



FACT SHEET

***Haemophilus Influenzae* type b (Hib) in South and South East Asia**

Haemophilus influenzae type B (*Hib*) and *Streptococcus pneumoniae* are the two primary causes of life-threatening pneumonia in children under 5 years of age. *Hib* is also the leading cause of endemic bacterial meningitis in infants and young children in countries where the *Hib* vaccine is not routinely used and one-third to one-half of the cases children either die or suffer permanent disability such as deafness, paralysis or mental retardation. Other important causes of deadly bacterial meningitis include pneumococcus and meningococcus.

Hib disease: A threat for children in South and South East Asia and around the world

- Hib is a leading cause of bacterial childhood meningitis and important cause of severe pneumonia in South and SE Asia
- The World Health Organization (WHO) estimates that 19% of under 5 deaths are due to pneumonia in South and SE Asia
- Increasing multi-drug resistance poses an even greater threat
- Globally, over 1000 children < 5 years old die daily from Hib disease

Hib pneumonia and meningitis are difficult to detect and burden is often significantly underestimated

- Surveillance often captures only a very small portion of the true burden of disease:
 - Hib is a fastidious organism making it difficult to detect; lab infrastructure is not always sufficient; prior use of antibiotics may mask the existence of the bacteria; lumbar punctures (for meningitis) are not always done; or children with Hib never reach a healthcare facility
- Hib vaccine probe studies demonstrate that the preventable burden of Hib disease is many times higher than what can be shown in a laboratory
 - A Bangladesh case-control study showed that the Hib vaccine prevented over 1/3 of hospitalized pneumonias and over 80% of hospitalized probable bacterial meningitis cases¹
 - A Hib vaccine trial in Lombok, Indonesia² detected Hib meningitis incidence rates greater than 70/100,000 in children under 5 compared to previous surveillance data from Asia showing an incidence of less than 10/100,000

The World Health Organization recommends Hib vaccine for all countries, without delay

- "In view of their demonstrated safety and efficacy, conjugate Hib vaccines should be included in all routine infant immunization programmes...Lack of local surveillance data should not delay the introduction of the vaccines...³" (2006)

Hib vaccine is safe, effective and shown to be a highly cost-effective intervention

- Hib vaccine has been available for over 17 years and is over 95% efficacious against invasive disease: routine use eliminates Hib disease
- Studies in The Gambia⁴, Chile⁵, Brazil⁶, Colombia⁷ and Bangladesh¹ showed that Hib prevented a significant portion of x-ray confirmed pneumonia
- A study in Lombok, Indonesia showed that Hib vaccine prevented a statistically significant portion of clinical pneumonia⁸
- Kenya⁹, Malawi¹⁰ and The Gambia⁴ surveillance studies all showed Hib vaccine drastically reduced Hib disease following routine use
- A recent study of Hib vaccine effectiveness against Hib meningitis in Uganda showed a drop in Hib meningitis by 85% within 4 years of vaccine introduction and fell to zero in the fifth year. Inclusion of Hib vaccine in the Ugandan immunization programme annually prevents almost 30,000 cases of severe Hib disease and 5,000 deaths in children under 5 years of age.¹¹
- Recent studies in Kenya¹² and Indonesia¹³ corroborated evidence in other developing countries showing that Hib vaccine is highly cost effective

There is a sustainable, affordable supply of Hib vaccine for resource-constrained countries

- Funding from the GAVI Alliance enables eligible countries to purchase vaccine at a subsidized price through 2015
 - Co-payments are based on a country's ability to pay. Poorest countries pay \$0.23/dose, while countries in the intermediate group will pay a starting co-payment of \$0.43/dose
- Hib vaccine is available in many private markets in Asia: Sri Lanka introduced Hib vaccine into its routine immunization program in January 2008 and Bangladesh and Pakistan are planning for introduction in 2008.
- Pentavalent combinations (DTP-Hepatitis B-Hib) which can be integrated into current immunization schedules, are currently available in fully liquid form and liquid-lyophilized form
- Additional pentavalent suppliers, including those from emerging markets, are expected in 2007 and beyond
- As demand for Hib vaccine increases and new suppliers enter the market over the next few years, prices are expected to decline making it easier for countries to achieve financial independence.

