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PRESENTATION

RECOMMENDED VACCINATIONS

Patient who meet any of the following asplenic conditions:

- Anatomic or splenectomy
- Functional
 - Chronic graft-versus-host disease (cGVHD)
 - Post-splenic artery embolization
 - Splenic irradiation ≥ 50%
 - Sickle cell disease

→ Provide the following vaccinations if not previously administered¹

- Administration of vaccines at least 14 days prior to elective procedure or chemotherapy is preferred
 - Otherwise administer at discharge or day 14 (whichever is first)
 - May consider waiting at least 3 months (6 months if patient received anti-CD20 monoclonal antibody, *i.e.*, rituximab) after completion of chemotherapy/immunosuppressive regimens in order to maximize vaccine efficacy²
- Initial vaccinations
 - Meningococcal
 - Meningococcal type B (Bexsero[®]) 0.5 mL IM³ **and**
 - Meningococcal conjugate (Menveo[®]) 0.5 mL IM³
 - Pneumococcal conjugate (PCV, Prevnar 13[®]) 0.5 mL IM³
 - Haemophilus influenzae type b (Hib) 0.5 mL IM³

- Follow-up vaccinations (2 months after initial vaccination)
- Meningococcal
 - Meningococcal type B (Bexsero[®]) 0.5 mL IM³ **and**
 - Meningococcal conjugate (Menveo[®]) 0.5 mL IM³
 - Pneumococcal polysaccharide (PPSV23, Pneumovax[®]) 0.5 mL subcutaneously or IM³

- Follow-up vaccinations (long-term)
- Meningococcal conjugate vaccine (Menveo[®]) 0.5 mL IM³
 - Booster in 4-5 years from first dose and every 5 years thereafter
 - Pneumococcal polysaccharide (PPSV23, Pneumovax[®]) 0.5 mL subcutaneously or IM³
 - Additional dose at least 5 years after the first dose
 - If most recent PPSV23 was administered before the age of 65 years, administer another dose of PPSV23 at age 65 years or older if 5 years have elapsed since last dose

¹ Only administer vaccines if not previously administered, except in hematopoietic stem cell transplant patients. For non-stem cell transplant patients, if any part of a series has already been given, refer to follow-up vaccinations or [Appendix A](#) for further instructions.

² Alternatively may wait until immune reconstitution for patients receiving active chemotherapy. Revaccination outside of hematopoietic stem cell transplant patients is generally thought to be unnecessary but robust data is lacking. Antibiotic prophylaxis can be considered in addition to vaccination or for patients awaiting vaccination; see [Appendix B](#).

³ See [Appendix C](#) for guidance on administration of IM vaccines in patients at high-risk for bleeding

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APPENDIX A: Vaccine Special Considerations¹

Meningococcal Vaccination	Pneumococcal Vaccination	Haemophilus influenzae type b (Hib) Vaccination
<ul style="list-style-type: none"> • Previously vaccinated with one dose of meningococcal conjugate (Menveo®) <ul style="list-style-type: none"> ○ If ≤ 5 years since 1st dose, administer 2nd dose of series at least 8 weeks after and then administer booster every 5 years thereafter ○ If ≥ 5 years past 1st dose, repeat 2 dose series and administer booster every 5 years thereafter • Revaccination with a booster is not required for meningococcal type B (Bexsero®) • Meningococcal conjugate (Menveo®) can be given on the same day as meningococcal type B (Bexsero®) at different anatomical sites • Meningococcal conjugate (Menveo®) and meningococcal type B (Bexsero®) should only be given IM (not subcutaneously) 	<ul style="list-style-type: none"> • Previously vaccinated with one dose of PPSV23 but not vaccinated with PCV13: <ul style="list-style-type: none"> ○ Administer PCV13 at least 1 year after last PPSV23 dose ○ Administer 2nd dose of PPSV23 at least 2 months after PCV13 and at least 5 years after the most recent PPSV23 dose ○ Administer 3rd dose of PPSV23 at age 65 or later if patient received PPSV23 before age 65 and 5 years have elapsed since last dose • Previously vaccinated with two doses of PPSV23 but not vaccinated with PCV13: <ul style="list-style-type: none"> ○ Administer PCV13 at least 1 year after last PPSV23 dose ○ Administer 3rd dose of PPSV23 at age 65 or later if patient received PPSV23 before age 65 and 5 years have elapsed since last dose • Previously vaccinated with PCV13 but not PPSV23: <ul style="list-style-type: none"> ○ Administer PPSV23 at least 2 months after PCV13 ○ Administer 2nd dose PPSV23 at least 5 years after 1st dose PPSV23 ○ Administer 3rd dose PPSV23 at age 65 or later if patient received PPSV23 before age 65 and 5 years have elapsed since last dose • Previously vaccinated with PCV13 and one dose of PPSV23: <ul style="list-style-type: none"> ○ Administer 2nd dose PPSV23 at least 5 years after 1st dose PPSV23 ○ Administer 3rd dose of PPSV23 at age 65 or later if patient received PPSV23 before age 65 and 5 years have elapsed since last dose 	<p>Booster doses of Hib are not necessary in patients who have already received a dose</p>

