Driving: An Old Hazard That is Still Here

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Disclosures

I have nothing to disclose
DoD Statement

- The views expressed in this presentation are those of the author and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, nor the U.S. Government.

Ramazzini and driving

- Preceded Henry Ford by ~230 years
- Silent on driving
- Somewhat heralding as medical requirements and guidelines are silent on many aspects regarding non-CMV driving
Driving impacts everyone

Driving is very important in the US

- In 2010 there were:
  - 210M licensed drivers
  - +43K drivers involved in fatal crashes
  - +2.9M drivers involved in injury crashes
  - +7.0M drivers involved in property damage crashes

- Much higher than other developed countries.
- USA developed highway infrastructure at expense of rail transit for commercial goods and passengers.
- New emerging trend in transportation.....
**Uber & Lift**

- Ride Sharing Apps (Uber and Lift) have greatly increased the number of drivers operating for compensation without CDLs.
- A private company that uses one’s own car & insurance
- Safer than cabs because:
  - cashless, no random pick ups protects from violence which is the #2 cause of occupational death
  - Electronic record of passengers
  - rate driver and passenger
  - Vehicle standards
  - Background checks
- Uber takes a 20% commission

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- Uber has 162k drivers
  - $17/h in DC and LA; $23/h in SF and $30/h in NYC
  - Payed more than taxi drivers and chauffeurs
  - No boss, office or specified hours
  - Drivers are more:
    - Female (48%)
    - College (~37%) and post grad (10%) educated
    - White (40%)
    - Have children at home (46%)
  - No specific medical standards for ride sharing drivers
Medical Requirements for Drivers Licenses are varied across states

- Driver’s licenses are issued by states, territories and the federal district.
- Laws and medical requirements vary across states for non commercial drivers or intrastate drivers.
- Unrestricted Licenses are driver's licenses that most American drivers have. Various states differ on what class they utilize to distinguish between a typical driver's license and special licenses, such as restricted, or motorcycle licenses.
- Real ID is now a federal requirement.

Bus Crash in New Orleans

- Bus driver had been treated 20x in past 21 months for ESRD and Cardiomyopathy. Signed out AMA from an inpatient admission the day prior. Tox test found antihistamine, metoprolol and cannabis.
  - Fired in past for + drug screens by 3 other companies
  - Doctor shopped until found provider who would sign off CDL clearance.
- Eventually led to the establishment of the CMVME Registry and current medical examiner requirements. But it took 15y to implement.
**Federal Motor Carrier Safety Administration**

- FMCSA regulates commercial drivers in interstate commerce
  - It is the commerce not the driver that meets the interstate criteria
  - Vehicle weight of +10K lbs
  - Designed or used to transport +9 persons for compensation
  - Designed or used to transport 16 or more passengers (including driver) whether or not for compensation

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**CMV Medical Examiner**

- National Registry of Certified Medical Examiners was established in 2014
- 8h of on-line training and pre & post reading
- Certification Exam passage required

- This will **not** be covered in this discussion.
Hot Topics in Driving

- Psychiatric Disorders and Driving
- Obstructive Sleep Apnea and Driving
- Prescribed Schedule 2 Medication and Driving
- Medical and Recreational Marijuana use and Driving
- Mature Drivers

Psychiatric disorders and driving

CAUTION
Some medications may cause:
sleepiness, blurred vision,
dizziness, slowed movement,
fainting, inattentiveness,
excitability, & nausea.
Psychiatric disorders and driving

- Are individuals with a psychiatric disorder at increased risk for a motor vehicle crash? If so, are there specific psychiatric disorders that present a particularly high risk?

  - Evidence is inconclusive.
    - The possibility of increased risk of crash for some drivers with psychiatric disorders cannot be ruled out
    - 8 studies. 6 low quality and 2 moderate quality
    - Strength of evidence: minimally acceptable

Subgroup analysis: Specific psychiatric disorders and crash risk

- Psychotic disorders
  - Evidence does not suggest an increase crash risk
- Mood disorders
  - Evidence suggest the possibility of increased crash risk, but more evident as needed
- Anxiety disorders
  - No evidence to draw increased crash risk
- Personality disorders
  - Evidence is inconsistent and prevents drawing an evidence-based conclusion on increased crash risk
Obstructive Sleep Apnea

- Are individuals with OSA at an increased risk for a motor vehicle crash when compared to comparable individuals who do not have the disorder?

