

BUS OPERATOR HEALTH ISSUES: A GUIDE FOR PHYSICIANS.

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Definitions in parentheses have been added for the layperson.

This page is intended to be cut out and given to bus drivers' doctors. Compiled by the union out of concern about the job's many health hazards, it is a set of summaries of studies conducted by medical researchers.

BACK DISORDERS

The percentages of bus drivers experiencing pain in the lumbar, cervical and thoracic regions of the spine were 66.4, 50.8 and 28.1 percent respectively. The percentages of comparisons experiencing pain in the regions were 44.8, 26.9 and 10.4 percent respectively. The author concludes that the higher prevalence of spinal problems can be attributed to biomechanical stresses associated with turning to the left while driving and to the right while loading and unloading passengers. *Anderson, R. 1992. Back Pain of Bus Drivers, Spine, 17:12.*

Bus drivers experience low back pain more frequently than the referents. Bus drivers with exposures to whole body vibration of more than 4.5 years exhibited significantly more LBP (low back pain) symptoms. *Bovini, M. et al 1992. Low Back Pain Symptoms of Bus Drivers, Spine 17:1048-1059.*

Significantly higher rates of degenerative disorders of the spine, herniated discs and low back pain were found among drivers. Vibrations between 8-10 Hertz caused higher risks than currently thought. The authors conclude that health effects of occupational exposure occur at levels below those indicated by the present standards and propose a lower limit. *Bongers, P. et al 1992. Back Disorders & Whole-Body Vibration, Clinical Biomechanics, 7:185-186.*

BENZENE TOXICITY

The authors conclude that this population of bus drivers is occupationally exposed to low but not negligible concentrations of benzene. The group may be at increased risk for benzene toxicity, including hemotoxic effects. *Gobba, F. et al 1997. Variability of Benzene Metabolism, Science of the Total Environment, 199: 41-48.*

BRAIN TUMORS

Odds ratios for brain tumors showed significant increased risk for those employed as drivers (Odds ratio 2.8). Authors conclude that there is an increased risk of developing brain tumors. *Kaplan, S. et al 1997. Occupational Risks for the Development of Brain Tumors, Journal of Medicine, 31:15-30.*

CANCER

Highly significant excess rates of lung cancer, stomach cancer and rectal cancer were found among Geneva's professional drivers. *Guberan, E. et al 1992. Increased Risk for Cancer, British Journal of Industrial Medicine, 49:337-344.*

The incidence of cancer among urban bus drivers in Denmark was investigated. Standardized morbidity ratio for bladder and skin cancer significantly elevated among bus drivers. *Netterstrom, B. 1998. International Archives of Occupational and Environmental Health. 61:217-221.*

The authors concluded that there is an increased risk of bladder cancer among employees in the bus, truck and taxi service industries. *Jensen, O. et al 1987. Bladder Cancer, Scandinavian Journal of Work..., 13:129-134.*

Increased traffic density in urban areas leads to carbon monoxide exposure that is two to three times higher than non-traffic environments. Study of over 37,000 men and 2251 urban drivers showed they had an excess risk of 31-64 percent for socioeconomic factors. Smoking rates were deemed equal across the test subjects. *Hansen, J., et al 1998. increased risk of lung cancer among different types of professional drivers in Denmark. Occupational Environmental Medicine 55:115-118.*

DIABETES MELLITUS – NON-INSULIN DEPENDENT

Study group consisted of managers, technical personnel clerical workers and drivers. The highest incidence of NIDDM occurred among transport workers, 8.7%, followed by clerical workers, 5.4%. They suggest that NIDDM be considered a work-related disease. *Morikawa, Y. et al 1997. Development of Non-insulin Dependent Diabetes Mellitus, American Journal of Industrial Medicine, 31:80-84.*

GENERAL HEALTH

The incidence of musculoskeletal disabilities among different occupations was examined in order to obtain a ranking of occupations with high and low levels of functional disability. High disability occupations were bus drivers and farm workers. *Leigh, J. et al 1992. Disability in Occupations, American Journal of Public Health, 82:1517-1524.*

Disproportionate mortality ratios (PMRs) for lung cancer, hematological and myelogenous (Produced by or originating in the [bone marrow](#)). cancers, chronic obstructive pulmonary disease, genitourinary disorders and suicide were seen in excesses, over 125, while suicide PMR was 186.2. *Guidotti, T. 1992. Morbidity, Occupational Medicine, 42:125-128.*

Evidence seems to implicate whole body vibration as a factor in the development of certain occupational diseases of bus drivers among which are a number of venous, bowel, respiratory, muscular and back disorders. Such Disorders include varicose veins, varicocele (A varicose condition of veins of the spermatic cord or the ovaries, forming a soft tumor.), hemorrhoids, diverticulosis (an intestinal condition characterized by the presence of [diverticula](#) in the colon that is typically symptomless but may be marked by symptoms as bleeding or constipation), appendicitis, inguinal hernia (of or located in the

groin), displacement of intervertebral disc, ankylosis (The stiffening or immobility of a joint resulting from disease, trauma, surgery, or bone fusion) of the spine and vertebrogenic (arising in a vertebra or in the vertebral column) pain syndrome. *Gruber, G. et al 1974. Musculoskeletal system, NIOSH, 75:1-72.*

Bus drivers who had to leave their job for medical reasons did so at a younger age than other groups of civil servants. The main conditions resulting in disability; related to the back, tendons and joints (35%), mental disorders (35%), and cardiovascular diseases (12%). The authors state that driving city buses appears to be an occupation with high risks for poor health and well-being. *Kompier, M. et al 1990. General Morbidity, Work and Stress 4:83-89.*

