Australian Government
Department of Health and Aged Care

Clinical recommendations for COVID-19 vaccines

The Australian Technical Advisory Group on Immunisation (ATAGI) has made recommendations on the use of COVID-19 vaccines in Australia.

June 2023 update on vaccine availability

The following COVID-19 vaccines are **no longer available** in Australia:

- Moderna 6 months to 5 years formulation (blue cap/purple stripe)
- Moderna ≥6 years formulation (red cap)
- AstraZeneca COVID-19 vaccine.

Primary course recommendations

COVID-19 vaccination is recommended for all people aged 5 years or older to protect against COVID-19.

COVID-19 vaccination is recommended for children aged 6 months to under 5 years with severe immunocompromise, disability, and those who have complex and/or multiple health conditions that increase the risk of severe COVID-19.

For most people, a primary vaccination course consists of 2 doses.

A third primary dose is recommended for people aged 6 months or older with severe immunocompromise. See considerations for special populations: people who are immunocompromised.

Primary course vaccine preference recommendations

For people aged 6 months – 11 years, an age-approved original (ancestral) COVID-19 vaccine should be used for the primary course (refer to Children and Adolescents below).

For people aged 12 years and older, a bivalent COVID-19 vaccine is now preferred for the primary course.

Adults who have started their course with an original (ancestral-based) vaccine are recommended to complete the course with a bivalent vaccine. For further information, refer to the ATAGI advice on the preferential use of bivalent COVID-19 vaccines for primary vaccination of people aged 12 years or older.

Original (ancestral) vaccines remain available for people aged 12 years and older who either cannot receive an mRNA vaccine or prefer not to receive a bivalent primary course.

The recommended schedule for the primary course for all vaccines in people aged 5 years and over is 2 doses, 8 weeks apart.

Booster dose recommendations

ATAGI made updated recommendations on boosters in February 2023, which replaced previous advice.

Adults

The following recommendations apply to adults whose last COVID-19 vaccine dose or confirmed infection (whichever is the most recent) was 6 months ago or more. It does not matter how many doses the person has received before. A person may be vaccinated earlier than the recommended 6-month interval in exceptional circumstances, such as before starting an immunosuppressant, before overseas travel or if someone cannot reschedule vaccination easily (such as in an outreach vaccination program).

65 years or older

ATAGI recommends a booster dose in early 2023 for all adults aged 65 years or older.

18 to 64 years

ATAGI recommends a booster dose in early 2023 for adults aged 18 to 64 years who have medical comorbidities that increase their risk of severe COVID-19, or disability with significant or complex health needs.

Other adults aged 18 to 64 may consider a booster dose in early 2023, based on an individual risk–benefit assessment with their immunisation provider.

People aged 5 to 17 years

A booster dose may be considered for children and adolescents aged 5 to 17 years who have medical comorbidities that increase their risk of severe COVID-19, or disability with significant or complex health needs. This should be based on an individual risk–benefit assessment with their immunisation provider.

ATAGI does not currently recommend a booster dose for children and adolescents aged under 18 years who do not have any risk factors for severe COVID-19.

Children aged under 5 years

ATAGI does not recommend booster doses for children aged under 5 years at this time.

Vaccine preference for booster doses

ATAGI expects that all currently available COVID-19 vaccines will provide a benefit, as a booster does, but prefers bivalent mRNA booster vaccines over other formulations.

Pfizer original or Novavax can also be used for booster doses, but are not preferred. Pfizer 5 to 11 years formulation (orange cap) can be used as a booster in children aged 5 to 11 years.

See ATAGI 2023 booster advice for details of the rationale behind the above booster recommendations.

For more details on vaccines see: COVID-19 vaccine information.

Considerations for special populations

People who are immunocompromised

COVID-19 vaccine is recommended for people who are immunocompromised because of their increased risk of severe illness with COVID-19.[1] For people aged 12 years and older, a bivalent COVID-19 vaccine is preferred for the primary course.

Vaccinated immunocompromised people should be advised to continue taking other protective measures against SARS-CoV-2.

Immunocompromise – additional primary dose

A third primary dose of COVID-19 vaccine is recommended for all people aged 6 months or older with severe immunocompromise who are receiving a 2-dose primary course. The third dose should be given from 2 months after the second vaccine dose. Severely immunocompromised children who receive the 3-dose primary schedule of the Pfizer 6 months to 4 years formulation (maroon cap) do not require a fourth primary dose. For people aged 12 years and older, a bivalent COVID-19 vaccine is preferred for the third dose, regardless of which vaccine(s) were used for prior doses.

