GUIDANCE ON ELIGIBILITY FOR

mRNA COVID-19 (BNT162b2) VACCINE

FOR ADOLESCENTS

AGE 12 TO 15 YEARS

Version 1.0

20th May 2021

EXECUTIVE SUMMARY

This document aims to support healthcare professionals in providing advice on mRNA COVID-19 vaccine for adolescent age 12 to 15 years. Pfizer –BioNTech Covid-19 vaccine has been recommended for persons 12 to 15 years of age in the US population under the FDA's Emergency Use Authorization (EUA). This document will be updated as additional information becomes available. The initial phase for vaccination would be prioritized for high-risk groups.

Rationale for vaccination of this age group

1. Adolescents infected with SARS-CoV-2 are much less likely to develop severe illness compared with adults. However, adolescents are nevertheless at risk of developing severe illness and late sequelae from infection. As older adults are increasingly protected from infection by vaccination, hospitalization rates in children are increasing and data from the United States found that a third of children admitted with Covid-19 require intensive care. Of the children who develop severe illness most have underlying medical conditions. Current evidence suggests that children with medical complexity, with genetic, neurologic, metabolic conditions, or congenital heart disease are at increased risk for severe illness. As with adults, adolescents with obesity, diabetes, asthma or chronic lung disease, hemoglobinopathy such as sickle cell anemia, or immunosuppression are also at increased risk for severe illness. As with adults, adolescents with severe COVID-19 may develop single- or multi-organ failure and in a very small number, the post-Covid inflammatory condition, Multisystem Inflammatory Syndrome in Children (MIS-C) may develop.
2. Non-immune adolescents are at risk of infection and achieving 'herd immunity' ultimately requires vaccination of this group. With the emergence of new variants coupled with high vaccination rates in adults, a significant unimmunized cohort of children and adolescents potentially allows for evolution of vaccine resistant viral strains with serious implications for wider public health. Unvaccinated children and teenagers are potential sources of infection to others. They are highly mobile attending schools, sports, and intersecting more often with various age groups including with their caretakers and older family members. Moreover, the majority of children and teenagers infected with Covid-19 are asymptomatic or minimally symptomatic and may be less effective in following standard hygiene precautions (distancing, mask-wearing and effective hand hygiene). Finally, a significant number of adolescents do experience both acute and chronic complications of Covid-19 infection and vaccination of this group reduces vulnerability not only to those vaccinated, but also to unvaccinated peers.

GENERAL GUIDELINES

INCLUSION CRITERIA	EXCLUSION CRITERIA
• Adolescent age 12 to 15 years • People with chronic illnesses: asthma, chronic lung diseases, heart failure, chronic renal diseases, chronic liver diseases, diabetes mellitus, hypertension, cardiac disease (including hypertension and congenital heart disease) • Genetic, neurologic or metabolic disorders • Sickle cell disease or thalassemia • Immune disorders and those on immunosuppressive therapy • Obesity (BMI >30 kg/m^2 or 95th percentile, as appropriate) • Persons with autoimmune conditions who have no contraindications to vaccination may receive an mRNA COVID-19 vaccine. • Adolescents 12-15y with vulnerable household members falling in a known risk group, who are currently ineligible for vaccination: • Adolescents living with children younger than 12y with any of the above chronic health problems • Unvaccinated, vulnerable adults who are ineligible for vaccination such as pregnant women (see exclusion criteria)	• Adolescent with active COVID-19 infection • Adolescents who have received other COVID 19 vaccines in the past • Adolescents in covid-19 vaccine or medication trials • Persons who previously received passive antibody therapy as part of COVID-19 treatment (i.e. monoclonal antibodies or convalescent plasma) • Severe or immediate allergic reaction of any severity to a previous mRNA vaccine dose (see section on 'Allergic Conditions' low). An immediate allergic reaction is defined as a reaction within 4 hours of getting vaccinated, including symptoms such as hives, swelling, or wheezing (respiratory distress) • Previous immediate allergic reaction of any severity to a component of the vaccine [polyethylene glycol (PEG) or polysorbate](Appendix)

