Haemophilus influenzae type b (Hib) Vaccination Position Paper

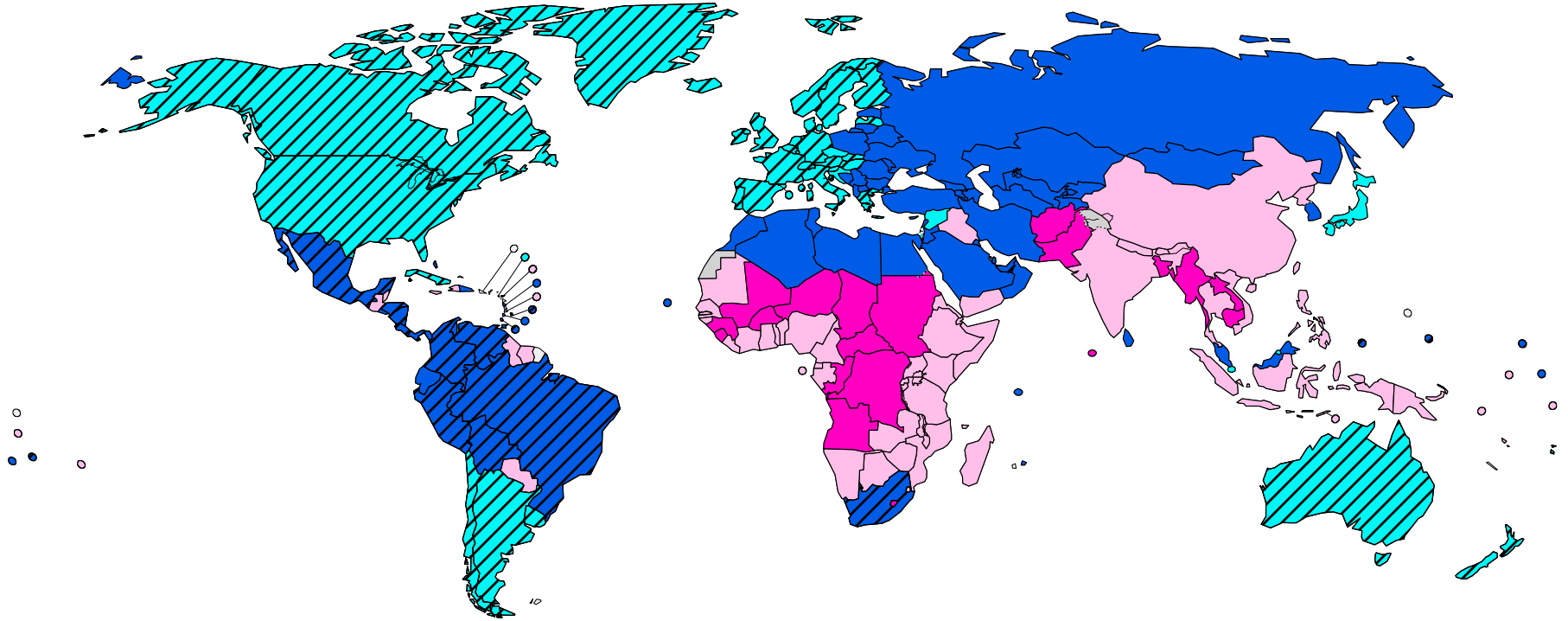
July 2013

Hib burden-pre vaccine era

- In 2000, before widespread introduction of Hib vaccine in resource-poor countries, Hib caused:
  - 8.13 million cases of serious disease in children aged 1-59 months (uncertainty range 7.33-13.2 million cases)
  - 371,000 deaths (uncertainty range 247,000-527,000).

Watt JP et al. Burden of disease caused by *Haemophilus influenzae* type b in children younger than 5 years: global estimates. *The Lancet*, 2009, 374:(9693) 903-911.

