Background to Project

- In response to concerns raised by injury researchers, the ICD-10-AM external cause chapter has had significant revisions beginning with ICD-10-AM Third Edition
- Collaboration of NCCH, NISU, IPCA and State Health Departments
- ARC-Linkage funded study to investigate quality of coded cause of injury morbidity data
Context for Research

- Injuries are a significant cause of hospitalisation in Australia
- Important public health decisions are made on the basis of national morbidity data
- Limited research to date on the quality of external cause coded morbidity data
- Errors based on invalid data affect health policy priorities and population health initiatives
Phases of Research Project

- Phase 1: Analysis of national morbidity data
- Phase 2: Survey of clinical coders
- Phase 3: Survey of injury researchers
- Phase 4: Medical record review
Methodology

SAMPLE

• Stratified random sample of 50 regional and rural public hospitals from Qld, NSW, Vic and SA

• Random sample of cases with between 50-100 records per hospital for patients with PDx of injury (S00-T79)

• Final case sample = 4373 patients
Methodology

PROCEDURE

- Used ACBA methodology with external cause, place and activity recoded on-site by an external coder (blinded to original codes)
- Full text information regarding injury circumstances was recorded onto data collection form
- Data collection sheets reviewed by research assistant who assigned a yes/no flag to indicate whether documentation included specified injury elements
Methodology

ANALYSIS

- Original and recoded external cause, place and activity data compared to identify ‘agreement’ (not ‘error’):
  - Disagreement at 3 digit block level
  - 3 digit code agreement, 4th digit disagreement
  - 4 digit code agreement, 5th digit disagreement
  - Complete code agreement
Results – External Causes

- Coders agreed over 90% of the time on the broad mechanism of injury (e.g. transport events, falls etc)
- Agreement varied by intent: Accident 63%; Self harm 77%; Assault 68% (14% of disagreement was for 5th digit perpetrator code)
- Broad mechanism with most disagreement was ‘Struck by or collision with object’ (24% disagreement), with almost 10% of these coded as ‘Falls’ by the external coder
Results – Activity when injured

• Moderate to high agreement to which broad activities the codes belonged (such as sports=83%, working for an income=90%)

• The original coder and external coder only agreed 48% for ‘Other specified activity’ with the external coder mainly assigning these cases to ‘Unspecified activity’ (37%)
Results – Place of occurrence

- Moderate agreement to which broad place the codes belonged (such as home=75%, school/other institution=70%)
- The original coder and external coder only agreed 61% of the time that the patient was at a sports area at the time of injury, with the external coder mainly assigning these discrepant cases to ‘Unspecified place’ (30%)
## Completeness of documentation for ICD-10-AM external cause elements

<table>
<thead>
<tr>
<th>ICD-10-AM External Cause Elements by Record Source</th>
<th>Intent</th>
<th>Mechanism</th>
<th>Object</th>
<th>Activity</th>
<th>Place</th>
<th>Cases with any narrative recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulance report</td>
<td>11.9%</td>
<td>88.9%</td>
<td>60.6%</td>
<td>18.3%</td>
<td>69.8%</td>
<td>1991</td>
</tr>
<tr>
<td>ED records</td>
<td>14.4%</td>
<td>93.2%</td>
<td>67.8%</td>
<td>24.2%</td>
<td>23.2%</td>
<td>3982</td>
</tr>
<tr>
<td>Progress notes</td>
<td>15.5%</td>
<td>86.2%</td>
<td>59.3%</td>
<td>20.2%</td>
<td>21.5%</td>
<td>2306</td>
</tr>
<tr>
<td>Discharge summary</td>
<td>9.0%</td>
<td>66.7%</td>
<td>35.9%</td>
<td>8.4%</td>
<td>9.1%</td>
<td>2735</td>
</tr>
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<td>20.5%</td>
<td>24.0%</td>
<td>1678</td>
</tr>
<tr>
<td>Cases with specific element present</td>
<td>22.2%</td>
<td>97.5%</td>
<td>76.1%</td>
<td>33.1%</td>
<td>51.4%</td>
<td>4373</td>
</tr>
</tbody>
</table>

(n=974) (n=4264) (n=3329) (n=1446) (n=2246)
## Completeness of documentation for additional external cause elements

<table>
<thead>
<tr>
<th>ICD-10-AM External Cause Elements by Record Source</th>
<th>Alcohol/drug</th>
<th>Risk</th>
<th>Preventative</th>
<th>Occupation</th>
<th>Cases with any narrative recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulance report</td>
<td>13.4%</td>
<td>21.0%</td>
<td>7.6%</td>
<td>2.4%</td>
<td>1991</td>
</tr>
<tr>
<td>ED records</td>
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<td>20.3%</td>
<td>5.2%</td>
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</tr>
<tr>
<td>Discharge summary</td>
<td>6.8%</td>
<td>10.6%</td>
<td>1.2%</td>
<td>1.6%</td>
<td>2735</td>
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<td><strong>6.7%</strong></td>
<td><strong>4373</strong></td>
</tr>
<tr>
<td></td>
<td>(n=691)</td>
<td>(n=1173)</td>
<td>(n=351)</td>
<td>(n=292)</td>
<td></td>
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</tbody>
</table>
Discussion

• Similar levels of code agreement to those found by previous studies – 60 - 65% for complete code
• ED records and ambulance report forms are the most complete source of external cause information for almost all elements
• Limited research examining and validating the quality of external cause coded data
• A lack of definitions and standards around the assignment of external cause codes
• Coding quality programs focus largely on accuracy of diagnosis coding not external cause coding
Discussion

• Researchers need reliable external cause data to identify trends and patterns in injury causation.
• These data have significant potential for injury surveillance and prevention.
• Need for further education and development to improve quality, consistency and reliability of documentation, classification system and coding.
More information

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