Diseases and medications when live vaccines may be contraindicated
(Immune system dysfunction and live attenuated viral vaccines)

The Immunisation Advisory Centre

Key point

If there is any doubt about the safety of administering a live attenuated viral vaccine – DEFER VACCINATION until you obtain more information.

The recent addition of the live attenuated herpes zoster vaccine (Zostavax®) for adults aged 65–80 years inclusively has highlighted some challenges assessing the safety of live attenuated viral (LAV) vaccine administration to adults who have one or more comorbidities.

LAV vaccines such as rotavirus, measles, mumps and rubella, varicella or zoster vaccines are contraindicated for pregnant women, people with anaphylaxis to a previous dose of the vaccine or vaccine ingredient, and some people with immune system dysfunction. The purpose of this fact sheet is to highlight conditions and treatments associated with immune system dysfunction and provide recommendations for the administration, delay or contraindication of LAV vaccines.

Immune system dysfunction is a broad term to identify altered immune system function that results in an impaired ability to mount an immune response to fight off infection at one end of the continuum and at the opposite end, a dysregulated immune system control mechanism that enhances the natural anti-tumour response but can also stimulate autoimmunity.

» **Conditions associated with primary and secondary immunodeficiency** are listed in Table 1.

» **Immunosuppressive and immunostimulatory treatments#** are listed in alphabetical order by generic name in Table 2 and by trade name in Table 3.
#Please note that the LAV vaccine recommendations in Table 1 and 2 apply when treatments are used singly. There are no data on possible risk stacking effects on immune system dysfunction with the combination of two or more treatments.

Table 1. Conditions associated with primary or secondary immunodeficiency

Primary immunodeficiencies	Examples	Live attenuated viral vaccines
B-lymphocyte deficiency (humoral)	X-linked agammaglobulinaemia Common variable immune deficiency	CONTRAINDICATED
	Selective IgA	Can be given
	IgG subclass deficiency (IgG2, IgG3)	Can be given in most cases but confirm with patient's specialist
T-lymphocyte deficiency (cell mediated)	Wiskott–Aldrich syndrome DiGeorge syndrome (most individuals)	CONTRAINDICATED
B- and T-lymphocyte (cell-mediated and humoral)	Complete defects, e.g. severe combined immunodeficiency (SCID)	CONTRAINDICATED
Innate immunodeficiency		
Complement deficiency	Early components (C1, C2, C3, C4) Late components (C5, C6, C7, C8, C9), properdin, factor B	Can be given
Phagocytic deficiency	Chronic granulomatous disease	Can be given
	Leukocyte adhesion defect Myeloperoxidase deficiency	Check with patient's specialist
Secondary immunodeficiencies	**Examples**	**Live attenuated viral vaccines**
HIV infection	CD4 count is under 200 cells/mm3	CONTRAINDICATED
	CD4 count is ≥ 200 cells/mm3	Can be given
Leukaemia	Acute lymphocytic leukaemia (ALL) Acute myeloid leukaemia (AML)	CONTRAINDICATED
	Chronic lymphocytic leukaemia (CLL) Chronic myeloid leukaemia (CML)	Can be given in most cases but confirm with patient's specialist
Hodgkin lymphoma Non-Hodgkin lymphoma	Current or less than 5 years in full remission	CONTRAINDICATED
	5 or more years in full remission	Can be given
Multiple myeloma		CONTRAINDICATED

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Table 2. Immunosuppressive or immunostimulatory treatment – alphabetical list by generic name