Special Considerations

- The second dose of the vaccine should be administered as close to the second dose schedule as possible. If for any reason there is a delay, the second dose can be given up to 42 days (6 weeks) after the first dose.
- If for any reason the child presents beyond 42 days for the second dose, this dose should be given as a second dose; the vaccination schedule should not be repeated.
- Lymphoedema of the arms of any aetiology (see notes below).
- Uncontrolled diabetes is not a contraindication to the vaccine. In fact, because these patients are at risk of severe COVID-19, they should be encouraged to be vaccinated (see under Endocrine Disorders below).
- Vaccination of persons with known current SARS-CoV-2 infection should be deferred until the person has recovered from the acute illness (if the person had symptoms). Recovery means that the person has completed 10 days from the first positive COVID-19 test with no symptoms for the last 3 days without anti-pyretic.
- If a person contracts COVID-19 after the first vaccine dose, the second dose should be deferred until recovery (as defined above), even if the dose is delayed. Therefore, prior COVID-19 infection is no contraindication to the vaccine
- Immunocompromised individuals may receive COVID-19 vaccination if they have no contraindications to vaccination.

Co-administration with other vaccines

- COVID-19 vaccines were previously recommended to be administered alone, with a minimum interval of 14 days before or after administration of any other vaccines. This was out of abundance of caution and not due to any known safety or immunogenicity concerns.
- COVID-19 vaccines and other vaccines may now be administered without regard to timing. This includes administration of COVID-19 vaccines and other vaccines on the same day, as well as co-administration within 14 days.
- It is unknown whether reactogenicity is increased with co-administration, including with other vaccines known to be more reactogenic, such as adjuvant vaccines or live vaccines.
- When deciding whether to co-administer another vaccine(s) with COVID-19 vaccine, providers should consider:
    - Whether patient is behind or at risk of becoming behind on recommended vaccines.
    - Their risk of vaccine-preventable diseases (e.g., during an outbreak or occupational exposure).
    - The reactogenicity profile of the vaccines.

Clinical considerations for people with a history of Multisystem Inflammatory Syndrome in Children (MIS-C)

The mechanisms of MIS-C are not well understood but include a dysregulated immune response to SARS-Cov-2. Children with MIS-C have high antibody titers to SARS-Cov-2, however, it is unknown if this correlates with protection against reinfection and for how long protective antibody levels persist. It is unclear if people with a history of MIS-C are at risk for recurrence of the same dysregulated immune response following reinfection with SARS-Cov-2 or in response to a COVID-19 vaccination.

- People with a history of MIS-C may choose to be vaccinated.
- Current evidence suggests that risk of SARS-Cov-2 reinfection is low in the months after initial infection but may increase with time due to waning immunity. Thus, people with a history of MIS-C should consider delaying vaccination until they have recovered from illness and for 90 days after the date of the diagnosis of MIS-C, recognizing that the risk of reinfection and, therefore, the benefit from vaccination, might increase with time following initial infection.
- Young people may be vaccinated after 90 days of diagnosis of MIS-C after consultation with their treating physician where the following should be considered
- Considerations for vaccination may include:
    - Clinical recovery from MIS-C, including return to normal cardiac function.
    - Personal risk of severe acute COVID-19 (e.g., underlying conditions)
    - Level of COVID-19 community transmission and personal risk of reinfection
    - Lack of safety data of COVID-19 vaccination following illnesses.
    - Timing of any immunomodulatory therapies

