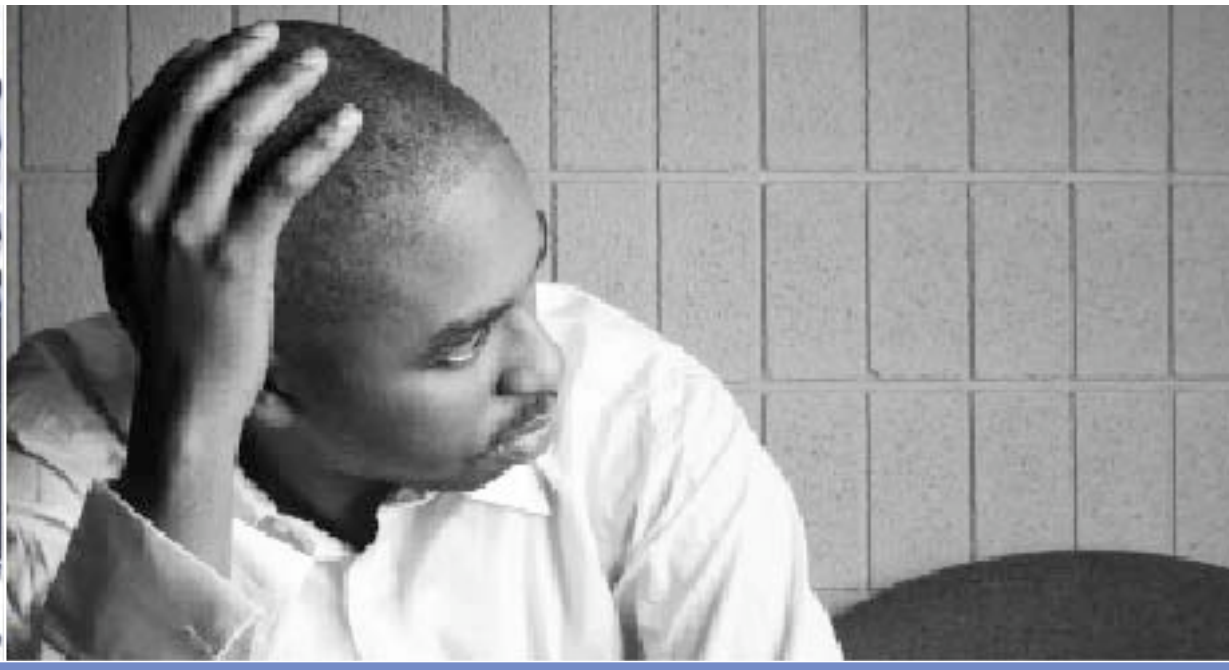

Sleep Deprivation: What Does It Mean for Public Safety Officers?

by Bryan Vila, Ph.D.

When I speak to police officers about my research on sleep, job performance and shift work, they always ask, "What's the best shift?"

I always answer, "That's the wrong question. Most shift arrangements have good and bad aspects." The right question is this: "What is the best way to manage shift work, keep our officers healthy and maintain high performance in our organization?"

Scheduling and staffing around the clock requires finding a way to balance each organization's unique needs with those of its officers. Questions like "How many hours in a row should officers work?" and "How many officers are needed on which shift?" need to be balanced against "How much time off do officers need to rest and recuperate properly?" and "What's the best way to schedule those hours to keep employees safe and performing well?"

After all, shift work interferes with normal sleep and forces people to work at unnatural times of the day when their bodies are programmed to sleep. Sleep-loss-related fatigue degrades performance, productivity and safety as well as health and well-being. Fatigue costs the U.S. economy $136 billion per year in health-related lost productivity alone.[1]

In the last decade, many managers in policing and corrections have begun to acknowledge — like their counterparts in other industries — that rotating shift work is inherently dangerous, especially when one works the graveyard shift. Managers in aviation, railroading and trucking, for example, have had mandated

hours-of-work laws for decades. And more recently they have begun to use complex mathematical models to manage fatigue-related risks.[2]

All of us experience the everyday stress associated with family life, health and finances. Most of us also feel work-related stress associated with bad supervisors, long commutes, inadequate equipment and difficult assignments. But police and corrections officers also must deal with the stresses of working shifts, witnessing or experiencing trauma, and managing dangerous confrontations.

