Sleep Apnea and Fatigue: Impact on Commercial Motor Vehicle Safety

Sleep Apnea-Multimodal Transportation Conference
American Sleep Apnea Association
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Agenda

- Sleep Apnea and Fatigue: Impact on Commercial Motor Vehicle Safety
- FMCSA Medical Certification & Sleep Apnea
- What’s New – Proposed National Registry of Certified Medical Examiners (NRCME)
FMCSA Mission

Reduce crashes, injuries, and fatalities involving large trucks and buses on America’s roads.
Truck and Bus Driver Statistics

- 7 million active interstate drivers
- About 3-4 million examinations annually
- Over 14 million CDL records (2010)
- Approximately 500,000 active interstate companies (2010)
Sleep Apnea and Fatigue: Impact on Commercial Motor Vehicle Safety
Fatigue - Our Concern

- Crashes involving a driver falling asleep:
  - very serious in terms of injury

- Crashes involving driver drowsiness:
  - high fatality rate

- Fatigue sharply reduces driver perception, recognition, and vehicle control abilities

**US DOT FMCSA
Advanced Driver Fatigue Research, April 2007
The Drowsy Driver

- The Drowsy Driver is:
  - A poor judge of individual level of drowsiness
  - Unable to reliably predict when impaired or drowsy


Fatigue: Subjective Signs/Symptoms

- Daytime sleepiness
- Fatigue
- Irritability/quick to anger
- Inability to concentrate/focus
- Slowed reflexes/hand-eye coordination
Fatigue: Objective Signs/Symptoms

**Individual**
- Eyes closing
- Head bobbing
- Head shaking
- Staring into space
- Excessive blinking

**Environmental**
- Lane deviation (weaving, crossover)
- Sudden unwarranted slowing/speeding

**US DOT FMCSA  Advanced Drive Fatigue Research,  April 2007**

Fatigue-Related Crash

- Vehicle runs off the road
- No sign of braking
- No mechanical defect
- Good weather
- No speeding

**US DOT FMCSA
Advanced Driver Fatigue Research, April 2007
Fatigue/Drowsiness - Our Concern

- Fatigue estimated to be involved in:
  - 2% to 23% of all crashes
  - 4% to 25% of single vehicle crashes
  - 10% to 40% of crashes on long motorways
  - 15% of single vehicle fatal truck crashes

- Crash incidence related to fatigue/drowsiness – underestimated

*US DOT FMCSA
Advanced Driver Fatigue Research, April 2007
http://www.fmcsa.dot.gov/facts-research/research-technology/report/Advanced-Driver-Fatigue-Research-Final-Report-
Recognizing the impact of fatigue on crashes

- Highest number of crashes occur after midnight
  - > 40% crashes: between 1 am and 7 am
- 70% of crashes are on rural highways with 55 to 65 mph speed limit
  - Monotonous and calm atmosphere, right for falling asleep
- First events in the Crash:
  - 64% collisions with fixed objects (trees, guardrail, highway sign, parked cars, etc.)
Sleep Apnea: An important cause of fatigue

Fatigue can be caused by:
- Sleep disorders
  - Sleep Apnea
  - Narcolepsy
- Sleep hygiene problems
  - Sleep deprivation
- Medications
- Other diseases/medical conditions
  - Hypothyroidism
  - Hypoglycemia
  - Alcohol/drug impairment
Sleep Apnea: Risk Factors

- Family History
- Anatomy
  - Narrow airways
  - Large tongue with normal or small mandible
  - Nasal obstruction - deviated septum, Large turbinates
  - Neck Circumference
- Age 65 Years and Older
- High Blood Pressure
Sleep Apnea: Risk Factors

- **Weight**
  - Overweight/obese
  - Recent weight gain
  - Neck Circumference

- **Medications**
  - Use of Sedatives & Tranquilizers

- **Smoking**

- **Alcohol Use**
Health Profile of the Driver

- **Lifestyle Factors**
  - Male
  - Over 40 years of age
  - Sedentary
  - Overweight
  - Poor nutrition

- **Medical Conditions**
  - Less healthy than the average American
  - More than two medical conditions
  - Cardiovascular disease prevalent
Sleep Apnea – Brief Overview

- Normally, muscles of the upper part of the throat help keep the airway open
- Relaxation of these muscles can cause the airway to close completely and become obstructed
- Loud snoring and labored breathing occur
- Breathing can stop for short periods of time (often more than 10 seconds) = sleep apnea
Sleep Apnea Patterns

