4.19 TETANUS

4.19.1 Bacteriology

Tetanus is caused by *Clostridium tetani*, a motile, non-capsulated, Gram-positive rod that forms endospores. Spores of the bacillus are found in manured soil and can enter wounds. Once in a wound site, the bacillus can grow anaerobically. *C. tetani* produces a potent protein toxin, which has two components, tetanospasmin (a neurotoxin) and tetanolysin (a haemolysin).

4.19.2 Clinical features

Tetanus is an acute, often fatal, disease caused by the toxin produced by *C. tetani*. The neurotoxin acts on the central nervous system to cause muscle rigidity with painful spasms. The disease usually occurs after an incubation period of 3 to 21 days (range 1 day to several months), with a median time of onset after injury of 10 days. Generally, a shorter incubation period is associated with a more heavily contaminated wound, more severe disease and a worse prognosis. Generalised tetanus, the most common form of the disease, is characterised by increased muscle tone and generalised spasms. Early symptoms and signs include increased tone in the muscletailer muscles (trismus, or lockjaw), dysphagia, and stiffness or pain in the neck, shoulder and back muscles. Some patients develop paroxysmal, violent, painful, generalised muscle spasms. A constant threat during generalised spasms is reduced ventilation, apnoea or laryngospasm. The patient may be febrile, although many have no fever; mental state is unimpaired. Sudden cardiac arrest sometimes occurs, but its basis is unknown. Other complications include pneumonia, fractures, muscle rupture, deep vein thrombophlebitis, pulmonary emboli, decubitus ulcers and rhabdomyolysis. Death results from respiratory failure, hypertension, hypotension or cardiac arrhythmia.

Tetanus is uncommon in people who have received 4 or more doses of a tetanus-containing vaccine and in those who received their last dose within 10 years. However, cases have been reported and clinicians should consider tetanus when there are appropriate symptoms and signs, irrespective of the person’s vaccination status. A high level of diagnostic awareness of tetanus is particularly important in the elderly in industrialised countries, including Australia, as most deaths occur in people over 70 years of age, especially women, and may be associated with apparently minor injury.

Neonatal tetanus is usually associated with generalised symptoms, and fatal if left untreated. It usually occurs following contamination of the umbilical cord stump. Neonatal tetanus was effectively eliminated in Australia and other developed countries over a century ago. Introduction of maternal immunisation during pregnancy with tetanus toxoid has seen neonatal tetanus almost eliminated in developing countries.

4.19.3 Epidemiology

In Australia, tetanus is rare, occurring primarily in older adults who have never been vaccinated or who were vaccinated in the remote past. There were 24 notified cases of tetanus during 2001–2007, but 156 hospitalisations (July 2000–June 2007) where tetanus was coded as the principal diagnosis. This discrepancy suggests under-notification. During 2001–2006, there were 3 deaths recorded from tetanus. The case-fatality rate in Australia is about 2%. Effective protection against tetanus can be provided only by active immunisation. This is because the amount of tetanus toxin required to produce clinical symptoms is too small to induce a protective antibody response; second cases of tetanus in unimmunised persons have been recorded. Tetanus vaccine was introduced progressively into the childhood vaccination schedule after World War II. The effectiveness of the vaccine was demonstrated in that war; all Australian servicemen were vaccinated against tetanus and none contracted the disease. As tetanus can follow apparently trivial, even unnoticed wounds, active immunisation is the only certain protection.

4.19.4 Vaccines

Tetanus toxoid is available in Australia only in combination with diphtheria, with or without other antigens such as pertussis, inactivated poliomyelitis, hepatitis B and *Haemophilus influenzae* type b.

The acronym DTPa, using capital letters, signifies child formulations of diphtheria, tetanus and acellular pertussis-containing vaccines. The acronym dTpa is used for formulations that contain substantially lesser amounts of diphtheria toxoid and pertussis antigens than child (DTPa-containing) formulations; dTpa vaccines are usually used in adolescents and adults.

