Yukon Immunization Program Manual

Section 8 - Biological Products

SECTION 8 – BIOLOGICAL PRODUCTS

Contents

August 2019

Diphtheria - Tetanus- Acellular Pertussis - Hepatitis B- Polio- Haemophilus Influenza Type b Adsorbed (DTaP- HB- IPV- Hib) (INFANRIX hexa®)

Supplier: GlaxoSmithKline Inc

INDICATIONS	INITIAL SERIES
(1) Primary series for infants starting at 8 weeks of age **(2)** Primary series for high risk infants who have received a birth dose of HBIg and/or Hepatitis B vaccine **(3)** Primary series for previously unimmunized infants and children who are late starting immunization and can complete a primary INFANRIX hexa® series before 7 years of age	**(1) & (2) Dose 1:** 0.5ml **IM** **Dose 2:** 0.5ml **IM** **Dose 3:** 0.5ml **IM** **Give each dose 8 weeks apart** **(3)** See Section 3, 1.2 SCHEDULE B

REINFORCEMENTS

(1) & (2) Booster dose at 18 months of age: 0.5 ml **IM** of DTaP-IPV-Hib (PEDIACEL®)

(3) Booster dose 24 weeks - 12 months after dose 3:

- 0.5ml **IM** of DTaP-IPV-Hib ((PEDIACEL®) if child is ≤ 6 years of age and **no** Hib dose has been given at ≥15 months of age, **or**
- 0.5 ml **IM** of DTaP-IPV (QUADRACEL®) if child is ≤ 6 years of age and a Hib dose has been given at ≥ 15 months of age, **or**
- 0.5 ml **IM** of Tdap-IPV (ADACEL-POLIO®) if child is ≥ 4 years of age and a Hib dose has been given at ≥ 15 months of age, **or**
- 0.5ml **IM** of Tdap (BOOSTRIX®) if the child is ≥ 7 years of age at time of booster dose and received their 3rd dose of an IPV-containing vaccine after their 4th birthday.

CONTRAINDICATIONS

1. History of anaphylactic reaction to a previous dose of DPT, DTaP, IPV, Hib or HB - containing vaccine or to any INFANRIX hexa® vaccine component, or to latex.
2. History of Guillain-Barré syndrome (GBS) within 8 weeks of receipt of a tetanus-containing vaccine.
3. INFANRIX hexa® is not indicated for children ≥ 7 years of age.

VACCINE COMPONENTS

Potential allergens: polymyxin B sulphate, neomycin sulphate, polysorbate 80.
Other components: lactose, aluminum hydroxide, aluminum phosphate sulfate, L-histidine, formaldehyde, polysorbate 20, M199, potassium chloride, disodium phosphate, monopotassium phosphate, glycine, yeast protein.

ADVERSE EVENTS

Local: soreness, redness, swelling.
Systemic: fever, anorexia, restlessness, irritability, persistent or unusual crying, vomiting, diarrhea

SPECIAL CONSIDERATIONS

- INFANRIX hexa® contains only a single dose of HB vaccine (as Engerix®-B) and is **not** indicated for infants and children requiring a Hepatitis B Vaccine Higher Dose Schedule
- **INFANRIX hexa® and PEDIACEL® are NOT interchangeable in a primary series. Clients started on PEDIACEL® should finish primary series with PEDIACEL®**
- Hypotonic-hyporesponsive episodes are not a contraindication to diphtheria, tetanus or acellular pertussis-containing vaccines, and continued immunization with **all** antigens is recommended.
- While the number of Hib doses varies with age of presentation, give INFANRIX hexa® as indicated above, even when doing so provides “extra” Hib doses for age.

