

Immunizations Part 1: Are your child's immunizations up to date?

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Immunization is an important preventative health care measure that parents can provide for their children and its value should never be underestimated. Health care providers, public health officials, school and daycare workers will often ask parents the following question: "Are your child's immunizations up to date?" Now, as a parent, you must ask yourself if you know the answer to this question.

In order to answer this question, it is important for you to know about routine immunization schedules as well as additional vaccines that are available for your child and how your child fits into these schedules. If you discover that your child's immunizations are not up to date, or you are unaware of their immunization status, there are certain steps that you must take in order to fully protect your child from vaccine preventable diseases.

Routine Immunization schedules for Infants and Children:

Routine immunization schedules can vary greatly from country to country. The differences include the type of vaccines administered, the recommended ages of administration and number and timing of doses. Immunization schedules even vary slightly between Canadian provinces, therefore it is important to keep this in mind when moving from province to province.

Children in Canada are routinely immunized against nine infectious diseases: diphtheria, tetanus, pertussis (whooping cough), poliomyelitis, haemophilus influenzae type B (Hib) infection, measles, mumps, rubella and hepatitis B. The recommended scheduling of these immunizations in Canada is outlined in Table 1:

Fifth Edition of the Canadian Immunization Guide, prepared by the National Advisory Committee on Immunization (NACI) 1998

Table 1
Routine Immunization Schedule for Infants and Children

Age at vaccination	DtaP	Inactivated polio vaccine	Hib ²	MMR	Td ³	Hep B ⁴ (3 doses)
Birth						Infancy or pre-adolescence (9-13 yrs)
2 months	X	X	X			
4 months	X	X	X			
6 months	X	(X) ⁵	X			
12 months				X		
18 months	X	X	X	(X) ⁶ or		
4-6 years	X	X		(X) ⁶		
14-16 years					X	
DtaP - Diphtheria, tetanus, pertussis (acellular) vaccine Hib - Haemophilus influenzae type b conjugate vaccine MMR - Measles, mumps and rubella vaccine Td - Tetanus and diphtheria toxoid, "adult type" Hep B - Hepatitis B vaccine						

In comparison, China's standard immunization schedule protects children against seven infectious diseases: tuberculosis (BCG vaccine), diphtheria, tetanus, pertussis, poliomyelitis, measles and Hepatitis B. Rates of immunization however vary greatly between the Chinese provinces and many children have not received the standard immunizations according to the schedule. The recommended scheduling of these immunizations in China is outlined in Table 2.

Table 2

Age at vaccination	BCG	DTP	OPV	Measles	Hep B
Birth	X				X
1 month					X
2 months			X		
3 months		X	X		
4 months		X	X		
5 months		X			
6 months					X
8 months				X	
18-24 months		X	X (in some provinces only)		
4 years			X		
7 years				X	
BCG - Bacille Calmette-Guérin (tuberculosis) DTP - diphtheria, tetanus, pertussis OPV - oral polio vaccine Measles - measles alone - does not contain mumps & rubella Hep B - Hepatitis B vaccine This is a general guideline and may vary between Chinese provinces					

Immunization of Internationally Adopted Children:

If you have adopted a child from another country, you cannot assume that he or she has been immunized according to that country's routine immunization schedule or that the immunizations were properly given. Whenever valid immunization records are available for the adopted child, one should first compare them to Canada's (provincial) routine immunization schedule to determine if additional vaccines are required to meet Canadian immunization standards. It is important to compare the types of vaccines administered, dates given (age at time of administration), number of doses and intervals between doses. Following this, one needs to make a decision as to the adequacy of the vaccines that are reported to have been administered. Although the majority of vaccines used worldwide are produced with adequate quality control standards and are effective, there is evidence that some children who were adopted internationally lack adequate immunity despite satisfactory vaccination records.

This suggests that the records may not be accurate and/or that the vaccines were not properly administered (e.g. expired or improperly stored vaccines).

In the absence of written reliable immunization records, there are concerns about both under and over-immunization of these children if a standardized approach is not used. Routine serologic testing (looking for antibodies to specific diseases) of these children to determine immunity is not practical. If in doubt about the adequacy of immunization, then the child should be re-immunized. The Fifth Edition of the Canadian Immunization Guide recommends the following approach:

1. All children lacking reliable written documentation of immunizations should be started on the routine Canadian Immunization Schedule as appropriate for their age (refer to Table 3 for children less than 7 years of age). Note a separate schedule exists for those more than 7 years of age.
2. MMR (measles, mumps, rubella), polio, Hib conjugate, hepatitis B and influenza vaccines can be given without concern about prior receipt of these vaccines because adverse effects of repeated vaccination have not been demonstrated.
3. Children in whom a serious adverse local reaction develops after administration of DPT, DtaP, DT or Td (diphtheria, pertussis and tetanus) should be individually assessed before they receive additional doses of these vaccines. Blood testing for diphtheria and tetanus antibodies may demonstrate immune status and may guide the need for continued immunization.
4. Pneumococcal vaccine should be given if indicated, as in most studies local reaction rates after revaccination were similar to rates after initial vaccination.

