Using Electronically Archived Medical Information for Public Health

Analysis of American Indian/Alaska Native Communicable Disease Diagnoses from the Indian Health Service National Data Warehouse

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- No system for aggregate data
- State/local health jurisdiction (LHJ) data difficult to obtain
- Misclassification in LHJ

Indian Health Service (IHS) National Data Warehouse (NDW)

- Repository of clinical data
  - Pulled from IHS/Tribal/Urban clinic electronic medical records, reporting systems
  - Compiled since 2000
  - Managed by IHS, Albuquerque office

What’s available from the NDW?

- Epi Data Mart (EDM) contains data on:
  - Patient registration & demographics
  - Patient encounter information

THE NDW FOR OREGON AI/AN COMMUNICABLE DISEASE SURVEILLANCE

Six Communicable Diseases

- ICD-9 (clinical modification) codes for:
  - Hepatitis A
  - Hepatitis B & C (acute and chronic)
  - Gonorrhea
  - Chlamydia
  - Pertussis

- 2007-2011
- Reporting sites in Oregon

Analysis

- Compare NDW with:
  - 2 clinic reporting systems
    - Calculate sensitivity, predictive value positive
  - Oregon notifiable disease system
    - Race-corrected

Oregon Sites Reporting to NDW, 2007-2011
NDW vs. 2 Clinic Reporting Systems

- 965 encounters with case-defining diagnoses
  - 3 (0.3%) absent from NDW

<table>
<thead>
<tr>
<th>Laboratory Confirmed Cases</th>
<th>Sensitivity</th>
<th>Predictive value positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>45*</td>
<td>49%</td>
</tr>
<tr>
<td>Gonorrhea</td>
<td>4</td>
<td>0%</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>174</td>
<td>64%</td>
</tr>
</tbody>
</table>

*Data available for only 1 clinic

NDW vs. Oregon System

<table>
<thead>
<tr>
<th>Condition</th>
<th>NDW n</th>
<th>Mean Age (y)</th>
<th>Oregon n</th>
<th>Mean Age (y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B</td>
<td>29</td>
<td>42</td>
<td>73</td>
<td>40</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>515</td>
<td>46</td>
<td>346</td>
<td>44†</td>
</tr>
<tr>
<td>Gonorrhea</td>
<td>14</td>
<td>22</td>
<td>84</td>
<td>25</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>476</td>
<td>22</td>
<td>1265</td>
<td>22</td>
</tr>
</tbody>
</table>

† p<0.05, comparison with NDW

Residents from urban counties:

<table>
<thead>
<tr>
<th></th>
<th>NDW</th>
<th>Oregon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B</td>
<td>38%</td>
<td>82%†</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>35%</td>
<td>56%†</td>
</tr>
<tr>
<td>Gonorrhea</td>
<td>21%</td>
<td>76%†</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>19%</td>
<td>56%†</td>
</tr>
</tbody>
</table>

† 2010 Census Statistical Area; † p<0.05, comparison with NDW

Hepatitis B Diagnoses: Oregon System

Hepatitis B Diagnoses: NDW

Hepatitis C Diagnoses: Oregon System

Hepatitis C Diagnoses: NDW
Hepatitis C Diagnoses:
NDW vs. Oregon System

Gonorrhea Diagnoses:
Oregon System

Gonorrhea Diagnoses: NDW

Gonorrhea Diagnoses: NDW vs. Oregon System

Chlamydia Diagnoses:
Oregon System

Chlamydia Diagnoses: NDW

Chlamydia Diagnoses: NDW vs. Oregon System

Conclusions

- Clinic reporting to NDW accurate
- Data limitations of NDW
- Representativeness at state-level: depends

Next Steps

- Test accuracy of NDW at area level
- Conduct analysis for Washington
- Share results with key stakeholders
Acknowledgements

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- Portland Area IHS and Tribal Clinics
- IHS Division of Epidemiology and Disease Prevention

Resources Required for NDW

- IHS clearance and permission
- Access to statistical software package (e.g., SAS)
- Personnel to manage data collection, quality (Albuquerque)

Portland Area IHS

Extra slides