
- NHLBI Dynamic Registry
  - 100% were discharged on DAPT
  - 69% were still on DAPT at one year

Adherence Following Discharge: The PREMIER Registry

- Largest decline in medication use between hospital discharge and 1 month follow up, P<.001
Adherence to Guidelines: One Year Post-discharge

<table>
<thead>
<tr>
<th>Therapy</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statin</td>
<td>70%</td>
</tr>
<tr>
<td>β-blocker</td>
<td>72%</td>
</tr>
<tr>
<td>ACE-I/ARB</td>
<td>60%</td>
</tr>
<tr>
<td>Antiplatelets</td>
<td>74%</td>
</tr>
<tr>
<td>Dual Antiplatelets</td>
<td>69%</td>
</tr>
<tr>
<td>Optimal Medical Therapy</td>
<td>47%</td>
</tr>
</tbody>
</table>

Importance of Dual Antiplatelet Therapy Adherence

<table>
<thead>
<tr>
<th>Mortality (%) at 12 months</th>
<th>Continued</th>
<th>Discontinued</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard Ratio</td>
<td>0.7%</td>
<td>7.5%</td>
</tr>
<tr>
<td>95% CI</td>
<td>1.3-60.6</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Who is at Risk?

- Did not graduate from high school
- CABG procedure or medical management
- Unmarried
- Older patients
- Female
- "High" risk

Who is at Risk?

- Risk of missing recommended treatments

Patient-Reported Reasons for Not Taking Evidence-Based Post-MI Therapy

<table>
<thead>
<tr>
<th>Reason</th>
<th>Aspirin (n=1,569)</th>
<th>Clopidogrel (n=1,554)</th>
<th>Statin (n=1,571)</th>
<th>β-blocker (n=1,566)</th>
<th>ACE inhibitor (n=1,556)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergy/intolerance/side effect</td>
<td>15.4%</td>
<td>2.8%</td>
<td>11.8%</td>
<td>7.2%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Not prescribed at discharge</td>
<td>22.6%</td>
<td>42.7%</td>
<td>42.1%</td>
<td>28.6%</td>
<td>43.5%</td>
</tr>
<tr>
<td>Stopped by MD unrelated to intolerance/side effects</td>
<td>25.0%</td>
<td>19.3%</td>
<td>11.8%</td>
<td>24.8%</td>
<td>14.9%</td>
</tr>
<tr>
<td>No reason provided</td>
<td>43.3%</td>
<td>37.3%</td>
<td>37.5%</td>
<td>41.2%</td>
<td>35.3%</td>
</tr>
</tbody>
</table>

Transitional Planning Begins at Admission

- Accuracy and completeness of medication history
- Early assessment of barriers to adherence
  - With targeted intervention toward highest risk
  - Most ACS will be considered high-risk
- Education early and often
  - Daily as medications are being administered
  - Utilizing “teach-back” techniques

Multi-Center Medication Reconciliation Quality Improvement Study (MARQUIS)

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Toolkit Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assigning roles and responsibilities</td>
<td>Identify resources available for each person</td>
</tr>
<tr>
<td></td>
<td>Outline required knowledge, skills</td>
</tr>
<tr>
<td></td>
<td>Encourage use of personnel for efficiency</td>
</tr>
<tr>
<td></td>
<td>Assign “ownership” for the process</td>
</tr>
<tr>
<td>Patient owned medication list</td>
<td>Provide patient with med list at discharge</td>
</tr>
<tr>
<td></td>
<td>Provide med list in ambulatory setting</td>
</tr>
<tr>
<td>Guidelines for taking “best possible” medication history</td>
<td>Two sources of information</td>
</tr>
<tr>
<td></td>
<td>Resolve discrepancies</td>
</tr>
<tr>
<td></td>
<td>Use probing questions</td>
</tr>
<tr>
<td>Risk stratification</td>
<td>Stratify patients into high, intermediate, low risk (example number of medications, Morisky Scale)</td>
</tr>
<tr>
<td>Discharge counseling</td>
<td>Correctly identify the “active learner”</td>
</tr>
<tr>
<td></td>
<td>Review entire med list (new, d/c, instructions, side effects, etc.)</td>
</tr>
<tr>
<td></td>
<td>Use “teach back” and “ask 3” techniques</td>
</tr>
<tr>
<td>Use medication reconciliation bundle</td>
<td>Assign high risk patients to highly skilled personnel</td>
</tr>
</tbody>
</table>