¹ Patients should receive other vaccines per CDC guidance (*i.e.*, influenza yearly, Tdap every 10 years, etc.)

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APPENDIX B: Risk Factors for Infections with Encapsulated Organisms and Relevant Prophylactic Agents

Patients should ideally be counseled on the below points prior to and after the procedure/chemotherapy. Family members of affected patients should ensure compliance with vaccines per CDC guidelines.

Travel considerations and animal exposures:

- Visit health care provider or travel clinic 4-12 weeks prior to travel
 - Care must be taken in areas where malaria is endemic (*e.g.*, tropical regions such as sub-Saharan Africa) or where outbreaks of meningococcal disease occur
 - Avoid tick bites and areas where babesiosis is endemic (*e.g.*, upper Midwest United States and coastal New England)
- Animal bites should be immediately attended to, particularly dog bites (*Capnocytophaga canimorsus*)

Prophylaxis recommendations

Consider prophylaxis for high-risk patients:

- Hematologic malignancy patients with anatomic or functional asplenia/hyposplenia awaiting or with incomplete vaccination
- Prolonged prophylaxis independent of vaccination status may be pursued on a case-by-case basis:
 - Hematopoietic stem cell transplant patients on therapeutic immunosuppressants for cGVHD
 - For details refer to Stem Cell Transplantation SOP "GC2.6 Vaccination Guidelines"
- Patients with history of sepsis with encapsulated organism
- High-risk patients should be cautioned to seek medical attention for any febrile illness

Preferred regimens:

- Oral penicillin V potassium (250 mg - 500 mg twice daily) or amoxicillin (500 mg twice daily)
 - Second line - cephalosporins (*e.g.*, cephalexin 250 mg twice daily) are reasonable alternatives that may be tolerated by patients with mild non-IgE-mediated reactions to penicillin
 - Third line - fluoroquinolones (*e.g.*, levofloxacin 500 mg daily) are less studied alternatives for patients with contraindications to penicillin or cephalosporins
- Can consider providing an emergency supply for high-risk patients not receiving prophylaxis to be used at onset of fever or infectious symptoms

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APPENDIX C: Administration of Vaccines to Patients with Increased Risk of Bleeding

Patients at risk of bleeding/hematoma from IM injections:

- Thrombocytopenic (platelets < 30 K/microliter)
- Receiving anticoagulation
 - IM injections should be avoided in patients on warfarin with elevated INR (>4)
- Hemophilia
- Von Willebrand disease

Successful administration of certain IM vaccines has been accomplished in hemophilia patients with the following techniques:

- Use a 23 or 25-gauge needle (25-gauge is smaller and preferred if available) for vaccine administration
- Apply pressure to site of vaccination for two minutes afterwards
 - Do **not** rub or massage the site

CDC guidance:

- Patients on anticoagulation therapy presumably have a similar bleeding risk as patients with clotting disorders so providers should follow the same guidelines for IM administration
- When IM vaccine is indicated for a patient with bleeding disorder, the vaccine should be administered if physician familiar with patient's bleeding risk determines IM route is reasonably safe
- Prior to administration of IM vaccine, patient and family should be informed of the risk of hematoma formation
- CDC discourages deviation from the recommended vaccine route, site, or dose for any vaccine since this can lead to reduced protection and increase the risk of an exaggerated local reaction

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DEVELOPMENT CREDITS

This practice consensus statement is based on majority opinion of the Asplenia Management workgroup at the University of Texas MD Anderson Cancer Center for the patient population. These experts included:

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