

Paediatric and Adult Immunizations



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Module 7

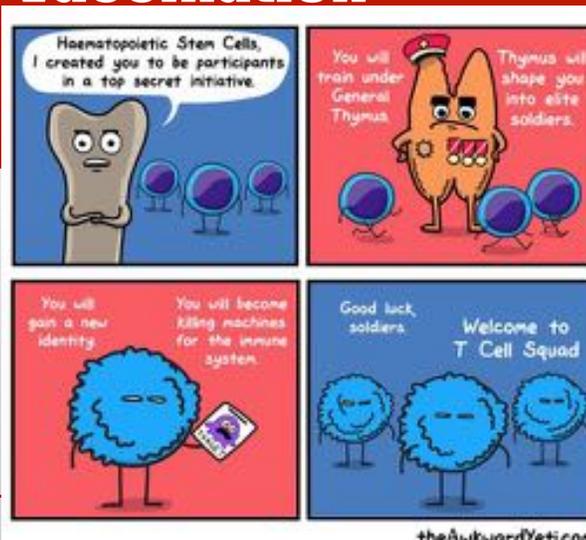
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1. Principles of Immunity and Vaccination
2. Getting to know Vaccines
3. Immunization Procedures
4. Case Studies
5. Barriers to Vaccination
6. Consent and Documentation
7. Other Vaccines
8. Reporting Adverse Events
9. Needle Stick Injury Procedure
10. Cold Chain Procedure
11. Emergency Measures

Outline

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Principals of Immunity and Vaccination

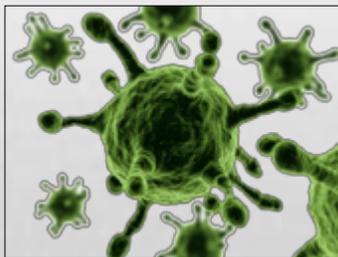


PART 1

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What is the purpose of immunity?

- Recognize self from non-self
- Recognize and eliminate infectious agents such as viruses and bacteria
- Prevent infection in the future



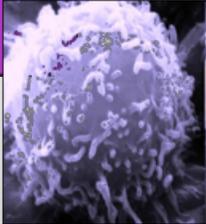
Principles: Immunity

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IMMUNE SYSTEM
part 3
THE CELL-MEDIATED RESPONSE

- <https://www.youtube.com/watch?v=GIJK3dwCWCw>
- <https://www.youtube.com/watch?v=2DFN4IBZ3rI>
- <https://www.youtube.com/watch?v=rd2cf5hValM>



Immunology 101

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Getting to Know Vaccines



PART 2

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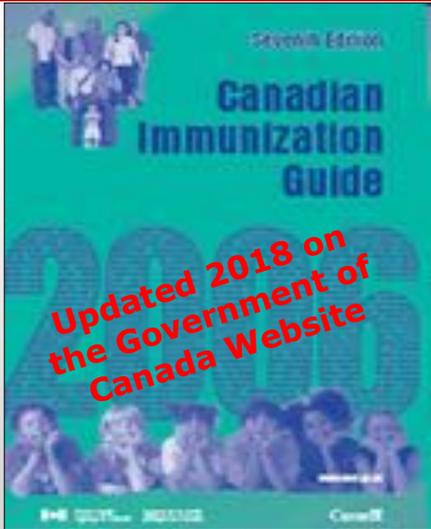
Live vs DEAD

- Induce immunity by actively replicating within the host
- Vaccine strains are weakened so that infection is either not apparent or very mild (*attenuated*)
- Mimics natural infection
- Leads to T and B cell activation
- Contraindicated in patient with immunodeficiency
- Together or 4 weeks apart

- Contain killed (*inactivated*) bacteria or virus
- Activate innate responses at their site of injection
- Need to be injected into well vascularised muscle to be effective
- Most always require multiple doses
- May require periodic supplemental doses to increase (boost) antibody levels

Types of Immunizing Products

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Updated 2018 on the Government of Canada Website

Now lets review the online guide...

<https://www.canada.ca/en/public-health/services/canadian-immunization-guide.html>

Canadian Immunization Guide

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(T)Clostridium tetani

- Direct-contact
- 99% efficacy

(d)C. Diphtheriae

- Direct-contact & airborne-contact
- 97% efficacy

(ap)Bordetella pertussis

- Airborne-contact & direct-contact
- 80%-85% efficacy

(IPV)Poliovirus

- Faecal-oral contact
- 100% efficacy

Haemophilus influenzae Type B

- Airborne-contact & direct-contact
- 95%-100% efficacy



Routine:
4-dose schedule at 2, 4, 6 & 18 months. The series should start no earlier than 6 weeks of age.

Tdap-IPV-Hib
(PediaceL)

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(T)Clostridium tetani

- Direct-contact
- 99% efficacy

(d)C. Diphtheriae

- Direct-contact & airborne-contact
- 97% efficacy

(ap)Bordetella pertussis

- Airborne-contact & direct-contact
- 80%-85% efficacy

(IPV)Poliovirus

- Faecal-oral contact
- 100% efficacy



Routine: 1 dose (4y-6y)

Tdap-IPV
(Adacel-Polio)

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(T)Clostridium tetani

- Direct-contact
- 99% efficacy

(d)C. Diphtheriae

- Direct-contact & airborne contact
- 97% efficacy

(ap)Bordetella pertussis

- Airborne-contact & direct-contact
- 80%-85% efficacy



**Routine: 1 dose
14y-16 y (10y after the
4-6y booster)**

**Tdap
(Adacel)**

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(T)Clostridium tetani

- Direct-contact
- 99% efficacy

(d)C. Diphtheriae

- Direct-contact & airborne-contact
- 97% efficacy



Routine: 1 dose Q10y

**Td
(Td Adsorbed)**

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Streptococcus pneumoniae

- Airborne-contact & direct-contact
- 89%-97% efficacy

SE: redness, swelling, soreness

Routine: 3-dose schedule at 2 & 4 months and 12 months of age for all low risk children < 2 years of age.



High Risk Criteria:

Pneumococcal Conjugate **(Pnevniar)**

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- Polysaccharide format:
Streptococcus pneumoniae
- Airborne-contact & direct-contact
 - 50%-80% efficacy among elderly and specific groups

Routine: 65y and booster 5 y later

High risk Criteria:

- 2y-64y



Pneumococcal Polysaccharide 23 **(Pneumovax 23)**

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Rotavirus

- Faecal-oral contact
- 85%-98% efficacy
- **NEW!** 5-valent vaccine
- **NEW!** 3-dose series

Routine:

- **3-doses scheduled at 2, 4 and 6 months.**
- **Doses must be at least 4 weeks apart**
- **Do not initiate if infant is over 15 wks of age**
- **Completion of series before 8 mos of age.**



Live

Rotavirus
(Rotateq)

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N. Meningitidis

- Airborne-contact & direct-contact
- 97% efficacy

Routine: Children aged 1 year old should receive a single dose

High Risk Criteria:

- 2 to 4 doses 2m apart



Meningococcal Conjugate C
(Menjugate)

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N. Meningitidis

- Airborne-contact & direct-contact
- 80%-85% efficacy within 3-4 years of vaccination

SE: redness, swelling, soreness at injection site

Routine: Students in grade 7 are eligible to receive a single dose of Men-C-ACYW.

