

observed. Apart from tuberculin and MMR, all other live vaccines can be administered at any time before or after tuberculin.


- **PRESCRIBING AND DISPENSING INFORMATION** Available from ImmForm (SSI brand).


The strength of tuberculin PPD in currently available products may be different to the strengths of products used previously for the Mantoux test; care is required to select the correct strength.

- **MEDICINAL FORMS** There can be variation in the licensing of different medicines containing the same drug. Forms available from special-order manufacturers include: solution for injection

Solution for injection

▶ Tuberculin purified protein derivative (Non-proprietary)

Tuberculin purified protein derivative 20 tuberculin unit per 1 ml Tuberculin PPD RT 23 SSI 20 tuberculin units/ml solution for injection 1.5ml vials | 1 vial 

Tuberculin purified protein derivative 100 tuberculin unit per 1 ml Tuberculin PPD RT 23 SSI 100 tuberculin units/ml solution for injection 1.5ml vials | 1 vial 

4 Vaccination

Vaccination, general principles

Active immunity

Active immunity can be acquired by natural disease or by vaccination. **Vaccines** stimulate production of antibodies and other components of the immune mechanism; they consist of either:

1. a *live attenuated* form of a virus (e.g. measles, mumps and rubella vaccine) or bacteria (e.g. BCG vaccine), or
2. *inactivated* preparations of the virus (e.g. influenza vaccine) or bacteria, or
3. *detoxified exotoxins* produced by a micro-organism (e.g. tetanus vaccine), or
4. *extracts* of a micro-organism, which may be derived from the organism (e.g. pneumococcal vaccine) or produced by recombinant DNA technology (e.g. hepatitis B vaccine).

Live attenuated vaccines usually produce a durable immunity, but not always as long-lasting as that resulting from natural infection.

Inactivated vaccines may require a primary series of injections of vaccine to produce an adequate antibody response, and in most cases booster (reinforcing) injections are required; the duration of immunity varies from months to many years. Some inactivated vaccines are adsorbed onto an adjuvant (such as aluminium hydroxide) to enhance the antibody response.

Passive immunity

Immunity with immediate protection against certain infective organisms can be obtained by injecting preparations made from the plasma of immune individuals with adequate levels of antibody to the disease for which protection is sought (see under *Immunoglobulins*). The duration of this passive immunity varies according to the dose and the type of immunoglobulin. Passive immunity may last only a few weeks; when necessary, passive immunisation can be repeated.

Antibodies of human origin are usually termed *immunoglobulins*. The term *antiserum* is applied to material prepared in animals. Because of serum sickness and other allergic-type reactions that may follow injections of antisera, this therapy has been replaced whenever possible by the use of immunoglobulins. Reactions are theoretically possible after injection of human immunoglobulins, but reports of such reactions are very rare.

Vaccines and HIV infection

HIV-positive children with or without symptoms can receive the following live vaccines:

- MMR (but avoid if immunity significantly impaired), varicella-zoster vaccine against chickenpox (but avoid if immunity significantly impaired—consult product literature; use of normal immunoglobulin should be considered after exposure to measles and varicella-zoster immunoglobulin considered after exposure to chickenpox or herpes zoster), rotavirus;
- and the following inactivated vaccines:
 - anthrax, cholera (oral), diphtheria, haemophilus influenzae type b, hepatitis A, hepatitis B, human papillomavirus, influenza (injection), meningococcal, pertussis, pneumococcal, poliomyelitis (inactivated poliomyelitis vaccine is now used instead of oral poliomyelitis vaccine for routine immunisation of children), rabies, tetanus, tick-borne encephalitis, typhoid (injection).

HIV-positive children should **not** receive:

- BCG, influenza nasal spray (unless stable HIV infection and receiving antiretroviral therapy), typhoid (oral), yellow fever (if yellow fever risk is unavoidable, specialist advice should be sought).

The above advice differs from that for other immunocompromised patients; *Immunisation of HIV infected Children* issued by *Children's HIV Association* (CHIVA) are available at www.chiva.org.uk.

Vaccines and asplenia

The following vaccines are recommended for asplenic patients, those with splenic dysfunction or complement disorders, depending on the age at which their condition is diagnosed:

- Haemophilus influenzae type b with meningococcal group C vaccine p. 818;
- Influenza vaccine p. 825;
- Meningococcal groups A with C and W135 and Y vaccine p. 819 and meningococcal group B vaccine (rDNA, component, adsorbed) p. 818;
- pneumococcal polysaccharide vaccine.

Children first diagnosed under 1 year of age should be vaccinated according to the Immunisation Schedule. Additionally, one dose of meningococcal groups A with C and W135 and Y vaccine should be given during infancy followed by a second dose at least one month apart. Two months following the routine 12 month booster vaccines, give a dose of meningococcal groups A with C and W135 and Y vaccine and an additional dose of 13-valent pneumococcal polysaccharide vaccine. An additional dose of haemophilus influenzae type b with meningococcal group C vaccine and 23-valent pneumococcal polysaccharide vaccine should be given after the second birthday. The influenza vaccine should be administered annually in children aged 6 months or older.

Children first diagnosed between 1 and 2 years of age should be vaccinated according to the Immunisation Schedule, including the 12 month boosters. Two months after the routine 12 month booster vaccines, give a dose of meningococcal groups A with C and W135 and Y vaccine and an additional dose of 13-valent pneumococcal polysaccharide vaccine. An additional dose of haemophilus influenzae type b with meningococcal group C vaccine and 23-valent pneumococcal polysaccharide vaccine should be given after the second birthday. The influenza vaccine should be administered annually.

Children first diagnosed over 2 years of age should be vaccinated according to the Immunisation schedule, including the 12 month boosters. The child should receive one additional booster dose of haemophilus influenzae type