Improving Adult Immunization

Information for health care providers

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Adult immunization

- Under-immunization for vaccine-preventable diseases is common among Canadian adults. While immunizations are recommended through all stages of life, it is the responsibility of health care providers to inform patients about the vaccines they need to stay healthy and prevent infection.

- The following slides offered by Immunize Canada are designed to assist health care providers increase their knowledge on adult immunization. The information in this resource is based on recommendations from the National Advisory Committee on Immunization (NACI) and the *Canadian Immunization Guide* (CIG).

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Role of health care providers

- The incidence of various infectious diseases was dramatically reduced after widespread use of vaccines in Canada.

- However, health care providers still must remain vigilant , as there is a potential for Canadians to become complacent and question the role of vaccines in preventative health care – risking lower immunization coverage and resurgence of vaccine-preventable diseases.

- All adults in Canada without contraindications should be routinely immunized against vaccine-preventable diseases.

- Health care providers have a responsibility to ensure that adults under their care are protected against vaccine-preventable diseases. It is also their duty to regularly review their patient's immunization status, to ensure it is up to date.

Why is adult immunization important?

Adults need to keep their immunization (vaccination) up to date for several reasons:

1. Some vaccines do not offer lifelong protection.
   - For example, adults require tetanus booster every ten years and should receive the influenza vaccine each year.

2. Some adults did not receive all the vaccines recommended in childhood.

3. People who have lived in another country as a child may not have received all the immunizations recommended in Canada.

4. Fully immunized adults can help protect vulnerable populations – such as infants, elderly, immune-compromised Canadians , etc. – who have not been immunized or who are unable to be immunized.

5. **Vaccine-preventable diseases can occur at any time because the bacteria and viruses that cause these infections have not been eliminated.**

Recommended adult immunizations

- Tetanus
- Pertussis
- Influenza
- Pneumococcal
- HPV
- Herpes Zoster
- Meningococcal
- Measles, Mumps, Rubella
- Varicella
- Hepatitis A
- Hepatitis B

Recommended adult immunizations:
Tetanus

Burden of disease:

- Tetanus is a serious and often deadly disease caused by the bacterium *Clostridium tetani*, which is found in dirt, dust and soil.
- Many Canadians, especially those who are older or born outside of Canada, do not have protective concentrations of tetanus antitoxin.
- The case fatality rate in the unvaccinated varies from 10% to over 80%, and is highest in the elderly.

Recommended immunization:

- Immunization of previously unvaccinated or incompletely vaccinated adults
- Routine booster immunization of adults
- Post-exposure prophylaxis in some wound management situations

Tetanus vaccines:

- Td, Td-IPV, Tdap, Tdap-IPV

Recommended adult immunizations:
Tetanus (continued)

Schedule:

- *Adults previously immunized with tetanus toxoid-containing vaccine:* one dose of Tdap vaccine if not previously received in adulthood (18 years of age and older), and a booster dose of Td vaccine every 10 years.
- *Adults not previously immunized with primary series of tetanus toxoid-containing vaccine should receive the following:* one dose of Tdap-IPV vaccine followed by two doses of Td-IPV. A booster dose of Td vaccine is recommended every subsequent 10 years.
- *Post-exposure/wound management:* the need for tetanus toxoid-containing vaccine in wound management, with or without tetanus immune globulin, depends on both the nature of the wound and the vaccination history.

Co-administration with other vaccines:

- Tetanus-toxoid containing vaccines can be administered concomitantly with routine vaccines at different injection sites.

Recommended adult immunizations:
Pertussis

Burden of disease:

- Pertussis is highly communicable and can affect individuals of any age.
- Immunity to pertussis from childhood vaccination and natural disease wanes with time; therefore, adults who are unvaccinated or have not received a booster vaccination are at risk of infection and its consequent transmission to others.

Recommended immunization:

- Adults who have not previously received a dose of pertussis-containing vaccine in adulthood, including immunocompromised adults and pregnant women at or after 26 weeks of pregnancy.

Pertussis vaccines:

- Tdap, Tdap-IPV

Recommended adult immunizations:
Pertussis (continued)

Schedule:

- One dose of Tdap vaccine

Co-administration with other vaccines:

Pertussis-containing vaccines may be administered concomitantly with routine vaccines at different injection sites using separate needles and syringes.

