New Study Examines Ties Between Acute Sleep Deprivation and Risk of Crashes

We already know that fatigue is a factor in traffic accidents because sleep deprivation slows reactions to stimuli, decreases accuracy of responses, and leads to long lapses in attention. But there's been little scientific research that measures the relationship between specific amounts of sleep deprivation and crash risk.

A new study from the AAA Foundation for Traffic Safety is the first to quantify the relationship between specific measures of recent sleep and the risk of crash involvement in a representative sample of crashes of the general driving population.

Data was examined from the National Highway Traffic Safety Administration's National Motor Vehicle Crash Causation Survey, which consisted of a representative sample of police-reported crashes that:

- Occurred in the US between July 2005 and Dec. 2007, from 6:00 AM-11:59 PM;
- Involved at least one car, pickup truck, van, minivan or sport utility vehicle that was towed from the scene due to damage; and

- Resulted in an emergency medical service dispatch.

Crashes were investigated on-scene by multidisciplinary teams of specially-trained investigators (independent of routine investigations by law enforcement officers). Such investigations included an assessment of factors that contributed to the crash, such as driver error, mechanical failures, environmental conditions, etc. as well as an assessment of how many hours the driver had slept in the 24 hours before the crash, usual daily amount of sleep, and whether the driver had changed their sleep schedule recently.

The relationship between sleep deprivation and crash risk was assessed by comparing the amount of sleep reported by drivers who on-scene crash investigators found to have contributed to the crash by means of an unsafe or illegal action, inaction or error to the amount of sleep reported by drivers who investigators found *not* to have contributed to the crash in such a manner.

Note that experts recommend that healthy adults should sleep for at least 7 hours daily. (Read about a study on Canadians and sleep habits.)

The researchers found that there's a significantly elevated crash risk for:

- Drivers who usually sleep for less than 5 hours daily
- Drivers who slept for less than 7 hours in the past 24 hours
- Drivers who slept for 1 or more hours less than they usually sleep in the past 24 hours.

Specifically, drivers who reported that they usually sleep for 4-5 hours per day had 5.4 times the crash rate of drivers who usually sleep for 7 hours or more daily.

Compared to drivers who reported that they'd slept at least their usual amount in the past 24 hours, drivers who reported

they had slept:

- 1-2 hours less than usual had 1.3 times the crash rate
- 2-3 hours less than usual had 3.0 times the crash rate
- 3-4 hours less than usual had 2.1 times the crash rate
- 4 or more hours less than usual had **10.2 times** the crash rate.

And the estimated rate ratio for crash involvement associated with driving after only 4-5 hours of sleep compared with 7 hours or more is similar to the US government's estimates of the risk associated with driving with a blood alcohol concentration equal to or slightly above the legal limit.

Bottom line: If your workers drive or operate mobile equipment on the job, take appropriate steps to address fatigue and prevent drowsy driving. For example, implement a fatigue risk management system and use tools such as:

- A Model Fatigue Management Policy
- Fatigue Hazards Identification Checklist
- Fatigue Self-Reporting Form
- A worker fatigue infographic.