

Candidate For or Recipient Of Solid Organ or Islet Cell Transplant

Re-immunization is NOT indicated for these clients. Assess previous immunizations and offer vaccines to complete routine schedule.

Recommended vaccines for candidate or recipient of solid organ or islet cell transplant ^A	
All routine <u>inactivated</u> vaccines, including inactivated polio vaccine (IPV)	Immunize according to routine schedule. Exception: Children expected to be transplanted before 18 months of age (see Table 1: BC Children's Hospital Multi-organ Transplant Clinic Accelerated Immunization Schedule for Children Expected to be Transplanted Before 18 Months of Age).
Hib vaccine	Unimmunized individuals 5 years of age and older require 1 dose.
Pneumococcal vaccine	Conjugate and/or polysaccharide vaccine depending on age. Requires once only revaccination with polysaccharide vaccine.
Meningococcal quadrivalent conjugate vaccine	Meningococcal quadrivalent conjugate vaccine for those 2 months of age and older. (This vaccine to be given in place of meningococcal C conjugate vaccine in the routine childhood immunization schedule). Reinforcement dose(s) are recommended. ^B
Hepatitis A vaccine	Immunize liver transplant candidates and recipients.
Hepatitis B vaccine	Requires Hepatitis B Vaccine Higher Dose Schedule . Kidney transplant candidates and recipients require the renal formulation. Post-immunization serology for anti-HBs is recommended (provide 2 nd series if response is < 10 IU/L). ^C
Influenza vaccine	Immunize yearly (all those 6 months of age and older). LAIV is contraindicated after transplantation.
MMR vaccine	Recommended before transplantation according to routine schedule. Refer to Immunization with Inactivated and Live Vaccines . Use Referral Form for MMR Vaccination . Last dose of MMR vaccine must be given at least 4 weeks prior to transplantation. Contraindicated after transplantation.
Varicella vaccine	Recommended before transplantation for susceptible individuals according to routine schedule. Separate doses by 12 weeks. Refer to Immunization with Inactivated and Live Vaccines . Use Referral Form for Varicella Vaccination . Last dose of varicella vaccine must be given at least 4 weeks prior to transplantation. Contraindicated after transplantation.
Rotavirus vaccine	Refer to Immunization with Inactivated and Live Vaccines . Use Referral Form for Rotavirus Vaccination . Last dose of rotavirus vaccine must be given at least 4 weeks prior to transplantation. Contraindicated after transplantation.

^A For specific vaccine schedule information, refer to [Part 4 - Biological Products](#).

^B If individual was previously vaccinated at 7 years of age and older: give 5 years after previous dose. If individual was previously vaccinated at 6 years of age and under: give 3 years after previous dose. Re-immunize every 5 years as long as medical condition exists.

^C Candidates for or recipients of a kidney transplant should be tested annually as per [Chronic Kidney Disease](#), see Hepatitis B Vaccination Guidelines for Patients with Chronic Kidney Disease.

Immunization should begin/resume at 3-6 months after transplant. However, influenza vaccine can be given as early as 1 month post-transplant during influenza season. If influenza season is ongoing at 3 months after transplant, a 2nd dose may be given, ensuring an interval of 4 weeks between doses.

Inactivated zoster vaccine (Shingrix®) is recommended by the National Advisory Committee on Immunization (NACI) for those 50 years of age and older, and may be considered for immunocompromised individuals. Although this vaccine is not provided free in BC, it may be purchased without a prescription at most pharmacies and travel clinics. For those with a contraindication to inactivated zoster vaccine, a live zoster vaccine (Zostavax® II) is also available; however, as it is a live vaccine, it must be given at least 4 weeks prior to transplantation, and is contraindicated after transplantation. For more information, see [Part 4 – Biological Products](#), Zoster Vaccines.

BC Children's Hospital has developed immunization schedules and worksheets for infants who will be requiring a solid organ transplant either before or after they are 18 months of age. See [Table 1: BC Children's Hospital Multi-organ Transplant Clinic Accelerated Immunization Schedule for Children Expected to be Transplanted Before 18 Months of Age](#) and [Table 2: BC Children's Hospital Multi-organ Transplant Clinic Routine Immunization Schedule for Children Expected to be Transplanted After 18 Months of Age](#).

