Occupational Health

Washington Department of Labor and Industries (L&I), Safety and Health Assessment and Research for Prevention (SHARP)

Tumwater, Washington

Assignment Description

The prospective fellow will be placed within the Safety and Health Assessment and Research for Prevention (SHARP) program at the Washington Department of Labor and Industries (WA L&I). SHARP is an internationally recognized research program who partners with business and labor to develop practical solutions to identify and eliminate workplace hazards and reduce human and economic costs of on-the-job illnesses and injuries.

SHARP's offices are located in Olympia, Washington—ideally situated for an abundance of outdoor recreation. Many of SHARP employees live in Olympia, but there are also currently members of SHARP who live in Seattle and Tacoma. L&I offers flexible schedules, telecommuting options, and incentives to help commuters, which would also be available to the prospective fellow.

SHARP typically employs approximately 20 scientists who offer expertise in economics, epidemiology, ergonomics, industrial hygiene, occupational medicine, occupational health psychology, safety, and data management. SHARP's researchers are recognized as leaders in their fields, with their high-quality research frequently cited in the scientific literature. SHARP participates locally, nationally, and internationally by delivering seminars, presenting research activities and results, providing independent scientific review of issues, and publishing information.

L&I/SHARP is recognized by the federal government as the lead state agency to address occupational illnesses and injuries in Washington State. SHARP has been successful in securing about $725,000 per year in federal research funds, and is currently funded for core occupational health surveillance and capacity building from CDC's National Institute of Occupational Safety and Health's (NIOSH) surveillance fund—awarded in five-year cycles. SHARP also receives additional NIOSH funding for the Washington Fatality Assessment and Control Evaluation (FACE) program; the Adult Blood Lead Epidemiology Surveillance (ABLES) system; occupational respiratory disease surveillance; the Trucking Injury Reduction Emphasis through Surveillance (TIRES) program; and a project aimed at identifying risk of musculoskeletal disorders in home health care.

SHARP research focuses on the primary prevention workplace injuries and illnesses. Aside from the federally-funded projects mentioned above, some areas of focus in SHARP include: workplace violence and bullying; effectiveness of consultation and enforcement activities on workers' compensation claims; research and surveillance of work-related musculoskeletal disorders; health and safety of firefighters; injury prevention in the logging industry; and utility of administrative workers' compensation claims data in predicting future workers' compensation claims. SHARP also recognizes the disparities that exist making some workers much more vulnerable to poor outcomes than others. SHARP has recently began to initiate work describing these disparities by race and ethnicity of the worker, as well as investigating injuries among temporary workers.

Day-to-Day Activities

The fellow will be incorporated into the SHARP program, whose day-to-day activities will be indistinguishable from the other entry-level epidemiologists. The fellow will attend weekly staff meetings, participate in SHARP's journal clubs, and other regular work-group meetings in SHARP such as the Communications, Occupational Health Disparities, and the SHARP Epidemiologists work groups. The fellow will also have the opportunity to attend agency-wide meetings and trainings, as well as monthly epidemiology seminars at the Department of Health.

During their placement in SHARP, the fellow will have several projects that will be their primary responsibility and occupy much of their daily activities. The fellow's projects, as described in detail below, will both contribute to SHARP's occupational safety and health mission and allow the fellow to complete all of the CSTE fellowship methods and communication requirements. The fellow will fully integrate into SHARP-- becoming competent in the use of workers' compensation data and unemployment insurance data for occupational health research and surveillance; using surveys, such as the Behavioral Risk Factor Surveillance System, to describe work-related injuries and illnesses; applying their epidemiological skills to develop surveys and design studies to answer specific public health questions; aiding in primary collection of data in the field; employing appropriate methods to analyze data and interpret results; following all Washington State Institutional Review Board (IRB) policies and guidelines for human subjects research; and finally, communicating findings widely. The fellow will serve as a valuable epidemiological resource to our team, applying their knowledge and gaining experience in a research-to-practice environment.

The fellow will have the opportunity to interact with a variety of different groups collaborating with SHARP, as described earlier. The fellow will be encouraged to attend meetings that bring together occupational health and safety stakeholders, to interact with other occupational health epidemiologists and other professionals nationally, and develop relationships with other public health practitioners at the Washington Department of Health.

