



What is new in the Canadian Immunization Guide: November 2016 to November 2018

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Abstract

The Canadian Immunization Guide is an online resource that provides evidence-based recommendations on the use of vaccines and vaccine administration practices to health care providers and public health practitioners in Canada. Its contents are based on the most up-to-date recommendations of the National Advisory Committee on Immunization (NACI) and the Committee to Advise on Tropical Medicine and Travel (CATMAT). The Canadian Immunization Guide (CIG) is frequently updated online in response to new evidence and changing product indications. Between November 2016 and November 2018, new and updated recommendations were published for the chapters on Vaccine Administration Practices, Immunization of Immunocompromised Persons, and Immunization During Pregnancy and Breastfeeding and on seven active vaccines (for cholera and traveller’s diarrhea, influenza, hepatitis A, hepatitis B, herpes zoster, human papillomavirus and pertussis), as well as a recent update on measles post-exposure prophylaxis.

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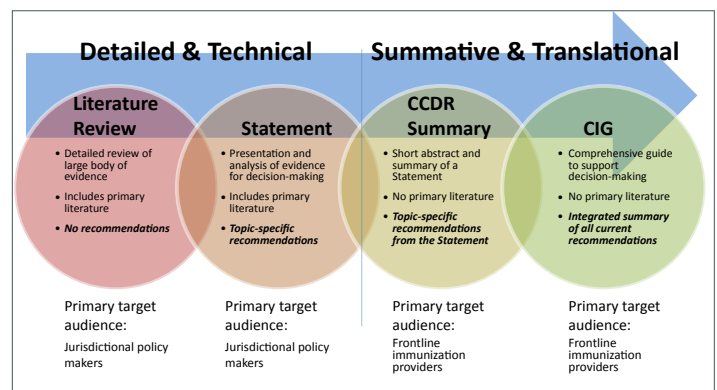
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Introduction

The National Advisory Committee on Immunization (NACI) has been providing advice on vaccines to governments and health care professionals in Canada and internationally since 1964 (1). It does this by providing a variety of information products to meet the needs of different audiences. NACI develops detailed and technical products, such as literature reviews and NACI statements, for immunization experts and policy makers. NACI also develops summative and translational products, such as statement summaries in the Canada Communicable Disease Report and updates in the Canadian Immunization Guide (CIG), for front line public health and clinical care. **Figure 1** provides an overview of NACI’s production process.

CIG has been providing clinically-relevant information on immunization to front line immunization providers since 1979 (2). CIG transformed into an evergreen online format in 2012 (3) and is now updated on an ongoing basis as new recommendations from NACI are completed. It also includes vaccine and related recommendations from the Committee to Advise on Tropical Medicine and Travel (CATMAT). CIG does not address economic and societal considerations related to immunization; however, it does highlight changes in disease epidemiology, safety signals and vaccine supply issues.

Figure 1: National Advisory Committee on Immunization: Production process



Abbreviations: CDDR, Canada Communicable Disease Report; CIG, Canadian Immunization Guide

CIG is divided into five parts: key immunization information; vaccine safety; vaccination of specific populations; active vaccines; and passive immunization.

The purpose of this update is to provide an overview of the changes that have been made to CIG between November 2016 and November 2018. This includes changes to key immunization information, vaccination of specific populations, active vaccines and measles postexposure prophylaxis (PEP).



Key immunization information

The chapter on *Vaccine Administration Practices* (4) was updated. It now has a *Needle Selection Guide* that emphasizes the importance of selecting needle length for intramuscular injection on a case-by-case basis that includes an assessment of the viscosity of the immunizing agent as well as the recipient's age, weight and muscle mass. The use of filter needles is not recommended as active ingredients such as adjuvants may be filtered out during the injection process. It notes that injections may be provided through a tattoo or a superficial birthmark; however, injection sites with potentially impaired lymphatic drainage should be avoided. There is a new table that provides immunization pain management strategies for clients of all ages. Regarding the combination of contents of multi-dose vials, health care providers are advised to adhere to jurisdictional or organizational policies.

Vaccination of specific populations

Two chapters were updated: immunization of immunocompromised persons; and immunization during pregnancy and breastfeeding.

Throughout the *Immunization of Immunocompromised Persons* chapter (5), tables have been included that outline immunization recommendations by vaccine and primary immunodeficiencies, acquired (secondary) immunodeficiencies, transplant recipients/candidates and HIV-infected persons. New information has been added on defects in innate immunity, criteria for consideration of measles-mumps-rubella and varicella vaccines in those with partial T cell defects, contraindications for live viral vaccines in some types of phagocytic cell defects and immunosuppressive therapy.