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Diphtheria - Tetanus - Acellular Pertussis – Polio - Haemophilus Influenzae Type b Adsorbed (DTaP-IPV-Hib) (PEDIACEL®)

Supplier: Sanofi Pasteur

INDICATIONS	**(1)** Primary series and booster for infants and children 8 weeks-59 months of age who have had one or more doses of PEDIACEL® **(2)** Primary series for high risk infants who have had doses of hepatitis B vaccine at birth and 4 weeks of age **(3)** Booster dose at 18 months of age for infants who have received a primary Infanrix hexa® series or a primary PEDIACEL® series
INITIAL SERIES ❶	**Dose 1:** 0.5ml **IM** **Dose 2:** 0.5ml **IM** **Dose 3:** 0.5ml **IM** **Give doses 1, 2 and 3 at 8 weeks apart** **+** **Dose 4:** 0.5ml **IM** **Give dose 4, 12 months after 3rd dose** ❷
REINFORCEMENTS	**School-entry booster is:** 0.5 ml **IM** of DTaP-IPV (QUADRACEL®)❸❹ **or** 0.5 ml **IM** of Tdap-IPV (ADACEL-POLIO®)❸❹
CONTRAINDICATIONS	1. History of anaphylactic reaction to a previous dose of DPT, DTaP, IPV or Hib--containing vaccine or to any PEDIACEL® vaccine component 2. Children ≥ 7 years of age. 3. History of Guillain-Barré syndrome (GBS) within 8 weeks of receipt of a tetanus-containing vaccine.
VACCINE COMPONENTS	**Potential allergens:** neomycin, streptomycin, polymyxin B, polysorbate 80, bovine serum albumin **Other components:**, aluminum phosphate, 2-phenoxyethanol, formaldehyde, glutaraldehyde.
ADVERSE EVENTS	**Local:** redness, pain, swelling. **Systemic:** irritability, crying, fever, drowsiness, decreased activity and appetite, vomiting and diarrhea.
SPECIAL CONSIDERATIONS	Hypotonic-hyporesponsive episodes are not a contraindication to diphtheria, tetanus or acellular pertussis-containing vaccines, and continued immunization with all antigens is recommended

❶ If the child's immunization schedule is delayed, so that the child requires fewer doses of Hib vaccine, administer DTaP-IPV or Tdap-IPV as appropriate rather than PEDIACEL®.

❷ If required, this dose can be given as early as 24 weeks following dose number 3. For protection against Hib, do not give this dose before 15 months of age.

❸ Dose number 5 should be given 30 to 54 months after dose number 4 and no sooner than age 4 (the minimum interval between dose 4 and 5 is 24 weeks). A 5th dose is not necessary if the 4th dose was given after the 4th birthday.

❹ May be given as DTaP-IPV (QUADRACEL®) **or** Tdap-IPV(ADACEL-POLIO®) in 2012.

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Diphtheria-Tetanus- Acellular Pertussis - Polio Adsorbed (DTaP-IPV) (QUADRACEL®)

Supplier: Sanofi Pasteur

INDICATIONS	DOSE
(1) School Entry Booster (if Adacel-Polio unavailable) **(2)** Used to complete the primary series and booster for children in whom Hib is not indicated (see routine Hib schedule).	**(1)** 0.5 ml **IM** ❶ **(2)** 0.5 ml **IM** ❷

CONTRAINDICATIONS	1. History of anaphylactic reaction to a previous dose of DPT, DTaP or IPV-containing vaccine or to any QUADRACEL® vaccine component 2. Children ≥ 7 years of age. 3. History of Guillain-Barré syndrome(GBS) within 8 weeks of receipt of a tetanus – containing vaccine.
VACCINE COMPONENTS	Neomycin, polymyxin B, aluminum phosphate, 2-phenoxyethanol, tween 80, formaldehyde and bovine serum.
ADVERSE EVENTS	**Minor local**: redness, tenderness, swelling, pain **Minor systemic**: fever > 38.3° C, anorexia, vomiting, irritability, drowsiness, listlessness, fretfulness, persistent or unusual crying
SPECIAL CONSIDERATIONS	Hypotonic-hyporesponsive episodes are not a contraindication to diphtheria, tetanus or acellular pertussis-containing vaccines, and continued immunization with all antigens is recommended.

❶ Not necessary if the 4th dose of PEDIACEL® or QUADRACEL® was given after the 4th birthday.

❷ An interval of 8 weeks is preferred between doses 1, 2, and 3. An interval of 12 months is preferred between doses 3 and 4 (minimum interval between dose 3 and dose 4 is 24 weeks.) Dose number 5 should be given 30 to 54 months after dose number 4 and no sooner than age 4 (the minimum interval between dose 4 and 5 is 24 weeks).