See [Worksheet for Immunization of Adult Solid Organ Transplant Candidates and Recipients](#).

Ideally, a recipient of solid organ or islet cell transplant should receive all vaccines before transplantation occurs. Vaccines are generally more immunogenic if given before transplantation because the immunosuppressive medications given after transplant to prevent and treat rejection of the transplanted organ may diminish the vaccine response. However, many children undergo transplantation before completion of their immunization schedule.

Live vaccines administered before the transplant must be completed at least 4 weeks before transplantation. Inactivated vaccines should be given at least 2 weeks before transplantation.

Solid organ and islet cell recipients usually receive lifelong immunosuppressive therapy. Live vaccines are contraindicated following transplantation except in certain circumstances.

Immunization should begin or resume at least 3-6 months after transplantation, when baseline immunosuppression levels are attained. However, in certain circumstances (e.g., during an outbreak), immunization may be recommended within the 3-6 months following transplantation if the expected benefits outweigh the risk of an inferior immune response to the vaccine. Additional post-exposure management (e.g., immune globulin) may also be considered.

If transplant recipients are treated for rejection using rituximab or anti-lymphocyte treatments (e.g., anti-thymocyte globulin), immunization should be deferred until 6 months post-treatment.

Immunization of Living Donors

Living donors should be up-to-date with routine vaccines based on age, immunization history, and exposure history according to the BC Immunization Guidelines. Receipt of live vaccines should be avoided within 4 weeks prior to organ donation.

Table 1: BC Children’s Hospital Multi-organ Transplant Clinic Accelerated Immunization Schedule for Children Expected to be Transplanted Before 18 Months of Age

Age	Immunization	Date Given YYYY/MM/DD	Serology	Comments
2 months	DTaP-IPV-Hib Hep B PCV13 Men-C-ACYW-135 Rotavirus ^A			INFANRIX hexa® is not appropriate as it does not contain the required hepatitis B dosing. Use Hepatitis B Vaccine Higher Dose Schedule . Rotavirus is a live vaccine: last dose must be given at least 4 weeks prior to transplantation.
3 months	DTaP-IPV-Hib Hep B PCV13 Rotavirus ^A			
4 months	DTaP-IPV-Hib PCV13 Men-C-ACYW-135 Rotavirus ^A			
6 months	MMR Varicella Hep B ^B Hep A (<i>liver transplant only</i>)		Anti-HBs 1 month after 3 rd dose of Hep B	MMR and Varicella are live vaccines: last dose must be given at least 4 weeks prior to transplantation.
12 months	DTaP-IPV-Hib PCV13 Men-C-ACYW-135 MMR Varicella Hep A (<i>liver transplant only</i>)			MMR and Varicella – see above for timing prior to transplantation.
13.5 months (6 weeks after previous visit)	MMR ^C Varicella ^B			MMR and Varicella – see above for timing prior to transplantation.
24 months	PPV23			
4-6 years	Tdap-IPV Men-C-ACYW-135			Offer Men-C-ACYW-135 at 3 years after the last dose, and then every 5 years.
7 years	PPV23			
Grade 6	HPV9			HPV9: 3-dose series
Grade 9	Tdap			
Annually	Influenza			Recommended for patient and all family members. LAIV is contraindicated post-transplantation.

Immunization should begin/resume at 3-6 months after transplant. However, influenza vaccine can be given as early as 1 month post-transplant during influenza season. If influenza season is ongoing at 3 months after transplant, a 2nd dose may be given, ensuring an interval of 4 weeks between doses.

^A If any dose in the series is RotaTeq® or the product is unknown, a total of 3 doses of vaccine should be administered.

