

Immunosuppressive Therapies and Timing with COVID-19 Vaccination

AND = Autoimmune Neuromuscular Disorder, **AA** = Aplastic Anemia, **ARD** = Autoimmune Rheumatic Disease, **HM** = Hematological Malignancy, **IBD** = Inflammatory Bowel Disease, **SC** = Solid Cancer

Immunocompromised persons, including individuals receiving immunosuppressive therapy, may have a diminished immune response to COVID-19 vaccine. The recommendations below are intended to minimize the interference of medication/treatment with vaccination.

***Life-saving or prolonging therapies or treatments should not be delayed solely to initiate or complete immunization.**

Medication/Treatment	Condition(s)	Timing considerations between medication/treatment and COVID-19 vaccination *
Abatacept, IV or weekly injections	ARD	Clinical considerations for which the client should speak with their medical specialist. Any decision to hold medications should be discussed between a patient and their healthcare team.
Adalimumab	ARD , IBD	No delay required
Alemtuzumab	AND	Clinical considerations for which the client should speak with their medical specialist. Any decision to hold medications should be discussed between a patient and their healthcare team.
Alemtuzumab, initial	SC	For each dose of a COVID-19 vaccine series, vaccination should occur at least 2 weeks before treatment.*
Alemtuzumab, cyclical	SC	For each dose of a COVID-19 vaccine series, vaccination should occur in the week before next treatment as this is when blood counts are likely to be the highest. Note: Avoid COVID-19 vaccination on same day as treatment.
Alemtuzumab, maintenance or non-cyclical treatment	SC	No delay required
Anakinra	ARD , IBD	No delay required
Azathioprine	AND , ARD , IBD	No delay required
Baricitinib	ARD	Clinical considerations for which the client should speak with their medical specialist. Any decision to hold medications should be discussed between a patient and their healthcare team.
Belimumab	ARD , IBD	No delay required
Canakinumab	ARD	No delay required
CAR-T cell therapy, CD19, CD20, CD22 targeted therapy	HM	Due to likelihood of impaired immune response to vaccination within 3 months of receiving B-cell directed monoclonal antibodies, CAR-T cell therapy and ATG, consider delaying COVID-19 vaccination to 3 months post-therapy.
Certolizumab	ARD , IBD	No delay required
Check point inhibitors	HM	Avoid COVID-19 vaccination on same day as treatment.

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Medication/Treatment	Condition(s)	Timing considerations between medication/treatment and COVID-19 vaccination *
Chemotherapy, initial treatment	HM , SC	For each dose of a COVID-19 vaccine series, vaccination should occur at least 2 weeks before treatment.*
Chemotherapy, cyclical – between cycles	HM , SC	For each dose of a COVID-19 vaccine series, vaccination should occur in the week before next treatment as this is when blood counts are likely to be the highest. Note: Avoid COVID-19 vaccination on same day as treatment.
Chemotherapy, continuous oral & other single agent small molecule inhibitors (kinase inhibitors, BTK inhibitors)	HM	No delay required
Cladribine	AND	Clinical considerations for which the client should speak with their medical specialist. Any decision to hold medications should be discussed between a patient and their healthcare team.
Cyclophosphamide, oral	AND , ARD , IBD	No delay required
Cyclophosphamide, IV	AND , ARD	For each dose of a COVID-19 vaccine series, an option is for vaccination at least one week prior to the next cyclophosphamide infusion.
Cyclosporine	AND , ARD , IBD	No delay required
Cyclosporine/ATG (Anti-thymocyte globulin)	AA	Due to likelihood of impaired immune response to vaccination within 3 months of receiving B-cell directed monoclonal antibodies, CAR-T cell therapy and ATG, consider delaying COVID-19 vaccination to 3 months post-therapy.
Dimethyl fumarate	AND	No delay required
Etanercept	ARD , IBD	No delay required
Endocrine therapy (including PARP inhibitors)	SC	No delay required
Glatiramer acetate	AND	No delay required
Golimumab	ARD , IBD	No delay required
Hydroxychloroquine	AND , ARD , IBD	No delay required
HSCT, autologous and allogeneic [‡]	HM	Pre-HSCT: COVID-19 vaccination should occur ≥ 2 weeks prior to starting conditioning chemotherapy. Post-HSCT: COVID-19 vaccination should occur > 3 months post-HSCT.
Immunomodulatory agents	HM	Avoid COVID-19 vaccination on same day as treatment.
Infliximab	ARD , IBD	No delay required
Interferons	AND	No delay required
Intravenous immunoglobulin-IVIG	AND , ARD , IBD	No delay required
Ixekizumab	ARD , IBD	No delay required

