

Does This Patient Have Obstructive Sleep Apnea?

Mr. Pickwick

- 42 year old man
- Notes poorer memory for 1 year
- Distractible
- Can't multitask as well as before
- What is the diagnosis?
- How to proceed?



Why is This Important?

- 20-30% of U.S. men and 10-15% of women have at least mild obstructive sleep apnea (OSA) defined as AHI > 5
- High rates are paralleling obesity epidemic
- Untreated OSA can decrease work productivity, cause daytime sleepiness, reduce quality of life, pose risk for traffic accidents
- Effective treatment exists

When Should You Consider? More than Just Daytime Somnolence...

- Snoring
- Witnessed apneas
- Morning headaches
- Attentional deficits and poor short term memory
 - Patients and providers may confuse for ADD
- Resistant hypertension
- Cor pulmonale
 - Peripheral edema
 - JVP elevation
- Night sweats

Secondary (Identifiable) Causes of Hypertension: OSA More Common than Other Diagnoses Combined!

- Cushing's syndrome
- Renal artery stenosis
- Primary aldosteronism
- Pheochromocytoma
- Chronic kidney disease
- Coarctation of the aorta
- Thyroid or parathyroid disease
- Obstructive sleep apnea



Differential Diagnosis

- Periodic leg movements of sleep
- Narcolepsy
- Central sleep apnea
- Neuromuscular disease of chest wall
- Attention deficit disorder
- GERD
- Nocturnal panic attacks
- Medical conditions causing chronic fatigue
- Ordinary insomnia

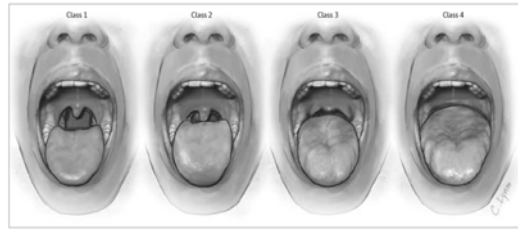


Which Aspects of History and Exam are Most Useful to Make Diagnosis (AHI > 10)?

Feature	Sensitivity	Specificity	LR+	LR-
History				
Hypertension	74%	45%	1.3	0.60
Nocturnal gasping	52%	84%	3.3	0.57
A.m. headache	22%	85%	1.5	0.92
Witnessed apnea	80%	42%	1.4	0.47
Daytime sleepiness	50%	61%	1.3	0.81
Exam				
Mallampati 3 or 4	55%	65%	1.6	0.68
Pharyngeal narrowing	67%	53%	1.4	0.63

Rational Clinical Exam JAMA 2013;310:731

Mallampati Classification



Class 1: Soft palate, uvula, pillars visible
 Class 2: Soft palate and base of uvula visible
 Class 3: Only soft palate visible
 Class 4: Only hard palate visible

Available Clinical Prediction Rules

- Berlin questionnaire (reference standard in research studies)
- STOP
- STOP-BANG
- Epworth Sleepiness Scale (ESS)
- Sleep apnea clinical score (SACS)



Which Clinical Prediction Rule? STOP-BANG

1. Do you snore loudly?
2. Do you often feel tired, fatigued, or sleepy?
3. Has anyone observed apneas during sleep?
4. High blood pressure?
5. BMI > 35
6. Age > 50
7. Neck circumference > 40 cm
8. Male gender

Total score ≥ 3

- High risk of OSA
- Sensitivity 87%
- Specificity 31%

Total score 5-8

- High risk for moderate to severe OSA (AHI > 10)

www.stopbang.ca

Confirmation of Value of STOP-BANG as a Screening Tool: Score of ≥ 3 Optimal

STOP BANG Score	Sensitivity %	Specificity %
≥ 1	100	2
≥ 2	98	20
≥ 3	91	52
≥ 4	76	71
≥ 5	54	84

Nagappa M, et al. PLoS One Dec. 2015

Pearls and Pitfalls

- Have a high index of suspicion
- Always consider OSA in differential diagnosis for ADD
- In resistant hypertension in obese patients, ask screening questions regarding possible OSA
- Consider OSA in scenarios beyond simply daytime somnolence

What is the cause of this patient's red eye?

Case: Ira Tatedi

- 32 year old man with one day h/o mild redness of OD, pain, and photophobia.
- Physical exam shows circumcorneal injection, and visual acuity is 20/80.
- What is his diagnosis?

Why is this important?

