

COVID-19 Vaccination Guidance for children 5 years and older undergoing cancer treatment and children with non-cancerous blood disorders - UPDATED

Version 4.1
11 April 2022

ANZCHOG has worked in close consultation with Australian and New Zealand paediatric infectious disease experts, paediatric immunologists and cardiologists to develop these guidelines. Consumer input has also contributed to these guidelines.

In Australia, the Therapeutic Goods Association (TGA) has approved the use of the following COVID vaccines:

- Comirnaty (Pfizer) in individuals aged 5 years and older
- Spikevax (Moderna) in individuals aged 6 years and older
- Nuvaxovid (Novavax) in individuals aged 18 years and older.

The Australian Technical Advisory Group on Immunisation (ATAGI) has recommended vaccination for all Australians aged 5 years and older. This includes children and adolescents with cancer and survivors of childhood cancer. ATAGI has also recommended that a third dose of COVID-19 vaccine be given to all Australians 5 years and older who are severely immunocompromised as part of their primary vaccination schedule.

A booster dose is recommended for those 16 years and older, 3 months after the final primary dose. The only booster COVID-19 vaccine currently registered in Australia for individuals aged 16 and 17 years is Comirnaty (Pfizer). The booster dose in individuals 18 years and older can be either Comirnaty (Pfizer) or Spikevax (Moderna), with Spikevax at the half-dose compared to the primary schedule.

Severely immunocompromised adolescents aged 16 years and older who would have received a 3-dose primary course and a booster dose are also recommended to receive an additional winter booster dose, from 4 months after their first booster.

In New Zealand, MedSafe has approved the use of the following COVID vaccines:

- Comirnaty (Pfizer) in individuals aged 5 years and older
- Janssen (Janssen) in individuals aged 18 years and older
- Nuvaxovid (Novavax) in individuals aged 18 years and older.

New Zealand Ministry of Health has recommended a third dose of the COVID-19 vaccine for all severely immunocompromised New Zealanders aged 12 years and older. Currently, the COVID-19 booster dose is recommended in individuals aged 18 years and older only.

All these vaccines are not live vaccines and therefore pose no risk of COVID-19 infection.

RISKS OF COVID-19 INFECTION IN CHILDREN AND ADOLESCENTS WITH CANCER AND NON-CANCEROUS BLOOD DISORDERS

Some types of cancer and cancer treatments can suppress or weaken the immune system. These treatments include chemotherapy, steroids, whole-body radiation, and stem cell or bone marrow transplantation. Additionally, certain non-cancerous blood disorders (for example aplastic anaemia, Evan's syndrome, Shwachmann diamond syndrome, Fanconi anaemia) are associated with immunosuppression.

Evidence suggests that immunosuppression increases the risk of severe COVID-19 infection by up to three fold.

Although the risk of serious illness or death remains low in children, not unsurprisingly, it is higher in children with cancer (1). In addition, having COVID-19 infection, even if mild, may result in modification of anti-cancer therapy (e.g. delay, reduction or withholding), therefore possibly compromising a child's cancer treatment⁽¹⁾.

Hence vaccinating patients with immunosuppression is a priority.

CURRENT VACCINE RECOMMENDATIONS

- All children (**aged 5 years and over**) and adolescents, including those with cancer and receiving cancer treatment or who recently completed cancer treatment should be vaccinated against COVID-19. The location where your child should receive the vaccination (treating centre/follow up programme vs standard community-based vaccination program) should be discussed with your oncology unit.