Recommended adult immunizations: Influenza

Burden of disease:

- Approximately 10-20% of the Canadian population becomes infected with influenza each year.
- Adults with co-morbidities are at greatest risk of influenza-related complications, as well as residents of nursing homes and other chronic-care facilities, people 65 years of age and older, pregnant women, and Aboriginal peoples.

Recommended immunization:

- *Adults (including pregnant women) with underlying health conditions, including:*
  - cardiac or pulmonary disorders (including bronchopulmonary dysplasia, cystic fibrosis and asthma), diabetes mellitus and other metabolic diseases, cancer, immune-compromising conditions (due to underlying disease and/or therapy), renal disease, morbid obesity, anemia or hemoglobinopathy, conditions that compromise the management of respiratory secretions
- Residents of nursing homes and other chronic-care facilities
- People 65 years of age and older
- Healthy pregnant women
- Aboriginal peoples
- *Adults capable of spreading influenza to individuals at high risk of complications:*
  - health care providers in facilities and community settings
  - household contacts of high-risk persons
  - service providers working in closed settings with high-risk adults (e.g., crew on a ship)
  - essential community service providers

Recommended adult immunizations: Influenza (continued)

Influenza Vaccines:

- Trivalent inactivated vaccine (TIV), adjuvanted trivalent inactivated vaccine (MF59 – adjuvanted TIV), quadrivalent inactivated vaccine (QIV), live attenuated influenza vaccine (LAIV).

Schedule:

- 1 dose annually:
  - QIV, TIV or LAIV are preferred products for healthy adults 18 to 59 years of age unless contraindicated.
  - QIV or TIV are preferred products for adults with chronic health conditions.
  - QIV or TIV are preferred products for adults 60 to 64 years of age with or without chronic health conditions.
  - QIV, TIV or MF59-adjuvanted TIV are preferred products in adults 65 years of age and older.

Co-administration with other vaccines:

- All influenza vaccines, including LAIV, can be given concomitantly with, or at any time before or after, live attenuated vaccines or inactivated vaccines.

Contraindications:

- Influenza vaccine should not be given to people who have developed an anaphylactic reaction to a previous dose or to any of the vaccine components, or who have developed Guillain-Barré Syndrome (GBS) within six weeks of influenza vaccination.
- LAIV is not recommended for pregnant women or persons with immune-compromising conditions.

Recommended adult immunizations: Pneumococcal

Burden of disease:

- *S. pneumoniae* is a common cause of invasive disease, such as pneumonia, bacteremia, and meningitis.
- The case fatality rate of bacteremic pneumococcal pneumonia is 5% to 7%, and is higher among elderly persons.
- Incidence rates of IPD among adults increases with age among adults, with those aged 60 years and over most affected.

Recommended immunization:

- Adults ≥ 65 years of age
- Immunocompetent adults less than 65 years of age in long-term care facilities
- Adults at highest risk of IPD, including:
  - Chronic cardiac or pulmonary disease
  - Chronic kidney disease
  - Chronic liver disease
  - Diabetes
  - HIV
- Asthma that required medical care in the preceding 12 months
- Adults with alcoholism
- Adults with weakened immune system
- Adults who have smoking-related diseases such as COPD
- Adults who smoke
- Adults on immunosuppressive therapies
- Adults who are homeless
- Adults who use illicit drugs

Recommended adult immunizations:
Pneumococcal (continued)

Pneumococcal Vaccines:

- Pneu-P-23 vaccine, Pneu-C-13 vaccine

Schedule:

Immunocompetent adults

- Administer one dose of Pneu-P-23 vaccine to all adults 65 years of age and older, and to immunocompetent adults less than 65 years of age in long-term care facilities.

Adults at highest risk of IPD

- Administer one dose of Pneu-P-23 vaccine to adults who are at high risk of IPD.
- Adults with immunocompromising conditions (except hematopoietic stem cell transplant [HSCT]): administer one dose of Pneu-C-13 followed 8 weeks later by one dose of Pneu-P-23 (if not previously immunized with Pneu-P-23). The Pneu-C-13 dose should be administered at least one year after any previous dose of Pneu-P-23. *Adults with HSCT:* administer three doses of Pneu-C-13 starting 3-9 months after transplant. These doses should be administered at least 4 weeks apart, followed by a dose of Pneu-P-23 12 to 18 months post-transplant (i.e. 6 to 12 months after the last dose of Pneu-C-13).