The *Immunization in Pregnancy and Breastfeeding* chapter (6) was updated to reflect the new recommendation to administer pertussis vaccine during every pregnancy between 27 and 32 weeks. It also clearly states that vaccines containing thimerosal are safe in pregnancy and should be used if indicated. Additional considerations during pregnancy have been added for the administration of Rhesus (Rh) immunoglobulin and other blood products and for the administration of the following vaccines: conjugate quadrivalent meningococcal; meningococcal B vaccine; yellow fever; and Japanese encephalitis.

Active vaccines and passive immunization

Seven active vaccine chapters were updated, along with an update on measles PEP using immune globulin.

Cholera and Enterotoxigenic *Escherichia coli* (travellers' diarrhea)

Due to the limited benefits associated with this vaccine, the oral cholera vaccine should no longer be routinely recommended to prevent travellers' diarrhea. CATMAT notes that it may be considered for those who are at highest risk of infection, health complications or serious inconveniences, such as humanitarian workers, health care workers in endemic countries, travellers

at high risk of exposure to contaminated water or food, immunocompromised persons and those with chronic illnesses for whom there is an increased risk of serious consequences from travellers' diarrhea. In addition, CATMAT recommends that all other clients follow hand hygiene, food and water safety practices and consider over-the-counter medication for the management of travellers' diarrhea (7,8).

Influenza

Seasonal influenza vaccine recommendations are updated annually in advance of the influenza season (9).

Hepatitis A

The recommended dosages for intramuscular immune globulin (IM Ig) as pre- and postexposure prophylaxis for hepatitis A have been increased to reflect new product monograph indications (10).

Hepatitis B

Based on vaccine immunogenicity and safety data, NACI has revised its recommendation for the dosage of Recombivax HB® for infants (of hepatitis B-negative mothers) to children less than 11 years of age from 0.25 mL to 0.5 mL. For children, previously-received doses of 0.25 mL are still considered valid and do not need to be repeated. For immunocompromised individuals, initial annual monitoring of hepatitis B antibody levels may be considered after primary immunization (11).

Herpes zoster (shingles)

Following Canadian authorization of the new recombinant herpes zoster vaccine (RZV), Shingrix®, NACI now recommends that RZV should be offered to adults 50 years and older without contraindications, including those who have previously received the live zoster vaccine (LZV), Zostavax®, at least one year prior. NACI recommends that individuals without contraindications who have had a previous episode of herpes zoster may be offered two doses of RZV, at least one year after the last episode. When RZV is contraindicated, unavailable or inaccessible, the previously-approved LZV may still be considered for immunocompetent individuals who are at least 50 years old and who have no contraindications. RZV (but not LZV) may be considered in immunocompromised adults who are at least 50 years old on a case-by-case basis (12–14). Two tables have been added to the guidelines that summarize the key considerations for the choice of a herpes zoster vaccine and its administration (12).

Human papillomavirus

The human papillomavirus (HPV) vaccine, HPV9, is now recommended for immunocompetent males and females who are nine to 14 years old using either a two- or three-dose immunization schedule, while it continues to be recommended using only a three-dose immunization schedule for males and females 15–26 years of age and may be used in those over 26 years of age who are at risk of ongoing exposure. This is similar to HPV2 (females only) and HPV4 vaccines. Any HPV vaccine



(HPV 2, HPV4, or HPV9 vaccine) should allow at least 24 weeks between the first and last dose in either a two- or three-dose schedule. Immunocompromised individuals should continue to receive the vaccine on a three-dose immunization schedule with at least 24 weeks between the first and last dose of vaccine (15).

Pertussis (whooping cough)

Recent evidence suggests that infants can effectively be protected against pertussis (whooping cough) through maternal immunization with the tetanus-diphtheria-pertussis (Tdap) vaccine during pregnancy. The Tdap vaccine is now recommended for every pregnancy between 27 and 32 weeks of gestation. When unique patient considerations preclude vaccination during this period, it is possible to offer the Tdap at any time from 13 weeks to the time of delivery (16).

Measles

New evidence suggests that the previously recommended dosage of immune globulin (Ig) no longer provides optimal protection for measles PEP. For NACI has updated recommendations for Ig PEP dosage, indications and routes of administration (17) as follows:

- Immunocompetent individuals six months of age and older who have been exposed to measles and who have no contraindications should be offered a measles-mumps-rubella vaccine within 72 hours of the exposure
- If injection volume is not a major concern, infants younger than six months of age should be given IM Ig at a concentration of 0.5 mL/kg, to a maximum dose of 15 mL, administered over multiple injection sites
- If injection volume is not a major concern, infants six to 12 months old who are identified after 72 hours and within six days of measles exposure should receive IM Ig (0.5 mL/kg), to a maximum dose of 15 mL, administered over multiple injection sites
- If injection volume is not a major concern, contacts who are pregnant or immunocompromised can receive IM Ig at a concentration of 0.5 mL/kg, understanding that recipients 30 kg or more will not receive the measles antibody concentrations that are considered to be fully protective
- In cases where injection volume is a major concern or for recipients 30 kg or more, intravenous immunoglobulin (IV Ig) can be provided at a dose of 400 mg/kg (17); and
- NACI does not recommend that susceptible immunocompetent individuals older than 12 months of age receive Ig PEP for measles exposure due to the low risk of disease complications and the practical challenges of administration for case and contact management

A summary of the updated recommendations on the active vaccines is presented in **Table 1**.

