

WORK-RELATED SURVEILLANCE RESEARCH AND TRAUMATIC INJURY PREVENTION IN ALASKA

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INTRODUCTION

From 1980 through 1989, Alaska experienced the highest worker fatality rate (34.8/100,000) of any state in the United States. This fatality rate was five times greater than the national work-related fatality rate (Marsh, 1993). In 1990 the National Institute for Occupational Safety and Health (NIOSH) initiated a comprehensive data collection and injury surveillance program in Alaska to track work-related fatalities and identify injury risk factors. The objective of this surveillance is to provide information and details on injuries and injury types so that injury prevention programs may be put into practice. From 1990 through 1999, this surveillance has led to injury prevention programs and reduction of work-related fatalities in Alaska (CDC, 2002; Conway, 1999; Conway, 2001; Marsh, 2001). In 1991, the Alaska Trauma Registry (ATR) was identified as a source of nonfatal injury data and added as a second phase to the NIOSH Alaska surveillance program (Husberg, 1998). Since 1991 there have been other trauma registries that have been used and evaluated for work-related injury surveillance (Forst, 1999).

Injury surveillance systems are used to describe events, set priorities, and provide information for preventing injuries. Some of the information that can be detailed includes who is being injured, which body parts are being injured, frequency of injuries, trends of injury, and magnitude of injury. Injury surveillance is also used to evaluate the effectiveness of injury prevention programs. Data normally collected for reasons other than injury surveillance can be adapted for use in monitoring and preventing work-related injuries. Existing local databases can be used for health and injury surveillance in the workplace. These databases include:

- OSHA logs
- On-site clinic logs and records
- Incident and injury reports
- Investigation reports
- Required surveillance programs
- Local worker compensation (claims-based reporting)

Many databases are also available on a broader scale. These may be kept at either state or federal levels. National, state, and regional trends can be examined and compared to local trends and rates. These databases include:

- Fatality data
 - Death certificates
 - Census of Fatal Occupational Injuries (CFOI)
 - National Traumatic Occupational Fatality Surveillance System (NTOF)
- Bureau of Labor Statistics survey data
- Worker's compensation claims
- Hospital discharge data
- Trauma registries

- Ad hoc reporting systems

The aim of this presentation is to examine the nonfatal work-related health surveillance and trends of nonfatal work-related injuries in Alaska, identified risk factors, and injury prevention efforts.

METHODS

Many states, regions, and local hospitals maintain trauma registries. Quality assurance monitoring for trauma patients treated in hospitals is the primary purpose of trauma registries. However, trauma registries contain much valuable data that can be used for injury surveillance and prevention (Lloyd, 1989).

The ATR is a population-based database of all hospitalized injuries seen in all 24 hospitals in Alaska. The database is maintained by the Alaska Department of Health and Social Services, Department of Public Health, Section of Community Health and Emergency Medical Services (CHEMS), with financial, technical, and analytic support by the National Institute for Occupational Safety and Health (NIOSH). The ATR collects information on injured patients who were admitted to a hospital for at least 24 hours for surgical and/or medical care. Data from 1991 through 1999 are currently available. Criteria for a case to be entered into the ATR include patients who have sustained injuries described by the International Classification of Diseases, 9th Revision, Clinical modification (ICD-9-CM) diagnosis code of 800.00 through 995.89 who are seen in a hospital emergency department in Alaska and either admitted to a hospital or transferred to another hospital for admission (> 24 hours) for a higher level of care (surgery or intensive care). Work-related cases meet NIOSH Operational Guidelines for Determination of Injury at Work (see Table 1) (Marsh, 2001).

Data for the ATR is collected from a review of the patient's hospital record by hospital medical records or nursing staff. The information is then sent to CHEMS where it is cleaned and coded and quality assurance reports for the state trauma program are distributed. The data also undergo analysis for injury surveillance by the state and NIOSH.

RESULTS

From 1991-1999, ATR data include 39,143 injuries; 10% (3,951) were classified as work-related. Industries with the highest number of injuries include construction (740), commercial fishing (648), transportation (388), logging (319), and military (315) (see Figure 1). Sorted by injury rate, there is a different rank order: logging was highest (23/1,000), followed by construction (7/1,000), mining (6/1,000), commercial fishing (4/1,000), and transportation (3/1,000) (see Figure 2). These rankings have helped to identify priority industries for injury prevention measures.

