1. Anti-platelet therapy, Anti-thrombotic therapy
   - 81-160mg of ASA for all patients
   - Clopidogrel 75mg for patients intolerant of aspirin
   - Add clopidogrel 75mg or ticlopidine for at least 1 year in ACS, PCI/stent (6-12 months), and at least 1 month in patients undergoing lower extremity or renal percutaneous intervention and stenting
   - There is no role for combination therapy in stable CHD or high risk patients
   - Aspirin resistance or failure occurs in 15-20% of persons. Consider clopidogrel (or the combination of ASA + clopidogrel) or higher dose aspirin (325mg) in persons who sustain an ACS while on low dose ASA
   - Avoid chronic NSAID usage if possible; if needed take at least 1 hour after daily aspirin. Exception is short term treatment of acute gout. Avoid NSAID’s in children or when creatinine >2.0-2.5mg/dL
   - Clopidogrel resistance can occur on the basis of pharmacogenomics or when used in combination with high doses of drugs that use the CYP450 3A4 pathway. The clinical meaning is yet to be determined
   - Ti/Astroke use 325mg ASA or Aggrenox™ (25mg ASA + 200mg dipyridamole bid). Use warfarin for strokes due to cardio-emboilism when considered safe
   - Consider clopidogrel 75mg for high risk patients with PAD. Note that in the setting of atherosomatic disease of the aorta and abdominal aortic aneurysms anticoagulation predisposes to the risk of atheroembolism to the kidney, heart, GI tract, heart, and CNS
   - Anti-coagulation with warfarin to INR 2-3 for at least 3mo if ventricular mural thrombus detected on imaging and consider for large anterior wall Ml; atrial fibrillation; vascular prosthetic grafts below knee. Anti-phospholipid antibody or other hypercoagulable syndromes (may need higher INR)

2. Blood pressure control and use of ACEi and angiotensin receptor blockers
   - Hypertension-Ideal BP is <120/80 mmHg
   - Diet restricted in salt, weight, high fiber or DASH Diet, exercise
   - Goals in non-diabetics <140/90, and for diabetes, those with CPI (<130/80) (JNC 7)
   - More aggressive BP lowering in patients with CAD (<130/80) should be considered, e.g. CV events on BP treatment, CHF, very high risk patients – drug choices ACEi/ARB, diuretic, amiodipine
   - Use ACEi or ARB in all patients with LVEF <40%, impaired fasting glucose, diabetes, UMA, and mild to moderate renal disease. Add aldosterone antagonist post MI when LVEF <40%
   - Patients with CHD should be considered for ACEi unless BP is ideal and otherwise low risk
   - For ACEi intolerant patients use valsartan or losartan. Titration of ACEi or ARB should be to the maximally tolerated dose. There is evidence that ACEi with higher tissue affinity (ramipril, perindopril) are more effective
   - African-Americans benefit from ACEi particularly for nephropathy, but more often require combination therapy to achieve BP targets (CCB or HCTZ)
   - For stage 2 hypertension (sBP >160 or dBP >100mmHg) 2-drug combination should be initiated (usual thiazide/ACEi or ARB). 2 agents in one dose improve compliance. Beta-blocker’s should not be used for primary treatment unless otherwise indicated
   - Combination drugs are necessary in >60% of patients with hypertension to reach target of <140/90 mmHg and in diabetes often k3 drugs are required to obtain the target <130/80 mmHg. In HTn and moderate chronic kidney disease use ARB or ACEi followed by beta-blocker and vasodilators such as CCB and minoxidil. Use diuretics when fluid retention is present
   - Suggest referral to nephrology in significant CRF or rapidly rising BUN/creatinine

3. Beta-blockers
   - STEMI for at least 1 year and possibly long term (achieve adequate heart rate control 50-70)
   - Non-STEMI for at least 1 year unless fully revascularized without evidence for ischemia
   - Impaired LVEF with or without heart failure
   - Stable angina or evidence for silent ischemia
   - Pre-operative treatment prior to major vascular surgery. Important to achieve adequate heart rate control