High Risk Criteria:



Meningococcal Conjugate ACYW-135 (Menactra)

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Measles virus

- Airborne-contact
- 100% efficacy

SE: pain, redness at injection site, low-grade fever and rash

Mumps virus

- Airborne-contact & direct-contact
- 76%-95% efficacy

Rubella virus

- Airborne-contact
- 97% efficacy

Routine: The 1st dose of MMR should be given on or after the 1st birthday. The 2nd dose should be given as MMRV at 4-6 years of age.

Live



Outbreak of Mumps in SLZ in 2017

Measles, Mumps, Rubella (MMRII, Priorix)

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Varicella zoster

- Airborne-contact
- 94.4%-98.3% efficacy

SE: pain, swelling, redness at injection site, low-grade fever and varicella like rash (3%-5% of vaccines)

Routine: Children 15 months of age should receive the 1st dose. The 2nd dose should be given as MMRV at 4-6 years of age.



Varicella
(Varivax III, Varilrix)

Live

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Measles virus

- Airborne-contact
- 100% efficacy

Mumps virus

- Airborne-contact & direct-contact
- 76%-95% efficacy

Rubella virus

- Airborne-contact
- 97% efficacy



Varicella zoster

- Airborne-contact
- 94.4%-98.3% efficacy

Routine: given at 4-6 years of age.

Live

Measles, Mumps, Rubella, Varicella
(ProQuad, Priorix-Tetra)

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Hepatitis B Virus

- Direct-contact
- 95%-100% efficacy pre-exposure

SE: irritability, headache, fatigue,
pain/redness at injection site

Routine: 2-dose*
schedule for grade 7
students give 4-6 months
apart depending on the
product used



Hepatitis B

(Recombivax)

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1. Infants born to HBV-positive carrier mothers:
 - premature infants weighing <2,000 grams at birth (4 doses)
 - premature infants weighing ≥2,000 grams at birth and full/post term infants (3 doses)
2. Children <7 years old whose families have immigrated from countries of high prevalence for HBV and who may be exposed to HBV carriers through their extended families (3 doses)
3. Household and sexual contacts of chronic carriers and acute cases (3 doses)
4. History of a sexually transmitted disease (3 doses)
5. **Intravenous drug use** (3 doses)
6. **Liver disease** (chronic), including hepatitis B and C (3 doses)
7. Awaiting liver transplants (2nd and 3rd doses only)
8. Men who have sex with men (3 doses)
9. **Multiple sex partners** (3 doses)
10. Needle stick injuries in a non-health care setting (3 doses)
11. On renal dialysis or those with diseases requiring frequent receipt of blood products (e.g., haemophilia) (2nd and 3rd doses only)

Hepatitis B (High Risk Criteria)

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**Influenza A virus,
Influenza B virus**

- Airborne-contact
- 30% efficacy against influenza-like illness (80% efficacy against laboratory confirmed influenza)



Routine: Age 6m-9y should received 2 doses 4w apart for initial dose then annually prior to flu season



Influenza

(FluLaval Tetra, Fluzone Quadrivalent; FluMist Quadrivalent and Fluzone trivalent – 2018/19)

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Herpes zoster

- Direct-contact & rarely airborne-contact
- 51% efficacy
- 65.5% preventing PHN

SE: pain, swelling, redness to injection site

Publicly Funded: 65y-70y
Self-Pay: May have age 50+



Live

Herpes Zoster (shingles)

(Zostavax II & Shingrix)

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Human papillomavirus

- Direct-contact
- 99% protection with 3 dose series
- quadrivalent and 9-valent preparations available



Routine:

- **Healthy males/ females 9-14 yrs:**
 - 2 doses (0m and 6m)
- **Healthy males/ females >15yrs:**
 - 3 doses (0m, 2m, 6m)



Human papillomavirus
(Cervarix, Gardasil-4, Gardasil-9)

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Country/Region	Vaccine	Age Group	Doses	Notes
USA	HPV4 (Cervarix)	9-14 yrs	2	...
USA	HPV9 (Gardasil-9)	9-14 yrs	2	...
USA	HPV9 (Gardasil-9)	>15 yrs	3	...
UK	HPV4 (Cervarix)	12-13 yrs	2	...
UK	HPV9 (Gardasil-9)	12-13 yrs	2	...
Canada	HPV4 (Cervarix)	9-14 yrs	2	...
Canada	HPV9 (Gardasil-9)	9-14 yrs	2	...
Canada	HPV9 (Gardasil-9)	>15 yrs	3	...

High Risk Vaccine Program

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Module 7 - Paediatric and Adult Immunizations

Age Group	Sex	Age	Notes
Newborn	Both	1	<ul style="list-style-type: none"> 1. Hib 2. Polio 3. Hepatitis B 4. Pneumococcal
	Both	2	<ul style="list-style-type: none"> 1. Hib 2. Polio 3. Hepatitis B 4. Pneumococcal 5. Rotavirus
Infant	Both	3	<ul style="list-style-type: none"> 1. Hib 2. Polio 3. Hepatitis B 4. Pneumococcal 5. Rotavirus 6. MMR
	Both	4	<ul style="list-style-type: none"> 1. Hib 2. Polio 3. Hepatitis B 4. Pneumococcal 5. Rotavirus 6. MMR 7. Meningococcal

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Preschool	Both	5	<ul style="list-style-type: none"> 1. Hib 2. Polio 3. Hepatitis B 4. Pneumococcal 5. Rotavirus 6. MMR 7. Meningococcal 8. Varicella
Preschool	Both	6	<ul style="list-style-type: none"> 1. Hib 2. Polio 3. Hepatitis B 4. Pneumococcal 5. Rotavirus 6. MMR 7. Meningococcal 8. Varicella 9. Typhoid
Primary School	Both	7	<ul style="list-style-type: none"> 1. Hib 2. Polio 3. Hepatitis B 4. Pneumococcal 5. Rotavirus 6. MMR 7. Meningococcal 8. Varicella 9. Typhoid 10. Tetanus
High School	Both	12	<ul style="list-style-type: none"> 1. Hib 2. Polio 3. Hepatitis B 4. Pneumococcal 5. Rotavirus 6. MMR 7. Meningococcal 8. Varicella 9. Typhoid 10. Tetanus 11. HPV

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Immunization Procedures



PART 3

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Medical Directive
Authority to Administer Immunizations as per the Publicly Funded Immunization Schedule for Ontario by Nurses Working in First Nations Communities in FNHO-Ontario Region

Medical Directive: CD-000-2017-C
Activation Date: January 1, 2018
Review (due by): January 31, 2019
Responsible Party: Dr. Anoop Singh, MD (COP) FNHO-ON, Regional Medical Officer, (for Class, NP (NPs), Director of Nursing)

Objectives/Outcomes:

- The administration of immunizations in accordance with the Ontario Publicly Funded Immunization Schedule, FNHO-Ontario Region Immunization Protocol which includes the current Canadian Immunization Guide and Regional Policies and The College of Nurses of Ontario's Nursing Standards and Guidelines;
- The management of post-immunization anaphylaxis in accordance with the Canadian Immunization Guide and FNHO-Ontario Region Basic Management of Post-immunization Anaphylaxis in Non-Hospital Setting.

