Standards of Care are not published annually in each category of disease management; for example, hypertension standards were published in 2003 and are due to be updated in 2012... whereas colorectal screening was 2010 and others in 2011.

When one is reviewing standards of care
After this date of publication, please refer
To the most recent literature for the updated
Guidelines
7-1-2012

AGE-BASED PREVENTIVE SCREENINGS

Screening is looking for a disease before it has symptoms in order to prevent target organ damage
Discussion from USTPF: 2011

- The U.S. Preventive Services Task Force (USPSTF) recommends biennial screening mammography for women aged 50 to 74 years.
  Grade: B Recommendation.
- The decision to start regular, biennial screening mammography before the age of 50 years should be an individual one and take patient context into account, including the patient's values regarding specific benefits and harms.
  Grade: C Recommendation.
- The USPSTF concludes that the current evidence is insufficient to assess the additional benefits and harms of screening mammography in women 75 years or older.
  Grade: I Statement.
- The USPSTF recommends against teaching breast self-examination (BSE).
  Grade: D Recommendation.
- The USPSTF concludes that the current evidence is insufficient to assess the additional benefits and harms of clinical breast examination (CBE) beyond screening mammography in women 40 years or older.
  Grade: I Statement.
- The USPSTF concludes that the current evidence is insufficient to assess the additional benefits and harms of either digital mammography or magnetic resonance imaging (MRI) instead of film mammography as screening modalities for breast cancer.
  Grade: I Statement.

This recommendation statement applies to women 40 years or older who are not at increased risk for breast cancer by virtue of a known underlying genetic mutation or a history of chest radiation. Increasing age is the most important risk factor for breast cancer for most women. Women without known deleterious genetic mutations (such as BRCA1 or BRCA2) may still have other demographic, physical, or historical risk factors for breast cancer, but none convey a clinically important absolute increased risk for cancer.

Genetic Risk Assessment and BRCA Mutation Testing

- The U.S. Preventive Services Task Force (USPSTF) recommends against routine referral for genetic counseling or routine breast cancer susceptibility gene (BRCA) testing for women whose family history is not associated with an increased risk for deleterious mutations in breast cancer susceptibility gene 1 (BRCA1) or breast cancer susceptibility gene 2 (BRCA2).
  Grade: D Recommendation.
- The USPSTF recommends that women whose family history is associated with an increased risk for deleterious mutations in BRCA1 or BRCA2 genes be referred for genetic counseling and evaluation for BRCA testing.
  Grade: B Recommendation.
- These recommendations apply to women who have not received a diagnosis of breast or ovarian cancer. They do not apply to women with a family history of breast or ovarian cancer that includes a relative with a known deleterious mutation in BRCA1 or BRCA2 gene; these women should be referred for genetic counseling. These recommendations do not apply to men.
Risk Assessment for Breast Cancer

• High Risk for Breast Cancer
  – Have a known BRCA 1 or BRCA 2 gene mutation
  – First degree relative with BRCA 1 or BRCA 2 gene mutation and has not had genetic testing herself
  – Had radiation therapy to the chest when she was between 10 - 30 years of age

Risk Assessment for Breast Cancer

• Moderately Increased Risk
  – Lifetime risk of breast cancer at 15%-20%
  – Personal history of breast cancer
  – Ductal carcinoma in situ
  – Lobular carcinoma in situ
  – Atypical ductal hyperplasia
  – Atypical lobular hyperplasia
  – Has extremely dense breasts or unevenly dense breasts by mammogram

Breast Cancer Screening Risk Based Guidelines

<table>
<thead>
<tr>
<th>Age</th>
<th>Risk</th>
<th>Screening</th>
</tr>
</thead>
</table>
| 40 & >         | No increased risk | Annual Mammogram  
                          Self Breast Exam  
                          Clinical Breast Exam |
| 20's and 30's  | No increased risk | Clinical Breast Exam  
                          every 3 years with annual physical exam |
| 20's           | No increased risk | Monthly BSE after sound technique learned      |
| >20% lifetime risk of Breast Cancer | High risk population | MRI and mammogram annually at age 30 |

http://www.cancer.org/docroot/CRI/content/CRI_2_6x_Breast_Cancer_Early_Detection.asp?sitearea= accessed 6-14.08
Breast Cancer Screening Recommendations for Older Women

<table>
<thead>
<tr>
<th>Guideline Authority</th>
<th>Upper age limit for screening</th>
<th>Recommended screening frequency</th>
<th>Web site and/or comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>American College of Obstetricians and Gynecologists, 2003</td>
<td>None</td>
<td>Every 2 years for women over 50</td>
<td><a href="http://www.guideline.gov/content.aspx?id=3990">www.guideline.gov/content.aspx?id=3990</a></td>
</tr>
<tr>
<td>US Preventive Services Task Force, 2008</td>
<td>74 years</td>
<td>Every 2 y for women younger than 75</td>
<td>State insufficient evidence to recommend for or against screening for women older than 75</td>
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<td>American Academy of Family Physicians, 2010</td>
<td>74 years</td>
<td>Every 2 y for women younger than 75</td>
<td>State insufficient evidence to recommend for or against screening for women older than 75</td>
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</table>

References: See last column of slide

Cervical Cancer Screening

May 2011: Update

“This decision analysis supports current recommendations regarding the age at which to begin and end screening. In terms of the screening interval, strategies conducted every 3 to 5 years consistently fall on the steepest part of the efficiency frontier, suggesting that these intervals may provide a reasonable balance between the burden and benefits of screening.

Strategies that include HPV in addition to cytology (co-testing) are sensitive to the use of either tests or colposcopies to quantify the burden of screening. Co-testing strategies are identified as efficient across a range of analyses and test accuracy estimates if colposcopies are used to quantify burden. However, cytology-only strategies are identified as efficient if tests are used to quantify burden.

Finally, analyses suggest that a strategy of HPV followed by cytology for HPV positive women may provide a reasonable trade-off between the burden and benefits of screening and warrants further study.”


Accessed 5-17-2011
Cervical Cancer Screening

- Begin 3 years after beginning vaginal intercourse (no later than age 21)
  - Annually with regular Pap test
  - Every 2 years using liquid-based Pap tests
- > age 30
  - After 3 normal consecutive pap tests, may be screened every 2-3 years
  - Most often based on an individual practitioners risk assessment


Cervical Cancer Screening

- After total hysterectomy (with cervical removal)
  - Not necessary for pap testing unless surgery was done as a treatment for cervical cancer or precancerous lesion/cells
- Women >70 years old with
  - 3 or more normal Pap tests
  - No abnormal results in last 10 years
  - May choose to stop cervical cancer screening


Dyslipidemia
ATP IV

- Detection, Evaluation and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel IV) is a work in process
- Expected Availability for Public Review and comment
  - Sometime 2012
- Expected Release Date
  - Sometime 2012


2012 Changes and Updates

- Emphasis remains on early detection
- Equal emphasis on LDL and HDL
- Use of lipid panels to identify early insulin resistance
- Polypharmacy remains optimal treatment over large does of single agents
- HDL
  - Two genetic forms
  - One very responsive to fish oil for > 30% increase in number and size
  - Debate over size continues with data inconclusive


Risk Assessment

- All persons aged ≥ 20
  - Fasting lipid panel
    - HDL, LDL, Triglycerides, Total cholesterol
  - If normal, repeat every 5 years
- If abnormal:
  - HDL < 40
  - LDL > normal for risk assessment
  - Treat and follow up to meet HDL, LDL goals

**NCEP Interim Report:**

**LDL-C Goals and Drug Cut Points for High-Risk Patients**

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Risk Category</th>
<th>LDL-C Goal (mg/dL)</th>
<th>LDL-C to Consider Drug Therapy* (mg/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderately High Risk</td>
<td>2 Risk Factors; 10-Year Risk 0%-99%</td>
<td>&lt;130</td>
<td>&lt;100</td>
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<tr>
<td>High Risk</td>
<td>CHD or CHD Risk Equivalents; 10-Year Risk &gt;10%</td>
<td>&lt;100</td>
<td>≤100**</td>
</tr>
<tr>
<td>Very High Risk</td>
<td>Established CVD Plus: Multiple Major Risk Factors; Severe and Poorly Controlled Risk Factors; Multiple Risk Factors of the Metabolic Syndrome; Acute Coronary Syndromes</td>
<td>&lt;100</td>
<td>≤100**</td>
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*When LDL-C–lowering drug therapy is used, the intensity of therapy should be sufficient to achieve a 30%-40% reduction in LDL-C. **Therapeutic lifestyle changes (TLC) should be initiated when LDL-C is at or above goal; any high-risk or moderately high-risk patient who has lifestyle-related risk factors is a candidate for TLC regardless of LDL-C level. †Optional LDL-C goal; ‡Consider drug options.

**Depression**

Screening Guidelines

- U.S. Preventative Services Task Force (USPSTF)
  - Routine screening for depression is recommended as long as systems are in place to provide:
    - Accurate diagnosis
    - Effective treatment
    - Adequate follow-up

Tools Available for the Primary Care Provider

- **Beck Depression Inventory, Primary Care (BDI-PC)**

- **Beck Anxiety Inventory (BAI)**

- **Zung Depression Scale**
  [http://www.neurotransmitter.net/depressionscales.html](http://www.neurotransmitter.net/depressionscales.html)

- **Hamilton Rating Scale for Depression**
  [http://www.neurotransmitter.net/depressionscales.html](http://www.neurotransmitter.net/depressionscales.html)

- **Hamilton Rating Scale for Anxiety**
  [http://www.anxietyhelp.org/information/hama.html](http://www.anxietyhelp.org/information/hama.html)

*See Appendix*

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Osteoporosis

BMD Testing

- Recommended for:
  - Postmenopausal women ≥ 65 years of age
  - Postmenopausal women < 65 years of age with multiple osteoporotic risk factors
  - Men and women with fragility fractures
  - Men and women having diseases or using medications that increase the risk of osteoporotic fractures

Summary of Revisions

- Treatment Recommendations
  - Treat all individuals with a T score of -2.5 in the hip
  - Those with T scores of -1.5 to -2.5 (osteopenia) should be treated when the 10 year probability of a hip fracture is ≥ 3% (FRAX® model) OR the 10 year probability of a major osteoporosis related fracture is ≥ 20% based upon the US adapted WHO criteria (FRAX® model)


How long between DEXA scans?