Tetanus vaccination stimulates the production of antitoxin. Hence, vaccination does not prevent growth of *C. tetani* in contaminated wounds, but protects against the toxin produced by the organism. The immunogen is prepared by treating a cell-free preparation of toxin with formaldehyde, thereby converting it into the innocuous tetanus toxoid. Tetanus toxoid is usually adsorbed onto an adjuvant, either aluminium phosphate or aluminium hydroxide, to increase its immunogenicity. Antigens from *Bordetella pertussis*, in combination vaccines, also act as an effective adjuvant.
Formulations for children aged <10 years

- **Hexaxim** – Sanofi-Aventis Australia Pty Ltd (DTPa-hepB-IPV-Hib; diphtheria-tetanus-acellular pertussis-hepatitis B-inactivated poliovirus- *Haemophilus influenzae* type b). Each 0.5 mL pre-filled syringe contains ≥20 IU diphtheria toxoid, ≥40 IU tetanus toxoid, 25 µg pertussis toxoid (PT), 25 µg filamentous haemagglutinin (FHA), 10 µg recombinant HBsAg, 40 D-antigen units inactivated poliovirus type 1 (Mahoney), 8 D-antigen units type 2 (MEF-1), 32 D-antigen units type 3 (Saukett) and 12 µg purified Hib capsular polysaccharide (PRP) conjugated to 22–36 µg tetanus toxoid, adsorbed onto 0.6 mg aluminium as aluminium hydroxide. May contain traces of glutaraldehyde, formaldehyde, neomycin, streptomycin and polymyxin B.

- **Infanrix** – GlaxoSmithKline Australia Pty Ltd (DTPa; diphtheria-tetanus-acellular pertussis). Each 0.5 mL monodose vial or pre-filled syringe contains ≥30 IU diphtheria toxoid, ≥40 IU tetanus toxoid, 25 µg PT, 25 µg FHA, 8 µg pertactin (PRN), adsorbed onto 0.5 mg aluminium as aluminium hydroxide.

- **Infanrix hexa** – GlaxoSmithKline Australia Pty Ltd (DTPa-HEP-B-IPV-Hib; diphtheria-tetanus-acellular pertussis-hepatitis B-inactivated poliovirus- *Haemophilus influenzae* type b). The vaccine consists of both a 0.5 mL pre-filled syringe containing ≥30 IU diphtheria toxoid, ≥40 IU tetanus toxoid, 25 µg PT, 25 µg FHA, 8 µg PRN, 10 µg recombinant HBsAg, 40 D-antigen units inactivated poliovirus type 1 (Mahoney), 8 D-antigen units type 2 (MEF-1) and 32 D-antigen units type 3 (Saukett), adsorbed onto aluminium hydroxide/phosphate; traces of formaldehyde, polysorbate 80, polysorbate 20, polymyxin and neomycin; and a vial containing a lyophilised pellet of 10 µg purified Hib capsular polysaccharide (PRP) conjugated to 20–40 µg tetanus toxoid. May contain yeast proteins.

- **Infanrix IPV** – GlaxoSmithKline Australia Pty Ltd (DTPa-IPV; diphtheria-tetanus-acellular pertussis-inactivated poliovirus). Each 0.5 mL pre-filled syringe contains ≥30 IU diphtheria toxoid, ≥40 IU tetanus toxoid, 25 µg PT, 25 µg FHA, 8 µg PRN, 40 D-antigen units inactivated poliovirus type 1 (Mahoney), 8 D-antigen units type 2 (MEF-1) and 32 D-antigen units type 3 (Saukett), adsorbed onto aluminium hydroxide; traces of formaldehyde, polysorbate 80, polymyxin and neomycin.

- **Quadracel** – Sanofi-Aventis Australia Pty Ltd (DTPa-IPV; diphtheria-tetanus-acellular pertussis-inactivated poliovirus). Each 0.5 mL monodose vial contains ≥30 IU diphtheria toxoid, ≥40 IU tetanus toxoid, ≥20 IU tetanus toxoid, 20 µg PT, 20 µg FHA, 3 µg PRN, 5 µg FIM 2+3, 40 D-antigen units inactivated poliovirus type 1 (Mahoney), 8 D-antigen units type 2 (MEF-1) and 32 D-antigen units type 3 (Saukett); 1.5 mg aluminium phosphate; ≤50 ng bovine serum albumin; phenoxethanol as preservative; traces of formaldehyde, glutaraldehyde, polysorbate 80, polymyxin and neomycin.

