Australian Rheumatology Association

Vaccinations for patients (>18 years) with autoimmune inflammatory rheumatic diseases (AIIRD) in Australia

General Practitioner and Allied Health Professional information

Key Points

- Vaccination and immunity status should be reviewed and addressed prior to commencement and escalation of immunosuppressive therapy and reviewed annually.
- Live vaccines are generally contraindicated in significantly immunosuppressed patients due to possible vaccine-induced infection.
- All patients presenting for a live vaccine should be checked for coexistent immunosuppressive therapy.
- Inactivated vaccines are safe, but vaccine effectiveness may be reduced by immunosuppression and active disease.
- Despite lower post-vaccination antibody titres in the setting of immunosuppression, these are usually adequate for clinical protection, and so the risk-benefit ratio of vaccination in this context is usually favourable.

Available live vaccinations

Varicella Zoster

- **In Australia, the currently available varicella zoster vaccinations are live vaccines.** These are Varivax and Varilrix which are low dose formulations approved for vaccination against varicella (chicken pox) in the paediatric and adult population, and Zostavax which contains a higher titre of live virus and is approved for prevention of herpes zoster in individuals 50 years of age and above. (Note: only PBS-funded for age ≥70).
- It is advisable to assess varicella zoster status in immunosuppressed patients prior to vaccination. If serological evidence of previous varicella zoster infection is absent, vaccination with the lower dose live varicella vaccine (Varivax and Varilrix) to prevent chickenpox may be considered after assessment of level of immunosuppression - please see below (two doses, > 4-8 weeks apart for Varivax and > 6 weeks apart for Varilrix in those aged ≥13 years).
- The higher dose herpes zoster vaccine (Zostavax) should not be given to immunosuppressed patients with no previous serologic evidence of varicella infection.
- Patients who have received the low dose live varicella zoster vaccine (Varivax or Varilrix) are not recommended to receive the higher dose herpes zoster vaccine (Zostavax).
- In Australia, as most people have been exposed to varicella in childhood, Zostavax should be considered in individuals aged 50-80 years before starting targeted synthetic disease-modifying anti-rheumatic drugs (tsDMARDs) or biologic DMARDs (bDMARDs).
- Zoster vaccination is recommended to be given at least one month before treatment starts with b/tsDMARDs.
- Zoster vaccination is NOT contraindicated if the patient is taking any ONE of the following: low dose glucocorticoids (equivalent to prednisolone≤20mg/day) or the following conventional synthetic DMARDs (csDMARDs): hydroxychloroquine, sulfasalazine, methotrexate (≤0.4mg/kg/week) and azathioprine (≤3mg/kg/day). These medicines do not need to be stopped/withheld if zoster vaccine is administered. If the patient is taking a combination of any of the above medicines, seek rheumatologist advice. There is no consistent advice on whether Zostavax is safe for people taking leflunomide.
- While data is lacking, b/tsDMARDs should be stopped prior to administration of a live vaccine. Seek rheumatologist advice regarding the number of doses to be missed and when to recommence b/tsDMARD. Regardless, patients should be advised to seek prompt medical

attention for possible anti-viral therapy should they develop symptoms of a viral illness following Zostavax.
- If immunosuppressed patients who are not immune to varicella-zoster virus are exposed to it, post-exposure prophylaxis should be considered. This may require discussion with an infectious diseases physician.
- There have been 3 deaths since 2017 due to disseminated vaccine-related varicella zoster virus infection following Zostavax administration. However, at this point in time the above recommendations remain appropriate.

Measles, mumps and rubella (MMR)
- MMR-containing vaccines are contraindicated in people receiving high-dose systemic immunosuppressive therapy, including b/tsDMARDs and high dose oral glucocorticoids (equivalent to prednisolone >20mg/day).
- Those only mildly immunosuppressed (including those receiving selected csDMARDs in low doses, either on their own or in combination with low-dose glucocorticoids, as per doses listed above) may be able to receive the MMR vaccine on advice from an infectious diseases specialist or rheumatologist after a thorough risk-assessment on a case-by-case basis.
- Post-exposure prophylaxis for non-immune exposed immunosuppressed adults should be considered.

Bacillus Calmette Guerin (BCG)
- As this vaccine is a live formulation, it is not recommended in the setting of immunosuppression.

Available inactivated vaccinations

For information on **COVID-19 vaccination for AIIRD patients** see here.

Influenza vaccines
- Immunosuppressed patients should receive the influenza vaccine annually.
- Immunosuppressed patients with AIIRD who receive the influenza vaccine for the first time may benefit from receiving two doses ≥4 weeks apart, and one dose annually thereafter.
- If a new influenza virus is detected (e.g., during a pandemic), people who are immunosuppressed should receive 2 doses of influenza vaccine, ≥4 weeks apart, regardless of previous influenza vaccine.

Pneumococcal vaccines
- Immunosuppressed patients should receive 13vPCV (Prevenar 13), followed by the PPV23 (Pneumovax) >2 months later. An additional PPV23 dose should be given ≥5 years later.
- If immunosuppressed patients have previously received PPV23, 13PCV should be given ≥12 months later. This “prime and boost” strategy uses both pneumococcal vaccines, thus providing broader protection.

Diphtheria, tetanus and pertussis
- No previous history of dT vaccination: 3 doses of dT vaccine, at least 4 weeks between doses. 1st dose preferably dTpa. Booster doses at 10 and 20 years after primary course.
- Adults >50 years without a booster dose of diphtheria and tetanus toxoid in the preceding 10 years should receive the dTpa (diphtheria-tetanus-pertussis acellular) preparation.