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Recommended adult immunizations: Pneumococcal (continued)

Schedule (continued):

- Re-immunization of adults who have received a previous dose of Pneu-P-23 because of a medical condition that places them at highest risk of IPD is recommended, with one dose of Pneu-P-23 as long as 5 years have passed since the previous Pneu-P-23 dose.
- Pregnant women can be vaccinated with Pneu-P-23 or Pneu-C-13 vaccine, if indicated. Recommendations for pneumococcal vaccines in pregnancy are the same as for non-pregnant and non-breastfeeding adults.

Co-administration with other vaccines:

- Pneu-P-23 vaccine and HZ vaccine may be administered together.

Recommended adult immunizations: Human Papillomavirus (HPV)

Burden of disease:

- In the absence of vaccination, it is estimated that 75% of sexually active Canadians will have an HPV infection at some point in their lives; most infections are transient.
- High-risk HPV types 16 and 18 and others can lead to cervical and anogenital cancers, as well as certain cancers of the head and neck. HPV types 16 and 18 cause approximately 70% of cervical cancers.
- Low-risk HPV types can cause anogenital warts (AGW). Most cases (>90%) of AGW are attributable to HPV types 6 and 11.

Recommended immunization:

- Females 9 through 26 years of age
- Females 15 through 26 years of age who have had previous Pap test abnormalities, including cervical cancer and external genital warts
- Males between 9 and 26 years of age, including males who have sex with males
- Females or males 27 years of age and older at ongoing risk of exposure may be immunized.
- HPV vaccines are not recommended for use in pregnancy because data on HPV vaccination in pregnancy are limited.
- HPV vaccine may be administered to immunocompromised persons according to routine vaccination schedules. However, the immune response and vaccine efficacy may be less than that in persons who are immunocompetent.

Recommended adult immunizations: Human Papillomavirus (HPV)(continued)

HPV Vaccines:

- Bivalent (HPV2) vaccine, quadrivalent (HPV4) vaccine

Schedule:

- *Healthy females (9-14 years of age):* either a 2-dose or 3-dose schedule of the HPV2 or HPV4 vaccines. For a 2-dose schedule, at least 6 months between the first and second dose is recommended. If the interval between doses is shorter than 6 months, a third dose should be given.
- *Healthy females (≥ 15 years of age):* a 3-dose schedule of the HPV4 vaccine at 0, 2 and 6 months, or 0, 1, and 6 months for HPV2 vaccine. If the first dose was administered between 9-14 years of age, a 2-dose schedule is sufficient for females >15 years of age, with the second dose administered at least 6 months after the first dose.
- *Healthy males (9-14 years of age):* either a 2-dose or 3-dose schedule of the HPV4 vaccine. For a 2-dose schedule, at least 6 months between the first and second dose is recommended. If the interval between doses is shorter than 6 months, a third dose should be given at least 6 months after the first dose.

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Recommended adult immunizations: Human Papillomavirus (HPV)(continued)

Schedule (continued):

- *Healthy males (≥ 15 years of age):* a 3-dose schedule of the HPV4 vaccine at 0, 2 and 6 months. If the first dose was administered between 9-14 years of age, a 2-dose schedule is likely to be sufficient for males >15 years of age, with the second dose administered at least 6 months after the first dose.
- Immunocompromised individuals and immunocompetent HIV-infected individuals may receive a 3-dose schedule of the HPV4 vaccine for males and females at 0, 2, and 6 months; or HPV2 for females at 0, 1, and 6 months.
- Incomplete or interrupted vaccine schedules should be initiated, even if the series may not be completed according to schedule. If the vaccine schedule is interrupted, the vaccine series does not need to be restarted.

Co-administration with other vaccines:

- HPV vaccine can be administered concomitantly with other age-appropriate vaccines.

Recommended adult immunizations: Herpes Zoster

Burden of disease:

- Herpes zoster (HZ) infection is characterized by pain and a unilateral vesicular eruption, usually in a single dermatome. It arises from the reactivation of latent varicella zoster virus (VZV) from sensory ganglia present from previous varicella (chickenpox) infection.
- Complications of acute HZ are potentially severe and may include sight-threatening eye infections, central nervous system infection, nerve palsies including Ramsay-Hunt Syndrome, neuromuscular disease including Guillain-Barré Syndrome, and secondary bacterial infections.
- Most frequent complication of acute HZ is post-herpetic neuralgia (PHN), which often has a major adverse impact on quality of life, especially in elderly persons.
- The incidence and severity of HZ and its complications increase with age.
- The lifetime risk of HZ is estimated to be as high as 30%.

