Effectiveness of Universal Hepatitis A Immunization of Young Children in Minsk City, Belarus: Four-Year Follow Up

Dr. E. Fisenko

Minsk City Centre of Hygiene and Epidemiology
Hepatitis A Morbidity in Minsk City During the Last 50 Years (per 100,000 population/year)
Rationales for Introduction of Hepatitis A Vaccination (1)

- A significant increase in incidence was observed in 2000-2002 in Minsk city and all of Belarus.

Increase of moving average of incidence in Belarus by 1.9 times

Increase of moving average of incidence in Minsk by 1.6 times
Rationales for Introduction of Hepatitis A Vaccination (2)

Increase of proportion for adults in the age profile of Hepatitis A incidence

Increase of proportion of jaundice and severe forms of Hepatitis A

- Jaundice forms
- Severe forms

Up 12%
Up 2%
Program of Hepatitis A Vaccination in Minsk

Universal vaccination:
- 6 y.o. children before entering primary school (launched in 2003)

Vaccination of risk groups:
- Community dwelling children and teenagers 6-13 y.o. (launched in 2005)
- Adults of epidemiologically significant professions for HAV transmission (launched in 2005)

Outbreaks control:
- Children and adults in outbreak sites (launched in 2004)
Study Objectives

- To evaluate a short-term impact of universal Hepatitis A vaccination of children 6 years of age

- To document Hepatitis A seroprevalence in different age groups
Effectiveness of Universal Hepatitis A Vaccination of 6 Years Old Children

Routine vaccination coverage

incidence per 10,000 age-population
Herd Immunity: Decrease of Incidence in All Age Groups

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Incidence per 10,000</th>
<th>2000-2002</th>
<th>2005-2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5 y.o.</td>
<td>4.2</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>6-9 y.o.</td>
<td>8.2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>10-14 y.o.</td>
<td>6.7</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>15-29 y.o.</td>
<td>4.2</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>&gt;30 y.o.</td>
<td>1.3</td>
<td>0.3</td>
<td></td>
</tr>
</tbody>
</table>

2000-2002

2005-2006
Hepatitis A Morbidity in Minsk: Forecasted and Factual Incidence

- **Forecasted Incidence**
  - A line graph showing the forecasted incidence of Hepatitis A in Minsk from 1994 to 2006.
  - The incidence per 100,000 is depicted on the y-axis, while the years are shown on the x-axis.
  - The forecasted incidence line starts high in 1994 and shows a downward trend, with a slight increase in 2001 and a significant decrease after 2002.

- **Introduction of Vaccination**
  - A green arrow indicating the introduction of vaccination, which is likely the reason for the decrease in incidence.

- **Factual Incidence**
  - The actual incidence line, also showing a downward trend after the introduction of vaccination, but with some fluctuations.

- **Years of Observation**
### Hepatitis A Incidence in Vaccinated vs. Non-vaccinated Children 1-17 Years of Age (2003-2006)

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>HA cases</th>
<th>Index per 10,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccinated</td>
<td>65,171</td>
<td>2 *</td>
<td>0.31</td>
</tr>
<tr>
<td>Non-vaccinated</td>
<td>210,900</td>
<td>131</td>
<td>6.21</td>
</tr>
</tbody>
</table>

*Two cases of Hepatitis A occurred in children who were vaccinated within 14 days after exposure to HAV, so they probably were in the incubation period of the infection.*
Effectiveness of Hepatitis A Vaccination in Children (1-17 Years of Age, 2003-2006)

- Vaccinated children: 0.31 cases per 10,000
- Non-vaccinated children: 6.21 cases per 10,000

20 times (95%) difference
Changes of Age-Specific Hepatitis A Morbidity in 2000-2006

2000-2 (no vaccination against Hepatitis A): 33-41% of child cases
2005-6: 7-12% of child cases
Hepatitis A Seroprevalence Age Structure (May-October 2007, 568 subjects)
Introduction of Universal Hepatitis A vaccination in Minsk resulted in sharply reduced incidence in both vaccinated and non-vaccinated children.

Hepatitis A virus circulation might be further decreased by beginning vaccination at a younger age.

Young adults in Minsk continue to be at risk of Hepatitis A infection.
Thank You for Attention