

Workers' Compensation Based Surveillance of Asthma, Hospitalized Burns, and Adult Blood Lead Levels in Washington State, 1994-1998

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Executive Summary:

In the 1980's, the status of occupational illness and injury surveillance in the US was described as 70 years behind the surveillance of infectious disease. Yet, injuries and illnesses due to occupational exposure place a tremendous burden on our society. A 1997 study demonstrated that costs of occupational injuries and deaths are well above other diseases such as AIDS and Alzheimer's Disease, and cost at least as much as circulatory disease and cancer². Given the high cost of occupational injuries and illnesses, additional surveillance programs for occupational conditions would create an immensely valuable tool to researchers and professionals who strive to prevent these injuries and illnesses. In response to this need, the Safety and Health Assessment and Research for Prevention (SHARP) program at the Washington State Department of Labor and Industries (L&I) is collaborating with the Washington State Department of Health (DOH) to include work-related asthma (WRA), work-related burns requiring hospitalization, and adult blood lead levels (BLL) to the revised reportable conditions rule. The adoption hearing for the revised reportable conditions rule is scheduled for July 2000.

In preparation for the rule, SHARP initiated surveillance of the proposed conditions using the best currently available data source, the Washington State Workers' Compensation (WC) System. The overall objectives of this initial study were: (1) to calculate baseline claims rates for the proposed conditions using WC data, and (2) to evaluate the utility of using WC data for the surveillance of the proposed conditions.

In Washington State, employers are required to obtain WC insurance through L&I, unless they are able to self-insure. Hence, approximately two-thirds of workers in Washington State are covered through the State Fund insurance. The remaining third typically work for the largest 400 employers and are insured through their employer. Hence, workers covered through the WC system, both State Fund and Self-Insured, represent a large proportion of Washington State workers. But, coverage is not required for all Washington State workers such as self-employed workers.

The Washington State WC database was designed for administrative purposes, not for surveillance or research activities. Therefore, in an effort to identify the most appropriate methods of case ascertainment from the WC database, SHARP evaluated at least two methods for each of the proposed conditions. Randomly sampled claims were reviewed to estimate the accuracy of each case ascertainment method. From this review, the most appropriate method was chosen, and the extracted data were then analyzed and compared to previous results in the literature or other available data sources. It should be noted that while 'best available' case ascertainment methods were identified and utilized for the purpose of this initial surveillance study, there were limitations associated with each. First, due to the low "database sensitivity" of the best available case ascertainment method for WRA, a high proportion of potential WRA cases will not be identified from the WC database. Second, due to limited information available from the WC database, cases of hospitalized work-related burns from self-insured employers could not be detected at all. Finally, the low predictive value positive of the best available case ascertainment method for elevated BLLs will lead to many false positive claims being identified

from the WC database. Additionally, it should be noted that for the one-third of Washington workers who are employed by self-insured companies, available information is limited to compensable claims (i.e., those involving more than 3 days away from work).

Work-Related Asthma Results

From 1994 through 1998, workers filed 940 potential work-related asthma (WRA) claims through the WC system. Over the five year period, the State Fund claims rate of WRA increased over 70% from 76 to 130 claims / 10^6 FTEs-YR. Claims rates of WRA in Washington State are among the highest reported in the United States. Yet, compared to other studies in the United States and internationally, it is likely that these claims rates are an underestimation. WRA claims were reported in a wide range of industries and occupations and were associated with a variety of sources. An additional 100 randomly selected claims from 1998 were closely reviewed. Fifteen claims were classified as false positives and removed from the analysis. Of the 85 remaining asthma claims, 59 (69%) were categorized as cases of work-aggravated asthma (WAA) and 26 as cases of work-related new onset asthma (NOA), of which five (6%) were classified as reactive airways dysfunction syndrome (RADS) by the documented exposure history. However, the review of claims demonstrated that WC data were not suitable to adequately categorize the claims into the accepted sub-classifications of NOA, WAA, and RADS, or to describe the industrial sources associated with the onset of WRA. Without better surveillance of WRA, prevention efforts will be hindered.

Hospitalized Work-Related Burns Results

From 1994 through 1998, 289 State Fund cases of hospitalized work-related burns were identified. Five fatalities were reported during this period through WC data. The majority of the burns (247) were described as “heat burns”. “Chemical burns” were identified in 27 claims, and the remaining 14 were described as “electric shock”. The State Fund claims rate of hospitalized work-related burns from 1994 through 1998 was 44 claims / 10^6 FTEs-YR.