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Nonadherence Has Reached Epidemic Proportions

- 1 in 3 patients fail to fill their prescriptions
- 3 of 4 patients report they do not consistently take their medications as directed
- 60% of patients cannot correctly name their medications
- 20% of patients take other people’s medications
- 33-69% of medication-related hospital admissions in the U.S. are due to poor adherence
- 1 in 4 nursing home admissions are related to improper self-administration of medications

Morisky 8-Item Medication Adherence Questionnaire

<table>
<thead>
<tr>
<th>Question</th>
<th>Patient Answer</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you sometimes forget to take your medicine?</td>
<td>Yes/No</td>
<td>Y=1; N=0</td>
</tr>
<tr>
<td>Have you ever cut back or stopped taking your medicine without telling your doctor because you felt worse when you took it?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When you travel or leave home, do you sometimes forget to bring along your medicine?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you ever cut back or stopped taking your medicine without telling your doctor because you felt worse when you took it?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When you feel like your symptoms are under control, do you sometimes stop taking your medicine?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often do you have difficulty remembering to take all your medicine?</td>
<td>A. Never/rarely B. Once in a while C. Occasionally D. Usually E. All the time</td>
<td>A=0; B-E=1</td>
</tr>
</tbody>
</table>

Medication Adherence

- Medication adherence is not exclusively the responsibility of the patient
- Medication-taking behavior is complex and involves patient/support system, physician, and process components
- Identification of nonadherence is challenging and requires motivational interviewing skills to affect health behavioral change
- Solutions include encouraging a “blame-free” environment, opting for less frequent dosing, improving patient education, assessing health literacy, and paying attention to rational nonadherence

Targeted Education and Intervention During Hospitalization

- HCAHPS: Patients’ Perspectives of Care Survey
- #16. How often did hospital staff describe/tell you what the medicine was for?
- #17. How often did hospital staff describe possible side effects in a way you could understand?
- Upgraded discharge processes and systematic approaches:
  - Improved Medication Reconciliation at discharge
  - Discharge prescription services
  - Project RED
  - Project BOOST

Elements of Discharge Medication Reconciliation

- Review accuracy of “Home Medication Lists”
  - Discussion with outpatient pharmacy(s) used by the patient
  - Tell me what pills or other things you take to improve or manage your health
  - Medications shared by friends or family
  - Action plan for potential missing meds: “If you get home and notice a medication missing...”
- Thorough review by multiple members of health care team whenever possible
  - Compliance with guidelines, performance measures, and standards of care

Medication Management During Transitions

- Identify barriers to adherence and address with patient, care-givers, and healthcare providers
- Improved quality of information at discharge
  - Improves continuity of care, reduces hospital use (readmission and ED visits), errors, and adverse events
- Direct communication with post-discharge providers, including community pharmacists
- Post-discharge comprehensive medication management
Discharge Prescription Services

- Mobile Pharmacy Services bring discharge medications to the patient’s bedside
- Allows team to work through financial barriers
- Involved Social Services
- Prior Authorization obtained prior to discharge
- Patient Assistant Programs involved
- Increased opportunity for pharmacist counseling, identification of medication errors, reminder of HCAHPS, etc.
- Ensures medications are in hand before departure

WellTransitions Benefits & Outcomes

- Benefits
  - Medication alignment and prescription planning
  - Ensure access and education
  - Patient counseling and clinical follow-up
  - Bridge to community resources
  - Joint outcomes reporting and accountability

