Use of healthcare consumption data to estimate vaccination coverage in France

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Background

In France, vaccination coverage in children is estimated using health certificates, mandatory filled in for each child at 2 years of age, and through school surveys performed every year. However, both tools allow the estimation of vaccination coverage only several years after the vaccination is performed. The purpose of this analysis was to validate a new tool for the estimation of vaccination coverage, which is likely to improve the timeliness of coverage measurements.

Objective

We used a new database, the “Echantillon Généraliste des Bénéficiaires” (EGB), to analyze coverage of two newly introduced vaccinations (HPV, invasive pneumococcal disease (IPD)) and to assess the impact of the reimbursement of the hexavalent vaccine in March 2008 on infant hepatitis B (HBV) vaccination coverage.

Methods

The EGB contains socio-demographic and exhaustive healthcare consumption data from a representative sample (n=534 049) of the population affiliated to the main French social security system (approximately 77% of the population). The database enables the linkage of each individual to his/her past vaccine reimbursements. Data are updated every month since January 2003 and follow-up will last for 20 years. Vaccines offered freely in the public sector are not recorded in the database therefore children without any pentavalent vaccine reimbursement before 1 year of age were not included in the denominators.

We estimated coverage in children born in 2008 for HBV and IPD vaccines and in girls aged 14 to 17 years in 2009 for the HPV vaccine. Data are available until 31 June 2010.

Results

HBV vaccination. Vaccination coverage was higher in children born in 2008 than in children born in 2006 before the reimbursement of the hexavalent vaccine (Figures 1-2). Of children born in 2008, 60.0% (95%CI: [58.7-61.2]) had started HBV vaccination by the age of 6 months (24.1%, 95%CI: [23.0-25.2] for those born in 2006).

Table 1

<table>
<thead>
<tr>
<th>Year of birth</th>
<th>Age in 2009</th>
<th>Vaccination coverage</th>
<th>95% Confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>17</td>
<td>35.5%</td>
<td>[33.8-37.3]</td>
</tr>
<tr>
<td>1993</td>
<td>16</td>
<td>33.1%</td>
<td>[31.4-34.9]</td>
</tr>
<tr>
<td>1994</td>
<td>15</td>
<td>27.6%</td>
<td>[25.9-29.3]</td>
</tr>
<tr>
<td>1995</td>
<td>14</td>
<td>9.9%</td>
<td>[8.8-11.0]</td>
</tr>
</tbody>
</table>

Of children born in 2008, 41.2% (95%CI: [39.8-41.6]) had begun HPV vaccination and 26.4% (95%CI: [25.6-27.2]) had received a full 3 doses vaccination scheme (Table 1).

HPV vaccination. In girls aged 14-17 years old in 2009, 40.7% (95%CI: [38.2-40.8]) had completed their IPD vaccination by the age of 15 months and 58.6% (95%CI: [57.3-59.9]) by the age of 18 months (Figure 4).

Conclusions

- HBV vaccination coverage remains insufficient but has increased significantly since the reimbursement of the hexavalent vaccine.
- HPV vaccination coverage is insufficient in girls aged 14-17 years.
- IPD vaccination coverage is very high for the first dose but it is insufficient for the full vaccination scheme.
- The EGB allows reactive and regularly updated vaccination coverage estimations to be obtained, which is particularly useful for new vaccines. This should allow a better monitoring of vaccination coverage in France.