Cardiovascular Update for Primary Care Providers

Peripheral Vascular Disease

October 4th 2014

Roberto A. Corpus Jr., MD
Agenda

• Lower Extremity pain
  – Initial evaluation
  – Treatment options of noncritical claudication

• Cerebral vascular disease
  – Screening and follow up
  – Treatment options
    • Medical therapy, carotid endarterectomy, carotid stenting

• Screening for AAA
Lower Extremity PAD
Epidemiology of PAD

• **Claudication**
  - 4:1 asymptomatic / symptomatic
  - 5 year mortality 30%
    • Overwhelming cause is cardiac death
  - 5 year amputation rate = 2-5%
    • Increased risk with diabetes, rest pain, ulceration, gangrene

• **Critical limb ischemia (rest pain)**
  - 50% amputation rate at 6-12 months

• **Major risk factors: Smoking and Diabetes**
Symptoms of Lower Extremity PAD

- Intermittent Claudication
- Rest Pain
- Tissue Loss / Gangrene
Intermittent Claudication

• Hallmark symptom of lower extremity PAD
• Aching, cramping, fatigue of involved extremity
  – Brought on by exertion
  – Relieved by rest
• Approximately 3.4 million people have claudication
Claudication

Symptoms typically occur in the muscle group just distal to the site of arterial occlusion.
Prognosis in Patients with Intermittent Claudication

Population >55 yr

Intermittent Claudication

Peripheral Vascular Outcomes

- Worsening Claudication 16%
- Lower Extremity Bypass Surgery 7%
- Major Amputation 4%

Other Cardiovascular Morbidity/Total Mortality

- Nonfatal Cardiovascular Event (MI/Stroke, 5-year Rate) 20%
- 5-yr Mortality 30%

- Cardiovascular Cause 75%

Adapted from Weitz JI et al. Circulation. 1996;94:3026-3049.
DDx of claudication

- **Atherosclerotic disease**
- **Arterial embolism**
  - Usually occurs in distal popliteal vessels after the trifurcation
- **Vasculitis**
  - Thromboangiitis obliterans
  - Giant cell arteritis
- **Fibromuscular dysplasia**
- **Extravascular compression**
- **Skeletal abnormalities**
  - Lumbosacral radiculopathy, spinal stenosis, hip arthritis
- **Neuropathy (diabetes)**
- **Myositis**
- **Chronic Venous Insufficiency**
  - Lymphedema (toe involvement), edema (spares toes)
<table>
<thead>
<tr>
<th>Feature</th>
<th>Claudication</th>
<th>Pseudoclaudication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause</td>
<td>Atherosclerosis</td>
<td>Spinal stenosis</td>
</tr>
<tr>
<td>Onset</td>
<td>Walking</td>
<td>Walking / standing</td>
</tr>
<tr>
<td>Character</td>
<td>Cramping / aching</td>
<td>“Paresthetic”</td>
</tr>
<tr>
<td>Bilateral</td>
<td>+ / -</td>
<td>+</td>
</tr>
<tr>
<td>Distance</td>
<td>Constant</td>
<td>Variable</td>
</tr>
<tr>
<td>Relief</td>
<td>Standing still</td>
<td>Sitting down or leaning</td>
</tr>
</tbody>
</table>

Krajewski LP, Olin JW. Chap. 11 Peripheral Vascular Disease 2nd Ed. 1996
Rest Pain

• Occurs with elevation of affected extremity
  – Typically occurs at night, awakes from sleep
    • in the recumbent position, legs / feet are placed up on bed
    – Gravity cannot help “pull” blood into the extremity
• Dull ache in toes / forefoot
• Symptoms relieved with walking or hanging legs over the bed
• Severe, Multilevel Stenoses
Rest Pain - Pallor with elevation and Rubor with dependency

Pallor with elevation

Rubor with dependency
Tissue Loss – Critical Limb Ischemia

- Ulceration or gangrene
- Involves:
  - Forefoot
  - Heels
  - Toes
Critical Limb Ischemia (CLI)