- **Snoring:**
  - Begins heavily right after falling asleep
  - Continues at a regular pace, becoming louder
  - Interrupted by a long silent period when there is no breathing
  - Followed by a series of loud snorts and gasps
  - Snoring returns
Sleep Apnea Signs/Symptoms

- Abnormal daytime sleepiness
- Falling asleep at inappropriate times (such as traffic lights)
- Awakening unrefreshed in the morning
- Depression
- Uncontrollable hypertension
More Sleep Apnea Signs/Symptoms

- Memory difficulties
- Morning headaches
- Personality changes
- Poor concentration
- Restless sleep
Sleep Apnea Screening/Diagnosis

- Sleep apnea interferes with oxygen exchange and may result in gradual or sudden incapacitation
- Physical examination
- Individuals may or may not be obese
- Diagnostic testing used to confirm OSA
Sleep Apnea
Sleep Apnea: Treatment

- **Treatment Options**
  - Lifestyle changes
  - Mouthpieces
  - Breathing devices
  - Surgery

- Most people with OSA can be successfully treated
Sleep Apnea: Treatment

- **Treatment Goal**
  - Keep the airway open so that breathing does not stop

- **Symptoms may be relieved by:**
  - Avoidance of alcohol or sedatives at bedtime (anything that deepens sleep)
  - Dental devices at bedtime that keep the lower jaw forward of the upper jaw
  - Weight loss
Untreated OSA: Complications

Possible complications of untreated OSA may include:

- Abnormal heart rhythm (arrhythmia)
- Excessive carbon dioxide
- Heart disease
- High blood pressure
- Sleep deprivation
- Stroke
- Other
FMCSA Medical Certification & Sleep Apnea
Purpose of the Medical Certification Examination

“The purpose of this examination is to determine a driver’s physical qualification to operate a commercial motor vehicle (CMV) in interstate commerce according to the requirements in 49 CFR 391.41-49.” *

*Medical examination report form
FMCSA Regulations

Regulate:
- Motor carriers
- Truck and bus drivers
- Trucks and buses

Medical examiners are responsible for knowing:
- Physical and mental demands of commercial driving
- Federal regulations, including advisory criteria
- Use of medical protocols for conducting physical exams
FMCSA System for Physical Qualifications of CMV Drivers

- Utilizes Medical Examiners
- Follows FMCSA regulations (49 CFR 391.41.3)
- Medical Certification every 2 years, at a minimum
- New information pertinent to CMV driver medical/physical ability to safely perform job requirements is continuously reviewed and evaluated by FMCSA
  - for sleep apnea
  - for other medical conditions which may impact public safety
Drivers with moderate to severe sleep apnea that may interfere with safe driving should be medically disqualified by the medical examiner.

Medical examiners should request further evaluation or testing as appropriate in making medical certification determinations.

“A person is physically qualified to drive a CMV if that person has no medical history or clinical diagnosis of a respiratory dysfunction likely to interfere with ability to control and drive a CMV safely” - 49 CFR 395.45(b)(5)
Sleep Apnea: Update

- **Sleep Apnea and Multimodal Transportation Conference**
  - Organized by American Sleep Apnea Association
  - FMCSA is a sponsor and program participant
  - November 8-9, Baltimore MD

- **Combined Medical Review Board/Motor Carrier Safety Advisory Committee Meeting**
  - Topic is Sleep Apnea
  - December 7, Alexandria VA
  - Joint Committee recommendations at close of meeting
Overview of the Proposed National Registry Program
Proposed National Registry-History

- **2005**: Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
  - SAFETEA-LU mandated a national registry of medical examiners

- Medical Examiners
  - Mandatory training
  - Testing
  - Certification

- Establishes
  - Online list (registry) of certified MEs
  - Quality assurance program
  - Removal of unqualified MEs
Proposed National Registry

- Medical examiners will:
  - Complete training on FMCSA physical qualification process standards
  - Pass a test verifying understanding of those standards
  - Maintain certification through periodic training and testing

- FMCSA goal:
  - Train and certify 40,000+ MEs to perform 3-4 million examinations annually
What’s New-Proposed Final Rule
NRCME

- Scheduled publication date – Winter 2011
- Sign up for List Serve for latest information
- www.nrcme.fmcsa.dot.gov
Federal Register notices

Technical briefs, reports

email FMCSAMedical@dot.gov

Telephone 202-366-4001

FMCSA Medical Program Site http://www.fmcsa.dot.gov/ (see main medical page)

National Registry of Certified Examiners Site www.nrcme.fmcsa.dot.gov
Questions?

- We appreciate everyone’s dedication to driver safety every day
- We welcome your questions