
Immunization Dialogue

***Haemophilus influenzae* Type b Vaccine**

Q. 1. *What are the Haemophilus influenzae type b vaccines available in India?*

A. 1. Two *Haemophilus influenzae* type b (Hib) vaccines are currently marketed in India. One vaccine is HbOC (trade name Hib TITER), which differs from other Hib vaccines as it contains oligosaccharides of the capsular polysaccharide; the carrier protein is a non-toxic variant of diphtheria toxin. The second vaccine is tetanus toxoid-conjugated Hib capsular polysaccharide (trade name ACTHIB). There have been some small-scale and preliminary studies in India confirming the immunogenic efficacy of the Hib vaccines. Therefore we can be reasonably sure that they will protect against Hib invasive disease.

Q. 2. *Should we immunize all our infants with the Hib vaccine routinely?*

A. 2. Hib immunization is not now routinely recommended in India; indeed the cost-benefit of universal immunization is unknown and it is not justified to suggest now that it should be incorporated in the national immunization schedule in view of the very high cost of the vaccines.

On the other hand, we do know that a very large proportion of cases of bacterial meningitis in infancy and pre-school age is caused by Hib. Hib is also a major cause of bacterial pneumonia in the same age groups. Therefore, for those who can afford the vaccine easily, it should be recommended. In families with limited income, there may be other more urgent needs/priorities for funds, and their diversion to purchase

Hib vaccine may not be justified, taking into account the low incidence of the diseases to be prevented.

Q. 3. *What is the immunization schedule and its adverse effects if any?*

A. 1. The IAP Immunization Committee has not made recommendations about scheduling Hib vaccines for children in India. Elsewhere it is given at 2,4 and 6 months, with a booster at 12-15 months. If the infant is 6 months already, 2 doses followed by one booster are sufficient; however the greatest risk of meningitis is in infancy and early immunization is ideal. If the child is 12-14 months already, one dose and one booster (2 months later) are given. In children of 15 months and above, only one dose is sufficient.

The rationale of this approach is rather unique. Hib is often *m* part of the resident bacterial flora, particularly beyond infancy. As a result of the pharyngeal colonization, small amounts of Hib antibodies are often present in older infants and pre-school children. Such low antibody levels are usually not protective against invasion of Hib into tissues, blood stream or across blood-brain barrier, resulting in "invasive Hib diseases". Such infectious diseases are called 'endogenous' as they are caused by organisms from one's own body. Immunization with protein-conjugated Hib vaccines induce high (and protective) levels of antibody in un-infected infants. In already infected, hence already sensitized subjects, namely older infants and pre-schoolers, lesser number of doses are sufficient to boost pre-existing natural immune response. Moreover, since the risk of invasive disease declines from mid-infancy the duration of protection also need to be shorter; again

lesser number of doses will suffice. In children at and beyond 15 months, a single dose may act as booster for the natural immunity.

The Hib vaccines are exceptionally safe and mostly free from reaction, locally or systemically.

Q. 1. *Upto what age can children be immunized with the above vaccine?*

A. 1. Most experts believe that there is hardly any need or value in giving Hib vaccine to children beyond 5 years of life. When we obtain epidemiological data on the incidence of invasive Hib diseases and the age-specific prevalence of Hib carriage

in the upper respiratory tract, we will be able to make more evidence-based recommendations.

Questions by
Rewati Govindarajan,
Senior Medical Officer,
Hindustan Antibiotics Limited,
Pimpri, Pune 411 018.

Reply by
T. Jacob John,
Chairman,
IAP Committee on Immunization,
Emeritus Professor,
Department of Clinical Virology,
C.M.C. Hospital, Vellore 632 004.