The third dose is intended to address the risk of lowered response or non-response to the standard 2-dose schedule. For more details on vaccine effectiveness in people who are immunocompromised, see COVID-19 vaccine product information.

Most studies of third doses of COVID-19 vaccine in immunocompromised people have used mRNA vaccines.

There is very limited evidence of the efficacy of Novavax in immunocompromised people.

More information, including definitions of severe immunocompromise, is available in:

- ATAGI recommendations for the use of a 3rd primary dose of COVID-19 vaccine in individuals who are severely immunocompromised.
- COVID-19 vaccination decision guide for people with immunocompromise
- Shared decision making guide for people with immunocompromise

Children and adolescents

COVID-19 vaccination is recommended for:

- all children and adolescents aged ≥5 years
- children aged 6 months to <5 years who are at increased risk of severe COVID-19.

Children should be given a formulation that is registered for their age. Providers should be vigilant about the potential for dosing errors, including overdosing, with COVID-19 vaccines in children.

The recommended schedule varies by age; see Recommended and variations on primary vaccination schedule.

Children aged 6 months to <5 years

Pfizer 6 months to 4 years formulation (maroon cap) is currently the only COIVD-19 vaccine available for this age group and is given in a 3-dose primary schedule, with 3 µg of mRNA in each 0.2 mL dose.

ATAGI recommends COVID-19 vaccination for children in this age group who are at greatest risk of severe outcomes from COVID-19. This includes those with the following or similar conditions:

- severe primary or secondary immunodeficiency, including those undergoing treatment for cancer, or on immunosuppressive treatments as listed in the ATAGI advice on third primary doses of COVID-19 vaccine in individuals who are severely immunocompromised
- bone marrow or stem cell transplant, or chimeric antigen T-cell (CAR-T) therapy
- complex congenital cardiac disease
- structural airway anomalies or chronic lung disease
- type 1 diabetes mellitus
- chronic neurological or neuromuscular conditions
- a disability with significant or complex health needs, such as severe cerebral palsy or Down syndrome (trisomy 21).

ATAGI does not currently recommend COVID-19 vaccination for children in this age group who are not in the listed high-risk categories for severe COVID-19.

For more information on this age group see:

- ATAGI recommendations on COVID-19 vaccine use in children aged 6 months to under 5 years
- ATAGI recommendations on use of the Pfizer COVID-19 vaccine for children aged 6 months to 4 years.

Children aged 5 to 11 years

Pfizer 5 to 11 years formulation (orange cap), is the only vaccine available for this age group, and is given as a 2-dose primary schedule, which contains 10 µg per 0.2 mL dose.

For more information on this age group, see: ATAGI recommendations on the use of the paediatric Pfizer COVID-19 vaccine in children aged 5 to 11 years in Australia.

Adolescents aged 12 to 17 years

Bivalent vaccines are preferred for use in the primary course of adolescents aged 12 to 17 years. The following bivalent vaccines are currently available for this age group:

- Pfizer bivalent original/Omicron BA.4/5 ≥12 years formulation (grey cap)
- Moderna bivalent original/Omicron BA.4/5 ≥12 years formulation (pre-filled syringe).

The following original (ancestral) vaccines can be used for the primary course in people aged ≥12 years, but are not preferred:

- Pfizer original ≥12 years formulation (dilute-to-use purple cap).
- Novavax.

Although bivalent COVID-19 vaccines are currently registered for use as booster doses, ATAGI considers them suitable for use in the primary course. Adolescents who have started their course with an original (ancestral-based) vaccine can complete the course with a bivalent vaccine. For further information, refer to the ATAGI advice on the preferential use of bivalent COVID-19 vaccines for primary vaccination of people aged 12 years or older.

The recommended schedule for the primary course is 2 doses, 8 weeks apart, regardless of which vaccines are used. ATAGI now prefers bivalent formulations for booster doses for adolescents aged 12 to 17 years:

- Pfizer bivalent original/Omicron BA.4/5 ≥12 years formulation (grey cap)
- Moderna bivalent original/Omicron BA.4/5 ≥12 years formulation (pre-filled syringe).