Informed Consent
Registered Nurses (RNs) and Registered Practical Nurses (RPNs) will obtain informed consent as per the College of Nurses of Ontario Practice Guidelines on Consent with additional support from the FNHO-Ontario Region Immunization Protocol.

Responsible Clients/Patients
Individuals, families or groups living or working in First Nations communities in Ontario, excluding provincially and/or federally funded health care facilities where care is managed and delivered under another physician's supervision. Any immunizations in these facilities would be provided under the authority of the supervising physician and would not be covered by the medical directive.

Authorized Implementers
The medical directive may be implemented by nurses who:

- are RNs or RPNs working in First Nations communities in Ontario, who are in good standing with the College of Nurses of Ontario, with no suspensions;
- are working in a Community Health Nursing role;
- have successfully completed the FNHO-Ontario Region Immunization Orientation and Competency Certification, and attended all mandatory immunization education sessions to maintain competency.

All nurses using this directive must be:

- Knowledgeable about the current FNHO-Ontario Region Immunization Protocol and other related policies/procedures and practice standards;
- able to apply their knowledge, judgment and skills in safely administering the most current Publicly Funded Immunization Schedule for Ontario;
- Remain up-to-date on changes to the Publicly Funded Immunization Schedule for Ontario as updated by the Ministry of Health and Long-Term Care (MHLTC);
- Report up-to-date on changes to the FNHO-Ontario Region Immunization Protocol including the current Canadian Immunization Guide and approved regional policies;
- Knowledgeable and remain up-to-date on Early Vaccine Reactions including Anaphylaxis found in the Canadian Immunization Guide, Part 2 - Vaccine Safety and the FNHO-Ontario Region Basic Management of Post-immunization Anaphylaxis in Non-Hospital Setting;
- Currently verified in CPR.

HC FNHO-ON-CD-140 1 of 2 Last Revised: December 2017

Medical Directive:

- Is given in advance by physicians/ordering authorizers to enable an implementer to decide to perform the ordered procedure(s) under specific conditions without a direct assessment by the physician or authorizer at the time.

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Module 7 - Paediatric and Adult Immunizations

Publicly Funded Immunization Schedules for Ontario – December 2016
Publicly funded immunizations must be provided with no charge, full/double and must be free of charge

Vaccine	1 Month	2 Months	3 Months	4 Months	5 Months	6 Months	9 Months	12 Months	15 Months	18 Months	24 Months	3-5 Years
DTaP-IPV-Hib Diphtheria, Tetanus, Pertussis, Polio, Haemophilus influenzae type b	+	+	+			+						
Paen.C-13 Pneumococcal Conjugate 13	+	+										
Rot.1 Rotavirus		+		+								
Men.C.C Meningococcal Conjugate C												
MMR Measles, Mumps, Rubella												
Var Varicella												

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Routine Schedule: Children Starting Immunization in Infancy

Vaccine	Age	2 Months	4 Months	6 Months
DTaP-IPV-Hib Diphtheria, Tetanus, Pertussis, Polio, Haemophilus influenzae type b		+	+	+
Paen.C-13 Pneumococcal Conjugate 13		+	+	
Rot.1 Rotavirus		+	+	
Men.C.C Meningococcal Conjugate C				
MMR Measles, Mumps, Rubella				
Var Varicella				



Lets take a closer look @ Routine Schedule

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Publicly funded vaccines may be provided only to eligible individuals and/or to the use of drugs

Catch-up Schedule 1: Children Starting Immunization between 7-17 Years

Vaccine	Age	1st Visit		2nd Visit		3rd Visit		4th Visit	5th Visit	6th Visit	7th Visit	8th Visit
		on or after 2000/Sep/01	on or prior to 2000/Aug/01	on or after 2000	on or prior to 2000	on or after 2000	on or prior to 2000					
Tdap-IPV	7-17	◆	◆	◆	◆							
MMRV	7-17	■	■									
MMR	7-17			■	■							
Var	7-17			■								
Men-C-C	7-17	■										
HB	7-17											
Men-C-ACTW	7-17											

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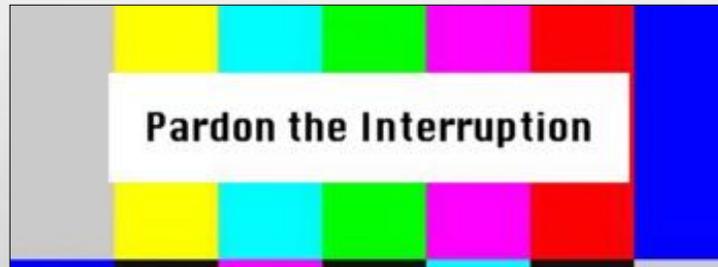
Catch-up Schedule 2: Children Starting Immunization between 7-17 Years

Vaccine	Age	1st Visit			
		If child is <13 years and born		If child is ≥13 years and born	
		on or after 2000/Sep/01	on or prior to 2000/Aug/01	in or after 2000	in or prior to 2000
Tdap-IPV	7-17	◆	◆	◆	◆
MMRV	7-17	■	■		
MMR	7-17			■	■
Var	7-17			■	
Men-C-C	7-17	■			
HB	7-17				
Men-C-ACTW	7-17				

Lets take a closer look @ Catch-up Sched 2

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“Interruption of a series of vaccinations for any reason does not require starting the series over again, regardless of the interval elapsed.”



General Principle

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Case Studies



PART 4

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- Nipin is 6 months old and attends the clinic for her well child visit with her mother. According to her chart she is up to date with her immunizations. Which immunizations would you provide at this visit?



- Which vaccines would you review with the family for her next visit?

Case Study #1

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- Ricky, 12 months, is brought in for his well child visit with his parents. You notice that he missed his 4 and 6 month well child visits and immunizations.
- What does Ricky require for his immunization catch-up?



- Which vaccines would you review with the family for his next visit?

Case Study #2

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- Ruby, 65 years of age attends the clinic today for a periodic health exam. She said she was watching an episode of Dr. Oz and he talked about vaccines for adults. She would like to know what she could receive.
- What immunizations would you discuss with her given her age?

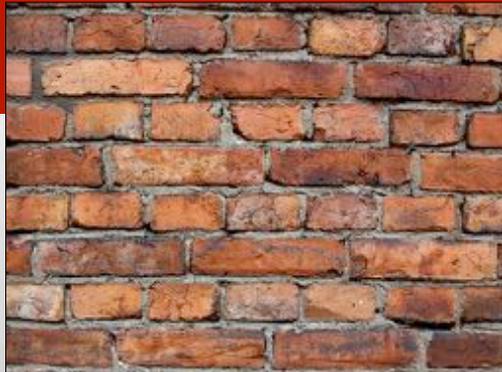


What else would you want to ask her?