Additionally, the fellow will have several opportunities for professional development. SHARP creates a very supportive environment encouraging employees to learn and grow—also, part of the agency's strategic plan. The SHARP program has developed their own format for internal professional development, known as SHARP'en Up talks, which have recently included trainings on qualitative research methods and using R for analysis and display of data. L&I also offers a variety of professional development trainings to its employees, such as SQL courses, an intro into the legislative process, and a series of selected TED Talks, which will also be available to the fellow. The fellow will also be encouraged to seek out other trainings of interest in the area. For example, many of SHARP's epidemiologists have attended Edward Tufte's course on data visualization in Seattle.

Potential Projects

Surveillance Activity **Development of a system to enhance monitoring of workplace violence in Washington**

The SHARP program currently employs two researchers that specialize in occupational health psychology, with expertise in the area of safety climate, and bullying and violence among health care workers. The fellow would contribute to this area by developing an enhanced system to broadly monitor workplace violence in the state. The fellow would research and gather relevant data on this topic from sources such as workers' compensation data and mortality data, to describe the epidemiology of injuries resulting from workplace violence. The fellow would use these data to describe recent trends, populations most at risk, circumstances when available, and risk factors. The fellow would also be responsible in developing a reporting format that clearly outlines the most useful information for the agency and other stakeholders.
This project will involve collaboration with the SHARP experts on workplace violence, and allow the fellow to work on a topic of high visibility to WA leaders, while applying key epidemiological methods in surveillance.

Surveillance Evaluation **Evaluation of Poison Control Center call data for utility in tracking work-related exposures**

Poison Control Center (PCC) call data are a potentially rich source of information about public health exposures, not captured by other health data systems. The medical professionals and poisoning experts that answer the PCC calls are often able to assess risk and provide information that prevents unnecessary trips to the doctor / hospital. Therefore, many exposures or possible exposures captured in the PCC data never appear in other health data systems. PCC call data systems also collect more in-depth information about work-relatedness and exposure circumstances than are present in other commonly used systems such as emergency department or hospital discharge data. PCC data are also typically more timely than these other systems, allowing for earlier detection of emerging issue and providing an opportunity for an effective response to prevent further exposures. The fellow would work closely with one of SHARP's industrial hygienists on this project to evaluate the PCC data system for its utility in identifying and tracking work-related chemical exposures.

Major Project **Investigating effect of climate change on occupational safety and health**

Little work on climate change has focused on the potential impacts to workers. Like other states, Washington has not been immune to recent change in climate, for example, increasingly high temperatures and frequent forest fires during the summer quarter. Workers who spend more time outside are more vulnerable to the effects of the climate, such as temperature or air quality.

SHARP recently collaborated with researchers at the University of Washington and described an increased risk for traumatic injury among agricultural workers that coincided with hot outdoor temperatures. We hypothesize that Work-related Musculoskeletal Disorders (WMSDs) may also be related to outdoor temperatures among certain populations of workers. The fellow would compare workers' compensation claims due to WMSDs over time with outdoor weather data to evaluate this relationship. Alternatively, the fellow may also work with the occupational respiratory disease team in SHARP to investigate work-related injury or respiratory disease claims and air quality to determine if

there is any relation to working near forest fires and injury or illness. This work may involve collaboration with epidemiologists at the Department of Health, as well as occupational health professionals at the CDC/National Institutes of Occupational Safety and Health (NIOSH) at the Spokane, WA office who have expertise in the area of climate change.

With this major project, the fellow would become familiar with recent climate change literature and its potential effects on workers to further develop hypotheses and design and epidemiological study. This project would also involve collecting and analyzing claim data from the WA workers' compensation data system, as well as weather and air quality data. The fellow would evaluate clustering of cases by geography and/or time using appropriate statistical techniques and controls. Finally, the fellow would interpret and communicate the results in the appropriate formats, which may include peer-review publication.

Additional Project **Evaluating and testing the Bayesian Improved Surname Geocoding (BISG) proxy method of assigning race and ethnicity**

The WA workers' compensation system does not currently collect race and ethnicity data for workers' compensation claimants. Workers of certain racial and ethnic minorities are potentially more likely to be employed in riskier jobs, more likely to be exposed to hazards within a workplace, and vulnerable to poorer outcomes after injuries. It is very important to SHARP to better understand these relationships. SHARP's social epidemiologist has been working on applying the BISG method to the WA workers' compensation data to develop proxies for these very important missing data. The BISG method uses surname and home address, both present in the workers' compensation data, to calculate probabilities that an individual belongs to certain race and ethnic categories.