- The number and time between doses will differ depending on which COVID vaccine is available and recommended, your child's age and level of immunosuppression. Your child's treating team can provide specific guidance about the schedule.
- All survivors of childhood cancer should be vaccinated – this can be done through a standard community-based vaccination programme.
- All children (**aged 5 years and over**) and adolescents with non-cancerous blood disorders (for example aplastic anaemia, sickle cell disease, Evan's syndrome, Shwachmann Diamond syndrome, Fanconi anaemia) should be vaccinated. The location where your child should receive the vaccination (treating centre/follow up programme or standard community-based vaccination program) should be discussed with your paediatric haematology unit.
- A third dose of COVID-19 vaccine should be given to all severely immunocompromised children, adolescents and adults as indication below. This includes patients on anticancer therapy or non-cancerous blood disease who are currently receiving immunosuppressive treatment such as chemotherapy and whole-body radiotherapy. A third dose should also be given to bone marrow/stem cell transplant or CAR-T cell therapy recipients who are within 2 years of treatment. Severely immunocompromised are also considered those who are receiving certain immunosuppressive drugs such as high-dose steroids, biological agents such as rituximab, certain drugs used in auto-immune conditions such as mycophenolate mofetil and cyclosporine, or patients who are receiving a combination of immunosuppressive drugs with an expected cumulative effect. Parents should discuss with their child's doctor whether a third dose is required.
 - Australia – 5 years and above
 - New Zealand – 12 years and above
- Either Comirnaty (Pfizer; both in Australia and NZ) or Spikevax (Moderna; in Australia only), both mRNA vaccines, are recommended for this third dose, depending on your child's age.
- The recommended timing interval for a third vaccine dose is 8 weeks after the second dose, with a minimum interval period of 4 weeks in exceptional circumstances (increased immunosuppression or very high-level risk of community transmission).
- Vaccination should be delayed in those with active myocarditis/pericarditis (inflammation of the heart/sac lining the heart). A decision on the future timing of COVID-19 vaccination should be made following review by your child's treating team.
- The timing of all vaccinations should be discussed with your treating team to ensure current treatment and individual circumstance is considered when scheduling vaccination, as is the case for other vaccinations like the seasonal influenza vaccination.
- Children who have been treated with specific chemotherapeutic agents including anthracyclines as part of their cancer treatment are not considered to be at higher risk of side effects from vaccination. Nonetheless, COVID-19 vaccination should be delayed by at least one week after anthracycline administration.
- There is a very small chance that children who have had an allergic reaction or are anaphylactic (a severe, potentially life-threatening allergic reaction) to Peg-asparaginase may be at an increased risk of an allergic or anaphylactic reaction to COVID-19 vaccination. It is recommended that vaccinations are given in a hospital setting for such patients or in large medically attended vaccination centres with increased post vaccination observation time (for New Zealand patients in remote areas only).
- Vaccination is recommended for children receiving a bone marrow/stem cell transplant, CAR-T cell therapy or treatment with rituximab **before treatment begins** however, if the child has already received these, vaccination is recommended **from 3 months after this treatment**. It is important to talk to the child's oncologist/haematologist/bone marrow transplant physician about the best time to schedule vaccination.
- For children undergoing cancer treatment, vaccination should not replace other COVID-safe practices (e.g. masks, social distancing, ensuring good indoor ventilation, and hand hygiene) to reduce risk of COVID-19 infection.
- For children receiving current cancer treatment, interruption of treatment during vaccination is not recommended.
- For children and adolescents who are found to have COVID-19 disease but have not yet been vaccinated or are partially vaccinated, receiving COVID-19 vaccination is still recommended in order to boost their natural but likely not adequate immune response to the virus. This should be done as soon as they have recovered from the disease. The exact timing can be guided by the treating team.
- All household contacts, including parents, siblings 5 years and older, and grandparents, should be fully vaccinated as an important preventative measure.

- After vaccination, children and their close contacts should continue to practice usual COVID-safe practices (e.g. masks, social distancing, ensuring good indoor ventilation, and hand hygiene) in accordance with national, state and regional guidelines.

FREQUENTLY ASKED QUESTIONS

Is it safe for my child to be vaccinated while undergoing cancer treatment?

Yes, it is safe. The TGA and MedSafe have approved vaccination for all children and adolescents from 5 years. Vaccination is recommended by ATAGI and New Zealand Ministry of Health for all children in this age group.

My child has had an allergic or anaphylactic (a severe, potentially life-threatening allergic reaction) reaction before, should they still be vaccinated?

In most cases yes, but please discuss this with your child's treating team to determine the details and severity of the allergic reaction, as this will determine the specific answer for you. For example, children who have had an allergic or anaphylactic reaction to Peg-asparaginase may be at a very small risk of allergic or anaphylactic reaction to COVID-19 vaccination and so it is recommended that vaccinations are given in a hospital setting (or in a closely supervised centre with increased observation time).

Will the vaccine still be effective if my child is immunocompromised?

Effectiveness studies in patients who are immunocompromised including patients undergoing cancer treatment suggest that standard two-dose COVID-19 vaccination schedule might not be offering optimal protection. ATAGI and New Zealand Ministry of Health have now recommended a **three-dose primary vaccine course** for all severely immunocompromised patients aged 5 years and older (Australia) and 12 years and older (NZ). Your child's treating team will be able to discuss the best timing for your child to receive this third dose.

My child has been asked to participate in a clinical trial about COVID-19 vaccination. Should I consider this?

ANZCHOG is aware of a number of clinical trials around Australia and New Zealand addressing knowledge around the effectiveness of the COVID-19 vaccine in children with cancer. We encourage participation in COVID-19 vaccination clinical trials after discussion with your child's treating team.

My child is currently having treatment, should they wait to have their vaccination?

No, because evidence suggests that immunosuppression increases the risk of severe COVID 19 infection by three fold and having COVID 19 infection, even if mild, is likely to delay cancer treatment, possibly compromising your child's cancer therapy. Hence it is important to vaccinate patients on treatment as soon as practicable and not wait for the completion of treatment.

My child has just had a bone marrow/stem cell transplant, CAR-T cell therapy or treatment with rituximab can they be vaccinated?

