This month’s article comes from Kyle Prewitt of the Plainfield Police Department. We think he has done a nice job in looking into a problem that faces many officers and departments. He submitted this paper as part of his Master Instructor requirements. For those interested, the requirements for becoming a Master Instructor can be obtained from Lt. Michael Beck.

Dead Tired

Law Enforcement Officer Fatigue and Motor Vehicle Crashes

By: Kyle R. Prewitt

 Ask any law enforcement officer what the most dangerous aspect of his or her job is and the likely answer will be felonious assaults of some variety. Statistics from the Officer Down Memorial Page show that 32 law enforcement officers died from gunfire or stabbings in 2013 while 33 died as a result of motor vehicle or motorcycle crashes while on duty. The Fatality Analysis Reporting System (FARS) of the National Highway Traffic Safety Administration (NHTSA) considers many factors when investigating a motor vehicle crash resulting in the death of a law enforcement officer; however officer fatigue is not analyzed by the FARS. Fatigue created by the long working hours of law enforcement officers and regularly interrupted or limited sleep of those officers must be considered contributing factors in many crashes involving law enforcement officers.

 Lamond and Dawson (1999) systematically compared the effects of fatigue and alcohol impairment on a range of neurobehavioral functions and found significant impairment after being awake more than 17 hours. Impairments after 20 hours of wakefulness were similar to that of an individual with a blood-alcohol concentration of 0.10 (p. 258). While federal or state regulatory commissions restrict the work hours of commercial truck drivers, pilots, firefighters, and doctors, no such regulations exist for most law enforcement officers (Lindsey, 2007).

 Establishments that serve alcohol are often held civilly liable for serving too many alcoholic drinks to patrons who then drive an automobile that is involved in a fatal crash. Trucking companies are also held responsible when drivers cause accidents after driving an excessive number of hours. It is not an unreasonable assumption to believe that law enforcement agencies will soon be held liable for personal injury or fatal automobile crashes involving officers too fatigued to drive safely.

**Sleep Facts**

 Humans typically have 4 to 6 sleep cycles which last between 70 to 90 minutes each during a night of sleep. As each cycle ends, they are nearly awake. During light sleep bodily movements decrease and it is much easier to be awakened. Intermediate sleep helps refresh the body and most of the night is spent in this stage. Deep sleep is the most restorative stage and generally lasts between 30 to 40 minutes during the first few cycles and decreases in length in later cycles. Dreaming occurs and the heart rate increases during the rapid eye movement (REM) sleep. REM sleep lasts about 10 minutes in the first cycle and between 20 to 30 minutes in subsequent cycles. A full night of sleep consists of these 4 to 6 of these cycles moving from one stage of sleep to another (Lindsey, 2007).

Van Reeth (1998) states that the utilization of artificial light beginning in the 19th century extended the day and interrupted normal human cycles of activity and rest that were naturally dependent on ambient light. The rest and activity cycle of organisms is commonly referred to as a circadian rhythm which is largely believed to be controlled by the Suprachiasmatic Nucleus (SCN) portion of the hypothalamus in the brain. The SCN signals the release of hormones, such as cortisol to increase wakefulness or melatonin to promote sleep (National Sleep Foundation). A disruption in activity and rest creates unbalanced circadian rhythms and sleep/wake homeostasis as the body signals sleep is necessary.

According to the National Sleep Foundation, each individual has unique sleep requirements that are based on multiple factors such as age, basal sleep need, and accumulated sleep debt. The healthy adult basal sleep need, or the amount of sleep necessary for optimal performance, averages between 7 to 9 hours nightly. Those who get less sleep than their basal sleep requirement accumulate sleep debt. Unresolved sleep debt results in feelings of drowsiness and reduced alertness. Consistently failing to meet the basal sleep need or to resolve sleep debt may result in persistent drowsiness and chronic sleep disorders. Sleep debt reaching a level beyond the person’s ability to physically remain awake will trigger imminent sleep which can overcome even the best attempts to fight sleep (Cochrane, 2001).

