Surveillance data prove an increase in methicillin-resistant S. aureus (MRSA) prevalence in German hospitals since the 1990s. In 2006, MRSA proportions around 21 percent were reported: EARSS: 21.0% in blood cultures (1); GENARS: 20.7% in any material for university hospitals (2). In contrast, little is known about the situation in ambulatory care settings in Germany. To gain a first insight, a dataset from a laboratory serving for physicians in the city and surroundings of Berlin covering the period from 2000 to 2006 was analyzed.

The dataset originates from a laboratory covering almost a third of the physicians in ambulatory care in the Berlin area; it is based on clinical specimens of all specialties 2000-2006. S. aureus identification and antimicrobial susceptibility testing (AST) were performed by VITEK 1 (bioMérieux). The phenotypical detection of MRSA was confirmed by subsequent PCR for MecA gene.

A total of 18,767 S. aureus isolates was analyzed; the sample was adjusted for copy strains: only the first isolate of the same material per patient and year was included. The percentage composition by material was: 23.6% wound swabs, 16.8% nose and throat, 16.8% swabs without location, 42.8% others. Time trends were calculated by linear regression.

### Results

Results are given in the table below and illustrated by the figures at the bottom:

From 2000 to 2006 the percentage of MRSA in ambulatory care increased from 2.7 percent to 17.0 percent with a yearly increment of 2.4% (CI: 2.2 – 2.6).

Stratification by the specialty of the physicians resulted in significant differences: highest proportions of MRSA were found in internal medicine (28.1%), followed by GPs (16.1%) and surgery (9.8%), low proportions were observed in ENT (3.8%), pediatrics (1.6%), and gynecology (0.9%). All specialties except for pediatrics and gynecology showed an increase over the years. The major increase was observed for internal medicine, it peaked with 36% in 2006.

**Table 1**: Trends of MRSA overall (shaded grey) and by specialty – specification in percent (upper value) of number of S. aureus isolates (in italics below) – regression coefficient (upper value) and 95% CI (in italics below)

**Figure 2a**: Trend of MRSA: overall

**Figure 2b**: Trend of MRSA: internal medicine

**Figure 2c**: Trend of MRSA: general medicine

**Figure 2d**: Trend of MRSA: surgery

**Table 1**: Trends of MRSA overall (shaded grey) and by specialty – specification in percent (upper value) of number of S. aureus isolates (in italics below) – regression coefficient (upper value) and 95% CI (in italics below)

<table>
<thead>
<tr>
<th>Specialty</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>Total</th>
<th>Regression coefficient (upper value) and 95% CI (in italics below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>internal medicine</td>
<td>8.9</td>
<td>8.8</td>
<td>22.9</td>
<td>32.8</td>
<td>34.0</td>
<td>31.1</td>
<td>26.0</td>
<td>28.1</td>
<td>4.4 (2.4 - 2.4)</td>
</tr>
<tr>
<td>general medicine</td>
<td>4.8</td>
<td>4.8</td>
<td>14.1</td>
<td>19.8</td>
<td>19.8</td>
<td>20.4</td>
<td>21.6</td>
<td>16.1</td>
<td>3.2 (2.4 - 3.0)</td>
</tr>
<tr>
<td>surgery</td>
<td>0.2</td>
<td>0.4</td>
<td>3.1</td>
<td>5.1</td>
<td>11.0</td>
<td>13.9</td>
<td>14.9</td>
<td>16.8</td>
<td>2.4 (2.4 - 2.4)</td>
</tr>
<tr>
<td>ear nose throat</td>
<td>1.1</td>
<td>2.0</td>
<td>0.8</td>
<td>0.6</td>
<td>1.6</td>
<td>2.2</td>
<td>1.1</td>
<td>1.6</td>
<td>0.8 (0.7 - 0.7)</td>
</tr>
<tr>
<td>ear nose throat</td>
<td>1.1</td>
<td>1.0</td>
<td>3.1</td>
<td>2.1</td>
<td>1.0</td>
<td>2.2</td>
<td>1.1</td>
<td>1.6</td>
<td>0.8 (0.7 - 0.7)</td>
</tr>
<tr>
<td>ear nose throat</td>
<td>2.7</td>
<td>3.0</td>
<td>0.7</td>
<td>1.0</td>
<td>2.2</td>
<td>1.1</td>
<td>0.9</td>
<td>0.9</td>
<td>0.8 (0.7 - 0.7)</td>
</tr>
<tr>
<td>ear nose throat</td>
<td>1.9</td>
<td>9.9</td>
<td>0.9</td>
<td>11.8</td>
<td>13.8</td>
<td>14.9</td>
<td>15.9</td>
<td>16.1</td>
<td>1.7 (2.4 - 2.3)</td>
</tr>
<tr>
<td>overall</td>
<td>2.7</td>
<td>3.0</td>
<td>0.7</td>
<td>1.0</td>
<td>2.2</td>
<td>1.1</td>
<td>0.9</td>
<td>0.9</td>
<td>0.8 (0.7 - 0.7)</td>
</tr>
</tbody>
</table>

**Figure 2a**: Trend of MRSA: overall

**Figure 2b**: Trend of MRSA: internal medicine

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Analysis of AST data from the Berlin area showed a continuous increase of MRSA proportions in ambulatory care settings from 2000 to 2006 reaching and passing levels known from hospital settings. Unfortunately, no further information is available that allows distinction of infection and colonization respectively health care associated and community acquired MRSA. In the light of these results the ambulatory care sector should be included into a national antimicrobial resistance surveillance; this will be started in Germany in 2008.

### Conclusions

Analysis of AST data from the Berlin area showed a continuous increase of MRSA proportions in ambulatory care settings from 2000 to 2006 reaching and passing levels known from hospital settings. Unfortunately, no further information is available that allows distinction of infection and colonization respectively health care associated and community acquired MRSA. In the light of these results the ambulatory care sector should be included into a national antimicrobial resistance surveillance; this will be started in Germany in 2008.

### References

1. www.rivm.nl/earss
2. www.genars.de/data.htm

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