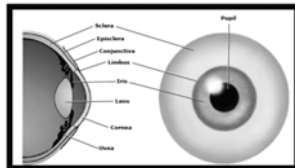
- Most cases of red eye are caused by viral conjunctivitis, which does not generally require any treatment
- Some cases are caused by bacterial or allergic conjunctivitis, for which specific treatment is indicated
- A minority of cases are caused by other conditions, which require emergent or urgent referral to an ophthalmologist
- It is essential to be able to distinguish these clinically from one another

Key Elements of History (including Phone Triage) and Physical Examination

- | <u>History and Triage</u> | <u>Physical Examination</u> |
|--|-----------------------------|
| ■ Is vision affected? | ■ Visual acuity |
| ■ Is there a foreign body sensation? | ■ Pupil size/reactivity |
| ■ Is there photophobia? | ■ Discharge |
| ■ Was there trauma? | ■ Pattern of redness |
| ■ Are you a contact lens wearer? | ■ Foreign body |
| ■ Is there discharge throughout the day? | ■ Hypopyon/hyphema |

Differential Diagnosis

- Conjunctivitis
- Episcleritis
- Scleritis
- Keratitis
- Iritis/Uveitis
- Corneal abrasion
- Subconjunctival hemorrhage
- Acute closed angle glaucoma



Conjunctivitis

- Viral
 - Erythema with co-existing URI
 - Watery-serous discharge
 - Normal vision
- Bacterial
 - Staph > pneumococcus or H. flu
 - Eyelid edema
 - Mucopurulent discharge
 - Eyes glued shut upon awakening
- Chlamydial
 - Sexually active individual with typical bacterial conjunctivitis not responding to treatment

Episcleritis and Scleritis

Episcleritis

- Inflammation of the superficial vessels
- Localized or diffuse erythema
- Discomfort/irritation, not pain
- Dilated vessels
- No vision changes

Scleritis

- Inflammation of the fibrous layer of the eye
- Intense pain and tenderness
- Photophobia
- Change in visual acuity
- Refer urgently to ophthalmology

Keratitis

- Inflammation of the cornea
- Due to infection, dry eyes, medications, contact lens irritation
- Tearing, erythema, pain, decreased vision
- Cloudiness, irregular surface, loss of epithelial cells
- Uptake with fluorescein dye

Iritis/Uveitis

- Young, middle aged patients
 - Pain
 - Photophobia
 - Blurred vision
 - 35% have severe impairment
 - Circumcorneal (peri-limbal) injection “ciliary flush”
 - Constricted pupil
- Inflammatory cells in the anterior chamber
 - Usually seen with slit lamp
 - If severe, can settle to form a hypopyon
- Urgent ophthalmology referral

Other Causes of Red Eye

Subconjunctival hemorrhage

- Well circumscribed hyperemia on sclera
- Normal vision, painless
- 2-3 weeks for reabsorption of blood

Corneal abrasion

- Direct injury from object, contact lenses
 - Foreign body sensation
 - Watery eyes
 - Photophobia

Acute closed-angle glaucoma

- Eye pain, nausea/vomiting
- Cloudy cornea
- Fixed mid-dilated pupil

Key Elements of Assessment of the Red Eye

Adapted from UpToDate



	Acuity	Foreign Body Sensation	Photophobia	Discharge	Cardinal Features
Conjunctivitis	Normal	No	No	Yes	Discharge
Episcleritis and Scleritis	Normal	No	No	None	Dull ache
Keratitis	Normal or decreased	Yes	Yes	Sometimes	Corneal opacities
Iritis/Uveitis	Normal or decreased	No	Yes	None or watery	Miotic pupil
Subconjunctival Hemorrhage	Normal	No	No	None	Extravasated blood
Corneal Abrasion	Normal or decreased	Yes	Yes	Watery	Contact lenses
Acute Closed-Angle Glaucoma	Normal or decreased	No	Sometimes	None or watery	Fixed mid-dilated pupil

Red Eye: Pearls and Pitfalls

- Diagnosis of the cause of red eye is made mostly on the basis of history with physical exam findings being confirmatory for some conditions
- If the vision is unaffected, the pupil reacts, and there is no foreign body sensation, photophobia, or corneal opacity, red eye can be managed by the primary care practitioner
- Most of these cases are related to conjunctivitis
- Other clinical situations require urgent or emergent referral to an ophthalmologist for consultation

What is the Cause of This Patient's Night Sweats?

A Sweaty Man Sees You...

- 62 year old man
- Hypertension and type 2 diabetes
- 1 month of drenching night sweats and 5 pound weight loss
- What is the diagnosis?
- What is a rational approach to workup?



Why is This Important?



