

Universal Pneumococcal Vaccination for India

The recent correspondence on pneumococcal vaccine(1-3) prompts the following considerations:

1. Is there a role for Pneumococcal vaccine in India?

Undoubtedly, there is paucity of data to suggest that pneumococcal disease is a significant problem in India; this argues against considering vaccination(1,2). But “absence of evidence” cannot be interpreted as ‘evidence of absence’ of pneumococcal disease. Therefore, pending the availability of good quality data, it may be prudent to analyze whether there is any reason to believe that the disease burden is likely to be lower than observed in limited studies and other developing countries. If not, this indirectly suggests a relatively high burden that argues in favour of vaccination. It may be recalled that paucity of large community based studies on epidemiology of Hib disease has been partly responsible for not incorporating Hib vaccine into the national schedule.

2. Do currently available pneumococcal vaccines in India have a role?

The polysaccharide vaccine can be used only in older infants and hence does not offer adequate protection since the disease also affects young infants. The serotypes in the 7-valent conjugate vaccine being aggressively marketed account for only half of those responsible for invasive disease among children under five years of age based on current data(4,5). Therefore, both are not worth considering for universal vaccination on epidemiological grounds, irrespective of economic considerations. The efficacy of the polyvalent preparations currently undergoing multicentric trials remains to be determined.

3. What is the way forward?

A large multi-centric, community based epidemiological study to confirm the high burden (or otherwise) of pneumococcal disease and the serotypes responsible.

Professionals need to send a clear message to policy makers about the need (or otherwise) of vaccines for universal immunization. This must be done based on epidemiological considerations in the context of our country, safety profile and efficacy. Policy makers need to consider economic factors in addition to these. Taking up this responsibility on their behalf will only provide an excuse for policy makers to defer/cancel decisions in favour of introducing vaccines. Perhaps this is why no new vaccine has been incorporated in the national schedule after 1985 (measles vaccine) despite great strides in economic and technological spheres. On the other hand, it should be remembered that unprecedented amounts of money have been (and are being) spent on supplementary vaccination with OPV. Therefore, where there is a will (to vaccinate), there will be a way (to pay), *pun intended*.

Manufacturers should be “encouraged” to design a Pneumococcal vaccine that is efficacious in the context of the epidemiology of our country. This may seem utopian, considering the time and expense involved. However, a potentially assured annual consumption of 100 million doses (25 million births × 4 doses; 3 primary plus booster) would attract manufacturers. This would also spur indigenous production which should be the goal, since dependence on importation will not be feasible in the long-term. As for other vaccines, highlighting an annual requirement of this magnitude can be an effective tool to bargain for an appropriate price.

Thus, pneumococcal vaccine is worth considering in India for universal vaccination, but neither of the currently available vaccines is appropriate. A possible way forward has been presented herein.

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Universal Pneumococcal Vaccination in India: Is it a Priority?

It was exciting to read the editorial about pneumococcal vaccination for Indian children by Levine and Cherian(1). However, this editorial raises certain important issues concerning pneumococcal vaccination which require explanation.

The authors suggest early introduction of the heptavalent conjugate pneumococcal vaccine (PCV-7) into India. PCV-7 currently being used in the United States, includes approximately 80% of the serotypes that cause severe pneumococcal disease in the US. While, the serotypes contained in PCV-7 account for only 50% of severe pneumococcal disease in under-5-children in India(2). In the absence of population based studies about incidence of invasive pneumococcal disease (IPD) from India, the authors extrapolate data from neighboring countries to project the impact of PCV-7 in reducing IPD in India(1).

In the present scenario, it appears more prudent to plan and execute, population based epidemiological studies of IPD in India along with pilot studies for evaluation of impact of PCV-7 on the reduction of IPD in India before prompting the introduction of PCV-7 in Universal Immunization Program. Simultaneously, Indian manufacturers should be sensitized to develop pneumococcal vaccine targeting Indian serotypes.

In India the prevalence of hepatitis B infection, ranges from 2%-7%, with very high chances of developing a life-long infection in perinatal transmission(3). This leads to significant morbidity

as well as creates an infectious pool in the society. This is preventable by very cheap and effective hepatitis B (HB) vaccine, which fortunately is being included in the national immunization program of India, though in a phased manner. Majority of the Indian children do not receive HB vaccine at birth, which is mandatory to prevent vertical transmission, because HB vaccine in the government program is given at 6 weeks along with DPT. This facility is only available at larger districts and not in the far-flung villages. Ensuring that HB vaccine is given along with BCG and OPV at birth and to all Indian children appears a more ethical and economically viable priority in the context of India.

MMR vaccine given at fifteen months not only protects against mumps and rubella but also enhances protection against measles. This again being a reasonably priced and effective vaccine qualifies to be in the Indian UIP ahead of the PCV-7 vaccine. Indian Academy of Pediatrics Committee on Immunization (IAP-COI) recommends inclusion of HB vaccine, MMR vaccine, typhoid vaccine and Hib vaccine in the UIP. However, IAP-COI does not recommend use of PCV-7 for universal immunization in India at present. The current recommendation is to offer PCV-7 after explaining the parents on one to one "named child" basis and routinely in high risk group children upto 5 years of age(3).

The "Global Alliance for Vaccines and Immunization" (GAVI) has been instrumental in funding of HB vaccine for children in urban slums, promotion of safe injection practices and inclusion of auto-disabled syringes for childhood immunizations in India(3). GAVI alliance has intimated Government of India about their non-binding