

Appendix 4: Commonly asked questions about vaccination

This chapter contains information for providers to refer to when responding to questions and concerns about immunisation. It covers general questions on adult and childhood vaccination, including contraindications and precautions. In addition, a discussion on some of the more recent concerns about vaccination is included, covering issues relating to vaccine safety, vaccine content, immunisation as a possible cause of some illnesses of uncertain origin, and the need for vaccination.

1. General questions

(i) How does vaccination work?

Vaccination conveys immunity to diseases by a process called active immunity, which can be achieved by administration of either inactivated (ie. not live) or live attenuated organisms or their products. Inactivated vaccines may include the whole organism (such as oral typhoid vaccine), the toxin produced by the organism (such as tetanus and diphtheria vaccines), or specific antigens (such as Hib and pneumococcal vaccines). In some cases the antigen is conjugated (ie. chemically linked) with proteins to facilitate the immune response. Inactivated viral vaccines may include whole viruses (IPV and hepatitis A vaccines) or specific antigens (influenza and hepatitis B vaccines). Live attenuated viral vaccines include MMR, OPV, varicella-zoster and yellow fever vaccines.

Immunity can also be acquired passively by the administration of immunoglobulins. Such immunity is immediate and is dose-related and transient.

(ii) What is the correct site for vaccination of children?

The top, outer part of the thigh is the preferred site for injections for infants under the age of 12 months. The deltoid region of the upper arm is the preferred site for vaccination of children 12 months of age and older because it is associated with fewer local reactions and has sufficient muscle bulk to facilitate the injection.

(iii) How many injections can be given into the same limb in a child aged under 12 months?

Normally only one injection should be administered in each limb. However there are occasions when a child under 12 months of age may need 3 or more vaccines. In this case two injections can be given into the same leg into the vastus lateralis muscle on the same day, but the injections should be given at least 25 mm (2.5 cm) apart using separate sterile injection equipment for each vaccine administered.

(iv) When should preterm infants be vaccinated?

Babies born at less than 32 weeks gestation should receive their first dose of hepatitis B vaccine either at birth or at 2 months, and may require a fourth dose at 12 months of age. They should receive their doses of DTPa-hepB, Hib and OPV (or IPV) 2 months after birth as normal, unless they are very unwell. When Pedvax HIB is used in an extremely preterm baby (<28 weeks gestation or <1500 g birth weight) an additional dose should be given at 6 months of age (see Part 2.3, 'Groups with special vaccination requirements'). Additionally, extremely preterm babies with chronic lung disease should be offered 7vPCV (see Part 2.3, 'Groups with special vaccination requirements').

(v) Do elderly people (over 65 years) who have no chronic illnesses need the influenza vaccine?

Yes. Age is an independent risk factor for influenza. Vaccination of those aged over 65 years, regardless of the presence or absence of chronic illness, reduces all-cause mortality by up to 50% in the winter period in this age group (see Part 3.11, 'Influenza').^{1,2} The healthy elderly should also receive the 23-valent pneumococcal polysaccharide vaccine (see Part 3.18, 'Pneumococcal infections').

(vi) Should adults receive pertussis (whooping cough) vaccine boosters?

An acellular pertussis vaccine (combined with tetanus and diphtheria antigens) is now available for adolescents and adults (dTpa, or Boostrix). This vaccine should not be given as a primary vaccination series against pertussis; further, no recommendations about additional booster doses using adult/adolescent formulation dTpa can be made at this time. A booster dose of dTpa is recommended for the following groups (unless contraindicated);

- adolescents at 15 to 17 years;
- adults working with young children;
- couples planning to have a family in the near future, and new parents as soon as possible after delivery of an infant; and
- any adult expressing an interest in receiving a booster dose of dTpa, provided a primary course of DTP has been given in the past.

Contraindications to adult/adolescent formulation dTpa include previous anaphylactic reaction to any vaccine component, and receipt of a vaccine containing either diphtheria or tetanus within the previous 5 years.

See Part 3.16, 'Pertussis' for more information.

2. Contraindications and precautions

(i) What are the absolute contraindications to childhood vaccination?

True contraindications to the childhood vaccines are extremely rare (see relevant chapters), and include only anaphylactic sensitivity to any of the particular vaccine's components, and an anaphylactic event following a previous dose of that vaccine.