- Outcomes (n=48)
  - Within first 6 months unadjusted 30-day readmission was decreased
  - 9.4% for participants
  - 14.3% for eligible non-participants
  - Improvement in HCAHPS scores and high patient satisfaction
  - Multiple preventable errors identified and avoided

Re-Engineered Discharge (Project RED)

<table>
<thead>
<tr>
<th>Toolkit Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascertain need for and obtain language assistance.</td>
</tr>
<tr>
<td>Make appointments for follow-up care (appointments &amp; tests/labs).</td>
</tr>
<tr>
<td>Plan for the follow-up of results from tests/labs pending at discharge.</td>
</tr>
<tr>
<td>Organize post-discharge outpatient services and medical equipment.</td>
</tr>
<tr>
<td>Identify correct medicines and plan for the patient to obtain them.</td>
</tr>
<tr>
<td>Reconcile the discharge plan with national guidelines.</td>
</tr>
<tr>
<td>Teach a written discharge plan the patient can understand.</td>
</tr>
<tr>
<td>Educate the patient about his or her diagnosis and medicines.</td>
</tr>
<tr>
<td>Review with the patient what to do if a problem arises.</td>
</tr>
<tr>
<td>Assess the degree of the patient’s understanding of the discharge plan.</td>
</tr>
<tr>
<td>Expedite transmission of the discharge summary to clinicians accepting care of the patient.</td>
</tr>
<tr>
<td>Provide telephone reinforcement of the discharge plan.</td>
</tr>
</tbody>
</table>

Better Outcomes for Older adults through Safe Transitions (Project BOOST)

<table>
<thead>
<tr>
<th>Risk Specific Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>General assessment of preparedness (GAP).</td>
</tr>
<tr>
<td>Medications reconciled with pre-admission list.</td>
</tr>
<tr>
<td>Medication use/side effects reviewed using teach back.</td>
</tr>
<tr>
<td>Teach back used to confirm understanding of diagnosis, prognosis, self-care, symptoms requiring medical attention.</td>
</tr>
<tr>
<td>Action plan for management complications.</td>
</tr>
<tr>
<td>Discharge communication provided to post hospitalization care providers and documented receipt.</td>
</tr>
<tr>
<td>Direct communication to principal outpatient provider.</td>
</tr>
<tr>
<td>Telephone contact arranged at 72 hours.</td>
</tr>
</tbody>
</table>


Pharmacist Intervention for Low Literacy in Cardiovascular Disease (PILL-CVD)


<table>
<thead>
<tr>
<th>Interventions</th>
<th>Potential ADEs (n=851)</th>
<th>Med Errors (n=851)</th>
<th>ADEs (n=851)</th>
<th>Med Errors, ADEs, Adverse Drug events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Med reconciliation</td>
<td>0.92 (0.77-1.09)</td>
<td>0.02 (0.01-0.20)</td>
<td>0.32</td>
<td>1.09 (0.86-1.38) 0.40</td>
</tr>
<tr>
<td>Med counseling</td>
<td>0.79 (0.62-1.01)</td>
<td>0.06</td>
<td></td>
<td>IRR (95% CI) P-value</td>
</tr>
</tbody>
</table>

MMCT Lessons Learned

• Common Barriers:
  - Financial resources, staffing resources, electronic transfer of patient information, communication, difficulty developing partners

• Elements for Success:
  - Multidisciplinary support, effective integration of the pharmacy team, data available to justify resources, strong partnerships, eMR and data transfer


MMCT Winners

1. Einstein Healthcare Network Program (REACH)
2. Froedters Hospital
3. Hennepin County Medical Center
4. Johns Hopkins Medicine
5. Mission Hospitals (MUST)
6. Sharp HealthCare
7. University of Pittsburgh School of Pharmacy and University of Pittsburgh Medical Center (MAAT)
8. University of Utah Hospitals and Clinics