Hib incidence rate per 100,000 children under five years of age, 2000



0 800 1,600 3,200 Kilometers

Hib (containing) Vaccine in schedule in 2000

<300

300 - <1000

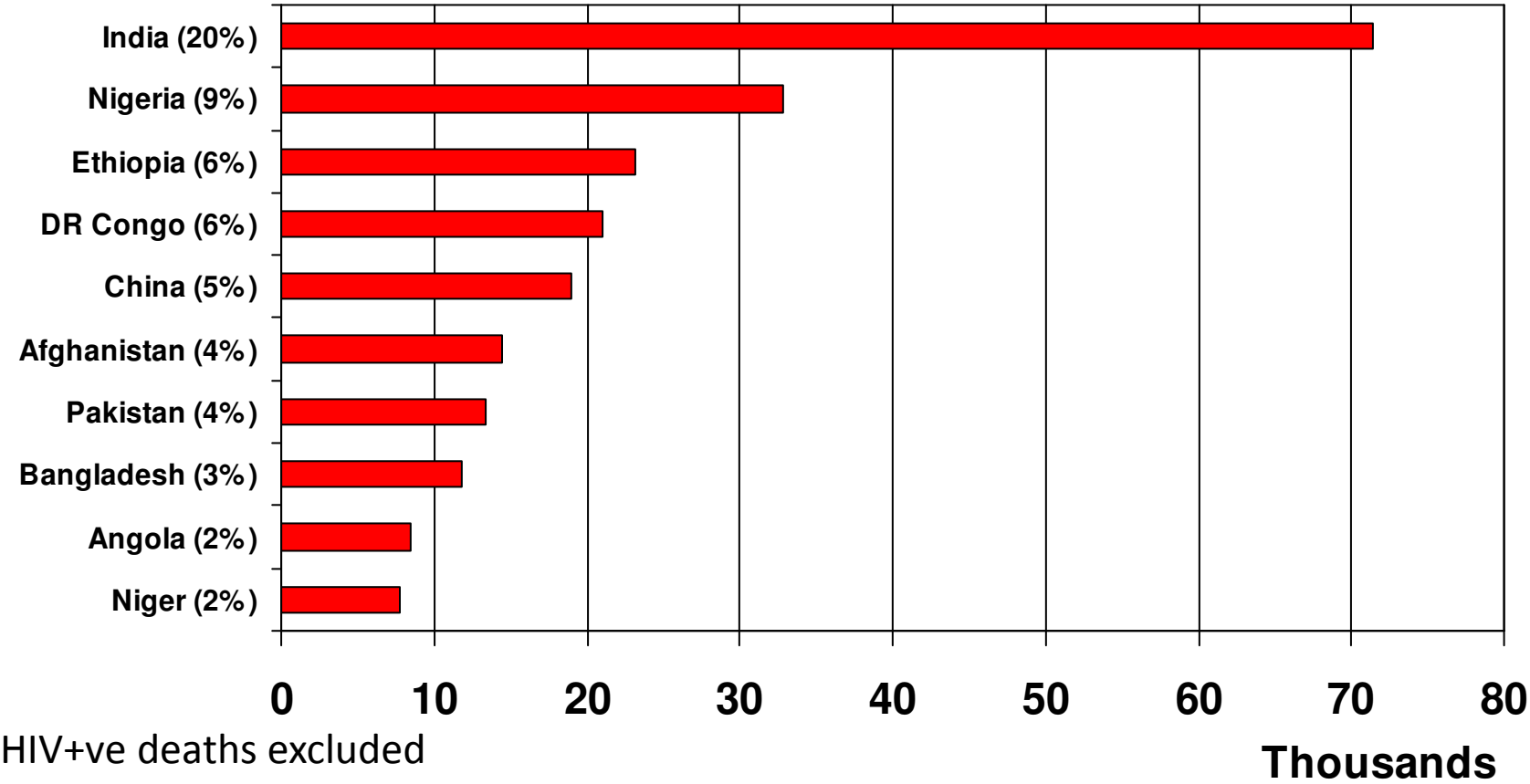
1000 - <2000

≥ 2000

Source: WHO/IVB official estimates based on Global Burden of Diseases estimates, 2008.
(http://www.who.int/immunization_monitoring/burden/Pneumo_hib_estimates_2000/en/index.html)
194 WHO Member States. Map production: Immunization Vaccines and Biologicals, (IVB). World Health Organization
Date of slide: 19 September 2013

