enabled public health, safety, and industry professionals to develop targeted interventions and reduce the high rate of occupational fatalities.

D2.6 Surveillance and Prevention of Nonfatal Work-Related Injuries in Alaska—Husberg BJ, Conway GA

The Alaska Trauma Registry (ATR) has been used as a population based tool for injury surveillance of nonfatal injuries in Alaska since 1991. This paper will cover injury surveillance using the ATR and how that information has been used in community injury prevention projects.

To be included in the ATR, patients either have to be admitted to a hospital, transferred from an Emergency Department (ED) to a facility with a higher level of care, or declared dead in the hospital. Data for the ATR is collected retrospectively from medical record charts. Over 150 data elements are collected in the ATR including cause of injury, nature of injury, and body region injured.

Currently the ATR has information for 3,230 work-related injuries occurring from January 1991 through December 1997. Commercial fishing (536) and construction (532) led the industry categories for number of occupational injuries. The industry with the highest injury rate was logging with 22.75 injuries per 1,000 workers. The most common causes of injuries in the fishing industry were caused by machinery (177) and falls (127). In the construction industry, different types of falls (263) lead all causes with falls from or out of building (72), fall on or from ladder (50), and fall on or from scaffolding (41). The leading causes in the logging industry were being struck by an object (117) and falls (41).

The ATR has assisted us in prioritizing industries and causes for injury prevention. The Alaska Marine Safety Education Association uses ATR information to focus on fishermen alerts and training. The Alaska Injury Prevention Center has begun focusing on fall prevention education in the construction industry. Local timber harvesting groups are beginning to use ATR data for monitoring effectiveness of injury prevention programs.

Session: D3.0
Title: Challenges in Assessing Exposure to Occupational Injury Hazards
Category: Special Session
Organized by Dana Loomis, Department of Epidemiology, University of North Carolina
Moderator(s): Dana Loomis

D3.1 Dealing With Variability of Hazards in Occupational Injury Epidemiology—Kromhout H, Loomis D

Injury epidemiology has been very traditional with respect to exposure assessment. Evaluation of risks has been based on job titles or personal attributes, like sex and age. Nevertheless, we know that hazardous circumstances are not permanently present or present with the same intensity. In order to make better inferences on causative factors leading to injuries, a better understanding of the variability in these factors will become a necessity. Much can be learned from recent advances in related fields of occupational cancer and respiratory disease epidemiology. Understanding of variability patterns in chemical and physical exposures has improved strategies for assessing and assigning exposure. For example, recent research on exposure to magnetic fields showed that health effects would have gone undetected had more traditional approaches to exposure assessment been applied. Variation in exposure has two fundamental dimensions: person and time. Variability between groups of people is a fundamental requirement for most epidemiological research. Exposure may also vary within groups and within individuals, however. The dimensions of exposure variability can be described quantitatively by the expression $X_{ij}(t) = f(\mu + \dot{\alpha}_i + \beta_j + \delta_t)$,where $X(t)$ is instantaneous individual exposure at time t, μ is the overall mean exposure level, and $\dot{\alpha}$, β, and δ respectively represent deviations from μ associated with being a member of group i, being the j-th person in that group, and temporal fluctuation of exposure at time t. Opportunities for improved hazard assessment in the field of occupational injury epidemiology will be sketched based on these concepts and experience with other workplace agents.

D3.2 Variability, Measurement, and Analysis of Hours of Exposure in a Cohort of Fishers—Marshall SW

Occupational epidemiologists and industrial hygienists have developed methods for modeling exposures to environmental agents, such as dusts and chemicals, but these methods have not been widely applied to injury hazards. We illustrate the general approach using preliminary data from a cohort of fishers in Eastern North Carolina. Hours spent working on the water was assessed on a weekly basis throughout the fishing season. We partition the variation in weekly hours worked into two components, between-worker variance (F_B^2) and within-worker week-to-week (F_w^2) variance, using a multilevel random effects model. Risk ratios (RR) and confidence intervals (CI) for weekly hours worked were estimated from the model.

The ratio of between-worker variation (s_B^2=1.40) to within-worker variation (s_w^2=0.40) was 3.5, indicating that the majority of the variation in weekly hours worked was due to differences between fishers. The range of variation was quantified by calculating, from the model, the ratio of the 97.5th percentile to 2.5th percentile of the distribution of hours worked. This ratio was 102.8 hours for the between-fishers component and 11.9 hours for the week-to-week within-fishers component.

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ABSTRACTS

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