OBJECTIVE

Guide the appropriate diagnosis and management of Coronary Artery Disease.

GUIDELINE

MDwise supports coronary artery disease recommendations from the American Heart Association and American College of Cardiologists: AHA/ACC Guidelines for Secondary Prevention for Patients With Coronary and Other Atherosclerotic Vascular Disease: 2011 Update

Guidelines are included in the MDwise Provider Manual and posted on the MDwise Web site. They are available individually as requested.

ASSESSMENT & DIAGNOSIS

DIAGNOSIS:
- A physician will diagnose CAD based on a patient’s medical and family histories, risk factors, a physical exam, and the results from tests and procedures

RISK ASSESSMENT
- Framingham Risk Assessment (10-year risk of Hard Coronary Heart Disease, i.e. MI or coronary death)

LAB EVALUATION:
- EKG
- Stress Test
- Echocardiography
- Chest X-Ray
- Blood Tests
- Electron-Beam Computed Tomography
- Coronary Angiography and Cardiac Catheterization

TREATMENT

Treatment is based on diagnosis, comorbidities, and prevention and treatment of complications and cardiovascular disease

| Smoking          | - Ask about tobacco status at every visit
| Goal             | - Advise every tobacco user to quit
| Complete cessation.| - Assess the tobacco user’s willingness to quit
| No exposure to   | - Assist by counseling and developing a plan for quitting
| environmental    | - Arrange follow-up, referral to special programs, or
| tobacco smoke    | - Urge avoidance of exposure to environmental tobacco smoke at work, home and public places