- 1 out 4 patients dead within 1 year
- 2 of 3 patients dead within 3 years
- Within 1 year of development of CLI 25% of patients will require a major amputation
## Classification of PAD

### Classification of PAD with Rutherford Categories

<table>
<thead>
<tr>
<th>GRADE</th>
<th>CATEGORY</th>
<th>CLINICAL DESCRIPTION</th>
</tr>
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<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>Asymptomatic</td>
</tr>
<tr>
<td>I</td>
<td>1</td>
<td>Mild claudication</td>
</tr>
<tr>
<td>I</td>
<td>2</td>
<td>Moderate claudication</td>
</tr>
<tr>
<td>I</td>
<td>3</td>
<td>Severe claudication</td>
</tr>
<tr>
<td>II</td>
<td>4</td>
<td>Ischemic rest pain</td>
</tr>
<tr>
<td>II</td>
<td>5</td>
<td>Minor tissue loss</td>
</tr>
<tr>
<td>III</td>
<td>6</td>
<td>Major tissue loss</td>
</tr>
</tbody>
</table>

### Fontaine Stage Classification of PAD

<table>
<thead>
<tr>
<th>STAGE</th>
<th>CLINICAL FINDINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Asymptomatic, decreased pulses, ankle-brachial index (ABI)&lt;0.9</td>
</tr>
<tr>
<td>II</td>
<td>Intermittent claudication</td>
</tr>
<tr>
<td>III</td>
<td>Daily rest pain</td>
</tr>
<tr>
<td>IV</td>
<td>Focal tissue necrosis</td>
</tr>
</tbody>
</table>

Detection of PAD

• Screen appropriate patient population
• Patient History
• Physical examination
• Non-invasive tests
• Invasive tests
Individuals at Risk for Lower Extremity Peripheral Arterial Disease

- Diabetic
- Smoker
- Age > 70 (65) years
- Leg symptoms with exertion (suggestive of claudication) or ischemic rest pain
- Abnormal lower extremity pulse examination
- Known atherosclerotic coronary, carotid, or renal artery disease
PAD Risk Factors

- Diabetes
- Smoking
- History of CAD
- Elevated cholesterol
- Decreased HDL
- Hypertension
- Sedentary lifestyle
- Obesity
- Increased plasma homocysteine
- Age

Krajewski LP, Olin JW. Chap. 11 Peripheral Vascular Diseases 2nd ed. 1996
PAD Evaluation – Class 1 indications

• Symptomatic patients
  – Exertional Leg Symptoms
  – Suspected ischemic rest pain
  – Nonhealing wounds
  – (Diminished pulses)
Screening for PAD in Asymptomatic Patients: ACC / AHA Guidelines

• 2011 Updated Guidelines:
  – Consideration of a Diagnostic ABI for at-risk asymptomatic individuals defined as:
    • < 50 y/o with diabetes and an additional cardiovascular risk factor
    • > 50 years old with history of smoking or diabetes
    • > 65 years old
**Screening for Peripheral Artery Disease and Cardiovascular Disease**

**Risk Assessment with the Ankle-Brachial Index in Adults**

**Clinical Summary of U.S. Preventive Services Task Force Recommendation**

<table>
<thead>
<tr>
<th>Population</th>
<th>Asymptomatic adults without a known diagnosis of peripheral artery disease (PAD), cardiovascular disease, severe chronic kidney disease, or diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommendation</td>
<td>No recommendation.</td>
</tr>
<tr>
<td>Grade: I statement</td>
<td>Adam C. Magid, MD, MPH, for the U.S. Preventive Services Task Force.</td>
</tr>
</tbody>
</table>

**Risk Assessment**

- Important risk factors for PAD include older age, diabetes, smoking, hypertension, high cholesterol level, obesity, and physical inactivity. Peripheral artery disease is more common in men than in women and occurs at an earlier age in men.

**Screening Tests**

- Resting ankle-brachial index (ABI) is the most commonly used test in screening for and detection of PAD in clinical settings. It is calculated as the systolic blood pressure obtained at the ankle divided by the systolic blood pressure obtained at the brachial artery while the patient is lying down. Physical examination has low sensitivity for detecting mild PAD in asymptomatic persons.