Drivers with less than 30 years of experience exhibited 23 and 26 percent higher incidence of circulatory system and ischemic heart disease, respectively. These excesses were even greater for drivers with less than 15 years of experience. Similar results were also noted for respiratory and lung cancers which were determined to be 19% more common. *Paradis, G, et al 1989. General Morbidity, International Journal of Epidemiology, 18:397-402.*

Two health-records studies sponsored by NIOSH report bus drivers are more susceptible to varicose veins, diverticulosis, appendicitis and inguinal hernias. *Wasserman, D. 1976. General Morbidity, International Journal of Occupational Health and Safety, pp.19-21.*

Twenty-two epidemiological studies that investigated the health of urban bus drivers were reviewed. These have consistently shown an increased prevalence of cardiovascular disease mortality and morbidity and gastrointestinal and musculoskeletal problems among bus driver compared to workers in other occupations. *Balarajan, R. et al 1988. General Morbidity, British Journal of Industrial Medicine, 45: 482-486.*

Ten illness factors were evaluated representing specific symptom clusters: musculoskeletal, distress, upper gastrointestinal tract, psychosomatic, cardiovascular, respiratory, auditory, head and renal. The authors conclude that among operators, jobs perceived to be high stress are predictive of highest morbidity. A significant correlation was found between the degrees of occupational stress in all of the listed illnesses except renal illness. *Borthwic, K.et al 1986. General Morbidity, Trends in Ergonomics of Work, 1:151-160.*

Results of the health inquiry showed the most common ailment to be shoulder and back pain in about 70% of the drivers. About 40% had back trouble, 20% had hypertension and 8% had gastric ulcers. Dyspepsia and stomach ache were also found in about 35% of the drivers. Pathologic changes occurred in 60 percent of the participants, with visual defects found in 43% and hearing defects found in 13%. *Backman, A., 1983. General Morbidity, Scandinavian Journal of Work, 9:30-35.*

Bus drivers exposed to whole body vibration are prone to digestive, circulatory and musculoskeletal system disorders. *Altman, S. 1976. NIOSH Vibration Project, Job Safety and Health, pp.15-20.*

The author observed a predominance of cervical and lumbar spondylarthritis (arthritis of the spine), disorders of the digestive system and psychoneuroses among vehicle drivers. He considers all the

pathological conditions to be occupational disease. *Filauro, F. 1973. Pathological Observations, Difesa Sociale, 4:97-122.*

Few other contemporary professions are as stressful as urban public bus operation. Occupational stressors have been considered an important setiological (original typeset probably meant etiologica: the cause or origin of a disease or disorder as determined by medical diagnosis) factor in health problems among urban bus drivers. Compared to employees in comparable professions, urban bus drivers have elevated absenteeism rates, retire due disability at earlier ages, and have higher rates of psychosomatic cardiovascular, musculoskeletal and gastrointestinal disorders. This study finds that women in the nontraditional occupation indicate that there is not significant gender difference in negative reaction to job stresses. *Rydstedt, L. et al 1998. A longitudinal study of workload, health and well-being among male and female urban bus drivers. Journal of Occupational and Organizational Psychology, 71:35-45.*

HEART DISEASE

The odds ratio for ischemic heart disease was 2.34, still indicating an elevated risk. *Hedberg, G. et al 1993. Ischemic Heart Disease, Scandinavian Journal of Work, 19:326-333.*

Hospital admissions and death ratios for ischemic heart disease showed significant excess risks among bus drivers. *Tuchesen, F. et al 1992. Ischemic Heart Disease, International Journal of Epidemiology, 21:450-459.*

Urinary catecholamine excretions significantly increased in drivers with high levels of job strain. High levels of job strain in the public transportation setting appear to increase catecholamine activity which in turn increases the risk for coronary heart disease. *Carrere, S. et al 1991. Cardiovascular disease, Journal of Occupational Psychology, 64:305-316.*

The authors conclude that drivers are at increased risk for heart disease as a result of increased job strain resulting from workplace demands and the degree of decision making latitude or control experienced by the workers. *Michaels, D. et al 1991. Heart Disease, International Journal of Epidemiology, 20:399-404.*

A study of coronary heart disease (CHD) and cardiovascular risk factors in bus drivers was conducted. The risk of CHD among the bus drivers was still elevated, odds ratio 3.0. *Rosengren, A. et al 1991. Coronary Heart Disease, International Journal of Epidemiology, 20:82-87.*

The relative risk for first hospital admission due to acute myocardial (the muscular tissue of the heart) infraction during employment as a bus driver increased with an increasing number of stress indicators. A significant association was established between the incidence of myocardial infraction and increased urban workloads, increased work pace, and decreased social contact with colleagues. *Netterson, B. et al 1988. Cardiovascular System, Scandinavian Journal of Work..., 14:231-238.*

The most common medical problems among London bus drivers are reported to be cardiovascular complications, which accounted for 25% of all forced medical retirements in 1983. *Diamond, P. 1984. Cardiovascular Complications, Travel Medicine International, 2:164-166.*

Systolic blood pressure was 5.4 millimeters (mm) of mercury higher among drivers and diastolic was elevated 1.5 mm. Serum cholesterol was 4% and triglycerides 16% higher among drivers. The authors conclude that previously determined increased mortality from coronary heart disease for drivers is associated with the psychic pressures of the job along with psychological factors. *Hartvig, P. et al 1983. Heart Disease, International Archives of Occupational & Environmental Health, 52:352-360.*

HYPERTENSION

The prevalence rates of hypertension were significantly elevated for the bus drivers relative to all three comparison groups. The authors conclude that bus drivers have significantly higher prevalence rates of hypertension. *Rogland, D. et al 1989. Hypertension, American Association of Occupational Health Nurses Journal, 37:71/74-79.*