Yes, vaccination is recommended, however a bone marrow/stem cell transplant, CAR-T cell therapy or treatment with rituximab, is likely to interfere with vaccine effectiveness, so we recommend your child wait at least 3 months after the therapy before having their vaccination. Your child's treating team will provide more information about this timing for your child.

Will vaccination cause any other changes to my child's treatment?

The timing of vaccination should be discussed with your child's treating team to make sure current treatment is considered when scheduling vaccination.

Is a third vaccine dose recommended for my child?

ATAGI recommends a third vaccine dose should be given to anyone in Australia 5 years and older if they are severely immunocompromised. New Zealand Ministry of Health recommends a third vaccine dose should be given to anyone severely immunocompromised in New Zealand 12 years and older. This will include some children and adolescents with blood cancer and other blood diseases who are currently receiving treatment that will affect their immunity levels such as chemotherapy or whole-body radiation, high-dose steroids or other immunosuppressive agents or those who have had a bone marrow/stem cell transplant or received CAR-T cell therapy in the last 2 years. Your child's treating team can provide more information for your child. A third dose should be given between 2 months after the second dose, and under exceptional circumstances can be considered given as soon as 4 weeks after the second dose.

Is a third vaccine dose the same as a booster dose?

No. A third dose is now recommended for severely immunocompromised patients as part of the initial immunisation schedule.

A COVID-19 booster dose is an additional dose of a vaccine designed to help people maintain their level of immunity for longer after the benefit from the original vaccination schedule has begun to decrease over time. A booster dose is currently recommended in Australia for adolescents 16 years and older, including those who are severely immunocompromised.

What side effects could my child have from their vaccination?

Evidence demonstrates the vaccine is safe in adolescents and immunocompromised patients, with increasing data on their use in children with cancer. The side effects are similar to those who are not undergoing cancer treatment. Common side effects include:

- Local reaction at the vaccine injection site including local tenderness and pain, redness and/or swelling
- Fatigue
- Headache
- Muscle and joint aches
- Fever and chills

There is a chance your child may get a fever following the vaccine – if this occurs, please consult your oncology/haematology unit, as you normally would.

If you are concerned your child is possibly having more severe or unexpected side effects (for example chest pain) please consult your treating team.

My child has completed their cancer treatment. Do they need to see a medical specialist before getting their vaccination?

In most instances if your child has completed their cancer treatment more than 6 months ago then no, this is not necessary. If your child has had a bone marrow/stem cell transplant, received rituximab or CAR-T cell therapy in the past 12 to 24 months we recommend that you consult your oncology unit for specific advice.

My child is under 5 and undergoing treatment for cancer. Can they have a vaccination?

No, not yet. Vaccines are not yet approved for children in Australia and New Zealand aged under 5 years. We will update this advice should further information on vaccination for children under 5 years becomes available.

Where can I find more information about vaccination for my child?

You can speak to your child's medical treatment team to get more information that is specific for your child.

ADDITIONAL INFORMATION SOURCES

- ASCIA - https://www.allergy.org.au/images/stories/pospapers/ASCIA_HP_Guidelines_COVID-19_Vaccination_2021-09-20.pdf
- ATAGI/CSANZ - <https://www.health.gov.au/resources/publications/covid-19-vaccination-guidance-on-mycarditis-and-pericarditis-after-mrna-covid-19-vaccines>
- ATAGI - <https://www.health.gov.au/news/atagi-statement-on-the-use-of-a-3rd-primary-dose-of-covid-19-vaccine-in-individuals-who-are-severely-immunocompromised>
- New Zealand Ministry of Health - <https://www.health.govt.nz/our-work/diseases-and-conditions/covid-19-novel-coronavirus/covid-19-vaccines/covid-19-vaccine-health-advice/covid-19-vaccine-severely-immunocompromised-people>
- AusVaxSafety - <https://ausvaxsafety.org.au/safety-data/covid-19-vaccines>
- ANZTCT - <https://anztct.org.au/wp-content/uploads/2021/02/FINAL-ANZTCT-COVID19-Vaccination-Position-Statement-Version2-2-Feb-2021.pdf>
- ASH-ASTCT: <https://www.hematology.org/covid-19/ash-astct-covid-19-and-vaccines>

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1. Mukkada S, Bhakta N, Chantada GL, Chen Y, Vedaraju Y, Faughnan L, Homsy MR, Muniz-Talavera H, Ranadive R, Metzger M, Friedrich P, Agulnik A, Jeha S, Lam C, Dalvi R, Hessissen L, Moreira DC, Santana VM, Sullivan M, Bouffet E, Caniza MA, Devidas M, Pritchard-Jones K, Rodriguez-Galindo C; Global Registry of COVID-19 in Childhood Cancer. **Global characteristics and outcomes of SARS-CoV-2 infection in children and adolescents with cancer (GRCCC): a cohort study.** Lancet Oncol. 2021 Aug 26:S1470-2045(21)00454-X. doi: 10.1016/S1470-2045(21)00454-X. Epub ahead of print. PMID: 34454651.
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