**Balance of Benefits and Harms**

- Evidence on screening for PAD with the ABI in asymptomatic adults with no known diagnosis of cardiovascular disease or diabetes is insufficient; therefore, the balance of benefits and harms cannot be determined.

**Other Relevant USPSTF Recommendations**

- The USPSTF has made recommendations on using nontraditional risk factors, including the ABI, in screening for coronary heart disease. These recommendations are available at www.uspreventiveservicestaskforce.org.

For a summary of the evidence systematically reviewed in making this recommendation, the full recommendation statement, and supporting documents, please go to www.uspreventiveservicestaskforce.org.
USPSTF Guidelines

• Performed a systematic review on using the resting ABI as a screening test for PAD or as a risk predictor for CAD

• Population:
  – Asymptomatic adults
  – No known history of PAD, cardiovascular disease, severe chronic kidney disease or diabetes
USPTF Guidelines

• In the **general population**, the current evidence is **insufficient** (GRADE I) to recommend using the ABI for routine screening for PAD or CVD risk assessment
Evaluation

• History and physical
• Ankle-brachial indices (ABI)
• Segmental pressures
• Ultrasound (doppler / duplex)
• CT angiography (CTA)
• MR angiography (MRA)
• Contrast Angiography
History

• Exertional limitation of the lower extremity muscles or history of walking impairment
  – Sx: Fatigue, aching, numbness, pain
  – Site of discomfort: buttock, thigh, calf, foot
  – Relation of symptoms to rest or exertion
• Poorly healing or nonhealing wounds
• Any pain at rest localized to the lower leg or foot
  – Association with upright or recumbent position
Vascular Physical Exam

- Measurement of BP in both arms
- Palpation / Auscultation of carotid pulse
- Palpation / Auscultation of abdominal aorta
- Palpate pulses at brachial, radial, ulnar, femoral, popliteal, DP / PT sites
  - 0: absent; 1: diminished; 2: normal; 3: bounding
- Remove shoes and socks
  - Inspect color / temperature / integrity of skin
  - Ulcerations
  - Alopecia, trophic skin changes (shiny), hypertrophic nails
Ankle-Brachial Index

Handheld Doppler
Ankle-Brachial Index

\[ \text{ABI} = \frac{\text{Ankle Pressure}}{\text{Arm Pressure}} \]
## Grading of the ABI

<table>
<thead>
<tr>
<th>ABI</th>
<th>Severity of PAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.9-1.0</td>
<td>Normal</td>
</tr>
<tr>
<td>0.8-0.9</td>
<td>Mild</td>
</tr>
<tr>
<td>0.6-0.8</td>
<td>Moderate</td>
</tr>
<tr>
<td>0.4-0.6</td>
<td>Severe</td>
</tr>
<tr>
<td>&lt;0.4</td>
<td>Critical</td>
</tr>
</tbody>
</table>
Segmental Pressure Recordings
Segmental Pressure Recording

Drop in pressure (index=0.68)
Suggests moderate left iliac stenosis

No drop in pressure from right arm to ankle suggests no significant stenosis
Duplex Ultrasound of Femoral Bifurcation
Duplex Ultrasound

• Useful for assessing arterial anatomy and hemodynamic physiology
• Consider with renal insufficiency, prior stenting, heavily calcified vessels
• Localizes and approximates severity of stenosis
• Sensitivity = 92%, specificity = 97%
CT Angiography
CT angiography

• Multislice CT scanner
  – Speed
  – Ability to perform 3D reconstruction from transaxial images (aneurysmal disease)

• Excellent correlation with angiography

• Anatomic (not physiologic) assessment

• Limitations
  – Renal insufficiency (Cr > 1.5mg/dl)
    • Typical study requires ~ 120 cc’s of dye
  – Heavy calcification
  – Prior stenting (shadowing)
  – Detail ends at level of ankles
MR Angiography
MR angiography

