Update in Sleep and Pulmonary Medicine for Primary Care
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Discloser

• None
Objective

• Update in the treatment of Pulmonary disorders.

• Update in diagnosis and management of OSA, Insomnia and other Sleep disorders
The US Preventive Services Task Force (USPSTF) has revised its guidelines for screening for lung cancer, based on a systematic review and an analysis of the benefits and harms of lung cancer screening.

- The USPSTF now recommends annual low-dose CT scan for high-risk adults:
  1. 30 pack-year smoking history and
  2. current smoker or quit within the past 15 years
  3. aged 55 to 80 years

With discontinuation of screening once the individual has not smoked for 15 years or has a limited life expectancy.

Criteria for screening from several other groups vary slightly, setting 74 years as the upper age for screening, consistent with the study population in the National Lung Screening Trial.
In postpartum women, the risk of venous thrombosis is highest during the first six weeks, but less is known about when the risk returns to baseline. A five-year retrospective analysis of almost 1.7 million women examined rates of thrombosis during the first year following delivery, comparing various postpartum time periods to a six-week period one year later. Risk of a thrombotic event was 11 times higher in the first six weeks postpartum.

Thus, the risk of thrombosis postpartum persisted beyond six weeks but absolute rates were low in weeks 7 to 18. These results support current practice of postpartum thromboembolism prophylaxis in select populations for a minimum of six weeks with extended prophylaxis for longer periods in those at higher risk.
• 1p (ie, 5-fold increased risk)
  – Heterozygous FV Leiden
  – Heterozygous protrombin gene mutation
  – Overweight (>28 in BMI in early pregnancy)
  – Cesarean section
  – Familial thrombosis less than 60 years
  – Maternal age >40 years
  – PreeclampsiaAbruptio placenta
  – Other large risk factor

• 2p (ie, 25-fold increased risk)
  – Protein S-deficiency
  – Protein C-deficiency
  – Immobilization (ie, strict bed rest ≥1 week, or)
  – Lupus antikoagulans Cardiolipin antibodies

• 3p (ie, 125-fold increased risk)
  – Homozygous FV Leiden
  – Homozygous prothrombin gene mutation≥4p
    High risk (10% absolute risk of VTE in relation to pregnancy)
  – Prior venous thromboembolic event (VTE)
  – Antiphospholipid syndrome (APS) without prior VTE

• Very high risk (>15% absolute risk of VTE)
  – Mechanical heart valves
  – Continuous warfarin prophylaxis
  – Antithrombin deficiency
  – Repeated thromboses
  – APS with prior VTE
Evidence-Based Management of Anticoagulant Therapy

• Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines

Risk of venous thromboembolism and Prophylaxis

ACCP
Antithrombotic Guidelines, 9th Ed

• In the latest sets of guidelines, the ACCP recommends the use of newer agents (for prophylaxis) including rivaroxaban (Xarelto), a direct factor Xa inhibitor, and dabigatran (Pradaxa) an oral antithrombin agent, in addition to LMWH, fondaparinux, apixaban, aspirin, low-dose unfractionated heparin and adjusted-dose vitamin K antagonist.
Loading Dose for Initiation of Vitamin K Antagonist (VKA) Therapy

For patients sufficiently healthy to be treated as outpatients, we suggest initiating VKA therapy with warfarin 10 mg daily for the first 2 days followed by dosing based on international normalized ratio (INR) measurements rather than starting with the estimated maintenance dose (Grade 2C).

Initiation Overlap for Heparin and VKA

For patients with acute VTE, we suggest that VKA therapy be started on day 1 or 2 of low-molecular-weight heparin (LMWH) or low-dose unfractionated heparin (UFH) therapy rather than waiting for several days to start (Grade 2C).
Monitoring Frequency for VKAs

For patients taking VKA therapy with consistently stable INRs, we suggest an INR testing frequency of up to 12 weeks rather than every 4 weeks (Grade 2B).

Anticoagulation Management Services for VKAs

(Best Practices Statement) We suggest that health-care providers who manage oral anticoagulation therapy should do so in a systematic and coordinated fashion, incorporating patient education, systematic INR testing, tracking, follow-up, and good patient communication of results and dosing decisions.
Dosing Decision Support

For dosing decisions during maintenance VKA therapy, we suggest using validated decision support tools (paper nomograms or computerized dosing programs) rather than no decision support (Grade 2C).