Precautions

- An immediate allergic reaction to any other vaccine or injectable medication is considered a precaution and not a contraindication.
- Post-transplant recipient patients: within 3 months post transplantation.
- People with acute febrile illness (AFI) at the time of vaccination.
- People on immunosuppressant medication or systemic corticosteroid.
- Patients treated with rituximab clearly have diminished humoral responses to vaccinations. Patients treated with rituximab and naturally infected with SARS-Cov-2 appear to be one of the highest risk group for COVID-19 morbidity and mortality. It is recommended that patients are vaccinated prior to initiation of therapy (e.g., both doses completed ≥ 2 weeks prior to initiation of B- cell directed therapy), when feasible. If it is not feasible to delay Rituximab based therapy, it is still reasonable to consider vaccination during times of high community transmission given that vaccination can generate T-cell memory responses even in the absence of humoral immunity.
- Patients on high dose steroids should be cautioned on the inadequate response to the vaccine. There is debate on what constitutes 'high dose' but generally patients on prednisone 20mg or more per day for over a month, or equivalent, may have diminished responses to vaccinations. It is recommended that patients treated with corticosteroids are vaccinated prior to therapy if feasible. Although these groups are among the high-risk group, it is considered better to vaccinate in order to get some protection if the drug cannot be stopped.
- People with bleeding disorders or on anti-coagulation with documented uncontrolled INR (please refer to the section on bleeding disorders and anticoagulation below).
- Individuals with a reaction to the first dose of vaccine should not be given an anti-histamine prior to the second dose.
- Serology testing to determine level of immunity in vaccine decision-making is not recommended.
- Vaccination providers should have appropriate medications and equipment—such as epinephrine, antihistamines, stethoscopes, blood pressure cuffs, and timing devices to check your pulse—at all COVID-19 vaccination centers.
- According to DHA External Circular number #0631, reporting of suspected adverse reactions should be followed by all the healthcare providers and professionals in the Emirate of Dubai, [link].
- In a patient with lymphoedema of the arm of any cause, the vaccine should be given in the opposite arm. If both arms are affected, then it should be given in the thigh or buttock.

Hematological Disorders & Malignancies

Bleeding Disorders and Thrombosis

Heritable bleeding disorders do not increase the risk of acquiring COVID-19. Hence, patients with such conditions may be vaccinated according to the published schedule. The vaccine itself does not present any additional safety concerns for these patients but the intra-muscular route of administration may increase the risk of bleeding at the injection site. Patients with severe hemophilia on prophylaxis with factor concentrate should have their normal prophylactic dose prior to the injection.

- Patients with mild bleeding disorders can generally have an intra-muscular injection without any hemostatic treatment. If there is any uncertainty, advice should be sought from the patient's hematologist/hemophilia center.
- Those on Emicizumab can have the vaccination without any additional treatment if they are at steady state because it is similar to mild hemophilia.
- Patients receiving regular platelet transfusions should have their vaccine after a platelet transfusion.
- Other patients not falling into these categories should be managed on an individual basis.

Anticoagulation or anti-platelet therapy

- Patients with bleeding disorders may have a slightly increased risk of bleeding due to the intramuscular route of administration.
- Patients on standard intensity anticoagulation with warfarin (target INR 2.0–3.0) can receive intramuscular injections as long as the most recent INR is 3.0. There is no need for an extra INR check prior to vaccination. However, pressure should be applied at vaccine site for 5 minutes.
- Patients on maintenance therapy with direct oral anticoagulants, therapeutic low-molecular weight heparin or fondaparinux can delay the dose on the day of vaccination until after the intramuscular injection but do not need to miss any doses.

- Patients on single agent anti-platelet therapy (e.g. aspirin or clopidogrel) can continue these medications without any adjustment.
- Patients with higher intensity anti-thrombotic treatment, for example warfarin with a target INR > 3.0 or dual antithrombotic medications, should be managed on an individual basis. For patients with higher ranges, recommendation is to ensure that the INR is <3. The risk of hematoma formation should be reduced by application of pressure at the injection site for at least 5 minutes afterwards (without rubbing the injection site).

