Publicly Funded Immunization Schedules for Ontario – January 2009

Schedule 1. Routine Schedule for Children Beginning Immunization in Early Infancy (Starting at age <12 mos.)

Age at vaccination	DTaP-IPV[1]-Hib[2]		Pneu-C-7[3]	MMR[4]	Men-C[5]	Var[6]	HB[7]	HPV[8]	Tdap[9]	Td[10]	Inf[11]
2 months old	■	■	■								
4 months old	■	■	■								
6 months old	■	■	■								
12 months old				■	■						
15 months old*			■			■					
18 months old	■	■		■	OR	OR					
4-6 years old	■					(■)[§]					
Grade 7 students					■[†]		■[†]				
Grade 8 females					OR			■[†]			
14-16 years old					(■)[‡]				■		
Every 10 years thereafter										■	
Every year (in autumn)											■

( ) Indicates dose may not be required, based on age and/or immunization history.
***Alternative schedules** if 15-month immunization visit not possible: **12-month visit** – give Pneu-C-7, MMR, Men-C, Var; **18-month visit** – give DTaP-IPV-Hib, MMR; [†]Administered through school-based program; [‡]15- to 19-year-olds who have not been immunized; [§]Var for unimmunized, susceptible 5-year-olds. See page 3 for high-risk eligibility criteria.

Notes:

Interruption of a vaccine series does not require restarting the series, regardless of the length of time elapsed since the last dose.

Up-to-date immunization records or valid exemptions are required for attendance at school (Immunization of School Pupils Act) and licensed day-care centres (Day Nurseries Act) in Ontario.

Vaccine Administration:

Never mix and administer different vaccines together in the same syringe unless indicated in the product monograph.

Route of administration: Intramuscularly (IM): DTaP-IPV-Hib, DTaP-IPV, Tdap, Td, HA, HB, HPV, Men-C, Inf, and Pneu-C-7. Subcutaneously (SC): MMR and Var. IPV if given as a separate antigen. IM or SC: Pneu-P-23.

Needle Length: The appropriate size and length of needle for vaccine administration should be based on the age and size of the individual. For IM injection, infants <6 months use 7/8 inch (2.2 cm) needle length; 1 inch (2.5 cm) for children 6 months and older; for adolescents and adults 1 inch to 1½ inch (3.8 cm).

Site: For site of administration go to: **www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/D/vacc_admin.pdf**

1. Diphtheria, Tetanus and Acellular Pertussis vaccine/Inactivated Poliovirus vaccine, (DTaP/IPV) for children under 7 years of age

The 4-6-year-old (5th) dose of DTaP-IPV in Schedules 1 and 2 is *not* necessary if the fourth dose was given after the 4th birthday. For the infant/primary series, the series should start no earlier than 6 weeks.

Tdap plus IPV should be given to 7-10-year-old children who missed their 4-6-year-old booster dose of DTaP-IPV.

2. *Haemophilus influenzae* type b vaccine (Hib)

Pediacel™ (DTaP-IPV-Hib) is premixed in liquid form. Hib vaccine is not routinely recommended for children aged 5 years and over.

3. Pneumococcal conjugate vaccine (Pneu-C-7)

Routine: For all children under 2 years of age, see page 2, Table 2 for detailed schedule. The booster dose may be given at 15 months of age (at least 2 months after final dose of the primary series). For children whose series has been interrupted, please check the product monograph.

High risk: Children 24-59 months of age should receive 2 doses, 8 weeks apart. See page 3 of this document for high-risk criteria.

4. Measles, Mumps, Rubella vaccine (MMR)

All students must have documented receipt of 2 doses of the measles vaccine (generally administered as MMR) given **on or after the 1st birthday.** The second dose of MMR vaccine should be given at least 28 days after the first dose.

MMR is a live virus vaccine. If not given according to the recommended schedule, MMR and Varicella must be given at least 28 days apart or on the same day.

Adults born prior to 1970 are assumed to have naturally acquired immunity to measles. Adults born in 1970 or later without evidence of immunity to measles should receive 1 dose of MMR.

All women of reproductive age and without evidence of rubella immunity should receive a second dose of MMR unless they are pregnant.

5. Meningococcal C conjugate vaccine (Men-C)

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

Catch-up: Unimmunized children aged 12 years (Grade 7) OR unimmunized youth aged 15 to 19 years old may receive a single dose.

High risk: For high-risk eligibility criteria, please see page 3 of this document.

One-year-old children immunized in infancy (i.e., <1 year of age) require another dose at least 1 year after the last dose for enhanced protection.

6. Varicella (chickenpox) vaccine (Var)

Varicella is a live virus vaccine. If not given according to the recommended schedule, MMR and Var must be given at least 28 days apart or on the same day.

Routine: Susceptible children 12 to 15 months of age should receive a single dose.