Case Study #3

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Barriers to Vaccination



PART 5

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- Immunization service should be responsive to the needs of vaccine recipient.
- When feasible, providers should schedule immunization appointments in conjunction with appointments for other health services.

Barriers to Immunization

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- **Are vaccines safe?**
 - At least 10 years of research to be approved by Health Canada
 - Vaccines used in Canada are safe and effective.
 - Furthermore, vaccines are readily monitored
- **Will vaccines make me sick?**
 - No
- **What is found in vaccines?**
 - Dead or weakened viruses or bacteria
 - Adjuvants which help the body's immune system respond better to the vaccine
 - Additives (Gelatin) and preservatives which help to maintain the quality and effectiveness of the vaccine



<https://www.youtube.com/watch?v=OgpfNScEd3M>

Anti-vaccine movement

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Effects of disease*			Side effects of vaccine
Pre-vaccine incidence	Post-vaccine incidence		
<p>Diphtheria Symptoms result from local infection of the respiratory tract (which may lead to breathing difficulties) or of the skin or mucosal surfaces, or from dissemination of diphtheria toxin, which damages the heart and central nervous system. The case fatality was about 5% to 10%, with highest death rates occurring in the very young and the elderly.</p>			<p>DTaP/1PV(Hib) vaccine: serious adverse events following immunization are rare. The most common adverse reactions are redness, swelling and pain at the injection site. Systemic reactions such as fever and irritability are less common. Redness and swelling greater than 3.5 cm diameter, with minimal pain, are more common in children receiving the fifth consecutive dose of vaccine at 4 to 6 years of age, and have been reported in up to 14% of children. In older persons receiving the Td booster, injection site reactions are reported by about 10% of recipients.</p>
<p>5-year period: 1925-1929 Avg. annual rate: 84.2 Peak annual no: 9,010 cases</p>	<p>5-year period: 2000-2004 Avg. annual rate: 0 Peak annual no: 1 case</p>		

Comparison of Diphtheria vs Vaccination

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Effects of disease*		Side effects of vaccine
Pre-vaccine incidence	Post-vaccine incidence	
<p>Measles Complications such as bronchopneumonia and otitis media occur in about 10%. Encephalitis occurs in 1/1,000 cases (fatal in 15% and neurologic sequelae in 25%). Subacute sclerosing panencephalitis is a rare but fatal complication. Case fatality < 0.05%. With 2-dose schedule, indigenous measles has been eliminated in Canada.</p>		<p>Measles vaccine is given in combination with mumps and rubella (MMR). MMR vaccine: Malaise and fever, with or without a non-infectious rash in about 5%; up to 2% of recipients may develop parotitis, about 5% have swollen glands, stiff neck or joint pains. Transient arthralgias or arthritis may occur and are more common in post-pubertal females.</p> <p>About 1/30,000 develop transient thrombocytopenia, 1/1 million develop encephalitis.</p>
<p>5-year period: 1950-1954 Avg. annual rate: 349.1 Peak annual no: 61,370 cases</p>	<p>5-year period: 2000-2004 Avg. annual rate: 0.2 Peak annual no: 199 cases</p>	

Comparison of Measles vs Vaccination

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Consent and Documentation



PART 6

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- To obtain informed consent for the administration of immunizations parent/guardian or individual must be given information about:
 - the disease related to the vaccine,
 - the component of the vaccine,
 - the immune process and
 - information about the immunization schedule for the vaccine.

Informed Consent

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Health Canada / Santé Canada

Immunization Documentation and Consent

(If any case form is to be filled out for each immunization visit)

Client's Name (Last name, first name, middle name)		
ECRB (JA, NOK, etc.)	Enter additional client information on page 2	
Immunization Screening Questions: Community Health Nurse to discuss with client/caregiver & document by appropriately checking:	Date (dd/mm/yyyy)	Provider Initials
1. Do we need to make any corrections to your client's name or date of birth? If so, what changes?	<input type="checkbox"/>	<input type="checkbox"/>
2. Have you, the client received any vaccine(s) that we do not have stock?	<input type="checkbox"/>	<input type="checkbox"/>
3. Have you, the client received any vaccine(s) in the past 4 weeks?	<input type="checkbox"/>	<input type="checkbox"/>
4. Have you, the client ever had a serious reaction to a vaccine? (i.e. Guillain-Barre difficulty breathing or swallowing, rash, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
5. Are you, the client feeling ill today? If yes, tell me about your, the client's symptoms (fever? loss of appetite? etc.)	<input type="checkbox"/>	<input type="checkbox"/>
6. Do you, the client have any allergies? (antibiotics, egg proteins, previous vaccines, latex rubber, adhesive band-aids, rubber/glass or steel)	<input type="checkbox"/>	<input type="checkbox"/>
7. Do you, the client take any medications on a regular basis? (prescription, over-the-counter, herbal, traditional or herbal, natural medicines)	<input type="checkbox"/>	<input type="checkbox"/>
8. Do you, the client have any health concerns that require regular visits to a health care professional? (i.e. on a long-term diet, without a spleen, immune-compromised, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
9. Have you, the client received any blood products/transfusions in the past year?	<input type="checkbox"/>	<input type="checkbox"/>
10. Is it possible that you, the client could be pregnant? (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>

Immunization Screening Questions

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Client Consent for Immunization											
<p>I have read or had explained to me information about the vaccine(s) that Lisa Child will be receiving.</p> <p>I have had the chance to ask questions, which were answered to my satisfaction.</p> <p>I understand that personal health information collected on this form may be put into a database &/or shared with another health care provider(s), if that is required for my/our child's care.</p> <p>I understand the risks and benefits associated with and consent to receive the vaccine(s).</p> <p>I agree that my/our child's complete immunization history contained in the PHRI may be shared with the relevant Public Health Unit for the purpose of updating my/our immunization history for school attendance in accordance with Regulation 444 of the Immunization of School Pupils Act.</p>	<p>Family(s) Being Given:</p> <p>1. _____</p> <p>2. _____</p> <p>3. _____</p> <p>4. _____</p> <p>5. _____</p>	<p>Form of Consent:</p> <p><input type="checkbox"/> Written <input type="checkbox"/> Verbal</p>									
	<p>Date: _____</p>	<p>Relationship:</p> <p><input type="checkbox"/> Parent <input type="checkbox"/> Caregiver</p> <p><input type="checkbox"/> Substitute Decision Maker</p>	<p>Print Name of Person Giving Consent:</p> <p>_____</p>								
	<p>Signature of Person Giving Consent:</p> <p>_____</p>		<p>Provider Initials:</p>								
	<p>Mandatory Nursing Actions: Check and show when completed. (If required, document in Nursing Notes below)</p> <table border="1"> <tr> <td>Injectable not prepared & available</td> <td>Teach signs & symptoms of reaction</td> <td>Follow immunization card (if available)</td> </tr> <tr> <td>Client's immunization history uncertain</td> <td>Check management of other side effects</td> <td>Post appointment reminder (pm)</td> </tr> <tr> <td>Teach benefits & risks of vaccination</td> <td>All nursing immunizations completed</td> <td>Update next post-visit (if applicable)</td> </tr> </table>			Injectable not prepared & available	Teach signs & symptoms of reaction	Follow immunization card (if available)	Client's immunization history uncertain	Check management of other side effects	Post appointment reminder (pm)	Teach benefits & risks of vaccination	All nursing immunizations completed
Injectable not prepared & available	Teach signs & symptoms of reaction	Follow immunization card (if available)									
Client's immunization history uncertain	Check management of other side effects	Post appointment reminder (pm)									
Teach benefits & risks of vaccination	All nursing immunizations completed	Update next post-visit (if applicable)									
<p>Provider Name (please print): _____</p>		<p>Signature & Credentials (i.e. RN): _____</p>									
<p>_____</p>		<p>Initials: _____</p>									