Auto-immune hematological conditions on immunosuppression (Autoimmune haemolytic anemia and immune thrombocytopenic purpura - ITP)

Children and adolescents who are receiving immunosuppressive agents including but not restricted to rituximab, cyclophosphamide, mycophenolate or steroids (equivalent of prednisolone 20mg/day for over a month) are deemed as clinically extremely vulnerable and should be encouraged to receive the vaccine.

Patients with ITP on thrombopoetin stimulating agent (eltrombopag/romiplastim) can receive vaccination if platelet is ≥ 30.

Hemoglobinopathies and Rare Inherited Anemias

- Patients with hemoglobinopathy are deemed “clinically extremely vulnerable” and should be offered the vaccine. This includes all adults with sickle cell disease and some patients with thalassemia and inherited rare anemias who have severe iron overload. Patient with G6PD deficiency can receive Covid-19 vaccine.
- Patients aged 12 to 15 years with underlying health conditions should be offered vaccination.
- This group includes people who receive the flu vaccine every year because they have problems with their spleen or have had their spleen removed. This group include sickle cell disease, thalassemia and rare inherited anemia patients who have had their spleen removed.

Acute Leukemias (AML, APL and ALL)

- Patients with acute leukemias who are receiving active treatment **should not** receive the vaccine until they complete their treatment and recover their blood counts.
- Patients with ALL who are planned for maintenance therapy can delay the maintenance therapy for 2 weeks after the second dose of the COVID-19 vaccine.

Blood and Marrow Transplantation & Cellular Therapy

Allogeneic

- Consider vaccination from 3-6 months following allogeneic hematopoietic stem cell transplant (HSCT), except if patient remains on immunosuppression (cyclosporine, tacrolimus etc.).
- Covid-19 vaccination should take priority over the regular vaccination schedules. If the patient has received other post-transplant vaccination. Consider vaccination of patients with mild chronic graft versus host disease (cGVHD) and/or receiving 0.5mg/kg prednisolone (or equivalent).
- For patients with moderate/severe cGVHD or on more intensive immunosuppressive therapy (high dose steroids >0.5mg/kg) assess the potential benefits of COVID-19 vaccination on a case-by-case basis
- For patients receiving T-cell depleted HSCT, vaccination may be initiated around 6 months post HCT with confirmed presence of B-cells > 50 and $CD4^+$ T-cells >100.

Autologous

- Consider vaccination from 2-3 months following autologous HSCT.

CART cell therapy

- Vaccination may be initiated as early as 3 months if demonstrated IVIG independent and B cell count ≥50.

Reasonable Criteria to postpone vaccination with our current knowledge are:

- Severe uncontrolled acute GVHD grade 3-4.
- Recipients who have received anti-CD20 antibodies during the last 6 months with absolute B cell count <50.
- CART cell patients with B cell aplasia (absolute B cell count <50)
- Recent therapy with ATG or alemtuzumab.

Lymphoma

- Patients with lymphoma may be immunosuppressed to a varying extent depending on the lymphoma diagnosis and treatment history. This has implications for overall vaccination strategy and treatment decisions, safety and efficacy of COVID-19 vaccines in immunocompromised patients. There are no data regarding the safety or efficacy of currently available COVID-19 vaccines in immunosuppressed patients.
- However, there is no evidence that replication-deficient vaccines are unsafe in this setting. Regarding clinical efficacy, it is reasonable to assume that patients with B-cell depletion/dysfunction are likely to have an impaired humoral response to vaccination, while those with T-cell depletion/dysfunction are likely to have an impaired cellular response and possibly also an impaired humoral response due to loss of T helper function.

Overall COVID-19 vaccination strategy: Based on current safety/benefit considerations and in the absence of data or guidance to the contrary, it is recommended that all patients with lymphoma should receive a non-replicating COVID-19 vaccine (unless explicitly contraindicated), accepting that this might not achieve full protection if there are pre-existing defects in humoral and/or cellular immunity. For these patients, vaccination of close contacts may be at least be as important. It should be emphasized that neither of these measures removes the need for social distancing and other precautionary measures.