- Images blood flow rather than the vasculature itself
- Uses no radiation or iodinated contrast
- IV gadolinium
  - Beware of pts with renal insufficiency (nephrogenic sclerosis)
- Cerebral, aortic, renal, and lower extremity applications
- Calcium is not a limitation
- PPM, ICD problematic
- Problem with stent “dropout”
Contrast Angiography - Runoff
Contrast Angiography

- Rarely used for diagnostic purposes only
- Confirm noninvasive findings
- Used to plan revascularization strategies
  - Surgical
  - Percutaneous
Diagnostic Algorithm

Directed History
Vascular Exam

**Mild to Moderate Symptoms**

- ABI (rest and post-exercise)
  - Mild
  - Moderate
  - Severe

**Critical Limb Ischemia**

- Treatment of CV risk factors
- Wound Care referral (ulcers)
- Cardiovascular Risk Assessment

**Referral to Vascular Specialist**

- Imaging with Duplex / MRA / CTA
- Angiography
- Percutaneous Revasc

- Treat CV risk factors
- Walking Exercise Program
- Physical exam / ABI q6mo
Treatment of PAD

Symptomatic Treatment

Cardiovascular Risk Reduction
Exercise therapy

• Cornerstone of therapy in patients with claudication

• Exercise improves:
  – Walking ability
  – Quality of life
  – Functional capacity

• Exercise therapy associated with
  – 180% increase in pain-free walking time
  – 120% increase in maximal walking time
Exercise Therapy

• Walking on treadmill or track
  – Resistance training does not confer same benefit
• Patient should exercise to a level which elicits Sx within 3-5 minutes
  – exercise at this level until moderate claudication occurs, rest until Sx subside then begin again.
  – “Exercise-rest” pattern

Recommendations for Exercise Therapy in Claudicants

- Supervised exercise training
- Minimum of 30 – 45 minutes
- At least 3 times per week
- Minimum of 12 weeks
- The usefulness of an **unsupervised** exercise program has NOT been established as an effective initial treatment for patients with claudication
Cilastazol (Pletal®)

- Phosphodiesterase type 3 inhibitor
- Antiplatelet
- Vasodilator
  - Preferentially dilates femoral arterial beds
- Significant improvement in
  - Maximal walking distance (40-60%)
  - Walking ability and health-related quality of life
- 100 mg is more effective than 50 mg
- **Contraindicated in patients with heart failure**
Recommendations for Cilastazol Therapy

• Cilastazol 100mg BID is indicated as effective therapy to improve symptoms and increase walking distance in patients with lower extremity PAD and intermittent claudication
  – Contraindicated in heart failure

• A therapeutic trial of cilostazol should be considered in ALL patients (without heart failure) who experience lifestyle limiting claudication
Pentoxifylline

- Pentoxifylline (400 mg TID) may be considered as second line alternative therapy to cilostazol to improve walking distance in patients with intermittent claudication
- Clinical effectiveness is marginal and not well established
Cardiovascular Risk Reduction in Patients with PAD

• Objective is to reduce risk of future cardiovascular events
  – MI
  – Stroke
  – Progression of PAD

• The long term mortality benefit of treating patients with PAD lies in the modification of their cardiovascular risk!!!
Cardiovascular Risk Reduction in Patients with PAD

- Smoking Cessation
- Lipid Management
- Hypertension
- Diabetes control
- Antiplatelet Agents
  - Aspirin
  - Plavix
Smoking

• Individuals with lower extremity PAD who smoke or use other forms of tobacco should be encouraged to stop smoking and should be offered comprehensive smoking cessation interventions
  – Behavior Modification / Counseling
  – Nicotine replacement therapy
  – Bupropriion (Wellbutrin)
  – Chantix (Varenicline)
Lipid Management

• All patients with PAD should be on a statin to achieve a target LDL of < 100

• In patients with LE-PAD at very high risk for ischemic events, target LDL is < 70
  – Multiple major risk factors (especially diabetes)
  – Severe and poorly controlled risk factors (especially smoking)
  – Multiple risk factors for the metabolic syndrome
    • TG>200, LDL > 130, HDL < 40
  – Individuals with acute coronary syndrome