Recommended immunization:

- Adults 60 years and older without contraindications
- Adults ≥ 50 years may be considered for immunization
- Adults ≥ 50 years of age and older with a prior history of HZ disease, with at least one year recommended following the last episode of HZ, may be considered for immunization.
- Adults on low-dose immunosuppressive therapy may be considered for immunization.
- Adults on anti-TNF biologics may be considered for immunization on a case-by-case basis after review with an expert in immunodeficiency.

Recommended adult immunizations:
Herpes Zoster (continued)

Herpes Zoster Vaccines:

- HZ vaccine

Schedule:

- One dose of HZ vaccine for recommended recipients.
- HZ vaccine is generally contraindicated in immunocompromised persons.

Co-administration with other vaccines:

- Herpes zoster vaccine can be administered concomitantly with other live vaccines given via parenteral, oral, or intranasal routes.
- Parenteral vaccines given separately should be administered with an interval of 4 weeks.
- Herpes zoster vaccine can be administered concomitantly with Pneu-P-23.

Recommended adult immunizations:
Meningococcal

Burden of disease:

- Invasive meningococcal disease (IMD) is endemic in Canada but occurs at low rates.
- The majority of IMD is associated with *Neisseria meningitidis* serogroups A, B, C, Y and W-135.
- IMD case fatality is approximately 10%.
- Of IMD survivors, 10% to 20% have long-term sequelae which include hearing loss, neurologic disabilities, and digit or limb amputations.

Recommended immunization:

- Young adults, even if they have previously been vaccinated as an infant or toddler
- At higher risk of IMD are adults with:
  - functional or anatomic asplenia
  - congenital complement, properdin, factor D or primary antibody deficiencies
  - acquired complement deficiency due to receipt of the terminal complement inhibitor eculizumab (Soliris™)
- Also at high risk are:
  - travellers to areas with high rates of endemic meningococcal disease or transmission, including travellers to the meningitis belt of sub-Saharan Africa and pilgrims to the Hajj in Mecca, Saudi Arabia
  - research, industrial and clinical laboratory personnel who may be at risk of exposure to *N. meningitidis*
  - military personnel who are at increased risk of meningococcal disease
  - HIV-positive individuals should be considered for vaccination, especially if HIV is congenitally acquired

Recommended adult immunizations: Meningococcal (continued)

Meningococcal Vaccines:
Men-C-C, 4CMenB, Men-C-ACYW-135

Schedule:
- Administer one dose of Men-C-C or Men-C-ACYW-135 to healthy adults up to 24 years of age.
- Re-vaccination with Men-C-ACYW-135 is recommended for adults at high risk of IMD.
- Previously unimmunized adults at high risk should receive a two-dose primary series administered 8 weeks apart, with a minimum interval of 4 weeks.
- Vaccination of adults at high risk of IMD caused by serogroup B should be considered using the 4CMenB vaccine.

Co-administration with other vaccines:
- Men-C-ACYW-135 vaccine can be administered concomitantly with other adult age-appropriate vaccines.
- Different formulations of vaccine that protect against the same disease should be separated in time.

Recommended adult immunizations: Measles, Mumps, Rubella

Burden of disease:

- Measles occurs worldwide and is one of the most highly communicable diseases.
- Canada has imported cases and occasional outbreaks of measles.
- Outbreaks of mumps continue to occur in Canada, and the proportion of cases aged 20 years and older has increased.
- Rubella occurs worldwide, is highly communicable and is particularly dangerous during pregnancy, where it can result in congenital rubella syndrome (CRS) in the infant.