Implications for lymphoma treatment: The predicted effects of specific lymphoma treatments on cellular and humoral responses to COVID-19 vaccination should be considered and discussed with parents in a balanced way alongside other treatment considerations, e.g., the desire to maximize progression-free survival and minimize overall treatment-related toxicity. This is particularly relevant for drugs, which deplete T and B cells, but may also improve long-term disease control.

Timing of COVID-19 vaccine

COVID-19 vaccination should be timed with the aim of achieving optimal protection at the earliest opportunity without compromising lymphoma outcome. Where possible, vaccination should be completed at least 2 weeks before any immunosuppressive treatment is given. For patients who have already received immunosuppressive treatment, the advantages and disadvantages of interrupting therapy or delaying vaccination to allow immune recovery requires careful consideration and discussion bearing in mind that short interruptions in treatment may not be sufficient for any meaningful improvement of immune function.

For patients that have received lymphocyte depleting therapy, ie Rituximab, blinatumomab, and anti-thymocyte globulin, alemtuzumab, etc. It is reasonable to consider deferring vaccination until 6 months after completion of therapy or until there is evidence of lymphocyte reconstitution ALC ≥1 (normal range 1.3 to 4 x 10^3 or B cell count of more than 50 cells per microliter lymph by flow cytometry. This is because patients with B cell aplasia will in all likelihood not mount a humoral immune response. However, given that COVID vaccination generate T-cell memory that may offer at least partial protection, it is reasonable to offer vaccination during times of high community transmission even to patients unlikely to mount a B-cell response.

Myelodysplasia:

- Children and adolescent with myelodysplastic syndrome (MDS) is amongst the highest risk groups for COVID19 and as the Pfizer/BioNTech vaccine is not a 'live' vaccine, it should be safe for blood cancer patients, including MDS patients. The consensus is that generally, for patients with blood cancer, the benefits of the vaccine far outweigh any potential side effects of the vaccine and the risks associated with having COVID-19 infection. Therefore, vaccination is recommended, except in people with a history of severe allergic reactions.
- This should include all MDS subtypes:
    - MDS patients on observation or on active therapy with hypomethylating agent now or those who have received treatment in the past
    - MDS patients in clinical trial
- Patients who have a low platelet count may bleed or bruise at the injection site. To reduce this risk, it is recommended that the platelet count should be 30 x 10^9/l or above and that

prolonged pressure at the injection site should be applied for 5 minutes. Those receiving regular platelet transfusions should have their vaccine after a platelet transfusion. If the platelet count is less than 30 x 10^9/l and the patient is not receiving regular platelet transfusions, they should discuss with their hematologist.

- Patients receiving PRBC transfusion can safely receive the Covid-19 vaccine.

Myeloproliferative Neoplasm (MPN):

Having an MPN and any MPN treatment (ruxolitinib, pegasys, etc) is not a contraindication to receiving the vaccine. If the patient is taking an anticoagulant, e.g., warfarin, rivaroxaban, apixaban etc. should follow the same recommendation as mentioned in the "anticoagulation section.

Chronic Myeloid Leukemia (CML):

- Patients receiving TKIs such as imatinib, dasatinib, nivolumab, ponatinib, bosutinib (with or without remission) should be considered for vaccination.

Aplastic Anemia (AA):

There are case reports of AA developing post-vaccination with other vaccines, and of recovered AA patients relapsing following vaccine administration. The evidence is limited and based also on an appreciation that a viral insult is likely to be an important trigger in the pathogenesis of AA.