4. Cholesterol lipids
   - If total cholesterol is >135 mg/dL: simvastatin 40mg, lovastatin 80mg, atorvastatin 20mg, rosuvastatin 10mg, or pravastatin 40-80mg with consideration of cost
   - Target LDLc is <100 mg/dL with option to <70 mg/dL which further decreases CV event rates
   - In high risk patient population (following an ACS, established CVD + multiple major risk factors, the metabolic syndrome, or diabetes; use a statin to target the LDLc to <70 and >40 mg/dL. Alternatively a lower dose statin + ezetimibe. Doses should not be altered unless patient displays adverse effects and/or LDLc <40 mg/dL, or total cholesterol <100 mg/dL)
   - Use statins in CAD even with a pre-treatment LDLc <100 mg/dL, and in ACS when LDLc is <80 mg/dL. Avoid low dose statins’ because patient is near target LDLc
   - If ALT/AST >2-3 times ULN reduce statin dose by 50% and reassess. Consider other reasons for abnormal liver function. Use reduced statin dose + ezetimibe 10mg. Consider 2gms of plant stanols daily.
   - If intolerant to statins with LDLc >150-200 mg/dL, consider referral to Lipid Clinic for long term plasma LDL-apheresis
   - Non-HDL cholesterol (total cholesterol – HDL-C) >130 mg/dL despite diet, exercise, and statin and usually in setting of triglycerides >200 mg/dL consider combination therapy with statin + niacin statin + fibrate with caution (fenofibrate preferableibrate)
   - If HDL-C <40 mg/dL in men or <50 mg/dL in women consider adding nighttime Niaspan™ or niacin with metformin titrating to 1500-2000 mg even if non-HDL cholesterol is at goal. Titration is recommended over several weeks with careful attention to monitoring of liver function at 6 weeks and 6 months.
   - All patients with low HDLC should be recommended to engage in daily physical activity for a minimum of 30 minutes

5. Diet
   - All patients are recommended Therapeutic Lifestyle Changes
   - Dietary counseling targeting ideal body weight.
   - High-complex carbs and fiber, nuts, fruits, vegetables, moderate alcohol, reduced simple carbs and limited in dairy and meats (Mediterranean diet)
   - Consider daily supplement of 1000mg of omega-3 PUFA from marine oils

6. Diabetes
   - Target HbA-1c <7%, FBS 90-120mg/dL
   - Oral hypoglycemic of choice is metformin in obesity
   - Sulfonylurea group may worsen ischemia by inhibiting ischemic preconditioning

7. Exercise
   - Moderate workload at least 30 minutes 5 days a week and preferably daily
   - Consider cardiac rehabilitation referral (998-7400), particularly for patients with recent STEMI, non-STEMI, unstable angina, and stable angina
   - Recent CAGB and post PCI

8. Smoking cessation
   - Begin evaluation of readiness to change: Ask, Assess, Advise, Assist, Arrange
   - Continue to stress importance and request family support
   - Try to set quit date
   - Nicotine agonist-antagonist varenicline (Chantix™) is safe and effective
   - Option of nicotine topical, gum, or spray, and bupropion (Zyban) 150mg bid
   - Refer to free smoking cessation counseling program (936-5688)

9. Stress reduction
   - Evaluate for depression, anxiety and stress at home and in work place
   - Have patient seek support from significant other
   - Consider PhQ-9 evaluation in all CAD patients. SSRI’s are safe in CHD
   - Referral for stress management (998-7400)

10. Others
    - Metabolic syndrome = 3 or more of following waist >40” in men and 35” in women; triglycerides >150mg/dL; men HDL-C <40mg/dL and women <50mg/dL; hypertension or sBP >135 or dBP >85, FBS >100mg/dL
    - Weight loss, diet restriction in simple sugars and processed foods, exercise at least 150-200min/week
    - Consider referral to MET FIT program (998-7400) at Domino Farm
    - Homocysteine, appears to be a risk factor for coronary events and stroke. There is no evidence for treatment benefit with folic acid, pyridoxine, and B-12, which may increase risk of re-stenosis post PCI

Faculty Lead: M Rubenfire
REV: 2008; ABC
© 2008 University of Michigan Board of Regents. All Rights Reserved