Recommended immunization:

- Rubella-containing vaccine is recommended for all susceptible adults.
- Priority groups for rubella immunization include:
  - Non-pregnant women of childbearing age – especially foreign-born
  - Staff and students in educational settings
  - People who work with children (e.g., child care workers, teachers)
  - Health care workers
  - Travellers to rubella-endemic areas
- Mumps- and measles-containing vaccine is recommended for susceptible adults born in 1970 or later.
- Immigrants new to Canada

Recommended adult immunizations: Measles, Mumps, Rubella (continued)

Measles, Mumps, Rubella Vaccines:

- MMR vaccine, MMRV vaccine

Schedule:

- Adults without contraindications, born in 1970 or later, who do not have documented evidence of receiving measles-containing vaccine on or after their first birthday, or laboratory evidence of immunity, or a history of laboratory-confirmed measles infection, should be immunized with one dose of MMR vaccine.
- Non-immune health care workers and military personnel: should be immunized with two doses of MMR vaccine at least 4 weeks apart regardless of year of birth.
- Students and travellers born in 1970 or later should be immunized with two doses of MMR vaccine.
- MMR and MMRV vaccines should generally not be given during pregnancy because of the theoretical risk of disease transmission to the fetus.
- Immunocompromised persons should not receive live vaccines because of the risk of disease caused by the vaccine strains.

Co-administration with other vaccines:

- MMR and MMRV vaccines can be administered concomitantly with all other vaccines.
- Varicella-containing vaccines should be administered 6 weeks apart from each other.
- Different vaccine formulations that protect against the same disease should be separated by time.

Recommended adult immunizations: Varicella

Burden of disease:

- Primary varicella zoster virus infection causes varicella (chickenpox), and reactivated infection results in herpes zoster (shingles).
- Complications are more common in adolescents, adults and immunocompromised people. Dehydration and pneumonia are reported more frequently in adults than children.

Recommended immunization:

- Univalent varicella vaccine is recommended for susceptible adults (18 to 49 years of age).
- Priority groups for varicella immunization include susceptible:
  - Non-pregnant women of childbearing age
  - Household contacts of immunocompromised people
  - Health care workers
  - Adults who may be exposed occupationally to varicella (e.g., people who work with young children)
  - Immigrants and refugees from tropical regions
  - People receiving chronic salicylate therapy (e.g., acetylsalicylic acid [ASA]).
  - People with cystic fibrosis
  - Susceptible adults exposed to a case of varicella

Recommended adult immunizations:
Varicella (continued)

Varicella Vaccines:

- Varicella vaccine, MMRV vaccine

Schedule:

- Adults (under 50 years of age) who may be susceptible to varicella should be tested for antibodies against varicella. If varicella susceptible, administer two doses of univalent varicella vaccine, at least 6 weeks apart.
- Adults (under 50 years of age) who have received only one dose of varicella vaccine should be offered a second dose.
- Varicella vaccines should generally not be given during pregnancy because of the theoretical risk of disease transmission to the fetus.
- Immunocompromised persons should not receive live vaccines because of the risk of disease caused by the vaccine strains.

Co-administration with other vaccines:

- Varicella-containing vaccines can be administered concomitantly with other vaccines.
- If two doses of MMRV are given, the two doses need to be at least 3 months apart.

Recommended adult immunizations:
Hepatitis A

Burden of disease:

- The severity of hepatitis A (HA) can range from a mild illness lasting 1 to 2 weeks to a severely disabling disease lasting several months.
- Approximately 25% of adult cases are hospitalized.
- The overall case fatality rate is 0.1% to 0.3%, but can reach 1.8% in adults over 50 years of age.
- Recovery from HA infection often takes 4 to 6 weeks but may take months, and about 25% of adult cases require hospitalization.

Recommended immunization:

- All adults who wish to decrease their risk of acquiring HA should be encouraged to be vaccinated.
- At highest risk of HA are:
  - Travelers to HA-endemic countries
  - Household or close contact with an acute HA case
  - Men who have sex with men (MSM)
  - Adults who use injection drugs
  - Populations or communities that have high endemic rates of HA or are at risk of HA outbreaks
  - Household or close contact with children adopted from HA-endemic countries

Recommended adult immunizations:
Hepatitis A (continued)

Hepatitis A Vaccines:

- HA vaccine, HAHB vaccine

Schedule:

- 2 doses of HA monovalent vaccine at months 0 and 6.
- With few exceptions, persons with indications for both hepatitis A (HA) and HB vaccine should be immunized with combined HAHB vaccine.
- HA vaccine may be administered to immunocompromised persons.

Co-administration with other vaccines:

- Hepatitis vaccines can be administered concomitantly with other vaccines.