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Haemophilus b Conjugate Vaccine Act-HIB®, HIBERIX®

Supplier: Sanofi Pasteur Limited., Act-HIB; GlaxoSmithKline Inc., HIBERIX®

INDICATIONS ❶	DOSES AND SCHEDULE ❷❸
(1) All children 2-59 months of age (2) Individuals 5 years of age and older with anatomic or functional asplenia or congenital immunodeficiency (regardless of immunization history). (3) Incompletely immunized individuals 5 years of age and older as indicated in Section 5-Immunization of Special Populations.	Age at presentation: • 2-6 months: 3 doses given as 0.5 mL IM, separated by 8 weeks. • 7-11 months: 2 doses given as 0.5 mL IM, separated by 8 weeks. • 12-14 months: 1 dose given as 0.5 mL IM. **Note:** Children completing any of the above primary series require a booster dose. See BOOSTER DOSES. • 15-59 months: 1 dose given as 0.5 mL IM ❹ All other indications: 1 dose given as 0.5 mL IM ❺
ADMINISTRATION	Both products need to be reconstituted. Use of the diluent provided with the vaccine. Administer the entire contents of the reconstituted vaccine
BOOSTER DOSES	One dose given as 0.5 mL IM at 18 months of age. ❻
SEROLOGICAL TESTING	Serological testing is not recommended before or after immunization.
CONTRAINDICATIONS	History of anaphylactic reaction to a previous dose of a Hib-containing vaccine or to any component of Act-HIB ®, Hiberix® or to latex (Act-HIB only)
PRODUCT COMPONENTS	**Act-HIB®**: Potential allergens: tetanus protein, latex. Other components: sucrose, Tris(hydroxymethyl)aminomethane. **HIBERIX®**: Potential allergens: tetanus toxoid. Other components: lactose.
ADVERSE EVENTS	**Minor Local:** redness, induration, swelling, pain. **Minor Systemic:** fever, irritability, lethargy, loss of appetite, prolonged or abnormal crying.

❶ Children who had Hib disease prior to 24 months of age may not have mounted an adequate immune response for protection against Hib disease and should receive vaccine according to the schedule consistent with their age.

❷ It is preferable to use the same Hib product for all doses of the primary series. Using different Hib products during the primary series is acceptable if it is not possible to continue with the initial product.

❸ If series is interrupted, complete series according to age at which child re-presents.

❹ At 15 months of age and older, a single dose of any Hib product is all that is required for protective antibody levels

❺ Give vaccine at least 14 days prior to elective splenectomy, or if not possible, 14 or more days post-splenectomy. If there is concern that the patient may not present later for immunization, give vaccine before discharge.

❻ The booster may be given as early as 12 months provided there is an 8 week interval following the previous dose.

2019 August

Hepatitis A Vaccine Indications

Recommended and provided free to:

- Individuals with haemophilia A or B receiving plasma-derived replacement clotting factors and testing negative for anti-HAV IgG/HAV total (combined IgM & IgG) negative. ❸
- Previously unimmunized anti-HCV positive individuals who are anti-HAV IgG/HAV total negative. ❸
- Previously unimmunized individuals chronically infected with Hepatitis B virus who are anti-HAV IgG/HAV total negative. ❸
- Individuals with other chronic liver disease (including cirrhosis and liver transplant candidates or recipients, liver damage from hemachromatosis) who are anti-HAV IgG/HAV total negative.❸
- Users of illicit injection drugs; persons sharing illicit drug snorting, smoking or injecting equipment.
- Men who have sex with men.
- Individuals with sexual life-style risks of infection where there is a likelihood of oral-anal contact.
- Individuals who are HIV positive.❹
- Inmates of correctional facilities in which there is epidemiological evidence of sustained Hepatitis A infection (on order of Medical Officer of Health only).
- Haematopoietic stem cell transplant (HSCT) recipients.
- Individuals receiving repeat blood transfusions or plasma-derived clotting factors.
- Contacts of a confirmed case of hepatitis A: ❶ Household, Close non-household, Daycare, Drug-sharing, Sexual contacts, Other food handlers at the same establishment if the case is a food handler, Patrons of involved food-handling establishment at risk of Hep A as assessed by Public Health staff.

