AMR Surveillance in Estonia

P. Naaber
Tartu University Clinics
University of Tartu
AMR Surveillance background

- **EARSS**
  + Data since 2001 (E. coli, S. aureus, S. pneumonia, E. faecalis/faecium)
  + 10 labs
  + Coverage 100% of blood cultures
  + Since 2004 + A. baumannii, P. aeruginosa, K. pneumonia
  - Low number of sets/1000 patient days
  - Represents mainly nosocomial pathogens, few data from community

- **Other studies**
  - 1999-2003 S. pneumonia in children
  - 2003 Gram negative bacteria in ICU (n=4)
  - 2004 invasive infections (EARSS labs/hospitals)
  - Molecular epidemiology of GN - ongoing study
Publications: AMR in Estonia

Resistance in Estonia:

Are our bacteria more resistant or sensitive as compared with other European countries?
EARSS, MRSA


(c) EARSS

legend
- No Data
- < 1%
- 1 - 5%
- 5 - 10%
- 10 - 25%
- 25 - 50%
- > 50%
Prevalence of Gram-negative bacteria in ICU
Lõivukene et al. (submitted to Scandinavian Journal of Infectious Diseases)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Total Gram-negatives</td>
<td>60</td>
<td>39.5</td>
<td>46.8</td>
<td>55.2</td>
<td>52.5</td>
<td>62.2</td>
<td>33</td>
<td>49.5</td>
</tr>
<tr>
<td><em>K. pneumoniae</em></td>
<td>12.0</td>
<td>4.7</td>
<td>5.4</td>
<td>2.7</td>
<td>3.5</td>
<td>8.9</td>
<td>ND</td>
<td>2.1</td>
</tr>
<tr>
<td><em>A. baumannii</em></td>
<td>12.0</td>
<td>1.9</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>4.5</td>
<td>ND</td>
<td>26.8</td>
</tr>
<tr>
<td><em>P. aeruginosa</em></td>
<td>9.0</td>
<td>4.7</td>
<td>10.8</td>
<td>13.8</td>
<td>22.3</td>
<td>15.5</td>
<td>14.5</td>
<td>12.4</td>
</tr>
<tr>
<td>Total Gram-positives</td>
<td>29.2</td>
<td>45.7</td>
<td>41.7</td>
<td>42.5</td>
<td>44</td>
<td>37.8</td>
<td>56</td>
<td>45.3</td>
</tr>
<tr>
<td><em>S. aureus</em></td>
<td>11.0</td>
<td>12.5</td>
<td>13.6</td>
<td>17.2</td>
<td>18.1</td>
<td>ND*</td>
<td>20.2</td>
<td>30.9</td>
</tr>
<tr>
<td>CoNS</td>
<td>6.1</td>
<td>15.8</td>
<td>16.4</td>
<td>16.7</td>
<td>18.7</td>
<td>25.7^a</td>
<td>11.3</td>
<td>2.1</td>
</tr>
<tr>
<td>Enterococci</td>
<td>2.7</td>
<td>8.5</td>
<td>11.7</td>
<td>5.3</td>
<td>7.2</td>
<td>8.4</td>
<td>8.9</td>
<td>11.3</td>
</tr>
</tbody>
</table>
AMR of Gram-negatives in ICU

Lõivukene et al. (submitted to Scandinavian Journal of Infectious Diseases)

<table>
<thead>
<tr>
<th>Antibiotics</th>
<th>Country (reference)/MIC&lt;sub&gt;50/90 mg/L&lt;/sub&gt; and/or % of susceptibility and method</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. baumannii</td>
<td></td>
</tr>
<tr>
<td>Meropenem</td>
<td>0.75/3; 95%</td>
</tr>
<tr>
<td>P. aeruginosa</td>
<td></td>
</tr>
<tr>
<td>Ceftazidime</td>
<td>1.5/48; 58%</td>
</tr>
<tr>
<td>Meropenem</td>
<td>1/16; 81%</td>
</tr>
<tr>
<td>Imipenem</td>
<td>3/&gt;32; 72%</td>
</tr>
</tbody>
</table>
ARM surveillance: problems

• Few data from community

• Difficulties in comparison of data
  – Sampling habits
    • number of cultures/patient days
    • specimens structure
  – List of antibiotics – since April 2005 consensus minimum list of AB for testing in lab

• Need for more quantitative data (MIC)
Blood culture sets: number per 1,000 patient-days

No. of blood culture sets/1,000 patient-days

EARSS country code

HU RO SK CZ BG EE PL MT HR SI LU PT IS UK SE ES NL FR FI IL

Diagram showing the number of blood culture sets per 1,000 patient-days in different countries.
Sampling in Estonian Hospitals

- Hosp1: 25,000 patient days per year
- Hosp2: 30,000 patient days per year
- Hosp3: 20,000 patient days per year
- Hosp4: 15,000 patient days per year
- Hosp5: 10,000 patient days per year
- Hosp6: 10,000 patient days per year
- Hosp7: 10,000 patient days per year
- Hosp8: 5,000 patient days per year
- Hosp9: 5,000 patient days per year

Legend:
- 10,000 of patient days per year
- blood and CSF samples/1000 pd
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  - Sampling habits
    - number of cultures/patient days
    - specimens structure
  - List of antibiotics – since April 2005 consensus minimum list of AB for testing in lab
- Need for more quantitative data (MIC)
Distribution of pathogens according to sampling sites in ICUs

<table>
<thead>
<tr>
<th></th>
<th>ICUs of TUC, 2005</th>
<th>Italy 2001</th>
<th>Belgium 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AIÜI</td>
<td>AINE</td>
<td>AIPU</td>
</tr>
<tr>
<td>Respiratory</td>
<td>46%</td>
<td>68%</td>
<td>59%</td>
</tr>
<tr>
<td>Wound</td>
<td>14%</td>
<td>4%</td>
<td>11%</td>
</tr>
<tr>
<td>Blood/CSF</td>
<td>18%</td>
<td>19%</td>
<td>14%</td>
</tr>
</tbody>
</table>
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