AHA/ACC Guidelines for Management of PAD
Hypertension

• Goals
  – Nondiabetics: BP< 140 / 90
  – Diabetics: BP< 130 / 80

• Agents
  – First line: Beta blockers
    • Used to reduce the risk of MI, stroke, CHF and cardiovascular death
  – ACE inhibitors
    • May be considered in symptomatic patients (class B) and asymptomatic patients (class C) with PAD to reduce risk of cardiovascular events
Diabetes

- Per the American Diabetes Association, patients with lower extremity PAD and diabetes should be treated to achieve a hemoglobin A1c of < 7.0%
Diabetic Foot Care

• Proper foot care, including the use of appropriate footwear, daily foot inspection, skin cleansing, and use of topical moisturizing creams should be encouraged.

• Skin lesions and ulcerations should be addressed urgently in patients with lower extremity PAD.

• Role of the podiatrist is extremely important.

AHA/ACC Guidelines for Management of PAD
Antiplatelet Agents

- Antiplatelet therapy is indicated to reduce the risk of MI, stroke, or vascular death in patients with atherosclerotic lower extremity PAD
- Aspirin 75 to 325 mg / day is recommended as a safe and effective antiplatelet therapy
- Clopidogrel (Plavix) at a dose of 75mg per day is recommended as an effective \textit{alternative} therapy to aspirin to reduce the risk of MI, stroke, or vascular death

\textbf{AHA/ACC Guidelines for Management of PAD}
Indications for Revascularization

• The patient has not had, or is not predicted to have an adequate response to exercise rehabilitation and pharmacologic therapy

• Significant lifestyle limiting claudication

• Severe limb ischemia
  – Rest pain
  – Lower extremity ulcerations
  – Gangrene – limit degree of amputation
Indications for Revascularization

• The patient is able to benefit from an improvement in claudication symptoms
• The patient has a reasonable life expectancy
Conclusions

• PAD is a common manifestation of atherosclerosis
• Patients with PAD are at a very high risk of subsequent cardiovascular events
  – Primary cause of death is cardiac
• Modification of cardiovascular risk is of paramount importance
Conclusions

• Goals of therapy
  – Symptomatic therapy
    • Exercise (walking) program
    • Cilostazol
    • Revascularization
  – Cardiovascular Risk reduction
    • Smoking cessation
    • BP<140/90
    • LDL < 100 (<70 in high risk groups)
    • HgbA1c < 7%
    • Antiplatelet therapy
Conclusions

• Antiplatelet therapy
  – Indicated in patients with PAD to reduce atherothrombotic risk
  – Aspirin (Class 1A)
  – Plavix (Class 1B)
    • Indicated as an alternative to aspirin
    • May confer added benefit in this high risk patient population
Cerebrovascular disease
Evaluation

• Symptom Status
• Degree of stenosis
  – Duplex U/S
  – CTA/MRA
  – Angiography
• High Risk Features
Definition: symptomatic carotid stenosis

• Focal neurologic symptoms that occur suddenly

• Referable to the appropriate carotid distribution
  – Ipsilateral to carotid pathology

• Includes
  – TIA
  – Transient monocular blindness (amaurosis fugax)
  – Nondisabling stroke (modified Rankin < 3)
Definition of Symptomatic Carotid Stenosis

• Symptoms occurred within the previous 6 months
  – Remote carotid symptoms should NOT be considered indicative of symptomatic disease

• Symptoms of dizziness / syncope / near syncope are NOT considered symptomatic carotid events
Indications for Carotid Duplex Ultrasound ACC / AHA guidelines

• Asymptomatic patients with a carotid bruit (IIa)
  – Repeat duplex yearly to assess progression of disease in patients with > 50% stenosis.
  – Once stability is established or candidacy for intervention has changed, longer monitoring intervals are appropriate
Indications for Carotid Duplex Ultrasound ACC / AHA guidelines

- Asymptomatic patients with SYMPTOMATIC PAD, CAD, or aortic aneurysm (Class IIb)
- Asymptomatic patients with ≥ 2 of the following (Class IIb)
  - HTN
  - Hyperlipidemia
  - Smoking
  - Family history
  - First degree relative with h/o ischemic stroke
Carotid Duplex Ultrasound