Pittsburgh and UPMC

• 47 patients screened by MAAT
  - 17 patients (36%) scored a 2 or higher and received comprehensive pharmacist team evaluation
  - 93% of these patients had a significant adherence or access issue
  - requiring 72 interventions
• Pharmacist spoke to 113 patients post-discharge
  - 866 medication discrepancies (~7.8 per patient)

Hennepin County

• Program Overview
  - Modified discharge plan (similar to Project RED)
  - Med Rec on discharge
  - F/U MTIM in an Enhanced Discharge Clinic within 7 days

• Results
  - 63% of medications lists had errors
  - 30% were classified as “likely to cause readmission”
  - 175 Medication-related problems identified
    - 44% adherence
    - 23% medication safety
    - 23% inappropriate indication
    - 10% poor efficacy
  - 12 re-admissions avoided in 6 month pilot
    - ~$120,000 cost avoidance
    - 60 MTM billings
    - ~$6,000 revenue generation


Essential Components of Successful Transitions Post-ACS

Transitions of Care – to outpatient

• Goals of therapy after ACS
  – Resume normal patient activities to the extent possible
  – Develop treatment plan based on ACS, particularly lifestyle and risk factor modification.
• Risk factors should be aggressively managed to prolong survival in this high-risk population.
• Pharmacists have an opportunity to provide evidence-based care to this high-risk cohort

J Am Coll Cardiol. 2014; doi:10.1016/j.jacc.2014.09.017

Transitions of Care – to outpatient

• Continued medical therapy
  – Prognostic benefit
    • Anti-platelet agents
    • Beta-blockers
    • Statins
    • Inhibitors of renin-angiotensin aldosterone system (especially for EF <40%)
  – Symptom benefit (anti-anginal)
    • Nitrates, beta blockers, CCBs, ranolazine

J Am Coll Cardiol. 2014; doi:10.1016/j.jacc.2014.09.017

Transitions of Care – to outpatient

• Treatment of major risk factors
  – Smoking
  – Hypertension
  – Dyslipidemia
  – Physical inactivity
  – Obesity
  – Diabetes
• Individualized treatment plans
  – Risk factors, symptoms, tolerability, personalized goals

J Am Coll Cardiol. 2014; doi:10.1016/j.jacc.2014.09.017

Plan of Care Post-ACS

• Class I
  – Patients should be transitioned to effective, coordinated outpatient care to help prevent hospital readmissions
  – An evidence-based plan of care that promotes medication adherence, timely follow-up, appropriate dietary and physical activity recommendations should be provided to the patients

J Am Coll Cardiol. 2014; doi:10.1016/j.jacc.2014.09.017

ACS Treatment Plan

<table>
<thead>
<tr>
<th>Management of Risk Factors and Comorbidities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet nutrition</td>
<td></td>
</tr>
<tr>
<td>Physical activity</td>
<td></td>
</tr>
<tr>
<td>Overweight/obesity</td>
<td></td>
</tr>
<tr>
<td>Tobacco cessation</td>
<td></td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
</tr>
<tr>
<td>Heart failure</td>
<td></td>
</tr>
<tr>
<td>Arrhythmia/arrhythmia risk</td>
<td></td>
</tr>
</tbody>
</table>

Circulation 2013;127:e6-e245.

Components of a Healthy Diet

1. Consume ≥ 4.5 cups/day of fruits and vegetables
2. Consume ≥ 2 servings/week of fish
3. Consume ≥ 3 servings/day of whole grains
4. No more than 36 oz/wk of sugar-sweetened beverages
5. No more than 1500 mg/day of sodium

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Physical Activity

- In general, advise adults to engage in aerobic physical activity
  - 3 to 4 sessions per week
  - Lasting on average 40 minutes per session
  - Moderate- to vigorous-intensity physical activity.
- Moderate-intensity physical activity: 2.5 hours/week or
- Vigorous-intensity aerobic physical activity: 75 min/week or
- Equivalent combination of moderate- and vigorous-intensity aerobic physical activity.
- Aerobic activity should be performed in episodes of at least 10 min, preferably spread throughout the week.