Number of deaths* in children under-five years of age due to Hib disease, 2000

Total = 363 000 deaths, 60% of child deaths concentrated in 10 countries



* HIV+ve deaths excluded

Data Source: WHO/IVB, July 2009 http://www.who.int/nuvi/hib/decision_implementation/en/

Hib transmission and disease

- Starts with colonization of the nasopharynx.
- Transmitted by droplets from nasopharynx
- **Local disease** caused by direct spread-e.g. sinusitis, middle ear infections
- **Invasive disease** caused by crossing into the blood stream and spreading to brain, lungs other sites to cause **meningitis, pneumonia**, and other serious diseases including **septic arthritis, osteomyelitis, pericarditis, cellulitis and epiglottitis.**

Age distribution of Hib disease

- Greatest disease burden 4 - 18 months.
- Age of peak burden varies considerably.
  - > 90% invasive Hib disease cases in children under 5 years : 59% of these cases in infants < 12 months.
  - low mortality settings/Europe, 37 - 46% of cases in infants < 12mths.
  - high mortality settings in Africa and Asia, closer to 80 per cent in infants <12 months

Hib in children with HIV

- Children infected with HIV have a 5.9 fold (95%CI 2.7-12.6) increased risk of Hib invasive disease
- HIV-infected children are more likely to present with bacteraemic Hib pneumonia than Hib meningitis.
- Children with HIV have only slightly higher risk of developing meningitis however, the severity is increased

Impact of vaccination

- Use of Hib conjugate vaccines has led to declines of greater than 90% in invasive Hib disease in the countries that have included them in national immunization programmes.
- Nasopharyngeal colonization by Hib has also been reduced considerably in populations with high Hib immunization coverage, in part due to herd protection induced by use of conjugate Hib vaccines.

WHO position

- WHO recommends the inclusion of conjugate Hib vaccines in all infant immunization programmes
- Vaccination is the only effective means of preventing Hib disease and is becoming increasingly important as Hib antibiotic resistance grows.
- Hib vaccines should be part of a comprehensive strategy to control pneumonia including :
  - ✓ exclusive breastfeeding for six months,
  - ✓ hand washing with soap,
  - ✓ improved water supply and sanitation,
  - ✓ reduction of household air pollution,
  - ✓ improved case management at community and health facility levels

Recommended schedules

Any of the following Hib immunization schedules may be used:

- 3 primary doses without a booster (3p);
- 2 primary doses plus a booster (2p+1);
- 3 primary doses with a booster (3p+1).

Selection of schedules may depend on settings e.g.:

- If peak burden of severe Hib disease occurs in young infants, 3 doses of vaccine early in life may confer a greater benefit.
- If greatest disease morbidity and mortality occur later, or rate reductions of disease are not fully sustained, a booster dose may be given, by following either a 2p+1 or 3p+1 schedule.

Age at first dose

- Because serious Hib disease occurs most commonly in children aged between 4 and 18 months, immunization should start **from 6 weeks of age, or as early as possible** thereafter
- The interval between doses should be at least 4 weeks if 3 primary doses are given, and at least 8 weeks if 2 primary doses are given.
- Booster doses should be administered at least 6 months after completion of the primary series

Late or interrupted vaccination

- If vaccination has been interrupted, the schedule should be resumed without repeating the previous dose.
- Children who start vaccination late, but are aged < 12 months, should complete the vaccination schedule (e.g. have 3 primary doses or 2 primary doses plus a booster).
- When a first dose is given to a child > 12 months of age, only one dose is recommended.
- Hib vaccine is not required for healthy children after 5 years of age.

Contraindications/precautions

- Hib conjugate vaccine is contraindicated in people with known allergies to any component of the vaccine.
- There are no other known contraindications or precautions