Practical Aspects of Sleep Disorders in Occupational Medicine

(FOR HANDOUT ONLY)

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Howard Leaman, MD
Intermountain Sleep Disorders Center
Salt Lake City Utah,

Disclosure information

Western Occupational Health Conference 2011

- Howard M Leaman, MD
  - Intermountain Sleep Disorders Center, Salt Lake City Utah

- I have the following financial relationships to disclose:
  - I have noting to disclose
  - I will not discuss off label use and or investigational use in my presentation.

Practical information: "What you can use tomorrow"

- Regularly perform commercial driver medical examinations
- Accountable for company health safety policy and performance
- Care for a company that has employees working "non-standard" hours or public safety sensitive occupations
  - Trucking Marine Aviation Railroad
  - Military
- "Executive health" responsibilities

Agenda

- **Clinical**
  - Sleep basics
  - Relevant sleep disorders:
    - Ten questions.
- **Public Health**
  - Commercial driver examination
- **Policy**
  - Organizational resources

- Further information resources

“How can I stay awake”
“Why am I sleepy”

- Sleepy vs. Tired

- Two process:
  - Homeostatic
  - Circadian

    Time of day>Time on task
- Workload (time on task)

Causes of Fatigue
Core and Modulating Risk Factors

- **Core Risk Factors**
  - Insufficient Sleep
  - Poor Sleep Quality
  - Fragmented Sleep
  - Main Sleep During Day (Circadian)
  - Changing work/rest schedule
  - Long work days
  - No opportunity to make up sleep

- **Modulating Risk Factors**
  - High Workload
  - Lack of control of work environment
  - Exposure to extreme environments
  - Poor Diet
  - Exercise
  - High Stress: Work, Family, Isolation

How to diagnose:
History Physical
Laboratory confirmation

- **STRUCTURED SLEEP INTERVIEW**
- **Ten questions:**
- **“You sleepin’ okay”?**

Basic Sleep History

1. Bed time [Sleep hygiene]	**3. Sleep Latency** "How long does it take you to fall asleep" [Upper limit of normal: 30 minutes]
2. Wake time **(Out-of-Bed)** ["Are you refreshed?"] [Total time in bed: 7 hours] [Alarm clock]	**4. Wake After Sleep Onset** (WASO-Number) ("Do you know what wakes you up?")

Keep the “F” in *SHIFTWORK*

- 5. When do you work?
  - Shifts rotate?

- 6. How long is your commute?

Obstructive Sleep Apnea

- 7. “Do you snore”,
- 8. “Stop breathing in your sleep”,
- 9. “When you awaken, are you refreshed”?
- 10. “Sleepy during the day”?

Sleep Disorders: Risks and Findings

- ***Obstructive Sleep Apnea: (Risks)***
  1. Body Mass index (central obesity),
  2. Oropharyngeal lumen: Mallampati score
  3. Craniofacial abnormalities:
     - (Dolichocephalic): maxillary narrowing, ogival palate, regressed chin
     - (Brachycephalic): retrusive maxilla
- ***Insomnia:***
  - Anxiety, depression, bipolar spectrum disorder, autism spectrum disorder, PTSD
- ***Narcolepsy:***
  - *Sleep attacks, cataplexy, hypnic hallucinations, sleep paralysis, HLA narcolepsy antigens*
- ***Central Sleep Apnea:***
  - *Heart Failure, opiate medications, Intercranial lesions(stoke, trauma, tumor)*
- ***Restless legs/Periodic limb movements***
  - Iron deficiency, SSRI, Dialysis, neuropathy…
- ***Parasomnias:***
  - *Sleep behavior: bruxing, eating, wandering, dream enactment; Parkinsons, Medications, Psych issues, brain lesions*

The Medical Certification Examination for Commercial Drivers

- Is more complex than it appears
  - Many conditions affect driving ability
  - Certification relies heavily on examiner judgment
- Our clients depend on us to **“Do It Right”**
- It’s different than any other exam that we are taught in medical school and residency
- This training is important both for content as well as context

"Form"

Link Medical Condition and Driver Function

- "Identify conditions that would affect the drivers ability to operate a commercial motor vehicle safely"
- "According to the requirements of [Federal Standards] 49 CFR 391.41-49"
- The physical should be "at least as complete as is indicated…on the form"

49CFR 391.41 "Instructions to the Medical Examiner, General Information"

- Who can do them: ILHCP's

(MD's/DO's; N.P's P.A.'s; Chiropractors)

Regulation vs Guideline

- Regulation: “Has no _____ likely to interfere with safe operation of a commercial motor vehicle” (vague)
- Guideline: What aspects of the medical condition are likely to interfere:
- Interpretive guidance formulated by medical subject matter experts
- Guidelines are not law, they are standard of practice. If not followed, you are “on your own” to explain.