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Consent / Mandatory Nursing Actions

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Vaccines Given			
<p>Family Member(s) Given:</p> <p>1. _____</p>	<p>Age: _____</p>	<p>Sex: _____</p>	<p>Form of Consent:</p> <p><input type="checkbox"/> Written <input type="checkbox"/> Verbal</p>
<p>2. _____</p>	<p>Age: _____</p>	<p>Sex: _____</p>	<p>Form of Consent:</p> <p><input type="checkbox"/> Written <input type="checkbox"/> Verbal</p>
<p>3. _____</p>	<p>Age: _____</p>	<p>Sex: _____</p>	<p>Form of Consent:</p> <p><input type="checkbox"/> Written <input type="checkbox"/> Verbal</p>
<p>4. _____</p>	<p>Age: _____</p>	<p>Sex: _____</p>	<p>Form of Consent:</p> <p><input type="checkbox"/> Written <input type="checkbox"/> Verbal</p>
<p>5. _____</p>	<p>Age: _____</p>	<p>Sex: _____</p>	<p>Form of Consent:</p> <p><input type="checkbox"/> Written <input type="checkbox"/> Verbal</p>
<p>Provider Name (please print): _____</p>		<p>Signature & Credentials (i.e. RN): _____</p>	
<p>_____</p>		<p>Initials: _____</p>	

Once given any of the 5 named vaccines, both names below prior to being faxed completed page 2 to: 416-952-8177

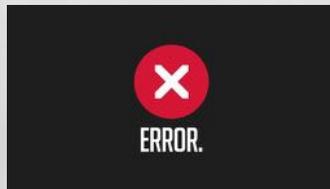
© Health Services Immunization Service - Public Page 2 of 2 Revised September 2012

Vaccines Given (reverse side)

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- Errors must be documented on a med error form and reported to your NIC and/or NPC
- Errors may also be found on documentation forms that are sent in for data entry. This must be reported to the immunizing nurse (for clarification) & if warranted, the NIC or zone NPC

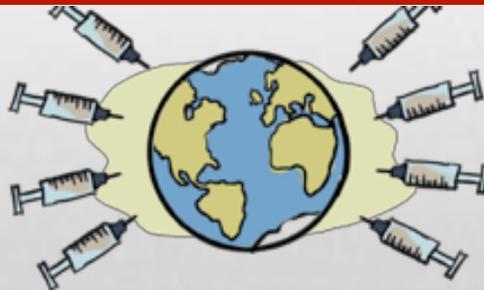
This system is not meant to be punitive, rather, to see where more support can be offered to nurses in the field.



Immunization Errors

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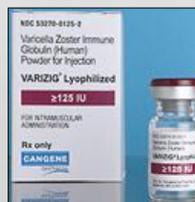
Other Vaccines



PART 7

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- Immune globulins are proteins extracted from blood serum
- It contains antibodies that recognize and attack specific antigens
- Non-specific immune globulins administered intramuscularly are used to prevent Measles and Hepatitis A or B
- Immune Globulins are short acting, therefore, vaccinations need to be given in addition for a long lasting effect



Principles: Immune Globulins

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Clostridium perfringens
Anti toxin

- Anti-toxins are antibodies that have the ability to neutralize a specific toxin.
- They are produced by injecting animals with a specific toxin.

Examples: diphtheria, gas gangrene, botulism tetanus

Principles: Anti-Toxins

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Tuberculin Skin Test (TST)

Delegated procedure

Recipient Client/Patients:

- Contacts of active TB cases
- Routine screening of 4 and 14 year olds in TBZ and MFZ
- Routine Screening of 4 year olds with no BCG History in Lac Seul, Pikangikum, Poplar Hill, Sandy Lake and Mishkeegogamang
- When required prior to giving BCG

Medical Directive
Authority to Administer Tuberculin Skin Tests by Nurses Working in First Nations Communities in FNMB-Ontario Region

Medical Directive: CD-107-001-C
 Activation Date: March 1, 2018
 Review Date: January 31, 2019
 Sponsorship: Personnel, at the direction, with the approval of the Chief Medical Officer, Health Services, FN (PNC), Director of Nursing

Delegated/Exception/Order:
 The safe and effective intradermal administration of purified tuberculin protein derivative (PPD) by nurses working in First Nations communities in Ontario Region. Nurses will assess for tuberculin infection in those designated as screening priority that live in First Nations communities in Ontario Region. In accordance with FNMB-Ontario Region Tuberculosis Prevention and Control Policy and Procedures (2016) or current, as well as the Canadian Tuberculosis Standards, 7th Edition or current.

Informed Consent:
 Registered Nurses and Registered Practical Nurses will obtain informed consent as per the College of Nurses of Ontario Practice Guidelines on Consent with additional support from the FNMB-Ontario Region Tuberculosis Prevention and Control Policy and Procedures (2016) or current, as well as the Canadian Tuberculosis Standards, 7th Edition or current.

Screening Criteria: Patients

- In all cases, when required for contact tracing of a tuberculous case.
- In all cases, when a client has a positive TST test and no past history of tuberculin disease, or a past history of a positive TST result.
- In all cases, when a high or moderate risk client has a positive tuberculin symptom assessment and no past history of tuberculin disease, or a past history of a positive TST result.
- Routine screening in One Localized Zone of four year olds that do not have a history of BCG vaccination in the following communities:
 - o Lac Seul
 - o Pikangikum
 - o Poplar Hill
 - o Sandy Lake
 - o Mishkeegogamang

Dose:

- A single dose of 0.1 cc PPD administered intradermally.

Additional Information:
 This medical directive may be implemented by nurses who:

- Are Registered Nurses (RN) or Registered Practical Nurses (RPN) working in First Nations communities in Ontario, who are in good standing with the College of Nurses of Ontario, with no suspensions.
- Are working in a Community Health Nursing role.
- Have successfully completed the FNMB-Ontario Region Immunization Orientation and Competency Certification, and attended all mandatory immunization education sessions to maintain competency.