**Drowsy-Driving**

The National Center on Sleep Disorders Research (NCSDR) and NTHSA analyzed accident reports created by law enforcement and driver self-reports in their study “Drowsy Driving and Automobile Crashes”. This report identifies sleepiness as a major factor contributing to motor vehicle crashes because of slower reaction time, reduced vigilance, and slower information processing. Unlike alcohol-related crashes, there is no existing objective test to identify the sleepy driver at the scene of a motor vehicle crash, so subjective measures must be used to study the drowsy driving phenomenon. The NCSDR and NTHSA identified seven characteristics of crashes that resulted from drowsy driving.

**The crash occurs during late-night hours**

Most crashes attributed to drowsy driving occur after midnight, while there is a secondary peak in drowsy driving crashes in the midafternoon due to natural circadian dips that occur then.

**The crash happens on a high-speed roadway**

Long distance driving associated with travel on highways and interstates with speed limits in excess of 55 miles per hour may cause inattentiveness consistently present during extended nighttime travel.

**Drowsy driving crashes are likely to be serious**

High speeds and delayed reaction times associated with drowsy driving increase the severity of injuries from those crashes. Annually about 71,000 people are injured in the nearly 100,000 crashes involving drowsiness or fatigue as the principal causation.

**A single vehicle left the roadway**

While sleepiness may play a role in rear-end and head-on crashes, most identified drowsy driving crashes are single vehicle crashes where the vehicle left the roadway.

**The driver made no effort to avoid crashing**

Skid marks and other evidence of corrective actions before a crash are not likely to be present in drowsy driving crashes, especially in those that involve a driver who fell asleep.

**The driver is the sole vehicle occupant**

The vast majority (82 percent) of identified drowsy driving crashes occur when the driver is the only occupant of the vehicle.

**High risk groups**

While not specifically inherent to the drowsy driving crash, the NCSDR and NTHSA report also identified shift workers, especially those who work night shift hours, as being in a high-risk group for drowsy driving. The report also stated that the growing market of 24-hour businesses has increased the number of people who are subjected to overnight shift work.

The report found that drivers under the age of 30 accounted for nearly two-thirds of the drowsy driving crashes, while a study conducted by the New York State Task Force (1996) found that drivers in the 18 to 24 and 25 to 39 age groups were responsible for the most drowsy driving crashes.

The report also identified males as being more prone to drowsy driving and crashes in which the driver fell asleep. NTHSA data shows that males are five times more likely than females to be involved in drowsy driving crashes.

**Law Enforcement Officer Fatigue**

Law enforcement officers must often attempt to balance family and social aspects of life with demanding work schedules. Most agencies providing 24 hour law enforcement services schedule officers to work 8, 10, or 12 hours at a time (Vila & Kenney, 2002). Traditionally, wages for law enforcement officers have been low which necessitates a dependency on overtime, night shift differential pay, and working off-duty jobs outside of the agency (Lindsey, 2007).

In addition to family life, regularly scheduled shifts, overtime, and off-duty employment, law enforcement officers are frequently called to testify in court, participate in training events, and attend meetings. Officers assigned to night shifts frequently sacrifice sleep in order to attend these extra obligations (Cochrane, 2001).

To compound the issue of fatigue in night shift officers, Van Reeth found that sleep after night work is usually shorter than sleep after day work due to increasing levels of cortisol promoting wakefulness and lessened levels of melatonin that promote sleep. Other factors during daytime sleep such as noise from traffic, children playing, and household noise can cause fragmented sleep that interrupts the regular sleep cycles of the night shift officer (1998).

A total of 4,957 law enforcement officers from the United States and Canada participated in an online sleep screening survey or an on-site sleep survey conducted by researchers at Brigham and Women’s Hospital in Boston, MA from July, 2005 to December, 2007. As a result of the regular screenings and surveys of those law enforcement officers, Rjaratnam et al. (2011) found that 40.4 percent screened positive for at least one sleep disorder. Out of those found to have a sleep disorder, 33.6 percent screened positive for obstructive sleep apnea, 6.5 percent for moderate to severe insomnia, and 5.9 percent for shift work disorder. Of the 4,608 law enforcement officers who completed the sleepiness scale, 28.5 percent reported excessive sleepiness. Out of all of the screenings, 26.1 percent of the law enforcement officers reported falling asleep while driving at least once a month, and of those officers, nearly 25 percent stated that they fell asleep while driving at least twice a month while 13.5 percent stated that they did so at least one to two times weekly.

