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## ***Immunization Dialogue***

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### **Hepatitis B Vaccine**

*Currently, universal infant hepatitis B vaccination is being promoted vigorously. The concept of hepatitis B immunization is relatively new for our country. In view of the novelty, cost, availability of different brands and the economic constraints of a developing country, several clarifications are required. In this context, Dr. T. Jacob John, Professor and Head, Department of Microbiology and Virology, Christian Medical College Hospital, Vellore, Tamil Nadu 632 004 continues answering important questions posed by us. Professor Jacob John, a leading International Vaccinologist, is an Adviser on Immunization to the World Health Organization and other International Agencies. He is the current Chairman of the IAP Committee on Immunization.*

*Editor-in-Chief*

**Q1.** *Do specific hepatitis B immunoglobulins interfere with the response to hepatitis B vaccine when they are given together?*

**A1.** Obviously, passive immunization does dampen the immune response to active immunization. Such inhibitory effect is relative; in the case of measles vaccine the inhibitory effect is quite marked. In the case of HB vaccine the effect is quite low. One must remember that the HBIG and HB vaccine must be administered using separate syringes and needles, at different sites.

**Q2.** *In a child who develops hepatitis three months after completion of the primary course, what will be the interpretation of various markers?*

**A2.** HB vaccine induces only anti-HBs response. No other marker is induced. Therefore, HBV infections, in a person undergoing HB immunization or has completed the schedule, can be diagnosed on the basis of induction of anti-HBC. Once again, I would like to reiterate that young children seldom, if ever, get clinical icteric hepatitis due to HBV.

**Q3.** *In a child who develops measles or chicken pox in between two doses of the primary course, what should be done?*

**A3.** An acute illness, simply requires the postponement of the next dose. In the case of measles at least one month after clinical recovery is recommended. With chicken pox, as soon as the crusts have fallen, the next dose can be given.

**Q4.** *What is the recommendation (including dosing and schedule) for immunization against hepatitis B in pediatricians? Is serological testing mandatory prior to and after immunization?*

**A4.** I recommend HB vaccination in all health care workers who come into contact with sick persons or their body fluids. Although young children do not usually get clinical icteric hepatitis with HBV, one would be surprised if a large sample of children are screened for HBsAg. In our region, between 1 to 4% of children are already HBs Ag positive, as chronic carriers, right from infancy upwards. I emphasize here the need for

HB vaccinations in pediatricians and pediatric nurses.

In young pediatricians, the 0-1-6 months regimen is ideal, followed by the first booster five years later. Or one may take the 0-1-2-14 months regimen if early protection is desired. If you are below 30 years, I would be quite happy not to monitor antibody response. If above 30 years, it is better to document the response. Now quantitative tests are easily available in the market. Indeed a pre-immunization screening is well worth the effort and cost, because, if you are already a carrier, you must know this and appropriate follow-up actions must be taken. Good medicine, like charity, begins at home, with ourselves first! Testing is not mandatory, but advisable.

**Q5.** *Is there any possibility that the hepatitis B vaccine may cause liver cancer?*

**A5.** There is no possibility that HB vaccine may cause liver cancer, or the preceding chronic liver diseases. These conditions are caused by the replication of HBV in liver cells over long periods. Indeed, HB vaccination protects against chronic liver diseases caused by HBV, namely chronic hepatitis, cirrhosis and hepatic carcinoma.

**Q6.** *Can recipients of hepatitis B vaccine donate blood?*

**A6.** Recipients of HB vaccine can certainly donate blood. However, their blood should also be screened for HBsAg (as well as for other relevant infections), for two reasons: (i) their HBsAg status should be recorded for the credibility of the blood bank; and (ii) blood banks cannot be given the respon-

sibility of verifying immunization histories of donors.

**Q7.** *What are the recommended storage temperatures and stability for hepatitis B vaccine? Can the vaccine be frozen? Can it be used if accidentally exposed to high temperature?*

**A7.** The vaccine is quite stable for at least two years, if stored between 2 and 8 degrees Celsius. If stored properly, the vaccine may be used upto the declared expiry date. The manufacturers state clearly that HB vaccine should not be frozen; they ask the clients to discard frozen vaccine. Short exposure to warm temperatures (upto one month at 37°C and upto 1 week at 45°C) are stated not to affect the immunogenic potency. However, this should not be taken to mean that strict temperature control is not necessary. It is an expensive vaccine and every precaution must be taken to maintain storage at 2°C to 8°C.

**Q8.** *What is the ongoing future research for hepatitis B vaccine especially in the context of developing combination vaccines?*

**A8.** One line of research, of interest to us, is to understand the phenomenon, of mutant strains of HB virus that seem to escape the immunity induced by HB vaccine, at the present time this is not of concern to pediatricians, but this scene must be watched carefully.

HB vaccine has no incompatibility with any other vaccine. Therefore, products combining HB vaccine with DPT and *Haemophilus* type b vaccine either singly (*i.e.*, DPT-HB vaccine) or together (*i.e.*, DPT-Hib-HB vaccine) are now being manufactured. They will, in all probability, be licensed in the near future.