Generic name	Safe dose*	Vaccination BEFORE treatment initiation	Vaccination AFTER treatment cessation*
5-ASA/Mesalazine	Any dose	Any time before, during or after treatment	
6-Mercaptopurine	≤1.5 mg/kg/day	1 month before	3 months after
Abatacept	NONE	1 month before	12 months after
Adalimumab	NONE	1 month before	12 months after
Anakinra	NONE	1 month before	12 months after
Atezolizumab	May or may not have a safe dose	1 month before	6 months after
Azathioprine	≤3.0 mg/kg/day	1 month before	3 months after
Chemotherapy – traditional cancer alkylating agents, plant alkaloids, antitumour antibiotics, antimetabolites, topoisomerase inhibitors, other antineoplastics	NONE	1 month before	6 months after
Ciclosporine	NONE	1 month before	3 months after
Cyclophosphamide	NONE	1 month before	3 months after
Dexamethasone	NONE	1 month before	3 months after
Dimethyl fumarate	NONE	1 month before	3 months after
Etanercept	NONE	1 month before	12 months after
Fingolimod	NONE	1 month before	3 months after
Fludrocortisone	NONE	1 month before	3 months after
Hydrochloroquine	Any dose	Any time before, during or after treatment	
Hydrocortisone	NONE	1 month before	3 months after
Infliximab	NONE	1 month before	12 months after
Ipilimumab	May or may not have a safe dose	1 month before	6 months after
Leflunamide	NONE	1 month before	6 months after
Mesalazine/5-ASA	Any dose	Any time before, during or after treatment	
Methotrexate	≤0.4 mg/kg/week	1 month before	3 months after
Mycophenolate mofetil	NONE	1 month before	3 months after
Natalizumab	NONE	1 month before	3 months after
Nivolumab	May or may not have a safe dose	1 month before	6 months after
Ocrelizumab	NONE	6 weeks before	3 years
Olsalazine	Any dose	Any time before, during or after treatment	
Pembrolizumab	May or may not have a safe dose	1 month before	6 months after
Prednisolone/Prednisone	Any dose when duration <14 days OR <20 mg/day when duration ≥14 days	1 month if ≥20 mg/day for ≥14 days	1 month if ≥20 mg/day for ≥14 days
Rituximab	NONE	1 month before	12 months after
Sulphasalazine	Any dose	Any time before, during or after treatment	
Tacrolimus	NONE	1 month before	3 months after
Teriflunomide	NONE	1 month before	6 months after
Trastuzumab	NONE	1 month before	12 months after

***NOTE**: These recommendations apply when treatments are used singly. There are no data on possible risk stacking effects on immune system dysfunction with the combination of multiple treatments in this table.

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Table 3. Immunosuppressive or immunostimulatory treatment – alphabetical list by trade name

Trade name	Safe dose*	Vaccination BEFORE treatment initiation	Vaccination AFTER treatment cessation*
Apo-Prednisone	Any dose when duration <14 days OR <20 mg/day when duration ≥14 days	1 month if ≥20 mg/day for ≥14 days	1 month if ≥20 mg/day for ≥14 days
Arava	NONE	1 month before	6 months after
Asacol, Asamax	Any dose	Any time before, during or after treatment	
Augabio	NONE	1 month before	6 months after
Cellcept	NONE	1 month before	3 months after
Cytoxan	NONE	1 month before	3 months after
Dexmethsone	NONE	1 month before	3 months after
Dipentum	Any dose	Any time before, during or after treatment	
Enbrel	NONE	1 month before	12 months after
Florinef	NONE	1 month before	3 months after
Gilenya	NONE	1 month before	3 months after
Herceptin	NONE	1 month before	12 months after
Humira	NONE	1 month before	12 months after
Hydrocortisone	NONE	1 month before	3 months after
Imuran	≤3.0 mg/kg/day	1 month before	3 months after
Keytruda	May or may not have a safe dose	1 month before	6 months after
Kineret	NONE	1 month before	12 months after
Mabthera	NONE	1 month before	12 months after
Neoral	NONE	1 month before	3 months after
Opdivo	May or may not have a safe dose	1 month before	6 months after
Orencia	NONE	1 month before	12 months after
Ocrevus	NONE	6 weeks before	3 years after
Pentasa	Any dose	Any time before, during or after treatment	
Plaquenil	Any dose	Any time before, during or after treatment	
Prednisone	Any dose when duration <14 days OR <20 mg/day when duration ≥14 days	1 month if ≥20 mg/day for ≥14 days	1 month if ≥20 mg/day for ≥14 days
Purinethol	≤1.5 mg/kg/day	1 month before	3 months after
Redipred	Any dose when duration <14 days OR <20 mg/day when duration ≥14 days	1 month if ≥20 mg/day for ≥14 days	1 month if ≥20 mg/day for ≥14 days
Remicade	NONE	1 month before	12 months after
Salazopyrin	Any dose	Any time before, during or after treatment	
Tacrolimus Sandoz	NONE	1 month before	3 months after
Tecentriq	May or may not have a safe dose	1 month before	6 months after
Tecfidera	NONE	1 month before	3 months after
Trexate	≤0.4 mg/kg/week	1 month before	3 months after
Tysabri	NONE	1 month before	3 months after
Yervoy	May or may not have a safe dose	1 month before	6 months after

***NOTE**: These recommendations apply when treatments are used singly. There are no data on possible risk stacking effects on immune system dysfunction with the combination of multiple treatments in this table.