- Goal screening: pick up and treat osteoporosis before a fracture:
  - Normal first scan/mild osteopenia: 15 years
     - T score -1.5 and higher
  - Moderate osteopenia- re-scan 5 years
     - T score -1.5 to -1.99
  - Advanced osteopenia – re-scan 1 year
     - T score -2.0 to -2.49

BMJ 2012;344:e585

FRAX® (online tool)

WHO Fracture Risk Assessment Tool

accessed 2-24-08 at http://www.shef.ac.uk/FRAX/tool.jsp?locationValue=9
STI’s

Vaccine Preventable STI

- Hepatitis A virus
  - Vaccine available in US since 1995 for persons under 2 years of age
- Hepatitis B virus
  - Universal infant immunization
  - Post exposure prophylaxis of at risk infants
  - Adolescents and adults at risk


HBV Pre exposure Risk

- Men having sex with men
- Persons with history of STI, multiple sex partners
- IV drug use
- Household or sexual partners of persons with chronic HBV
- Occupational exposure
- Persons on hemodialysis
- Liver disease
- HIV/AIDS
- Transfusion recipients (prior to 1998)

Hepatitis C

• Direct percutaneous exposure to infected blood (transfusions, injected drugs)
  – Sexual transmission remains controversial
• Exposure to sero-conversion @ 8-19 weeks
• Chronic infection develops in most (75-85%) with 60-70% active liver diagnosis
• Most unaware and asymptomatic
• Anti –HCV recommended for routine testing of at risk asymptomatic persons
• No currently available vaccine


Sexually Transmitted Infections

• Syphilis
  – USPSTF recommends testing in women and men engaging in high risk sexual behavior
    • Universal screening for pregnant women
    • Individuals with other sexually transmitted infections
    • Men who have sex with men
    • Commercial sex workers
    • Those who have sex for drugs
    • Incarcerated adults


Screening

• The majority of these infections are asymptomatic, therefore screening is essential
• Chlamydia trachomatis often goes undiagnosed and untreated
• ACOG, CDC, & U.S. Preventive Services Task Force
  – Annual screening in all sexually active women age ≤ 25 years

Sexually Transmitted Infections

- **Chlamydia trachomatis**
  - Asymptomatic, women at risk
  - Prior STI
  - New or multiple sex partners
  - Using barrier contraceptive methods inconsistently
- **Gonorrhea**
  - High risk women

Blood Pressure

JNC VIII

- Expected Availability for Public Review
  - Sometime in 2012…???
- Expected Release Date: Sometime 2012..??
- Suspected changes
  - ARB non inferior to ACE inhibitors in outcomes
  - Additional compelling indications for ACE/ARB
  - Changes in elderly blood pressure limits
  - Combination therapy better than monotherapy

Main Tenants of Therapy

- Identify early
- Treat aggressively
  - Remember those who are chronologically challenged
- Choose medications
  - Combination therapy over monotherapy with high doses
  - To avoid target organ damage

Reduction of Target Organ Damage

- Key to screening is to evaluate target organ damage
  - Proteinuria, left ventricular remodeling, renal dysfunction
- Blood pressure numbers are surrogate markers that may not indicate the presence of target organ damage
  - Variability to 25 mmHg in measurements

Screening for Hypertension

- Routine measurement of blood pressure is recommended in individuals ≥ 18 years
- Goal:
  - Early disease detection
  - Ultimately, decrease in hypertension related target organ damage
**Diagnosis**

- 2 readings in the absence of TOD establishes diagnosis
  - 1 reading in the presence of TOD
- Patient should not ingest caffeine or smoke for 30 minutes before readings
- Patient should sit for 5 minutes with arm at heart level before blood pressure is checked


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<th>DBP* mm Hg</th>
<th>Lifestyle Modifications</th>
<th>Considerations for Initial Therapy</th>
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<tbody>
<tr>
<td>Normal</td>
<td>&lt;120 and &lt;80</td>
<td>Normal</td>
<td>Encourage</td>
<td>No antihypertensive drug/therapy</td>
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<td>120-139</td>
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<td>No</td>
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<td>or 90-99</td>
<td>Yes</td>
<td>Drugs for compelling indications</td>
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<td>Stage 2 Hypertension</td>
<td>≥160</td>
<td>or ≥100</td>
<td>Yes</td>
<td>Other antihypertensive drug (ACEI, ARB, BB, CCB) or needed</td>
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SBP: systolic blood pressure; DBP: diastolic blood pressure; ACEI: angiotensin-converting enzyme inhibitor; ARB: angiotensin receptor blocker; BB: beta-blocker; CCB: calcium channel blocker.

*Treatment determined by highest BP category.

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*Treatment determined by highest BP category.
Screening for Colorectal Cancer

- The USPSTF recommends screening for colorectal cancer (CRC) using fecal occult blood testing, sigmoidoscopy, or colonoscopy, in adults, beginning at age 50 years and continuing until age 75 years. The risks and benefits of these screening methods vary.
  
  Grade: A Recommendation.

- The USPSTF recommends against routine screening for colorectal cancer in adults age 76 to 85 years. There may be considerations that support colorectal cancer screening in an individual patient.
  
  Grade: C Recommendation.

- The USPSTF recommends against screening for colorectal cancer in adults older than age 85 years.
  
  Grade: D Recommendation.

- The USPSTF concludes that the evidence is insufficient to assess the benefits and harms of computed tomographic colonography and fecal DNA testing as screening modalities for colorectal cancer.
  
  Grade: I Statement.

Risk Factors for Colorectal Cancer

**Average Risk**
- Age ≥ 50 years; asymptomatic

**High Risk**
- Personal history of CRC or adenomas
- Family history of CRC or adenomas
- Genetic syndromes
  - Familial adenomatous polyposis (FAP)
  - Hereditary non-polyposis CRC (HNPCC)
- Inflammatory bowel disease

Natural History: A Typical Case

- Normal
- Adenoma
- Carcinoma

A series of molecular changes transforms normal colonic epithelial cells into colorectal carcinoma through the intermediate step of an adenomatous polyp.

~25% of the general population have polyps by age 50 years.


Recommended CRC Screening Strategies: Average Risk (ACS, ACG, AGA Guidelines)

**Options Beginning at Age 50 Years**

**African Americans begin at age 45**
- Annual fecal occult blood testing (FOBT)
- Flexible sigmoidoscopy (FS) every 5 years
- Annual FOBT plus FS every 5 years
- Double-contrast barium enema (DCBE) every 5 years
- Colonoscopy every 10 years

*Digital rectal examination is not an appropriate CRC screening method.*


ACG Guidelines

- African Americans
  - Begin at age 45
  - Colonoscopy is the preferred method of screening
    - High incidence of colorectal cancer in African Americans
    - Greater prevalence of proximal or right sided polyps and cancerous lesions in this population

INCREASED RISK – Patients With a History of Polyps on Prior Colonoscopy

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>Age to Begin</th>
<th>Recommended Test</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small rectal hyperplastic polyps</td>
<td>Same as those at average risk</td>
<td>Colonoscopy or other screening at same intervals as for those at average risk</td>
<td>Those with hyperplastic polyps syndrome are at increased risk for adenomatous polyps and cancer and should have more intensive follow-up.</td>
</tr>
<tr>
<td>1 or 2 small (&lt; 1cm) tubular adenomas with low-grade dysplasia</td>
<td>2–10 years after the polyps are removed</td>
<td>Colonoscopy</td>
<td>The flexible test should be limited to other factors such as prior colonoscopy findings, family history, race, as well as patient/provider preferences.</td>
</tr>
<tr>
<td>3 or more adenomas, or any adenomas with high-grade dysplasia or villous features</td>
<td>3 years after the polyps are removed</td>
<td>Colonoscopy</td>
<td>Adenomas must have been completely removed. If colonoscopy is normal or shows only 1 or 2 small tubular adenomas with low-grade dysplasia, future colonoscopies can be done every 5 years.</td>
</tr>
<tr>
<td>&gt; 10 adenomas on a single exam</td>
<td>3 years after the polyps are removed</td>
<td>Colonoscopy</td>
<td>Consideration of genetic syndrome such as FAP or HNPCC.</td>
</tr>
<tr>
<td>Multiple adenomas that are removed in pieces</td>
<td>2-6 months after removal</td>
<td>Colonoscopy</td>
<td>If entire adenoma has been removed, further testing is not indicated in such cases.</td>
</tr>
</tbody>
</table>

### Increased Risk – Patients with Family History

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>Age to Begin</th>
<th>Recommended Test</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorectal cancer or adenomatous polyps in any first degree relative before</td>
<td>Age 40, or 10 years before the youngest case in</td>
<td>Colonoscopy Every</td>
<td>Same intervals as for those at average risk</td>
</tr>
<tr>
<td>age 60 or in 2 or more first degree relatives at any age</td>
<td>the immediate family, whichever is earlier</td>
<td>5 years</td>
<td></td>
</tr>
<tr>
<td>Colorectal cancer or adenomatous polyps in any first degree relative aged</td>
<td>Age 40, or 10 years before the youngest case in</td>
<td>Colonoscopy Every</td>
<td>Same intervals as for those at average risk</td>
</tr>
<tr>
<td>60 or older, or in at least 2 second-degree relatives at any age</td>
<td>the immediate family, whichever is earlier</td>
<td>5 years</td>
<td></td>
</tr>
</tbody>
</table>


### High Risk Individuals

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>Age to Begin</th>
<th>Recommended Test</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Familial adenomatous polyposis (FAP) diagnosed by genetic testing, or</td>
<td>Age 10 – 12</td>
<td>Yearly flexible sigmoidoscopy</td>
<td>Colonoscopy every 1 to 2 years; counseling to consider genetic testing if it hasn't been done.</td>
</tr>
<tr>
<td>suspected FAP without genetic testing</td>
<td></td>
<td></td>
<td>If genetic test is positive, removal of colon (colectomy) should be considered.</td>
</tr>
<tr>
<td>Hereditary non-polyposis colon cancer (HNPCC), or at increased risk of</td>
<td>Age 20 to 25 years, or 10 years before the youngest</td>
<td>Colonoscopy every 1 to 2 years;</td>
<td>Genetic testing should be offered to first-degree relatives of people found to have HNPCC by genetic testing. 10 years before the youngest case in the immediate family.</td>
</tr>
<tr>
<td>HNPCC based on family history without genetic testing</td>
<td>case in the immediate family</td>
<td>counseling to consider genetic</td>
<td>Genetic testing should be offered to first-degree relatives of people found to have HNPCC by genetic testing. 10 years before the youngest case in the immediate family.</td>
</tr>
<tr>
<td>Inflammatory bowel disease: -Chronic ulcerative colitis</td>
<td>Age 18 to 20 years, or 12 years before the youngest</td>
<td>Colonoscopy every 1 to 2 years;</td>
<td>These people are best referred to a center with experience in the surveillance and management of inflammatory bowel disease.</td>
</tr>
<tr>
<td>-Crohn's disease</td>
<td>case in the immediate family</td>
<td>counseling for dysplasia</td>
<td></td>
</tr>
<tr>
<td>Cancer risk begins to be significant 8 years after the onset of pancolitis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(involvement of entire large intestine), or 12-15 years after the onset of left-sided colitis</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Diabetes
Screening for Diabetes

- According to the ADA, screening should begin on all individuals ≥ 45 years of age<sup>1</sup>
  - Repeated every 3 years, if normal
- If at risk, can begin screening at an earlier age
  - i.e. obese, sedentary lifestyle
- **American College of Endocrinology<sup>2</sup>**
  - Begin screening at age 25 years, in at risk individuals

---

**ADA & AACE Guidelines**

**Additional Risk Factors for Screening**

- Physically inactive
- First degree relative with diabetes
- Members of a high risk ethnic group
- Delivered baby weighing > 9lbs or diagnosed with gestational diabetes
- Hypertensive >140/90
- HDL < 35mg/dL and or triglycerides ≥ 250 mg/dL
- Previous testing showing IGT or IFG
- Other conditions associated with diabetes
  - PCOS or Acanthosis
- History of vascular disease.

