ALBERTA BLOOD AND MARROW TRANSPLANT PROGRAM

NEW GUIDELINES FOR THE IMMUNIZATION OF HEMATOPOIETIC STEM CELL TRANSPLANT (HSCT) RECIPIENTS

JULY 1, 2013
WHY RE-IMMUNIZE POST-HSCT PATIENTS?

The magnitude and duration of vaccine-induced immunity is reduced in immunocompromised individuals.

- this means that even if an HSCT recipient was immunized at any time prior to the transplant, we must assume that the transplant wipes out immunologic memory.

- there should be no assumptions made about susceptibility or protection, and complete re-immunization is recommended.
RE-IMMUNIZATION IS IMPORTANT!

• HSCT recipients are at increased risk of certain vaccine-preventable diseases, especially streptococcus pneumoniae.

• It is strongly recommended that household contacts should be up to date with their immunizations including annual influenza immunization to reduce the risk of disease transmission to the transplant recipient.

• Immunizations should occur at public health clinics only, not at pharmacies or family doctors’ offices.
WHY THE NEW SCHEDULE?

It is known that the majority of HSCT recipients will have a detectable antibody response to vaccine 6 months post-transplant, and this continues to increase over the next 12 to 24 months.

Therefore:

• re-immunization will now commence at 6 months post-transplant.
• serology will be done at 36 months post-HSCT to monitor antibody response and boosters will be given as needed.
WHERE DO WE FIND THE NEW GUIDELINES?

- Transplant recipients should be immunized according to the Alberta Immunization Policy and Alberta Health Services Immunization Standards:
  
  [www.health.alberta.ca/professionals/manuals.html](http://www.health.alberta.ca/professionals/manuals.html)

- The new guidelines were developed based on international guidelines.

- The schedule is the same for autologous and allogeneic transplants, as well as adult and pediatric populations.
HIGHLIGHTS OF THE NEW SCHEDULE

- **6 mo** post-transplant: start **non-live** immunizations (pneumococcal immunization only), and influenza immunization.
- **12 mo**: continue with other **non-live** immunizations
- **24 mo** post-transplant: start **live** immunizations if no contraindications exist.
- **36 mo**: serology for tetanus and measles, rubella serology only ordered in women of childbearing age. Hepatitis B serology in adults is only ordered if patient is in a high risk group, or is a health care worker. Boosters ordered based on serology.
NEW SCHEDULE START DATE

GO-LIVE DATE ~ JULY 1, 2013

• All post-HSCT patients will commence on the new schedule from the go-live date onwards.

• Patients transplanted from July 2012 to December 2012 will be referred to public health to commence non-live immunizations prior to one year post-HSCT, and can be transitioned into the new schedule by public health using minimum spacing vaccine schedules.
## SCHEDULE AT A GLANCE

<table>
<thead>
<tr>
<th>Vaccine Preventable Disease</th>
<th>6 mo</th>
<th>7 mo</th>
<th>8 mo</th>
<th>12 mo</th>
<th>14 mo</th>
<th>24 mo</th>
<th>27 mo</th>
<th>36 mo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Streptococcus pneumoniae</td>
<td>Pneu-C13</td>
<td>Pneu-C13</td>
<td>Pneu-C13</td>
<td>Pneumo-P</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neisseria meningitdis</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>(Only if at high risk)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diphtheria, Tetanus, Pertussis, Polio, Haemophilus influenzae type B</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>Serology (TAT Only)</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>Serology (only if at high risk)</td>
</tr>
<tr>
<td>MMR</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Varicella</td>
<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

*Booster prn*
IMPORTANT REMINDERS!

CLEARANCE FOR NON-LIVE IMMUNIZATIONS:

• Patients may commence re-immunization and receive non-live immunizations even if they are currently on immunosuppressants such as Prednisone and/or Cyclosporine.

• Rationale: patients on immunosuppression for graft vs. host disease (GVHD) are most susceptible to pneumococcal infections, and some vaccine response is better than no protection at all, if left un-immunized.
Re-immunization guidelines are the same for both autologous and allogeneic transplant recipients.