Remarks: Inexperienced prescribers may be more likely to improve prescribing with use of decision support tools than experienced prescribers.

OTHER PULMONARY MEDICINE
Acid suppression and pneumonia (March 2014)

• Previous observational studies reported an association between proton pump inhibitor (PPI) use and community acquired pneumonia (CAP),
• The meta-analysis included eight cohort studies with over 4 million new users of nonsteroidal antiinflammatory drugs (NSAIDs), of which nearly 100,000 were treated prophylactically with PPIs and about 50,000 were treated with histamine 2 receptor antagonists (H2RAs).
• On adjusted analysis, neither the use of PPIs nor H2RAs was associated with an increased risk of hospitalization for CAP during the six months following initiation of NSAIDs.
A new genetic cause of recurrent respiratory infections and bronchiectasis (January 2014)

- A new genetic defect has been identified that causes a primary immunodeficiency (PID) associated with recurrent respiratory tract infections and bronchiectasis.
- This dominant gain-of-function point mutation, leading to defective T and B cell function.
- Activated PI3K-delta syndrome (APDS) was found in 17 patients from 7 unrelated families, suggesting that it is a relatively common PID in patients with this clinical presentation.

A new genetic cause of recurrent respiratory infections and bronchiectasis (January 2014)

- Patients are treated with immune globulin replacement therapy and antibiotics. Selective p110δ inhibitors are a possible alternative therapeutic approach.
Otherwise snore and this will happen to you….

Or sleep alone….

Sleep Center Services

• OSA
• SLEEP and work
• Other disorders for sleep referral.
• Sleep studies
• CMS and other insurances.
WHAT IS OSA?

• Episodes of complete or partial collapse of airway are translated to # of apnea and hypopnea events (AHI).
  – Apnea = cessation of airflow > 10 seconds
  – Hypopnea = Decreased airflow ≥ 10 seconds associated with:
    • Arousal
    • Oxyhemoglobin desaturation

WHY DOES THIS MATTER?

• Excessive daytime somnolence
• Impaired cognitive performance
• Poor quality of life
• Increased risk of MVA
• Adverse cardiovascular outcomes
• Pulmonary hypertension
• (?DM/metabolic syndrome)
**Epidemiology**

- Disease prevalence = 2 – 4 % of US adult population
  - Higher in population subsets
- 1980’s = morbidity associated with OSA became more widely appreciated
- Majority of cases still undiagnosed
  → PCP = increase knowledge
    = recognize risk factors
    = identify affected individuals

**Obstructive Sleep Apnea**

Extremely Common problem

*OSA Syndrome*: 5% population

*Mod-Severe*: 4-6% of adult population

*Mild*: < 20% of adult population
Cardinal Symptoms Of OSA

- Loud, habitual snoring (common)
- Witnessed apneas (ask bed partner)
- Excessive daytime somnolence (Despite regular, adequate sleep)

UARS

First described by Guilleminault (stanford)in the early 1990s, upper airway resistance syndrome (UARS) is defined as

an entity characterized by flow-limited breathing that result in arousals.

The increased inspiratory effort allows for the maintenance of normal levels of ventilation but eventually induces an arousal, called a respiratory effort related arousal (RERA).

The first article (July 15), discussed sleep disorders and advances in sleep research. It included professors of psychiatry and behavioral sciences Christian Guilleminault, MD
Primary snoring, UARS, obstructive hypopneas, and obstructive apneas are all manifestations of a change in the caliber of the upper airway during sleep. Consequently, these phenomena all fall on a continuum, where in primary snoring represents the most minor reduction in airway size, and obstructive apnea represents the most profound reduction.

![Diagram showing the continuum of breathing from normal to snoring, RERA, HA, and apnea]

Worsening Disease and Decreasing Airway Caliber

The typical OSAS patient circa 1976
The photograph is from a snoring patient in whom obstructive sleep apnea was excluded by polysomnography.