For more information on this age group, see ATAGI statement regarding vaccination of adolescents aged 12-15 years.

Pregnancy, breastfeeding or planning pregnancy

Bivalent mRNA COVID-19 vaccines are preferred for the primary course and for booster doses in pregnant women.

There is a large body of evidence supporting the safety and effectiveness of ancestral-based (original) mRNA vaccines in pregnancy.[2,3]

Although bivalent mRNA COVID-19 vaccines are currently registered for use as booster doses and have not been formally studied in pregnant women, ATAGI considers them as suitable for the primary course and for booster doses in pregnant women. There are no additional concerns regarding the safety of bivalent COVID-19 vaccines compared with the original vaccines.

Pfizer Original and Novavax can also be used in pregnant women, where an individual prefers to not have a bivalent mRNA vaccine.

The same formulations can be used for the primary course and for booster doses in pregnant women as for the general population.

Pregnant women who have already received a primary course should discuss with their immunisation provider whether a booster dose is required during their pregnancy. Pregnancy is not currently considered a risk factor for severe illness in a woman who has already completed a primary course and booster and who does not have any medical risk conditions. The risk of severe disease during the Omicron SARS-CoV-2 variant period is already low in pregnant women who have received 3 doses of COVID-19 vaccine.[4,5]

For more details, see Shared decision making guide for women who are pregnant, breastfeeding or planning pregnancy..

For details on:

- vaccine effectiveness in pregnancy, see COVID-19 vaccine product information
- risk of COVID-19 in pregnancy, see Clinical features of COVID-19 disease
- adverse events and safety in pregnancy, see COVID-19 vaccine adverse events.

People with a past SARS-CoV-2 infection

All people are recommended to defer COVID-19 vaccination for 6 months after a confirmed SARS-CoV-2 infection. ATAGI notes that testing rates have decreased since their peak in December 2021, and there are likely to have been many people with undetected SARS-CoV-2 infection in late 2022 and early 2023.. There are no safety concerns for individuals receiving a COVID-19 vaccine who may have had undetected SARS-CoV-2 infection within the past 6 months.

Vaccination is likely to enhance the protection induced by infection. The interval between infection and vaccination enhances the protection from vaccination by further boosting the immune response, including immune memory response, generated following infection.[4]

A person may be vaccinated earlier than the recommended 6-month interval in exceptional circumstances, such as before starting an immunosuppressant, before overseas travel or if someone cannot reschedule vaccination easily (such as in an outreach vaccination program).

Infection can be confirmed by either PCR or rapid antigen test.

For people who have been infected and are required to receive COVID-19 vaccination, a temporary medical exemption may be applicable. People should speak with their healthcare provider about what is best for them. Providers are advised to only provide temporary

exemptions for a period of up to 6 months after infection. This is due to the increased risk of reinfection after this time.

People who were previously vaccinated within 6 months of a confirmed SARS-CoV-2 infection do not need to repeat any doses.

People who have been infected with SARS-CoV-2 can receive other (non-COVID) vaccines without any minimum interval. As with any vaccine, vaccination should be deferred in people who are acutely unwell (such as with an acute febrile or systemic illness).

People treated with an anti-SARS-CoV-2 monoclonal antibody

Anti-SARS-CoV-2 monoclonal antibodies can be used to treat SARS-CoV-2 infection, or as pre- or post-exposure prophylaxis.

When monoclonal antibodies are used as treatment for COVID-19 (that is, after infection with SARS-CoV-2), the recommended interval for a booster dose of COVID-19 vaccine is 6 months (the same as for the interval after infection). Also see People with a past SARS-CoV-2 infection.

When monoclonal antibodies are used as pre- or post-exposure prophylaxis to prevent COVID-19 (currently only tixagevimab and cilgavimab – Evusheld), there is no minimum recommended interval, and the timing of vaccination is a clinical decision. Providers should consider several factors, including the following:

- There is a theoretical risk of interference between antibody treatments and vaccines.
- Monoclonal antibodies are likely to protect the person for at least 2 to 3 months, so the incremental benefit of a booster soon after treatment may be small.
- There are no known concerns regarding adverse events if there is a short interval between tixagevimab/cilgavimab and a COVID-19 vaccine.
- Consider whether the person is likely to return for a booster dose at a later date.