Catch-up: Unimmunized susceptible children 5 years of age should receive a single dose.

High risk: See page 3 of this document for high-risk conditions. For number of doses needed for susceptible high-risk persons with specific medical conditions, refer to the *Canadian Immunization Guide (CIG), 7th edition (2006).*

7. Hepatitis B vaccine (HB)

A 2-dose schedule of this vaccine is routinely offered to Ontario school pupils in grade 7. Vaccine is also available for certain high-risk groups including infants born to carrier mothers. For high-risk eligibility criteria, refer to page 3 of this document.

Refer to the product monograph and the *CIG, 7th ed., 2006* for age appropriate vaccine, dosing and scheduling.

8. Human Papillomavirus vaccine (HPV)

As of September 2007, all female school pupils in grade 8 will be offered a 3-dose schedule (0, 2, 6 months) through a school-based program.

If schedule is interrupted, the vaccine series does not need to be restarted. (Please see product monograph.)

9. Diphtheria, Tetanus and Acellular Pertussis (adolescent/adult type) vaccine (Tdap)/ Inactivated Poliovirus vaccine (IPV)

A **single** dose of Tdap is recommended for all adolescents between the ages of 14 to 16 years old who are due for their adolescent booster (10 years after the 4-6-year-old booster dose).

Unimmunized children/adolescents beginning their primary series at 7 years of age or older should receive 3 doses of Tdap plus IPV (2 separate injections). The 14-16-year-old booster dose should be given at least 5 years after the third dose.

Unimmunized adults or those with unknown polio immunization history who may be exposed to imported wild polio cases should receive 2 doses of IPV (4-8 weeks apart), with a third dose 6-12 months later.

10. Tetanus and Diphtheria vaccine (Td)

Given to adults every 10 years, after the 14-16-year-old Tdap booster dose.

11. Influenza vaccine (Inf)

All individuals aged 6 months and older who live, work or attend school in Ontario are eligible to receive influenza vaccine. The *National Advisory Committee on Immunization* (NACI) statement on influenza is published annually and is available on the *Public Health Agency of Canada* (PHAC) website.

Previously unvaccinated children under 9 years of age require two doses of influenza vaccine given 4 weeks apart. Eligible children under 9 years of age who have properly received one or more doses of influenza vaccine in the past are recommended to receive one dose per season thereafter.

Available at: www.phac-aspc.gc.ca/publicat/ccdr-rmtc/08pdf/acs-3.pdf

Vaccine Antigen Abbreviations: DTaP = diphtheria, tetanus and acellular pertussis for children under 7 years of age; **IPV** = inactivated poliovirus; **Hib** = *haemophilus influenzae* type B; **Pneu-C-7** = pneumococcal 7-valent conjugate; **MMR** = measles, mumps and rubella; **Men-C** = meningococcal C conjugate; **Var** = varicella zoster; **HA** = Hepatitis A; **HB** = Hepatitis B; **Tdap** = diphtheria, tetanus and acellular pertussis adult/adolescent formulation; **Td** = tetanus and diphtheria adult type formulation; **Inf** = influenza vaccine; **HPV** = Human papillomavirus; **Pneu-P-23** = pneumococcal polysaccharide vaccine; **Men-C-ACWY** = meningococcal A, C, W-135, Y quadrivalent conjugate.

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Schedule 2. Catch-up Schedule for Children Starting Immunization at 1-6 years of age

Timing	DTaP-IPV[1]-Hib[2]	Pneu-C-7[3]	MMR[4]	Men-C[5]	Var[6]	HB[7]	HPV[8]	Tdap[9]	Inf[11]
First visit	■ ■	■	■						
Second visit: 1 month after 1st visit and 1 year old				■	■				
Third visit: 2 months after 1st visit	■ (■)[§]	(■)	■						
Fourth visit: 2 months after 3rd visit	■								
Fifth visit: 6-12 months after 4th visit	■				OR				
4-6 years old	(■)			OR	(■)[¶]				
Grade 7 (12 years old)				(■)[†]		■[†]			
Grade 8 females (13-14 years old)							■[†]		
14-16 years old								■	
Every year (in autumn)									■

( ) Indicates dose may not be required, based on age and/or immunization history. If fourth dose of DTaP is given after the 4th birthday, the 4-6-year-old booster dose is not needed.
[§]Administer Hib vaccine to children under 5 years of age; [†]Administered through school-based program; [¶]Var at 15 months and 5 years. See page 3 for high-risk eligibility criteria.

