

NOIRS Abstracts

Epidemiology of Ocular Injury in a Major U.S. Automotive Company—Lincoln A

Purpose. Although occupational eye injuries account for a large proportion of ocular injuries in adults, little epidemiological data in specific industries have been published. To address this problem, we examined the epidemiology of eye injuries among employees of a major automobile corporation. The purpose of this study is to establish data on industry-specific rates of ocular injury and identify problem areas in eye injury prevention in the workplace.

Design. All persons employed between July 1989 and June 1992 in the corporation's assembly, power train, stamping, and parts depot facilities were included in the study. The population was derived from a total of 33 plants situated over the continental United States. Ocular injury data were obtained from an active surveillance system at a major automotive corporation. Incidence data included demographic characteristics of the injured workers (job class, gender, age, length of service) and case characteristics (nature of injury, body part, object involved). In addition, narrative free text fields in the description of the injury and the activity preceding the injury allowed us to go beyond the limitations of coded data to understand the specific circumstances of the injury. Year end employee censuses were used to estimate the population at risk. Outcomes from the ocular injury included: 1) OSHA restricted duty days; 2) OSHA lost days, 3) temporary transferred days, and 4) whether no alternative work was available in the plant.

Results

1,983 work related eye injuries occurred over a three year period, from July 1989 to June 1992. The incidence rate was 14.9 injuries per 1000 person years. Workers between the ages 20-29 had the highest age-specific incidence of 28.2 injuries per 1000 person years. Males had a higher incidence than females across all ages, with an age-adjusted incidence of 15.6 injuries per 1000 person years and age-adjusted relative risk of 1.53 (95% confidence interval, 1.43, 1.64). External foreign bodies and corneal abrasions made up 86.7% of all injuries, while penetrating eye injury occurred in only 3 cases. Almost one third of ocular injuries resulted in the inability of the worker to resume his normal duties.

Conclusion

A high incidence of workplace eye injuries occur among employees of the automotive industry. Although the vast majority of injuries were minor, they account for significant avoidable lost productivity. While the apparently high incidence in automotive workers may be due to higher risks inherent in this industry, it could also be due to the inclusion of previously under-reported minor injuries not requiring medical attention at hospitals. The high proportion of injury related to grinding, welding, and use of air tools reemphasizes the need for eye protection in these activities. The high proportion of paint-related chemical injuries suggests the need for eye protection in workers exposed to such substances.

Nature of Construction Industry Eye Injuries Treated in Emergency Departments—Long DJ, Layne LA, Jackson LL

For most of the last twenty years the construction industry has had the highest rate of nonfatal serious injury of any U.S. industrial sector (U.S. Bureau of Labor Statistics). Our analysis of emergency department cases recorded in the National Electronic Injury Sur-

veillance System (NEISS) indicated that emergency medicine departments treated an estimated $240,300 \pm 51,800$ (CI95) work-related eye injuries in the United States from October 1995 through September 1996. Of those eye injuries 16% ($37,700 \pm 12,600$ CI95) occurred to construction workers. Eye injuries represented 11% of all types of traumatic injury among construction workers. We are studying the epidemiology of eye injuries among injured construction workers from this national sample to determine risk factors for specific occupations and work tasks that will lead to better eye injury prevention strategies.

NEISS is a national stratified probability sample of all hospitals in the United States that provide 24-hour emergency department services. Four hundred thirty-three case records were collected for construction worker eye injuries from October 1, 1995 through September 30, 1996 from 65 nationally sampled hospitals through a collaborative agreement between the Consumer Product Safety Commission and the National Institute for Occupational Safety and Health. Each NEISS injury record contains demographics of the injured worker, occupation and industry information when available, and a narrative description of the injury incident. From the narrative description of the injury, we further coded work activity, tools used, materials handled, and outcome of injury. Using a statistical weighting factor for each case we calculated national estimates for various eye injury characteristics. Confidence intervals were calculated using simple linear expansion to account for the complex sample design.

Nationally, 98% ($37,100 \pm 12,400$ CI95) of these construction eye injuries occurred to males. Forty-one percent ($15,500 \pm 8,000$ CI95) of all workers were 20 to 29 years old and 33% ($12,300 \pm 3500$ CI95) were 30 to 39 years old at the time of injury. Seventy-eight percent ($29,400 \pm 12,000$ CI95) of the injured workers were white, and 5% ($1,700 \pm 1,000$ CI95) were black. Most eye injuries occurred to relatively young, white male construction workers following the general demographic trends for the construction industry.

For all eye injuries, about 70% were foreign bodies in the eye, 13% were struck by injuries, and 6% ultraviolet burns or keratitis. Although the details of work activity at the time of the injury were frequently missing from these surveillance system records, several common construction tasks were identified that resulted in eye injuries. For example, sawing was indicated as the work task for 16% of the foreign body eye injuries and hammering or pounding was indicated in 10% of the struck by injuries. In 91% of the ultraviolet burn cases, the injured person was clearly identified as either welding or in the area of someone else welding at the time of injury.

A large number of these injuries are preventable. Although the majority of the injuries are relatively minor, they still represent a significant loss of productivity and medical expense that are avoidable through better engineering controls and utilization of proper eye and face protection.

Work-Related Eye Injuries Among Union Carpenters 1989-1995 Lipscomb HJ, Dement JM

Union administrative records were combined with workers' compensation data to identify a cohort of union carpenters, their person-time at risk, and their documented work related eye injuries between 1989 and 1995 in the State of Washington. The injuries were described using ANSI codes for injury nature, type (mecha-