As with all vaccines, COVID-19 vaccination should be deferred in people who are acutely unwell.

Timing of administration of other vaccines, including influenza vaccine

COVID-19 vaccines can be co-administered (that is, given on the same day) with influenza and other vaccines in all age groups. This includes routine infant, childhood and adolescent vaccines and during pregnancy.

Providers need to balance the opportunistic need for co-administration with the potential benefits of giving the vaccines on separate visits. There is the potential for an increase in mild to moderate adverse events when more than one vaccine is given at the same time. Co-administration or near administration (that is, within days) with another vaccine may also make it challenging to attribute potential adverse events.[7,8] Providers should ensure that parents/guardians of young children receiving COVID-19 vaccines are aware of the increased potential for local reactions. However, in many cases, the benefits of ensuring timely vaccination and maintaining high vaccine uptake outweigh any potential risks associated with immunogenicity, local adverse reactions or fever.

Several randomised controlled trials conducted in adults have demonstrated the safety and immunogenicity of co-administration of COVID-19 and influenza vaccines.[9,10] There is limited direct evidence relating to co-administration with other vaccines and in children, however globally no safety signals have emerged associated with co-administration. mRNA COVID-19 vaccines have been used widely in children under 5 years of age in other countries with low reported rates of fever, suggesting co-administration is likely to be well tolerated.

Co-administration of antipyretics or analgesics

Using paracetamol or ibuprofen before receiving a COVID-19 vaccine is not recommended.

Pain relievers such as antipyretics and analgesics can be taken after vaccination if needed to manage vaccine-related side effects such as fever and myalgia.

Recommended and variations on primary vaccination schedule

Primary course dosing interval for children aged 6 months to <5 years

ATAGI recommends a dosing schedule for Pfizer 6 months to 4 years formulation (maroon cap) of 3 doses, 8 weeks apart.

The manufacturer's recommended dosing schedule is:

3 doses, 3 weeks apart for dose 1 and 2, then dose 3 at least 8 weeks after dose 2.

ATAGI's recommended longer dosing interval may improve immunogenicity. In adult populations, extending the interval to 8 weeks or longer has resulted in higher antibody levels, improved vaccine effectiveness and potentially longer duration of protection compared with the standard interval.[11-13] Extended dosing intervals have not yet been directly studied in children.

Shorter dose intervals

The dose interval for paediatric Pfizer formulations can be shortened to a minimum of 3 weeks between the first and second dose, but the interval between the second and third doses should be a minimum of 8 weeks.

The benefits of earlier protection with a shorter interval should be weighed against the benefits of the longer dose interval, such as a slightly lower risk of adverse events and a longer duration of protection.

Shortening of the recommended dose interval below the manufacturer's dosing schedule may result in a suboptimal immune response.

Longer dose intervals

If the second or third dose is administered later than the recommended interval, no further doses are recommended.

Primary course dosing interval for children aged 5 to 11 years

ATAGI recommends a dosing schedule for Pfizer 5 to 11 years formulation (orange cap) of 2 doses, 8 weeks apart. The manufacturer's recommended dosing schedule is 2 doses, 3 weeks apart.

ATAGI's recommended longer dosing may improve immunogenicity. In adult populations, extending the interval to 8 weeks or longer has resulted in higher antibody levels, improved vaccine effectiveness and potentially longer duration of protection compared with the standard interval.[11-13] Extended dosing intervals have not yet been directly studied in children. This recommendation is consistent with other national immunisation technical advisory groups, such as the National Advisory Committee on Immunization in Canada.[14]

Also see: Mixed (heterologous) schedules.

Shorter dose intervals

The dose interval for Pfizer 5 to 11 years formulation (orange cap) can be shortened in special circumstances to a minimum of 3 weeks, for higher-risk groups (such as those with medical risk factors for severe illness) or before international travel.

The benefits of earlier protection should be weighed against the benefits of the longer dose interval, such as a slightly lower risk of adverse events and a longer duration of protection.

Shortening of the recommended dose interval below the manufacturer's dosing schedule may result in a suboptimal immune response.

Longer dose intervals

If the second dose of Pfizer 5 to 11 years formulation (orange cap) is administered later than the recommended interval, no further doses are recommended.

