FALLING ASLEEP AT A VERY LARGE WHEEL

by Steven Grenard RRT, RPSGT

According to the U.S. National Commission on Sleep Disorders, using 1988 as a benchmark, the cost of motor vehicle accidents caused by drowsy drivers was $37.9 billion. In the public transportation sector, sleep related accidents cost $720 million and work related accidents due to sleepiness rang up another $13.4 billion. Adding in the cost of accidents at home due to sleepiness the grand total was $56 billion. There were 24,318 deaths as a result of sleepiness and nearly 2.5 million disabling injuries. Over 29 million work days were lost as a result of such accidents. And catastrophes such as those that befell the Exxon Valdez, the Challenger, and the nuclear accidents at Cherynobl, Three Mile Island and Peach Bottom all revealed that the events were associated with sleep deficits on the part of personnel involved. Although many causes have been advanced for these accidents, none of investigators seemed too interested in holding undiagnosed (and therefore un-treated) obstructive sleep apnea out as a cause of the sleepiness that results in personnel who tend to fall asleep during critical operations. Why not?

Topping the list of the usual suspects is the use of medications: prescribed, legal OTC, illegal and alcohol. Being intoxicated by alcohol or drugs COULD certainly be the cause. In fact, medications were cited as the chief cause of one of New York City's worst public transportation accidents when, on October 15, 2003, the Staten Island Ferry Andrew J. Barbieri on its regular run from Manhattan to Staten Island crashed into a concrete maintenance pier, killing 11 passengers and seriously injuring and maiming many more. The Assistant Captain, Richard Smith, who was at the wheel during docking, tested negative for alcohol and narcotics but it was later revealed that he was fatigued that day, and had used blood pressure pills (Triamterene), the pain killer Tramadol (for back pain) and Ambien for insomnia, this last presumably the night before. Smith also took diphenylhydramine which is used for allergies as well as an OTC sleeping aid. Smith says he "blacked out" thus setting into motion the conditions which led to the accident. It is not clear how long he was "slumped over" the wheel, but descriptions suggest "blacked out" and loss of consciousness were headline grabbing euphemisms for, well, falling asleep.

Smith was recently sentenced to a prison term of 18 months for his involvement in this tragedy. The United States Attorney (nor anyone else) considered the possibility that Mr. Smith may've been suffering from OSA. His photo accompanies this article and it is being published without comment. Judge for yourselves. Also take a gander at the government's statement at: www.usdoj.gov/usao/nye/pr/2004aug04.htm.

And if Smith didn't complain of: heavy snoring, frequent waking up to urinate at night, trouble breathing while asleep causing him to wake up, along with generalized excessive daytime sleepiness then it would have been unlikely for his doctor to send him to be tested for sleep apnea, thus precluding the possibility of treatment for a condition which in this man's occupation could and did cost lives. And anyone with excessive daytime sleepiness due to OSA certainly will have their sleepiness exacerbated significantly by his otherwise properly prescribed medications. The lesson to be learned here is that in spite of all the cajoling and publicity given to OSA the sleep medicine community needs to do more. Smith has accepted his guilt in a statement to the court, confessing he was overly fatigued and admitting he should have called in sick rather than risk doing his job that day. But if Smith does have OSA he was the proverbial accident waiting to happen, if not that day, some other day. But is it his fault he didn't think well enough of his sleepiness to complain to his doctor about it? And if he did have the other symptoms, did he know enough to mention them or seek out additional help? Evidently not.

To their credit the medical department of the Metropolitan Transit Authority (NYC) flags employees who drive buses and operate trains (conductors and engineers) and have had prior diagnoses of OSA being treated by CPAP. These employees, some of whom grouse about it but do it anyway (it's their job) are required to undergo all night CPAP PSGs followed by MWTs and are expected to pass in order to stay in their job classifications. However, in a cursory review of medical questionnaires for many critical occupations obstructive sleep apnea does not appear even as a check off option, thus effectively preventing employees and patients alike from even thinking about the possibility that they may have this condition and then bringing it to their doctor's attention. So the first suggestion is that all forms used in doctor's offices, clinics and employee health services contain a check off for this condition. The following questions should also be asked:

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Have you been told you stop breathing during sleep? Do you experience excessive sleepiness when you should be awake? Do you wake up frequently during sleep short of breath or to urinate? Do you snore? What is your neck size? Have you been tested positive for sleep apnea? How has it been treated? Has the treatment corrected your inappropriate sleepiness?

Even a single yes to any of these simple questions should trigger a referral to a sleep specialist or to a sleep center either for testing or for follow-up to assure therapy is continuing and remains effective if answer to #7 is No.

Could a change in the H&P paperwork given out in doctor's offices and by employee health services engender an improvement in the numbers of patients who are suspected of OSA? And if not, national organizations and researchers need to find the answer. And if the answer is yes, then a way needs to be found in order to make this happen. Should agencies that certify fitness for licensing personnel in critical occupations such as the Coast Guard for boat captains or the FAA for pilots do likewise?

And the armed forces themselves? How many tragic accidents occur during military operations and training due to EDS from undiagnosed/untreated OSA? Should such critical occupational licensors/certifiers require PSGS and MWTS as part of the physical? If the answers to the first 5 questions above are Yes, then they should.

But this humble essay is not going to acquire the real estate for sleep disorders on a doctor's or other health questionnaire. But perhaps some one or more persons reading this can by making copies of this article and the vast amount of literature on this subject and give it to their congressmen and senators. All that is being accomplished is for lives to be saved. It's a start.

Respiratory Text Review... *Continued from previous page*

us who appreciate reading the history of our modern-day conveniences, this section is delightful reading. It is especially valuable because it also contains first-hand accounts of the early development of capnography by two of the field's pioneers.

Part 4 closes the book with 5 final chapters on Technological Perspectives. While capnography is the measurement of carbon dioxide, what physical means and principles are applied to actually detect and quantify carbon dioxide gas? What are the physical properties of carbon dioxide and which of them can we exploit for its measurement? How are these means accomplished? Specifically, how does infrared absorption operate? What are the characteristics of an infrared detector and how is it embodied in a capnograph? What other methods might suffice: photoacoustic spectroscopy, colorimetry, or mass spectrometry? How do mainstream and sidestream capnography compare? Answers to these questions are the basis for these chapters.

This is an extremely comprehensive book covering a large variety of capnography related issues in depth and detail. Who, then, is this book written for? Is it the anesthesiologist predominately concerned with assessment of alveolar ventilation during surgery, the critical care physician who would like to use a non-invasive approach to monitor ventilator patients and receive an early warning of impending status change? Or maybe the respiratory therapist who, at one point, uses a form of capnography to assess the patient who has just been intubated and, at another point uses volumetric capnography to determine if a ventilator patient may attempt weaning? The book will not appeal to everyone but it would be an exceptionally valuable and comprehensive resource for the intensivist, anesthesiologist, pulmonary physiologist or therapist interested in all aspects of the field of capnography. I recommend it in particular to RT education programs as a reference.