NB: An anaphylactic reaction to eggs does not contraindicate MMR vaccine, as the vaccine viruses are not grown in eggs and the vaccine does not contain any egg protein³ (see Part 3.13, 'Measles').

(ii) What are the contraindications to further doses of pertussis-containing vaccines?

Further doses of DTPa are contraindicated in those who have had:

- encephalopathy within 7 days of DTPa, defined as severe acute neurological illness with prolonged seizures and/or unconsciousness and/or focal signs, not due to another identified cause. Note that encephalopathy is much less likely to occur now that the acellular pertussis vaccine (DTPa) is routinely used, rather than whole-cell pertussis vaccine (DTPw).

- immediate severe allergic or anaphylactic reaction to vaccination with DTPa. In these cases CDT should be used for further vaccination. Although the pertussis component is the most likely cause of adverse events, further vaccination with diphtheria and tetanus vaccines should be undertaken under careful observation.

A previous simple febrile convulsion or pre-existing neurological disease is not a contraindication to pertussis-containing vaccines.

(iii) What are the precautions to childhood vaccination?

In general, children with immunodeficiency or on immunosuppressive therapy should not be given live vaccines (see (vii) to (ix) below).

(iv) Should a child with an intercurrent illness be vaccinated?

A child with a minor illness (without systemic illness and with a temperature below 38.5°C) may be safely vaccinated. Infants and children with minor coughs and colds without fever, or those receiving antibiotics in the recovery phase of an acute illness can be vaccinated safely and effectively. In a child with a major illness or high fever $\geq 38.5^\circ\text{C}$, vaccination should be postponed until the child is well. If vaccination were to be carried out during such an illness, the fever might be confused with vaccine side effects and might also increase discomfort to the child. In such cases, it is advisable to defer vaccination and arrange for the child to return for vaccination when well again.

(v) Should children with epilepsy be vaccinated?

Yes. Stable neurological disease (such as epilepsy) is not a reason to avoid giving vaccines like pertussis (whooping cough). Pertussis vaccine is included in DTPa-combination vaccines. Children who are prone to fits should have paracetamol before and for 48 hours after vaccination to reduce the chance of a fever after vaccination bringing on a convulsion. Note that the fever following measles vaccine occurs 5 to 12 days after vaccination (in less than 20% of vaccinees).⁴ A family history of fits or epilepsy is not a reason to avoid vaccination.

(vi) Should children with neurological disease receive the normal vaccination schedule?

Children with neurological disease may be at increased risk of complications of diseases such as whooping cough and measles if they attend centres where there are a number of other children. Such children are also often at increased risk of complications from diseases like measles and whooping cough, as they can be more prone to respiratory infections and chest problems. Therefore it is important that these children be immunised, on time, as recommended in the ASVS.

(vii) Are steroids a contraindication to vaccination?

Live virus vaccines such as MMR, OPV, BCG and varicella-zoster vaccines, should *not* be given to children receiving high dose oral (more than 2 mg/kg/day prednisolone for more than one week) or parenteral (injected) corticosteroid therapy, or extensive topical (skin) steroid therapy for more than 2 weeks. Inactivated vaccines (eg. DTPa-hepB) may be less effective in this group but are not contraindicated. Therapy with inhaled steroids is not a contraindication to vaccination.

(viii) Should vaccines be given to children who have problems with their immune systems?

Children with immunodeficiency or those on immunosuppressive therapy should *not* be given live virus vaccines such as OPV, MMR, and varicella-zoster vaccines.⁵ These children and their household contacts should be given inactivated poliomyelitis vaccine (IPV) instead of OPV. HIV-infected children may be given MMR vaccine provided their CD4 counts are above a certain threshold (see Table 2.3.1). The contacts of immunodeficient children can be given MMR without risk of transmission. Non-immune household contacts of immunodeficient children should be offered varicella-zoster vaccine.

With the exception of OPV (because IPV should be used instead), live virus vaccines can be given to children with leukaemia and other malignancies who are on chemotherapy 6 months after they have completed chemotherapy, provided there are no concerns about their immune status. Such measures would normally be carried out under the supervision of the child's oncologist (see Part 2.3, 'Groups with special vaccination requirements').

(ix) What vaccines should children with HIV infection receive?