My colleague, John Violanti, Ph.D., a 23-year veteran of the New York State Police, is currently a professor in the Department of Social and Preventive Medicine at the University at Buffalo and an instructor with the Law Enforcement Wellness Association. His research shows that law enforcement officers are dying earlier than they should. The average age of death for police officers in his 40-year study was 66 years of age — a full 10 years sooner than the norm.[3]

He and other researchers also found that police officers were much more likely than the general public to have higher-than-recommended cholesterol levels, higher-than-average pulse rates and diastolic blood pressure,[4] and much higher prevalence of sleep disorders.[5]

So what can we do to make police work healthier? Many things. One of the most effective strategies is to get enough sleep. It sounds simple, but it is not. More than half of police officers fail to get adequate rest, and they have 44 percent higher levels of obstructive sleep apnea than the general public. (See "What is Sleep Apnea?" page 28.) More than 90 percent report being routinely fatigued, and 85 percent report driving while drowsy.[6]

Sleep deprivation is dangerous. Researchers have shown that being awake for 19 hours produces impairments that are comparable to having a blood alcohol concentration (BAC) of .05 percent. Being awake for 24 hours is comparable to having a BAC of roughly .10 percent.[7] This means that in just five hours — the difference between going without sleep for 19 hours versus 24 hours — the impact essentially doubles. (It should be noted that, in all 50 states and the District of Columbia, it is a crime to drive with a BAC of .08 percent or above.)

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If you work a 10-hour shift, then attend court, then pick up your kids from school, drive home (hoping you do not fall asleep at the wheel), catch a couple hours of sleep, then get up and go back to work — and you do this for a week — you may be driving your patrol car while just as impaired as the last person you arrested for DUI.

Bars and taverns are legally liable for serving too many drinks to people who then drive, have an accident and kill someone. There is recent precedent for trucking companies and other employers being held responsible for drivers who cause accidents after working longer than permitted. It seems very likely that police departments eventually will be held responsible if an officer causes a death because he was too tired to drive home safely.

Sleep and fatigue are basic survival issues, just like patrol tactics, firearms safety and pursuit driving. To reduce risks, stay alive and keep healthy, officers and their managers have to work together to manage fatigue. Too-tired cops put themselves, their fellow officers and the communities they serve at risk.

WHAT IS SLEEP APNEA?

"Apnea" refers to a breathing pause that lasts at least 10 seconds. Obstructive sleep apnea occurs when the muscles in the back of the throat fail to keep the airway open, despite efforts to breathe.

More than 18 million American adults have sleep apnea, according to the Sleep Foundation. Ongoing sleep research involving police officers is expected to give us a better understanding of the situation among this group.

Symptoms: Snoring during sleep, drowsiness and fatigue during awake times, difficulty concentrating, depression, irritability, sexual dysfunction, learning and memory difficulties.

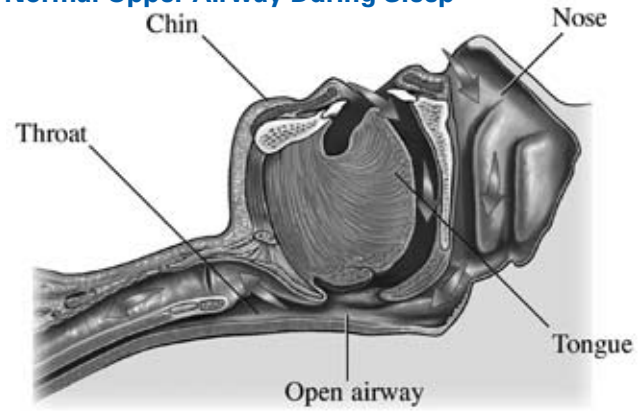
Consequences: High blood pressure, heart attack, stroke, depression and car crashes.

Risk factors: Being overweight, being older than 40 years of age, having a large neck size (for men, a large neck size is 17 or larger), smoking cigarettes and using alcohol. Research seems to indicate that apnea runs in families.