- In the setting of the COVID-19 pandemic, current American Society of Hematology COVID-19 and AA guidance is that the risk versus benefit would favor vaccine administration, particularly in those with additional risks for severe COVID-19 disease (age, obesity, other comorbidities associated with increased risk).
- No data on efficacy in immunosuppressed patients has been made available to date for any of the SARS-CoV-2 vaccines in development. Those patients within 6 months of anti-thymocyte globulin/cyclosporin (ATG/CSA) initiation are unlikely to mount an appropriate immune response to a vaccine. Those patients with AA remaining on CSA for more than 6-12 months post-ATG treatment may respond to a vaccine. Vaccinations may be given after thoroughly considering and balancing risk versus benefit. Post-transplantation patients with AA should follow standard post-transplantation guidelines for vaccine administration. These will be updated regarding SARS-CoV-2 vaccines when they become available, extrapolating from recommendations for other vaccines.

Therapy Specific Recommendations

- Steroids: Patients treated with corticosteroids may have diminished responses to vaccination. Corticosteroids are detrimental to patients with mild Covid-19 yet appear beneficial to patients with severe Covid-19. It is recommended that patients treated with corticosteroids are vaccinated prior to therapy if possible.
- IVIG: Covid-19 vaccines may be administered to patients receiving plasma therapy not specific to Covid-19 (eg: IVIG), as these are unlikely to substantially impair development of protective antibody responses.
- Rituximab: Patients treated with rituximab clearly have diminished humoral responses to vaccination. Patients treated with rituximab and naturally infected with SARS-CoV2 appeared to be one of the highest risk groups for Covid-19 morbidity and mortality. It is recommended that patients are vaccinated prior to initiation of therapy (Eg: both doses completed ≥ 2 weeks prior to initiation of B-cell directed therapy.). If it is not feasible to delay rituximab based therapy, it is still reasonable to consider vaccination during times of high community transmission given that vaccination can generate T-cell memory responses even in the absence of humoral immunity.

Patients with solid tumors receiving chemotherapy, checkpoint inhibitors (pembrolizumab, nivolumab, ipilimumab) etc.

- Patients with solid tumor cancers should be offered the vaccine if the component of the vaccine are not contraindicated. The rationale for Covid-19 vaccine in patients with solid tumor malignancies is to reduce the risk of Covid-19 morbidity and mortality. Covid-19 vaccination will also enable ongoing receipt of disease-specific therapy and avoid delays in cancer care.
- Patients with active cancer have a high risk of morbidity and mortality from Covid-19
- Data from other vaccine preventable illnesses such as influenza, pneumococcal disease and herpes zoster suggest a protective effect of vaccination in cancer patients.
- Antibody responses to vaccines are generally lower in patients received cytotoxic chemotherapy compared with healthy individuals or cancer patients who are not actively receiving treatment.
- Given the paucity of data, optimal timing of vaccination in relation to cytotoxic chemotherapy or other cancer directed therapy has not been established.
- If feasible for patients completing cytotoxic therapy, time first dose of vaccine to be given after therapy complete and nadir period resolved.

Renal conditions
Eligibility for mRNA vaccination • Chronic kidney disease, including patients with chronic glomerular disease, end-stage renal disease on hemodialysis or peritoneal dialysis. The patients on hemodialysis with tendency to easy bleeding/bruising would need to check with their nephrologist regarding the timing of the vaccine with regards to the hemodialysis session. • Chronic, mild and stable electrolyte and acid-base imbalances • Stable renal transplant patients • Congenital anomalies of the kidneys and urinary tract • Asymptomatic nephrolithiasis • Immunosuppressed patients (on immunosuppressive treatment for renal transplant, glomerular diseases, interstitial nephritis, or immunocompromised conditions such as chronic kidney disease) Treatment with **rituximab** ideally should be delayed for at least 4 weeks after the vaccination course is completed.
CAUTION Consider postponing vaccination for people with acute moderate to severe illness such as the following conditions, until the clinical condition returns to baseline or is controlled with treatment: • acute kidney injury • acute urinary tract infection, except maybe mild cystitis • acute rejection of renal transplant • recent renal transplant recipients • Acute and significant electrolyte imbalances • Hypertensive crisis/accelerated hypertension – resting systolic >160 mmHg and/or resting diastolic >100 mmHg – provided that they are asymptomatic.