Minimum co-financing levels per dose (US\$) Single or combination

Vaccine	COUNTRY GROUPINGS			
	Poorest	Intermediate	Least Poor	Fragile States
1 st new vaccine	0.20	0.30	0.30 (+15% annual increment)	0.10
each additional vaccine	0.15	0.15	0.15 (+15% annual increment)	0.15

2008 GAVI applications deadlines: February 8, May 2 and September 25, 2008

The Hib Initiative

- The Hib Initiative aims to guide countries in making informed decisions regarding introduction or continuation of Hib vaccine programs in the context of other health problems and offers technical assistance and support in the following areas:
 - Research and surveillance, planning coordination in decision making and implementation, and advocacy and communication support for GAVI-eligible countries
- The Hib Initiative unites experts from Johns Hopkins Bloomberg School of Public Health, the London School of Hygiene and Tropical Medicine, the World Health Organization, and the Centers for Disease Control and Prevention (CDC),
- The Hib Initiative is supported by a 4-year grant from the GAVI Alliance (www.gavialliance.org)

References

- ¹ Baqui A, et al. Effectiveness of Haemophilus influenzae Type B Conjugate Vaccine on Prevention of Pneumonia and Meningitis in Bangladeshi Children: A Case-Control Study. *Pediatr Infect Dis J* 2007; 26(7):565-571.
- ² Gessner BD, et al. Incidences of vaccine-preventable *Haemophilus influenzae* type b pneumonia and meningitis in Indonesian children: hamlet-randomised vaccine-probe trial. *Lancet* 2005; 365(9453):43-52.
- ³ Weekly Epidemiological Record, Jan 6, 2006; www.who.int/wer
- ⁴ Mulholland K, et al. Randomised trial of Haemophilus influenzae type-b tetanus protein conjugate vaccine for prevention of pneumonia and meningitis in Gambian infants. *Lancet*. 1997 Apr 26; 349(9060):1191-7.
- ⁵ Levine OS, et al. Defining the Burden of Pneumonia in Children Preventable by Vaccination against *Haemophilus Influenzae* Type b. *Pediatr Infect Dis J* 1999; 18, 1060-64.
- ⁶ de Andrade ALSS, et al Effectiveness of *Haemophilus influenzae* type B vaccine on childhood pneumonia: a case-control study in Brazil. *Int J of Epidemiology* 2004; 33(1): 173-181.
- ⁷ de la Hoz F, et al. Effectiveness of *Haemophilus influenzae* type B vaccine against bacterial pneumonia in Colombia. *Vaccine* 2004; 23:36-42
- ⁸ Gessner BD, et al. Incidences of vaccine-preventable *Haemophilus influenzae* type b pneumonia and meningitis in Indonesian children: hamlet-randomised vaccine-probe trial. *Lancet* 2005; 365(9453):43-52.
- ⁹ Cowgill KD, Ndiritu M, Nyiro J, Slack MPE, Chipchatsi S, Ismail A, Kaumau T, Mwangi I, English M, Newton C RJC, Feikin DR, Scott J A G. Effectiveness of Haemophilus influenzae type b conjugate vaccine introduction into routine childhood immunization in Kenya. *JAMA* 2006; 296: 671-678.
- ¹⁰ Daza P, Banda R, Misoya K, Katsulukuta A, Gessner B, Katsande R, Mhlanga B, Mueller J, Nelson C, Phiri A, Molyneux E, Molyneux M. The impact of routine immunization with Haemophilus influenzae type B vaccine in Malawi, a country with high human immunodeficiency virus prevalence. *Vaccine* 2006; in press. E-publication June 9. <http://dx.doi.org/10.1016/j.vaccine.2006.05.076>
- ¹¹ Hyun-Ju Lee E, Lewis R, Makumbi I, Kekitiinwa A, Ediamu T, Bazibu M, Braka F, Flannery B, Zuber P, Feikin D. *Haemophilus influenzae* type b conjugate vaccine is highly effective in the Ugandan routine immunization program: a case-control study. *Trop Med Int Health*. 2008 Apr; 13(4):495-502.
- ¹² Akumu, A. O., English, M., Scott, J. A. G., Griffiths, U. Economic evaluation of delivering Haemophilus influenzae type b vaccine in routine immunization services in Kenya. *Bulletin of the World Health Organization*. July 2007, 85(7).
- ¹³ Gessner, B.D., Sedyaningih, E.R., Griffiths, U.K., Sutanto, A., Linehan, M., Mercer, D., Mulholland, E.K., Walker, D.G., Steinhoff, M., Nadjib, M. Vaccine-preventable *Haemophilus influenzae* type b (Hib) disease burden and cost-effectiveness of infant Hib vaccination in Indonesia. *Pediatr Infect Dis J*. 2008 May;27(5):438-43.

**Visit the Hib Initiative at www.HibAction.org or
contact your local or regional WHO immunizations representative for more information**