- **Triacel** – Sanofi-Aventis Australia Pty Ltd (DTPa; diphtheria-tetanus-acellular pertussis). Each 0.5 mL monodose vial contains ≥30 IU diphtheria toxoid, ≥40 IU tetanus toxoid, 10 µg PT, 5 µg FHA, 3 µg PRN, 5 µg FIM 2+3; 1.5 mg aluminium phosphate; 3.4 mg phenoxethanol.

Reduced antigen formulations for adults, adolescents and children aged ≥10 years

- **ADT Booster** – CSL Limited/Statens Serum Institut (dT; diphtheria-tetanus). Each 0.5 mL monodose vial or pre-filled syringe contains ≥2 IU diphtheria toxoid and ≥20 IU tetanus toxoid, adsorbed onto 0.5 mg aluminium as aluminium hydroxide.

- **Adacel** – Sanofi-Aventis Australia Pty Ltd (dTpa; diphtheria-tetanus-acellular pertussis). Each 0.5 mL monodose vial contains ≥2 IU diphtheria toxoid, ≥20 IU tetanus toxoid, 2.5 µg PT, 5 µg FHA, 3 µg PRN, 5 µg FIM 2+3; 0.33 mg aluminium as aluminium phosphate; phenoxethanol; traces of formaldehyde and glutaraldehyde.

- **Adacel Polio** – Sanofi-Aventis Australia Pty Ltd (dTpa-IPV; diphtheria-tetanus-acellular pertussis-inactivated poliovirus). Each 0.5 mL monodose vial or pre-filled syringe contains ≥2 IU diphtheria toxoid, ≥20 IU tetanus toxoid, 2.5 µg PT, 5 µg FHA, 3 µg PRN, 5 µg FIM 2+3, 40 D-antigen units inactivated poliovirus type 1 (Mahoney), 8 D-antigen units type 2 (MEF-1) and 32 D-antigen units type 3 (Saukett); 0.33 mg aluminium as aluminium phosphate; phenoxethanol; traces of formaldehyde, glutaraldehyde, polysorbate 80, polymyxin, neomycin and streptomycin.

- **Boostrix** – GlaxoSmithKline Australia Pty Ltd (dTpa; diphtheria-tetanus-acellular pertussis). Each 0.5 mL monodose vial or pre-filled syringe contains ≥2 IU diphtheria toxoid, ≥20 IU tetanus toxoid, 8 µg PT, 8 µg FHA, 2.5 µg PRN, adsorbed onto 0.5 mg aluminium as aluminium hydroxide/phosphate; traces of formaldehyde, polysorbate 80 and glycine.
• **Boostrix-IPV** – GlaxoSmithKline Australia Pty Ltd (dTpa-IPV; diphtheria-tetanus-acellular pertussis-inactivated poliovirus). Each 0.5 mL pre-filled syringe contains ≥2 IU diphtheria toxoid, ≥20 IU tetanus toxoid, 8 µg PT, 8 µg FHA, 2.5 µg PRN, 40 D-antigen units inactivated poliovirus type 1 (Mahoney), 8 D-antigen units type 2 (MEF-1) and 32 D-antigen units type 3 (Saukett), adsorbed onto 0.5 mg aluminium as aluminium hydroxide/phosphate; traces of formaldehyde, polysorbate 80, polymyxin and neomycin.

### 4.19.5 Transport, storage and handling
Transport according to National vaccine storage guidelines: Strive for 5.\(^{16}\) Store at +2°C to +8°C. Do not freeze. Protect from light.

Infanrix hexa must be reconstituted by adding the entire contents of the syringe to the vial and shaking until the pellet is completely dissolved. Reconstituted vaccine should be used as soon as practicable. If storage is necessary, hold at room temperature for not more than 8 hours.

### 4.19.6 Dosage and administration
The dose of all tetanus-containing vaccines is 0.5 mL, to be given by IM injection. Do not mix DTPa- or dTpa-containing vaccines or dT vaccine with any other vaccine in the same syringe, unless specifically registered for use in this way.