“Likely”

- **FORWARD** (Certification)
  - RISK ASSESSMENT-medical condition-likelihood of accident-
  - DUTY, PUBLIC SAFETY-other drivers
- **BACK,** (accident)
  - Held to account for decisions
  - Is there a different standard?

- Ecologic fallacy
- “Dispassionate approach” seems against our training as a physicians but is REQUIRED of people who perform DOT exams
- <u>Can not predict the future-follow published guidelines</u>

Pathological Fatigue and Sleep Apnea

- Risk of crash relates to fatigue:
  - Sleep debt: Insufficient sleep time **OR** Sleep disturbance
  - Circadian issues (Hours of Service regulations)
  - Time on task
- Sleep Apnea: Those affected with this condition are frequently unaware that they have it
- Drivers with sleep apnea have a 2-7 fold higher risk of accident involvement
- Studies of Sleep Apnea in drivers
  - 28.1 to 78% prevalence in total
  - Severe Sleep Apnea between 4.7 and 10%

Screening for Sleep Disorders in Clinic

Positive predictive value depends on prevalence of condition within the population

- Varying driver prevalence estimates:
- Stoohs: 10-78%
  - (High prevalence condition)
- Pack: 5-18%
  - (Prevalence like that of general population)

DOT Guidelines for Medical Certification and Sleep Disorders Range from the Categorical to the Conditional

- " Individuals with ***suspected*** (emphasis mine) or untreated Sleep Apnea should be considered medically unqualified…". Pulmonary Consensus conference
- "Patients with sleep apnea syndrome having symptoms of excessive daytime somnolence cannot take part in interstate driving..." Neurology Consensus Conference

Consensus Document CHEST /JOEM 2006

(*Chest.* 2006;130:902-905.)

- IN SERVICE
  - **CONTINUE WORKING**

- EVALUATION REQUIRED (3 months)
  - Criteria:
  - History
  - BMI>35, Neck >17, HTN (new uncontr., 2 or more meds)
  - Epworth >10
  - Known sleep disorder

    Compliance claimed but unknown
  - Mild-Moderate OSA (PSG) not sleepy(ESS), No MVA, HTN simple controlled

- OUT OF SERVICE
  - **NO DRIVING**

  - Criteria:
  - Witnessed Sleeping or confessed sleepiness
  - Fall asleep accident
  - Epworth > 16 *
  - Known sleep apnea non-compliant, no recent f/u, surgery no f/u test

Conflicting recommendations:

- Consensus Document: Chest 2006
- Expert Panel Recommendations: FMCSA MRB
- FMCSA Medical Examiner Handbook
  - (between and within)
- FMCSA Pulmonary Guideline
- FMCSA Neurology Guideline

DOC-Don't waste my time…

Diagnostic referral issues

- **"I DON'T HAVE A PROBLEM !"**
  - "Driving many years without accident"
  - "I'm not tired or sleepy!"

- **THIS IS GOING TO COST ME…My job, Money I don't have,**

- **"SHOW ME"**
  - Driver must perceive the need

  - Questionnaires or risk scales:

    Subjective and context dependent

    - Epworth
    - Berlin (Snoring, Apneas, non-refreshing sleep, daytime fatigue, driving, hypertension, BMI)
    - Flemmons (adjusted neck circumference)
    - Maislin (BMI based - 35 kg/m^2)

- Ambulatory monitoring for "risk assessment": oximetry, airflow, sleep

- CPAP-Auto: Documentation of treatment efficacy *

When we refer a Driver to sleep docs, we get the following:

- Statement from the sleep specialist :
- Accurate diagnosis
- Meets FMCSA (Published) Guidelines for operation of a Commercial Motor Vehicle
- Driver must agree to monitoring and treatment compliance

Summary: Sleep Apnea

- Don’t rely on questionnaires or other clinical tests to diagnose sleep apnea. They are context dependent
- (*Identify RISK*)
- Develop a relationship with a sleep specialist
- Follow the FMCSA guidelines in qualifying drivers. (*consider other published sources*)
- Document everything.

“Problematic Areas”

- What we are NOT told by the drivers in the health history…
- Federal guidelines are not always current or clear- examiners judgment in certifying
- Economic issues:
- (Don’t ask) Employer: Needs Driver
- (Don’t tell) Driver: Needs job
- -Opt out- ”Walk down the street and try again”
- Doctor: Public safety duty v. Duty to patient

What's the solution?

