Implementation of PCV7/PCV13 in Israel Resulted in a Significant Impact on Both Pneumococcal and Non-Pneumococcal Complex Otis Media (OM) Rates

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Introduction

- Complex OM is a sequelae of OM that occurs in a considerable fraction of the children who have OM at the time of presentation and is associated with long-term sequelae in some cases.
- Complex OM is frequently caused by non-pneumococcal pathogens, affecting children in whom OM is caused by pneumococcal infection.
- The implementation of PCV13 in Israel has dramatically reduced the incidence of pediatric OM.

Objectives

- To assess the implementation of PCV13 in Israel and its impact on both pneumococcal and non-pneumococcal complex OM rates.
- To evaluate the impact of PCV13 on the incidence of OM in Israel.

Materials and Methods

- Retrospective analysis of OM cases in Israel from 2004 to 2016.
- Comparison of OM rates before and after the implementation of PCV13.
- Statistical analysis using chi-square test and Fisher’s exact test.

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Results

- Vaccine uptake is presented in Figure 3.
- Characteristics of the study episodes before PCV introduction is presented in Figure 4.
- The annual incidence of pneumococcal OM from July 2004 through June 2014 is presented in Figure 5.
- The annual incidence of non-pneumococcal OM and all-cause OM from July 2004 through June 2014 is presented in Figure 6.
- Impact of the sequential PCV7/PCV13 introduction to the NIP on pneumococcal, non-pneumococcal and all-cause OM rates is presented in Table 1.

Figure 3: Children 7-11Y old with 22 Doses of PCV (PCV7 or PCV13)

Figure 4: Characteristics of Study Episodes in Children 2-18Y in the Pre-PCV7/PCV13 Era (July 2004-June 2006)

Table 1: Impact of the Sequential PCV7/PCV13 Introduction to the NIP on Pneumococcal, Non-Pneumococcal and All-Cause OM

<table>
<thead>
<tr>
<th>OM category</th>
<th>Pre-PCV7/PCV13</th>
<th>Pre-PCV13</th>
<th>Post-PCV13</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumococcal OM</td>
<td>53.8/100,000</td>
<td>39.6/100,000</td>
<td>10.8/100,000</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Non-pneumococcal OM</td>
<td>40.9/100,000</td>
<td>27.8/100,000</td>
<td>5.8/100,000</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>All-cause OM</td>
<td>94.7/100,000</td>
<td>67.4/100,000</td>
<td>16.6/100,000</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Conclusion

- All OM cases, including pneumococcal, NTHi and culture-negative episodes enriched with complex OM were markedly reduced in children <2 years after PCV7/PCV13 introduction.
- These results are consistent with the current understanding of the natural evolution of OM.
- The reduction in the burden related to OM beyond that caused directly by vaccine-type pneumococcal could be predicted from pre-capsule PCV trials and early post implementation studies.