Hepatitis B (HBV)
- All patients with AIIRD should be screened for HBV (anti-HBs AND anti-HBc) before immunosuppression.
- Vaccination should be considered in immunosuppressed patients with inadequate immunity (anti-HBs <10mIU/mL).
- Vaccination should be administered at months 0,1 and 6, with measurement of blood HBsAb 4-8 weeks after the last dose.
- Booster doses of hepatitis B vaccine are recommended for the immunosuppressed. Monitor the person’s levels of antibody to hepatitis B surface antigen every 6–12 months and give a booster dose when needed.

Human papilloma virus

- A 3-dose schedule of 9vHPV vaccine is recommended for people who are immunosuppressed, regardless of their age when they started vaccination. This is because their immune response is likely to be lower than healthy people. They are also more likely to develop a persistent HPV infection and HPV-related disease.
- The decision to vaccinate those with AIIRD should consider the likelihood of previous exposure to HPV, the future risk of HPV exposure, the extent/duration of immunosuppression and cost, as this indication is not currently funded under the PBS.

Travel vaccination

This is a complex area and often requires specialist input to determine the risk/benefit based on travel itinerary, rheumatological diagnosis and immunosuppression.

Cholera

The Dukoral vaccine is inactivated and should be considered in the immunosuppressed as they have a higher risk of diarrhoeal disease.

Hepatitis A

Pre-travel vaccination (2 doses, 6 months apart) should be considered in all immunosuppressed patients.

Meningococcal B

Pre-travel vaccination with the inactivated meningococcal B vaccination (Bexsero or Trumenba) should be considered in highly immunosuppressed patients and travellers.
The live vaccine is contraindicated in the immunosuppressed.

Polio

One booster vaccination with inactivated polio vaccine (Ipol) is advised in adulthood, if travelling to an at-risk destination and not already received.
Sabin is a live attenuated vaccine and contraindicated in the immunosuppressed.

Typhoid

The parenteral inactivated polysaccharide vaccine should be considered prior to travel to endemic areas.
The oral live vaccine is contraindicated in the immunosuppressed.

Yellow Fever

This is a live vaccine and contraindicated in immunosuppressed patients.
Seek specialist advice if patients are planning travel to a high-risk area. Some countries require evidence of Yellow Fever vaccination prior to entry.

Vaccinations in infants born to mothers who received b/tsDMARDs in pregnancy

- All b/tsDMARDs except certolizumab (Cimzia) are likely to be transmitted to the infant *in utero*.
- The safety of live vaccines in infants exposed to b/tsDMARDs or thiopurines *in utero* or through breast milk is unclear. Live attenuated vaccines should not be given in the first 6 months of life. Inactivated vaccines should be given according to the National Immunisation Program (NIP).
- The rotavirus vaccine is the only live vaccine routinely administered to infants <12 months old. It may be best avoided in babies < 6 months old born to mothers who receive b/tsDMARDs, except for certolizumab (Cimzia) during pregnancy. The likelihood of rotavirus infection is less in infants > 6 months old, so “catch-up” dosing is probably not required.

Household contacts of immunosuppressed patients

Immunocompetent household members of patients with AIIRD should be encouraged to receive vaccines according to national guidelines. Immunosuppressed patients should avoid handling nappies of infants vaccinated against rotavirus for 4 weeks following administration of this vaccine.

Useful references:

https://www.health.gov.au/initiatives-and-programs/national-immunisation-program
https://www.health.gov.au/health-topics/immunisation
https://immunisationhandbook.health.gov.au

Wong PKK, Young L, Johnson DF. **Vaccination of patients with autoimmune inflammatory rheumatic disease.** Medicine Today 2019; 20(7): 50-53.
Wong PKK and Johnson DF. **Live vaccinations and immunocompromised patients. How can GPs ensure this cohort is safely protected against disease?** Medical Observer, 14th August 2019.
Furer et al. **2019 update of EULAR recommendations for vaccination in adult patients with autoimmune inflammatory rheumatic diseases**. Ann Rheum Dis 2020;79:39-52.

Glossary

AIH	Australian Immunisation Handbook put year in here
AIIRD	autoimmune inflammatory rheumatic disease
bDMARDs	biologic disease modifying antirheumatic drugs
“Catch-up” vaccination	The process of planning and scheduling vaccines for people who have missed 1 or more doses of scheduled vaccines
csDMARDs	conventional synthetic disease modifying antirheumatic drugs
Immunocompetent	Having a normal immune response.
Immunocompromised	Having an immune system that is weakened and unable to protect the body from disease. It can be caused by disease or some medicines.
Immunosuppressed	A state in which the immune system is suppressed by medicines or radiation, in order to prevent the rejection of grafts or transplants or to control autoimmune diseases.
Immunosuppressive therapy	Medicines used to treat certain conditions, but that also weaken the immune system, e.g. oral corticosteroids
Live vaccine	A vaccine containing live virus or bacteria that are weakened (attenuated) to produce an immune response in the recipient without causing the serious effects of the disease
Post-exposure prophylaxis	Providing immunoglobulin (or sometimes vaccine) to a person exposed to an infectious agent, to prevent them developing the disease
Significantly immunosuppressed patients	Includes patients on b/tsDMARDs and patients on glucocorticoids equivalent to prednisolone >20mg/day, methotrexate >0.4 mg/kg/week and azathioprine >3mg/kg/day.
tsDMARDs	targeted synthetic disease modifying antirheumatic drugs

Reference: https://immunisationhandbook.health.gov.au/technical-terms

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