- However, re-immunization of autologous patients may occur at the discretion of their hematologist.
DELAY OF IMMUNIZATIONS POST-RITUXIMAB:

HSCT recipients who are treated with Rituximab, should have ALL immunizations postponed until at least 6 months after the last dose of Rituximab.

- this is due to the medication’s prolonged depletion of normal B cells which impairs the humoral response and may decrease the ability to mount a protective antibody response from the immunizations.
CLEARANCE FOR LIVE IMMUNIZATIONS

- Live immunizations are contraindicated in patients with relapsed disease, or active GVHD.
- Patient must stay on anti-viral medication (Valacyclovir/Acyclovir) until 1 day before first Varicella immunization. AND patient should not re-start this medication after receiving the initial Varicella immunization dose.
- Only Varicella vaccine should be used. The Zoster (Shingles) vaccine is contraindicated in the post-HSCT population.
CLEARANCE FOR LIVE IMMUNIZATIONS con’t…

• Patient must be off immunosuppressive medications for at least 3 months, and have had no blood products or IVIG for 7-10 months prior to administering live vaccines.

*See next slide for table regarding delay of live immunizations post blood product administration.*
## GUIDELINES FOR DELAY OF LIVE IMMUNIZATIONS AFTER BLOOD PRODUCTS

<table>
<thead>
<tr>
<th>Product</th>
<th>Dose</th>
<th>Interval (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intravenous immune globulin (IVIg)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>160 mg/kg</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>320 mg/kg</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>640 mg/kg</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>&gt; 640-1280 mg/kg</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>&gt; 1280-2000 mg/kg</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Plasma and platelet products</td>
<td>10 mg/kg</td>
<td>7</td>
</tr>
<tr>
<td>Reconstituted RBCs</td>
<td>10 mg/kg</td>
<td>3</td>
</tr>
<tr>
<td>Washed RBCs</td>
<td>10 mg/kg</td>
<td>0</td>
</tr>
</tbody>
</table>

As per Public Health Agency of Canada (PHAC) - Canadian Immunization Guide (Part 1: Key Info)
WHO INITIATES RE-IMMUNIZATION?

Clearance for **non-live** immunizations at 6 months post-HSCT, and for **live** immunizations at 24 months post-HSCT must be completed by the:

- **Transplant physician or nurse practitioner** for allogeneic transplants

- **Primary physician (Hematologist/ Oncologist) or nurse practitioner** for autologous transplants.
THE PROCESS...

Letters/ orders that correspond to action required at each immunization time point will be built into ARIA (adult patients only) as a note template, and will be standard across the province.

- the pediatric transplant centers will utilize the same letters, but will have their own method of creating them as they do not use the ARIA system
- letters will indicate patient demographics, which transplant center the letter is from, the date that the letter was generated, and all contact info for the transplant centers.
HOW TO FIND LETTER TEMPLATES IN ARIA

In “Notes”
Click “new”
HOW TO FIND LETTER TEMPLATES IN ARIA

Click “Template”
HOW TO FIND A LETTER TEMPLATE IN ARIA

Selection of BMT- Immunization Letters appear

Double click the one you require

Click “Approve”

Click “Print”

BMT Immunization letter prints off, and displays in Notes for future reference
Letters for immunization clearance will be signed by the transplant/primary physician or nurse practitioner and given to the patient at a clinic visit as an “order” for public health to proceed.

The patient is then responsible to make their immunization appointment at their local public health unit.
REFERRAL TO PUBLIC HEALTH

The non-live immunization clearance letter will also be faxed to the Communicable Disease Units (CD unit) in Edmonton or Calgary to indicate that the patient has been cleared to proceed.

• CD unit then routes referral to appropriate local public health unit closest to where the patient resides.

Edmonton CD Unit (Edmonton area and north):
780-342-0248

Calgary CD Unit (Calgary area and south):
403-955-6755
Letters for *live* immunization clearance will be signed by the transplant/primary physician or nurse practitioner and given to the patient at a clinic visit as an “order” for public health to proceed.