Table 1. NIOSH Operational Guidelines for Determination of Injury at Work

- On employer premises:
 - Work-related
 - Engaged in work, apprentice, vocational training
 - On break in hallway, restroom, cafeteria, storage
 - In parking lot during work, while arriving, or leaving
 - Not work-related
 - Recreational activities for personal enjoyment
 - Visitor for non-work purposes, not official business
- Off employer premises:
 - Work-related
 - Working for pay including at home
 - Volunteer EMS, firefighter, law enforcement
 - Family business (profit oriented), including farm
 - Traveling on business
 - Engaged in work where vehicle is considered the work environment
 - Not work-related
 - Homemaker working at homemaking activities
 - Working for self/non-profit
 - Student engaged in school activities
 - Operating vehicle (personal or commercial) for non-work purposes
 - Commuting to or from the work site

Figure 1.
Work-Related Injuries by Industry, 1991-1999

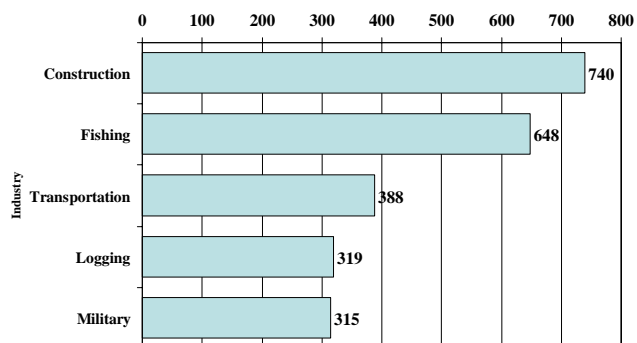
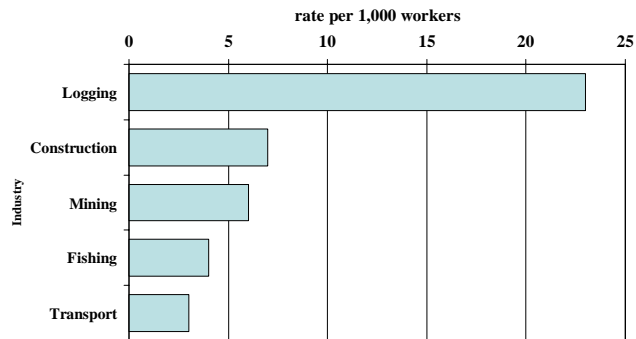


Figure 2.
Work-Related *Injury Rate* by Industry, 1991-1999



Commercial fishing is an example of one industry that has been identified with a high number and rate of injuries (see Figure 3). There has already been a lot of work completed examining the fatalities in this industry; therefore, it was logical to continue to look at the nonfatal injuries in this phase. Machinery caused 32% of commercial fishing injuries, many involving crab pot launchers or a crane used to position crab pots on deck. Falls were the cause of 25% of the injuries and being struck by an object another 15%.

Figure 3. Commercial Fishing



CONCLUSION

The ATR provides a database of serious nonfatal injuries in an easy to analyze electronic format. Injury information can be very comprehensive including details on the circumstances of the injury, medical treatment, hospital costs, and disability.

The Alaskan industries with the highest number and rates of injury have been identified. This has led to the development of risk factor understanding and injury prevention measures. This study shows that Alaska does have injury rates of concern for nonfatal hospitalized work-related injuries, especially in the logging, construction, and commercial fishing industries and the military.

In the commercial fishing industry, machinery led to the majority of nonfatal injuries. This is quite different from the fatal injuries previously studied in this industry, where most are due to man overboard or vessel loss at sea. Nonfatal injury surveillance has led to a “Deck Safety Project” that focuses on the causes of nonfatal injuries in this industry. Many of the recommendations focus on procedure and machinery design and modification (Jensen, 2002; Thomas, 2001; Lincoln, 2001).

Recent collaboration with the U.S. Army has led to injury surveillance and prevention for cold related injuries to soldiers in Alaska. In the construction industry, ATR data have been used to great effect in prioritizing needs in Alaskan organizations involved in safety training. In the logging industry, collaboration is underway between NIOSH, educational institutions, and local safety professionals to further assess injury prevention needs and increase safety awareness. Recently, an *Occupational Research Agenda for Northwest Forestlands* has been developed by the University of Washington with input from NIOSH and the ATR. This agenda includes training and research priorities for interventions and their evaluation in the logging industry.

At this time, there is a lack of population-based comparative data from other states and nations similar to the ATR. This has made it difficult to make comparisons and evaluate the injury rates in this study. Currently, there is a two-year lag until data can be collected from all hospitals in Alaska and then entered into the ATR for data analysis.

This is one of the first studies to use population-based data to study serious nonfatal work-related injuries in a large population. Collaboration is currently ongoing with organizations and priority industries in identifying risk factors and preventing injuries.

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