- From FMCSA Evidence Based Report on OSA
Drivers with OSA are at increased risk for a crash compared to their counterpart who did not have the disorder.

- **Strength of evidence:**
  - Strong for NON CMV

- A precise estimate of the magnitude of this increased cannot be determined at this time.

What disease-related factors are associated with increased motor vehicle crash risk among individuals with OSA?

- Not all individuals appear to be at increased risk.
  - Many individuals with the disorder did not pose additional threat to public safety.

- The identification of these factors is important because it will enable medical examiners to differentiate high-risk individuals from low-risk individuals when making decisions about fitness to drive.
What disease-related factors are associated with increased motor vehicle crash risk among individuals with OSA?

- Ten manuscripts met the inclusion criteria.
  - The quality of these studies was not high.
    - 1 study was of moderate quality.
    - 9 were of low quality.
- No evidence-based conclusion pertaining to the risk factors for crash among drivers with OSA can be drawn at the present time.

Are individuals with OSA unaware of the presence of the factors that appear to be associated with an increased motor vehicle crash risk?

- Three articles met the inclusion criteria.
- None of the three studies (all case series) was of high quality and none attempted to determine whether drivers are aware of the extent to which they are affected by daytime sleepiness.
Which treatments have been shown to effectively reduce crash risk among individuals with OSA?

- CPAP reduces crash risk among individuals with moderate-to-severe OSA
  - Strength of Evidence: Strong

- While several other technologies may reduce crash risk among individuals with moderate-to-severe OSA
  - The available evidence to support this is not convincing.

Prescription Rx & Driving
Prescribed Schedule II Drugs and MV Safety

- Does the licit use of a prescribed Schedule II drug increase the risk for a motor vehicle crash?

- Whether a relationship exists between the licit use of a Schedule II drug and motor vehicle crash risk cannot be determined at the present time.

  Includes all Schedule II drugs

Opioids and Driving

- Marked increase in prescribing of opioids in recent decade. Possibly due to TJC pain requirement
  - 46 people die from overdose of painkillers everyday in the US.
  - 259M prescriptions for painkillers in 2012. Enough for every American adult to have a bottle.
  - 10 of the highest prescribing states for painkillers are in the South.
Information is poor

- 49 potentially relevant articles
  - none met the inclusion criteria for this key question.
  - studies combined crash data from licit and illicit Schedule II drug users (32 studies).
    - illicit drug users do not use drugs in a manner that is compatible with a therapeutic regimen
      - the aim of a drug abuser is to use the drug to deliberately initiate a change in mental state
      - the aim of a licit user is to treat a disorder
  - crash data that include drug abusers cannot provide an answer

Traumatic brain injury and driving
Traumatic brain injury and driving

- Available evidence is insufficient to determine whether crash risk is elevated for driver’s with TBI.
- However, driving performance as measured by on-road driving test and driving stimulators was significantly impaired among individuals with TBI compared to uninjured controls.

What factors associated with TBI are predictive of increased crash risk?

- Available evidence is insufficient to determine whether any factors related to TBI can predict actual crash risk.
What is the impact of rehabilitation programs on crash risk individuals with TBI?

- No studies provide direct evidence to address this question

Marijuana and Driving
Marijuana and driving

- Marijuana is currently legal for recreational use in:
  - Colorado
  - Washington
  - Washington, DC

- Medical marijuana is currently legal in 24 states
- FMCSA does not have an Expert Panel report
  - NIH funding difficult

Marijuana and driving

- Academic Literature
  - Laboratory Studies
    - Determine the effects of marijuana on skills used in driving
  - Driving Simulator Studies
    - Test the effects of marijuana use on driving simulators designed to replicate actual driving
  - Field Studies
    - Explore the degree to which marijuana use is responsible for motor vehicle accidents in the real world
Marijuana Laboratory Studies

- Detected impairments in:
  - tracking,
  - attention,
  - reaction time,
  - short-term memory,
  - eye coordination,
  - vigilance,
  - time

- Most of the above examined low-dose marijuana use
- “The acute effect of moderate or of higher doses of marijuana impaired the skills related to safe driving and injury risk”
  - Also showed significant synergism with alcohol

Marijuana driving simulator studies

- There is evidence of a dose-dependent impairment in marijuana affected individuals ability to control a vehicle in the area of:
  - steering,
  - headway control,
  - speed variability,
  - car following,
  - reaction time
  - lane positioning.