Recommended adult immunizations: Hepatitis B

Burden of disease:

- Most acute cases of hepatitis B (HB) occur in unimmunized people 25 years of age and older who acquire infection through unprotected sexual activity, sharing injection drug equipment, household contact with a HB carrier or procedures with percutaneous exposure.
- A high proportion of HB carriers in Canada are immigrants from HB-endemic areas.
- A person with acute HB can become a chronic carrier and remain infectious. Chronic infection may lead to serious liver disease.

Recommended immunization:

- Adults at high risk include:
  - Immigrants to Canada from areas where HB is prevalent
  - Workers in child care settings where a child or worker has acute HB or is an HB carrier
  - Household and sexual contacts of acute HB cases and HB carriers
  - Household or close contacts of children adopted from HB-endemic countries if the adopted child is HBsAg positive
  - Populations or communities where HB is highly endemic
  - Residents and staff of institutions for the developmentally challenged
  - Staff and inmates of correctional facilities

Recommended adult immunizations: Hepatitis B (continued)

- Persons with lifestyle risks for infection, including:
  - Adults who have unprotected sex with new partners
  - Adults who have had more than one sexual partner in the previous 6 months
  - Adults with a history of sexually transmitted infections
  - Adults seeking evaluation or treatment for a sexually transmitted infection
  - Adults who engage in high-risk sexual practices
  - Adults who use injection drugs
  - Men who have sex with men (MSM)
- Adults with chronic liver disease from any cause, including hepatitis C
- Hemophiliacs and those receiving repeated infusions of blood or blood products
- Adults with chronic renal disease or undergoing chronic dialysis (hemodialysis or peritoneal dialysis)
- Adults with congenital immunodeficiencies
- Adults who have undergone hematopoietic stem cell transplantation (HSCT) or are awaiting solid organ transplant
- HIV-infected adults
- Travellers to HB-endemic areas
- Service providers with potential occupational exposure to blood, blood products and bodily fluids that may contain HB virus

Recommended adult immunizations: Hepatitis B (continued)

Hepatitis B Vaccines:

- HB vaccine, HAHB vaccine

Schedule:

- 3 doses of monovalent HB vaccine at months 0, 1 and 6 (depending on vaccine)
- With few exceptions, persons with indications for both hepatitis A (HA) and HB vaccine should be immunized with combined HAHB vaccine.
- HB vaccine may be administered to immunocompromised persons.

Co-administration with other vaccines:

- Hepatitis vaccines can be administered concomitantly with other vaccines.

Immunization of specific populations: Adults with chronic diseases

- Chronic diseases may increase a person's risk of infection and/or increase a person's risk of more severe disease should infection occur.
- There is also an increased risk of nosocomial exposure to vaccine-preventable diseases.
- Chronic disease leads to increased likelihood of prolonged hospitalization and frequent outpatient visits associated with chronic disease.
- Adults with chronic diseases who are immunocompetent may be immunized with both live and inactivated vaccines according to routine immunization schedules.

Immunization of specific populations:
Pregnant women

- Immunization status of women intending to become pregnant should be reviewed and vaccines updated as necessary prior to conception.
- In general, inactivated vaccines are not associated with an increased risk of adverse events when administered during pregnancy or in breastfeeding women.
- Vaccines recommended for the protection of a pregnant woman's health may include:
  - Inactivated influenza vaccine
  - Hepatitis B vaccine for a woman with ongoing exposure risks
  - Hepatitis A vaccine for a woman who is a close contact of a person with hepatitis A or who is travelling to an endemic area
  - Tetanus toxoid and reduced diphtheria toxoid-containing vaccine if indicated
  - Meningococcal vaccine in an outbreak setting or post-exposure
  - Pneumococcal polysaccharide or conjugate vaccine for women in a high-risk group due to underlying illnesses
  - Acellular pertussis-containing vaccine (Tdap) for all pregnant women who are at 26 weeks of pregnancy or greater who have not previously received Tdap vaccine in adulthood
- Live vaccines, such as measles, mumps, rubella, varicella, and yellow fever, should not be given during pregnancy because of the theoretical risk of harm to the fetus.

Immunization of specific populations: Adults in long-term care institutions

- Residents of long-term care facilities should receive all routine immunizations as appropriate for their age and risk status.