### 4.19.7 Recommendations

#### Infants and children

**Primary doses**

Tetanus toxoid is given in combination with diphtheria toxoid and acellular pertussis as DTPa-containing vaccines. The recommended 3-dose primary schedule is at 2, 4 and 6 months of age. The 1st dose can be given as early as 6 weeks of age, due to the high morbidity and occasional mortality associated with pertussis in very young infants. If the 1st dose is given at 6 weeks of age, the next scheduled doses should still be given at 4 months and 6 months of age (refer to 4.12 Pertussis).

**Booster doses**

Two booster doses of DTPa-containing vaccine are recommended during childhood (at 18 months and 4 years of age) to provide ongoing protection against pertussis through to early adolescence (refer to 4.12 Pertussis).

For details on the management of children who require catch-up vaccination for tetanus, including minimum acceptable intervals between vaccine doses, refer to 2.1.5 Catch-up.

#### Older children and adolescents

An additional booster dose (i.e. in addition to those recommended for young children, refer above) is recommended for adolescents between 10 and 17 years of age, using the reduced antigen content dTpa. The optimal age for administering this dose is 11–13 years, particularly due to waning of the pertussis antibody response following the booster dose recommended at 4 years of age (refer to 4.12 Pertussis). This adolescent booster dose of tetanus-containing vaccine is also essential for maintaining immunity to tetanus (and diphtheria and pertussis) into adulthood.

It is recommended to use the reduced antigen content dTpa for booster doses. However, when necessary, dT can also be used for the booster dose or, if necessary, for the primary dT course, in persons aged ≥10 years (refer to 4.19.14 Variations from product information below).

For details on the management of children and adolescents who require catch-up vaccination for tetanus, refer to 2.1.5 Catch-up.

#### Adults

**Booster doses**

All adults who reach the age of 50 years without having received a booster dose of dT in the previous 10 years should receive a further tetanus booster dose. This should be given as dTpa, to also provide protection against pertussis (refer to 4.12 Pertussis). This stimulates further production of circulating tetanus antibodies at an age when waning of diphtheria and tetanus immunity is commencing in the Australian population.\(^9\)

A single booster dose of dTpa is also recommended for adults aged ≥65 years (if not received in the previous 10 years), for protection against pertussis (refer to 4.12 Pertussis).
Travellers to countries where health services are difficult to access should be adequately protected against tetanus before departure. They should receive a booster dose of dT (or dTpa if not given previously) if more than 10 years have elapsed since the last dose of dT-containing vaccine.

For persons undertaking travel with a high risk of sustaining a tetanus-prone wound, consider giving a booster dose of either dTpa or dT (as appropriate) if more than 5 years have elapsed since the last dose of a dT-containing vaccine.

**Primary doses**

Persons who have not received any tetanus vaccines are also likely to have missed diphtheria vaccination. Therefore, 3 doses of dT should be given at minimum intervals of 4 weeks, followed by booster doses at 10 and 20 years after the primary course. One of these 3 doses (preferably the 1st) should be given as dTpa, to also provide additional protection against pertussis. In the event that dT vaccine is not available, dTpa can be used for all primary doses.17

For additional information on adults with no history of a primary course of dT vaccine requiring catch-up, refer to 2.1.5 *Catch-up.*

**Interval between tetanus/diphtheria-containing vaccines**

In some circumstances where protection against pertussis is required as soon as possible, a single dose of dTpa vaccine can be administered at any time after a dose of tetanus- and diphtheria-containing vaccine (refer to 4.12 *Pertussis*). If providing dT or dTpa vaccine as part of a dT catch-up schedule in adults or children aged ≥10 years, the recommended minimum intervals between doses should be met (refer to 2.2 Administration of vaccines).

### 4.19.8 Pregnancy and breastfeeding

Although dT vaccines are not routinely recommended for pregnant women, they can be given under certain circumstances, such as for management of a tetanus-prone wound (refer to 4.19.9 Tetanus-prone wounds below).18

dTpa vaccine is recommended for pregnant women (in the third trimester of each pregnancy) to prevent pertussis in pregnant women and their newborns (refer to 4.12 *Pertussis*).

dT or dTpa vaccines can be given to breastfeeding women.