- Night sweats are common and often benign
- In one study, 41% of primary care office patients reported night sweats in past month including 23% with night sweats only (no daytime sweats)*
- Night sweats can be due to serious illness
- The challenge is to do "just the right amount" of workup for the right patients
- Minimize unnecessary testing, cost, and potential for false positive results

* J Fam Pract 2002;51:452

First Distinguish Between Four Overlapping Syndromes

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1. Flushing
 - Cutaneous vasodilatation
 - Redness in face and trunk apparent to others
2. Hot flashes
 - Warmth in face, neck, upper chest. Followed by sweating. Typical 5-15 minutes duration
3. Hyperhidrosis
 - Benign lifelong excessive sweating
4. Night sweats
 - Sweats requiring changing night clothes



Large Differential Diagnosis: How to Approach Differential Dx Rationally?

Malignancy

- Lymphoma
- Germ cell tumors
- Solid tumors

Infections

- Tb
- Endocarditis
- Osteomyelitis
- HIV
- Malaria

Endocrine

- Carcinoid
- Hyperthyroidism
- Pheo
- Menopause
- Miscellaneous
- Autonomic dysreflexia
- Anxiety
- Sleep apnea
- Substance withdrawal

Smetana GW. UpToDate 2016

How Common are Night Sweats for the "Classic" Diagnoses?

Smetana GW. UpToDate 2016

Cause	Prevalence of Night Sweats
Hodgkin's Disease "B" symptom	25%
Pheochromocytoma	40%
Carcinoid syndrome	85%
Hyperthyroidism	50-90%
Menopause	35%
Infections	
• Tuberculosis	30-60%
• HIV / AIDS	10 to 70%
• Malaria	90%
Obstructive Sleep Apnea	25%

Medications May be One of Most Common Causes in Primary Care

- Antidepressants
- Triptans
- GnRH agonists
- Aromatase inhibitors
- Sildenafil
- Tamoxifen
- Raloxifene
- Insulin
- Oral diabetic meds
- Beta agonists
- Alcohol
- Niacin
- Opioids
- Aspirin
- Tramadol



Smetana GW. UpToDate 2016

Medications and Night Sweats: Particularly Remember Antidepressants as Cause

Medication	Approximate Prevalence of Night Sweats
Antidepressants	
• SSRI antidepressants, bupropion	10-15%
• Tricyclics	15%
• Bupropion	>15%
Hormonal agents	
• Tamoxifen	65%
• Raloxifene	10-25%
• Anastrozole	5%
• Leuprolide	85%
Sildenafil and related drugs	10%
"Triptans" for migraine	3%

How to Distinguish Between Idiopathic Hyperhidrosis and Serious Cause?

- First exclude fever
 - This changes and narrows differential diagnosis
- Inquire about alarm features
 - Weight loss
 - Localized pain
 - IV drug use
 - High risk sexual history
 - High risk travel or country of origin
 - Known positive PPD



The History is the Most Important "Test" When Evaluating Night Sweats

- Weight loss, fatigue, pruritus, lymphadenopathy – lymphoma
- Localized pain – abscess, osteomyelitis, cancer
- Back pain – cancer, endocarditis, epidural abscess or discitis
- Risk factors for Tb – homeless, institutionalized, recent immigrant from endemic area, healthcare worker, known prior positive PPD
- Recent new medications including OTC and complementary/alternative?
- Flushing, diarrhea – carcinoid, hyperthyroidism
- Characteristic hot flashes - menopause

Focused Physical Exam to Seek Clues

- Tachycardia, elevated bp – pheochromocytoma, hyperthyroidism
- Lid lag, exophthalmos - hyperthyroidism
- Lymphadenopathy – lymphoma, solid tumors, Tb, localized infection
- Rales, rhonchi – Tb, pneumonia
- Splenomegaly - lymphoma



A Rational Approach to Testing if No Specific Diagnosis Suggested by History and Exam

- | Tier 1 | Tier 2 |
|----------------|---|
| ■ CXR | ■ Blood cultures |
| ■ PPD | ■ Torso CT |
| ■ HIV antibody | ■ +/- Gallium scan |
| ■ CBC | ■ Endocrine testing for pheo, carcinoid |
| ■ TSH | |

Pearls and Pitfalls



- No decision support tools available
- Remember medications as a common cause of night sweats
- Seek historical features that focus the subsequent workup
- "Shotgun" labs only if no cause apparent after history and physical
- Tier 2 studies only if Tier 1 studies normal, night sweats persist, and no cause suggested by history and exam

Does This Patient Have Temporal Arteritis?

Ms. Munch

- 78 year old woman
- Not usually a headache person
- One month of bitemporal non-throbbing headaches
- Non-disabling
- Fatigue
- Is this temporal arteritis?

Why is This Important?