• NO benefit (Class C)
  – Routine screening of asymptomatic patients without atherosclerotic risk factors
  – Routine evaluation of patients with neurologic or psychiatric disorders unrelated to focal cerebral ischemia
  – Patients without risk factors for atherosclerotic carotid disease and no disease on initial vascular testing
Indications for CTA, MRA, or angiography in diagnosis of carotid artery disease

- Definitive diagnosis by duplex ultrasound cannot be obtained or is nondiagnostic (class 1)
- To evaluate severity of stenosis when duplex ultrasound is inadequate [ie moderate stenosis in symptomatic patients] (class IIa)
- To search for intracranial vascular pathology when an extracranial source of ischemic is not identified (class IIa)
Medical Management

• Cardiovascular risk factor modification
  – Treatment of HTN (< 140/90)
  – Treatment of hyperlipidemia
    • LDL < 100 (class 1)
    • LDL < 70 (Class IIa)
  – Treatment of diabetes
    • Benefit of goal HbA1c < 7.0% in patients with carotid disease has not been established
  – Smoking cessation
Medical Management - Antiplatelets

• Aspirin 75-325 mg daily (Class I)

• In symptomatic patients
  – ASA (75-325 mg daily)
  – Plavix (75 mg daily)
  – ASA + dipyridamole (25-200 mg BID)
    • Preferred over the combination of ASA and plavix

• Aspirin allergic patients
  – Plavix or ticlopidine (250 mg BID) [class IIa]
Medical Management

• Administration of plavix in combination with aspirin is NOT recommended within 3 months after stroke or TIA [Class III]
Carotid Endarterectomy (CEA)

• Indications
  – Symptomatic patients with > 70% stenosis (NASCET)
    • Clear benefit
  – Symptomatic patients with > 50-69% stenosis
    • Marginal benefit
    • Benefit is greater in MALE patients
  – Asymptomatic patients > 70% stenosis
Carotid Endarterectomy (CEA)

- Contraindications
  - Severe neurologic deficits following cerebral infarction
  - Ipsilateral carotid occlusion
  - Concurrent medical conditions that would significantly limit patients life expectancy

- Consider high risk features for CEA
High risk features for CEA

• **Clinical**
  - CHF: NYHA class 3 or 4, LVEF < 30%
  - Unstable angina
  - Recent MI
  - Need for open heart surgery within 6 weeks
  - Severe pulmonary disease

• **Anatomic**
  - High cervical lesion / Infra-clavicular (CCA) lesion
  - Contalateral carotid occlusion
  - Prior CEA with recurrent stenosis
  - Prior neck irradiation / radical neck surgery
  - Contralateral larengyl nerve palsy
  - Severe tandem lesions
Indications for Carotid Artery Stenting

- Only currently approved indication for CAS is in patients with the following criteria
  - High Risk for CEA
  - Symptomatic
  - > 70% stenosis

- Study protocol
  - High risk for CEA, Symptomatic, > 50%
  - High risk for CEA, Asymptomatic, > 80%
AAA Screening Guidelines
### Screening for Abdominal Aortic Aneurysm

#### Clinical Summary of U.S. Preventive Services Task Force Recommendation

<table>
<thead>
<tr>
<th>Population</th>
<th>Men ages 65 to 75 years who have ever smoked*</th>
<th>Men ages 65 to 75 years who have never smoked</th>
<th>Women ages 65 to 75 years who have ever smoked</th>
<th>Women who have never smoked</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommendation</strong></td>
<td>Screen once for abdominal aortic aneurysm (AAA) by ultrasonography. Grade: B</td>
<td>Selectively screen for AAA. Grade: C</td>
<td>No recommendation. Grade: I statement</td>
<td>Do not screen for AAA. Grade: D</td>
</tr>
</tbody>
</table>

#### Risk Assessment

Risk factors for AAA include older age; a positive smoking history; having a first-degree relative with an AAA; and having a history of other vascular aneurysms, coronary artery disease, cerebrovascular disease, atherosclerosis, hypercholesterolemia, obesity, or hypertension.