Hospitalized work-related burns identified by the above method for 1998 were compared to hospitalized work-related burns reported by a Washington State burn center and the Washington Fatality Assessment and Control Evaluation (FACE) program. In that analysis, 28 additional cases were identified beyond the 51 reported to the WC system. By inclusion of those cases, the 1998 claims rate for hospitalized work-related burns would increase to 56 claims / 10^6 FTEs-YR, a 55% increase over the 1998 WC rate.

Hospitalized work-related burns represent a serious injury in Washington State, incurring costs of nearly \$2.75 million per year and significant time loss from work. In 1998 alone, nine fatalities involved serious work-related burns.

Elevated Blood Lead Level Results

From 1994 through 1998, thirty-six cases of elevated blood lead levels (BLLs) in adults were identified through WC data. The claims rate for elevated BLL claims decreased 95% from 13.9 in 1994 to 0.7 claims / 10^6 FTEs-YR in 1998.

Thirty-four of the 36 positive claims matched to the Washington State Adult Blood Lead Registry (Registry) maintained by SHARP. In the Registry, 749 distinct patient ID's with an elevated BLL were identified in the same period. Hence, 715 individuals with at least one elevated BLL did not have a corresponding claim record. Of the six individuals in the lead registry with at least one BLL greater than or equal to 80 ug/dL, only two matching claims were identified. Therefore, even extremely elevated BLLs are greatly under-reported in the WC system.

Incidence rates for the Registry were calculated in the same manner as claims rates. From the Registry, incidence rates decreased 63% from 122 to 45 cases / 10⁶ FTEs-YR between 1994 and 1998. The rate for BLLs greater than 39 ug/dL decreased 80% from 41 to 8 cases / 10⁶ FTEs-YR in the same period. Of the 37 industries identified through the Registry for BLLs > 39 ug/dL, less than 40% (14/37) were identified through the WC system. Of the top ten industries ranked by the prevention index (PI), four, including the first and third ranked industries, were not identified by the claims data. Further, rates reported in the Registry for BLL > 39 ug/dL are nearly four-fold higher than reported claim rates. The Registry is clearly superior to WC for obtaining elevated BLLs, even at high levels (>80 ug/dL). Only through continued surveillance via the Registry can prevention efforts by SHARP continue in Washington State.

WC Not Suitable as a Single Source

The results of this report not only establish a baseline for comparison, but also describe why surveillance using WC as the only source is not suitable for these conditions. Surveillance and, ultimately, prevention efforts will be enhanced through adoption of these conditions in the proposed reportable conditions rule as follows:

1. SHARP currently maintains the Adult Blood Lead Registry for the State of Washington. These activities will continue unchanged following the adoption of the new reportable conditions rule. The new rule will simply provide a mandate allowing SHARP to continue with its current surveillance efforts.
2. Washington health care providers will be required to report all cases of confirmed or suspected work-related asthma to DOH on a monthly basis. DOH will forward all case reports to SHARP for follow-up to determine if they meet the case definition, a health care professional's diagnosis of asthma and an association between symptoms of asthma and work. Cases will also be ascertained using data from the WC system.
3. SHARP will seek to develop voluntary reporting agreements with hospitals and burn centers treating the majority of work-related burns, as determined from baseline surveillance measures using the WC system data. SHARP will collect cases of work-related thermal, electrical, friction, and radiation burns affecting workers employed in Washington that require inpatient hospitalization for the treatment of the burn or the skin graft surgery. Cases will be reported directly to SHARP on a monthly basis, unless otherwise specified in the terms of the reporting agreement.

For the proposed conditions and other occupational injuries and illness, SHARP will serve as a scientific resource for health care providers, occupational health professionals, public health professionals, L&I, industry stakeholders, labor organizations, and Washington State workers. Furthermore, SHARP's past surveillance activities have proven that SHARP is committed to using data for effective public health action rather than for the sake of collection alone. Likewise, SHARP is dedicated to utilizing the data gathered for the selected reportable conditions in the following ways:

1. Describe the magnitude of the problem in Washington State for each of the work-related reportable conditions.
2. Characterize the distribution of each condition across occupation, industry, and location.
3. Identify the causative agents and factors associated with the conditions.
4. Discover and investigate potential clusters.
5. Prioritize high-risk industries for follow-up site visits.
6. Develop and implement sound interventions targeting selected high-risk industries and occupations.
7. Evaluate the effectiveness of these prevention strategies.
8. Utilize the information learned through evaluative efforts to continuously improve surveillance and prevention activities.
9. Share information learned with health care providers, public health professionals, and labor and industry stakeholders at the local, state, and national levels.