# Immunization for Adult Solid Organ Transplant Candidates and Recipients

**Revision Date:** June 30, 2016

**Note:** This guide is meant to supplement existing recommendations for routine immunization as outlined in the current Alberta Immunization Policy. Consult with an attending transplant physician before providing live vaccines. See [Principles of Immunization in Hematopoietic Stem Cell Transplant Recipients and Solid Organ Transplant Recipients](#).

**Rationale for Policy Update:** Included detail of ‘Evidence of Measles Immunity’.

## 1. Routine Immunizations – Before Transplant

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Series</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Td or dTap</strong></td>
<td>3 doses</td>
<td>If an adult requires completion of a primary series of Td, the first dose in the series should be replaced with dTap. Adults who have not previously received a dose of acellular pertussis in adulthood should receive a one-time booster dose of dTap. Subsequent boosters should be Td. Immunization should be completed at least two weeks before the transplant or if not completed can resume 3 – 6 months post-transplant.¹</td>
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<td>Td booster every 10 years.</td>
<td></td>
<td><strong>Note:</strong> If both dTap and polio are indicated, dTap-IPV may be used. Immunity screening after HAV immunization is not routinely recommended.¹</td>
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<tr>
<td><strong>Polio</strong></td>
<td>3 doses</td>
<td>Primary immunization with inactivated polio vaccine is recommended for all previously unimmunized SOT candidates and recipients.¹</td>
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</tbody>
</table>
| **IPV** | Dose 2: Four weeks after dose 1 | **Notes:**  
- Booster doses of IPV are not necessary for adults living in Canada except for adults at high risk of exposure. Those at higher risk (e.g., health care workers and laboratory workers) may receive a single lifetime booster dose.¹  
- If available, TdP may be used when both Td and IPV vaccines are indicated. |
| Dose 3: Six months after dose 2. | Immunity screening after immunization is not recommended.¹ |
| **Pneumococcal** | PNEU-C13 followed by PNEUMO-P eight weeks later.  
1 reimmunization  
Five years after the initial doses.¹ (use PNEUMO-P) | There should be at least eight weeks between PNEU-C13 and PNEUMO-P¹². Adults who have already received PNEUMO-P should receive PNEUC13. PNEU-C13 should be administered at least one year after any previously administered dose of PNEUMO-P.²³  
Immunity screening after immunization is not recommended. |
| **Hib** | 1 dose | One dose is recommended for candidates/ recipients of SOT five years of age and older regardless of previous Hib immunization (at least one year after any previous dose).¹  
Immunity screening after immunization is not recommended. |
### Vaccine | Series | Comments
--- | --- | ---
**MenC-ACYW**<br>(18 years to 24 years of age inclusive and those 25 years of age and older at higher risk) | 18 – 24 years of age*: One dose (unless received as an adolescent at 12 years of age or older.) *Booster doses are not indicated. **Increased risk: 18 years of age and older.** (Under lying medical condition) Two doses eight weeks apart **Booster dose every five years if risk continues.** | Recommended for individuals:  
1. 18 – 24 years of age inclusive  
2. Increased risk - 18 years of age and older as listed¹:  
   - Anatomical or functional asplenia including sickle cell disease  
   - HIV infection  
   - Congenital complement, properdin, factor D or primary antibody deficiencies.  
   - Acquired complement deficiency e.g. those receiving eculizumab (Soliris™).  
   - Laboratory workers routinely exposed to Neisseria meningitides. |
**Hepatitis B**<br>HBVD¹ | Three doses administered at 0, 1 and 6 months. Booster if titre is less than 10 IU/mL and retest for anti-HBs one month later¹ | Administer dialysis strength (RECOMBIVAX®) dose.¹ Note: If RECOMBIVAX® is unavailable, use ENGERIX® following the dosage and schedule for hypo-responsive individuals. \**Laboratory Recommendations** Screen for anti-HBs within 1 – 6 months after the third dose. If antibody levels are suboptimal, repeat the series once and retest for anti-HBs within 1 – 6 months after the repeat series.¹ Periodic screening as recommended by the transplant physician taking into account the severity of the immunocompromised state and whether or not the risk of hepatitis B is still present.¹ \**Ordering serology and interpretation of the results is the responsibility of the transplant physician.** |
**Human Papillomavirus Vaccine**<br>HPV (18 – 26 years of age inclusive²) | Three doses administered at 0, 2 and 6 months | Immunity screening after immunization is not recommended. |
**INFLUENZA**<br>(inactivated) | Annually | Administer a dose of inactivated influenza vaccine every fall. Influenza vaccine can be administered as early as three months post-transplant. \**Note:**  
1. Solid organ transplant recipients: Live attenuated influenza vaccine (LAIV) is contraindicated.  
2. Household contacts: Immunize annually with either inactivated influenza vaccine or live attenuated influenza vaccine. Immunity screening after immunization is not recommended.
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| MMR (only susceptible       | One or two doses. If a second dose is       | MMR must be administered at least four weeks prior to transplant.¹  
| adults* pre-transplant)¹     | indicated the interval between doses        | **Not recommended post-transplant**  
|                              | should be at least four weeks.¹            | *Evidence of Measles Immunity:  
|                              | (See Laboratory Recommendations)           | • Individuals born prior to 1970  
|                              |                                              | • Individuals born in 1970 or later  
|                              |                                              | ✓ with a documented history of two doses of measles-containing vaccine OR  
|                              |                                              | ✓ history of laboratory confirmed measles disease OR  
|                              |                                              | ✓ laboratory evidence of measles immunity.  
|                              |                                              | **Laboratory Recommendations**  
|                              |                                              | Routine immunity screening prior to transplant is not recommended because of waning immunity.  
|                              |                                              | Screen for measles and rubella immunity (IgG) one month after the first dose of vaccine  
|                              |                                              | If non-immune and a second dose can be administered, provide a second dose (after consult with the transplant physician) and repeat screening in one month.  
|                              |                                              | Annual screening for immunity is not recommended.  
|                              |                                              | **Ordering serology and interpretation of the results is the responsibility of the transplant physician.**  
| Varicella                   | 1 or 2 doses                                 | *Evidence of Immunity:  
| (chickenpox)                |                                              | • history of chickenpox or shingles OR  
| VZ (only susceptible        |                                              | • history of two doses of varicella vaccine after 12 months of age OR  
| adults* pre-transplant)     |                                              | • laboratory evidence of immunity  
|                              |                                              | Varicella must be administered at least four weeks prior to transplantation.²  
|                              |                                              | **Not recommended post-transplant**  
|                              |                                              | **Laboratory Recommendations**  
|                              |                                              | Routine screen pre-transplant includes varicella IgG testing.  
|                              |                                              | Serology is recommended after one dose of VZ vaccine and if seroconversion is demonstrated consider immune. If non-immune and depending upon discussion with transplant physician either:  
|                              |                                              | • Provide a second dose six weeks after the first dose¹ OR  
|                              |                                              | • Administer no further doses and consider non-immune. Provide PEP if exposed to varicella.  
|                              |                                              | **Ordering serology and interpretation of the results is the responsibility of the transplant physician.**  
| Varicella-Zoster Vaccine    | Adults 50 years of age and older²          | ZOSTAVAX® may be considered pre-transplant for individuals who are varicella positive (i.e., have had chickenpox or shingles or are varicella seropositive with no history of previous varicella vaccine doses³); with no contraindications to the use of live vaccines or ZOSTAVAX® and if the vaccine can be administered four weeks or more prior to the transplant. Individuals should discuss the vaccine with their transplant physician.  
| (Shingles) Var-S            |                                              | ZOSTAVAX® is not available through the provincially funded immunization program. It is available by prescription and may be purchased and administered at local pharmacies.  
|                              |                                              | ZOSTAVAX® is contraindicated post-transplant.  
|                              |                                              | Immunity screening after immunization is not recommended.  