- The following vaccines are particularly important to consider:
  - Herpes zoster in those 60 years of age and older
  - Pneumococcal
  - Influenza
  - Pertussis should be given once in adulthood
  - Td vaccine is recommended every 10 years for adults, and providing that vaccine may be an opportunity to provide polio or pertussis vaccine as well in previously unimmunized or under-immunized people

Immunization of specific populations: Immunocompromised patients

- Each immunocompromised person is different and presents unique considerations regarding immunization.

- **Inactivated Vaccines:**
  - Inactivated vaccines should be administered to immunocompromised people if indicated. However, when considering consultation with the individual's attending physician is recommended.

- **Live Vaccines:**
  - Immunocompromised people should not receive live vaccines because of the risk of disease caused by the vaccine strains. People who are severely immunocompromised, or whose immunization status is uncertain, should not receive live vaccines.

Immunization of specific populations:
What is considered significant immunosuppression?

Some examples include:

- Prednisone 20 mg or more per day x 14 days or more
- Biologicals such as Enbrel and Remicade
- HIV and other known immunodeficiency states
- Malignant neoplasms including leukemia and lymphoma
- Solid tumors

For more information, visit
http://www.phac-aspc.gc.ca/publicat/cig-gci/p03-07-eng.php

Immunization of specific populations:
Drugs NOT considered significant immunosuppression

- Prednisone < 20 mg/day or short term (<14 days)
- Sulfasalazine
- Hydroxychloroquine
- Auranofin

Please note special considerations are given for drugs not considered to cause significant immunosuppression for administering the herpes zoster vaccine. For more information, visit http://www.phac-aspc.gc.ca/publicat/cig-gci/p04-herp-zona-eng.php#immther

The following drugs are NOT considered to cause significant immunosuppression for administering the herpes zoster vaccine:

- Methotrexate < 0.4 mg/kg/week
- Azothiaprine < 3.0 mg/kg/day
- 6 mercaptopurine < 1.5 mg/kg/day
- Prednisone < 20 mg/day

Prior to administering any live vaccines, consultation with the treating physician is recommended.

Vaccine uptake in adults: Common reasons for incomplete immunization in adulthood

- Lack of recognition of the importance of adult immunization
- Lack of recommendation from health care providers
- Misunderstanding of the risks associated with vaccines
- Lack of understanding of vaccine safety and efficacy
- Missed opportunities for immunization
- Lack of publicly-funded vaccine and reimbursement programs
- Inaccessibility or inconvenience
- Fear of needles or pain associated with injections

Vaccine uptake in adults:
Risks associated with under-immunization

Unimmunized adults have a much greater chance of:

- *Exposure to a vaccine-preventable disease*
  - For example, outbreaks of measles imported from outside of Canada

- *Illness when a disease is spreading in a community*
  - For some vaccine-preventable diseases, such as measles, one case can quickly and easily spread through a community among those not immunized.

- *Transmitting the disease to others*

- *Severe complications from a vaccine-preventable disease*
  - In most cases, it is not possible to know if an unvaccinated person will experience mild or severe complications from a vaccine-preventable disease.

Vaccine uptake in adults:
Strategies for improving uptake

The following strategies are based on the *National Guidelines for Immunization Practices* and can be used by health care providers to encourage vaccine uptake in adults.

Screen

- Use all clinical opportunities to review vaccine status and immunize patients.
- All adults should be counselled concerning their immunization status.
- Regularly review and ensure patient immunization status is up to date and bring attention to new vaccines.

Vaccine uptake in adults:
Strategies for improving uptake

Opportunities for general immunization counselling of adults include:

- new patient/client encounters
- periodic health examinations
- pregnancy and the immediate post-partum period
- visits for chronic disease management
- assessment of new immigrants
- parents attending their child's vaccination visits
- hospitalization, especially when diagnosed with a chronic disease
- management protocols on admission to nursing homes, long-term care institutions, and acute-care institutions
- management protocols on admission to health professional training programs
- new employee assessments in daycare, health care and health care-related facilities
- persons requesting specific vaccination(s)
- persons with evidence of risk-taking behaviour, such as illicit drug use or a sexually transmitted infection
- individuals requesting advice concerning travel

Vaccine uptake in adults:
Strategies for improving uptake

Communicate, inform, & educate

Communicate current knowledge about immunization using an evidence-based approach. Educating and informing patients should be integral in making strong recommendations for immunizations.

Factual information about immunization should also be communicated regularly.