Schedule 3. Schedule for Unimmunized Children/Adolescents Aged 7-17 years (inclusive)

Timing	MMR[4]	Tdap[9]	IPV[9]	Men-C[5]	HB[7]	HPV[8]	Inf[11]
First visit	■	■	■				
Second visit: 2 months after 1st visit	■	■	■				
Third visit: 6-12 months after 2nd visit		■	■				
Grade 7 (12 years old)				■[†]	■[†]		
Grade 8 females (13-14 years old)						■[†]	
14-16 years old		■					
15-19 years old				(■)			
Every year (in autumn)							■

( ) Indicates dose may not be required, based on age and/or immunization history.
[†] Administered through school-based program. See page 3 for high-risk eligibility criteria.

Schedule 4. Schedule for Adults Aged 18 Years and Older Not Immunized in Childhood

Timing	MMR[4]	Td[10]	IPV[9]	Inf[11]	Pneu-P-23
First visit	■	■	(■)		
Second visit: 2 months after 1st visit	■	■	(■)		
Third visit: 6-12 months after 2nd visit		■	(■)		
Every 10 years thereafter		■			
Every year (in autumn)				■	
A single dose at/after age 65					■

( ) Indicates dose may not be required, based on age and/or immunization history. For recommendations related to travel, refer to the *CIG, 7th ed., 2006.*
See page 3 for high-risk eligibility criteria.

Detailed Information for the Administration of Specific Vaccines

Table 1: Detailed schedule for *Haemophilus influenzae* type b Conjugate vaccine

Age at first dose	Primary series	Age at Booster dose[˘]
2-6 months	3 doses, 2 months apart	15 to 18 months
7-11 months	2 doses, 2 months apart	15 to 18 months
12-14 months	1 dose	15 to 18 months
15-59 months	1 dose	None

[˘] The Hib booster dose should be given at least 2 months after the previous dose.

Table 2: Detailed schedule for Pneumococcal Conjugate vaccine depending on age at first dose

Age at first dose	Primary series	Age at Booster dose[†]
2-6 months	3 doses, 2 months apart	12 to 15 months
7-11 months	2 doses, 2 months apart	12 to 15 months
12-23 months[‡]	2 doses, 2 months apart	
24-59 months – with high-risk conditions	2 doses, 2 months apart	

[†] The pneumococcal conjugate booster dose should be given at least 2 months after the final dose of the primary series.
[‡] Publicly funded vaccine is available for all children less than 2 years of age **AND** those at high-risk under 5 years of age.

Table 3: Detailed schedule for Varicella vaccine for high-risk persons[**] depending on age

Age at first dose	Number of doses
12 months – 12 years[**]	1 dose
13 years and older[††]	2 doses, 1 month apart

[**] Special considerations/restrictions are required for the immunocompromised (see *Canadian Immunization Guide, 7th ed., 2006*). Guide errata and clarifications, March 2008. Available at: http://www.phac-aspc.gc.ca/publicat/cig-gci/errarta-eng.php
[††] Publicly funded vaccine for **non** high-risk persons is available only for children at 1 year or 5 years of age.

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Table 4: Reimmunization with Pneumococcal Polysaccharide vaccine	
Criteria for Reimmunization	Timing
A single revaccination with Pneumococcal Polysaccharide vaccine is appropriate for those 2 years of age and older with: • Functional or anatomic asplenia or sickle-cell disease • Hepatic cirrhosis • Chronic renal failure or nephrotic syndrome • HIV infection • Immunosuppression related to disease or therapy	• 1 dose after 5 years for those 11 years of age or older at the time of initial immunization OR • 1 dose after 3 years for those 10 years of age or less at the time of initial immunization

High-Risk Eligibility Criteria

Pneumococcal Vaccine High-Risk Criteria

A. Pneumococcal Conjugate Vaccine and/or Pneumococcal Polysaccharide Vaccine (depending on age):

1. Pneumococcal *conjugate* vaccine: All children *under 5 years of age* with the medical conditions listed below:

2. Pneumococcal *polysaccharide* vaccine: All persons *2 years of age and older* with the medical conditions listed below:

   - Chronic respiratory disease (excluding asthma, except those treated with high-dose corticosteroid therapy)
   - Chronic cardiac disease
   - Cirrhosis or alcoholism
   - Chronic renal disease or nephrotic syndrome
   - Diabetes mellitus
   - Asplenia, splenic dysfunction, sickle-cell disease and other sickle-cell haemoglobinopathies
   - Chronic cerebrospinal fluid leak
   - Primary immune deficiency
   - HIV infection
   - Other conditions associated with immunosuppression (malignancies, long-term systemic corticosteroids and other immunosuppressive therapy)
   - Solid organ transplant recipients
   - Cochlear implant recipients (pre/post implant)

For high-risk children 24 to 59 months of age, there should be an interval of at least 8 weeks between the administration of the conjugate vaccine and the pneumococcal polysaccharide vaccine. See the *CIG, 7th ed.* and NACI guidelines[1] for the immunization of high-risk children with the pneumococcal vaccines.

High-risk children less than 5 years of age also includes those attending child care centres or those of First Nations origin.