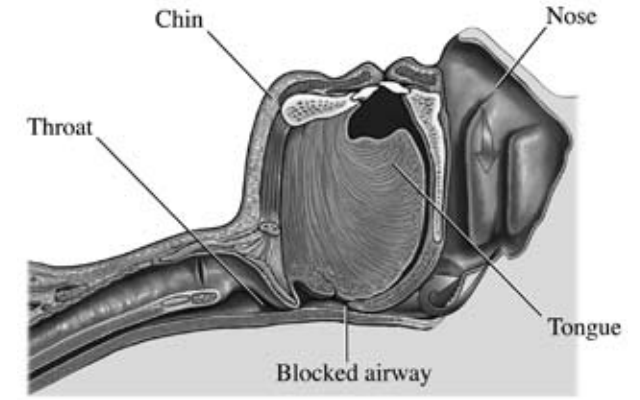
Treatment: The most common treatment is the use of a continuous positive airway pressure device mask worn during sleep. Some cases may be treated with a dental appliance. Lifestyle changes can also be highly effective: lose weight, avoid alcohol and quit smoking.

Learn more at www.sleepfoundation.org.

Normal Upper Airway During Sleep



Obstructive Sleep Apnea: Blocked Upper Airway



Accidental Deaths and Fatigue

The number of police officer deaths from both felonious assaults and accidents has decreased in recent years. Contrary to what most people might think, however, more officers die as a result of accidents than criminal assaults. (See "Police Officer Deaths in the United States, 1980–2007," page 29). Ninety-one percent of accidental deaths are caused by car crashes, being hit by vehicles while on foot, aircraft accidents, falls or jumping. (See "Police Officer On-the-Job Injuries and Deaths," page 29.)

We know that the rate of these accidents increases with lack of sleep and time of day. Researchers have shown that the risk increases considerably after a person has been on duty nine hours or more. After 10 hours on duty, the risk increases by approximately 90 percent; after 12 hours, 110 percent.[8] The night shift has the greatest risk for accidents; they are almost three times more likely to happen during the night shift than the morning shift.

Countering Fatigue

Researchers who study officer stress, sleep and performance have a number of techniques to counteract sleep deprivation and stress. They fall into two types:

- Things managers can do.
- Things officers can do.

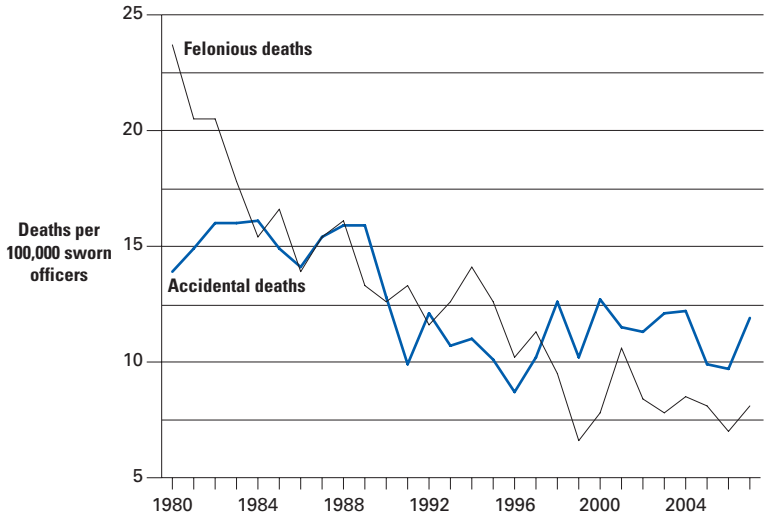
The practices listed below have been well received by departments that recognize that a tired cop is a danger both to himself and to the public.