---

**Classification and Diagnosis**

- A1C
  - Lab using a method that is NGSP certified and standardized to the DCCT assay
  - A1c greater than or equal to 6.5% = diabetes
  - A1c 5.7 or greater = IFG
  - A1c 5.7 to 6.4 = individuals with high risk for future diabetes and to whom the term “pre-diabetes” may be applied

---
Correlation of A1C with Glucose

<table>
<thead>
<tr>
<th>A1C (%)</th>
<th>Mg/dl</th>
<th>Mmol/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>126</td>
<td>7.0</td>
</tr>
<tr>
<td>7</td>
<td>154</td>
<td>8.6</td>
</tr>
<tr>
<td>8</td>
<td>183</td>
<td>10.2</td>
</tr>
<tr>
<td>9</td>
<td>212</td>
<td>11.8</td>
</tr>
<tr>
<td>10</td>
<td>240</td>
<td>13.4</td>
</tr>
<tr>
<td>11</td>
<td>269</td>
<td>14.9</td>
</tr>
<tr>
<td>12</td>
<td>298</td>
<td>16.5</td>
</tr>
</tbody>
</table>

For every additional 29 points add 1%


Classification and Diagnosis

• A1C
  – Interventions should be most intensive and follow up more frequently for those with an A1c > 6.0%
  – Considered at very high risk for development of diabetes.


Classification and Diagnosis

• A1C – Quantifiers for Accuracy
  • Must use glucose criteria exclusively
    – Recent transfusions
    – Abnormal red blood cell turnover
    • Pregnancy
    • Anemias from hemolysis
    • Blood loss anemias
    • Significant and frequent hypoglycemias
    • Iron deficiency anemias
    • Use of erythropoetic products

Classification and Diagnosis

• Categories of increased risk
  – FPG 100-125 fm/dL (IFG)
  – 2 hr PG on the 75g OGTT 140-199 mg/dL (IGT)
  – A1c of 5.7% to 6.4%

Classification and Diagnosis

• FPG >/= to 126 mg/dl
  – Fasting is defined as no caloric intake for at least 8 hours
• 2 hour plasma glucose >/= 200 mg/dl during an OGTT
  – Using a glucose load containing the equivalent of 75 g anhydrous glucose dissolved in water
• In a patient with
  – Symptoms of hyperglycemia
  – Hyperglycemic crisis
  – Random plasma glucose >/= 200 mg/dl

Criteria for Testing

• Testing should be considered in all adults who are overweight (waist >35-40") and have:
  • Physical inactivity
  • First degree relative with DM
  • Members of high risk ethnic population
    – African American
    – Latino
    – Native American
    – Asian American
    – Pacific Islander
Criteria for Testing

• Women who have delivered a baby weighing >9lbs or were diagnosed GDM
• Hypertension (>140/90 mm/Hg or on therapy for hypertension)
• HDL < 35 mg/dl and/or Triglycerides >250 mg/dl
• Women with polycystic ovary syndrome
• A1C >/= 5.7%, IGT, or IFG on prior testing
• Other clinical conditions associated with insulin resistance
• History of CAD

Criteria for Testing

• In the absence of above criteria testing begins at age 45
• For normal results test Q3 years unless risk profile changes.

Screening for and diagnosis of GDM

• Carry out diabetes testing at first prenatal visit
• Women at very high risk should be screened for diabetes as soon as possible after confirmation of pregnancy
  – Severe obesity
  – Prior history of GDM or delivery of a large for gestational age infant
  – Presence of glycosuria
  – Diagnosis of PCOS
  – Strong family history of type 2 diabetes


Screening for and diagnosis of GDM

• Low risk status (does not require GDM testing) ALL of the following
  – Age, 25 years old
  – Weight normal before pregnancy
  – Member of an ethnic group with low prevalence of DM
  – No known diabetes in first degree relatives
  – No history of abnormal glucose tolerance
  – No history of poor obstetrical outcomes


Screening for and diagnosis of GDM

• GDM testing at 24-28 weeks
  – All women of greater than low risk of GDM

• 2 step approach
  – Initial screening of PG or serum glucose 1 hour after 50 gram load
    • 90% sensitive of GDM women will be >/= 130 mg/dl
  – Perform diagnostic 100 g OGTT on a separate day on women who exceed the chosen threshold on 50 g screening


Screening for and diagnosis of GDM

• 1 step approach
  – 100 g OGTT in the morning after an overnight fast of at least 8 hours

  – Oral glucose Testing for Diabetes (meet 2)

    Fasting >/= to 95 mg/dl
    1 hour >/= 180 mg/dl
    2 hour >/= 155 mg/dl
    3 hour >/= 140 mg/dl

What Is Good Control?

• ADA Guidelines: A1C Target < 7%¹
  – <180 mg/dL peak postprandial capillary glucose
  – “…the A1C goal for selected individual patient is as close to normal (<6%) as possible without significant hypoglycemia”

• AACE Guidelines: A1C Target <6.5%²
  – <140 mg/dL 2 hr post meal
  – “as near normal as possible without inducing clinically significant hypoglycemia”

² American Association of Clinical Endocrinologists. Medical Guidelines for Clinical Practice for the Management of Diabetes Mellitus. Endocrine Practice 2007;13(suppl 1).

TARGET ORGAN DAMAGE
OUR PERSPECTIVE
Vascular Disease and Retinopathy

TARGET ORGAN DAMAGE
OUR PERSPECTIVE
Neuropathy Microalbuminuria
Stages of Type 2 Diabetes

- IGT (Impaired Glucose Tolerance)
- Post-prandial Hyperglycemia
- Type 2 Diabetes Phase I
- Type 2 Diabetes Phase II
- Type 2 Diabetes Phase III

**Beta Cell Death**

- Patient loses first phase insulin secretion; this is the first defense against postprandial hyperglycemia
- Time of diagnosis for most individuals
- 50% beta cell death

**Insulin resistance**

- Defined clinically as a state in which a given increase in plasma insulin in an individual causes less of an effect in lowering the plasma glucose than it does in a normal population.

**Insulin resistance**

- Primarily, the plasma glucose level regulates the physiologic secretion of insulin
- When an individual develops insulin resistance, the normal amount of insulin is not able to maintain normal plasma glucose levels
- To compensate, insulin secretion is increased until the plasma glucose levels return to normal

Interrelation between atherosclerosis and insulin resistance

- Hypertension
- Obesity
- Hyperinsulinemia
- Diabetes
- Hypertriglyceridemia
- Small, dense LDL
- Low HDL
- Hypercoagulability

Factors which increase suspicion for presence of insulin resistance

- Cerebrovascular disease
- Hypertension
- PCOS
- NASH (NASH)
- Acanthosis nigricans
- Numerous skin tags
- Central adiposity
- Sedentary lifestyle
- Age > 40 years
- History of gestational diabetes
- Family history of diabetes

Insulin resistance: Early diagnosis

- Dyslipidemia
  - Increase in VLDL, Small LDL
  - Decrease in HDL (number and size)
- NASH (hepatic manifestation of IR)
  - ALT/AST > 1
- Increased Insulin levels
  - > 30 microU/ml
- Hypertension
  - Systolic ≥ 130 mmHg; Diastolic ≥ 80 mmHg
Insulin resistance – Early diagnosis

- Central Obesity
  - Waist circumference
    - > 35 inches in women
    - > 40 inches in men
- Glucose
  - Normal glucose yet with multiple risk factors
    - ≥ 100 mg/dL
    - A1C > 6.5%

First World Congress on Insulin Resistant Syndrome; 2003, Nov 20-23, Los Angeles, California, USA


Earliest markers of target organ damage...

- NASH
  - ALT/AST > 1
    - Ultrasound to verify absence of lesions
    - Hepatitis ABC screen
- Proteinuria
  - Spot urine for microalbuminuria > 30

First World Congress on Insulin Resistant Syndrome; 2003, Nov 20-23, Los Angeles, California, USA

Ethnic Differences in Visceral Fat Volume

- Relative visceral fat volume varies by race/ethnicity
- Evidence from CT/MRI, body composition, and anthropometry studies

Less visceral fat

More visceral fat

African Americans

Caucasians

Hispanics

Asians

Japanese

Glucose absorption

Hepatic glucose overproduction

Beta-cell dysfunction

Insulin resistance

DPP-4 = dipeptidyl peptidase-4; TZDs = thiazolidinediones.


Therapies for diabetes

Pancreas

Liver

Muscle and fat

Gut

DPP-4 inhibitors

TZDs

DPP-4 inhibitors

Incretin Mimetics

Biguanides

Sulfonylureas

Meglitinides

Bile acid sequestrants

Alpha-glucosidase inhibitors

Incretin Mimetics

Bile acid sequestrants

Pancreas

Liver

↓ Glucose level

Muscle and fat

Gut

Sulfonylureas

Meglitinides

DPP-4 inhibitors

Incretin Mimetics

Alpha-glucosidase inhibitors

Bile acid sequestrants

Prostate
New News! ??

- Each year, more than 33,000 American men die of prostate cancer, and 20 million get the PSA test to detect the disease early.
- According to the USPSTF, evidence suggests the potential harms caused by PSA screening of healthy men (as a means of identifying prostate cancer) outweigh its potential to save lives and that routine annual screening should be eliminated in the healthy.
- Elevated PSA readings are not necessarily evidence of prostate cancer, and can lead to unnecessary prostate biopsy.
- In addition, even when biopsies reveal signs of prostate cancer cells, evidence shows that a large proportion will never cause harm, even if left untreated. The disease in older men often progresses slowly so that those who have it frequently die of other causes.
- Treatments for prostate cancer can include the removal of the prostate, radiation or other therapies, each of which has the potential to cause serious problems like erectile dysfunction, complete impotence, urinary incontinence or bowel damage. And men who choose to “watch and wait” after elevated PSA readings must live with the anxiety of knowing they have an untreated cancer that could start to progress.

