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McKenzie, Kirsten and Enraght-Moony, Emma and Waller, Garry and Walker, Sue and Harrison, James and Henley, Geoffrey and McClure, Rod (2009) *Concordance of external cause coding in Australia*. In: National Centre for Classification in health Conference, 11th-13rd March 2009, Sydney. ( Unpublished )

# Concordance of external cause coding in Australia

## RESEARCH TEAM:

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# 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

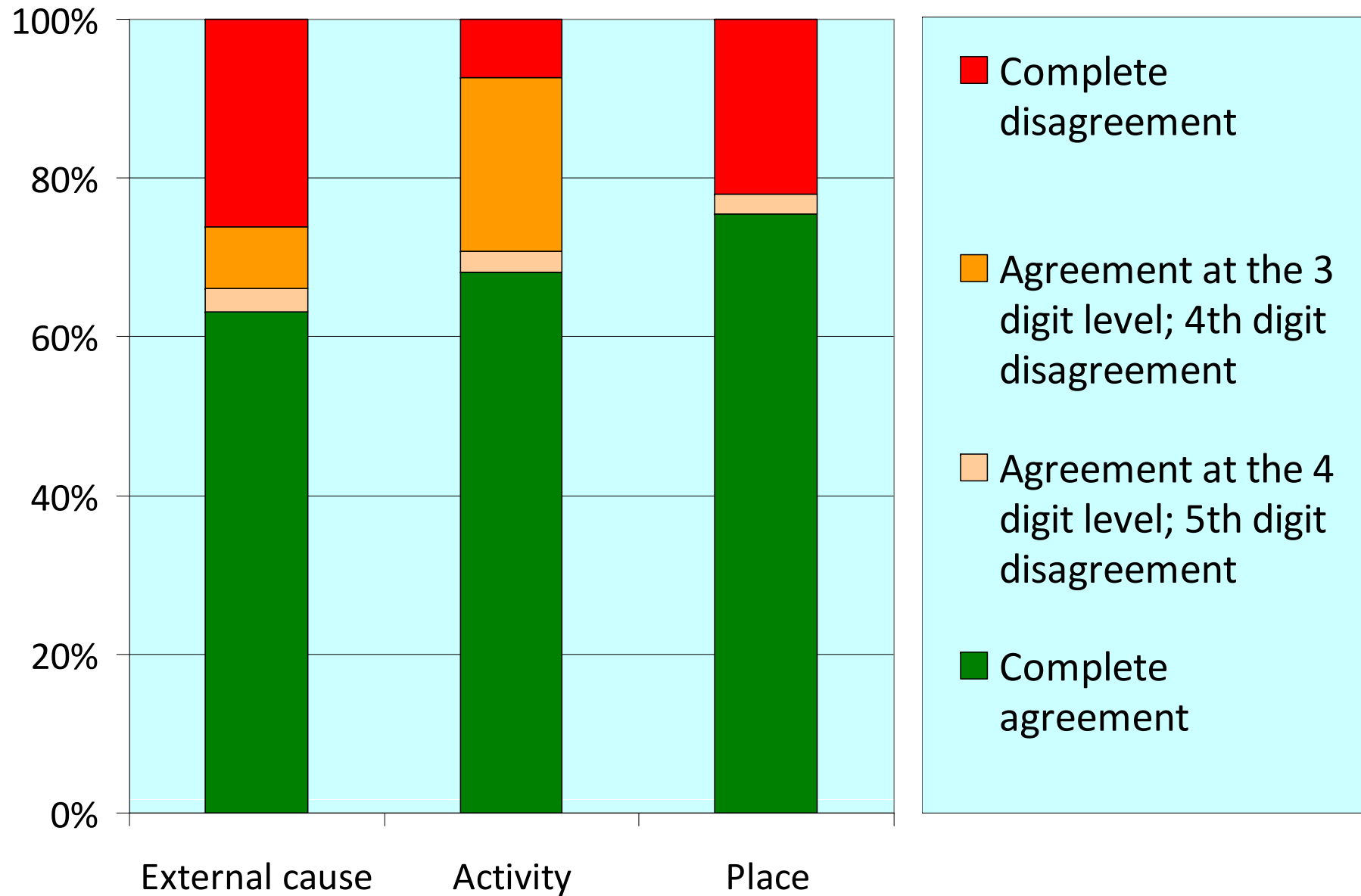
## ANALYSIS

- 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, 4<sup>th</sup> digit disagreement
  - 4 digit code agreement, 5<sup>th</sup> digit disagreement
  - Complete code agreement





# Percentage agreement at each code level



# 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 5<sup>th</sup> 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

ICD-10-AM External Cause Elements by Record Source	Intent	Mechanism	Object	Activity	Place	Cases with any narrative recorded
Ambulance report	11.9%	88.9%	60.6%	18.3%	69.8%	1991
ED records	14.4%	93.2%	67.8%	24.2%	23.2%	3982
Progress notes	15.5%	86.2%	59.3%	20.2%	21.5%	2306
Discharge summary	9.0%	66.7%	35.9%	8.4%	9.1%	2735
Other records	15.7%	86.1%	60.6%	20.5%	24.0%	1678
<b>Cases with specific element present</b>	<b>22.2%</b> (n=974)	<b>97.5%</b> (n=4264)	<b>76.1%</b> (n=3329)	<b>33.1%</b> (n=1446)	<b>51.4%</b> (n=2246)	<b>4373</b>

# Completeness of documentation for additional external cause elements

ICD-10-AM External Cause Elements by Record Source	Alcohol/ drug	Risk	Preventative	Occupation	Cases with any narrative recorded
Ambulance report	13.4%	21.0%	7.6%	2.4%	1991
ED records	13.2%	20.3%	5.2%	3.8%	3982
Progress notes	11.1%	18.2%	3.7%	4.2%	2306
Discharge summary	6.8%	10.6%	1.2%	1.6%	2735
Other records	8.8%	14.8%	3.0%	7.0%	1678
<b>Cases with specific element present</b>	<b>15.8%</b> <b>(n=691)</b>	<b>26.8%</b> <b>(n=1173)</b>	<b>8.0%</b> <b>(n=351)</b>	<b>6.7%</b> <b>(n=292)</b>	<b>4373</b>

# 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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