Children with HIV (human immunodeficiency virus) infection should have all routine inactivated vaccines on the ASVS. Inactivated poliomyelitis vaccine (IPV) should be given instead of OPV. Varicella-zoster vaccine is generally contraindicated in children with HIV, as it can cause disseminated varicella infection. However, it may be considered for asymptomatic or mildly symptomatic HIV-infected children, after weighing up the potential risks and benefits. This should be discussed with the child's specialist.

MMR can be given to children with HIV, depending on their CD4 counts (see above). Children with HIV infection should also be vaccinated against pneumococcal disease (see Table 3.18.1 and 3.18.3). Influenza vaccine is also recommended for HIV-infected children. They should not be given BCG, due to the risk of disseminated infection (see Part 2.3, 'Groups with special vaccination requirements').

(x) Should chronically ill children be vaccinated?

In general, children with chronic diseases should be vaccinated as a matter of priority because they are often more at risk from complications from the diseases. Care is needed however, in situations where the child's illness, or its treatment, may result in impaired immunity.

(xi) Should children be vaccinated while the child's mother is pregnant?

There is no problem with giving routine vaccinations to a child whose mother is pregnant. MMR vaccine viruses are not transmissible, and transmission of varicella-zoster vaccine virus is very rare and causes a very mild infection. Furthermore, vaccinating the child of a pregnant mother will reduce the risk of her being infected by her offspring if she is not immune. Administration of varicella-zoster vaccine to household contacts of non-immune pregnant women is safe.

(xii) Should children with allergies be vaccinated? What precautions are required for atopic or egg-sensitive children?

Asthma, eczema, hay fever and allergies are not contraindications to any vaccine on the childhood schedule. An important exception is anaphylactic sensitivity to eggs, characterised by generalised hives, swelling of the mouth or throat, difficulty breathing, wheeze, low blood pressure, and shock. If a person has a history of severe egg allergy, influenza, yellow fever and Q fever vaccines should *not* be given. Because MMR vaccines viruses are not cultured in eggs and the vaccine does not contain egg protein, MMR can be given safely to those with anaphylactic sensitivity to eggs.³ Simple dislike of eggs or having diarrhoea or stomach pains after eating eggs are not reasons to avoid MMR and these children require no special precautions. These children can also have all other routine vaccines without special precautions.³

3. Responding to questions and concerns about immunisation

Some people express concerns about immunisation. These mostly relate to whether the vaccine is safe and whether vaccines weaken the immune system of the child. Providers should listen to and acknowledge people's concerns. Providers should discuss the risks and benefits of immunisation with parents/caregivers honestly and in a non-defensive manner. Parents and adult vaccine recipients should receive accurate information on the risks from the diseases and those from vaccine side effects and adverse events (see table on back cover 'Comparison of effects of vaccines and diseases'). The following section responds to some arguments frequently raised by opponents of immunisation, and examines the scientific evidence in order to assist providers and parents in making an informed choice about the risks and benefits of vaccination.

a) Vaccine safety**(i) How safe are vaccines?**

Before vaccines are made available they are tested for safety and efficacy in clinical trials and then in mass trials. All vaccines marketed in Australia are manufactured according to strict safety guidelines and are evaluated by the Therapeutic Goods Administration to ensure they are efficacious and are of adequate quality and safety prior to marketing approval being granted.

After introduction into immunisation schedules there is continuing surveillance of efficacy and safety through trials and post-marketing surveillance. In Australia there are regional and national surveillance systems actively seeking any adverse events following immunisation. This is necessary, as sometimes problems do occur after vaccines are registered for use. An example is rotavirus vaccine, which was licensed in the USA in August 1998. In pre-licensure trials, the vaccine appeared to be safe, but post-licensure surveillance detected a risk of intussusception associated with the vaccine. As soon as this risk was discovered, the vaccine was withdrawn from the market. Rotavirus vaccine was never released in Australia.⁶

(ii) Can too many vaccines overload or suppress the natural immune system?

The increase in the number of vaccines and vaccine doses given to children has led to concerns about the possible adverse effects of the aggregate vaccine exposure, especially on the developing immune system. In day-to-day life, all children and adults confront enormous numbers of antigens (substances that provoke a reaction from the immune system) and the immune system responds to each of these in

various ways to protect the body. Studies of the diversity of antigen receptors indicate that the immune system can respond to an extremely large number of antigens. In addition, the number of antigens received by children during routine childhood vaccination has actually decreased compared with several decades ago. This has occurred in spite of the increase in the total number of vaccines given, and can be accounted for by the removal of 2 vaccines – smallpox vaccine (which contained about 200 different proteins), and whole-cell pertussis vaccine (about 3000 distinct antigenic components) from routine vaccination schedules. In comparison, the acellular pertussis vaccine currently used in Australia has only 3 to 5 antigens.⁷

(iii) Do vaccines cause disease?