Table 1: Summary of updates on active vaccines and postexposure prophylaxis, November 2016 to November 2018

Vaccine-preventable disease	Previous recommendation	New recommendation
Cholera and travellers' diarrhea	Not routinely recommended for travellers	May be considered for those who are at highest risk of infections, complications or inconveniences
Influenza	New seasonal recommendations are issued every year in preparation of the upcoming influenza season	
Hepatitis A	For protection lasting less than three months IM Ig is 0.02 mL/kg of body weight If protection is required for three months or longer, 0.06 mL/kg of body weight should be administered and repeated every six months	IM Ig standard dose with a dosage of 0.1 mL/kg is recommended for household and institutional hepatitis A case contacts For travellers to high risk areas, prophylactic doses are as follows: Up to one month travel = 0.1 mL/kg Up to two months two months or longer = 0.2 mL/kg Repeat dose of 0.2 mL/kg every two months
Hepatitis B	Recombivax HB® dosage for children 0–10 years old of hepatitis B negative mothers: 0.25 mL	Recommended dosage for Recombivax HB increased to 0.5 mL
Herpes zoster (shingles)	LZV (Zostavax®) is recommended for adults 50 years and older without contraindication	The RZV (Shingrix®) is recommended for adults 50 years old and over without contraindications, including those who received LZV at least one year prior If RZV is contraindicated, unavailable or inaccessible, then LZV may be considered for immunocompetent individuals ≥50 years of age without contraindications RZV (not LZV) may be considered for immunocompromised adults ≥50 years of age based on a case-by-case assessment of the benefits versus risks
Human papillomavirus	HPV9 vaccine recommended using a three-dose schedule, compared to HPV2 and HPV4 vaccine which may be used in a two- or three-dose schedule in some populations	HPV9 vaccine now recommended as a two-dose or three-dose schedule in some populations, similar to HPV2 and HPV4 vaccines
Pertussis (whooping cough)	Tdap vaccine should be offered to pregnant women during pertussis outbreaks	Tdap vaccine should be offered to every woman during every pregnancy, ideally between weeks 27 and 32 of gestation to protect infants



Table 1 (continued): Summary of updates on active vaccines and postexposure prophylaxis, November 2016 to November 2018

Vaccine-preventable disease	Previous recommendation	New recommendation
Measles	<p>Dosage: when indicated, IM Ig at a concentration of 0.25 mL/kg should be administered or 0.5 mL/kg for immunocompromised individuals</p> <p>Populations: IM Ig provided to susceptible individuals of all ages presenting between 72 hours and six days post-exposure; and provided to infants under six months of age, pregnant women, or immunocompromised individuals presenting anytime up to six days postexposure</p>	<p>Increased IM Ig dosage: When indicated, IM Ig at a concentration of 0.5 mL/kg, up to a maximum dosage of 15 mL where injection volume is not a concern</p> <p>Route of administration: IV Ig can be considered at a dose of 400 mg/kg when injection volume is a major concern or for individuals ≥ 30 kg</p> <p>Change to recommended populations: NACI no longer recommends that susceptible immunocompetent individuals older than 12 months of age receive Ig PEP for measles exposure due to the low risk of disease complications and the practical challenges of administration for case and contact management</p>

Abbreviations: HPV, human papillomavirus; Ig, immune globulin; IM Ig, intramuscular immune globulin; IV Ig, intravenous immune globulin; kg, kilogram; LZV, live herpes zoster vaccine; mg, milligram; mL, milliliter; NACI, National Advisory Committee on Immunization; N/A, not applicable; PEP, postexposure prophylaxis; RZV, recombinant herpes zoster vaccine; Tdap, tetanus toxoid, diphtheria toxoid, acellular pertussis; \geq , at least

Summary and conclusion

CIG continues to provide practical, evidence-based recommendations, based on the advice provided by NACI and CATMAT, to health care professionals to inform front line immunization practices. Summaries of changes are highlighted in Canada Communicable Disease Report from time to time. There is also a list of the changes made to CIG available online, and this list is updated in close to real time (18). Notices of new NACI recommendations, statements, NACI updates and updates to CIG chapters are also available by subscribing to [NACI and CIG mailing lists](#) (19).