The National Law Enforcement Memorial Fund reported 504 law enforcement in-the-line-of-duty deaths from motorcycle or automobile crashes from 2004 to 2013. The NHTSA FARS data did not analyze fatigue or drowsy driving as a factor in those deaths.

**Fatal Law Enforcement Vehicle Crash Characteristics**

The most recent NHTSA (2011) FARS data for law enforcement vehicles involved in fatal crashes from 1980 to 2008 shows striking similarities to the NCSDR and NHTSA joint study on drowsy driving in the civilian sector. The following information from the FARS indicates a drowsy driving epidemic in law enforcement.

From 1980 to 2008 there were a total of 772 crashes resulting in at least one law enforcement officer fatality. Of these crashes, 682 law enforcement officers were killed while inside passenger-type vehicles and 90 were driving motorcycles. A total of 823 law enforcement officers and 91 civilians were killed in these crashes. It is important to note that law enforcement officers who were killed after being struck by vehicles were not included in this data.

**Roadway Considerations**

A majority (61 percent) of fatal accidents involving law enforcement vehicles occurred while the vehicle was going straight while only 19 percent of those accidents happened while negotiating a curve. The roadway was characterized as “level” in 66 percent and as “graded” in 29 percent of these crashes. The roadway surface was considered “dry” in 78 percent of the fatal law enforcement passenger vehicle crashes, and “with no adverse atmospheric conditions” in 86 percent of the crashes. In 37 percent of the fatal law enforcement vehicle crashes evidence at the scene indicates that no attempt was made to avoid the crash.

**Primary Causations**

“Failure to keep in proper lane or running off road” was listed as the primary cause for 34 percent of the law enforcement officer fatal crashes in passenger cars, followed closely by 31 percent for “driving too fast for conditions or in excess of posted speed limit”. Pursuit of fleeing vehicles accounted for 10 percent of the fatal crashes, and only 4 percent were determined to be a direct result of inattention of the law enforcement driver.

The first property damage or injury-producing event in these fatal crashes shows that 53 percent first struck another motor vehicle while 36 percent first struck a fixed object. Rollovers accounted for 5 percent of the fatal law enforcement crashes in passenger vehicles.

**Age and Sex**

Most (36 percent) of the law enforcement officers killed in passenger vehicle crashes were between 30 and 39 years of age followed by 32 percent for 20 to 29 years of age. Given that most law enforcement officers are males, 92 percent of those killed in passenger vehicle crashes were male as were 99 percent of those killed on motorcycles.

**Time of Occurrence**

Fatal law enforcement vehicle crashes occurred more frequently between 8 p.m. to 4:59 a.m., while most happened between 11 p.m. and 1:59 a.m. The FARS data also analyzed fatal law enforcement crashes for passenger vehicles driven by law enforcement officers working eight hour shifts and found that 42 percent of these crashes occurred between midnight and 7:59 a.m. The 4 p.m. to 11:59 p.m. shift accounted for 36 percent of the fatal crashes while the 8 a.m. to 3:59 p.m. shift had 23 percent of the fatal crashes. For two rotating 12-hour shifts, as is common in Central Indiana, 67 percent of the fatal crashes by officers driving passenger cars occurred between 6 p.m. and 6 a.m. while 33 percent happened between 6 a.m. and 6 p.m.

Perhaps due in part to the common scheduling hours of officers on motorcycles, 62 percent of the fatal law enforcement motorcycle crashes happened between 8 a.m. and 3:59 p.m.

**Recommendations**

 Sleep and fatigue are basic law enforcement survival issues in the same vein as patrol tactics, firearms marksmanship, and pursuit driving. Law enforcement officers behind the wheel while sleep deprived place their fellow officers and the communities they serve at risk. Law enforcement policy-makers and first-line supervisors must make changes in order to mitigate this risk. Vila and Kenney (2002) identified the following four steps that every law enforcement agency can take to evaluate the impact of officer fatigue.

