Motor Vehicle Crash Mortality among Northwest American Indians & Alaska Natives

Improving Data & Enhancing Access (IDEA-NW) Project, NW Tribal EpiCenter

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Background
Excess mortality among AI/ANs

- AI/AN life span 6 years below U.S. average
- After declining in 1900s, AI/AN death rates rose in mid-1980s
- Large racial disparities in injury deaths
  - Motor vehicle crashes account for majority of unintentional injury deaths
- Injury prevention has become a public health priority area for Indian Country
AI/AN race often misclassified on death certificates

- Race not often based on family’s own report
- AI/ANs misclassified more frequently than other races/ethnicities
- Misclassification errors may follow a patient between data systems
- Net result: morbidity and mortality measures are underestimated for AI/AN
Improving Data & Enhancing Access (IDEA-NW)

- Goal: Reduce misclassification of AI/AN race in surveillance systems; disseminate local-level health data to NW tribes.
- Grant funding: AHRQ (2010 to 2013), OMH (2012-2017)

Northwest Tribal Registry (“The Tribal Registry”)

- All AI/AN registered at IHS or tribal clinic in the NW
- Augmented with data from urban clinics

Linkages conducted with public health datasets
Linkages in the Northwest

- Cancer registries
- Hospital discharge systems
- Death certificates
- STD/HIV and other communicable diseases
- Trauma registries
Methods
Data Sources

• Death certificates
  ▪ Oregon: 2006-2010
  ▪ Idaho: 2006-2010

• Linked with The Tribal Registry (known AI/AN)
  ▪ Using LinkPlus software, compared data sets to find individuals who appear in both
  ▪ Names, birthdates, SSN, etc. are compared
  ▪ Probabilistic linkage - allow for errors, misspellings, missing data, nick names, etc.
  ▪ Each pair given a score indicating likelihood of a match
  ▪ “Grey area” matches reviewed by hand
Analysis

- Cause of Death defined using ICD-9/10 only underlying COD
- AI/AN in analysis = AI/AN (any mention) on death certificate and/or matched NTR
  - White race (alone) selected for comparison
  - AI/AN & White comprised 95% of the data
- Rates: 2006-2009
- Trends (Washington only): 1990-2009
- NCHS bridged-race population estimates used as population denominators
- Rates age-adjusted and presented per 100,000 population
Results
Racial misclassification

- Idaho: 8.3%
  - 95% coded as white
- Oregon: 12.9%
  - 98% coded as white
- Washington: 9.3%
  - 94% coded as white
Unintentional injury mortality, 2006-2009

Age-adjusted rate per 100,000

<table>
<thead>
<tr>
<th></th>
<th>AI/AN</th>
<th>White</th>
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</thead>
<tbody>
<tr>
<td>Idaho</td>
<td>67.0</td>
<td>42.0</td>
</tr>
<tr>
<td>RR = 1.6</td>
<td></td>
<td></td>
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<tr>
<td>Oregon</td>
<td>63.7</td>
<td>37.7</td>
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<tr>
<td>RR = 1.7</td>
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<tr>
<td>Washington</td>
<td>95.9</td>
<td>40.3</td>
</tr>
<tr>
<td>RR = 2.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Leading causes of unintentional injury deaths, NW region, 2006-2009

- Motor vehicle crashes: 39.4%
- Accidental poisoning: 33.4%
- Falls: 27.6%
- Accidental drowning: 4.2%
- Other: 14.5%

Percent of UI deaths

Blue bars (AI/AN) and red bars (White)
Motor vehicle crash mortality, 2006-2009

- **Idaho**
  - AI/AN: 34.5
  - White: 16.1
  - RR = 2.1

- **Oregon**
  - AI/AN: 20.9
  - White: 10.6
  - RR = 2.0

- **Washington**
  - AI/AN: 32.8
  - White: 9.4
  - RR = 3.5
MVC mortality by sex, 2006-2009

Age-adjusted rate per 100,000

- Idaho
  - AI/AN Male: 40.1
  - AI/AN Female: 28.9
  - White Male: 22.4
  - White Female: 9.8

- Oregon
  - AI/AN Male: 24.1
  - AI/AN Female: 17.4
  - White Male: 15.2
  - White Female: 6.2

- Washington
  - AI/AN Male: 40.6
  - AI/AN Female: 25.0
  - White Male: 13.9
  - White Female: 4.9
AI/AN MVC mortality by age, 2006-2009

Percent of MVC deaths

- Idaho:
  - Less than 8 yrs: 5.4%
  - 8-16 yrs: 10.8%
  - 17-25 yrs: 45.9%
  - 26-54 yrs: 29.7%
  - 55 yrs and older: 10.8%

- Oregon:
  - Less than 8 yrs: 5.7%
  - 8-16 yrs: 20.8%
  - 17-25 yrs: 15.1%
  - 26-54 yrs: 5.7%
  - 55 yrs and older: 4.2%

- Washington:
  - Less than 8 yrs: 2.4%
  - 8-16 yrs: 4.2%
  - 17-25 yrs: 12.0%
  - 26-54 yrs: 39.8%
  - 55 yrs and older: 41.6%
AI/AN urban vs. rural MVC mortality, 2006-2009

RR = 1.2

RR = 2.2

RR = 1.1

Age-adjusted rate per 100,000

Idaho

Oregon

Washington

Urban

Rural

27.2

32.2

15.3

34.0

29.5

33.5

3-year rolling averages

Age-adjusted rate per 100,000

APC = -2.6%
Discussion
• Correct racial classification is a critical factor in accurate surveillance of mortality
  ▪ Linkage can help address misclassification

• Unintentional injury & MVC mortality in particular remain disproportionately high for AI/ANs

• Some improvements experienced by Whites (significant decrease in MVC rates) have not occurred for AI/ANs
Tribal uses of data

• Tribes use mortality data for:
  - Health assessment
  - Grant writing and reporting
  - Program planning and evaluation
  - Policy and advocacy

• Comprehensive 3-state mortality report to be published in November, 2012
Injury prevention projects at NPAIHB

- Injury Prevention Program
  - NW Tribal Injury Prevention Coalition → 5-year Tribal Injury Prevention Action Plan
  - Focus on motor vehicle safety & elder falls

- Native CARS (Children Always Ride Safe)
  - Randomized delayed-intervention CBPR study in 6 NW Tribes
  - Goal: to design, implement, and test the effectiveness of tribal interventions to improve the use of child safety seats among AI/AN children
Limitations & challenges

- Tribal Registry under-represents urban AI/AN and those with private insurance
  - Captures 75-80% of AI/AN population
- Even with combined data years, small numbers make AI/AN rates unstable
  - Local-level analysis/reporting even more difficult
- Death certificate data does not answer the “why” questions
Thank You!

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