

## **If You've Ever Said, "This Shift is Killing Me"**

Let's face it. Whether you work combined police/fire, police separate from fire/EMS, single jurisdiction, multiple, regional...you've had killer shifts. From someone whose agency staffs eight crew members and a duty captain...all of whom can be tied up with one incident (and there's *\*never\** just one incident at that point because Murphy comes to every party)... I *get* that everyone has killer shifts.

That said, if you're working overnights on a regular basis, or "rapidly rotating shifts" where you go days to overnights in the same week, the scientific news isn't good.

I'm writing this for a couple of reasons. I keep harping on how important it is for us to take care of ourselves and reading the science brings this more sharply into focus. The other reason is, given the real health and public safety risks involved with this scheduling, I think it's time for the industry to re-examine its scheduling practices. This is the first in a series of three columns. I'm going to present scientific findings around sleep and circadian rhythm disruption, then devote a column to thoughts on risk and policy, followed by a column with ideas to help offset the health issues related to the schedules required by our jobs.

I've been on a rapidly rotating shift for over two years (2x12 days, 2x12 overnights) and am noticing a nagging feeling of tiredness that never really goes away, less patience with minor irritations, an increase in the inability to find the right word in conversation, forgetfulness at home, and...bonus... my doctor has delivered the news that my blood sugar is at a pre-diabetic level despite there being no history in my family.

Interestingly, these effects of doing shift work are what sent Dr. John Violanti, then a New York State Trooper, into the world of epidemiological research: "About six or seven years in I decided to get some education. Especially after working three different shifts in the same week on a regular basis. It was terrible," Dr. Violanti said, "...feeling tired all the time, burning the candle at both ends with family responsibility, being a young person thinking sleep wasn't important. It all adds up to fatigue."

As a researcher with the University of Buffalo, he's studied the effects of working "midnights" on police officers. His findings show troopers who steadily work overnight shifts have the highest rate of metabolic syndrome as well as suffering from circadian rhythm disruption. Okay, you say, but what does that really mean?

Metabolic syndrome is a collection of one or more diseases in the body: obesity, high blood pressure, diabetes, heart disease, insulin resistance. Metabolic syndrome is shown to be related to sedentary lifestyle including sitting at work as well as being related to the type of shift you work.

Circadian rhythm disruption (CRD) means you've somehow become misaligned with the wake/sleep cycle humans evolved to follow: awake during the day, asleep at night. Your circadian rhythm controls hormonal and brain chemical releases as well as determining optimal times to eat and ingest medications. CRD manifests as a loss of cognitive ability, tendency to

microsleep (where someone doesn't even \*realize\* they've been sleeping), can have an adverse affect on chronic disease like asthma, as well as smaller brain volume in the brain's memory centers. CRD is also linked to metabolic syndrome.

[<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1991337/>]

As Dr. Violanti points out, *tired people tend to make more mistakes*: "Look, if you *can't think straight because of fatigue the public is at risk, [law enforcement officers] and firefighters out there are at risk. **The effects of CRD on the brain are devastating.***"

A study published in 2014 by the Institute of Occupational and Environmental Medicine bears this out. You've seen the headline: "Dementia Like Brain Damage in Shift Workers." That one caught my eye. How'd they get *that* data? In reality, no one is dissecting deceased dispatcher brains to get to this conclusion. People were tested for speed and memory ability. And while the study involved only individuals who did shift work defined as night shifts, it clearly showed *those individuals had impaired cognitive function* when tested. Those who did shift work for over ten years had the *worst* results showing the equivalent of over six years of age-related decline in brain function. In other words, their brains were six years older than their chronological age. The study concluded *"shift work chronically impairs cognition, with potentially important safety consequences not only for the individuals concerned, but also for society."* One of the positive things that came out of that study is the information that the *brain can recover* from the effects of shift work, although *it will take five years*.

[<https://www.sciencedaily.com/releases/2014/11/141103192034.htm>]

When I asked Dr. Charmane Eastman, a researcher with the Biological Rhythms Lab at Rush University Medical Center, whether the *body* could recover from the physical effects of shift work, she said, *"...it is possible to partially adapt to permanent night shifts and permanent early morning shifts [as they]...have less circadian misalignment. **This type of adaptation is not possible with rapidly rotating shifts.**"* Specific to risk of disease related to shift work? Dr. Eastman told me, "It depends on how long [someone] worked nights. *Since night work increases the risk of many diseases, especially cancer, diabetes, and cardiovascular disease, once the disease takes hold, it may be difficult to cure.*"

There's also research that indicates the amygdala, the brain area that regulates emotional response, becomes more sensitive to negative images when someone is sleep deprived. In other words, if someone is sleep deprived, then they might feel worse when exposed to negative situations than they would if they'd had enough sleep. [[http://www.cell.com/current-biology/fulltext/S0960-9822\(07\)01783-6](http://www.cell.com/current-biology/fulltext/S0960-9822(07)01783-6)]

Where does this leave us, as a community? It would appear many of us are at high risk of being chronically cognitively impaired and physically sick on the job...if we aren't already. I'd suggest the impact of scheduling on our ability to think and on our physical health poses a public safety risk. For both the public we serve *and* our responders.

Since modern study of sleep and sleep/circadian disruption has been around at least since the 1980s, why are agencies continuing to schedule in ways that promote higher risk to the public, their communications people and their responders? It's a question I'll explore in the next column.