Things Managers Can Do

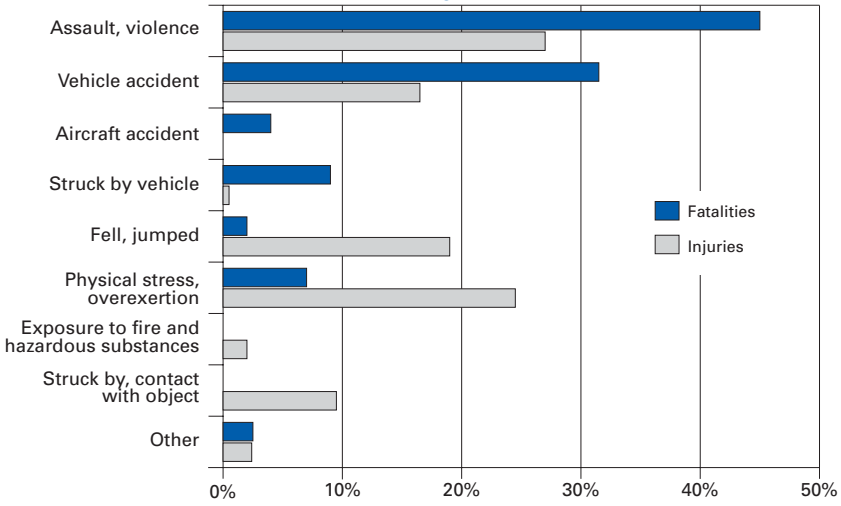
- Review policies that affect overtime, moonlighting and the number of consecutive hours a person can work. Make sure the policies keep shift rotation to a minimum and give officers adequate rest time. The Albuquerque (N.M.) Police Department, for example, prohibits officers from working more than 16 hours a day and limits overtime to 20 hours per week. This practice earned the Albuquerque team the Healthy Sleep Capital award from the National Sleep Foundation.
- Give officers a voice in decisions related to their work hours and shift scheduling. People's work hours affect every aspect of their lives. Increasing the amount of control and predictability in one's life improves a host of psychological and physical characteristics, including job satisfaction.
- Formally assess the level of fatigue officers experience, the quality of their sleep and how tired they are while on the job, as well as their attitudes toward fatigue and work hours issues. Strategies include: administering sleep quality tests like those available on the National Sleep Foundation's Web site (www.sleepfoundation.org), and training supervisors to be alert for signs that officers are overly tired (for example, falling asleep during a watch briefing) and on how to deal with those who are too fatigued to work safely.

  Several Canadian police departments are including sleep screening in officers' annual assessments — something that every department should consider.
- Create a culture in which officers receive adequate information about the importance of good sleep habits, the hazards associated with fatigue and shift work, and strategies for managing them. For example, the Seattle Police Department has scheduled an all-day fatigue countermeasures training course for every sergeant, lieutenant and captain. In the Calgary Police Service, management and union leaders are conducting a long-term, research-based program to find the best shift and scheduling arrangements and to change cultural attitudes about sleep and fatigue.

Police Officer Deaths in the United States, 1980–2007



Police Officer On-the-Job Injuries and Deaths*



*Adapted from Houser, A.N., B.A. Jackson, J.T. Bartis, and D.J. Peterson, *Emergency Responder Injuries and Fatalities: An Analysis of Surveillance Data,* Santa Monica, CA: RAND, March 2004, available at www.rand.org/pubs/technical_reports/2005/RAND_TR100.pdf.

Things Officers Can Do

- Stay physically fit: Get enough exercise, maintain a healthy body weight, eat several fruits and vegetables a day, and stop smoking.

- Learn to use caffeine effectively by restricting routine intake to the equivalent of one or two eight-ounce cups of coffee a day. When you need to combat drowsiness, drink only one cup every hour or two; stop doses well before bedtime.[9]
- Exercise proper sleep hygiene. In other words, do everything possible to get seven or more hours of sleep every day. For example, go to sleep at the same time every day as much as possible; avoid alcohol just before bedtime; use room darkening curtains; make your bedroom a place for sleep, not for doing work or watching TV. Do not just doze off in an easy chair or on the sofa with the television on.
- If you have not been able to get enough sleep, try to take a nap before your shift. Done properly, a 20-minute catnap is proven to improve performance, elevate mood and increase creativity.
- If you are frequently fatigued, drowsy, snore or have a large build, ask your doctor to check you for sleep apnea. Because many physicians have little training in sleep issues, it is a good idea to see someone who specializes in sleep medicine.