^B Check anti-HBs 1 month post series. If anti-HBs < 10 IU/L, provide a 2nd series. Retest anti-HBs 1 month after 2nd series. Candidates for or recipients of a kidney transplant should be tested annually as per [Chronic Kidney Disease](#), see Hepatitis B Vaccination Guidelines for Patients with Chronic Kidney Disease.

^C If 1st dose of MMR and/or varicella is given when child is under 12 months of age, 2 doses are recommended at 12 months of age or later. The final doses of MMR and varicella are given at 13.5 months in order to maintain an interval of 6 weeks between varicella doses, and to facilitate co-administration of these vaccines.

Table 2: BC Children’s Hospital Multi-organ Transplant Clinic Routine Immunization Schedule for Children Expected to be Transplanted After 18 Months of Age

Age	Immunization	Date Given YYYY/MM/DD	Serology	Comments
2 months	DTaP-IPV-Hib Hep B PCV13 Men-C-ACYW-135 Rotavirus ^A			INFANRIX hexa® is not appropriate as it does not contain the required hepatitis B dosing. Use Hepatitis B Vaccine Higher Dose Schedule . Rotavirus is a live vaccine: last dose must be given at least 4 weeks prior to transplantation.
4 months	DTaP-IPV-Hib Hep B PCV13 Men-C-ACYW-135 Rotavirus ^A			
6 months	DTaP-IPV-Hib Hep B PCV13 Rotavirus ^A Hep A (<i>liver transplant only</i>)		Anti-HBs 1 month after 3 rd dose of Hep B	Provide a 2 nd series if anti-HBs < 10 IU/L at least 4 weeks after initial series. Candidates for or recipients of a kidney transplant should be tested annually as per Chronic Kidney Disease , see Hepatitis B Vaccination Guidelines for Patients with Chronic Kidney Disease.
12 months	MMR Varicella Men-C-ACYW-135 PCV13 Hep A (<i>liver transplant only</i>)			MMR and Varicella are live vaccines: last dose must be given at least 4 weeks prior to transplantation.
18 months	DTaP-IPV-Hib MMR Varicella			MMR and Varicella – see above for timing prior to transplantation.
24 months	PPV23			
4-6 years	Tdap-IPV Men-C-ACYW-135			Offer Men-C-ACYW-135 at 3 years after the last dose, and then every 5 years.
7 years	PPV23			
At time of pre-transplant assessment or in Grade 6	Hep B series (<i>if not previously given or anti-HBs < 10 IU/L</i>) HPV9		Anti-HBs 1 month after 3 rd dose of Hep B	Provide a 2 nd series if anti-HBs < 10 IU/L at least 4 weeks after initial series. HPV9: 3-dose series
At time of pre-transplant assessment or in Grade 9	Men-C-ACYW-135 (<i>if not previously given</i>) Tdap			
Annually	Influenza			Recommended for patient and all family members. LAIV is contraindicated post-transplantation.

Immunization should begin/resume at 3-6 months after transplant. However, influenza vaccine can be given as early as 1 month post-transplant during influenza season. If influenza season is ongoing at 3 months after transplant, a 2nd dose may be given, ensuring an interval of 4 weeks between doses.

^A If any dose in the series is RotaTeq® or the product is unknown, a total of 3 doses of vaccine should be administered.

Date:
YYYY/MM/DD

Worksheet for Immunization of Adult Solid Organ Transplant Candidates and Recipients

CLIENT INFORMATION

Name:		
	<i>Last</i>	<i>First</i>
DOB:		PHN:
	YYYY/MM/DD	

Date of Transplant:		Type of Transplant:
	YYYY/MM/DD	

Vaccine	Date given YYYY/MM/DD	Date given YYYY/MM/DD	Date given YYYY/MM/DD	Date given YYYY/MM/DD	Date given YYYY/MM/DD
Td or Tdap					
IPV					
Hib					
Hepatitis B					
Hepatitis A (for liver transplant only)					
HPV9 (eligible individuals only)					
Pneumococcal Polysaccharide					
Meningococcal Quadrivalent Conjugate					
Influenza					
Varicella Live vaccine: for pre-transplant only					
MMR Live vaccine: for pre-transplant only					