Erythema and edema of the uvula are present, probably secondary to the tissue vibration that accompanies the snoring sound.
OSA Symptoms

• Other associated symptoms
  – Sleep fragmentation
    – Insomnia of sleep maintenance
  – Unrefreshing sleep
  – Morning headaches
  – Tiredness / fatigue
    – Not necessarily sleepy
  – Memory / mood problems

Common physical features

• Obesity!
• Men: premenopausal women = 2:1
• Thick neck (men >17”)
• Small jaw
• Large tongue
• Crowded posterior oropharynx
• Nasal congestion? / Mouth breathers?
Complications of OSA

– Increased risk for:
  • Traffic Accidents
  • Hypertension (↑1-3x)
  • Heart attacks
  • Strokes (↑ by 50%)
  • Congestive heart failure

Consequences of OSA

• Poor performance on driving simulation tests
• Automobile crash rate of 6 X normal
• Severe OSA  2 X crash rate vs mild-mod
• Alcohol & Sleep restriction further worsen
• Increased occupational accidents
Safety Critical Occupation

- Truck, taxi or bus drivers
- Railway engineers
- Airline pilots, air traffic controllers, aircraft mechanics
- Ship captains
- Car drivers falling asleep driving
- Working with machinery or hazardous occupations

Screening in Clinic

- Symptoms
  - Excessive Daytime Sleepiness
- Risk Factors
  - Obesity (↑ BMI)
  - Collar size (≥ 17” for men)
  - Facial features
  - Hypertension
Testing - PSG (Level I Study)

- Diagnostic
- Therapeutic / Titration
- ‘Split-night’ Studies
- Initial vs Repeat Studies
- MSLT
  - Day subsequent to PSG
  - Primarily for Narcolepsy

OSA Testing

- Polysomnography (Level I test)
  - Gold standard
  - In Sleep Lab
  - Access limited depending on your location
- Level III testing
  - Home based
  - Adequate for many patients
  - Negative test does not rule out OSA
- Overnight Oximetry
  - Adjunctive test
  - No definitive role in diagnosis
Portable monitoring (PM)

• Is an acceptable approach to the diagnostic evaluation of suspected obstructive sleep apnea (OSA). However, it should only be used for the diagnostic evaluation of suspected OSA in patients with a high pre-test probability of having moderate to severe OSA and no comorbid medical or sleep disorders.

Puls Ox

• Pulse oximetry is a widely accepted and important component of both polysomnography (PSG) and PM. However, when it is measured alone or with only one other variable, it is not recommended for the diagnostic evaluation of suspected OSA.


Practice parameters for the use of portable monitoring devices in the investigation of suspected obstructive sleep apnea in adults.
AU Chesson AL Jr, Berry RB, Pack A, American Academy of Sleep Medicine, American Thoracic Society, American College of Chest Physicians
Sleep. 2003;26(7):907
Treatment Of OSA

- *Conservative measures*
- *Continuous positive airway pressure (CPAP)*
- *Dental appliance*
- *Surgery*

Conservative Treatment

- *Weight Loss!*
- Non-supine sleep
- Avoid alcohol < 4 hours before sleep
- Smoking cessation
- Treat nasal congestion
- Muscle specific training?
CPAP Therapy

- Most widely used and most effective therapy
- Improves symptoms, reduces mortality, physician & hospital costs
- Patient tolerance and adherence variable
  - 30-80% non-adherence (<4 hours use/night)
Dental Appliances

- Reasonable alternative to CPAP for selected patients
- Best patient characteristics
  - Mild-moderate OSA
  - Supine predominant
  - Healthy dentition
  - Thin
- Permanent’ or Temporary Devices
- Dental, jaw side-effects
- Expensive, not funded

Surgery

- T&A for young children
- Uvulopalatal Pharyngoplasty (UPPP)
  - Laser
- Maxillary-Mandibular Advancement
- Tracheostomy
  - Definitive therapy
  - Only specific therapy until early CPAP ('80s)
- Nasal Surgery
  - Septoplasty-Rhinoplasty
**SLEEP and work**


**Sleep-Related Workplace Errors**

- Second leading cause of car crashes and a major cause of truck crashes (US data)
  - Three-Mile Island
  - Chernobyl
  - Exxon Valdez oil spill
  - Space Shuttle Challenger
  - Several fatal train crashes

- Estimated annual cost of sleepiness-related accidents is in the billions (US)
Physiologic Effects

- Hypertension
- Coronary Calcification
- Respiratory Depression
- Immune Function (TNF-, IL-6)
- Appetite
  - ↓ Leptin
  - ↑ Grehlin

Sleep Requirements

- Sleep Fragmentation can cause the similar effects as sleep deprivation
Causes of Inadequate Sleep

• Sleep Restriction (Deprivation)
• Insomnia
• Shift work disorder
• Circadian phase delay
• OSA
• Other sleep Breathing Disorders
  – Hypoventilation
  – Cheyne Stokes Central Apneas
• Restless Legs/ Periodic Limb Movement
• Narcolepsy

