Capturing work-related emergency department cases: Understanding the process and the data

Audrey A. Reichard, Suzanne M. Marsh, Ruchi Bhandari, Theresa R. Tonozzi

Background
Since 1997, the National Institute for Occupational Safety and Health (NIOSH) has worked with the U.S. Consumer Product Safety Commission (CPSC) to conduct surveillance of nonfatal occupational injuries treated in U.S. emergency departments (EDs) through an occupational supplement to the National Electronic Injury Surveillance System (NEISS-Work).

NEISS-Work captures nonfatal work-related injury cases from a national stratified probability sample of approximately 67 hospitals.

Methods
Multiple interrelated data sources were used to assess and improve the case capture and data validity in NEISS-Work.

Hospital audits
In 2011, we assessed case capture at a sub-sample of 20 NEISS-Work hospitals. There were two primary components to each visit:

1. ED record reviews: NIOSH reviewed a minimum of 1,000 records at each hospital, abstracting all work-related cases and classifying each case as "an injury" or "illness/other." Abstracted cases were compared to those submitted to NEISS-Work by the hospital coder for the same time frame. Cases abstracted by NIOSH staff were considered the benchmark for the assessment of agreement and undercount.

2. Process documentation: During each hospital visit, NIOSH staff documented factors influencing case identification. These factors were captured during interviews with the hospital coders and observed during participation in the data abstraction process. The qualitative data were analyzed using a content analysis approach.

Telephone interview studies
From June 2012 – December 2013, two telephone interview studies were conducted. Each captured expected payer from a sample of interviewed workers. These data were compared to the NEISS-Work expected payer data for the same workers. Worker-reported expected payer was captured approximately 2 months after ED treatment while NEISS-Work expected payer is generally captured within a week of ED treatment. Consequently, worker-reported payer was considered the benchmark.

Qualitative hospital audits: Process documentation
Qualitative analysis of interview data identified reasons for overcounting and undercounting work-related cases, and facilitators for case identification.

Qualitative hospital audits: Data documentation
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Factors contributing to an overcount of work-related cases (false positives)
- Including non-ED cases (e.g., patients treated in an outpatient clinic);
- Assuming cases are work-related when not stated in the record;
- Coding all cases as work-related when guarantor is workers’ compensation.

Factors contributing to an undercount of work-related cases (false negatives)
- Hospital records not available at time of coding (e.g., patients held for observation);
- Lack of accessibility to medical records (e.g., ambulance run sheets, ED logs, nurses’ and physicians’ notes, workers’ compensation forms);
- Lack of identification of specific types of cases as work-related (e.g., students working or training);
- Including cases only when the expected payer is workers’ compensation;
- Occupational/employment/work related information not available in medical records;
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Results

Table I: Weighted Agreement and Uncounted for Work-Related Cases in All Hospitals, 2011

<table>
<thead>
<tr>
<th>NIOSH staff</th>
<th>Coder</th>
<th>% cases</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreement</td>
<td>Work</td>
<td>Work</td>
<td>69</td>
<td>64</td>
</tr>
<tr>
<td>Undercount</td>
<td>Work</td>
<td>Work</td>
<td>31</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Work</td>
<td>Nonwork</td>
<td>31</td>
<td>25</td>
</tr>
</tbody>
</table>

Table II: Unweighted Case Comparison of NEISS-Work Expected Payer to Worker-Reported Payer

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>113.9</td>
</tr>
<tr>
<td>Yes</td>
<td>1563</td>
</tr>
<tr>
<td>Unknown*</td>
<td>1047</td>
</tr>
</tbody>
</table>

Factors related to over- or undercounting cases suggested a need to improve communication and presentation within the coders’ instructional manual.

Discussion
Combined results from the interrelated data sources provided insight into the accuracy of the NEISS-Work data and guided actions to improve the NEISS-Work case capture, coding, and data validity.

Factors related to over- or undercounting cases suggested a need to improve communication and presentation within the coders’ instructional manual.

Conclusions
Revisions to the NEISS-Work case criteria, data, and instructional materials should result in improved case identification and data validity. Consequently, better estimates for nonfatal, ED treated occupational injuries will be produced.

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Notes:
1. *Worker-reported payer was considered the benchmark.
2. ** NEISS expected payer was considered the benchmark.

References:
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