Table 3

Routine Immunization Schedule for Children Less Than 7 Years of Age Not Immunized in Early Infancy

Timing	DtaP ¹	Inactivated polio vaccine	Hib ²	MMR	Td ³	Hep B ⁴ (3 doses)
First visit	X	X	X	X ⁷		Preadolescence (9-13 yrs)
2 months later	X	X	(X) ⁸	(X) ⁶		
2 months later	X	(X) ⁵				
6-12 months later	X	X	(X) ⁸			
4-6 years ⁹	X	X				
14-16 years					X	

Notes: (for Tables 1 and 3)

1. DtaP (diphtheria, tetanus, acellular or component pertussis) vaccine is the preferred vaccine for all doses in the vaccination series, including completion of the series in children who have received > 1 dose of DPT (whole cell) vaccine.
2. Hib schedule shown is for PRP-T or HbOC vaccine. If PRP-OMP, give at 2, 4 and 12 months of age.
3. Td (tetanus and diphtheria toxoid), a combined adsorbed "adult type" preparation for use in persons > 7 years of age, contains less diphtheria toxoid than preparations given to younger children and is less likely to cause reactions in older persons.
4. Hepatitis B vaccine can be routinely given to infants or pre-adolescents, depending on the provincial/territorial policy; three doses at 0, 1 and 6 month intervals are preferred. The second dose should be administered at least 1 month after the first dose, and the third dose should be administered at least 4 months after the first dose, and at least 2 months after the second dose.

5. This dose is not needed routinely, but can be included for convenience.
6. A second dose of MMR is recommended, at least 1 month after the first dose given. For convenience, options include giving it with the next scheduled vaccination at 18 months of age or with school entry (4-6 years) vaccinations (depending on the provincial/territorial policy), or at any intervening age that is practicable.
7. Delay until subsequent visit if child is less than 12 months of age.
8. Recommended schedule and number of doses depend on the product used and the age of the child when vaccination is begun (see page 80 for specific recommendations). Not required page age 5.
9. Omit these doses if the previous doses of DTaP and polio were given after the fourth birthday.

(Adapted from the Fifth Edition of the Canadian Immunization Guide, prepared by the National Advisory Committee on Immunization (NACI) 1998)

This article has reviewed the guidelines for routine immunization of children in Canada with particular focus on children adopted internationally who may have incomplete or inadequate vaccination upon arrival in Canada. Part 2 of this article, which will appear in the next newsletter, will review the new vaccines and their indications. Further information about immunization can be found in these sources:

Canadian Websites:

- Canadian Paediatric Society - www.cps.ca
- Caring for kids - www.caringforkids.cps.ca
- Canadian Immunization Awareness Program - www.immunize.cpha.ca

- Division of Immunization, Health Canada - www.hc-sc.gc.ca/hpb/lcdc/bid/di
- Canadian Infectious Disease Society - www.cids.medical.org
- Canadian Coalition for Influenza Immunization - www.influenza.cpha.ca

American Websites:

- Centers for Disease Control - www.cdc.gov/nip
- Immunization Action Coalition - www.immunize.org
- National Network for Immunization Information - www.immunizationinfo.org
- National Partnership for Immunization - www.partnersforimmunization.org
- Institute for Vaccine Safety-John Hopkins University - www.vaccinesafety.edu
- Childhood Immunization Support Program - www.cispimmunize.org

Other Websites:

- Global Alliance for Vaccine and Immunization (GAVI) - www.vaccinealliance.org
- World Health Organization - www.who.int/vaccines

Books:

- Your Child's Best Shot: A parent's guide to vaccination. Ottawa. Canadian Paediatric Society, 1997. Also available in French (currently under revision)
- Vaccines: What Every Parent Should Know. Revised edition - includes current vaccine controversies. New York: IDG Books Worldwide Inc., 1999. Authors: Offit, PA; Bell, LA.

Children and Youth New to Canada. Ottawa. Canadian Paediatric Society, 1999.

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