- Get more information
- Don't be afraid to defer qualification (even if temporarily)
- Don't be afraid to limit duration of medical card (2 years is the MAXIMUM duration)
- Sleep apnea gets one year
- Know what you're signing

Medical Examiners Certificate

I certify that I have examined

1. In accordance with the Federal Motor Carrier Safety Regulations (49 CFR 391.41-391.49) and

2. With knowledge of the driving duties,

I find this person is qualified; and, if applicable,

- only when: wearing corrective lenses
- driving within an exempt intracity zone (49 CFR 391.62)
- wearing hearing aid
- accompanied by a Skill Performance Evaluation Certificate (SPE)
- accompanied by a _____ waiver exemption
- Qualified by operation of 49 CFR 391.64

- CONTINUED NEXT SLIDE

The information I have provided regarding this physical examination is true and complete.

A complete examination form with any attachment embodies my findings completely and correctly, and is on file in my office.

_____ _____ _____

SIGNATURE OF MEDICAL EXAMINER TELEPHONE DATE

MEDICAL EXAMINER'S NAME (PRINT)

MEDICAL EXAMINER'S LICENSE OR CERTIFICATE NO./ISSUING STATE

SIGNATURE OF DRIVER ADDRESS OF DRIVER

MEDICAL CERTIFICATE EXPIRATION DATE _____

My Recommendations 1

- Careful attention to:
  - Sleep Apnea Risk and diagnosis/treatment
  - Medication issues
- Follow the rules
- Document–Document--Document
- Remember who you're working for

My Recommendations 2

- Tell your drivers to see their own doc three months in advance of expiration of their card: no surprises on DOT exam day
- Otherwise
- Drivers lack of planning becomes
  - HIS financial problem and
  - YOUR headache if he can not work

“The Future”

- National Registry Of Certified Medical Examiners (NRCME)
- New MRB: planned updates on Guidelines

Employer issues

- We don't have a problem with fatigue
  - How do you know if you haven't looked
- That's THEIR PROBLEM
  - Employee problems BECOME your problem
- I've got freight or passengers to move
  - You've got to train, attract and retain drivers/employees
- That's why we pay for insurance
  - Punitive damages are NOT covered by insurance
- Won't this be expensive
  - Pay me now, or pay me later
- You're causing me labor problems
  - Multistate employers
- Training: We're paying you to identify medical issues so we don't have to.

Recognizing Fatigue in Accident Causatic

Transportation Safety Board of Canada

Roles and responsibilities:

- Employee responsibility: fit for duty (HR Policies)
  - Fatigue as acute and chronic cognitive and intellectual deterioration
  - "Delirium"→ "Dementia"

- Employer responsibility: safe workplace (OSHA)
  - Free from recognized hazards, or
  - Hazards controlled by recognized/proven techniques
    - Work practices- training
    - Engineering- substitution
    - Personal protective equipment

- Fatigue does not mitigate workers compensation liability
  - Contributory negligence, Fellow Servant, Assumption of risk

- Employer liability: Third parties

Competing Accountabilities

Risk/Insurance
Workers Comp
Prop/Casualty

- W/C
  Claims reduction
- (safety)
- P&C
- What did you know
- When did you know it
- What did you do about it

Human Resources

- Driver Qualified?
  - Medical Qualification criteria
- Sleep Disorder Screening
  - "Witch hunt"

Benefits

- Cost reduction
  - Sleep disorder diagnosis and treatment

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Principals and Practice of Sleep Medicine, Fifth edition, Kryger, Roth, Dement, Elsevier Press 2011. ; cf. Chapter 9 "Occupational Sleep Medicine"

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http://www.fmcsa.dot.gov/facts-research/briefs/SleepApneaCrash-RiskStudy-TechBrief.htm

The "High Risk" commercial driver FMCSA Tech Brief, Available at:
http://www.fmcsa.dot.gov/facts-research/briefs/high-risk-commercial-driver.pdf

Sleep Apnea FMCSA expert panel recommendations:
http://www.fmcsa.dot.gov/rules-regulations/TOPICS/mep/report/Sleep-MEP-Panel-Recommendations-508.pdf

Sleep Apnea and Commercial Drivers: FMCSA
http://www.fmcsa.dot.gov/safety-security/sleep-apnea/industry/commercial-drivers.aspx

Company programs:

Toolbox for Transit Operator Fatigue, TRCP Report 81, FTA Transit Cooperative Research Program: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_81.pdf

Fatigue Management Plan: A practical guide to developing and implementing a fatigue management plan: http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0017/302804/Guide-to-the-Development-of-a-Fatigue-Management-Plan-Amended-17-6-10.pdf

Railroad Fatigue Risk Management Program at the FRA: past present and future. http://www.fra.dot.gov/downloads/safety/fatiguewhitepaper112706.pdf

Fatigue risk management systems for aviation safety: FAA Advisory Circular 8/3/2010 AC 120-03, http://www.faa.gov/documentLibrary/media/Advisory_Circular/AC%20120-103.pdf

Public health:

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Thank You

Howard M. Leaman, M.D.
INTERMOUNTAIN SLEEP DISORDERS CENTER
IHC Health Services to Business
801-463-1309