HC FNMB-OR-CD-001 1 of 4 Last Revised February 2018

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BCG

BCG vaccination is not currently being provided: pending review – Agency RNs are not certified to administer

- *Bacillus Calmette–Guérin (BCG)* vaccine is a vaccine primarily used against tuberculosis.
- BCG is still given in some Northern Communities at Birth
- Agency nurses are **not** certified to give BCG
- Given in Right deltoid
- Can create an open sore for up to 6 weeks
- Dry dressing only. No topical antimicrobials

TST

- The Tuberculin Skin Test (TST) or Mantoux test is a tool for screening for tuberculosis (TB) and for tuberculosis diagnosis.
- TST is given at 4-6 years old
- Two step test
- Check at 48-72 hours
- Measure induration only
- What is the work up if positive?

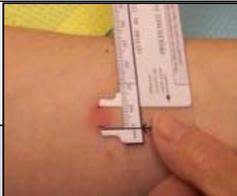


BCG vs. TST

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Module 7 - Paediatric and Adult Immunizations

TST Reaction Size	Situation When Result is Considered Positive
0 - 4mm	In general this is considered negative and no tx is indicated Child less than 5 years and high risk of TB infection
5 - 9mm	HIV infection Contact with infectious TB within the past 2 years Fibronodular disease on chest x-ray (healed TB but not previously treated) Organ transplantation (related to immune suppressant therapy) TNF alpha inhibitors Other immunosuppressive drugs e.g. corticosteroids End-stage renal disease
≥ 10mm	TST conversion (within 2 years) Diabetes, malnutrition Silicosis Hematologic malignancies



TST interpretation

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TST Documentation

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Reasons for Testing (adults & 1 year to 18 years)

Contact tracing Targeted screening Other

Test Specifications		Test Results	
Date of Test DD-MMM-YYYY		Date of Testing DD-MMM-YYYY	
Time of Test		Time of Testing	
Site	<input type="checkbox"/> Inner aspect of left forearm <input type="checkbox"/> Inner aspect of right forearm <input type="checkbox"/> Other	Test Result	<input type="checkbox"/> Positive <input type="checkbox"/> Negative <input type="checkbox"/> Not Spec
Lot # Expiry Date		<input type="checkbox"/> Positive - 48 Hours Enhanced Surveillance (ES) Sites <input type="checkbox"/> Negative <input type="checkbox"/> Not Spec	<input type="checkbox"/> No follow up required <input type="checkbox"/> Repeat TST <input type="checkbox"/> Check 3 Mo
Please note: 1 step (Random) requires a physician's order. <input type="checkbox"/> Step 1 of 2 <input type="checkbox"/> Step 2 of 2		First Name of Provider Signature of Provider	First Name of Provider Signature of Provider

After reading and recording the test result, file this page in the appropriate number below and place this form in the client's chart.

All Sites Specific Site for Sites
 FAX: 1-413-952-0077

TST Documentation Con't

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Reporting Adverse Events



PART 8

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- Vaccines are safe and continue to be a positive contribution to overall population health, however, there is a slight risk of adverse reactions as a result of vaccination.
- Local reactions are the most common occurrence after a vaccination
- They normally present as indurations, pain or sensitivity, redness or heat at the injection site
- These are generally self limiting and require no treatment



Injection site reaction

Management of Adverse Events

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Adverse Events Following Immunization (AEFI) are defined as:

- any untoward medical occurrence in a vaccine which follows immunization and which does **not** necessarily have a causal relationship with the administration of the vaccine.
- adverse event may be any unfavourable and/or unintended sign, abnormal laboratory finding, symptom or disease.



Reportable Adverse Events

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Module 7 - Paediatric and Adult Immunizations

REPORT OF ADVERSE EVENTS FOLLOWING IMMUNIZATION (AEFI)

Patient identification

AEFI Information

Impact of AEFI

Reporter information

REPORT OF ADVERSE EVENTS FOLLOWING IMMUNIZATION (AEFI)

Local Reaction

Allergic or Allergic-like Events

Neurologic Events

Other Events

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- REPORT if the AE has a temporal association with immunization (i.e. the event follows immunization); and
- If the AE has no other clear cause when reporting
- A causal relationship does not need to be proven, and submitting a report does not imply causality.
- Expected AE found in the vaccine's product monograph DO NOT NEED TO BE REPORTED
- If there is any doubt as to whether or not an event should be reported, a conservative approach should be taken and the event should be reported.

What AEFI should be reported?

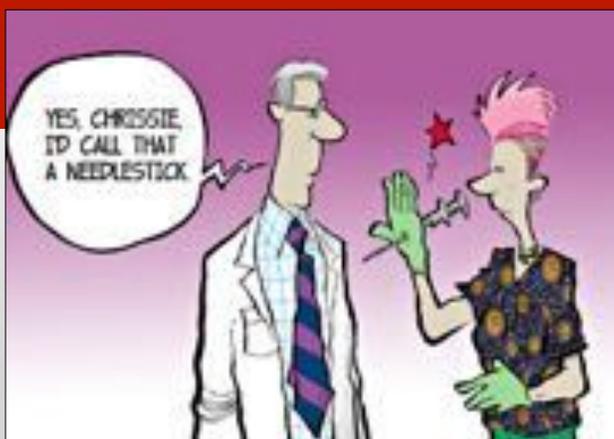
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- Nurse who identifies AEFI notifies the Zone CD Nurse by phone immediately, once the patient is stabilized, fax of the AEFI form (within 24hrs)
- Nurse will inform the patient that the AEFI will be reported to the local public health unit and Health Canada and that they will be contacted with recommendations for future immunization.
- The Zone CD Nurse forwards copies to the Zone Medical Officer, Local PHU and the Regional Communicable Disease Coordinator
- A copy of the AEFI report with recommendation for future immunization is sent by the Zone CD Nurse within two weeks who will contact the nurse
- Nurse will review recommendations with patient

Procedure for reporting AEFI

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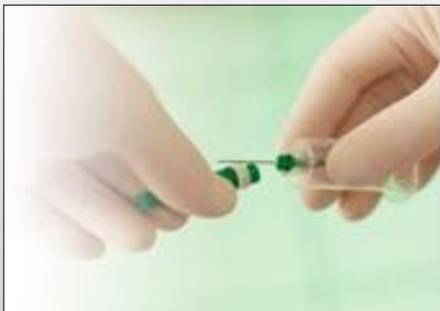
Needle Stick Injury Procedure



PART 9

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- Nurses should avoid needle stick injuries by the use of routine practices such as using the correct personal protective equipment and avoiding recapping needles.