- Stimulator studies did not replicate in laboratory studies
  - Likely due to marijuana affected participants consciously compensating for the impairment
Marijuana driving field studies

- Driving under the influence of marijuana is associated with increased risk of motor vehicle accidents.
  - A 2008 study showed driving more than 20 times across a 4 year period had a collision relative risk of 1.4 compared with those who had never driven under the influence of marijuana.

Mature Drivers
In 2012, there were almost 36 million licensed driver’s age 65 or older
- 34% increased from 1999
- Helps older adult stay mobile and independent
- Risk of being injured or killed in an MVA increases with age
- In 2012
  - 5,560 elder adults killed, 214K injured
  - This amounts to 15 killed and 586 injured in crashes every day
  - Older drivers have a higher crash risk than middle aged adults, but lower than teen driver’s

**CDC’s view of Mature drivers**

- Fatal crash rate increased starting at age 70-74 and is highest among driver’s age 85 and older
  - Largely due to increased susceptibility to injury and medical complications rather than tendency to get into crashes
- Age-related decline in vision and cognitive functions are responsible for crashes
- Males had substantially higher death rates than females
CDC & Mature Drivers

- Existing protective factors may improve older driver safety
  - Higher incidence of seatbelt
  - Tendency to drive when conditions are safest
    - Risk avoidance
  - Lower incidence of impaired driving

GHSA & Mature Drivers

- State laws regarding mature drivers vary widely
  - 33 states and DC her special provisions for mature drivers including:
    - Accelerated renewal frequency
    - Restrictions of online or mailed renewals
    - Vision test
    - Road test and/or
    - Reduce fees
  - Reporting Requirements to DMV
Many Corporations have set age limits that prohibit occupational driving over a set age.

Literature clearly states that it is the person not the age that determines function.
- Not all 75 year olds are equal
- Corporate Benchmark is variable but closest to 75 for those companies who have an age limit
- One may be asked to formulate policy

Reporting Requirements to DMV

- Differ Widely by State
- In California

Physicians are required to report all patients diagnosed with ‘disorders characterized by lapses of consciousness.’ The law specifies that this definition includes Alzheimer’s disease
- ‘and those related disorders that are severe enough to be likely to impair a person’s ability to operate a motor vehicle.’
Mandatory Medical Reporting Laws:
- In some states, physicians are required to report patients who have specific medical conditions (e.g., epilepsy, dementia) to their DMV.
- Usually specific guidelines and forms

Physician Reporting Laws: Other states require physicians to report ‘unsafe’ drivers to their state DMV, with varying guidelines for defining ‘unsafe.’
- The physician may need to provide
  - (a) the patient’s diagnosis and
  - (b) any evidence of a functional impairment that can affect driving (e.g., results of neurological testing) to prove that the patient is an unsafe driver

Case Scenarios
- You are an Occupational & Environmental Physician in California.
- Patients names are fictional
Ms. Jones

- Ms. Jones is 65 yo driver of a van that picks up laboratory specimens from private medical offices and takes them to a central laboratory. She has been taking medical marijuana for 10 years for glaucoma. She was involved in a minor MVA 10 days ago with minor injuries. She presents to your office for a RTW evaluation. What do you do?

Mr. Smith

- Mr. Smith is a 35 yo floral delivery man operating a van. He has Dxs of PTSD/TBI and has been taking OxyContin TID for +10 years to relieve joint pain in multiple body places. He also has a prescription of Xanex that he used PRN. He has been functioning well and without complaints other than occasional constipation. He presents to your clinic for RTW evaluation following a broken wrist he sustained during a recreational soccer game.
**Mr. Larky**

Mr. Larky is a 75 yo volunteer for a substance abuse rehabilitation facility. His job includes picking new patients up from the airport and driving them to the hospital. He is upset because he was just told that he is no longer permitted to do this as a new company purchased the facility and has a policy prohibiting person over 75 from driving corporate vehicles. What do you tell him.

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**Mr. Perez**

Mr. Perez is a 59yo professional carpet cleaner who drives a van to clients homes. He presents to your clinic for RTW evaluation after being off work for minor injuries from an occupational traffic accident. He is yawning several times during your evaluation. He reports that he has been diagnosed with OSA and needs a CPAP, but cannot afford the deductible. What do you do?
Thank You