MODEL INSERT
DTP - Hib combination vaccine (liquid)

DESCRIPTION
The vaccine is a homogeneous liquid containing DTP as purified diphtheria and tetanus toxoids and inactivated whooping cough organisms and Hib vaccine as a bacterial subunit vaccine containing highly purified, non-infectious *Haemophilus influenzae* type b (Hib) capsular polysaccharide chemically conjugated to a protein ……(specify). The polysaccharide is derived from Hib bacteria grown in chemically defined media, and subsequently purified through a series of ultrafiltration steps. The vaccine is adsorbed onto ……. (specify). …… (specify) is used as a preservative. The potency of the vaccine per single human dose is at least 4 IU for pertussis, 30 IU for diphtheria, 60 IU for tetanus (determined in mice) or 40 IU (determined in guinea pig) and ..….µg Hib conjugate.

COMPOSITION

<table>
<thead>
<tr>
<th>Paediatric Dose</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 ml</td>
<td></td>
</tr>
<tr>
<td>Diphtheria toxoid</td>
<td>XX Lf/ml (…..IU/ml )</td>
</tr>
<tr>
<td>Tetanus toxoid</td>
<td>XX Lf/ml (…..IU/ml )</td>
</tr>
<tr>
<td>Pertussis antigen</td>
<td>XX OU/ml</td>
</tr>
<tr>
<td>Hib conjugate</td>
<td>XX µg/ml</td>
</tr>
<tr>
<td>Nature of Aluminium salt and quantity as AL+++</td>
<td>XX mg/ml</td>
</tr>
<tr>
<td>Nature and amount of preservatives</td>
<td>XX mg/ml</td>
</tr>
</tbody>
</table>

ADMINISTRATION
The liquid vaccine vial should be shaken to homogenize the suspension. The vaccine should be injected intramuscularly. The anterolateral aspect of the upper thigh is the preferred site of injection, or into the deltoid muscles of older children. An injection into a child’s buttocks may cause injury to the sciatic nerve and is not recommended. It must not be injected into the skin as this may give rise to local reaction. One dose is 0.5ml. A sterile syringe and sterile needle should be used for each injection.

IMMUNIZATION SCHEDULE
In countries where pertussis is of particular danger to young infants, the combination vaccine should be started as soon as possible with the first dose given as early as 6 weeks, and two subsequent doses given at 4-week intervals. The combined vaccine can be given safely and effectively at the same time as BCG, measles, polio (OPV and IPV), hepatitis B, and yellow fever vaccines and vitamin A supplementation.

SIDE EFFECTS
The type and rate of severe adverse reactions do not differ significantly from the DTP and Hib vaccine reactions described separately.

For DTP, mild local or systemic reactions are common. Some temporary swelling, tenderness and redness at the site of injection together with fever occur in a large proportion of cases. Occasionally severe reactions of high fever, irritability and screaming develop within 24 hours of administration. Hypotonic-hyporesponsive
episodes have been reported. Febrile convulsions have been reported at a rate of one per 12500 doses administered. Administration of acetaminophen at the time and 4-8 hours after immunization decreases the subsequent incidence of febrile reactions. The national childhood encephalopathy study in the United Kingdom showed a small increased risk of acute encephalopathy (primarily seizures) following DTP immunization. However subsequent detailed reviews of all available studies by a number of groups, including the United States Institute of Medicine, the Advisory Committee on Immunization Practices, and the paediatric associations of Australia, Canada, the United Kingdom and the United States, concluded that the data did not demonstrate a causal relationship between DTwP and chronic nervous system dysfunction in children. Thus there is no scientific evidence that these reactions have any permanent consequences for the children.

Hib vaccine is very well tolerated. Localized reactions may occur within 24 hours of vaccination, when recipients may experience pain and tenderness at the injection site. These reactions are generally mild and transient. In most cases, they spontaneously resolve within two to three days and further medical attention is not required. Mild systemic reactions, including fever, rarely occur following administration of Hib vaccines. More serious reactions are very rare; a causal relationship between more serious reactions and the vaccine has not been established.

CONTRAINDICATIONS
DTP-Hib vaccine should not be given to individuals who had an anaphylactic reaction to a previous dose or to any constituent of the vaccine.

*Immune deficiency*
Individuals infected with human immuno-deficiency virus (HIV), both asymptomatic and symptomatic, should be immunized with combined vaccine according to standard schedules.

STORAGE
The combination vaccine should be stored and transported between +2°C and +8°C. IT MUST NOT BE FROZEN.
Once opened, multi-dose vials should be kept between +2°C and +8°C. Multi-dose vials of liquid DTP - Hib from which one or more doses of vaccine have been removed during an immunization session may be used in subsequent immunization sessions for up to a maximum of 4 weeks, provided that all of the following conditions are met (as described in the WHO policy statement: The use of opened multi dose vials in subsequent immunization sessions. WHO/V&B/00.09):
- The expiry date has not passed;
- The vaccines are stored under appropriate cold chain conditions;
- The vaccine vial septum has not been submerged in water;
- Aseptic technique has been used to withdraw all doses;
- The vaccine vial monitor (VVM), if attached, has not reached the discard point (see figure).

PRESENTATION
The vaccine comes in single dose vials or vials of .... (specify) doses.

* In Weekly Epidemiological Record, No. 18, 7 May 1999. Page 139

Revised December 2005
Vaccine Val Monitors (VVMs) are part of the label on ...(specify vaccine) supplied through ... (specify supplier or manufacturer). The colour dot which appears on the label of the vial is a VVM. This is a time-temperature sensitive dot that provides an indication of the cumulative heat to which the vial has been exposed. It warns the end user when exposure to heat is likely to have degraded the vaccine beyond an acceptable level.

The interpretation of the VVM is simple. Focus on the central square. Its colour will change progressively. As long as the colour of this square is lighter than the colour of the ring, then the vaccine can be used. As soon as the colour of the central square is the same colour as the ring or of a darker colour than the ring, then the vial should be discarded.

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Vaccine Vial Monitor

The vaccine vial monitor...

- Inner square lighter than outer circle.
  - If the expiry date has not been passed, use the vaccine.

- At a later time, inner square still lighter than outer circle.
  - If the expiry date has not been passed, use the vaccine.

- Discard point:
  - Inner square matches colour of outer circle.
  - Do not use the vaccine.

- Beyond the discard point:
  - Inner square darker than outer ring.
  - Do not use the vaccine.