Some studies have suggested a link between immunisations and certain medical conditions, such as asthma, multiple sclerosis, and diabetes. The allegations of a link are often made for a disease of unknown cause. The existence of a link between vaccination and the diseases does not necessarily imply causation, and in many cases, subsequent epidemiological studies have indicated that the association is due to chance alone. The following is a list of concerns that have been raised.

• Does MMR vaccine cause inflammatory bowel disease or autism?⁶

In 1993, Wakefield et al (Royal Free Hospital, London) suggested an association between both the natural and vaccine types of measles virus and inflammatory bowel disease (IBD) based on a study of 25 children with Crohn's disease. In 1998 researchers from the same group reported the occurrence of an apparently new syndrome of an unusual type of IBD in association with developmental disorders such as autism.⁸ The researchers suggested that MMR vaccine caused IBD, which then resulted in decreased absorption of essential vitamins and nutrients through the intestinal tract. They proposed that this could result in developmental disorders such as autism.

This study had several weaknesses. First, finding out whether or not MMR causes autism is best determined by comparing the incidence of autism in vaccinated versus unvaccinated children. However, the researcher included only vaccinated children. Second, the author claimed that gastrointestinal inflammation contributes to autism – however, in several of the cases the behavioural problems appeared before the onset of bowel disease.⁹ Furthermore, the association between vaccine and autism was primarily based on parental recall, and parents are more likely to have linked changes in behaviour with memorable events such as vaccination. The Royal Free Hospital study was conducted on a very selective group of patients, all referred to the hospital for gastrointestinal ailments, and such a case series analysis is unable to determine causal links.

In 2002 Uhlmann, Wakefield and others published a further study showing a higher rate of measles virus in the bowel of autistic children with bowel symptoms, compared to a group of children without autism.¹⁰ The validity of this study is difficult to assess because the study does not report key information on the characteristics and the method of selection of the cases and controls, and on laboratory methods. For example, the vaccination status of the children in the study is not known. There was no attempt to distinguish between wild-type measles virus and vaccine strain virus – nor was there any mention of whether the laboratory personnel performing the tests were aware of the immunisation status of the children whose specimens they tested.⁹

The onset of autism and MMR vaccination may coincidentally appear associated in time because the average age at which parents report concerns about child development is 18 to 19 months, and over 90% of children receive MMR vaccine before their second birthday in the UK.¹¹ More thorough, large epidemiological studies have found no evidence of an association.¹²⁻¹⁵

- **Do childhood immunisations cause asthma?**

There is no evidence that vaccination causes or worsens asthma. It is especially important that children with asthma be vaccinated like other children, as catching a disease like whooping cough can make an asthma attack worse. Although influenza vaccine is not routinely recommended for all asthmatics, it is recommended for severe asthmatics, such as those requiring frequent hospitalisation.¹⁶

- **Does hepatitis B vaccine cause multiple sclerosis?**

There is no evidence that hepatitis B vaccine causes multiple sclerosis (MS). Concerns about hepatitis B vaccination arose from France, after a few reports of a possible link between hepatitis B vaccine and MS. However, when the French data were examined closely, the rate of MS in vaccinated people was not significantly different from the expected population rate. With millions of vaccinations administered worldwide, it is likely that surveillance systems in some countries will receive some reports of MS, which seem to be related in time to vaccinations. As with all such reports, however, they only suggest the possibility of an association. Subsequent studies have found no increase in incidence of MS, or even relapse of MS, after hepatitis B vaccination.¹⁷⁻²¹

- **Do some vaccines cause 'Mad Cow Disease'?**

Variant Creutzfeldt-Jakob disease (vCJD) is considered to be the human equivalent of bovine spongiform encephalopathy (BSE, also known as 'mad cow disease'). There is no evidence that any case of vCJD has resulted from the administration of any vaccine product, despite millions of doses of vaccine being administered worldwide. Concerns about the risk of transmission of this disease arose because the production of some vaccines requires bovine derivatives such as fetal bovine serum, and there is thus a theoretical risk of transmitting BSE via some vaccines. In Australia, the Therapeutic Goods Administration has confirmed that the vaccines available in this country contain bovine materials preferentially sourced from BSE-free areas, and that they undergo appropriate purification treatment. Therefore, although some vaccines carry a theoretical risk of transmissible spongiform encephalopathies, this risk is infinitesimally small (estimated at less than one in a billion).²² The benefits of vaccination are considered to far outweigh any theoretical risk of BSE transmission.²³

