Sleep and Sleep Disorders in the Hospital; Collop, N; Chest, May 2012

- Hospital-poor place for sleep: noise & lights and scheduled interventions-Vitals
- Increase in light sleep and decreased deep sleep and REM
- Sleep occurs in short bursts over 24 hrs
- Disrupted circadian rhythms

Ventilated Patient Sleep

- Fragmented: pain, noise, patient care
- Study of 22 pts- total sleep time per day
  - mean 8.8 + of 5.5 hours
- Ventilator modes- 2 hours each of AC, PS and PS with dead space; Better with AC
- PAV vs PS  Sleep better with PAV
- Sedation: interruption vs continuous
- more slow wave & REM with PAV
- Melatonin 10mg vs placebo- 1 hours more sleep with melatonin at 9PM-better quality
My First Case of Insomnia

- 1975-1st 24 hour call as a medical student
- 45yoF- severe fatigue, HTN, DM II, edema, DOE, nonsmoker. Difficulty sleeping in chair, never in bed.
- ABG- low O2 and high CO2, worse at night. HTN and DM worse at night.
- Mild obesity, postmenopausal, no asthma
- Snored in chair, occasion choking in sleep
- Awake-no difficulty breathing or swallowing

Insomnia Patient

- CXR- heart prominent, no infiltrates or edema
- No oximetry or 2-D echo (stone age)
  Work-up started, looking for Zebras
- She died 2 nights later, in her chair
- 1977 – Dement and Guilleminault report case of insomnia with apneas

Insomnia with Sleep Apnea

- Stanford Grand Rounds presentation
- Chief of Pulmonary Medicine-walked out
- What would two psychiatrist know about breathing and snoring?
- Their advantage: **they watched people sleep.**
Oxygen or cut the rope?

OXYGEN OR HEIMLICH?
Obstructive Sleep Apnea

- 5% of the US population
- Sleep apnea – Stroke pts- 60-90%
- risk of early death-OSA with Stroke
- Acute MI- undiagnosed OSA in 60%
- Decompensated HF- 75%- AHI of 15 or G
- Internal Med Service- BMI greater 35kg/M2 Hypoventilation in 31%
- CPAP underused in hospital - one study showed only 6% diagnosed with sleep apnea provided with CPAP therapy

OSA Patients with Pneumonia

- Retro- 250,907 patients- 347 Hospitals
- 2007 to 2010, 66%CAP-6.2% had OSA
- Inv-Vent(18%vs9%), Noninv(29%vs7%)
- More likely men, obese, young, COPD, HF
- More likely to deteriorate clinically
- More use of resources

- Lindemayer-Chest-May 2014:1032-1038
CPAP vs Oxygen in patients with HTN
- 281 randomized to O2 or CPAP
- AHI of 15 to 50/hr
- 12 weeks of therapy
- 24 hours - mean arterial pressure
- Significantly lower with CPAP than O2 alone or control group
- O2 use=4.8hrs, CPAP use=3.5hrs
- CPAP ? Prevent post-apnea BP surge
  - S Redline, et al NEJM,370;24 6-12-2014

Perioperative SDB
Roggernbach,J et al;Patient Safety in Surgery, 3-13-2014
- Prospective- Major Abdominal Surgery
- No previous Dx of SDB
- Study -4 channel- No “EEG”
- presurgery & post-op - 37 patients
- 40% prostate – fluid load post-op common
- Increased SDB common after 2nd night

Preop - 4 Channel Screening
OSA & Severe Maternal-Infant Morbidity/Mortality in USA 1998-2009
Louis,J et al SLEEP,vol37, No 5, 2014

• OSA-0.7/10,000 1998 to 7.3/10,000 2009
• Ave. ann. increase of OSA Dx----24%/year
• If OSA Dx - OR for preeclampsia 2.5
  • eclampsia 5.4
  • cardiomyopathy 9.0
  • pulmonary embolism 4.5
  • In hospital mortality 5.0

Stop-Bang Sleep Apnea Questionnaire

High risk of OSA: answering yes to three or more items
Low risk of OSA: answering yes to less than three items

Pneumology,1999, 19:45-52 (2) SAPC, Esaund,98. Test de Screening en las enfermedades del sueño. Evacuantes: Chang et al
+ STOP-BANG and Preeclampsia
Goldfarb, I et al; Obstet Gynecol; May 2014; 123 Suppl 1:53S

- OSA Dx with PSG associated with pre-eclampsia and intrauterine growth restriction in previous studies
- 103 pregnancies screened with STOP BANG-19 “+” (18%)
- 42% of screen positive – preeclampsia
- 13% of screen negative – preeclampsia
- No association with IUGR
- 53% of total would accept formal PSG if recommended by their health care provider

Treatment of OSA with CPAP

- Very Challenging in the hospital
- Staff bias against OSA and CPAP therapy
- PSG blows up DRG reimbursement
- Education of patient to use CPAP takes a lot of time and TLC
- CPAP mask selection is usually minimal
- Mask comfort and humidity are number 1 challenges

Nasal High Flow Oxygen
Nasal High-Flow vs Venturi Mask Oxygen Therapy-Post extubation
Maggiore, SM; AJRCCM, 8-1-2014,
• 105 ventilated for ARF for at least 48hrs
• Randomized to NHF or Venturi
• same FiO2 post extubation
• NHF-4 respiratory failure (2NIV, 2 Intubate)
• Venturi-18 RF (7NIV, 11 intubated)
• NHF is really low pressure CPAP/PEEP with enhanced humidity

1977- Sleep Apnea
• Chief of Pulmonary Disadvantage:
  • He only observed people awake
  • He assumed snoring was normal and pauses in breathing common without impact on health
• 40 years later, most physicians have the same disadvantage
• The advantage goes to the night shift worker
• You need to repeatedly present your observations of a patient with sleep apnea
• Even when daytime clinicians, repeatedly walk away