Risk Related Screening

<table>
<thead>
<tr>
<th>Risk</th>
<th>Ages</th>
<th>Screening</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient with a 10 year life expectancy</td>
<td>50 or &gt;</td>
<td>DRE and PSA</td>
<td>Annually</td>
</tr>
<tr>
<td>African Americans; Men with 1 first degree relative with prostate cancer</td>
<td>45</td>
<td>DRE and PSA</td>
<td>Annually</td>
</tr>
<tr>
<td>Men with several first degree relatives with early (&lt; age 65) prostate cancer</td>
<td>40</td>
<td>DRE and PSA</td>
<td>Annually</td>
</tr>
</tbody>
</table>

For men who choose to be screened for prostate cancer

- Screening is recommended with PSA with or without DRE.
- Screening should be conducted yearly for men whose PSA level is 2.5 ng/mL or greater.
- For men whose PSA is less than 2.5 ng/mL, screening intervals can be extended to every 2 years.
- A PSA level of 4.0 ng/mL or greater historically has been used to recommend referral for further evaluation or biopsy, which remains a reasonable approach for men at average risk for prostate cancer.
- For PSA levels between 2.5 ng/mL and 4.0 ng/mL, health care providers should consider an individualized risk assessment that incorporates other risk factors for prostate cancer, particularly for high-grade cancer, that may be used to recommend a biopsy. Factors that increase the risk of prostate cancer include African American race, family history of prostate cancer, increasing age, and abnormal DRE. A previous negative biopsy lowers the risk. Methods are available that merge this information to achieve an estimate of a man’s overall risk of prostate cancer and, more specifically, of his risk of high-grade prostate cancer (see “Beyond Prostate-Specific Antigen: Individualized Risk Assessment,” below).

http://www.uspreventiveservicestaskforce.org/uspstf/uspsprca.htm accessed 6-17-2012

http://www.cancer.org/docroot/CRI/content/CRI_2_4_3X_Can_prostate_cancer_be_found_early_36.asp accessed 6-14-08

http://caonline.amcancersoc.org/cgi/content/full/60/2/70 accessed 5-17-2011
Skin Cancer

Routine Screening

• The USPSTF concludes that the evidence is insufficient to recommend for or against routine screening for skin cancer using a total body skin examination for the early detection of cutaneous
  – Basal cell cancer
  – Cutaneous melanoma
  – Squamous cell skin cancer

ACS Recommendations

• Every 3 years between ages 20 and 40
• Every year for anyone ≥ 40 years

• Increased screening may be recommended for the individual with a family history of cutaneous melanoma
American Thyroid Association Screening Recommendations

- Adults be screened for thyroid dysfunction beginning at age 35 and every 5 years thereafter (TSH - screening test)
- Indication: particularly compelling for females
- Risk factors for thyroid dysfunction may require more frequent screening

**Adult Dental Guidelines**

- Cleanings
  - Minimally every 6 months, individualized as needed
- Oral examinations and radiographs
  - Annually, unless issues need further investigation

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**Aortic Aneurysm**

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**U.S. Preventive Services Task Force AAA screening**

- One time screening (ultrasonography) in men aged 65 - 75 who have never smoked
- The USPSTF makes no recommendation for or against screening in men age 65-75 years who have never smoked
- The USPSTF recommends against routine screening for AAA in women

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(Images and references not included in the text format)
Risk factors for AAA

- Age > 65 years old
- Male sex
- History of smoking (>100 cigarettes in a person’s lifetime)
- First degree family history of a AAA repair
- Modest association between atherosclerotic disease and AAA

Screening Guidelines

- The U.S. Preventive Services Task Force recommends against routine screening for peripheral arterial disease
- The USPSTF found fair evidence that screening with ABI can detect adults with asymptomatic PAD
- However, in individuals without increased risk for PAD, risk of ABI false positives and unnecessary work-ups was found
Patients at Increased Risk

- Symptomatic claudication
- Smokers
- Increasing age
- Multiple cardiovascular risk factors

Increased Risk for PAD

Hypertension

Smoking

Diabetes

Dyslipidemia

Obesity

Hyperhomocysteinemia

Prevalence of Asymptomatic PAD

- Diagnosis of PAD ranges from 1%–22%, depending on population, risk factors, and diagnostic technique(s) used
- Ratio of symptomatic to asymptomatic PAD patients ranges from ~1:1 to 1:6
- For every IC patient, another 3 are estimated to have asymptomatic PAD
Understanding the Ankle Brachial Index (ABI)

- Both ankle and brachial systolic pressures should be taken using a hand-held Doppler instrument
- For both arm and leg, use higher of 2 pressures
- The ABI is 95% sensitive and 99% specific for PAD

Ankle Brachial Index (ABI)

\[ \text{ABI} = \frac{\text{Ankle systolic pressure}}{\text{Brachial systolic pressure}} \]

<table>
<thead>
<tr>
<th></th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brachial</td>
<td>130</td>
<td>128</td>
</tr>
<tr>
<td>Posterior tibial</td>
<td>92</td>
<td>56</td>
</tr>
<tr>
<td>Dorsalis pedis</td>
<td>96</td>
<td>58</td>
</tr>
<tr>
<td>ABI</td>
<td>( \frac{96+130=0.74}{130} )</td>
<td>( \frac{58+130=0.45}{130} )</td>
</tr>
</tbody>
</table>

Office Measurement of the Ankle Brachial Index (ABI)

- Right arm pressure: Pressure: PT DP
- Left arm pressure: Pressure: PT DP

Adapted from the PARTNERS Program.
Interpreting the Ankle Brachial Index

<table>
<thead>
<tr>
<th>ABI</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.90–1.30</td>
<td>Normal</td>
</tr>
<tr>
<td>0.70–0.89</td>
<td>Mild</td>
</tr>
<tr>
<td>0.40–0.69</td>
<td>Moderate</td>
</tr>
<tr>
<td>≤0.40</td>
<td>Severe</td>
</tr>
<tr>
<td>&gt;1.30</td>
<td>Non-compressible vessels</td>
</tr>
</tbody>
</table>


Tuberculosis

Screening for Tuberculosis is Based Upon Risk

- TB is spread via respiratory droplets
- People at high risk
  - Correctional facility staff
  - Healthcare workers
  - Migrant workers
  - Close contact with a person infected with TB

http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5417a1.htm?s_cid=rr5417a1_e accessed June 12, 2012
Risk Based Screening for TB

• Patients with
  – HIV infection
  – Injection drug use
  – Radiographic evidence of previous TB
  – Low body weight (> 10% below ideal)
  – Silicosis, diabetes, chronic renal failure, hemodialysis, gastrectomy, jejunoileal bypass, solid organ transplant, head and neck cancer, prolonged use prednisone or immunosuppressive medications

Guide for Primary Health Care Providers: Targeted Tuberculin Testing and Treatment of Latent Tuberculosis Infection 2005. CDC accessed 7-4-08
www.cdc.gov/tb/pubs/LTBI/targetedtesting.htm#1

GENERAL HEALTH COUNSELING

Seatbelts, Helmets, Sunscreen, Smoke Detectors CO₂ detectors
Safety Issues:
Pool Safety, Guns, Domestic Violence

Alcohol

American Heart Association
• Moderate intake of alcoholic beverages
  – 1-2 drinks per day of wine
• There is no clear evidence that wine is more beneficial than other forms of alcohol.
• Alcohol consumption poses a number of health hazards

**Alcohol Abuse**

- **Alcohol abuse**
  - Drinking accompanied by 1 or more
    - Failure to fulfill major work school or home responsibilities because of drinking
    - Drinking in situations that are physically dangerous
    - Recurring alcohol related legal issues
    - Having social or relationship issues that are caused by or worsened by alcohol


**Alcohol**

- **Alcoholism (alcohol dependence)**
  - In addition to the characteristics of alcohol abuse
    - Persistent drinking in spite of obvious physical, mental, or social problems caused by alcohol
    - Loss of control – inability to stop drinking once begun
    - Withdrawal symptoms
      - Nausea, sweating, shakiness, anxiety
    - Tolerance (needing increased amounts to get same "high")


**Screening Tool**

- **CAGE questionnaire**
  - C: Have you ever felt you should CUT down on your drinking?
  - A: Have people ANNOYED you by criticizing your drinking?
  - G: Have you ever felt badly or GUILTY about your drinking?
  - E: Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover (EYE OPENER)?
CAGE questionnaire

- Scoring
  - Total of 2 or more would suggest a problem with alcoholism


Smoking

Impact of Smoking

- Smoking damages nearly every organ in the human body
- Smoking is linked to at least 15 different cancers
- Smoking accounts for some 30% of all cancer deaths
- Smoking costs billions of dollars each year

Morbidity of Smoking

- Smoking is responsible for nearly 1 in 5 deaths in the United States
- Cigarette smoking and tobacco use are acquired behaviors — activities that people choose to do
- Smoking is the most preventable cause of premature death in our society.


Ages of Smokers

- Almost 24% of those 18 to 44 years old are current smokers
- 10.2% of those ≥ 65 years smoke cigarettes
- Nationwide, 22.3% of high school students and 8.1% of middle school students were smoking in 2004


Counseling for Smokers

- If not smoking, don't start
- If the individual does smoke, offer:
  - 5 – A’s: Ask, Advise, Assess, Assist, Arrange
  - Offer opportunities to help
    - Behavior modification
    - Nicotine intake by patch, gum, lozenge
    - Prescription medications

**Five A’s**

- **Ask**
  - Ask to identify all tobacco users at every visit
- **Advise**
  - Strongly urge all tobacco users to quit
- **Assess**
  - Determine willingness to make a quit attempt
- **Assist**
  - Aid the patient in quitting
- **Arrange**
  - Arrange a follow up contact


---

**IMMUNIZATIONS**

---

**Adult Immunizations**

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>For Whom</th>
<th>Schedule</th>
<th>Contraindications</th>
</tr>
</thead>
</table>
| Influenza   | > Age 50
            | > Medical problems
            | > Respiratory Compromise
            | > Chronic Care Facilities
            | > Healthcare workers
            | > Women who will be pregnant during flu season
            | > Students living together
            | > Household members of those with medical issues |
|             | Annually
             | Previous reactant
             | Moderate or severe illness
             | Anaphylaxis to eggs |
| Pneumococcal | > 65 years old
            | Chronic illnesses or significant risk factors for selected respiratory and medical illnesses;
            | Asplenia, functional asplenia
            | Alaskan Natives, certain American Indian populations;
            | Immunosuppressive therapy; |
|             | Once; may repeat x 1 for high risk groups if 5 years or x from last PPV
             | or for those who were < 65 at first injection
             | Moderate or severe acute illness |

## Adult Immunizations

<table>
<thead>
<tr>
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<th>For whom</th>
<th>Schedule</th>
<th>Contraindications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zostavax</td>
<td>All persons &gt; 60 unless immunocompromised</td>
<td>Once</td>
<td>Provisional recommendations are on line at www.</td>
</tr>
<tr>
<td></td>
<td>Persons with history of herpes zoster may receive</td>
<td></td>
<td>Cdc.gov/vaccines/recs/provisional/default.htm#acip.</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>All persons through age 18; high risk persons and their households; Injection drug users; men who have sex with men; persons with HIV; healthcare personnel; persons with chronic liver disease; sexually active persons not in a long term monogamous relationship; sex partners HBs Ag + individuals</td>
<td>3 doses; Day 0 Day 1 – 2 month Day 6 months</td>
<td>Moderate to severe acute illness</td>
</tr>
</tbody>
</table>

