

Impact of Haemophilus influenzae type b (Hib) immunization on the incidence of Hib meningitis in Poland

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Introduction

- Since 2004, Hib vaccine was provided for free only to specific high-risk groups (infants from orphanages and living in families with more than 3 children).
- A substantial number of parents were paying for their children being vaccinated against Hib disease.
- In 2007 Hib monovalent conjugate vaccine was implemented in the universal childhood immunization schedule (primary doses at 6-8 weeks, 3-4 months and 5-6 months, supplementary dose at 16-18 months).
- The aim of the present paper was to assess the impact of immunization against Hib disease on epidemiology of Hib meningitis in Poland.

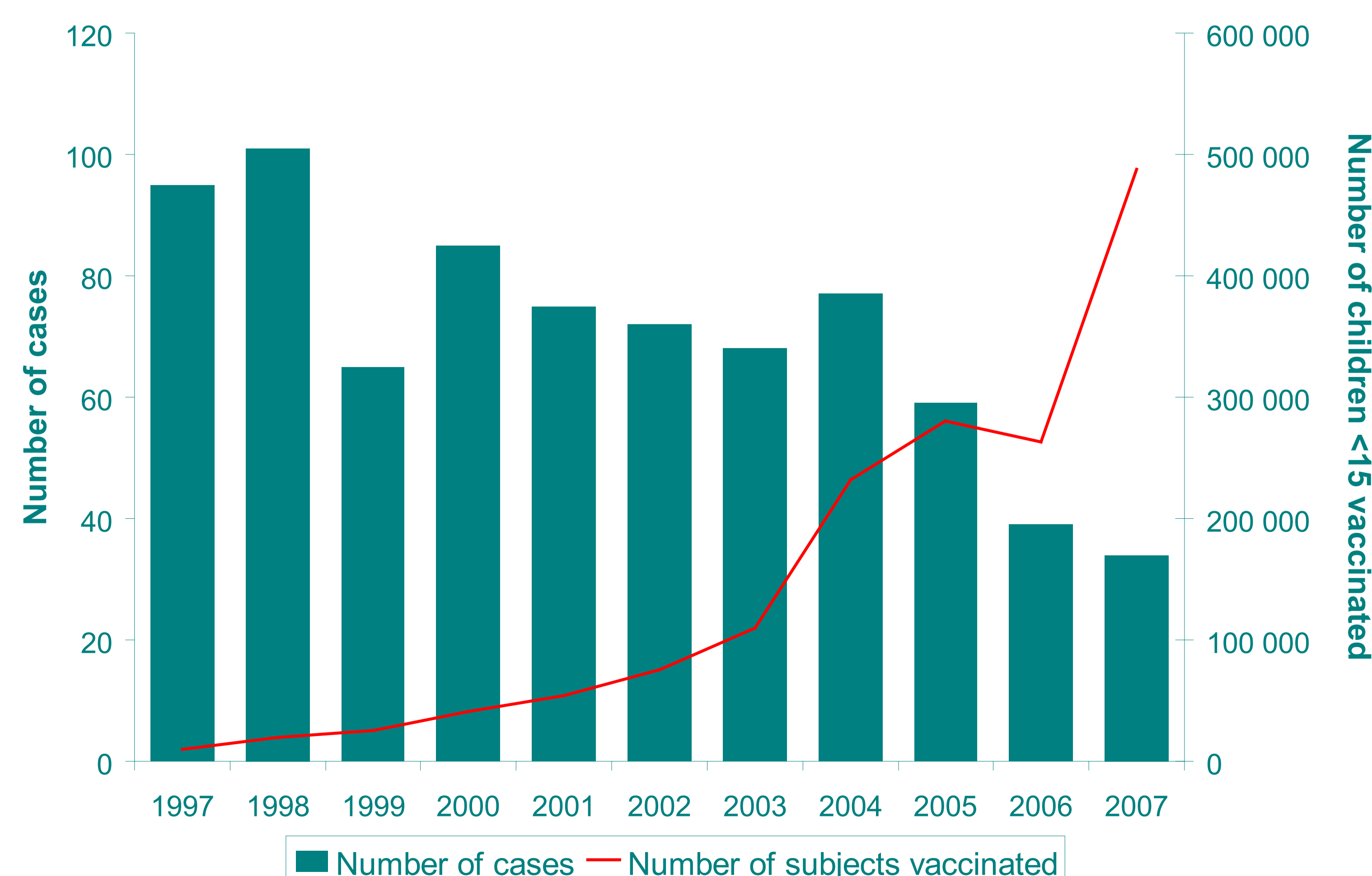
Material and Methods

- Aggregated data on Hib vaccination coverage and on Hib meningitis from 1997 to 2007 were used in the study (n=769).
- Individual case forms summarizing the investigation of Hib meningitis in 2005 - 2007 were used (n=127).
- Restriction of the analysis to meningitis was related to the extension of surveillance to the whole-spectrum Hib invasive disease from 2005.