Factors associated with a reduced risk for AAA include African American race, Hispanic ethnicity, and diabetes.

#### Screening Tests

Abdominal duplex ultrasonography is the standard approach for AAA screening. Screening with ultrasonography is noninvasive and easy to perform and has high sensitivity (94% to 100%) and specificity (98% to 100%) for detection.

#### Treatment

Patients with large AAAs (≥5.5 cm) are referred for open surgical repair or endovascular aneurysm repair. Patients with smaller aneurysms (3.0 to 5.4 cm) are generally managed conservatively via surveillance (e.g., repeated ultrasonography every 3 to 12 months). Early open surgery for the treatment of smaller AAAs does not reduce AAA-specific or all-cause mortality. Surgical referral of smaller AAAs is typically reserved for rapid growth (>1.0 cm per year) or once the threshold of ≥5.5 cm on repeated ultrasonography is reached.

Short-term treatment with antibiotics or β-blockers does not appear to reduce AAA growth.

#### Balance of Benefits and Harms

- **There is a moderate net benefit of screening for AAA with ultrasonography in men ages 65 to 75 years who have ever smoked.**
- **There is a small net benefit of screening for AAA with ultrasonography in men ages 65 to 75 years who have never smoked.**
- **The evidence of screening for AAA in women ages 65 to 75 years who have ever smoked is insufficient, and the balance of benefits and harms cannot be determined.**
- **The harms of screening for AAA in women who have never smoked outweigh any potential benefits.**

*"Ever smoked" is defined as a person who has smoked at least 100 cigarettes in his or her lifetime.*
USPSTF Guidelines for AAA screening in Asymptomatic Patients

• One time screening for AAA in men aged 65-75 who have smoked at least 100 cigarettes in their lifetime (class B)

• No recommendation for or against screening in men aged 65-75 who have never smoked (class C)

• Insufficient evidence to screen in women 65-75 who have smoked (class I)

• Do not screen for AAA in women who have never smoked (class D)
Medicare Part B Coverage

- Medicare Part B will cover a one time Abdominal U/S in the following patients:
  - Family history of AAA
  - Men, 65-75 y/o, and have smoked > 100 cigarettes in lifetime
Questions ???
Screening for Asymptomatic carotid disease

**SCREENING FOR ASYMPTOMATIC CAROTID ARTERY STENOSIS**
**CLINICAL SUMMARY OF U.S. PREVENTIVE SERVICES TASK FORCE RECOMMENDATION**

<table>
<thead>
<tr>
<th>Population</th>
<th>Adults without a history of transient ischemic attack, stroke, or other neurologic signs or symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommendation</td>
<td>Do not screen for asymptomatic carotid artery stenosis in the general adult population.</td>
</tr>
<tr>
<td>Grade: D</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk Assessment</th>
<th>The major risk factors for carotid artery stenosis include older age, male sex, hypertension, smoking, hypercholesterolemia, diabetes mellitus, and heart disease.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening Tests</td>
<td>All screening strategies, including ultrasonography with or without confirmatory tests (digital subtraction or magnetic resonance angiography), have imperfect sensitivity and could lead to unnecessary surgery and result in serious harms, including death, stroke, and myocardial infarction. There is no evidence that screening by auscultation of the neck to detect carotid bruits is accurate or provides benefit.</td>
</tr>
<tr>
<td>Balance of Benefits and Harms</td>
<td>The harms of screening for asymptomatic carotid artery stenosis outweigh the benefits.</td>
</tr>
<tr>
<td>Other Relevant USPSTF Recommendations</td>
<td>The USPSTF has made recommendations on many factors related to stroke prevention, including screening for hypertension, screening for dyslipidemia, the use of nontraditional coronary heart disease risk factors, counseling on smoking, and counseling on healthful diet and physical activity. In addition, the USPSTF recommends the use of aspirin for persons at increased risk for cardiovascular disease. These recommendations are available on the USPSTF Web site (<a href="http://www.uspreventiveservicestaskforce.org">www.uspreventiveservicestaskforce.org</a>).</td>
</tr>
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