**Hepatitis A**
- Persons who travel and work anywhere EXCEPT USA, Canada, Japan, Australia, New Zealand, Western Europe; persons with chronic liver disease; injecting and non-injecting drug users; men who have sex with men; 2 doses; Day 0 Day 6 months
- If dose #2 is delayed, no repeating dose 1
- Moderate or severe acute illness
- Safety during pregnancy not established

**Twinrix**
- Hepatitis A & B combination
- Patients over 18 yrs old
- 3 doses, 0, 1, & 6 months
- Same as hepatitis A

**Td**
- All adults who lack documentation of prior administration; Booster may be needed for wound management as early as 5 yrs after prior dose.
- Unvaccinated: complete the primary series with Td 0, 1-2 m, 6-12 m One time Tdap may be used age 18-64
- Td booster q 10 years after primary series completed
- Moderate or severe acute illness
- GBS within 6 weeks of receiving a previous dose of TT vaccine
- Unstable neurologic condition
- Tdap or Td not contraindicated in pregnancy

**Tdap**
- All adults younger than age 65 who have never received Healthcare workers who have never had Tdap
- Once between 11 – 64 years of age
- As above

---

### Adult Immunizations

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>For Whom</th>
<th>Schedule</th>
<th>Contraindications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varicella</td>
<td>All persons without evidence of immunity</td>
<td>2 doses; born before 1980 in US; administer 2 doses Day 0, Day 1 month</td>
<td>Pregnancy or possibility of pregnancy in 4 weeks; immunocompromised individuals; moderate or severe acute illness</td>
</tr>
<tr>
<td>Meningococcal</td>
<td>All persons aged 11-18 years</td>
<td>1 dose, if initial vaccine was MPSV, revaccinate after 5 years if high risk continues, routine revaccination with MCV4 is not recommended</td>
<td>Moderate or severe acute illness</td>
</tr>
<tr>
<td>HPV</td>
<td>All previously unvaccinated women through age 26 years</td>
<td>3 doses Day 0, Day 2 months, Day 6 months, at least 4 weeks between doses 1 &amp; 2; 12 weeks between doses 2 &amp; 3</td>
<td>Data on vaccination in pregnancy is limited; vaccination should be delayed until after delivery</td>
</tr>
<tr>
<td>MMR</td>
<td>Persons born outside the US or after 1957 or later should receive 1 dose; anatomic or functional asplenia; persons in high risk groups, healthcare workers, students entering college, post high school educational institutions, international travelers</td>
<td>2 doses, if dose 2 is recommended, give no sooner than 4 weeks after dose 1</td>
<td>Pregnancy or possibility of pregnancy in 4 weeks; immunocompromised individuals; moderate to severe acute illness</td>
</tr>
</tbody>
</table>


### Common Adult Primary Care Issues
Hordeolum/Stye

- Common disorder of eyelid
- Acute focal infection (usually *staphylococcal*)
  - Painful, warm swollen red lump on the eyelid
  - May also induce corneal astigmatism and cause blurring of vision
- Abscess of polymorphonuclear leukocytes and necrotic debris

Ehrenhaus, MP. Hordeolum. June 10, 2008. accessed 7-20-08
http://www.emedicine.com/OPH/topic606.htm
Hordeolum/Stye

- Treatment
  - Self limiting, improvement in 1-2 weeks
  - Hygiene, warm compresses to lesions for 10 minutes four times daily
  - Topical antibiotic ointment if lesion is draining or if accompanying blepharoconjunctivitis
  - Systemic antibiotics if hordeolum is complicated by preseptal cellulitis
  - Surgical incision and drainage if large or refractory to medical therapy

Blepharitis

- Impacts the eyelid and eyelash margins
- Tiny oil glands located near the base of the eyelashes malfunction
- Bacterial overgrowth results
- May be a chronic condition
- No permanent damage to the eyesight
Blepharitis

- Symptoms
  - Watery or red eyes
  - Gritty burning sensation in the eye
  - Itchy eyelids
  - Red, swollen eyelids
  - Flaking of the skin around the eyes
  - Crusted eyelids upon waking
  - Sensitivity to light
  - Rarely disappears completely, relapses common

Blepharitis

- Treatments
  - Warm compress over closed eye for 10 min four times daily
  - Washcloth moistened with warm water and gentle soap to wash off oil or debris/scales on eyelash
  - Antibiotic cream or ointment
  - Steroid drops if needed (use cautiously)
  - Good hygiene to avoid recurrence

Conjunctivitis
### Conjunctivitis

- Inflammatory process which involves the conjunctiva
- Cellular infiltration and exudation caused by:
  - Virus
  - Bacteria
  - Fungus
  - Parasite, chlamydia, chemical or allergen

---

### Symptoms

- Eyelids are stuck together upon waking
- Itching and burning
- Gritty foreign body sensation
- Pus sliding across eye which can cause a distortion of vision
- Minimal photophobia

---

### Types

- **Bacterial** – acute onset, unilateral, minimal pain, occasional pruritus
  - *Staphylococcus* and *streptococcus* most common pathogens
- **Viral** – acute or subacute onset, minimal pain, exposure history, clear watery discharge, bilateral
- **Chlamydial** – STD history, chronic onset, minimal pain, occasional pruritis
- **Allergic** – acute onset, no pain, pruritis extremely common
Conjunctivitis

- Treatment
  - Supportive
  - Artificial tears
  - Compresses
  - Antibiotic drops help prevent secondary infection
  - Topical corticosteroids by ophthalmologist for substantial inflammation

Subconjunctival hemmorhage

- Blood between the conjunctiva and sclera
- Bleeding of the conjunctival or episcleral blood vessels into the subconjunctival space
  - Trauma
  - Spontaneous
  - Related to systemic issue
  - Valsalva/vomiting
  - Hypertension/atherosclerosis (very rare)
Subconjunctival Hemorrhage

- Most common appearance is a bright red patch
- View of sclera may be obscured by blood
- May be dark red, if not acute
- Differentials
  - Conjunctivitis
  - Anterior uveitis (formerly known as iritis)
  - Conjunctival neoplasm with secondary hemorrhage

Subconjunctival Hemorrhage

- Care:
  - Reassurance — resolves in about 2 weeks
  - Artificial tears can be used to decrease mild irritation
  - Identify cause (use of aspirin products, NSAIDs, check PT/INR if on coumadin type products)
  - Check with provider for hypertension or bleeding diathesis potential

Corneal Abrasion
Corneal Abrasion

- Most common and neglected eye injury
  - Disruption in the integrity of corneal epithelium
  - Corneal surface injured/abraded
  - Denuded as a result of external forces
    - Dry eye
    - Foreign bodies
    - Contact lens
    - Trauma

Corneal Abrasion

- Foreign body sensation
- Pain (sharp, severe)
- Photophobia (secondary uveitis)
- Excessive tearing
- Conjunctival injection often present
- Eyelid swelling may be present

Corneal Abrasion

- Diagnosis:
  - Slit lamp examination
  - Fluorescein instillation and examination with blue light
Corneal Abrasion

- Outpatient for minor abrasion
  - Topical antibiotic is not always recommended but may soothe eye
  - Ice compress for 24-48 hours to reduce edema
  - Follow up evaluation in 24 hours
  - Inform about signs and symptoms of infection
    - Increasing pain
    - Erythema
    - Edema
    - Purulent discharge

Chalazion

- Chronic, noninfectious granulomatous reaction
- Lipid breakdown products leak into the surrounding tissue and cause a granulomatous inflammatory response
- Can evolve from internal hordeolum/stye
• Single, non tender, firm nodule(s) located deep within the lid
• More common on upper eyelid than lower
• A stye/hordeolum is more marginal or superficial and more centered on an eyelash
• Inflammation may be present

Chalazion

• Treatment
  – Small, inconspicuous, asymptomatic can be ignored and patient reassured
  – Lid massage, moist heat, topical mild steroid drops
  – Acute therapy
    • Tetracycline minimizes infectious components, decreases inflammation
    • Referral to ophthalmologist
  – Consider surgical removal

Herpetic Lesions
Ocular Herpes Zoster

- Varicella-zoster virus of the eye – ophthalmicus
- Involves the tissues innervated by the ophthalmic division of the trigeminal nerve
- Accounts for 10%-25% of all cases of herpes zoster

Herpes Zoster of the Eye

- Sequelae of herpes zoster ophthalmicus can be devastating!
  - Chronic ocular inflammation
  - Visual loss
  - Debilitating pain
- Presentation
  - Develops within 3 weeks of rash
  - Lesions can resolve rapidly and completely
  - Eye pain, red eye (unilateral), decreased vision, skin/eyelid rash, malaise
  - Grouped vesicular rashes; crusting on 5th or 6th day
Acute Treatment Options

- **Antiviral**
  - Goal: Reduce viral reproduction

- **Corticosteroids**
  - Initially postulated that these reduce viral replication; recent studies have not found this to be true
  - However, they do decrease pain

- **Pain Management**
  - Topical agents
  - Anti-inflammatory agents
  - Narcotics

- **Postherpetic neuralgia prevention**

Refer

- All herpes zoster lesions involving the eye must be referred to ophthalmology for a more comprehensive examination and treatment

Foreign Body of the Eye
Corneal Foreign Body

- Usually on or in the cornea
- Most common location – palpebral conjunctiva (under lids in the recesses)
  - Metal
  - Glass
  - Organic material

Foreign Body

- Foreign body results in an inflammatory cascade
  - Dilation of surrounding vessels
  - Subsequent edema
    - Lids, conjunctiva, cornea
  - White blood cell liberation
    - Anterior chamber reaction
    - Corneal infiltration
    - If not removed – infection or tissue necrosis

Foreign body

- History:
  - Pain
  - Foreign body sensation
  - Photophobia
  - Tearing
  - Red eye
- Exam:
  - Conjunctival injection
  - Rust ring (if metallic foreign body)
  - Epithelial defect that stains with fluorescein
Foreign Body

- Treatment
  - Relieving pain
  - Avoiding infection
  - Preventing permanent loss of function
  - If able to remove, antibiotic ointment and recheck in 24 hours
  - If unable to remove or red flags, refer to ophthalmologist
- Caution: patching eye

Eye Emergencies

- Loss of sight
- Partial loss of sight/visual acuity
- Painful red eye
- Visible foreign body
- Retinal detachment
- Trauma to orbit, globe rupture
- Chemical burns

Eye Emergencies

• Need rapid intervention in an Emergency Department or an Ophthalmologist’s office

ENT

Acute Otitis Media
Otitis Media

• Symptoms
  – Fever
  – Pain
  – Discharge from ear
  – Irritability, crying, lethargy
  – Decreased appetite
  – Decreased sleep
  – Recent URI

accessed 7-13-08 http://www.emedicine.com/emerg/TOPIC351.HTM

Otitis Media

• Signs
  – Red, bulging tympanic membrane
  – Retracted with pus, fluid or air bubbles
  – No movement with insufflation
  – Inability to see normal landmarks
  – Occasionally-hole in the tympanic membrane

accessed 7-13-08 http://www.emedicine.com/emerg/TOPIC351.HTM

Variations of Tympanic Membrane

Normal TM
Acute OM
Otitis Media with Effusion
Acute Otitis Media

• Gram-positive diplococci
  • *S. pneumoniae*
  • Most common causative organism