Examples of information to be shared with patients include:

- information about current and new vaccines
- recommendations regarding the use of vaccines
- cost of vaccines if not publicly funded
- potential consequences of not being immunized
- where vaccines can be obtained
- vaccine safety

Vaccine uptake in adults:
Strategies for improving uptake

Additionally, health care providers should educate patients about the importance of:

- immunization
- preventing vaccine-preventable diseases
- recommended immunizations
- recording immunizations

Health care providers should also pay attention to their patients' concerns and provide supporting resources for patients to take away with them.

Communication tools are available for health care providers to assist with communicating immunization information with patients.

A-S-K Approach

Short form available at:
http://www.immunizebc.ca/sites/default/files/graphics/ask_quick_ref_card1_0.pdf

Long form available at:
http://www.immunizebc.ca/sites/default/files/docs/ict_final.pdf

Vaccine uptake in adults:
Strategies for improving uptake

Provide access

Immunization services should be readily available and accessible at all times. Individuals in difficult-to-access populations should be accommodated whenever possible.

Record

- Health care providers must maintain a record of all vaccinations administered and must ensure that information is accurately and completely recorded in their files.
- Encourage patients to keep a personal immunization record and present it at each health care visit so that it can be updated.
- If the personal immunization record is not available at the time of immunization, ensure that adequate information is given to the patient for their own record keeping.

Vaccine uptake in adults:
Pain management during immunization

Vaccine injection-associated pain impacts both the vaccine recipient and immunizer delivering the injection. Negative experiences during immunization can lead to non-compliance or avoidance of future immunizations.

The following information is derived from Clinical Practice Guidelines designed to help health care providers reduce vaccine injection-associated pain in adults.

Procedural interventions

- Inject the most painful vaccine last.

Physical interventions

- Encourage patients to sit up during vaccine injections.
- Muscle tension in either non-injection arm or lower body (i.e. abdomen or legs) may be used during vaccine injections in patients with a history of fainting.

Vaccine uptake in adults:
Pain management during immunization

Pharmacological interventions

- Topical anesthetics may be applied before vaccine injections.
- Vapocoolants may be applied before vaccine injections.

Psychological interventions

- Verbal signal of impending procedure (vs. a signal of impending pain) may be given before vaccine injection.
- Breathing interventions may be used during vaccine injections.

Vaccine uptake in adults:
Pain management during immunization

Interventions for patients with high levels of needle fear

- Exposure-based therapy: it is recommended that *in vivo* exposure-based therapy be used in adults 18 years of age and older with high levels of needle fear.
- Single-session *in vivo* exposure
- If *in vivo* session exposure-based therapy is not used, it is recommended that non-*in vivo* (imaginal, computer-based) exposure therapy be used.
- Applied tension (muscle tension and exposure) in adult patients with fainting

Process interventions

- Education of immunizers about vaccine and fear management
- Patient education about pain and fear management associated with immunization procedures on the day of immunization

Summary

- Accurate and accessible information about vaccine-preventable diseases helps Canadians stay protected.
- Health care professionals and those who care for people at high risk need to promote and embrace immunization to reduce the transmission of disease.
- Health care professionals need to be more engaged in promoting vaccine uptake, identifying barriers to immunization, and developing solutions.
- Health care professionals should emphasize the importance of vaccines and their safety, even among the vaccine hesitant.
- Publicly-funded immunizations for adults may vary between provinces and territories.
- *For additional information, visit* http://immunize.ca or the Public Health Agency of Canada: http://www.phac-aspc.gc.ca/im/index-eng.php

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Dr. Susan Bowles BSc Phm PharmD MSc FCCP
Associate Professor, College of Pharmacy at Dalhousie University
Chair of Immunize Canada

Dr. Shelly McNeil MD FRCPC
Professor of Medicine at Dalhousie University, Infectious Diseases Consultant at the QEII Health Sciences Centre in Halifax, Clinical Investigator Canadian Center for Vaccinology
Vice-Chair of Immunize Canada

Dr. Shelley Deeks MD MHSc FRCPC FFAFPM
Medical Director, Immunization and Vaccine-Preventable Diseases at Public Health Ontario
Associate Professor, Dalla Lana School of Public Health at the University of Toronto

Dr. David Allison MD FRCPC
Chief Medical Officer of Health, Eastern Health, Newfoundland and Labrador
Past Chair of Immunize Canada

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