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Leflunomide	AND , ARD , IBD	No delay required
Methotrexate	ARD	No delay required
Methotrexate	IBD	No delay required
Methotrexate	AND	Clinical considerations for which the client should speak with their medical specialist. Any decision to hold medications should be discussed between a patient and their healthcare team.
Mycophenolate mofetil	AND , ARD	Clinical considerations for which the client should speak with their medical specialist. Any decision to hold medications should be discussed between a patient and their healthcare team.
Mycophenolate mofetil	IBD	No delay required
Natalizumab	AND	No delay required
Obinutuzumab, initial	SC	For each dose of a COVID-19 vaccine series, vaccination should occur at least 2 weeks before treatment.*
Obinutuzumab, cyclical	SC	For each dose of a COVID-19 vaccine series, vaccination should occur in the week before next treatment as this is when counts are likely to be the highest. Note: Avoid COVID-19 vaccination on same day as treatment.
Obinutuzumab, maintenance or non-cyclical treatment	SC	No delay required
Ocrelizumab	AND , ARD , IBD	COVID-19 immunization should ideally be timed four to five months after their last infusion and two to four weeks prior to their next infusion, when possible, in order to optimize vaccine response. However, in patients who require immediate infusion or who are unable to optimize timing of infusion product and vaccine, it is likely more important to have the COVID vaccine as soon as possible than it is to delay based on timing of B-cell therapy.
Prednisone ≤ 20 mg daily	AND , ARD	No delay required
Prednisone ≥ 20 mg daily	AND , ARD	For patients on prednisone 20 mg/d or higher, consider waiting until the prednisone dose is tapered to below 20 mg/d to receive both vaccine doses. (Note: for individuals with Duchenne's Muscular Dystrophy on deflazacort, Parent Project Muscular Dystrophy and Muscular Dystrophy Canada recommend vaccination on current prednisone dose.)
Prednisone ≥ 20 mg daily or equivalent corticosteroids	SC , IBD	Ideally, systemic corticosteroids (at daily doses ≥ 20 mg prednisone or equivalent for > 1 month) should be avoided or completed at least 28 days before commencing the first vaccine dose when possible. If it is not possible, immunization should proceed.

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Proteasome inhibitors (e.g. bortezomib)	HM	Avoid COVID-19 vaccination on same day as treatment.
Radiation – patients due to start radiation therapy	SC	If immunization is pending, and it is possible to delay radiation therapy without compromising outcomes, radiation therapy should be postponed until anticipated immunity is achieved before commencing radiation therapy. *
Radiation – currently on therapy	SC	COVID-19 vaccination can occur at any time during treatment while blood counts are near normal range, ideally as early in the course of radiation therapy as possible. The vaccine should be given on the opposite side if unilateral radiation treatment is, or was, given to area of injection site.
Radiation – completed course or during regimen of cyclical radio-isotope therapy	SC	Clinical considerations for which the client should speak with their medical specialist. Any decision to hold medications should be discussed between a patient and their healthcare team. If proceeding with vaccination, the vaccine should be given on the opposite side if unilateral radiation treatment is, or was, given to area of injection site.
Rituximab	AND , ARD , IBD	COVID-19 immunization should ideally be timed four to five months after their last infusion and two to four weeks prior to their next infusion, when possible, in order to optimize vaccine response. However, in patients who require immediate infusion or who are unable to optimize timing of infusion product and vaccine, it is likely more important to have the COVID vaccine as soon as possible than it is to delay based on timing of B-cell therapy.
Rituximab, initial	SC	For each dose of a COVID-19 vaccine series, vaccination should occur at least 2 weeks before treatment.*
Rituximab, cyclical	SC	For each dose of a COVID-19 vaccine series, vaccination should occur in the week before next treatment as this is when blood counts are likely to be the highest. Note: Avoid COVID-19 vaccination on same day as treatment.
Rituximab, maintenance or non-cyclical treatment	SC	No delay required
Sarilumab	ARD , IBD	No delay required
Secukinumab	ARD , IBD	No delay required
Sulfasalazine	AND , ARD , IBD	No delay required
Systemic corticosteroids that are inhaled, nebulized, intra-articular, intrabursal or topical	SC	No delay required

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Systemic corticosteroids	HM	Cyclical treatment as part of chemotherapy regimens - Avoid COVID-19 vaccination on same day as treatment. Continuous treatment - Ideally high dose systemic corticosteroids (> 0.5 mg/kg/day prednisone or equivalent) should be avoided or completed 28 days prior to vaccination; if this is not possible, proceed with vaccination.
Tacrolimus	AND , ARD , IBD	No delay required
Teriflunomide	AND	No delay required
Tocilizumab	ARD , IBD , AND	No delay required
Tofacitinib	ARD	No delay required
Upadacitinib	ARD	No delay required
Ustekinumab	ARD , IBD	No delay required
Vedolizumab	IBD	No delay required

* In general, it is preferred that patients complete immunization before starting immunosuppressive therapy if possible, based on the timing of the treatments and the availability of vaccines at the time. However, life-saving or -prolonging therapy should not be delayed solely to complete immunization. Some immunity may be achieved following the first dose of the two-dose vaccines.

‡ If local COVID-19 transmission rates are high, consider prioritization of COVID-19 vaccination and defer initiation of routine post-HSCT vaccinations until at least 14 days after completion of a COVID-19 vaccine dose.