Acute OM

• *H. influenzae*
  - Gram-negative bacilli
    - =>40% amoxicillin-resistant via beta-lactamase production
  • *M. Catarrhalis*
    - 90-95% beta-lactamase producing
    - Likely to resolve on own

Antibiotic Therapy

• AAFP recommend use of high doses and short courses of amoxicillin
• Beta lactamase positive *H. influenzae* and/or *Moraxella catarrhalis* – high dose amoxicillin and clavulanate is recommended
• Allergic to amoxicillin
  – Cefdinir, cefpodoxime, cefuroxime, azithromycin or clarithromycin
Serous Otitis Media

Eustacian Tube Dysfunction

• Negative pressure develops
• If present for long enough and with sufficient magnitude, negative pressure elicits a transudate from the mucosa
• Eventual accumulation of a serous, sterile effusion

Presentation

- Adults report aural fullness and/or pressure
- Feels like an ear being plugged
- Decreased hearing
- Rare complaints of pain
- Associated
  - Recent URI, plane trip, scuba diving, allergies

Exam

- Inflammation
- Decreased motility of tympanic membrane
- Bulging contour
- Difficulty assessing ossicular landmarks
- Yellowness and or redness with hypervascularitity
- Occasionally bullae

Treatment

- Treatment: Chronic - surgical
- Treatment: Acute
  - First generation antihistamines and decongestants in appropriate patients
  - Mucolytics may be appropriate
  - Treatment with antibiotics is reasonable but of questionable benefit
    - Erythromycin/sulfasoxazole, amoxicillin, amoxicillin-clavulanate, trimethoprim-sulfamethoxazole
Bullous Myringitis

Acute Bullous Myringitis

- Bacterial infection caused by
  - *Streptococcus pneumoniae*
  - *Mycoplasma pneumoniae*
  - Virus
    - *Influenza*

Presentation

- 2-3 day history of congestion and hearing loss
- Pain intensifies to severe
- Treatment
  - Macrolide, analgesics, anti-inflammatory medications, antihistamines
Otitis Externa

- Infection of external auditory canal
- Infectious Agents
  - *Pseudomonas*, *staphylococci*, *streptococci*
- May cause significant issues in those with:
  - Diabetes or immunocompromised individual
- Chronic Otitis Externa:
  - Infection exceeds 4 weeks or
  - > 4 episodes in one year

Otitis Externa Presentation

- 1-2 days progressive discomfort
- Itching, purulent discharge
- Conductive hearing loss
- Pain with tragal movement
- Erythema, edema of epithelium, accumulation of moist debris in canal
Otitis Externa

- Differential Diagnosis:
  - Foreign body in ear
  - Herpes zoster
  - Otitis media
- Treatment
  - Aminoglycosides combined with a second antibiotic and a topical steroid
    - Neomycin, polymyxin B and hydrocortisone
    - Flouroquinolones (ofloxacin, ciprofloxacin)

Fungal Otitis Externa

- Fungal infection (rare - 10%)
  - Aspergillus species
- Mild fungal infections can usually be treated with an acetic acid solution
- More severe cases may require a topical antifungal such as 1% clotrimazole instilled into the ear

http://www.emedicine.com/emerg/TOPIC350.HTM
Cellulitis of Auricle

- Auricle and external auditory canal are composed of skin and cartilage
  - Susceptible to same insults as other skin
- Presentation:
  - Warm, erythematous, inflamed skin with possible pustular drainage
- Treat as other skin infections
- Consider referral if no improvement in 24 hours or extensive

Amin, ME. External Ear, Inflammatory Diseases. Feb 5, 2008 accessed 7-13-08
http://www.emedicine.com/ent/TOPIC718.HTM

Cerumen Impaction
Cerumen in Ear Canal

Cerumen Impaction

- Brown, usually hard material obstructing the external auditory canal
- Occurs as a result of:
  - Hypersecretion of cerumen
  - Cleaning of ears with q-tip and packing wax
  - Disruption of the endothelium, external canal

Presentation

- Itching of the ear
- Pain
- Tinnitus
- Dizziness
- Cough
- Decreased hearing

Pray, W. S. Pray, J. J. Earwax: Should it be Removed? Accessed 7-23-08
Removal

- Must be removed cautiously
  - Care to not disrupt epithelial layer of external auditory canal
  - Care not to rupture tympanic membrane
- Use of cerumenolytic solutions (may not work)
- Irrigation by healthcare professional is now recommended

Pharyngitis

Pharyngitis

- Epidemiology
  - Group A Beta Hemolytic Strep
    - Most interest because of its association with severe complications
    - Peritonsillar abscesses, rheumatic fever, post-streptococcal glomerulonephritis - complications
    - Rheumatic fever: 20/100,000 people in early 1900’s, now 1:100,000
      - Recent increase in cases
      - Many cases in individuals without sore throat

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Thomas BJ. Pharyngitis, Bacterial. E medicine. Aug 1 2006; accessed 7-23-08
http://www.emedicine.com/med/TOPIC1811.HTM
Pharyngitis

• Symptoms
  – Group A Beta Hemolytic Strep
    • Rapid onset of sore throat
    • Fever 103-104
    • Swollen glands
    • Usually-no URI symptoms
    • Headache
    • Decreased appetite
    • Dysphagia
    • Irritability

Tonsillitis/Pharyngitis

Exudative pharyngitis

Strep pharyngitis
Peritonsillar abscess
Mononucleosis
Viral pharyngitis
Pharyngitis

• Plan
  – Diagnostic
    • Throat culture: 24 hour is the gold standard
    • Quick strep: 85-100% specificity; 31-95% sensitivity
    • Must swab both tonsils for best results
    • Consider mononucleosis

Pharyngitis
Even with a best case scenario, 1/3 - 1/2 of cases of strep pharyngitis are missed or overdiagnosed using history and physical examination only!!!

MUST DO A THROAT CULTURE

Pharyngitis

• Plan
  – Therapeutic: Strep Pharyngitis
    • PCN VK-standard
    • Treatment is for 10 days
    • Warm water gargles
    • Tylenol/NSAID’s
  – Educational
    • Contagion
    • Quick improvement
    • Discard toothbrush
Peritonsillar Abscess

- Generally begins as an acute febrile URI or pharyngitis
- Progresses into the deep soft tissues
- Condition suddenly worsens
  - Increased fever
  - Anorexia
  - Drooling
  - Dyspnea
  - Trismus

Mehta N. Peritonsillar Abscess May 16, 2007; accessed 7-23-08
http://www.emedicine.com/EMERG/topic417.htm

Peritonsillar Abscess

- Physical examination
  - May appear restless
  - Irritable
  - May lie with head hyperextended to facilitate respirations
  - Muffled or “hot potato voice”
  - Stridor may be present
  - Respiratory distress

Mehta N. Peritonsillar Abscess May 16, 2007; accessed 7-23-08
http://www.emedicine.com/EMERG/topic417.htm
Peritonsillar Abscess

• Physical examination findings
  – Fiery red asymmetric swelling of one tonsil
  – Uvula is often displaced contralaterally and often forward
  – Large, tender lymphadenopathy

Mehta N. Peritonsillar Abscess May 16, 2007; accessed 7-23-08
http://www.emedicine.com/EMERG/topic417.htm
Important Reminder

• If respiratory distress is severe, do not examine the pharynx

Treatment

• Aspiration of the abscess may be performed for an accurate diagnosis and treatment
• CT scan of the head and neck
  – Monitor airway at all times
• ENT consult is essential
• Usual management
  – IV antibiotics
  – Inpatient management

Epiglottitis
Adult Epiglottitis

• Acute inflammation of the supraglottic region of the oropharynx
• Inflammation of epiglottis, vallecula, arytenoids and aryepiglottic folds
• Rapid progression
  – Starts as sore throat in am and rapidly progresses throughout day – until severe

Epiglottitis

• Presentation
  – Stridor
  – Voice muffling
  – Rapid clinical changes
  – History of diabetes
  – Often associated with need for airway intervention!

Presentation

• Fever
• Drooling/inability to handle secretions
• Cervical adenopathy
• Stridor
• Hypoxia
• Respiratory distress
• Severe pain on gentle palpation over larynx
Infectious Organisms

• *H. influenzae* (25%)
• *Haemophilus parainfluenzae*
• *Streptococcus pneumoniae*
• *Group A streptococci*

Intervention

• Airway management until reach EMS arrives or patient reaches Emergency Department
• Intubation, only if last resort, to maintain airway
• IV antibiotics
• Inpatient management

Acute Bacterial Rhinosinusitis
New Definition of Rhinosinusitis

Take into consideration:

Mucosa of both nose and sinuses

Fluids that lie within cavities of nose and sinuses


Microbiology of ABRS

 Adults

0%-8% 2%-10% 20%-43% 22%-35% 0%-9% 3%-9%


Streptococcus pneumoniae
Haemophilus influenzae
Streptococcal species
Moraxella catarrhalis
Anaerobes
Staphylococcus aureus

Remember…

• Only 0.5 – 2% of viral sinusitis cases turn into bacterial sinusitis
Predisposing Factors of ABRS

- Upper respiratory infections
- Colds
- Allergy
- Smoking
- Anatomical abnormalities
- Immunodeficiency syndromes
- Dental infections

Pathophysiology of ABRS

- Normally, bacteria is removed from the sinuses by the mucous and the action of the cilia
- Ostia of a sinus becomes blocked
- Bacteria is normally present in the sinus
- Once the sinus opening is blocked, the bacteria is trapped and begins to grow in number


Pathophysiology of ABRS

- Mucosa of the sinuses become inflamed and swollen; The body responds by sending neutrophils to the area
- Result: Increased production of thick, green discharge; Pain in affected sinus(es)

Diagnosis of ABRS

A diagnosis of ABRS may be made in adults or children with symptoms of a viral upper respiratory infection that have not improved after 10 days or have worsened after 5 to 7 days.