B. Pneumococcal Polysaccharide Vaccine (may be given subcutaneously (SC)):

1. All residents of nursing homes, homes for the aged and chronic care facilities or wards.
2. All persons 65 years of age and older regardless of medical condition.

Meningococcal Vaccine High-Risk Criteria

A. Meningococcal C Conjugate Vaccine

1. All individuals with functional or anatomic asplenia (1-10 years of age)[2]
2. All individuals with complement, properdin or factor D deficiency (1-10 years of age).
3. Cochlear implant recipients (pre/post implant) (1-10 years of age).
4. HIV positive individuals (all ages).

B. Meningococcal ACYW-135 Conjugate Vaccine (2-55 years)

1. All individuals with functional or anatomic asplenia.
2. All individuals with complement, properdin or factor D deficiency.
3. Cochlear implant recipients (pre/post implant).

C. Meningococcal ACYW-135 Polysaccharide Vaccine (>55 years)

1. All individuals with functional or anatomic asplenia.
2. All individuals with complement, properdin or factor D deficiency.
3. Cochlear implant recipients (pre/post implant).

Varicella Vaccine High-Risk Criteria

1. Children and adolescents given chronic salicylic acid therapy (consider stopping treatment for 6 weeks after vaccination, see product monograph).
2. All individuals with cystic fibrosis.
3. Immunocompromised individuals[3]: see the *CIG, 7th ed.,* p. 331 for vaccination recommendations regarding specified susceptible immunocompromised individuals.

For the recommended number of doses for susceptible high-risk persons, see *CIG, 7th ed.*

Hepatitis B Vaccine High-Risk Criteria

1. Infants born to carrier mothers (first dose given in hospital).
2. Household and sexual contacts of chronic carriers and acute cases.
3. Persons on renal dialysis (second and third doses) and those with diseases requiring frequent receipt of blood products (e.g., haemophilia).
4. Individuals awaiting liver transplants.
5. Intravenous drug users.
6. Men who have sex with men and heterosexuals with multiple sex partners.
7. Those having needle stick injuries in a non-health care setting.
8. Children < 7 years old whose families have immigrated from countries of high prevalence for hepatitis B, and who may be exposed to hepatitis B carriers through their extended families.
9. Persons with chronic liver disease including hepatitis C.

Hepatitis A Vaccine High-Risk Criteria

1. Persons with chronic liver disease (including hepatitis C).
2. Persons engaging in intravenous drug use.
3. Men who have sex with men.

NOTE: For immunization recommendations for hematopoietic stem cell transplant recipients and other immunocompromised individuals, see the current *Canadian Immunization Guide, 2006, 7th ed.* Available at: **http://www.phac-aspc.gc.ca/publicat/cig-gci/**

Guide errata and clarifications, March 2008. Available at: http://www.phac-aspc.gc.ca/publicat/cig-gci/errarta-eng.php

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[1] National Advisory Committee on Immunization. Statement on recommended use of pneumococcal conjugate vaccine. *Canada Communicable Disease Report Volume 28, 15 January 2002.* Available at: http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/

[2] National Advisory Committee on Immunization. Statement on conjugate meningococcal vaccine for serogroups A, C, Y and W135. *Canada Communicable Disease Report. Volume 33, 1 May 2007.* Available at: *http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/*

[3] National Advisory Committee on Immunization. *Canadian Immunization Guide, 2006, 7th edition. Public Health Agency of Canada, 2006.* Available at: http://www.phac-aspc.gc.ca/publicat/cig-gci/
Guide errata and clarifications, March 2008. Available at: http://www.phac-aspc.gc.ca/publicat/cig-gci/errarta-eng.php

Refer to the *Canadian Immunization Guide (CIG), 7th edition (2006)* for additional information regarding alternate schedules for the administration of specific vaccines and recommendations for immunocompromised individuals.

(Available online at: www.phac-aspc.gc.ca/publicat/cig-gci/pdf/cig-gci-2006_e.pdf; Guide errata and clarifications, March 2008. Available at: www.phac-aspc.gc.ca/publicat/cig-gci/errarta-eng.php)

For more information and to report adverse events following immunization contact your local public health unit at:

Consult the manufacturer's product monograph, current *Canadian Immunization Guide,*
or the *National Advisory Committee on Immunization* website for more detailed vaccine information at:
www.phac-aspc.gc.ca/naci-ccni/index.html

References:
- National Advisory Committee on Immunization. *Canadian Immunization Guide, 7th edition.* Public Health Agency of Canada, 2006.
- Statement on Influenza Vaccination for the 2008-2009 Season, *CCDR* Volume 34, ACS-3; July 1, 2008.
- Statement on Human Papillomavirus Vaccine, *CCDR* Volume 33, ACS-2: February 15, 2007.

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