¹ Not recommended post-transplant  
² Laboratory Recommendations  
³ Evidence of Measles Immunity:  
• Individuals born prior to 1970  
• Individuals born in 1970 or later  
  ✓ with a documented history of two doses of measles-containing vaccine OR  
  ✓ history of laboratory confirmed measles disease OR  
  ✓ laboratory evidence of measles immunity.
2. Non-routine Immunizations – Before and/or After Transplant

Note: Non-routine immunizations may be provided using the same schedule after transplant if not completed prior to transplant. Immunization may resume once immunosuppression has been reduced to maintenance levels, usually 3 to 6 months after transplant,\(^1\)\(^4\) and as determined appropriate by the individual’s attending transplant physician. Live vaccines are contraindicated post-transplant.

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<th>Series (if needed)</th>
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| Hepatitis A HAV    | Two doses: Second dose 6 – 12 months after the first dose.                        | Only for those considered at high risk:  
  - Lifestyle risks (e.g. those engaging in oral/anal sex; illicit drug use; MSM)  
  - Chronic liver disease, liver transplantation; chronic liver GVHD following HSCT  
  - Hemophilia A or B (when receiving plasma-derived clotting factors)  
  - Hepatitis A virus researchers and non-human primate handlers  
  - Household/close contacts of children adopted from hepatitis A endemic countries  
  - Susceptible immigrants from endemic countries  
  - Populations/communities at risk of hepatitis A outbreaks or in which hepatitis A is highly endemic (e.g. some aboriginal communities).  
  Note: Provincially funded vaccine is not provided for travelers – refer individuals to local travel clinics. Immunity screening after HAV immunization is not routinely recommended.\(^1\) |
| Rabies RAB         | *Pre-exposure*: days 0, 7, 21 or 28  
  Post-exposure: days 0, 3, 7, 14 and 28  
  Serology every two years if pre-exposure risk continues  
  Booster as indicated depending upon serology results. | *Pre-exposure*: Should be administered intramuscularly only to those considered high risk and should be administered pre-transplant if possible and completed at least 14 days before starting immunosuppressants.\(^1\)  
  Post-exposure: Rabies prophylaxis can be administered intramuscularly at any time before or after transplantation if indicated.  
  Laboratory Recommendations  
  Pre-exposure: Immunity screening is recommended 7 – 14 days after last dose of the series.\(^1\)  
  Post-exposure: Immunity screening is recommended 7 – 14 days after the completion of the vaccine series.\(^1\)  
  Ordering serology and interpretation of the results is the responsibility of the transplant physician. |
| Typhoid Fever TYVI* (inactivated) | 1 dose  
  Booster every three years if at continued high risk.\(^1\) | *Only for those considered high risk. Individuals at high risk include household and/or intimate contacts of a typhoid carrier and laboratory workers who manipulate Salmonella typhi. Immunity screening after immunization is not recommended. |

3. Ongoing Recommendations after Transplant

Note: Immunization may resume once the individual is on baseline immunosuppression, usually 3 - 6 months after transplant,\(^1\) and as determined appropriate by the individual’s attending transplant physician. If immunizations were not completed prior to transplant, complete the series for inactivated vaccines as previously indicated. Live vaccines, such as MMR, VZ and live attenuated influenza vaccine are contraindicated after transplant.
References