Symptoms:
- Headache
- Facial pain/pressure
- Nasal drainage
- Nasal congestion
- Postnasal drip
- Hyposmia/anosmia
- Fever
- Halitosis
- Cough
- Fatigue
- Maxillary dental pain
- Ear fullness/pressure


Diagnostic Testing

- Sinus X-rays
  - Allows visualization of the maxillary and frontal sinuses
  - Lack of specificity is a limiting factor
  - US Agency on Healthcare Policy – not cost effective
- CT Scan
  - Best visualization of the paranasal sinuses


Goals of Treatment

- Restore integrity and function of ostiomeatal complex
  - Reduce inflammation
  - Restore drainage
  - Eradicate bacterial infection

Treatment of Acute Bacterial Rhinosinusitis

- Nonpharmacologic Therapies
  - Nasal lavage
  - Cold steam vaporizer
  - Increased water intake

Management Strategies in ABRS

- Guaifenesin
- Antihistamines
  - Should not be used unless allergic component
  - 2nd generation antihistamines
- Topical corticosteroids
- Corticosteroids
- Antimicrobials

Antimicrobial Therapies

<table>
<thead>
<tr>
<th>Initial Therapy</th>
<th>Allergy to Beta lactams or TMP/SMX</th>
<th>No Improvement – 72 hours; mild symptoms and recent antibiotics or moderate symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild Symptoms</td>
<td>Amoxicillin</td>
<td>Dicloxacillin, azithromycin, clarithromycin, erythromycin, Moxifloxacin, levofloxacin, gemifloxacin, clindamycin, rifampin</td>
</tr>
<tr>
<td>No antibiotic use in 4 – 6 weeks</td>
<td>Amoxicillin/clavulanate, cefpodoxime, cefuroxime</td>
<td>Moxifloxacin, levofloxacin, high dose amoxicillin/clavulanate, or combination of therapies (azithromycin or clindamycin or rifampin)</td>
</tr>
</tbody>
</table>


Allergic Rhinitis

Symptoms of Allergic Rhinitis

- Nasal congestion
- Sneezing
- Profuse watery discharge from nose and/or eyes
- Itching of nose, eyes, and palate
- Frequent clearing of the throat
- Nose picking
- Grimacing or twitching
- Cough
- Mouth breathing
- Fatigue
- Irritability
- Decreased appetite
- Decreased hearing
- Hoarse voice
- Decreased smell
- Sniffling
- Epistaxis

Physical Examination Findings in the Individual With Allergic Rhinitis

- Pale, boggy mucosa and turbinates
- Allergic shiners
- Allergic salute
- Conjunctival injection
- Cobblestoning
- Allergic facies
- Dennie’s lines
- Watery discharge in nose and eyes
- Ulcerations on nasal mucosa
- Pharyngeal edema
- Lymphoid tissue
- Nasal polyps
- Long eye lashes
- High arched palate


Allergic Rhinitis: A Risk Factor for Asthma

- Brown University Study
  - 690 students
  - 162 diagnosed with allergic rhinitis
  - 528 without allergic rhinitis
  - 23 years later
  - Of the 162 with allergic rhinitis, 10.5% had developed asthma compared with 3.6% of those without allergic rhinitis

Risk Factors for the Development of Allergic Rhinitis and Asthma

- Family history of atopy/allergy
- Repeated exposure to indoor/outdoor allergens
  - For instance, infants who are repeatedly exposed to high amounts of indoor allergens such as pet dander or dust mites have an increased risk for the development of symptoms related to those particular allergens later in life
- Same risk factors for the development of allergic rhinitis

Treatment

- Avoidance of allergens and environmental controls
- Decongestants
- Antihistamines
- Corticosteroids
- Mast cell stabilizer
- Anticholinergic agents
- Immunotherapy

Upper Respiratory Infection
URI

- Invasion of the mucosal lining of upper airway
- Person to person spread of virus is most common
- Inoculation by bacteria or viruses begins when the secretions are transferred by touching or inhaling droplets from infected person

Symptoms

- Result from the body’s inflammatory response of the immune system to invading pathogens
  - Local swelling
  - Erythema
  - Edema
  - Secretions
  - Fever

Symptom Comparison

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Allergy</th>
<th>URI</th>
<th>Influenza</th>
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<tr>
<td>Itchy, watery eyes</td>
<td>Common</td>
<td>Rare, conjunctivitis may occur with adenovirus</td>
<td>Soreness behind eyes, conjunctivitis</td>
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<td>Nasal discharge</td>
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<td>Sometimes</td>
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<td>Very Common, can last for weeks</td>
</tr>
<tr>
<td>Myalgia</td>
<td>Never</td>
<td>Slight</td>
<td>Very severe, common</td>
</tr>
<tr>
<td>Duration</td>
<td>Weeks</td>
<td>3-14 days</td>
<td>3-5 days, acute</td>
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</tbody>
</table>
Treatment

- Viral (majority of infections)
  - Symptom relief
  - Analgesic antipyretics
  - Anticholinergic agents
  - Antihistamines
  - Antitussives
  - Adrenergic agonists
  - Corticosteroids
  - Decongestants


Aphthous Stomatitis

Recurrent Aphthous Ulcers

- Very common oral mucosal lesions
  - Unknown etiology
- Commonly found on oral mucosa
  - Labial and buccal mucosa
  - Maxillary and mandibular sulci
  - Unattached gingiva
  - Soft palate
  - Tonsils
  - Floor of mouth
  - Ventral surface of the tongue

RAU Presentation

• ≥ 1 of following:
  – Rounded
  – Shallow
  – Punched-out appearance
  – Painful oral ulcers
  – Occur at intervals of a few days to months
  – Prodromal stage –
    • Burning sensation
    • Ulcers develop in 24-48 hours

Treatment

• Antiinflammatory and immunodulatory agents
  – Corticosteroids
• Adjuvant rinses limit inflammatory effect and reduce bacterial counts
  – Chlorhexidine gluconate
  – Betadine, tetracycline and dilute salt water rinse
  – Dilute hydrogen peroxide
  – Topical lidocaine or benzocaine
  – Magic mouthwash

Treatment

• Systemic Agents
  – Colchicine 0.6 mg 3 times a day
  – Cimetidine 200 mg 2 - 4 times a day
  – Azathioprine (Imuran) 50 mg daily
Squamous Cell Cancer of Tongue

• 90% of oral cancers are SCC
• Typically on the lip or lateral part of the tongue
• Multifactorial and strongly related to lifestyle
  – Diet
  – Alcohol (5 fold greater risk)
  – Tobacco (20 fold greater risk)
  – Tobacco and alcohol together (50 fold risk)
  – Older men – have greatest risk


Cancer of the Tongue
Presentation

- May be preceded by premalignant lesions
  - Erythroplakia (red patch)
  - Leukoplakia (white patch)
  - Speckled leukoplakia (red and white patch)

- Watch for single ulcers, lumps, red patches or white patches (particularly if they persist > 3 weeks)

- Treatment: referral to oral surgeon

Torus Palatinus

- Benign lesion in the oral cavity
  - Occurs due to protuberant bone growths
  - Located on the palate
- Common in postmenopausal women
- Slow growing
- Vulnerable to blunt trauma
  - Could predispose to osteonecrosis
- Treatment: observation

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Torus Palatinus

Severe Dental Decay
“Methmouth”

Severe Dental Decay – “Methmouth”
Methamphetamine

- During use cravings for high sugar content - carbonated beverages
- Leaves a residue on teeth
- In addition, poor oral hygiene during 12 hour high
- Acidic contents of meth can damage teeth
  - Battery acid, lantern fuel, antifreeze, hydrochloric acid, drain cleaner, lye etc
- Meth will also dry up saliva which is protective to teeth

Methmouth

- Treatment
  - Usually – tooth extractions
- Assist with drug recovery efforts

Dizziness
Dizziness

- Incidence of dizziness, vertigo, imbalance > 40 years - 40%
- Need to differentiate central from peripheral dizziness
- Identifying exact cause is the task for the healthcare provider
- Patient’s history is the critical diagnostic tool

Dizziness – General Exam

- Vital signs
- Supine and standing blood pressure measurement
- Evaluation of the cardiovascular system
- Evaluation of the neurologic system
- Examine ears for
  - External abnormalities/infection
  - Middle ear infection/inflammation

Dizziness – General Exam

- Test hearing
  - Tuning fork
  - Whispered voice at 6 feet or rubbing hair together
- ROM of cervical spine
- Specific evaluation of vestibular system is fundamental in evaluating dizziness
  - Hallpike maneuver/Barany maneuver
Dizziness

- Dizziness
  - Lightheadedness, unsteadiness, motion intolerance, imbalance, floating, head rushes
  - May be due to CNS, cardiovascular, systemic diseases
    - Gradual, ill-defined symptoms

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Dizziness

- If cause of dizziness is not apparent
  - Look for vestibular issues
  - Covered in vertigo section

---

Treatment

- Acute dizziness and vertigo are usually managed with:
  - Vestibular suppressants for 24 – 72 hours
    - Prolonged use may delays the brain’s natural compensatory mechanisms
  - Antiviral medications
  - Antiemetic medications
Vertigo

- 40% of patients with migraine headaches have vertigo and / or motion sickness
- As with dizziness, the history is critical in distinguishing cause and treatment
- Central vertigo
  - Frequently unable to ambulate during acute episodes of vertigo
- Peripheral vertigo
  - Patients usually ambulate during episodes
  - Consciously aware of their environment

Vertigo

- True rotational movement of self or surroundings
  - Lasts for seconds
  - Associated with head or body movement
- True rotational vertigo often due to inner ear disease
  - Sudden onset, vivid memory of episode, especially if hearing loss, ear pressure or tinnitus are present
  - Lasts for hours of days – Meniere’s disease or vestibular neuronitis
- Vertigo of sudden onset; lasts for minutes
  - Consider brain or vascular disease, if CV risk factors present

Friedman M. Dizziness, Vertigo, and Imbalance. 2-21-07 E medicine. Accessed 7-20-08 http://www.emedicine.com/neuro/TOPIC693.HTM
Central Vertigo

- Brainstem or cerebellar ischemia associated with other brainstem characteristics:
  - Diplopia
  - Autonomic symptoms
  - Nausea
  - Dysarthria
  - Dysphagia
  - Focal weakness

Treatment

- Acute dizziness and vertigo is usually managed with
  - Vestibular suppressants
    - Only a few days
    - May delay the brain’s natural compensatory mechanisms
  - Antiviral medications
  - Antiemetic medications

Mononucleosis
Infectious Mononucleosis

• Clinical syndrome
  – Fever
  – Pharyngitis
  – Lymphadenopathy
• Epstein-Barr virus (EBV) is transmitted via sharing utensils, respiratory secretions
  – Primarily oropharyngeal secretions

EBV infects B cells in the oropharyngeal epithelium
• Circulating B Cells spread the infection to the reticular endothelial system (RES)
  – Liver
  – Spleen
  – Peripheral lymph nodes

Presentation
• Early signs
  – Fever, lymphadenopathy, pharyngitis, rash
• Later findings
  • Hepatomegaly, palatal petechiae, jaundice, uvular edema, splenomegaly
  • Pulmonary involvement is not a feature of EBV-infectious mononucleosis
  • Pharyngitis may be exudative or non-exudative
    – Commonly colonized with group A streptococci
Treatment and Care

• Patient education
  – Disease progress and length
  – Rest and good hydration
  – Decrease contact of body fluids to avoid spread
  – No physical sports (spleenic rupture danger)
• Closely monitor patients with tonsillar enlargement or uvular edema for airway patency

Caution

• Avoid use of amoxicillin or dicloxacillin in the patient with mononucleosis
• Approximately, 90% of these individuals will develop a rash

Angioedema
Angioedema

- Painless
- Non-pruritic
- Well circumscribed
  - Edema due to increased vascular permeability
  - Most apparent in head and neck
    - Face, lips, floor of mouth, tongue and larynx