**Policies, Practices, and Scheduling**

Due to the effects of working overtime, off-duty employment, and shift scheduling; policy-makers should attempt to restrict the number of hours an officer can work in a 24 hour period. Since most healthy adults have a basal sleep need between 7 to 9 hours, a guideline restricting non-exigent work hours to 16 hours in a 24 hour period is reasonable. Agencies should also establish policies and practices to deal with officers who seem to be overly tired while on duty.

**Allowing Officer Input in Shift Scheduling**

The number of hours worked by an individual officer, as well as the time of day he or she is expected to work have a direct impact on the officer’s professional, personal, social, and family life. Excluding officers from having a voice in shift scheduling fosters stress which limits their ability to deal with fatigue.

**Assessment of Fatigue**

The quality and quantity of sleep law enforcement officers obtain may seem to be a personal issue, however it has a direct impact on the agency. As a result, agencies should assess officer fatigue and issues that arise from shift work. The National Sleep Foundation website offers free sleep quality testing, and several Canadian law enforcement agencies include sleep screening in their annual assessments of officers.

**Training**

 As a basic survival issue, sleep is rarely if ever discussed in the training of law enforcement officers. In-service training programs focused on the importance of good sleep habits, hazards of being fatigued, and strategies for managing fatigue would create awareness of these issues that is otherwise lacking.

**Conclusions**

No citizen or law enforcement administrator would stand for a law enforcement officer who is found to be intoxicated while on-duty; yet it is common for sleep deprived officers to be impaired at a level of a person who has a blood alcohol content of .08. It is imperative that the law enforcement profession recognize the safety issues presented by drowsiness and fatigue, especially as it pertains to vehicle operation. Continuing to turn a blind eye to this phenomenon will unfortunately result in the needless deaths and injuries to officers and members of the community.

**References**

Causes of law enforcement deaths. (n.d.). National Law Enforcement Officers Memorial Fund.

Retrieved from: http://www.nleomf.org/facts/officer-fatalities-data/causes.html

Cochrane, G. (2001). The effects of sleep deprivation. *Federal Bureau of Investigation Law*

 *Enforcement Bulletin, 70* (7), 22-25.

Honoring officers killed in 2013. (n.d.). Officer Down Memorial Page. Retrieved from:

 http://www.odmp.org/search/year?year=2013

How much sleep do we really need? (n.d.). National Sleep Foundation. Retrieved from:

 http://sleepfoundation.org/how-sleep-works/how-much-sleep-do-we-really-need

 Lamond, N., & Dawson D. (1999). Quantifying the performance impairment associated with

 fatigue. *Journal of Sleep Research, 8* (4), 255-262. doi: 10.1046/j.1365-

 2869.1999.00167.x

Lindsey, D. (2007). Police fatigue: An accident waiting to happen. *Federal Bureau of*

 *Investigation Law Enforcement Bulletin, 76* (8), 1-8.

National Center for Sleep Disorders Research & National Highway Traffic Safety

 Administration (1998). *Drowsy driving and automobile crashes*. (DOT HS 808 707).

 Washington, DC: U.S. Government Printing Office.

National Highway Traffic Safety Administration (2011). *Characteristics of law enforcement*

 *officers' fatalities in motor vehicle crashes.* (DOT HS 811 411). Washington, DC:

 U.S. Government Printing Office.

Rajaratnam, S.M., Barger, L.K., Lockley, S.W., Shea, S.A., Wang, W., Landrigan, C.P.,…

 Czeisler, C.A. (2011). Sleep disorders, health, and safety in police officers.

 *The Journal of the American Medical Association, 306* (23), 2567-2578. doi:

 10.1001/jama.2011.1851

Vila, B., & Kenney, D. (2002). Tired cops: The prevalence and potential consequences of police

 fatigue*. National Institute of Justice,* (248), 16-21. Retrieved from:

 https://www.ncjrs.gov/pdffiles1/jr000248d.pdf