Primary course dosing interval for adolescents and adults aged 12 years and older

ATAGI recommends a primary course dosing schedule of 2 doses, 8 weeks apart for both bivalent COVID-19 vaccines (the preferred vaccines for this age group) and original (ancestral-based) vaccines.

The following bivalent COVID-19 vaccines are registered for use as booster doses. However, ATAGI considers them the preferred vaccines for use in a primary course with a schedule of 2 doses, 8 weeks apart:

- Moderna bivalent original/Omicron BA.4/5 ≥12 years formulation (pre-filled syringe)
- Pfizer bivalent original/Omicron BA.4/5 ≥12 years formulation (grey cap)
- Moderna bivalent original/Omicron BA.1 ≥18 years formulation (blue cap/green label)
- Pfizer bivalent original/Omicron BA.1 ≥ 18 years formulation (grey cap)

The manufacturers' recommended dosing schedules for Pfizer original ≥12 years formulation (purple cap) and for Novavax are 2 doses, at least 21 days (3 weeks) apart. The recommended dosing interval of 8 weeks may improve effectiveness. The longer interval may also reduce the risk of myocarditis and pericarditis compared with shorter intervals, particularly for those most at risk of these side effects (males aged 12 to 39 years).

For more information see: ATAGI guidance on myocarditis and pericarditis after mRNA COVID-19 vaccines.

Shorter dose intervals

The dosing interval can be shortened to a minimum of 3 weeks for bivalent COVID-19 vaccine doses or Pfizer original ≥12 years formulation (purple cap). This shorter interval can be used in specific circumstances for higher risk groups (such as older people of those with medical risk factors for severe illness), or before international travel.

Providers should consider the potential risk of myocarditis and pericarditis when selecting a COVID-19 vaccine brand and dose interval, taking into account the person's age, preferences and any precautions to specific vaccine brands.

Shortening of the recommended dose interval below the manufacturer's dosing schedule may result in a suboptimal immune response.

For more information, see use of an additional COVID-19 vaccine dose as a replacement dose if the second dose was given less than 14 days after the first dose.

Longer dose intervals

If the second dose of the primary course is administered later than the recommended interval, no further doses are recommended.

Minimum valid dose schedules

ATAGI advises that the absolute minimum interval between the first and second dose of any COVID-19 vaccine is 14 days. Dose intervals of at least 14 days are considered acceptable and valid, and the person will be considered fully vaccinated in the Australian Immunisation Register (AIR).

Use of an additional COVID-19 vaccine dose as a replacement dose if the second dose was given less than 14 days after the first dose

A second dose of a COVID-19 vaccine administered <14 days after the first dose is considered an invalid dose. An additional COVID-19 vaccine dose should be administered as a replacement dose.

The aim of this replacement dose is to attain a level of immune response that is comparable to that expected after completing a 2-dose primary course of a COVID-19 vaccine according to the recommended dosage and schedule.

The same COVID-19 vaccine brand should be used for the replacement dose to complete the primary vaccination course, unless there are special circumstances indicating the use of an alternative vaccine. See Mixed (heterologous) schedules

The interval between the invalid second dose and the replacement dose is flexible but is recommended at 4 to 8 weeks after the invalid second dose. Timing of the replacement dose should be informed by an individual risk-benefit assessment that considers:

- risk of exposure to SARS-CoV-2

- local disease epidemiology
- mandatory vaccination requirements for work (such as aged care or healthcare workers)
- individual medical conditions associated with increased risk of severe COVID-19 (such as immunocompromise).

There are no direct clinical trial data on vaccines used in Australia regarding a second dose being administered at <14 days after the first dose. The recommendation for a replacement dose is based on first principles. It takes into consideration the small amount of preliminary data in trials where participants received a third dose of the vaccine (at various intervals), and the potential incremental benefits outweighing the potential adverse effects.

These recommendations do not apply to booster doses.

Mixed (heterologous) primary schedules

It is preferable to use the same brand of COVID-19 vaccine for the primary course where possible. However, people aged 12 years and older who commenced their primary course with an original (ancestral) vaccine are now recommended to complete the course with an age-appropriate bivalent vaccine.

Additionally, an alternative vaccine brand for dose 2 (that is registered for the appropriate age group) should be used if:

- there are specific medical contraindications or precautions to the first-dose brand
- the same vaccine brand is not available in Australia
- the person is unable to access the same brand or does not accept a second dose of the same brand.