Results

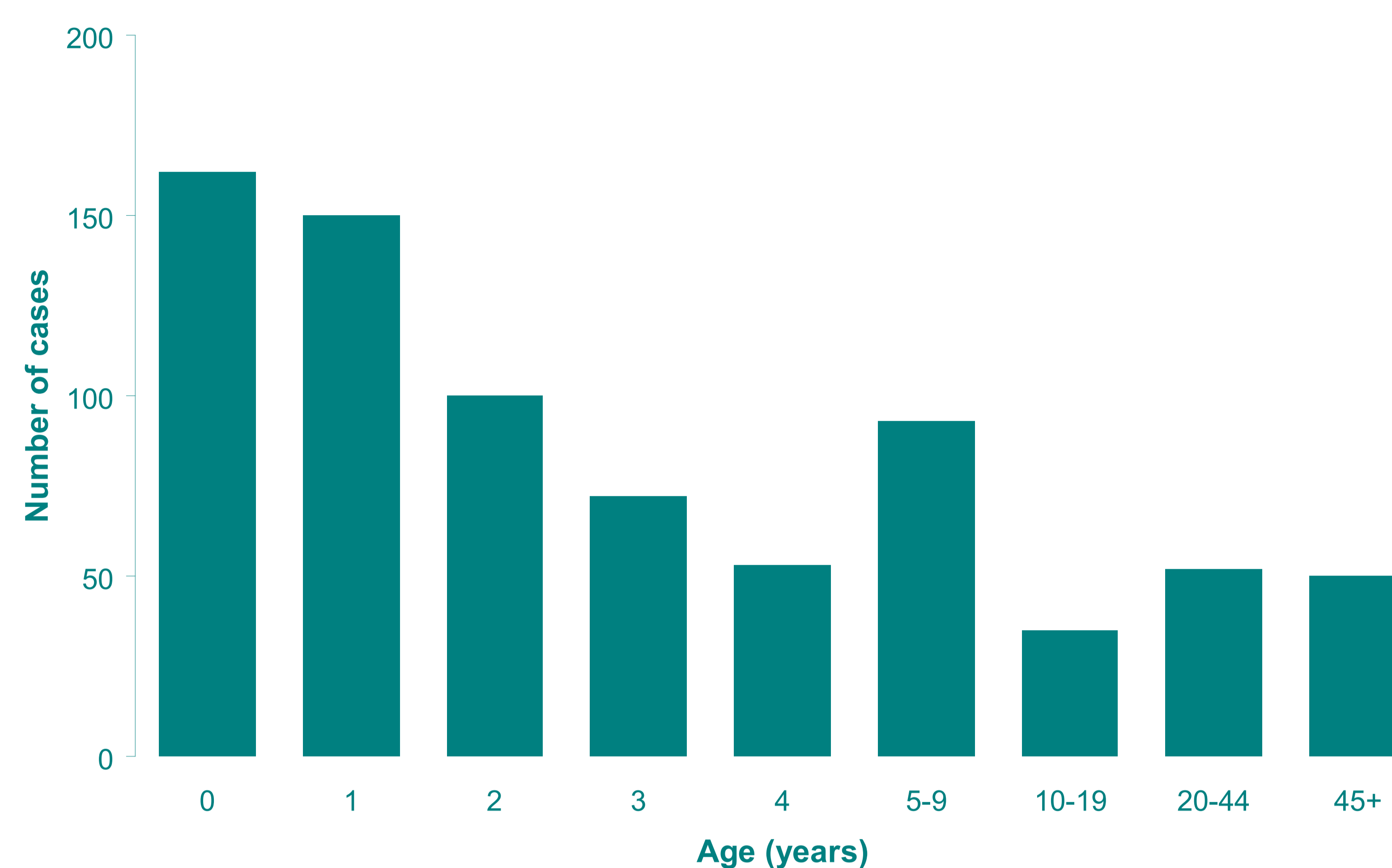
- In 1997-2007 the number of vaccinated children under 15 years of age has increased from 9,557 to 487,997 (Fig. 1).
- The preliminary data from 2007 indicate that 73,9% of 3-year olds were immunized against Hib.
- In the studied period the number of reported cases has decreased from 95 in 1997 to 34 in 2007 (Fig. 1).

Fig.1. Hib meningitis cases and number of immunized subjects, Poland, 1997-2007.



- The highest Hib meningitis incidence was recorded among children <2 years (Fig.2).

Fig.2. Number of Hib meningitis cases by age group, Poland, 1997-2007.



- During years 2005 – 2007 4 cases of vaccine failure were recorded (Tab. 1).

Table 1. Line list of vaccinated children with diagnosed Hib meningitis, Poland, 2005-2007.

Year	Gender	Age	Vaccine	# doses	Case classification
2005	female	2 mo	Act-Hib	1	confirmed
2007	female	5 yrs	Hiberix	1	probable
2006	female	6 mo	ACT Hib	1	probable
2007	male	16 mo	Pentaxim	3	confirmed

- Since the implementation of the EU case definition for Hib invasive disease, the diagnostic certainty of reported cases has improved (Tab. 2).

Table 2. Case classification of Hib meningitis cases by year, Poland, 2005-2007.

	2005	2006	2007
Discarded	2	0	0
Probable	11	7	5
Confirmed	41	32	28
Proportion confirmed	75.9%	82.1%	84.8%

Conclusions

- Following a systematic increase in the proportion of children immunized against Hib, Hib meningitis incidence has dropped significantly in past decade from 2.9 per 100 000 inhabitants in 1997 to 1.2 in 2007.
- Since case-based data on Hib invasive disease are available since 2005, more detailed assessment of impact of Hib vaccinations is not possible.
- Improvement of Hib disease surveillance is expected, with collection of individual case reports, implementation of case definition enhanced strain monitoring implemented at the new reference laboratory.