Endocrine disorders
There are no absolute contraindications for any endocrine conditions. Poor glycaemic control itself puts the patient at high risk and patients should be vaccinated regardless of his/her blood glucose levels They should be advised to seek advice from their physician to improve their diabetes control. There is no contraindication or cut-off for blood glucose level to vaccinate but the patient should be advised to seek urgent appointment with his/her physician to improve glycaemia as vaccination might further elevate blood glucose levels. People with the following endocrine conditions can be vaccinated: • Obesity (BMI>30 kg/m^2 or 95th percentile, as appropriate) • Type 1 diabetes • Type 2 diabetes • Hypoadrenalism/patients on long term steroids • Pituitary disease on hormone replacement • Diabetes insipidus with pituitary disease • Hyperthyroidism on anti-thyroid drugs • Other types of Diabetes-MODY • Cushing's disease • Pituitary adenoma/previous pituitary surgery on hormone replacement

Allergic conditions
• Known allergy to one of the inactive ingredients of the mRNA vaccine – polyethylene glycol (PEG) or polysorbate– is a contraindication to getting the vaccine (Refer to Appendix).   ○ Allery to food, drugs, pets, insect bites etc is not a contraindication to mRNA vaccine • Persons with previous immediate allergic reaction to any other vaccine or those with severe allergies should be observed for at least 30 minutes following vaccine administration, rather than the usual 15 minutes. • Persons with a severe allergic reaction or an immediate allergic reaction of any severity to the first dose should not receive the second dose.

Rheumatological and musculoskeletal disease (RMDs) conditions
mRNA vaccines can be given safely in patients with RMDs and in patients treated with drugs that influence the immune system, with the following precautions: • Avoid vaccination during active disease phase • Vaccinate before planned immunosuppression, if possible • Patients on rituximab should stop the drug and re-start 4 weeks after the vaccination course is complete, if possible • The vaccine can be given to patients with autoimmune diseases provided they do not have any contraindications to vaccines.
Psychiatry disorders
No contraindications for patients with psychiatric disorders and those on psychiatric medications
Epilepsy
Persons with epilepsy can be given the vaccine. There is no evidence for its contraindication, either related to the disease or medications.

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APPENDIX

Common parenteral medications containing potential PEG and/or polysorbate

Formulary Medications (PARENTERAL ROUTES only)	Polysorbate 80 (PS80)	Polysorbate 20 (PS20)	Polyethylene Glycol (PEG)
Ado-trastuzumabemtansine		X	
ALEMTUZUmab	X		
Alteplase	X		
Atezolizumab		X	
Avelumab		X	
Bamlaniuimab	X		
BEVACIZUmab		X	
Blinatumomab	X		
Brentuximab	X		
Cemiplimab	X		
Cyclophosphamide			X
Daratumumab		X	
Depomedrol			X
Depoprovera			X
Dinutuximab		X	
Docetaxel	X		
Durvalumab	X		
Elotuzumab	X		
Etoposide (inj. solution)	X		
Fam-trastuzumab	X		
Fosaprepitant	X		
Fulvestrant	X		

Gemcitabine			X
Herceptin			X
Infliximab	X		
Ipilimumab	X		
Isatuximab-irfc	X		
Lorazepam			X
Mogamulizumab	X		
Neulasta			X
Nivolumab	X		
Ofatumumab	X		
PEGaspargase			X
Pembrolizumab	X		
Pertuzumab		X	
Phytonadione	X		
Polatuzumab		X	
Ramucirumab	X		
Rituximab	X		
SacituzumabGovitecan	X		
Temozolomide	X		
Trastuzumab		X	
Ustekinumab	X		
Vancomycin			X