Refer to 3.3 *Groups with special vaccination requirements*, Table 3.3.1 *Recommendations for vaccination in pregnancy* for more information.

### 4.19.9 Tetanus-prone wounds

The definition of a tetanus-prone injury is not straightforward, as tetanus may occur after apparently trivial injury, such as from a rose thorn, or with no history of injury. It is for this reason that all wounds other than clean, minor cuts are considered ‘tetanus-prone’. However, there are certain types of wounds that are more likely to favour the growth of tetanus organisms. These include compound fractures, bite wounds, deep penetrating wounds, wounds containing foreign bodies (especially wood splinters), wounds complicated by pyogenic infections, wounds with extensive tissue damage (e.g. contusions or burns) and any superficial wound obviously contaminated with soil, dust or horse manure (especially if topical disinfection is delayed more than 4 hours). Reimplantation of an avulsed tooth is also a tetanus-prone event, as minimal washing and cleaning of the tooth is conducted to increase the likelihood of successful reimplantation. Persons who inject drugs are also at risk of tetanus, particularly if skin ‘popping’ is practiced.19

Appropriate tetanus prophylaxis measures in wound management, including use of tetanus immunoglobulin (TIG), are outlined in Table 4.19.1.

Adults who have sustained injuries deemed to be tetanus-prone (all wounds other than clean minor cuts) should receive a booster dose of dT if more than 5 years have elapsed since the last dose of tetanus-containing vaccine (refer to Table 4.19.1). As an alternative to dT vaccine after a tetanus-prone wound, adults can receive dTpa vaccine (refer to 4.12 *Pertussis*) to also provide additional protection against pertussis.20 In children <10 years of age, this dose of vaccine should be given as DTPa or a DTPa-combination vaccine, consistent with the child’s vaccination history and the recommended schedule. For details on the management of children who have missed doses in the recommended schedule, refer to 2.1.5 *Catch-up*. If there is any doubt about the adequacy of previous tetanus immunisation in a person who has a tetanus-prone wound, TIG must be given as soon as possible, as well as tetanus toxoid-containing vaccine, to provide both immediate passive and active protection (refer to Table 4.19.1). The recommended dose for TIG is 250 IU, given by IM injection, as soon as practicable after the injury. If more than 24 hours have elapsed, 500 IU should be given. Persons with a significant humoral immune deficiency may not have developed or maintained adequate immunity to tetanus, despite vaccination, and require TIG for tetanus-prone wounds.

Clean minor cuts are not categorised as tetanus-prone wounds and, for these wounds, TIG is unnecessary, independent of previous tetanus vaccination history.

Information regarding accessing tetanus immunoglobulin (for intramuscular use for management of tetanus-prone wounds, or intravenous tetanus immunoglobulin for the treatment of clinical tetanus) should be obtained from the
General measures for treatment of tetanus-prone wounds

Whatever the immune status of a person with a tetanus-prone wound, local disinfection and, where appropriate, surgical treatment of tetanus-prone wounds, must never be omitted. Antibiotic prophylaxis is not indicated for the prevention of tetanus; however, the use of antibiotics (such as penicillin, amoxycillin + clavulanate, or metronidazole) for preventing other bacterial infection of the wound is a matter for clinical judgment.

Table 4.19.1: Guide to tetanus prophylaxis in wound management

<table>
<thead>
<tr>
<th>History of tetanus vaccination</th>
<th>Time since last dose</th>
<th>Type of wound</th>
<th>DTPa, DTPa-combinations, dT, dTpa, as appropriate</th>
<th>Tetanus immunoglobulin*</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥3 doses</td>
<td>&lt;5 years</td>
<td>Clean minor wounds</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All other wounds†</td>
<td>NO</td>
<td>NO†</td>
</tr>
<tr>
<td>≥3 doses</td>
<td>5–10 years</td>
<td>Clean minor wounds</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All other wounds†</td>
<td>YES</td>
<td>NO‡</td>
</tr>
<tr>
<td>≥3 doses</td>
<td>&gt;10 years</td>
<td>Clean minor wounds</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All other wounds†</td>
<td>YES</td>
<td>NO‡</td>
</tr>
<tr>
<td>&lt;3 doses or uncertain§</td>
<td></td>
<td>Clean minor wounds</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All other wounds†</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

* The recommended dose for TIG is 250 IU, given by IM injection, as soon as practicable after the injury. If more than 24 hours have elapsed, 500 IU should be given. Because of its viscosity, TIG should be given to adults using a 21 gauge needle. For children, it can be given slowly using a 23 gauge needle.