| Blood Pressure   | For all patients
|                  | - Initiate or maintain lifestyle modification: weight control; increased physical activity; alcohol moderation;
| Goal: <140/90 mmHg | sodium reduction; and emphasis on increased consumption of fresh fruits, vegetable, and low-fat dairy products for patient with blood pressure ≥140/90 mmHg (or ≥130/80 for individuals with chronic kidney disease or diabetes)  
- As tolerated, add blood pressure medication, treating initially with Beta-blockers and/or ACE inhibitors, with addition of other drugs as needed to achieve goal blood pressure |
| Lipid Management Goal: LDL-C <100 mg/dL; If triglycerides are ≥200 mg/dL, non-HDL-C should be <130 mg/dL | For all patients  
- Start dietary therapy. Reduce intake of saturated fats (to <7% of total calories), fatty acids, and cholesterol (to <200mg/d)  
- Adding statin therapy in the absence of contraindications or documented adverse effects  
- Promote daily physical activity and weight management  
- An adequate dose of statin should be used that reduces LDL-C < 100 mg/dl AND achieves at least a 30% lowering of LDL-C  
- With triglycerides > 500 mg/dl should be started on fibrate therapy in addition to statin therapy to prevent acute pancreatitis  
1. If treatment with a statin (including trials of higher-dose statins and higher-potency statins) does not achieve the goal for a patient, intensification of LDL-C-lowering drug therapy with a bile acid sequestrant or niacin should be added  
2. LDL-C-lowering therapy with bile acid sequestrants and/or niacin is reasonable when statins cannot be tolerated  
3. Very high-risk patients should be on statin therapy to lower LDL-C to <70 mg/dL  
4. Treat very high risk patients and those who have triglycerides ≥ 200 mg/dL, a non–HDL-C goal of <100 mg/dL  
5. Consider ezetimibe for patients who do not tolerate or achieve target LDL-C with statins, bile acids sequestrants, and/or niacin.  
6. Reasonable to use niacin or fibrate therapy or fish oil if patient continues to have an elevated non-HDL-C while on statin  
7. Encourage increased consumption of omega-3 fatty acids in the form of fish or in capsule form for risk reduction. |
| Physical Activity Goal: 30 minutes, 7 days per week (minimum 5 days per week) | - For all patients, assess risk with physical activity history and/or an exercise test, to guide prescription  
- For all patients, encourage 30 to 60 minutes of moderate-intensity aerobic activity, such as brisk walking, on most, preferably all, days of the week, supplemented by an increase in daily lifestyle activities (eg. walking, breaks at work, gardening, household work)  
- Encourage resistance training 2 days per week  
- Advise medically supervised programs for high-risk patients (eg. recent acute coronary syndrome or revascularization, heart failure) |
| Weight Management Goal: Body mass index: 18.5 to 24.9 kg/m2 Waist circumference: men <40 inches, women <35 inches | - Assess body mass index and/or waist circumference on each visit and consistently encourage weight maintenance/reduction through an appropriate balance of physical activity, caloric intake, and formal behavioral programs when indicated to maintain/achieve a body mass index between 18.5 and 24.9 kg/m2  
- If waist circumference (measured horizontally at the iliac crest) is ≥35 inches in women and ≥40 inches in men, initiate lifestyle changes and consider treatment strategies for metabolic syndrome as indicated  
- The initial goal of weight loss therapy should be to reduce body weight by approximately 10% from baseline. With success, further weight loss can be attempted if indicated through further assessment |
| Diabetes Management Goal: HbA1c <7% | - Initiate lifestyle and pharmacotherapy to achieve near-normal HbA1c  
- Begin vigorous modification of other risk factors (eg. physical activity, weight management, blood pressure control, and cholesterol management as recommended above)  
- Coordinate diabetic care with patient’s primary care physician or endocrinologist  
- Use metformin if not contraindicated  
- Individualize the intensity of blood sugar–lowering interventions based on the individual patient’s risk of hypoglycemia during treatment  
- Initiate pharmacotherapy interventions to achieve target HbA1c  
- A target HbA1c of less than or equal to 7% should be considered  
- Less stringent HbA1c goals should be considered for patients with a history of severe hypoglycemia, limited life expectancy, advanced microvascular or macrovascular complications, or extensive comorbidities. |
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<th><strong>Antiplatelet Agents/ Anticoagulants</strong></th>
<th><strong>Renin-Angiotensin-Aldosterone System Blockers</strong></th>
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| - Start aspirin 75 to 162 mg/d and continue indefinitely in all patients unless contraindicated  
- A P2Y12 receptor antagonist in addition to aspirin is indicated in patients after ACS or PCI with stent placement.  
  - For patients receiving a bare-metal stent or drug-eluting stent during PCI for ACS, Clopidogrel 75mg daily, prasugrel 10mg daily or ticagrelor 90 mg twice daily should be given for at least 12 months.  
- For patients undergoing coronary artery bypass grafting, aspirin should be started within 6 hours after surgery to reduce saphenous vein graft closure. Dosing regimens ranging from 100 to 325 mg/d appear to be efficacious.  
- Treatment with aspirin alone (75–325 mg daily), clopidogrel alone (75 mg daily), or the combination of aspirin plus extended-release dipyridamole (25 mg and 200 mg twice daily, respectively) should be started and continued in patients with extracranial carotid or vertebral atherosclerosis who have had ischemic stroke or TIA.  
- Antiplatelet therapy with aspirin (75–325 mg daily) or clopidogrel (75 mg daily) should be started and continued for patients with symptomatic atherosclerotic peripheral artery disease of the lower extremity.  
- Patients with atherosclerosis, antiplatelet therapy is recommended in preference to anticoagulant therapy with warfarin or other vitamin K antagonists to treat.  
  - If there is a compelling indication for anticoagulant therapy, such as atrial fibrillation, prosthetic heart valve, left ventricular thrombus, or concomitant venous thromboembolic disease, warfarin should be administered in addition to the low-dose aspirin (75–81 mg daily).  
  - For patients requiring warfarin, therapy should be administered to achieve the recommended INR for the specific condition. For patients with symptomatic atherosclerotic peripheral artery disease of the lower extremity, antiplatelet therapy with aspirin (75–325 mg daily) or clopidogrel (75 mg daily) should be started and continued.  
  - Use of warfarin in conjunction with aspirin and/or clopidogrel is associated with increased risk of bleeding and should be monitored closely.  
- If the risk of morbidity from bleeding outweighs the anticipated benefit afforded by thienopyridine therapy after stent implantation, earlier discontinuation (eg, less than 12 months) is reasonable.  
- After PCI, it is reasonable to use 81 mg of aspirin per day in preference to higher maintenance doses.  
- For patients undergoing coronary artery bypass grafting, clopidogrel (75 mg daily) is a reasonable alternative in patients who are intolerant of or allergic to aspirin.  
- The benefits of aspirin in patients with asymptomatic peripheral artery disease of the lower extremities are not well established.  
- Combination therapy with both aspirin 75 to 162 mg daily and clopidogrel 75 mg daily may be considered in patients with stable coronary artery disease. |
| **ACE inhibitors:**  
- Start and continue indefinitely in all patients with left ventricular ejection fraction ≤40% and in those with hypertension, diabetes, or chronic kidney disease, unless contraindicated  
- Among lower-risk patients with normal left ventricular ejection fraction in whom cardiovascular risk factors are well controlled and revascularization has been performed, use of ACE inhibitors may be considered optional  
**Angiotensin receptor blockers:**  
- Use in patients who are intolerant of ACE inhibitors and have heart failure or have a had a myocardial infarction with left ventricular ejection fraction ≤40%  
- Consider in all patients who are ACE inhibitor intolerant  
- Consider use in combination with ACE inhibitor in systolic-dysfunction heart failure  
**Aldosterone blockade:**  
- Use in post-myocardial infarction patients, without significant renal dysfunction or hyperkalemia who are already receiving therapeutic doses of an ACE inhibitor and Beta-blocker, have a left ventricular ejection fraction ≤40%, and have either diabetes or heart failure |
| **Beta-Blockers** |  
- Start and continue indefinitely in all patients who have had a myocardial infarction, acute coronary syndrome, or left ventricular dysfunction with or without heart failure symptoms, unless contraindicated.  
- Beta blockers therapy should be started and continued 3 years as chronic therapy in all patients with normal left ventricular function who have had myocardial infarction or ACS.  
- Continue beta blockers beyond 3 years as chronic therapy in all patients with normal left ventricular function who have had myocardial infarction or ACS. |
- Give beta blocker therapy in patients with left ventricular systolic dysfunction (ejection fraction ≤ 35%) without heart failure or prior myocardial infarction.
- Consider chronic therapy for all other patients with coronary or other vascular disease or diabetes unless contraindicated.