The patient is then responsible to make their immunization appointment at their local public health unit, and will bring the *live* immunization clearance letter with them to their immunization appointment.

Transplant centers will no longer fax referral for *live* immunizations to the CD unit when a patient is granted clearance to proceed.
REFERRAL TO PUBLIC HEALTH con’t…

There will no longer be an additional referral for live immunization required prior to dose # 2 of the live immunizations.

• the philosophy behind this is that the transplant center would NOT grant clearance for initial live immunizations if there was any is ANY concern with a post HSCT patient's health status at 24 months.

In addition, there will no longer be a 30 day limit between live immunization clearance being granted, and when the patient can present to public health for immunization.
BOoster Dose(s)

• Ordering serology needed to assess immunity following immunization, interpretation of the serology results and ordering of further immunization is the responsibility of the transplant physician and/or nurse practitioner for allogeneic transplants and by the primary physician (hematologist/oncologist) and/or nurse practitioner for autologous transplants.
BOOSTER DOSE(s) con’t…

• Clinic nurses will order serology as per BMT program standard guidelines and ensure that the transplant or primary physician reviews the titer results.
• The clinic nurse will then obtain an order for the booster dose(s) required from the transplant or primary physician.
• If a booster dose is required, the clinic nurse will mail the letter titled “non-live and live immunization booster dose needed” to the patient to indicate that they require a booster dose. This letter will indicate which booster dose(s) are required and will serve as an “order to proceed”.
The patient will make an appointment at their local public health unit to receive the booster dose. The patient will present the letter indicating which immunizations require a booster at their appointment. This letter is vital in communicating which immunization booster(s) are required and immunizations for booster dose(s) cannot occur without the letter.

If no booster dose is required, the clinic nurse will document that all immunizations are complete in the progress notes.
IMMUNIZATION PROCESS

NON-LIVE

Clearance granted at 6 mo

Clearance letter faxed to Calgary or Edmonton Communicable Disease (CD) Unit at 6 mo post
Edmonton CD Unit: 780-342-0248
Calgary CD Unit: 403-955-6755

CD Unit notifies local public health unit that pt cleared

Pt makes appointment at local public health unit

Pt takes letter to local public health unit and gets immunized

See below, after immunization

LIVE

Clearance granted at 24 mo

Pt makes appointment at local public health unit

Pt takes letter to local public health unit and gets immunized

See below, after immunization

AFTER IMMUNIZATION

Serology ordered at 36 mo

Titres assessed and booster ordered pm

Letter sent to pt indicating they require booster(s)

Pt makes appointment at local public health unit

Pt takes letter to local public health unit and gets immunized

Documentation all immunizations complete
PROCESS FOR BOOSTER DOSE(s)
Serology ordered at 36 months post-transplant as per follow-up guidelines

Is booster dose required?
- Yes: The primary/clinic nurse mails letter to pt indicating booster dose(s) they require.
  - Pt makes appt at their local public health unit to receive booster dose(s).
  - Clinic nurse documents that all immunizations are complete.
- No: Clinic nurse documents that all immunizations are complete.
WHAT IS THE ROLE OF THE IMMUNIZATION LEAD AT THE TRANSPLANT CENTERS?

The “Immunization Lead” at the transplant centres will:

• be the point of contact for public health and/or hematology clinic staff when inquiring about post-HSCT immunization related questions/concerns.

SEE NEXT SLIDE FOR CONTACT DETAILS
TRANSPLANT CENTRES CONTACTS

FOR QUESTIONS OR CONCERNS PLEASE CALL:

• Cross Cancer Institute (CCI)
  Phone: 780-432-8677       Fax: 780-989-4343
  email: ACB.BMTCrossCancerInstitute@albertahealthservices.ca

• Tom Baker Cancer Center (TBCC)
  Phone: 403-521-3463       Fax: 403-521-3644
  email: ACB.TBBMTIImmunization@albertahealthservices.ca

• Alberta Children’s Hospital
  Phone: 403-955-2247       Fax: 403-955-7393
  email: pedsBMT.IImmunizations@albertahealthservices.ca