Resistance decrease and serotype modifications of Pneumococci isolated during acute otitis media in children; 2001-2011 survey of the French Network

M. Kempf*, P. Lanotte, E. Varon, A. Lepoutre, M.C. Ploy, on behalf of the French Regional Pneumococcal Observatories (ORP) Network

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Disclosure Slide

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French Pneumococcus surveillance network

- Founded in 1995
- Includes 396 laboratories (296 public hospital laboratories and 100 private laboratories)
- Collects data from 23 regional observatories (Observatoires Régionaux du Pneumocoque, ORP)
- Coordination with the National Reference Centre for Pneumococci (CNRP) and the Institut de Veille Sanitaire (InVS)
- A biannual national surveys (collection of > 5,000 pneumococcus strains each year of study: CSF, blood, middle ear fluid, pleural fluid)
Study period 2001-2011: 6,683 *S. pneumoniae* isolated from middle ear fluid in children (<16 years) during acute otitis media (AOM)

- MIC for penicillin G (PEN), amoxicillin (AMX) and cefotaxime (CTX) by agar dilution method

- Susceptibility to erythromycin (ERY) and cotrimoxazole (SXT)

- Serotyping of a systematic sample of 1,569 strains (Statens Serum Institut Copenhagen Denmark)

- Statistical analysis, Capture System software (SAS Institute, Cary, NC)
  \(\chi^2\) test for trends (p<0.01)
Results

Evolution of antibiotic resistance

<table>
<thead>
<tr>
<th>Year</th>
<th>PEN</th>
<th>AMX</th>
<th>CTX</th>
<th>ERY</th>
<th>SXT</th>
<th>SXT</th>
<th>ERY</th>
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<td>77</td>
<td>54</td>
<td>43</td>
<td>29</td>
<td>30</td>
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<td>54</td>
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<td>29</td>
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<td>57*</td>
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<tr>
<td>2005</td>
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<td>77</td>
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<td>2007</td>
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<td>54</td>
<td>43</td>
<td>29</td>
<td>30</td>
<td>57*</td>
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<tr>
<td>2009</td>
<td>77</td>
<td>77</td>
<td>54</td>
<td>43</td>
<td>29</td>
<td>30</td>
<td>57*</td>
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<tr>
<td>2011</td>
<td>77</td>
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<td>54</td>
<td>43</td>
<td>29</td>
<td>30</td>
<td>57*</td>
</tr>
</tbody>
</table>

N° of strains: 1,695 1,378 1,159 974 922 555
Results

Evolution of serotype distribution

- PCV-7 (introduced in 2003)
- PCV-13 (since 2010)

% of isolates

- 2001: N=341
- 2003: N=367
- 2005: N=200
- 2007: N=308
- 2009: N=201
- 2011: N=152
Conclusion

- Dramatic decrease over the 2001-2011 period in France in antibiotic resistance of *S. pneumoniae* isolated during AOM

- Coincided with
  - general reduction in antibiotic consumption (2001-2007)

- Reduction in rates of PCV-7 serotypes and 19A

- Increase of non-vaccine serotypes 15A, 23A, 6C

- In 2011, PCV-13 covered 62% of the serotypes and among them, 75% of the penicillin non-susceptible isolates (19A)

To continue this surveillance to track modifications in circulating serotypes following the introduction of PCV-13