Circulation. 2014;129(suppl 2):S76-S99

Overweight/Obese

- Patients who are overweight (BMI 25.0–29.9 kg/m²) and obesity (BMI ≥30 kg/m²) are at elevated risk of CVD.
- Obesity adults are at elevated risk of mortality from all causes
- Sustained weight loss of 3%–5% is likely to result in clinically meaningful reductions in triglycerides, blood glucose, hemoglobin A1c, and the risk of developing type 2 diabetes
- Long-term pharmacotherapy: Orlistat, lorcaserin, phentermine/topiramate


Tobacco Cessation

- Behavioral therapy
  - Simple six-step algorithm: 6 A's
  - Ask about tobacco at every visit
  - Advise every tobacco user to quit
  - Assess willing to quit at every visit
  - Assist patients with counselling or referral to tobacco cessation program
  - Arrange for follow-up
  - Avoid exposure to smoke
  - Direct patient-clinician encounters, telephone, computer programs, multimedia, text messaging, or group-based therapy
  - National Cancer Institute quitline 1-877-44U-QUIT

Circulation 2013;127:e6-e245.

Tobacco Cessation

- Pharmacologic Treatments
  - Nicotine replacement
    - Superior to placebo, increasing quit rates about 2-fold
    - Over the counter: Patch, gum, lozenge
    - Rx: Oral inhaler, nasal spray
  - In a meta-analysis, combination nicotine replacement (patch + gum, spray, or inhaler) was more effective than any treatment alone (RR 1.34, 95% CI, 1.18–1.51).

Treating Tobacco Use and Dependence: 2008 Update. U.S. Department of Health and Human Services; Cochrane Database of Systematic Reviews 2012;11


Tobacco Cessation

Dyslipidemia

Clinical ASCVD

- Acute coronary syndromes, or a history of MI, stable or unstable angina, coronary or other arterial revascularization, stroke, TIA, or atherothrombotic peripheral arterial disease.
  - Age 75 or younger – high intensity statin recommended
  - Over age 75 years – moderate intensity statin recommended

**Statin Intensity**

- **HIGH**
  - Rosuvastatin 20-40 mg/day
  - Atorvastatin 40-80 mg/day

- **LOW**
  - Simvastatin 10 mg/day
  - Lovastatin 10-20 mg/day
  - Pravastatin 10 to 20 mg/day
  - Fluvastatin 20 to 40 mg/day
  - Pitavastatin 1 mg/day

- **MODERATE**
  - Simvastatin 20-40 mg/day
  - Atorvastatin 10-20 mg/day
  - Pravastatin 40-80 mg/day
  - Rosuvastatin 5-10 mg/day
  - Lovastatin 40 mg/day
  - Fluvastatin 80 mg/day
  - Pitavastatin 2-4 mg/day

**Dyslipidemia**

- The benefit of non-statin therapies has not been shown to exceed the risk of ADRs, with the recent exception of ezetimibe.
  - Higher ASCVD risk patients on maximum-tolerated statin with a less-than-anticipated therapeutic response, adding a non-statin drug(s) may be considered
  - Higher-risk individuals include:
    - Individuals with clinical ASCVD younger than 75 years
    - Individuals with baseline LDL-C of 190 mg/dL or higher
    - Individuals 40–75 years of age with DM

**IMPROVE-IT** Improved Reduction of Outcomes: Vytorin Efficacy International Trial

- Ezetimibe reduces cholesterol absorption at the epithelial brush border in the GI tract.
- When added to a statin, can result in an additional 20% reduction in LDL-C
- Goal: To determine the clinical efficacy and safety of ezetimibe/simvastatin vs. simvastatin alone
  - Reduction in CV events
  - Is lower LDL-C better?
  - Ezetimibe safety

