Is Emergency Department Syndromic Surveillance Useful for Monitoring General Illness Trends?

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Syndromic Surveillance in the National Capitol Region

- Hospitals from Maryland (n=8), Virginia (n=6), and the District of Columbia (n=6) involved in the overall project

- Only data from the 8 Maryland hospitals was analyzed for this abstract

Approximate area served by syndromic surveillance

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Syndromic Surveillance in Maryland

- ED logs faxed daily to Maryland Department of Health from each hospital’s Infection Control Practitioner (or their designee) in the morning
- Each log entry is coded into 1 of 8 syndromes
  - Death
  - Sepsis
  - Rash Illness
  - Respiratory Illness
  - GI illness
  - Unspecified Infectious Illness
  - Neurological Illness
  - Other

- Coding based on chief complaint for most EDs
- Relative proportions of syndromes compared to previous days (using various techniques)
- When thresholds are exceeded, follow-up is performed

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Respiratory Illness Category

• **Accepted chief complaints:**
  – cough
  – respiratory distress
  – shortness of breath
  – dyspnea
  – hypoxia
  – pneumonia
  – Wheezing
  – Asthma
  – Croup
  – Bronchitis
  – Chest pain in person, 50 yo
  – Croup

• **Excluded chief complaints:**
  – pharyngitis
  – sore throat
  – stuffed nose
  – nasal congestion
  – URI, listed alone
  – cold, listed alone
  – tonsilitis
  – palpitations
  – chest pain following trauma
  – CHF
  – COPD
  – tachycardia/bradycardia

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Methods

• The daily percentage (%) of ED visits coded as “respiratory” was averaged by week
• The total number of respiratory outbreaks reported each week was calculated
  – Respiratory outbreaks include:
    • *Influenza* or influenza-like illness
    • Pneumonia or acute febrile respiratory disease
    • Legionellosis
    • Psittacosis
    • Pertussis
Methods, continued

• **Kappa statistics** were calculated correlating weeks when the average proportion of respiratory ED visits increased by $\geq 10\%$ to weeks when reported respiratory outbreaks increased by $\geq 2$

• *Note:* **Kappa statistic** is a measurement which compares the agreement against that which might be expected by chance.

• Possible values for **Kappa** range from:
  – + 1 (perfect agreement)
  – 0 (no agreement above that expected by chance)
  – -1 (complete disagreement).
% Resp. ED Visits/wk vs. # Resp. Outbreaks/wk, Sept 2001 - Sept 2002

# Outs.

% Resp. ED Visits

MMWR wk
Results

• **Emergency Department (ED) Respiratory visits**
  – Ranged from 11 - 16.6% of total ED visits each week

• **Respiratory outbreaks**
  – Ranged from 0 – 9 outbreaks reported each week

• **Kappa statistics**

<table>
<thead>
<tr>
<th>Comparison period</th>
<th>Kappa</th>
<th>Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same week</td>
<td>-0.17</td>
<td>poor</td>
</tr>
<tr>
<td>1 week lag</td>
<td>0.30</td>
<td>fair</td>
</tr>
<tr>
<td>2 week lag</td>
<td>0.61</td>
<td>substantial</td>
</tr>
<tr>
<td>2 week lag w/1 adjustment</td>
<td>0.76</td>
<td>substantial</td>
</tr>
</tbody>
</table>

– *Note: lag occurred between week of syndromic surveillance data reported and week of outbreaks reported*

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Conclusions

• Syndromic surveillance data may reflect trends in respiratory illness approximately 2 weeks earlier than trends seen using traditional disease detection systems (such as outbreak reports)
Acknowledgements

• Thanks to Karen Fujii, Harriet Highsmith, Dipti Shah, Jessica Totaro, who helped with syndromic surveillance coding and to the hospital Infection Control Practitioners for their assistance with this project

• Also, thanks to Karen, Dipti, and Jessica for their tireless work on investigating outbreaks

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