NCJ 225762

For More Information

- Ackerman, J., and J. Zarracina, "How to Nap," *Boston Globe,* available at www.boston.com/bostonglobe/ideas/naps.
- The National Sleep Foundation has tips and toolkits for healthy sleep at www.sleepfoundation.org.
- Sleep and Performance Research Center at Washington State University Spokane: www.spokane.wsu.edu/researchoutreach/sleep.
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About the Author

Bryan Vila is a professor of criminal justice at Washington State University Spokane and director of the Critical Job Tasks Simulation Laboratory in the Sleep and Performance Research Center. Vila served as a law enforcement officer for 17 years. He has authored numerous research articles and four books, including *Tired Cops: The Importance of Managing Police Fatigue.*

Notes

1. Ricci, J.A., E. Chee, A.L. Lorandeau, and J. Berger, "Fatigue in the U.S. Workforce: Prevalence and Implications for Lost Productive Work Time," *Journal of Occupational and Environmental Medicine* 49 (1) (2007): 1–10.
2. U.S. Department of Transportation/Federal Railroad Administration, *Validation and Calibration of a Fatigue Assessment Tool for Railroad Work Schedules,* Summary Report (2006) (DOT/FRA/ORD-06/21), available at www.fra.dot.gov/downloads/research/ord0621.pdf.
3. "Dying for the Job," in *Policing and Stress,* ed. H. Copes and M.L. Dantzker, Upper Saddle River, NJ: Pearson Prentice Hall, 2005: 87–102.
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7. Dawson, D., and K. Reid, "Fatigue, Alcohol and Performance Impairment," *Nature* 388 (July 17, 1997): 235.
8. Folkard, S., and D.A. Lombardi, "Modeling the Impact of the Components of Long Work Hours on Injuries and 'Accidents,'" *American Journal of Industrial Medicine* 49 (11) (November 2006): 953–963.
9. Wesensten, N.J., "Pharmacological Management of Performance Deficits Resulting From Sleep Loss and Circadian Desynchrony," in *Principles and Practice of Sleep Medicine,* 5th ed., ed. M.H. Kryger, T. Roth, and W.C. Dement, Philadelphia: Elsevier Saunders, forthcoming: Chapter 73.

WAYS TO AVOID SLEEP DEPRIVATION

by Charles H. Samuels, MD, CCFP, DABSM

This excerpt is from Inside Source, *the newsletter of the Calgary Police Service (Volume 4, Issue 4, May/June 2005).*

Humans require six to eight hours of sleep every 24 hours to restore memory and concentration, physical and emotional function. People have individual needs for amount of sleep and their own circadian sleep phase (the timing of their sleep rhythms).

Humans are also diurnal mammals, which means they prefer to be awake in the day and asleep at night. Day sleep has been clearly shown to be shorter and less efficient than night sleep. One's resistance to sleep deprivation is a function of age, environmental distraction, and internal or external stimulation. As we age (usually as we enter the mid-40s), we become less able to tolerate the effects of acute and chronic sleep deprivation.

Substantial research from NASA and the U.S. military in both acute and chronic sleep deprivation protocols has established that there is a significant impairment in cognitive function following 15 to 17 hours of sustained wakefulness.

Shift work imposes a state of both acute and chronic sleep deprivation as well as chronic circadian dysrhythmia (a disruption of the body's biological clock that may feel like jet lag). Being deprived of sleep has a serious negative effect on police performance, which requires a high level of alertness and attention.

Shift workers can take action to avoid incurring additional sleep debt, above and beyond the debt imposed by the nature of shift work.

The adage "Protect Your Sleep" is the fundamental cornerstone of successfully managing the impact of shift work on the patrol officer.

How to protect your sleep:

1. **Determine how much sleep you need** to feel well rested on a daily basis. Multiply that number by 7. The resulting number is the amount of sleep you need per week.
2. **Determine how much sleep you get.** Add up the total amount of sleep you get on day/afternoon/evening shifts per week and night shift per week. Then determine your sleep debt in each situation by subtracting those numbers from your sleep need.
3. **Focus on minimizing your total sleep debt** by taking the following actions:
   a. Improve your day sleep environment.
   b. Catch up on your sleep on your days off.
   c. Learn to catnap.
   d. Sleep longer during the day when you have a night rotation or tour of duty.
4. **Give yourself a quiet, completely dark, comfortable day-sleep environment** with no distractions.
5. **Try to get two three- to four-hour blocks of sleep** during the day when you work the night shift.
6. **Learn to catnap.** Take a short 20–30 minutes of time with eyes closed, situated in a comfortable and resting position. You do not have to sleep to get the benefit of a catnap.

Remember: The treatment for sleepiness and fatigue is SLEEP!

About the Author

Charles Samuels is the medical director at the Centre for Sleep and Human Performance in Calgary, Alberta, and a clinical assistant professor at the University of Calgary, Faculty of Medicine.