<table>
<thead>
<tr>
<th>Mean LDL-C (mg/dL)</th>
<th>Primary End Point</th>
<th>P Value for End Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ezetimibe/simvastatin</td>
<td>53.7</td>
<td>32.7%</td>
</tr>
<tr>
<td>Simvastatin</td>
<td>69.5</td>
<td>34.7%</td>
</tr>
</tbody>
</table>

**IMPROVE-IT**

- Patients hospitalized for STEMI or non–ST-segment elevation myocardial infarction (NSTEMI)
- Age ≥ 50 years plus 1+ risk factor:
  - New ST change, + troponin, DM, prior MI, PAD, CVD, prior CABG (coronary artery bypass grafting) > 3 years, multivessel CAD
- LDL-C 50–125 mg/dL
  - 50–100 mg/dL if prior lipid-lowering therapy
- More than 18,000 patients enrolled and randomized for 4.9 years

**Hypertension**

- In 2015, the ACC/AHA published HTN guidelines for patients with CAD
- BP goal <140/90 mmHg (I.A)
  - Consider lower BP goal (<130/80 mmHg) in some patients with previous MI, stroke or TIA, or CAD risk equivalents (IIb, C)
- Initial therapy:
  - Beta blocker plus
  - ACE inhibitor plus
  - Thiazide diuretic (chlorothalidone preferred)
- Add other antihypertensive drugs to reach BP goal

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Case #4

• An 80 year old man with diabetes was recently discharged from the hospital with recurrent ACS. He now has a total of 4 coronary stents. He would like to do all he can to reduce his risk of another heart attack and is asking what his goal A1c should be. He is currently taking metformin 1g BID as well as short- and long-acting insulin and his last A1c was 7.8%. Which of the below is the best response?

A. Less than 6%
B. Less than 7%
C. Less than 8%
D. Less than 9%

Diabetes

• Consider ACE inhibitor therapy and use aspirin and statin therapy (if not contraindicated) to reduce the risk of CV events.
• In patients with a prior MI, β-blockers should be continued for at least 2 years after the event.
• Less stringent A1C goals (such as <8%) may be appropriate for patients with advanced macrovascular complications, limited life expectancy, extensive comorbid conditions, h/o severe hypoglycemia
• In individuals with overt CVD, a lower LDL cholesterol goal of <70 mg/dL (vs. <100 mg/dL), with a high dose statin, is optional

AHA Statement on HF TOC

• The elderly are a growing segment of the US population and account for a large number hospitalizations.
• For Medicare beneficiaries hospitalized with HF from 2006 to 2008, the 30-day all-cause risk-standardized re-hospitalization rate was 24.7%
• For those ≥65 years of age, discharge to long-term care increased significantly from 17% in 2000 to 21% in 2010
• Of patients re-hospitalized from home-care services, 42% had cardiac-related diagnoses

Transitions of Care Recommendations

1. Systematically implement principles of transition of care programs in high-risk patients
   – Medication reconciliation
   – Very early postdischarge contact and communication with patient
   – Early office follow-up
   – Patient education on chronic self-care, including recognizing early warning signs of worsening
   – Communication with patient and postdischarge healthcare providers
   – Integrated, interdisciplinary collaboration and coordination
   – A framework that ensures that education is initiated in the hospital before the day of discharge and continues during initial community-based care

2. Routinely assess patients for high-risk characteristics associated with poor post-discharge clinical outcomes
3. Ensure that qualified and trained healthcare providers (nurses, pharmacists) provide care services
4. Allot adequate time in the hospital and postacute setting to deliver complex chronic interventions and to assess patient and caregiver responsiveness
5. Implement handoff procedures at hospital or post–acute care discharge
Transitions of Care Recommendations

6. Develop, monitor, and ensure transparency of results of quality measures using a structured outcome framework.
7. Consider patients' perceptions of QoL as a surrogate for physical, psychological, and social concerns that require support during the transition of care process.
8. Ensure availability of transition of care component details in writing
9. Use health informatics technology to assist with program sustainability. Informatics should be patient and healthcare provider centric.