Angioedema

- Most frequently involves head and neck but can involve any part of the body
  - Gastrointestinal tract: colicky abdominal pain, nausea, vomiting, diarrhea.
- Causes:
  - Hereditary
  - Acquired
  - Allergic reactions (associated with urticaria)
  - Medications (ACE inhibitor is common, immunizations)
  - Idiopathic

Treatment

- Airway protection
- Identify cause
- Activate 911 if shortness of breath present or signs of anaphylaxis
- Antihistamine may be beneficial
  - Liquid or chewable preferred
- Epinephrine – IM or SC if anaphylaxis
Anaphylaxis

• Acute, systemic reaction
• Caused by release of mediators from mast cells and basophils
• Must involve more than one body system
  – Most frequent involved
    • Cutaneous
    • Respiratory
    • Cardiovascular
    • Gastrointestinal

Presentation

• Cutaneous/ocular
  – Flushing, urticaria, angioedema, cutaneous and or conjunctival pruritis, warmth, swelling
• Respiratory
  – Nasal congestion, rhinorrhea, throat tightness, wheezing, shortness of breath, cough, hoarseness, angioedema
• Cardiovascular
  – Dizziness, weakness, syncope, chest pain, palpitations
Presentation

• Gastrointestinal
  – Nausea, vomiting, diarrhea, bloating, cramps
• Neurologic
  – Headache (rare except in exercise induced), seizures (very rare)

Treatment

• First: Intramuscular epinephrine
• Second (or simultaneously) - Activate 911
• Monitor airway
• Antihistamine
  – Liquid or chewable is absorbed more quickly

RESPIRATORY
Asthma

- Chronic inflammatory disease of the airways
  - Variable courses; highly individual
  - Asthma exacerbations are hard to predict
- New guidelines introduced in 2007

Treatment of Exacerbation

- Determine FEV1 or PEFR
- Prednisone or equivalent
  - 3 days – 10 days
  - No taper necessary
- Short acting beta 2 agonists
  - MDI
  - Nebulizer
Acute Bronchitis

Bronchitis

• Definition: Inflammatory condition of the tracheobronchial tree
  – Acute bronchitis
    • Most cases of acute bronchitis are viral (90-95%)
  – Chronic bronchitis
    • Is defined by the physiologic changes
      – Mucous gland enlargement
      – Atrophy of airways
      – Ciliary abnormalities


Bronchitis

• 90% - 95% of bronchitis cases are viral
• 5% or so are bacterial
  – Most frequent cause of bacterial bronchitis – atypical pathogen (i.e. mycoplasma)
Treatment for Bronchitis

• Symptomatic
• Increase fluids
• Steam
• Guaiifenesin or similar
• First generation antihistamine
• Cough syrup – usually not helpful or effective

Bronchitis

• Treatment
  – Antibiotics rarely needed
    • If needed, atypical pathogen coverage
  – Prednisone
    • Short, non-tapering burst is often very effective

Acute Exacerbation of Chronic Bronchitis
Exacerbation Definition

An exacerbation of COPD is defined as an event in the natural course of the disease characterized by a change in the patient's baseline dyspnea, cough, and/or sputum that is beyond normal day-to-day variations, is acute in onset, and may warrant a change in regular medication in a patient with underlying COPD.

Importance of These Events

• We now recognize ABECB as clinically important events in the patient with COPD.
• Believed that inadequate treatment of ABECB can worsen the underlying COPD.
Criteria for Diagnosis

- Chronic bronchitis
- Plus:
  - Increased dyspnea*
  - Sputum volume*
  - Sputum purulence*
  - Cough*
  - Chest tightness
  - Fluid retention
  - Wheeze
  - Decrease in airflow
  - Fatigue or not feeling well

* The three cardinal symptoms of AECB

AECB Diagnostic Clues

- Simple AECB
  - Age ≤ 65 years
  - ≤ Four exacerbations per year
  - Minimal or moderate impairment in respiratory function

- Complicated AECB
  - Age > 65 OR
    - FEV1 < 50% of predicted OR
    - > 4 exacerbations per year

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Diagnostic Criteria

- Complicated chronic bronchitis with comorbid disease
  - Complicated criteria
  - PLUS
  - CHF, DM, Chronic renal failure, chronic liver disease, or other chronic disease

Antibiotics Should Be Given To...

- Patients with exacerbations of COPD with the following:
  - three cardinal symptoms: increased dyspnea, increased sputum volume, and increased sputum purulence
- Patients with exacerbations of COPD with two of the cardinal symptoms, if increased purulence of sputum is one of the two symptoms
- Patients with a severe exacerbation of COPD that requires mechanical ventilation

Simple or Uncomplicated AECB

<table>
<thead>
<tr>
<th>Patient characteristics</th>
<th>Likely pathogens</th>
<th>Recommended ABX</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;=64 years</td>
<td>Gram-positive</td>
<td>Newer macrolide</td>
</tr>
<tr>
<td>&lt;=4 exacerbations/ year</td>
<td>Gram-negative</td>
<td>Azithromycin</td>
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<tr>
<td>No comorbidity</td>
<td>H. influenzae</td>
<td>Clarithromycin</td>
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<tr>
<td>FEV1&gt;50% predicted</td>
<td>M. catarrhalis</td>
<td>Cefuroxime</td>
</tr>
<tr>
<td></td>
<td>M. pneumoniae</td>
<td>Cefpodoxime</td>
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<tr>
<td></td>
<td>C. pneumoniae</td>
<td>Cefprozil</td>
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<tr>
<td></td>
<td>Atypical pathogens</td>
<td>Tetracycline</td>
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</tbody>
</table>

www.goldcopd.org
Complicated ABECB or Complicated with Comorbid Condition

<table>
<thead>
<tr>
<th>Patient characteristics</th>
<th>Likely pathogens</th>
<th>Recommended ABX</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;=65 years OR</td>
<td>Gram-positive</td>
<td>Respiratory FQ</td>
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<tr>
<td>&gt;=4 exacerbations/ y</td>
<td>- S. pneumoniae</td>
<td>- Levofloxacin</td>
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<tr>
<td>OR</td>
<td>-DRSP risk</td>
<td>- Moxifloxacin</td>
</tr>
<tr>
<td>FEV1 &lt;=50% predicted</td>
<td>- H. influenzae</td>
<td>- Amoxicillin w/</td>
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<tr>
<td></td>
<td>- M. catarrhalis</td>
<td>clavulanate</td>
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<td>Complicated plus</td>
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<td>comorbidity</td>
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<td></td>
<td>- C. pneumoniae</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Legionella spp.</td>
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Additional Pharmacologic Treatments

- Corticosteroids
  - If FEV 1 < 50% of predicted
  - 40 mg prednisone per day for 10 days
- Inhaled bronchodilators
- Theophylline
- Cough suppressants
- Oxygen therapy

Adapted from www.goldcopd.org

Additional Nonpharmacologic Treatments

- Smoking cessation
- Immunizations: yearly influenza
  - Pneumovax
- Increased water intake
- Good nutrition
- Avoidance of pollutions
Hospitalization

- The following patients should be considered for hospitalizations
  - Marked increase in intensity of symptoms
  - Severe COPD
  - Onset of new physical signs (i.e. cyanosis)
  - Failure of exacerbation to respond to initial treatments
  - Significant comorbidities
  - Newly occurring dysrhythmias
  - Older age
  - Insufficient home assistance

Adapted from www.goldcopd.org

Influenza

Vaccinations

- Influenza vaccination is the primary mechanism of prevention
- Indicated for:
  - Children aged 6-59 months
  - Pregnant women
  - Persons aged >50
  - Persons with chronic medical conditions
  - Persons who live and care for persons at high risk
  - Household contacts with high risk individuals
  - Healthcare workers

Smith NM, Bresee JS, et al. Prevention and Control of Influenza: Recommendations of the Advisory Committee on Immunization Practices. 8/10/06 accessed 7-10-08
Symptom Comparison

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<td>Duration</td>
<td>Weeks</td>
<td>3-14 days</td>
<td>7 days, acutely</td>
</tr>
</tbody>
</table>

Treatment

- Antiviral agents
- Symptom relief
- Monitor for secondary complications
  - Pneumonia

Antiviral Agents

- Amantadine (Symmetrel)
  - 100 mg bid within 24-48 hours of symptoms
- Rimantadine (Flumadine)
  - 100 mg bid within 24-48 hours of symptoms
- Zanamivir (Relenza)
  - 2 inhalations once a day for 10 days
- Oseltamivir (Tamiflu)
  - 75 mg once daily X 10 days
Pneumonia

Inflammation and consolidation of lung tissue by an infectious agent
- Community acquired – outside the hospital or long term care facility (past 14 days)
- Typical Bacteria
  - S. pneumoniae, H. influenzae, S. aureus
- Atypical Bacteria
  - Legionella, mycoplasma, chlamydia

Presentation
- Fever
- Tachypnea
- Tachycardia or bradycardia
- Central cyanosis
- Dullness to percussion over consolidation
- Rales or crackles
- Presentations vary based upon age and immunocompetency
CURB-65 Score

- Confusion
- Urea > 7 mmol/L
- Respiratory rate > 30/min
- Systolic blood pressure ≤ 90 mm and Diastolic blood pressure ≥ 60 mm Hg
- Age > 65 years of age

CURB-65 Score

- CURB ≥ 3 – ICU management
- CURB = 2: Hospital admission
- CURB = 0 – 1: Outpatient management

Diagnosis

- All patients suspected of pneumonia need to have a chest x-ray to confirm or establish the diagnosis
- Infectious Disease Society of America also recommends sputum for gram staining prior to initiating antibiotic therapy, particularly if you are going to be hospitalizing the individual
IDSA/ATS 2007 Guidelines for CAP in Adults

- Practice Guidelines for the Management of Community-Acquired Pneumonia in Adults
  - Revised and published in Clinical Infectious Diseases 2007; 44:S27 – S72
  - [http://www.journals.uchicago.edu/CID/journal/issues/v44nS2/41620/41620.text.html](http://www.journals.uchicago.edu/CID/journal/issues/v44nS2/41620/41620.text.html) accessed on 02-20-07

### IDSA / ATS 2007 Guidelines

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Previously Healthy and No Risks for DRSP</th>
<th>Previously Healthy and Recent Antibiotics</th>
<th>Comorbidities and No Recent Antibiotics</th>
<th>Comorbidities and Recent Antibiotics</th>
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</thead>
<tbody>
<tr>
<td>Antibiotic Options</td>
<td>Macrolide</td>
<td>Respiratory Quinolone</td>
<td>Respiratory Quinolone</td>
<td>Respiratory Fluoroquinolone</td>
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<tr>
<td>Antibiotic Options</td>
<td>Doxycycline</td>
<td>Macrolide + High dose amoxicillin</td>
<td>Macrolide + Beta Lactam</td>
<td>Advanced Macrolide plus beta lactam</td>
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<td>Antibiotic Options</td>
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<td>Macrolide + High Dose amox/clav</td>
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</tbody>
</table>

***> 25% of infection with high level Macrolide resistance

End – Part 1