Emerging data support the safety and efficacy of mixed schedules.

Mixed schedules of Therapeutic Goods Administration (TGA)-approved or TGA-recognised vaccines are acceptable.

The recommended interval between first and second doses of a mixed schedule is 8 to 12 weeks after the first dose, regardless of the brand of the first dose. An interval longer than 12 weeks is acceptable if the second dose cannot be administered during this time window.

Short-term adverse reactions are slightly more likely to occur in people who have a different vaccine for dose 2 than if they had the same vaccine for both doses, but the nature and severity of the adverse effects are similar.[12-18]

Emerging data show that mixed schedules stimulate an adequate or comparable immune response compared with using the same brand for both doses. These trials have mostly been conducted with AstraZeneca as dose 1 and either Pfizer original ≥12 years formulation (purple cap) or the now-unavailable Moderna original ≥6 years formulation (red cap) as dose 2. One randomised controlled trial with 100 participants used Pfizer as the first dose followed by AstraZeneca as the second dose. These studies also showed an acceptable safety profile in the small cohorts vaccinated with mixed schedules.[12,15,16,18-20]

One study investigated AstraZeneca as the second dose following a first dose of an mRNA vaccine. This study showed that the immune response after a first dose of Pfizer (original formulation) followed by AstraZeneca was lower than 2 doses of Pfizer.[12]

Currently there are no data showing the efficacy or safety of mixed doses using the Novavax vaccine for one of the doses. However, there are no theoretical concerns about the safety of mixed doses with Novavax.

Special circumstances for mixed schedules

In the following special circumstances, an alternative formulation, brand or vaccine platform may be recommended for the second dose (if not contraindicated).

Children who move into a higher age band after their first dose

Children should receive the appropriate brand and dose of vaccine according to their age on the day of vaccination.

For example:

- children who turn 5 after receiving their first or second dose of the Pfizer 6 months to 4 years formulation (maroon cap) should receive the 5-to-11-year formulation (orange cap) for the remaining dose(s) to complete the 3-dose primary course
- children who turn 12 after their first dose of Pfizer 5 to 11 years formulation (orange cap) should receive either Moderna bivalent original/Omicron BA.4/5 ≥12 years formulation (pre-filled syringe) or Pfizer bivalent original/Omicron BA.4/5 ≥12 years formulation (grey cap) to complete the primary course.

People with serious vaccine-attributable adverse events after dose 1 that warrant the use of an alternative vaccine brand for dose 2

Serious vaccine-attributable adverse events include:

- anaphylaxis to the first dose of a COVID-19 vaccine (note: anaphylaxis to a previous dose of an mRNA COVID-19 vaccine is a contraindication to further doses of mRNA vaccine),

OR

- any other serious adverse event attributed to a previous dose of a COVID-19 vaccine (and without another cause identified) that:
    - has been reported to State or Territory adverse event reporting programs and/or the TGA, AND
    - has been determined to be serious following review by, and/or on the opinion of, an experienced immunisation provider/medical specialist taking into account whether repeat vaccine doses would be associated with a risk of recurrence of the serious adverse event.

Assessment of adverse events following immunisation requires detailed information about the event and the severity of the condition, as well as a determination of the likelihood of a causal link with vaccination. Serious adverse events are generally defined as those which:

- require hospitalisation
- are medically significant (for example, immune thrombocytopenic purpura, myocarditis)
- are potentially life-threatening (for example, anaphylaxis), and/or
- result in persistent or significant disability (for example, Guillain-Barré syndrome).

These reactions do not typically include expected local or systemic reactions that are known to occur within the first few days after vaccination. Attributing a serious adverse event to a previous dose of a COVID-19 vaccine may require discussion with the person's GP, local immunisation service or relevant medical specialist.

People given an incomplete course of a COVID-19 vaccine brand that is not available in Australia

People who received a first dose of a COVID-19 vaccine overseas that is not available in Australia can be offered an alternative vaccine brand available in Australia to complete their primary vaccination course.

The TGA has information on vaccines that are recognised for the purposes of travel to Australia. People who have had a first dose of a vaccine that is not recognised by the TGA (or are unable to provide evidence of previous vaccine doses) should restart the primary vaccination course using a TGA approved or recognised vaccine. It is recommended that the new primary vaccination course commences 4 to 8 weeks after the last vaccine dose.

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