Sleep Restriction

• Commonest cause of sleepiness in general population
• Sleep time has decreased over the last century
  • Benefit (?) of electricity
• Shift work
• Multiple jobs
• Social life
Insomnia

- **Definition**
  - Difficulty initiating or maintaining sleep
  - Waking up too early
  - Despite adequate sleep time
  - Associated with decreased daytime function

- **Common Problem**
  - Occasional: > 50% general population
  - Chronic 10-20%

- **Work related issues a common cause**
  - Stress
  - Shift work
  - Jet Lag
  - Medical Illness
  - Primary

Insomnia – Common pitfalls

- **Diagnosis** – Insomnia ??
- Inadequate history specially re: circumstances of onset
- **Sleep Hygiene**
- Attributing insomnia to 1st identified comorbid factor
- Lack of sleep never killed anybody
- Ordering a PSG
- All sleeping pills are addictive (public)
- **Sleeping pills are addictive (~90% of 500 primary docs)** Because past sleeping pills have a tainted history
  - Millions of sufferers switch to OTC pills testifies to this practice
  - 4-5% admit to taking sleeping pills of some kind
Insomnia Recommendations

- Optimize sleep hygiene including maintaining a regular bedtime and awakening time, while sleeping in a quiet dark bedroom, and avoiding stimulants such as nicotine, caffeine, decongestants, and diet pills.
- Consider behavioral therapy of insomnia such as stimulus control therapy. This therapy focuses on having the patient go to bed only when sleepy. If the patient has not fallen asleep after 15 minutes, the patient then leaves the bedroom to do something quiet in another room. The patient then returns to bed when they start to feel sleepy. This therapy needs to be performed on a nightly basis and frequently several times per night early in the course of therapy, however when utilized on a consistent basis is one of the best long term therapies of insomnia.

Insomnia - Summary

- Insomnia is very common
- But heterogenous in etiology
- Circumstances at onset – valuable info.
- Etiologic diagnosis is vital
- Behavioral, Etiological & Pharmacological Rx
- Sleep Hygiene & Exercise critical
- Contract with the patient re: participation
- Set goals and expectations
- Early intervention more effective
**Circadian Phase Disorder**

- Normal sleep architecture
  - out of synch - ‘in a different time zone’
- Genetic predisposition
- Delays more common in young adults
- Phase advance in elderly
- Only a problem if interferes with life/work
- Tx - Behavioral modifications

**Restless Legs/ PLMD**

- Primary or Secondary
- RLS – subjective sensation, pt complains
  - Worse at night, travelling in care/plane
  - Causes insomnia
- PLMD- bed partner complains
  - Occurs during sleep
  - +/- EEG arousals
  - May have an autonomic response
Narcolepsy

• Prevalence: 1/2–4,000
• Constellation of:
  • Daytime Sleepiness
  • Hypnagogic Hallucinations
  • Sleep Paralysis
  • Cataplexy
• Diagnosed on Sleep Study + MSLT

Narcolepsy Treatment

• Excellent Sleep Hygiene
  • +/- daytime naps
• Stimulant Meds
• Antidepressant meds for cataplexy
• Behavioral / work modification
• Will not get a professional drivers license
• Should not do high-risk work
The Future of Sleep Medicine

• Shift From Sleep Testing Paradigm to Longitudinal Care
  – Partnerships with primary care
  – Satellite offices with other specialties
  – Emphasis on other co-morbid conditions
    • Hypertension
    • Diabetes
  – DME Affiliation
    • Improved quality of care
    • Adherence measurements

The Future of Sleep Medicine

• Emphasis on Out of Center Sleep Testing
  • AASM members report fewer than 25% of sleep testing is OCST (2011)
  • Greater amount of OCST in the east & west
  • Increased demands for OCST
    • Prior authorizations required for nearly all commercial payers for in-lab testing
    • Prior authorizations required for many commercial payers for OCST
    • Redefining personnel roles
      • RPSGT/RST
      • Other personnel
      • Physician peer-to-peer reviews
Summary

- Poor or insufficient sleep negatively affects daytime performance
- Multiple causes of EDS
  - Behavioral or physiologic causes
- Basic screen of sleepiness worthwhile
- Good evidence for treating OSA

Thank you… Mohammad