- Often overlooked
- Incorrectly attributed to tension-type or cervicogenic headache
- Potential for irreversible unilateral or bilateral visual loss if diagnosis missed
- Prompt treatment with high dose prednisone nearly completely prevents subsequent visual loss

When to Consider Temporal Arteritis? More than Just Headache... Any of Following if > 50 years old

- | | |
|-------------------------------------|---|
| ■ Any new onset persistent headache | ■ Jaw claudication (true vascular claudication) |
| ■ Does not need to be temporal | ■ Scalp tenderness |
| ■ Fever of unknown origin | ■ Diplopia |
| ■ Acute visual loss | ■ Mononeuritis multiplex |
| ■ Scintillating scotoma | ■ Unexplained anemia |
| ■ PMR symptoms | ■ High ESR not otherwise explained |

Differential Diagnosis

- Cervicogenic headache
- Tension-type headache
- TMJ dysfunction
- Migraine with aura
- Retinal detachment
- TIA



Which Symptoms Best Predict Likelihood of Temporal Arteritis Among Patients Referred for Biopsy?

Symptom	Prevalence %	LR +	LR -
Anorexia	35	1.1	0.87
Weight loss	43	1.3	0.89
Diplopia	9	3.4	0.95
Fatigue	39	1.2	0.94
Fever	42	1.2	0.92
Temporal headache	52	1.5	0.82
Any headache	76	1.0	0.70
Jaw claudication	34	4.2	0.72
PMR	34	0.97	0.99
Unilateral visual loss	24	0.85	1.2
Vertigo	11	0.71	1.1

Smetana and Shmerling. Rational Clinical Exam. JAMA 2002;287:92

Abnormal Temporal Artery Exam is Most Useful Physical Finding to Predict Temporal Arteritis

Finding	Prevalence %	LR +	LR -
Optic neuropathy	29	1.6	0.8
Scalp tenderness	31	1.6	0.93
Beaded temporal artery	16	4.6	0.93
Enlarged temporal artery	47	4.3	0.67
Tender temporal artery	41	2.6	0.82
Absent temporal pulse	45	2.7	0.71
ESR abnormal	96	1.1	0.2
ESR > 50	83	1.2	0.35
ESR > 100	39	1.9	0.8

Smetana and Shmerling. Rational Clinical Exam. JAMA 2002;287:92

Beaded and Prominent Temporal Arteries

Clinical Prediction Rule: Four Factors Most Specific for TA

Young, et al. Mayo Clin Proc 2004;79:483

	Headache	Jaw Claudication	Scalp tenderness	Visual Loss	LR+
1	✓				1.7
		✓			6.7
2			✓		3.0
	✓	✓			8.0
		✓	✓		17.0
3	✓		✓		4.1
	✓	✓			15.0
	✓			✓	6.0
		✓		✓	6.0

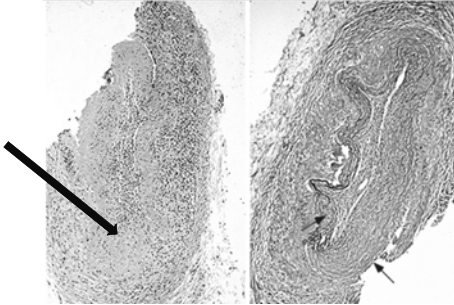
Permanent Visual Loss due to Anterior Ischemic Optic Neuropathy: The Most Feared Complication

What to Do if Strong Suspicion for Temporal Arteritis?

- Prednisone 60 mg qd immediately (same day)
- Biopsy within 1 week optimal
- Biopsy within 2 weeks acceptable
- Biopsy same side as symptoms if unilateral
- Minimum optimal biopsy length 2 cm.
- If strong suspicion and biopsy negative, proceed to contralateral bx (up to 25% additional yield)

Pathologic Findings

Granulomatous and lymphocytic infiltration of wall of artery Disruption of elastica



Pearls and Pitfalls



- Any new headache in patient over age 50 years, not just temporal headache
- Jaw Claudication and scalp tenderness most specific symptoms
- Abnormal temporal artery exam most useful physical finding
- A normal ESR makes TA much less likely (LR 0.2)
- Start prednisone immediately if TA suspected

Does This Patient Have a Pathological Cause of Headache?

Ms. Cephalalgia

- 29 year old woman
- Several year history of migraines
- Pain becoming worse over 2-3 months
- Bifrontal and non-throbbing
- She asks: "Do I have a brain tumor?"

Why is This Important?