- **Is there a link between vaccination and Sudden Infant Death Syndrome (SIDS)?**

Despite extensive studies, there is no evidence that vaccination causes SIDS (cot death). Deaths do occasionally occur shortly after vaccination but the relationship is simply a chance association, since SIDS tends to happen in babies of 2 to 6 months of age whether they are vaccinated or not. Many studies have conclusively shown that SIDS is not caused by immunisation. In addition, some studies have found a lower rate of SIDS in immunised children.²⁴⁻²⁶

- **Does immunisation cause diabetes?**

In 1997, a study from Finland suggested a link between Hib vaccination and type 1 diabetes.²⁷ However, subsequent reanalysis of the data did not support such a link. The conclusion that there is no causal link between any of the childhood vaccines and diabetes has also been supported by a subsequent review of the literature, and the conclusions of two workshops held in the USA in 1998.^{6,28-30}

- **Does influenza vaccine cause 'flu?**

Influenza vaccine is included on the vaccination schedule for adults over the age of 65 years and is recommended for other groups at risk of complications of the 'flu. Although some believe that the vaccine causes influenza, this is not possible as it is not a live virus vaccine. As some people experience adverse events such as a mild fever after the vaccine, it is understandable that they may confuse these symptoms with actually having the 'flu.

b) Vaccine content**(i) Why are there additives in some vaccines?**

Additives may be necessary either as part of the production process of some vaccines, as preservatives, or to help boost the body's immune response to the vaccine (an adjuvant). These may include formaldehyde, thiomersal and aluminium.

(ii) Formaldehyde

Formaldehyde is used during the manufacture of tetanus vaccine (to detoxify the tetanus toxin protein produced). The non-toxic protein which becomes the active ingredient of the vaccine is further purified to remove contaminants and any excess (unreacted or unbound) formaldehyde. The current standard applicable to vaccines for human use in Australia is less than 0.02% w/v of free formaldehyde. The maximum amount of free formaldehyde detected by the Therapeutic Goods Administration during testing of vaccines registered in Australia has been 0.004% w/v, which is well below the standard limit.

(iii) Thiomersal

Thiomersal (or thimerosal) is a compound which is partly composed of mercury. It has been used in very small amounts in vaccines for about 60 years, to prevent bacterial and fungal contamination of vaccines. In the past, the small amount of thiomersal in vaccines was one of several potential sources of mercury – diet (such as some seafoods) and other environmental sources are also possible sources of mercury. Vaccines used in the past, such as DTP, contained only 25 µg thiomersal per dose.

Mercury causes poisoning after it reaches a certain level in the body. Whether or not it reaches a toxic level depends on the amount of mercury consumed and the person's body weight; individuals with very low body weight are usually more susceptible to poisoning from a certain intake of mercury. Thus, the possibility existed that vaccination of newborn babies, particularly those of very low birth weight, with repeated doses of thiomersal-containing vaccines, might have resulted in levels of mercury above the recommended guidelines.

In response to this theoretical concern, all vaccines on the current ASVS for children under the age of 5 years are now either free of thiomersal, or contain a reduced (trace) amount of thiomersal. Hepatitis B containing vaccines which do not contain any thiomersal include preservative-free paediatric formulation of H-B-Vax II (which is recommended for administration in newborns and infants), and the infant and childhood vaccines, such as Infanrix Hep B, Comvax and Twinrix Junior (360/60).

People sometimes ask why thiomersal was removed from vaccines if it did not cause adverse health effects in children. There were two main reasons; first, it was an attempt to reduce to a minimum the amount of mercury given, in any form, to very small premature babies with low birth weight in whom there was a theoretical risk.