*Avoid recapping and
reduce needle stick injury*

Needle Stick Injuries

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1. Report the injury to the NIC
2. Allow the wound to bleed freely, then wash with copious amount of soap and water
3. Complete the “Unusual Occurrence form” and forward to the Zone Nursing Office within 24 hours
4. Review the client’s blood serum status (HBsAg, Anti-HBs, Hepatitis C, HIV). If blood status is unknown, obtain consent from the client to obtain the above
5. Test for Anti-HBs, Hepatitis C, HIV as soon as possible
6. Consult physician regarding need for post-exposure prophylaxis (PEP)

Needle Stick Injury Procedure

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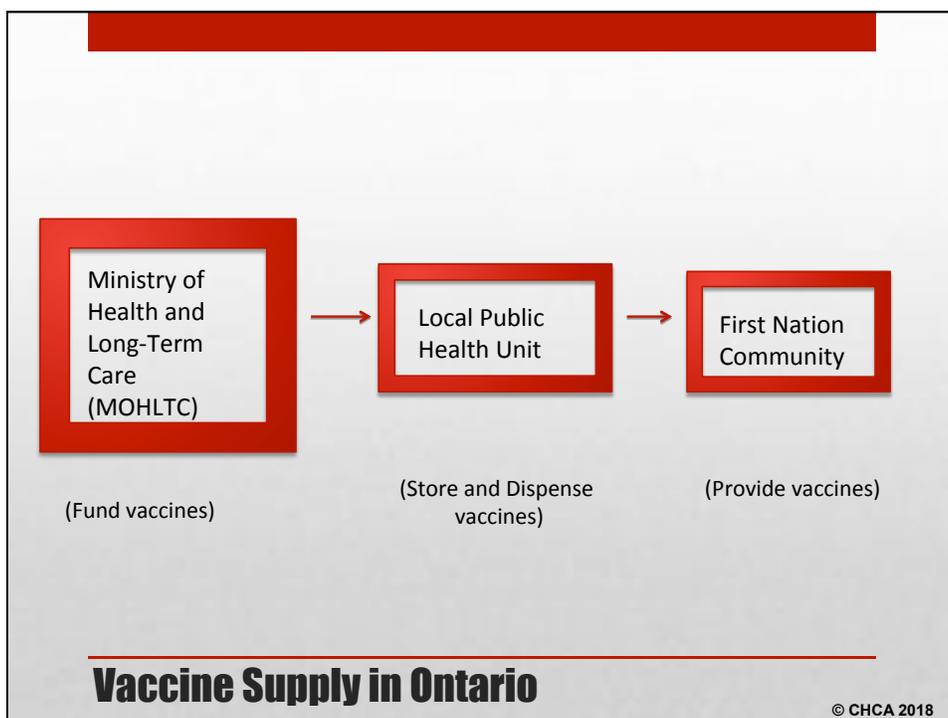
Cold Chain Procedure

COLD CHAIN



PART 10

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The Vaccine Cold Chain

3 Elements to Cold Chain procedure:

- Personnel
 - Delegated primary staff member
- Equipment
 - Refrigerator, koolatron, coolers, thermometers
- Storage and handling policy/procedures
 - Temperature-controlled supply chain (+2°C - +8°C)
 - Begins with the manufacturer and ends with the administration of the vaccine



Cold Chain Procedure

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- Vaccines must be stored in a dedicated vaccine refrigerator
- Vaccines must be stored on the middle shelves away from walls or cold air vents.
- No food, beverages or other biological products in the vaccine refrigerator.
- Do not leave vaccines on site if refrigerator will not be monitored for an extended period of time



Vaccine Storage and Handling

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Month: <u>January 2011</u> Office/Facility: <u>ABC Pharmacy</u>				
Week 5	Mon	3	Tue	4
Time	8:30 AM	5:30 PM	8:30 AM	5:30 PM
Current	5.8	7.0	5.7	6.0
Max Temp	7.1	7.9	6.8	7.2
Min Temp	3.4	3.2	2.8	
Initials	AA	Bj	AH	



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The following 9 steps must be taken in response to a cold chain break:

- 1. Notify** the vaccine manager immediately of any situation when the refrigerator temperature goes outside of the +2C to +8C range.
- 2. Complete** the cold chain Failure/Exposure/Wastage Report form.
- 3. Record the date and time** of discovery of the problem.
- 4. Record the temperature** (current, minimum, maximum) at the time of discovery of the problem.
- 5. Record the estimated duration** of exposure.

... continued

6. **Record the date and time** of the last recorded temperature which was in the correct temperature range of +2C to +8C.
7. **Record the current inventory** of the vaccines inside the refrigerator. **DO NOT** open the door unnecessarily, this will cause further temperature fluctuations inside the refrigerator.
8. **Package the vaccine** and label as “**DO NOT USE**”, transfer to a functioning refrigerated unit with the temperature monitor.
9. **Determine** whether the problem is related to the status of the equipment or an electrical problem.

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Refrigeration is broken at a remote site

Get power

- Water treatment tap water get power to the conditioner from the refrigerator at 4°C to 8°C
- Return vaccine into cooler immediately in the conditioner from the freezer at 4°C to 8°C
- Place get power to tap or water treatment tap

Check temperature monitoring device

- Condition at refrigerator at 4°C to 8°C
- Stop when power is restored and temperature return to normal

Check the door

- Turn off refrigerator (check at 4°C to 8°C)
- Check temperature monitoring device and return to normal

Check the vaccine

- Condition at refrigerator (check at 4°C to 8°C)
- Stop when power is restored and temperature return to normal

Get power

- Water treatment tap water get power to the conditioner from the refrigerator at 4°C to 8°C
- Return vaccine into cooler get power to the conditioner from the freezer at 4°C to 8°C
- Place get power to tap or water treatment tap

Check the vaccine

- The all vaccine container with get power from the cooler to a safe level in the refrigerator conditioner at 4°C to 8°C is recommended to package vaccine for the vaccine

Note: Different temperature for storage depending on vaccine. Check the range of vaccine. Different handling procedure for each vaccine. Right time, right place, right temperature and right handling procedure for each vaccine. Always use good practice and common sense to avoid any vaccine wastage.

OFF site storage and handling

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- Anaphylaxis is an acute hypersensitivity reaction with multi-organ system involvement that can rapidly progress to a severe life threatening reaction.
- Anaphylaxis following immunization is rare.
- Anaphylaxis generally begins a few minutes after injection and is usually evident within 30 minutes.

Table 1 Mueller's grading for systemic allergic reactions¹²

I	Generalised urticaria, periorbital oedema, itching, malaise, anxiety
II	Angioedema or two or more of the following: chest or throat tightness, nausea, vomiting, diarrhoea, abdominal pain, dizziness
III	Dyspnoea, wheezing, or stridor, or two or more of the following: dysphagia, dysarthria, hoarseness, weakness, confusion, feeling of impending disaster
IV	Hypotension, collapse, loss of consciousness, incontinence, cyanosis

Identification of Anaphylaxis

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Basic Management of Post-Immunization Anaphylaxis in Non-Hospital Setting
EARLY RECOGNITION AND TREATMENT IS VITAL

1. Promptly administer aqueous epinephrine 1:1000 by IM in the mid-anterolateral aspect of the thigh.
 - Record time of dose
 - Repeat Q5-15 min PRN; max. 3 doses (don't use the same site as immunization)
2. Activate the emergency Response System (911) or other service as per community protocol
3. Position client:
 - On back or position of comfort
 - Elevate lower extremities
 - Place on side if vomiting or unconscious
 - Pregnancy- place in semi-recumbent position on left side with legs elevated
4. Monitor airway, skin, HR, BP frequently for change in condition. Establish oral airway if necessary
5. Stabilize:
 - Give adjunctive treatment such as diphenhydramine IM if indicated
 - Perform CPR if necessary
6. Arrange for transportation for local hospital or other facility as per community protocol

Treatment Protocol

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Table 1: Dose of Epinephrine (1:1000, 1 mg/mL solution), by weight or age

The Canadian Immunization Guide (2016) recommends injecting epinephrine intramuscularly in the mid anterolateral aspect of the thigh. It further states that the deltoid is not as effective as an absorption site as the mid anterolateral thigh and to avoid the limb used for vaccination.