† All wounds, other than clean minor wounds, should be considered ‘tetanus-prone’. For more detail, refer to 4.19.9 Tetanus-prone wounds above.

‡ Individuals with a humoral immune deficiency (including HIV-infected persons who have immunodeficiency) should be given TIG if they have received a tetanus-prone injury, regardless of the time since their last dose of tetanus-containing vaccine.

§ Persons who have no documented history of a primary vaccination course (3 doses) with a tetanus toxoid-containing vaccine should receive all missing doses and must receive TIG. Refer to 2.1.5 Catch-up.

4.19.10 Contraindications

The only absolute contraindications to tetanus-containing vaccines are:

- anaphylaxis following a previous dose of any tetanus-containing vaccine
- anaphylaxis following any vaccine component.

If a person has a tetanus-prone wound and has previously had a severe adverse event following tetanus vaccination, alternative measures, including the use of tetanus immunoglobulin, can be considered.

4.19.11 Adverse events

Mild discomfort or pain at the injection site persisting for up to a few days is common. Administration of more than 1 dose of a dT-containing vaccine in a 5-year period in previously immunised adults had previously been thought to be associated with an increased risk of injection site reactions. However, recent studies indicate that, in adults and adolescents, the adverse reactions to a single dose of dTpa are similar whether administered shortly (18 months) or at a longer interval after a previous dose of a vaccine containing tetanus/diphtheria toxoids. (Refer also to 4.12 Pertussis.)

Uncommon general adverse events following dT vaccine include headache, lethargy, malaise, myalgia and fever. Anaphylaxis, urticaria and peripheral neuropathy occur very rarely. Brachial neuritis (inflammation of a nerve in the arm, causing weakness or numbness) has been described following the administration of tetanus toxoid-containing vaccines, with an estimated excess risk of approximately 0.5–1 in 100 000 doses in adults. For specific adverse events following combination vaccines containing both tetanus and pertussis antigens, refer to 4.12 Pertussis.

4.19.12 Public health management of tetanus

Tetanus is a notifiable disease in all states and territories in Australia.
Further instructions about the public health management of tetanus, including management of cases of tetanus, should be obtained from state/territory public health authorities (refer to Appendix 1 Contact details for Australian, state and territory government health authorities and communicable disease control).

- **Tetanus Immunoglobulin-VF (human; for intramuscular use)** – CSL Limited. 160 mg/mL immunoglobulin (mainly IgG) prepared from human plasma containing high levels of antibody to the toxin of Clostridium tetani. Single vials contain 250 IU of human tetanus antitoxin, with the actual volume stated on the label on the vial. Also contains glycine.

For information on the definition and management of tetanus-prone wounds, refer to 4.19.9 *Tetanus-prone wounds* and Table 4.19.1 above. To access tetanus immunoglobulin (for intramuscular use for management of tetanus-prone wounds, or intravenous tetanus immunoglobulin for the treatment of clinical tetanus), contact the Australian Red Cross Blood Service (refer to Part 5 Passive immunisation).

### 4.19.13 Variations from product information

The product information for Infanrix states that this vaccine is indicated for primary immunisation of infants from the age of 2 months to 12 months and as a booster dose for children from 15 months to 6 years of age who have previously been vaccinated against diphtheria, tetanus and pertussis. The ATAGI recommends that this vaccine may also be used for catch-up of the primary schedule or as a booster in children <10 years of age. The ATAGI also recommends that the primary schedule may be commenced at 6 weeks of age, if required.

The product information for Infanrix hexa states that this vaccine is indicated for primary immunisation of infants from the age of 6 weeks and as a booster dose for children 18 months of age if boosting is required for all antigens. The ATAGI recommends that this vaccine may also be used for catch-up of the primary schedule or as a booster in children <10 years of age.