- Headache is one of the top 5 reasons that patients see primary care providers and also top 5 for ED visits
- Most headaches are benign
- A small number of patients will have a serious cause that could cause permanent neurological harm if not diagnosed
- Clues in the history provide the correct diagnosis
- To minimize unnecessary neuroimaging

There are Two Types of Headache

1. Old headaches
 2. New headaches
- All pathologic headaches are new headaches
 - New headache is either:
 - New onset headache in person without chronic headache history or
 - A change in the character of headache in a person with old headaches
 - A change in severity or frequency is not a new headache

2

Differential Diagnosis



<u>Benign</u>	<u>Pathologic</u>
Primary headaches	■ Brain tumor
■ Migraine	■ AVM
■ Tension-type	■ Subarachnoid hemorrhage
■ Cluster	■ Brain abscess
Secondary headaches	■ Meningitis
■ TMJ	■ Temporal arteritis
■ Cervicogenic	■ Subdural hematoma
■ Sinus disease	
■ Flu like illnesses	

Which Historical Features are Most Helpful in the Diagnosis of Migraine?



Feature	Positive LR	Negative LR
Nausea	19.2	0.20
Photophobia	5.8	0.25
Phonophobia	5.2	0.38
Exacerbation by activity	3.7	0.24
Unilateral pain	3.7	0.43
Throbbing pain	2.9	0.36

Smetana GW. Arch Intern Med 2000;160:2729

Clinical Prediction Rule: Does this Patient Have a Migraine?

POUND

1. Pounding?
2. 4-72 hours?
3. Unilateral?
4. Nausea?
5. Disabling?

Number of Features	LR+ (CI)
≥ 4	24 (1.5-388)
3	3.5 (1.3-9.2)
≤ 2	0.41 (0.32-0.52)

For definite or possible migraine by IHS criteria

Rational Clinical Exam Series JAMA 2006;296:1274

Always Examine Fundi for Papilledema

Meta-Analysis: Which Clinical Features Best Predict Abnormal Neuroimaging?

Feature	LR+	LR-
✓ Cluster-type headache	11	0.95
✓ Abnormal neuro exam	5.3	0.71
✓ "Undefined" headache	3.8	0.66
✓ Aura	3.2	0.51
✓ Focal symptoms	3.1	0.79
✓ Increased by Valsalva	2.3	0.70
✓ Vomiting	1.8	0.47
✓ New headache	1.2	0.89
✓ Migraine type headache	0.55	1.2

Rational Clinical Exam Series JAMA 2006;296:1274

Mnemonic for Pathologic Headaches Red Flags "SNOOP"



American Headache Society

Feature	Examples
S ystemic symptoms or S econdary risk factors	Fever, weight loss HIV, known malignancy
N eurologic symptoms or signs	Eye pain, visual loss, mental status changes, hemiparesis
O nset	"Thunderclap"
O lder	> 50 years old, especially new and progressive
P revious headache history	"First of worst" change in clinical features of old headache

Worrisome Features: When To Image?

- Change in pattern of old headache (new headache not otherwise explained)
- Migraine variants
 - New migraine headache >40 y.o. (R/O AVM)
 - Migraine headache side-locked, always on same side (R/O AVM)
 - Prolonged aura
- Focal neurologic exam
- Thunderclap headache
- New progressive headache over months in person without chronic headache history
- New persisting headache after age 50 (also ESR)
- Exertional or sexual headache

American Headache Society Choosing Wisely 2014

- 1 • Don't perform neuroimaging studies in patients with stable headaches that meet criteria for migraine.
- 2 • Don't perform computed tomography (CT) imaging for headache when magnetic resonance imaging (MRI) is available, except in emergency settings.
- 3 • Don't recommend surgical deactivation of migraine trigger points outside of a clinical trial.
- 4 • Don't prescribe opioid or butalbital-containing medications as first-line treatment for recurrent headache disorders.
- 5 • Don't recommend prolonged or frequent use of over-the-counter (OTC) pain medications for headache.

Pearls and Pitfalls



- Don't be fooled by old headache history: consider pathologic headache if change in pain character
- Brain tumor headaches typically worsen over 1-2 months before neurologic impairment
- Always examine fundi for papilledema
- Remember features of migrainous headache that may indicate AVM: side locked, prolonged aura, older age at onset
- Always consider temporal arteritis if > 50 years old regardless of pain character
- "Thunderclap" headache SAH until proven otherwise

Does this patient have bacterial sinusitis?



<https://www.hivehealthmedia.com/antibiotics-ineffective-bacterial-sinusitis>

Ms. Drrippnose: It snot what it seems...

38 y.o. woman with one week of URI symptoms.
Scratchy throat followed by nasal congestion; initially clear but now cloudy. Low grade fever and frontal headache.

