

## Editorials

## Serious motor vehicle crashes: the cost of untreated sleep apnoea

L J Findley, P M Suratt

Motor vehicle crashes are the leading cause of injury morbidity and mortality in the United States, accounting for more than 40 000 deaths and 6 million injuries every year.<sup>1</sup> Sleep related accidents comprise 15–20% of all motor vehicle crashes and result in thousands of serious injuries and death.<sup>2</sup> Many of these sleep related accidents could be prevented by treatment of sleep related respiratory disorders.

Sleep apnoea is a common problem and affects at least 4% of working men and 2% of women; it has been reported to occur in 5% of commercial drivers.<sup>3,4</sup> Unfortunately, more than 80% of people with sleep apnoea have not yet been diagnosed or treated. Sleep apnoea severely disrupts sleep and causes daytime sleepiness and inattentiveness, as well as cognitive impairment, poor performance on driving simulators, and a motor vehicle crash rate that is 2–4 times higher than normal.<sup>4</sup> Recent studies have documented that patients with sleep apnoea report a high rate of accidents at home and at work.<sup>5</sup>

Two recent studies have shown a very important benefit of treating sleep apnoea. Findley showed a marked reduction in objective reports of motor vehicle crashes over 2 years in 36 subjects with sleep apnoea treated with continuous positive airway pressure (CPAP)<sup>6</sup> while, in contrast, the crash rate did not fall in 14 subjects with sleep apnoea who did not accept treatment. This study found that successful treatment of sleep apnoea prevented five motor vehicle crashes in 36 patients during 2 years of treatment (a decrease of 0.07 crash/driver per year). These state reported crashes were serious “at fault crashes”. The driver was given a traffic violation citation and caused property damage and/or personal injury. In a larger group of patients with sleep apnoea George, in this issue of *Thorax*, confirms that those who are treated with nasal CPAP have a decrease in objectively measured vehicle crashes.<sup>7</sup> This study found that successful treatment of sleep apnoea with nasal CPAP prevented 75 motor vehicle crashes in 210 patients during 3 years of treatment (a decrease of 0.12 crash/driver per year). These were also serious crashes resulting in property damage and/or personal injury, although they were not necessarily “at fault crashes” since all drivers did not receive a citation for a traffic violation.

Using data from the above two studies, one can roughly estimate the number of motor vehicle crashes prevented by successfully treating patients with serious sleep apnoea in the USA. Treating 500 patients for 3 years would prevent 180 serious crashes (105 with the driver at fault). Since about 20% of reported crashes result in serious personal injury, 36 injuries will be prevented. The prevention of 180 serious crashes and 36 serious injuries would save about US\$369 000 in direct property damage and medical

expenses, and US\$648 000 in lost wages, legal expenses, and administrative costs of insurance companies and government.<sup>1</sup> The total economic savings of treating 500 patients for 3 years would exceed US\$1 000 000.

Preventing these accidents is important since crashes caused by falling asleep are likely to be serious. They often take place on highways where speed limits are high and involve a driver in a vehicle that leaves the road and hits another vehicle or object at high speed.<sup>8</sup> These serious crashes pose a great danger to the driver with untreated sleep apnoea and to all other drivers and passengers on the highways. It is difficult to estimate the number of drivers with sleep apnoea and other travellers who may die each year in motor vehicle accidents as a result of sleep apnoea. Since one traffic fatality occurs for every 810 motor vehicle collisions reported,<sup>1</sup> there is at least a 20% chance that treating 500 patients for 3 years would prevent a fatality.

Preventing serious motor vehicle crashes by treating sleep apnoea is beneficial to everyone. For drivers with sleep apnoea and those they injure it avoids injury and death and loss of wages and property. For insurance companies and employers it eliminates the economic consequences of these problems. Unfortunately some government agencies and insurance companies have arbitrary and shortsighted policies which limit treatment for people with sleep apnoea. These obstacles, like dangerous objects on a highway, may contribute to serious and costly motor vehicle crashes.

L J FINDLEY

*Sleep Disorders Center of Northern Colorado,  
Aspen Medical Center,  
1808 Boise Avenue,  
Loveland, CO 80538, USA*

P M SURATT

*Pulmonary Division,  
Department of Internal Medicine,  
University of Virginia Medical Center,  
Charlottesville, VA, USA*

- 1 US Census Bureau. *Statistical Abstract of the United States*. 119th edn. Washington, DC: 1999, No. 225 (page 146) and No. 1041 (page 645).
- 2 Horne J, Reyner L. Sleep related vehicle accidents. *BMJ* 1995;310:565–7.
- 3 Young T, Blustein J, Finn L, *et al.* Sleep-disordered breathing and motor vehicle accidents in a population-based sample of employed adults. *Sleep* 1997;20:608–13.
- 4 Strohl K, Bonnie R, Findley L, *et al.* Sleep apnea, sleepiness, and driving risk. *Am J Respir Crit Care Med* 1994;150:1463–73.
- 5 Krieger J, Meslier N, Lebrun T, *et al.* Accidents in obstructive sleep apnea patients treated with nasal continuous positive airway pressure. *Chest* 1997;112:1561–6.
- 6 Findley L, Smith C, Hooper J, *et al.* Treatment with nasal CPAP decreases automobile accidents in patients with sleep apnea. *Am J Respir Crit Care Med* 2000;161:857–9.
- 7 George C. Reduction in motor vehicle collisions following treatment of sleep apnoea with nasal CPAP. *Thorax* 2001;56:508–12.
- 8 Parsons M. Fits and other causes of loss of consciousness while driving. *Q J Med* 1986;227:295–303.