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<th>Influenza Vaccine</th>
<th>Patients with cardiovascular disease should have an annual influenza vaccination</th>
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| Depression        | - Patients with recent coronary artery bypass graft surgery or myocardial infarction, screen for depression in collaboration with their primary care physician and a mental health specialist.  
- Treatment of depression has not been shown to improve cardiovascular disease outcomes but may add to other clinical benefits. |

| Cardiac Rehabilitation | - Patients with ACS or whose status is immediately post coronary artery bypass surgery or post-PCI should be referred to a comprehensive outpatient cardiovascular rehabilitation program either prior to hospital discharge or during the first follow-up office visit.  
- All eligible outpatients with the diagnosis of ACS, coronary artery bypass surgery or PCI, chronic angina and/or peripheral artery disease within the past year should be referred to a comprehensive outpatient cardiovascular rehabilitation program.  
- A home-based cardiac rehabilitation program can be substituted for a supervised, center-based program for low-risk patients.  
- A comprehensive exercise-based outpatient cardiac rehabilitation program can be safe and beneficial for clinically stable outpatients with a history of heart failure. |

REFERENCES

AHA/ACC Guidelines for Secondary Prevention for Patients With Coronary and Other Atherosclerotic Vascular Disease: 2011 Update

National Heart, Lung and Blood Institute: How is Coronary Heart Disease Diagnosed? [http://www.nhlbi.nih.gov/health/health-topics/topics/cad/diagnosis](http://www.nhlbi.nih.gov/health/health-topics/topics/cad/diagnosis)

Centers for Disease Control and Prevention: Coronary Artery Disease. [http://www.cdc.gov/heartdisease/coronary_ad.htm](http://www.cdc.gov/heartdisease/coronary_ad.htm)

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