The fellow would become familiar with this method, and work on incorporating a third element to refine the BISG probabilities—the injured worker's primary language preference. The fellow would evaluate the improvements made to the BISG method by including the language information, and make the recommendation on if and how the BISG method should be revised. The fellow would also have the opportunity to apply this method of race and ethnicity assignment to investigate disparities in work-related injury or illness incidence and outcomes post-injury.

Additonal Project **Epidemiology of workers' compensation claims among immigrant workers**

WA is one of the largest recipient of workers that come into the state with an H-2A visa. The H-2A program brings in workers from other countries, such as Mexico, on a temporary basis for agriculture work. Workers in other industries may also enter the country, using the temporary H-2B visa program. Immigrant workers are often described as a vulnerable working population because, for example, they may be less likely to speak up or leave unsafe working conditions, aren't properly educated on their rights as workers, and don't report when they're injured due to fear of losing their job or becoming black-listed for future employment opportunities.

There is little information on the work-related injuries and illnesses in this specific population of vulnerable workers. These workers are covered by the WA workers' compensation system, however. This workers' compensation system is one of the most comprehensive systems in the country and provides the unique ability describe the epidemiology of the work-related injuries and illnesses

among these workers. The fellow will work to develop an indicator in the workers' compensation system to identify workers on a temporary work visa, such as foreign home address, industry they work in, and/or employer. The fellow will then describe recent trends and patterns, for example, by type of injury, exposure or event leading to the injury, demographics, claim duration, and cost among these workers. These data will be compared to non-immigrant workers in similar industries to identify and describe any disparities that may exist.

Preparedness Role

We will partner with the Department of Health to give the fellow experience in emergency preparedness at that agency, including attending staff trainings on emergency planning in preparedness in which the response and roles of the health department staff during different scenarios are presented in detail. The fellow will also be involved with the preparedness activities at L&I aimed at preparing the agency's workers safe during emergencies.

Additional Activities

Field data collection:

The SHARP program has expertise in field data collection, our industrial hygienists and ergonomists regularly assess hazards in the workplace. If interested, the fellow would have the opportunity to assist SHARP researchers collect primary data of exposures in the field. The fellow would gain a deeper understanding of the assets of data collected in the field, and the limitations of these types of data. The fellow would also gain valuable experience in planning and executing field studies.

Respond to data requests:

The fellow will also be involved in helping with occasional data requests that may come in from agency leadership, outside researchers, or from researchers within SHARP. The fellow will work with the requestor to develop specific questions that may be accurately answered by available data, analyze the data with appropriate statistical methods, and help interpret the results.

Provide epidemiology support to SHARP:

SHARP thrives as a multidisciplinary team, with expertise in many different areas in occupational health. The SHARP epidemiologists all maintain their own projects, but also provide support on projects headed by other researchers in other areas such as ergonomics, industrial hygiene, and economics. SHARP epidemiologists often work with other researchers on survey and study design, development of surveillance systems, program evaluation, and analytic methods. The fellow will also have the opportunity to interact on our multidisciplinary project teams and apply their epidemiological knowledge.

Participate in creation of communication products:

SHARP regularly publishes a wide variety of products for different audiences, including research findings, statistical briefs, hazard alerts, and fatality investigations. The fellow will produce the appropriate products to communicate findings from their own projects. The fellow may also provide technical assistance such as overall design or idea, data analysis and visualization, and interpretation of findings for other researchers in SHARP.

Evaluate legislation that effect worker health and/or the workers' compensation system:

During each legislative session in WA, SHARP closely follows proposed bills that may affect worker health or the workers' compensation system in the state. SHARP also provides the agency with expertise in specific areas, and regularly participates in the agency's bill analysis process. The fellow will be welcomed to follow the legislative sessions, perform literature reviews and provide feedback when SHARP is asked to comment on bills.

Mentors

Primary	Jennifer Marcum DrPH, MS Epidemiologist III
Secondary	Dave Bonauto MD, MPH Research Director