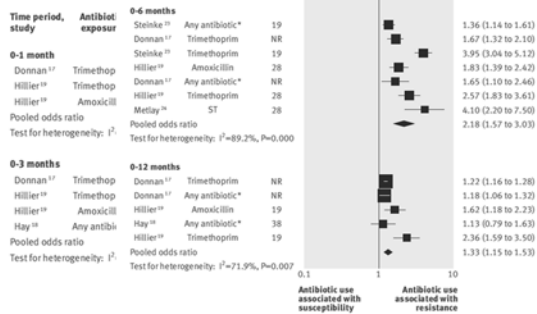
T=99.4 F. No adenopathy.
Diffuse mild sinus tenderness
Normal TMs and pharynx.
Chest - clear

Why is this important?



- Most upper respiratory tract infections are not bacterial and do not require antibiotic therapy
- Risks of unnecessary antibiotic therapy include side effects, toxicities and drug resistance
- Unnecessary antibiotic therapy increases the cost to patients and the healthcare system
- It is important to distinguish bacterial from viral sinusitis in order to know who is at risk for complications

Bacterial Resistance is Common after Antibiotic Exposure



Effect of antibiotic prescribing in primary care on antimicrobial resistance in individual patients: systematic review and meta-analysis. *BMJ*. 2010;340:c2096

Symptoms and Signs of Acute Rhinosinusitis (ARS)

- Nasal congestion and obstruction
- Facial pain or pressure that is worse when bending forward
- Associated symptoms of eustachian tube dysfunction
- Fever
- Cheek erythema and/or tenderness
- Nasal mucosa erythema/edema with purulent discharge



Distinguishing Viral (AVRS) from Bacterial (ARBS) Rhinosinusitis

	Viral	Bacterial
Symptom Intensity	Mild to Moderate	Moderate to Severe
Duration	7-10 days	>10 days
Fever	Absent	Present
Nasal Discharge	Clear → Cloudy → Clear	Cloudy early in course
Facial Pain/Pressure	Sometimes	Almost always

Complications of ARBS

- Periorbital and orbital cellulitis
- Meningitis
- Intracranial and epidural abscess
- Osteomyelitis of the sinus bones
- Septic cavernous sinus thrombosis

Antimicrobial Treatment of Acute Sinusitis Has Modest Value

1. RCT of adult patients (n=166) who met clinical criteria for acute sinusitis
 - Randomly assigned to 10-day course of amoxicillin or placebo
 - Evaluated disease-related quality of life
 - No difference between groups at day 3 or at day 10
 - Greater symptom improvement in amoxicillin group at day 7
2. 2012 meta-analysis of 13 randomized trials in adults (n=2878): 13 patients (NNT, 95% CI 9-22) would need to be treated with antibiotics for one to benefit

JAMA. 2012;307:685. *Clin Infect Dis*. 2012;54:e72.

ACP 2016 Recommendations:



Appropriate Antibiotic Use for Acute Respiratory Tract Infection in Adults: Advice for High-Value Care From the American College of Physicians and the Centers for Disease Control and Prevention

Aaron M. Hersh, MD, MPH; Louis A. Hicks, DO; and Amir Qaseem, MD, PhD, MBA, for the High Value Care Task Force of the American College of Physicians and for the Centers for Disease Control and Prevention

Background: Acute respiratory tract infection (ARTI) is the most common reason for antibiotic prescription in adults. Antibiotics are often inappropriately prescribed for patients with ARTI. This article presents best practices for antibiotic use in healthy adults (those without chronic lung disease or immunocompromising conditions) presenting with ARTI.

Methods: A narrative literature review of evidence about appropriate antibiotic use for ARTI in adults was conducted. The most recent clinical guidelines from professional societies were complemented by meta-analyses, systematic reviews, and randomized clinical trials. To identify evidence-based articles, the Cochrane Library, PubMed, MEDLINE, and EMBASE were searched through September 2015 using the following Medical Subject Headings terms: "acute bronchitis," "respiratory tract infection," "pharyngitis," "rhinovirus," and "the common cold."

High Value Care Advice 1: Clinicians should not perform testing or initiate antibiotic therapy in patients with bronchitis unless pneumonia is suspected.

High Value Care Advice 2: Clinicians should test patients with symptoms suggestive of group A streptococcal pharyngitis (for

example, persistent fevers, anterior cervical adenitis, and tonsillopharyngeal exudates or other appropriate combination of symptoms) by rapid antigen detection test and/or culture for group A *Streptococcus*. Clinicians should treat patients with antibiotics only if they have confirmed streptococcal pharyngitis.