Pharmacist Interventions to Reduce Readmissions

- A 2014 meta-analysis (42 randomized trials) found select interventions prevented early readmissions; many involved pharmacists
  - Medication reconciliation or special education aimed at improving medication understanding or adherence; often conducted by a pharmacist
  - Standardized discharge package to minimize failures using discharge planners and pharmacists
  - Risk-targeted, home-based intervention by nurse and pharmacist
  - Medication liaison service to improve communication of medication-related issues through discharge process
  - Regular pharmacy-facilitated discharge process with pharmacy service follow-up call

Ambulatory Care Opportunities

- Pharmacists ability to make impact on lipids, HTN, and cost reduction has been shown in ambulatory care settings such as Kaiser Permanente
- Opportunity for hospitals to partner with primary care and specialty clinics to ensure smooth transition from inpatient stay to chronic care
- Opportunity for community pharmacists to help patients understand their new regimens, help with adherence and participate in medication reconciliation

Secondary Prevention Checklist

- Complete smoking cessation
- BP control
- Lipid management
- Physical activity
- Healthy diet
- Weight management
- Type 2 DM management
- Antiplatelet therapy
- RAAS blockers
- β-Blockers
- Influenza vaccine – annually
- Depression screening
- Cardiac rehabilitation

Key Points

- Strong evidence exists on way to prevent recurrent cardiovascular events
- Medication therapy is a cornerstone to these prevention strategies
- Pharmacists are well positioned to care for patients post-ACS

Self-Assessment Question 1

A 78 year old man was discharged from the hospital post ACS on simvastatin 20 mg/day. You are evaluating his medications 2 weeks after discharge and note his LDL prior to discharge was 69 mg/dL. Which of the following is the best course of action?

A. D/C simvastatin and start atorvastatin 80 mg/day
B. D/C simvastatin and start atorvastatin 20 mg/day
C. Continue simvastatin 20 mg/day
D. D/C simvastatin; no statin is indicated.
Self-Assessment Question 2
A 65 year old man is 4 week post-ACS. His past medical history is significant for CVA. His blood pressure is 147/84 mmHg and his heart rate is 60 bpm. Before his hospitalization, his primary care physician said his BP goal is <150/90 mmHg since he is over 60. He is currently taking metoprolol succinate 50 mg/day and lisinopril 20 mg/day. He is currently asymptomatic and his electrolytes and renal function are normal. What is the best course of action?
A. BP is at goal; no change is needed.
B. BP is at goal; decrease metoprolol succinate to 25 mg/day
C. BP is above goal; increase metoprolol succinate to 75 mg/day
D. BP is above goal; add chlorthalidone 12.5 mg/day

Self-Assessment Question 3
A 60 year old woman calls you to discuss her medications. She had an MI and with stent placement 7 months ago. She is currently taking ticagrelor 90 mg twice daily and aspirin 81 mg/day, among her other medications. She asks if she could stop the ticagrelor since she is having “ugly” bruising. She is having no bleeding. What is the best response?
A. Yes, she has been on it for at least 6 months.
B. Yes, but she needs to call her doctor first
C. No, she will need to be on it for at least 12 months
D. No, she will need to take it indefinitely

Self-Assessment Question 4
When should discharge planning begin for patients admitted with an ACS event?
A. In the emergency room
B. Day of admission
C. 48 hours before discharge
D. Day of discharge

Self-Assessment Question 5
Which of the following transition of care techniques/methods can be completed by a pharmacist?
A. Medication reconciliation
B. Telephone follow up medication instructions
C. Patient medication adherence assessment
D. A and C
E. All of the above

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