Second, the intent was to reduce total exposure to mercury in babies and young children in a world where other environmental sources may be more difficult to eliminate. ³¹⁻³³

(iv) Aluminium

A small amount of aluminium salts has been added to some vaccines for about 60 years. Aluminium acts as an adjuvant, which improves the protective response to immunisation by keeping antigens near the injection site so that they can be readily accessed by cells responsible for inducing an immune response. The use of aluminium in vaccines means that, for a given immune response, less antigen is needed per dose of vaccine, and a lower number of total doses is required. Although aluminium-containing vaccines have been associated with local reactions and less often with the development of subcutaneous nodules at the injection site, other studies have reported fewer reactions with aluminium-adsorbed vaccines than with unadsorbed vaccines. Concerns about the longer-term effects of aluminium in vaccines arose after some studies suggested a link between aluminium in the water supply and Alzheimer's disease, but this link has never been substantiated. The amount of aluminium in vaccines is very small and the intake from vaccines is far less than that received from diet or medications such as some antacids. ^{34,35}

(c) The need for immunisation

(i) Isn't natural immunity better than immunity from vaccination?

While vaccine-induced immunity may diminish with time, 'natural' immunity, acquired by catching the disease is usually lifelong. The problem is that the wild or 'natural' disease has a high risk of serious illness and occasionally death. Children or adults can be revaccinated (with some but not all vaccines) if their immunity from the vaccines falls to a low level. It is important to remember that vaccines are many times safer than the diseases they prevent.

(ii) Diseases like measles, polio, whooping cough and diphtheria have already disappeared from most parts of Australia. Why do we need to keep vaccinating children against these diseases?

These diseases are much less common now, but the bacteria and viruses that cause them are still present. The potential problem is kept in check by routine vaccination programs. In countries where vaccination rates have declined, vaccine preventable diseases have sometimes reappeared. For example, Holland has one of the highest rates of fully vaccinated people in the world. However, in the early 1990s there was a big outbreak of polio among a group of Dutch people who belonged to a religious group that objected to vaccination. While many of these people suffered severe complications like paralysis, polio did not spread into the rest of the Dutch community. This was due to the high rate of vaccination against polio, which protected the rest of the Dutch community.

There have been recent outbreaks of whooping cough, measles and rubella in Australia, and a number of children have died. Cases of tetanus and diphtheria, although rare, still occur. So even though these diseases are much less common now than in the past, it is necessary to continue to protect Australian children, so that the diseases cannot re-emerge to cause large epidemics.

(iii) Why do some children get the disease despite being vaccinated?

This is possible, since no vaccine is 100% effective. A small proportion of those who are vaccinated will remain susceptible to the disease. However, in the cases in which illness does occur in vaccinated individuals, the illness is usually much less severe than in those who were not vaccinated. The protection provided by vaccines differ. For example, if 100 children are vaccinated with MMR, 5 to 10 of the fully vaccinated children might still catch measles, mumps or rubella (although the disease will often be less severe in vaccinated children). If 100 children are vaccinated with a full schedule of pertussis-containing vaccines, 20 of the children might still get whooping cough but once again the disease is often less severe in these vaccinated children. To put it another way, if you do not vaccinate 100 children with MMR vaccine, and the children are exposed to measles, all of them will catch the disease with a risk of high rates of complications like pneumonia (lung infection) or encephalitis (inflammation of the brain).

(iv) What about homeopathic 'immunisation'?

Homeopathic 'immunisation' has not been proven to give protection against infectious diseases; only conventional immunisation produces a measurable immune response. The Council of the Faculty of Homeopathy, London, have issued a statement in 1993, which reads: "The Faculty of Homeopathy, London, strongly supports the conventional vaccination program and has stated that vaccination should be carried out in the normal way, using the conventional tested and proved vaccines, in the absence of medical contraindications".³⁶ The Executive Director of the Australian Natural Therapies Association has stated that no properly qualified natural therapist would recommend homeopathic 'immunisation' as an alternative to conventional immunisation.

Where can I get more information about vaccination?

More information about vaccination can be found in the following publications published by the Commonwealth Department of Health and Ageing:

- Understanding Childhood Immunisation
- Immunisation Myths: Responding to Arguments Against Immunisation

Also check with your local State or Territory public health unit or your doctor, local council, maternal child health nurse, or public health vaccination clinic for more information (see Appendix 1).

Other web sites on immunisation:

(Note that inclusion on this list does not necessarily indicate endorsement of the organisation producing these web sites);

<http://www.immunise.health.gov.au>

<http://www.cdc.gov/nip>

<http://www.who.int/vaccines/>

<http://www.immunize.org>

<http://www.cdc.gov/mmwr/>

<http://www.ncirs.usyd.edu.au>

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