The product information for Infanrix IPV states that this vaccine is indicated for use in a 3-dose primary schedule for immunisation of infants from the age of 6 weeks and as a single booster dose for children ≤6 years of age who have previously been vaccinated against diphtheria, tetanus, pertussis and poliomyelitis. In addition, the ATAGI recommends that this product may also be used for catch-up of the primary schedule or as a booster in children <10 years of age.

The product information for Quadracel states that this vaccine is indicated for use in a 3-dose primary schedule from the age of 2 months to 12 months and may also be used as a booster dose for children from 15 months to 6 years of age who have previously been vaccinated against diphtheria, tetanus, pertussis and poliomyelitis. The ATAGI recommends that, when appropriate, this product may also be used for either catch-up of the primary schedule or as a booster dose in children aged <10 years. The ATAGI also recommends that the primary schedule may be commenced at 6 weeks of age, if required.

The product information for Tripacel states that this vaccine is indicated for use in a 3-dose primary schedule from the age of 2 months to 12 months and may also be used as a booster dose for children from 15 months to 8 years of age who have previously been vaccinated against diphtheria, tetanus and pertussis. The ATAGI recommends that, when appropriate, this product may also be used for either catch-up of the primary schedule or as a booster dose in children aged <10 years. The ATAGI also recommends that the primary schedule may be commenced at 6 weeks of age, if required.

The product information for ADT Booster states that this vaccine is indicated for use as a booster dose only in children aged ≥5 years and adults who have previously received at least 3 doses of diphtheria and tetanus vaccines. The ATAGI recommends instead that, where a dT vaccine is required, ADT Booster can be used, including for primary immunisation against diphtheria and tetanus (for any person ≥10 years of age).

The product information for Adacel and Boostrix (reduced antigen content dTpa) states that these vaccines are indicated for booster doses only. The ATAGI recommends instead that, when a 3-dose primary course of diphtheria/tetanus toxoids is given to an adolescent/adult, dTpa should replace the 1st dose of dT, with 2 subsequent doses of dT. If dT is not available, dTpa can be used for all 3 primary doses.

The product information for Adacel states that vaccination in pregnancy is not recommended unless there is a definite risk of acquiring pertussis. The product information for Boostrix states that the vaccine should be used during pregnancy only when clearly needed, and the possible advantages outweigh the possible risks for the fetus. The ATAGI recommends instead that pregnant women receive a dose with every pregnancy. The ATAGI recommends that pregnant women receive a booster dose with every pregnancy and that other adults in contact with infants and/or at increased risk from pertussis can receive a booster dose every 10 years.
The product information for Boostrix, Boostrix-IPV and Adacel states that dTpa-containing vaccine should not be given within 5 years of a tetanus toxoid-containing vaccine. The product information for Adacel Polio states that dTpa-containing vaccine should not be given within 3 years of a tetanus toxoid-containing vaccine. The ATAGI recommends instead that, if protection against pertussis is required, dTpa-containing vaccines can be administered at any time following receipt of a dT-containing vaccine.

The product information for Adacel, Adacel Polio, Boostrix, Boostrix-IPV, Infanrix, Infanrix hexa, Infanrix IPV, Quadracel and Tripacel states that these vaccines are contraindicated in children with encephalopathy of unknown aetiology or with neurologic complications occurring within 7 days following a vaccine dose. The ATAGI recommends instead that the only contraindication is a history of anaphylaxis to a previous dose or to any of the vaccine components.

The product information for Adacel Polio states that this vaccine is not indicated following a tetanus-prone wound. The ATAGI recommends instead that Adacel Polio can be administered following a tetanus-prone wound.

References

A full reference list is available on the electronic Handbook or website www.immunise.health.gov.au.

18. Centers for Disease Control and Prevention (CDC). Updated recommendations for use of tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine (Tdap) in pregnant women and persons who have or anticipate having close contact with an infant aged <12 months – Advisory Committee on Immunization Practices (ACIP), 2011. MMWR. Morbidity and Mortality Weekly Report 2011;60:1424-6.