The dosing regimens included in the tables below are based on most recent CG and AC recommendations for weight based dosing, further adapted by and used with permission from Health BC Region.

Use of Autoinjector: If 15–30 kg, give Junior dose; if > 30 kg, give Standard dose.
 *Do not use under 15kg

Weight (recommended up to times)	Age (if weight not known)	Dose (1:1000) (mg) (0.1 mg/kg body weight)	Dose by Autoinjector
Under 6 kg (14 lbs)	0–6 months	0.25 mL (maximum per dose)	Not applicable
6–12 kg (13–26 lbs)	7 months–2 yrs	0.1 mL	Not applicable
12–17 kg (26–37 lbs)	3–4 yrs	0.15 mL	Junior Dose of 0.15mg after 15kg
18–22 kg (39–49 lbs)	5–6 yrs	0.2 mL	Junior Dose of 0.15mg
23–27 kg (51–61 lbs)	7–8 yrs	0.25 mL	Junior Dose of 0.15mg
28–32 kg (62–72 lbs)	9–10 yrs	0.3 mL	Standard Dose 0.30mg
33–37 kg (73–83 lbs)	11 yrs	0.35 mL	Standard Dose 0.30mg
38–45 kg (84–99 lbs)	12 yrs	0.4 mL	Standard Dose 0.30mg
46 kg (100 lbs) and up	13 yrs of age and up	0.5 mL (maximum per dose)	Standard Dose 0.30mg

Adapted with permission from Health BC – Saskatchewan Region based on CG and AC.

Epinephrine Treatment Protocol

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Table 2: Dose of Diphenhydramine Hydrochloride, by weight or age

Diphenhydramine hydrochloride (Benadryl®) can be given as an adjunct to epinephrine if:

- The client's symptoms are not controlled by epinephrine; or
- The client cannot be transferred to an acute care facility within 30 minutes.

*Note: IM administration of Benadryl® is recommended during anaphylaxis because it provides more rapid absorption.

Oral treatment is suitable for conscious patients that exhibit non-anaphylactic allergic reactions following immunization. Diphenhydramine is available as oral solutions in 2 strengths:

Benadryl Liquid Children (and generic) 0.25 mg/mL or 0.5 mg/mL
 Benadryl (the best generic) 12.5 mg/5mL

Diphenhydramine is generally not recommended for infants under 12 months of age, and should be used with caution between 12–24 months because it may cause drowsiness or paradoxical excitement.

Weight	Age	IM Dose (0.5mg/mL, 1mg/kg to max. dose of 50 mg)	PO Dose (0.25 mg/5mL or 12.5mg/5mL) 2 mg/kg to a max. dose of 50 mg
7–10 kg (15–22 lbs)	<12 months	0.2 mL	0.5 mL (0.25 mg) or 1.25 mL (6.25 mg)
11–15 kg (24–34 lbs)	2–4 years	0.3 mL	0.75 mL (0.375 mg) or 2.5 mL (12.5 mg)
16–20 kg (35–45 lbs)	5–7 yrs	0.4 mL	1.5 mL (0.75 mg) or 5 mL (25 mg)
21–30 kg (46–67 lbs)	8–9 yrs	0.6 mL	3 mL (1.5 mg) or 7.5 mL (37.5 mg)
31–40 kg (68–88 lbs)	10–12 yrs	0.8 mL	4 mL (2 mg) or 10 mL (50 mg)
41 kg (90 lbs) and up	13 yrs of age and up	1 mL	5 mL (2.5 mg) or 12.5 mL (62.5 mg)

Adapted with permission from Health BC – Saskatchewan Region based on CG and AC.

Diphenhydramine Treatment Protocol

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Module 7 - Paediatric and Adult Immunizations



Health Canada Santé Canada

FNHIB-OR Anaphylaxis Kit Checklist

Stock only the amounts listed in the kits due to space considerations
Only complete the reorder date for missing, expired, or soon to expire items

Health Facility Name: _____ Month: _____ Year: _____

Item	Week 1	Week 2	Week 3	Week 4
Date:	Date:	Date:	Date:	Date:
Anaphylaxis Pocket Card with Dosage Guide	Present? Y_N_	Present? Y_N_	Present? Y_N_	Present? Y_N_
Epinephrine 1:1000 (1 ml x 3 vials) or Epinephrine Autoinjectors (Junior x 3 + Adult x 3)	Present? Y_N_ Expiry: _____ Reorder Date: _____			
Diphenhydramine 50 mg/ml (1 ml x 1 vial)	Present? Y_N_ Expiry: _____ Reorder Date: _____			
1 cc syringe with removable attached needle: 25 gauge 1 inch (x 3)	Present? Y_N_ Expiry: _____ Reorder Date: _____			
1 cc syringe with removable attached needle: 25 gauge 5/8 inch (x 3)	Present? Y_N_ Expiry: _____ Reorder Date: _____			
25 gauge 5/8 inch needle (x 3)	Present? Y_N_ Expiry: _____ Reorder Date: _____			
25 gauge 1 inch needle (x 3)	Present? Y_N_ Expiry: _____ Reorder Date: _____			
25 gauge 1.5 inch needle-extra for large adult (x 3)	Present? Y_N_ Expiry: _____ Reorder Date: _____			
CHN Signature: _____				

Basic Management of Post-Immunization Anaphylaxis in Non-Hospital Setting
 EARLY RECOGNITION AND TREATMENT IS VITAL

- Ensure all supplies are stocked in Anaphylaxis Kits, as per recommendations (checklist on LMS)
- Maintain Anaphylaxis Kits, ensuring supplies are sufficient and expiry dates are not surpassed, check weekly.
- Ensure that reference material is current and up to date

Role of Community Health Nurse

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- Be familiar with the immunizations
- Observe storage & handling procedures to minimize risks & optimize effectiveness
- Use every opportunity to update a person's immunization status
- It is safe & effective to give multiple injections
- Do not defer vaccination unless there is a true contraindication
- Never mix vaccines in the same syringe
- Always give full doses
- Do not re-initiate a primary vaccine schedule
- Always observe a 15 minute waiting period following immunization

Lets wrap it up...

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The Immunization Support Line

1-866-297-3577

Monday – Friday

8:00am-4:00pm Eastern Time



Immunization Support Line

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1. Canadian Immunization Guide. Public Health Agency of Canada retrieved from <https://www.canada.ca/en/public-health/services/canadian-immunization-guide.html>
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12. Basic Management of post-Immunization Anaphylaxis in Non Hospital Setting. Early Recognition and Treatment is Vital (2017). Government of Canada.

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