Background: Syndromic surveillance in NSW

- Public Health Rapid Emergency, Disease and Syndromic Surveillance (PHREDSS) system

- Receives data from:
  - Emergency Departments
  - Ambulance Triple Zero (000) dispatch calls

- Rapid Emergency Department Data for Surveillance
  - real-time data feeds from participating EDs (85% NSW ED activity)
  - ≈ 6,400 visits/day and ≈ 45,000 visits/week

- Groups provisional ED diagnosis codes into 9 broad syndromes
Syndromic surveillance: Alcohol

- Alcohol syndrome = intoxication, mental and behavioural disorders, gastritis, poisoning, dependence, withdrawal, rehab & counselling, and evidence of alcohol in the blood.

- Used for:
  - Public health surveillance
  - To describe alcohol harms occurring during major events e.g. NYE
  - Monitoring and evaluation of policy & prevention strategies e.g. alcopops tax (Gale et al 2015)

- Limitations of administrative ED data
  - NOT a good indicator of total burden (Indig et al 2009)

Alcohol syndrome output
Aims

1. Evaluate the precision (positive predictive value; PPV) of the alcohol syndrome to identify acute alcohol harm presentations

2. To identify predictors of acute alcohol harm ED presentations that may guide or improve the application and interpretation of the syndrome

Method

- Random sample (n=1,000) of coded alcohol problem ED presentations from 2014
- Manual review of triage notes to:
  1. Confirm alcohol involvement
  2. Classify each record into alcohol harm type (dependent variable)
     - Acute alcohol intoxication = outcome of interest
     - Chronic alcohol problem
     - Acute alcohol intoxication + chronic alcohol problem
     - Undetermined
- Flagged mention of co-morbid problems – mental health problems, suicide or self-harm, injury, poly-substance use
- Statistical analysis:
  - Descriptive stats, univariate and multivariate logistic regression
Results: positive predictive value

- 54% Acute alcohol intoxication
- 14% Chronic alcohol problem only
- 12% Chronic alcohol problem & presented intoxicated
- 21% Not Classified

* 21% of records could not be classified because they either did not mention the term alcohol in the triage notes or the patient denied consumption of alcohol.

Results: Alcohol harm, by patient characteristics (n=1,000)
Results: Alcohol harm, by service characteristics

Results: other presenting problems
Results: Predictors of acute harm ED visits

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Adjusted Odds Ratio</th>
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<tbody>
<tr>
<td>Age: 12-24 vs 25-39 years</td>
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<tr>
<td>40-54 vs 25-39 years</td>
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<tr>
<td>55+ vs 25-39 years</td>
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<tr>
<td>Weekend</td>
<td></td>
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<tr>
<td>Arrival time: 10pm-5.59am</td>
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<tr>
<td>Ambulance arrival</td>
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<tr>
<td>Not admitted</td>
<td></td>
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<tr>
<td>Injury</td>
<td></td>
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<tr>
<td>Mental health problem</td>
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</tbody>
</table>

Limitations

- 1/5 of coded alcohol presentations could not be classified
- Not a measure of burden of alcohol on EDs
- Known limitations of ED data:
  - Poorer coverage in rural and remote EDs
  - Variations between hospitals in:
    (a) Text-based discharge diagnoses options for clinicians
    (b) Mapping of discharge diagnoses to coded diagnoses
    (c) Different coded classifications systems
  - Lack of standard questions on alcohol consumption in the ED
  - Variation in content and quality of triage notes
Discussion

- Syndromic surveillance is FAST but has limitations
- Alcohol syndrome provides moderate precision as an indicator of acute alcohol harms
- Precision to identify acute harms can be improved by:
  1. Filtering data by the strongest independent predictors (e.g. applying younger age group or late night hours)
  2. Sub-setting the current syndrome by acute harm codes → requires testing and refinement
- Provides support to the proxy method commonly used to identify alcohol-related injuries by applying late-night hours to injury presentations

Implications for policy

- Increasing interest in using administrative data for public health research and policy evaluation
- Focus of recent policy has been to introduce strategies aimed at reducing binge drinking and related harms
- Remains difficult to identify alcohol-related ED presentations
- Alcohol syndrome provides timely trend data to evaluate policy and legislative changes and situational awareness
- But it currently contains background noise and requires refining to more accurately represent acute alcohol harms
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