Monitoring the incidence of injury using administrative data: Proceed with caution!

Gabrielle Davie

Presented at: Big Health Data for Epidemiology: opportunities and challenges using the SNZ IDI and other sources of "big data" for epidemiological research in NZ. University of Otago, Wellington, 26 January 2016.
Key IPRU people

Past
• Prof John Langley
• A/Prof Colin Cryer

Present
• Gabrielle Davie
• Dave Barson
• Brandon De Graaf
• Dr Rebbecca Lilley
• A/Prof Sarah Derrett
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2. Data quality
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4. Current injury research using admin data
1. Methodological steps required to use the NMDS for monitoring the incidence of injury
Monitoring the incidence of injury – using the NMDS

• All hospital discharges with an external cause code & Injury PDx

• Exclude: Died in hospital Readmissions

• Restrict to: Serious injuries
Readmissions Indicator

- Derived by IPRU using 4 variables within the NMDS:
  - NHI, dates of injury, admission & discharge

- One of only a few countries in the world that can identify readmissions this way
Injury Severity

ICD-based injury severity score (ICISS) derived by IPRU using variables within the NMDS

Steps:

1. NMDS Clinical codes used to create injury diagnosis-specific survival probabilities (DSPs)
2. For each HDR, DSPs relating to the patient’s injury diagnoses are combined to give ICISS
3. Those with ~6% threat to life=SERIOUS
Hospital discharges with Injury PDx

- All non-fatal
- Non-fatal incidence
- Serious non-fatal incidence
Bespoke linkage with other administrative data

E.g. Probabilistic linkage of:

Serious non-fatal hospital discharges

AND

ACC work-related claims
Injury Outcome Indicators: Serious Non-Fatal Work-related Claims
2. Data Quality
Accuracy of coding

• Compared ICD10-AM codes as in NMDS with those of an expert coder for 1800 discharges from 2001-2004

• 14% of the PDxs and 26% of the external cause codes had inaccuracies in the 1st, 2nd or 3rd characters.
• 22% of the place of occurrence codes were incorrect
• 29% of the activity codes were incorrect
Use of unspecified codes

E.g. Place of occurrence of assault (2013 data)

<table>
<thead>
<tr>
<th>Place</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Home</td>
<td>1660</td>
<td>29%</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Street &amp; Highway</td>
<td>1005</td>
<td>18%</td>
</tr>
<tr>
<td>5 Trade &amp; Service Area</td>
<td>442</td>
<td>8%</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Other specified place</td>
<td>229</td>
<td>4%</td>
</tr>
<tr>
<td>9 Unspecified place</td>
<td>2047</td>
<td>36%</td>
</tr>
</tbody>
</table>
3. Importance of data familiarity
Data familiarity

- Data Dictionaries
- Explore data
- Liaise with data providers
- Talk with other users

E.g. Non-systematic change in data being submitted to NMDS
Increasing inclusion of short-stay ED injury discharges over time
Variability in inclusion of short-stay ED injury discharges by DHBs over time
4. Current injury research using Administrative data
Injury research using administrative data, not IDI

- Main motivations = **key dataset not in IDI, link to participant interviews, simpler**

- HRC 2015-17: Pre-hospital injury deaths: preventability, service accessibility and equity

- HRC 2015-17: Subsequent Injury Study: Improving outcomes for injured New Zealanders
Injury research using the IDI

• Main motivation = access to previously unavailable datasets

• 2015 UORG: Older workers & financial wellbeing following injury – an exemplar using SNZ’s IDI

• 2016 UORG: Child protection inequality: exploring the relationship with deprivation using SNZ's IDI
Key Publications


• Davie G, Cryer C, Langley J. Improving the predictive ability of the ICD-based injury severity score (ICISS). Injury Prevention, 2008, 14;250-255


Health research using SNZ IDI:

*Proceed with caution!*

gabrielle.davie@otago.ac.nz