High Value Care Advice 3: Clinicians should reserve antibiotic treatment for acute rhinosinusitis for patients with persistent symptoms for more than 10 days, onset of severe symptoms or signs of high fever (>39 °C) and purulent nasal discharge or facial pain lasting for at least 3 consecutive days, or onset of worsening symptoms following a typical viral illness that lasted 5 days that was initially improving (double sickening).

High Value Care Advice 4: Clinicians should not prescribe antibiotics for patients with the common cold.

Ann Intern Med. doi:10.7326/M15-1940

For author affiliations, see end of text.

This article was published at www.annals.org on 19 January 2016.

ACP 2016 Guideline: When to Suspect ABRs and Begin Antibiotics?

1. Persistent symptoms or signs of sinusitis lasting > 10 days without improvement
 2. Severe symptoms or signs (high fever, purulent nasal discharge, and/or facial pain) for at least 3-4 days at beginning of illness
 3. Symptoms of URI that are slowly improving but then worsen again ("double-sickening") after 5-6 days
- Bacterial culture of nasal discharge and radiologic imaging are generally not helpful

Acute Sinusitis: Pearls and Pitfalls

- Acute rhinosinusitis (ARS) is much more often viral than bacterial
- Most bacterial cases are caused by *Streptococcus pneumoniae* or *Moraxella catarrhalis*
- Bacterial ARS may be complicated by extension into the orbit, CNS, or surrounding tissues
- Distinguish viral from bacterial ARS by: characteristic symptoms and signs, duration and pattern of illness, fever, and facial pain/tenderness
- Culture of nasal discharge and radiologic imaging are generally not useful

What is the Cause of this Patient's Low Back Pain?

Case: Cy Attica

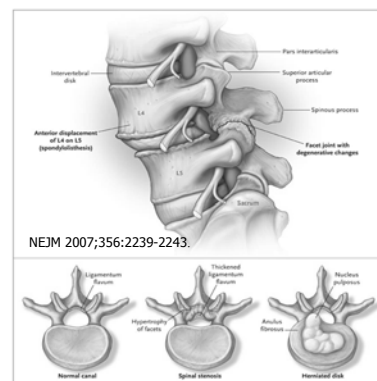
- 74 y.o. man with leg heaviness and pain on walking three blocks relieved with rest and setting. Gradual onset. H/o intermittent LBP.
- PMHx: HTN, DM.
- Exam: reduced ROM lower spine, no focal neurologic findings, preserved pulses.
- Dx: ? Spinal stenosis

Why is this important?



- Low back pain is most common musculoskeletal complaint among adult patients seen in primary care practice
- Specific diagnosis established in only 15-20%
- Produces at least short-term impairment in 70-80% of general population over lifetime
- A small % of cases are not self-limited, reflect a more serious underlying disease, and may require specific interventions

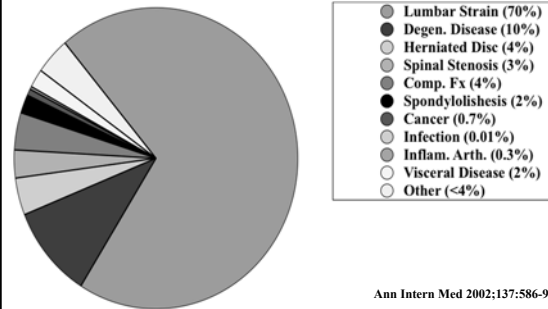
Common Patho-Anatomical Conditions



Demographics/Epidemiology

- Most cases ages 30-60 years
- Leading cause of disability in persons < 45
- Comparable rates among men and women
- Incidence greater among women than men in occupations requiring heavy exertion
- Men generally present at younger age
- Precipitating event in only 6-28% of cases
- Recurrence of occupational low back pain in 33-60% of patients within 3 years

Causes of Acute Low Back Pain

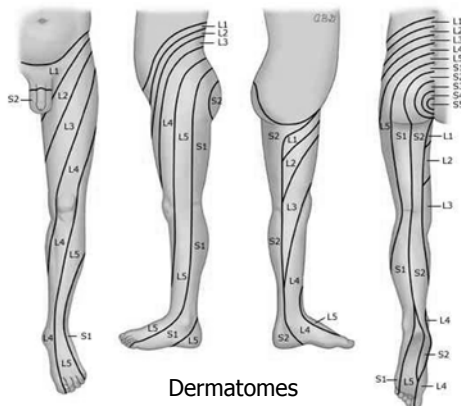


Mechanical Low Back Pain

- History
 - Pain in back, buttock +/- thigh, often severe
 - Onset hours to days after new/unusual exertion
 - No history of major trauma, infection or malignancy
 - Relief of pain in supine position +/- legs flexed
- Physical examination
 - Paravertebral tenderness/spasm
 - Scoliosis or loss of lumbar lordosis
 - No demonstrable neurologic deficits
- Supporting studies
 - None necessary