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References

- Desai S, Lsmail SJ, Lerch R, Warshawsky BF, Gemmill I. Canada's National Advisory Committee on Immunization: Celebrating 50 years. *Can J Infect Dis Med Microbiol* 2015 May-Jun;26(3):126–8. [PubMed](#)
- Public Health Agency of Canada. Canadian immunization guide: Introduction. Ottawa (ON): PHAC; 2017. www.canada.ca/en/public-health/services/canadian-immunization-guide/introduction.html
- Public Health Agency of Canada. Canadian immunization guide: Acknowledgements. Ottawa (ON): PHAC; 2016. www.canada.ca/en/public-health/services/canadian-immunization-guide/acknowledgements.html
- Public Health Agency of Canada. Canadian Immunization Guide: Part 1 – Key Immunization Information; Vaccine Administration Practices. Ottawa (ON): PHAC; [updated 2017]. www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-1-key-immunization-information/page-8-vaccine-administration-practices.html
- Public Health Agency of Canada. Canadian Immunization Guide: Part 3 – Vaccination of Specific Populations; Immunization of Immunocompromised Persons. Ottawa (ON): PHAC; 2018. www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-3-vaccination-specific-populations/page-8-immunization-immunocompromised-persons.html
- Public Health Agency of Canada. Canadian Immunization Guide: Part 3 – Vaccination of Specific Populations; Immunization during Pregnancy and Breastfeeding. Ottawa (ON): PHAC; [updated 2016]. www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-3-vaccination-specific



[populations/page-4-immunization-pregnancy-breastfeeding.html](#)

7. Public Health Agency of Canada. Cholera and Enterotoxigenic Escherichia Coli (ETEC) Travellers' Diarrhea Vaccine, Canadian Immunization Guide. Ottawa (ON): PHAC; [updated 2017]. www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-3-cholera-enterotoxigenic-escherichia-coli-travellers-diarrhea-vaccine.html
8. Committee to Advise on Tropical Medicine and Travel. Statement on Travellers' Diarrhea. Ottawa (ON); CATMAT; [updated 2015]. www.canada.ca/en/public-health/services/travel-health/about-catmat/statement-travellers-diarrhea.html
9. Public Health Agency of Canada. Canadian Immunization Guide Chapter on Influenza and Statement on Seasonal Influenza Vaccine for 2018–2019. Ottawa (ON): PHAC; 2018. www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-statement-seasonal-influenza-vaccine-2018-2019.html
10. Grifols Therapeutics Inc. Product monograph: GamaSTAN® S/D: Immune Globulin (Human), Solvent/Detergent Treated, Injectable Solution, 15-18% Protein. 2018. https://pdf.hres.ca/dpd_pm/00043801.PDF
11. Public Health Agency of Canada. Canadian immunization guide: Part 4 – Active Vaccine; Hepatitis B vaccine. Ottawa (ON): PHAC; [updated 2017]. www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-7-hepatitis-b-vaccine.html
12. Public Health Agency of Canada. Herpes Zoster (Shingles) Vaccine: Canadian Immunization Guide. PHAC; Ottawa (ON): PHAC; [updated 2018]. www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-8-herpes-zoster-shingles-vaccine.html
13. Public Health Agency of Canada. National Advisory Committee on Immunization. Updated Recommendations on the Use of Herpes Zoster Vaccine. Ottawa (ON): PHAC; 2018. www.canada.ca/en/services/health/publications/healthy-living/updated-recommendation-s-use-herpes-zoster-vaccines.html
14. Warrington R, Ismail S. NACI. Summary of the NACI Update on Herpes Zoster Vaccines. Can Commun Dis Rep 2018;44(9):220–5. DOI
15. Public Health Agency of Canada. Canadian Immunization Guide: Part 4 – Active Vaccines; Human Papillomavirus Vaccine. Ottawa (ON): PHAC; [updated 2018]. www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-9-human-papillomavirus-vaccine.html
16. Public Health Agency of Canada. Canadian Immunization Guide: Part 4– Active Vaccines; Pertussis vaccine. PHAC; Ottawa (ON): PHAC; [updated 2018]. www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-15-pertussis-vaccine.html
17. Tunis MC, Salvadori MI, Dubey V, Baclic O; National Advisory Committee on Immunization (NACI). Updated NACI recommendations for measles post-exposure prophylaxis. Can Commun Dis Rep 2018;44(9):226–30. DOI
18. Public Health Agency of Canada. Canadian immunization guide: Table of updates. Ottawa (ON): PHAC; 2018. www.canada.ca/en/public-health/services/canadian-immunization-guide/updates.html
19. Public Health Agency of Canada. Canadian Immunization Guide update and National Advisory Committee on Immunization - publications mailing list. Ottawa (ON): PHAC; 2018. <http://health.canada.ca/en/health-canada/services/healthy-living/immunization-and-vaccines/canadian-immunization-guide/subscribe.html>