Herniated Intervertebral Disc

- History
 - Acute onset, severe, lancinating
 - Often antecedent flexion strain injury or trauma
 - Sciatica
 - Relief of pain with hip in partial flexion
- Physical examination
 - Striking paravertebral tenderness/spasm, with splinting in awkward postures
 - Radiculopathy
- Supporting studies
 - Usually none early; later, MRI, EMG/NCV



Physical Examination

- Landmarks
 - Inspection:
 - curvature, symmetry
 - Palpation:
 - Bony tenderness
 - Paravertebral muscles
 - Sensory and motor exams
 - DTR's
- Radicular signs
- SLR
 - Supine
 - Seated
 - Crossed SLR
 - Femoral stretch
 - Sciatic notch tenderness

Waddell's Signs

- Inconsistent signs that raise concern for malingering or psychological contribution
- SLR that improves with distraction
- SLR differs in supine and sitting positions
- Pain with axial loading (compress head and C-spine)
- Non-dermatomal sensory loss
- Jerky or sudden give away on motor exam

Accuracy of Exam for Disc Herniation

Finding	Sensitivity	Specificity
Ipsilateral SLR	0.80	0.40
Crossed SLR	0.25	0.90
Ankle dorsiflexors weak	0.35	0.70
EHL weak	0.50	0.70
Plantar flexion weak	0.06	0.95
Quadriceps weak	0.01	0.99
Sensory loss	0.50	0.50
Decreased ankle reflex	0.50	0.60
Knee reflex weak	0.50	--

JAMA 1992;268:760-765

When to Suspect Malignancy/Infection?

Physical examination

- Tender spinous process(es)
- Variable neurologic findings
- Evidence of systemic cancer/infection

Supporting studies

- Epidural process best delineated by MRI, CT +/- myelogram
- L/S films may reveal destructive bony lesions
- Bone scan sensitive for metastatic carcinoma (but not for myeloma)
- ESR usually elevated

Imaging in a Patient with a "Red Flag" Diagnosis



N Engl J Med 2006;355:2012-2020.

Red Flags

Cancer or infection	Spinal fracture	Cauda equina
Prior CA or recent infection	Hx of significant trauma	Acute onset urinary retention
Fever > 100 F	Prolonged use of corticosteroids	Loss of anal sphincter tone
Unexplained weight loss	Age > 70 +/- limited trauma	Saddle anesthesia
Immunosuppression		Global/progressive LE weakness
Intravenous drug use		Acute onset urinary retention
Corticosteroid use		
No change or worse with rest		
Age > 50		
Persistence > 1 month		

Systematic Review of "Red Flags"

- Included 14 studies evaluating 53 red flags
- Many red flags provide virtually no change in probability of fracture or malignancy or have untested diagnostic accuracy
- Red flag with highest post-test probability for malignancy is history of malignancy (33%)
- Red flags with highest post-test probability for spinal fracture: 1) older age (9%); 2) prolonged use of corticosteroids (33%); 3) severe trauma (11%); and 4) presence of contusion/abrasion (62%)

Brit Med J 2013;347:f7095.

Spinal Stenosis

History

- Back pain may vary from absent to severe
- Pseudoclaudication often prominent
- Pain worsens during the day, aggravated by standing, relieved by rest and trunk flexion
- Weakness, bladder and bowel dysfunction
- Age > 50

Physical examination

- Neurologic findings vary, often multiple levels
- Findings of osteoarthritis may be prominent

Supporting studies

- Standard radiographs; MRI or CT +/- myelography; NCV/EMG



Low Back Pain: Pearls and Pitfalls ACP Clinical Practice Guidelines

- Conduct focused history and exam to distinguish:
 - Nonspecific low back pain
 - Back pain potentially associated with radiculopathy and/or spinal stenosis
 - Back pain associated with another potential spinal cause
- Do not obtain imaging routinely in patients with nonspecific low back pain
- Image for severe or progressive neurological deficits or when serious underlying conditions are suspected
- Obtain MRI or CT only potential candidates for surgery or epidural injection

Ann Intern Med 2007;147:478-91.

Summary

- Certain features of the history and exam are more useful than others when distinguishing between benign and serious etiologies
- "Can't miss" diagnoses have characteristic clues
- Limited role for laboratory testing and imaging
- Clinical prediction rules and guidelines help for some, but not all, "can't miss" diagnoses