Recommended but not provided free to:

- Travelers, military personnel, and others who will work or live in countries with intermediate or high endemic rates of HAV infection, especially when travel or work will involve rural or primitive conditions. ❷
- Persons with multiple sex partners.
- Food handlers.
- Employees who have been directed to receive this immunization, as per employer direction, must pay upfront for the immunization, i.e. Department of Highways & Public Works, City of Whitehorse.
- Zookeepers, veterinarians, and researchers who handle non-human primates; certain workers involved in research on Hepatitis A virus or the production of Hepatitis A vaccine.

❶ One dose of vaccine is to be provided when it is within 14 days after the last exposure to the case while case was in the infectious period. If a client received 1 dose of hepatitis A vaccine more than 24 weeks previously, provide a 2nd dose of hepatitis A vaccine. For more information on post-exposure prophylaxis, see Yukon Communicable Disease Guidelines, Chapter 3: Hep A.

❷ Travelers who opt not to undergo HAV immunization may consider Ig prophylaxis.

❸ That is, those who do not have evidence of past hepatitis A infection. Those who have started a vaccine series who now have positive serology should complete the series regardless of the interval between dose 1 & 2. Those who have not started a vaccine series with a positive anti-HAV IgG or HAV total are considered to have lab evidence of immunity against Hepatitis A.

❹ For individuals who are HIV positive, please contact YCDC for most recent CD4 counts prior to immunization.

	2019 August
Hepatitis A Vaccine (Inactivated Viral) (Havrix 720® and Havrix 1440®)	**Supplier: GlaxoSmithKline**
INDICATIONS	See Hepatitis A Vaccine Indications
INITIAL SERIES ❶ ❹	**≥ 24 weeks up to and including 18 years of age: ❷❺** **USING HAVRIX® presentation of 720 ELU per 0.5ml** **Dose 1:** 0.5 ml **IM** **Dose 2:** 0.5 ml **IM** 24 weeks - 12 months after dose 1
	≥ 19 years and older: **USING HAVRIX® presentation of 1440 ELU per 1.0 ml** **Dose 1:** 1.0 ml **IM** **Dose 2:** 1.0 ml **IM** (**1440 ELU presentation**) **or** 0.5 ml **IM** (**720 ELU presentation**) 24 weeks - 12 months after dose 1❸
REINFORCEMENTS	Currently no recommendation for booster dose(s).
CONTRAINDICATIONS	History of an anaphylactic reaction to a previous dose of any hepatitis A vaccine, to any component of HAVRIX ® vaccine or to latex (pre-filled syringe presentation only).
VACCINE COMPONENTS	Potential allergens: neomycin sulphate, bovine serum albumin. Other components: formaldehyde, aluminium hydroxide, potassium chloride, disodium phosphate, monopotassium phosphate, polysorbate 20, amino acids.
ADVERSE EVENTS	Tend to be mild and transient. **Local:** Soreness and redness at injection site **Systemic:** Headache, fatigue, fever, malaise, and gastrointestinal symptoms
SPECIAL CONSIDERATIONS	Active immunization with hepatitis A vaccine is the first choice for protection against hepatitis A for travellers. Given the good serologic response to vaccine after the primary dose, simultaneous administration of Ig is **not** indicated even if the vaccine is given immediately before departure. Ig **may** be used for infants < 24 weeks of age and individuals for whom the vaccine is contraindicated. Post – vaccination testing is not indicated following a Hepatitis A vaccine series

❶ The hepatitis A vaccines may be used interchangeably, using the age-appropriate dose for the product being given.

❷ HAVRIX® 720 Junior is licensed for persons 1-18 years of age(inclusive). However, NACI indicates hepatitis A vaccine may be provided, beginning at 6 months of age, to infants who are at increased risk of infection or severe hepatitis A. Immune response may be blunted in some children less than 24 weeks of age due to interference with maternally derived antibody. As maternal hepatitis A antibody status is usually not know, contact the Immunization Program Manager to discuss giving Ig to infants less than 24 weeks of age who are at risk of hepatitis A.

❸ Studies have shown that 720 ELISA units provides an effective booster dose in those ≥19 years of age.

❹ For individuals who are HIV positive, please contact YCDC for most recent CD4 counts prior to immunization.

❺ A 1.0 mL of dose of adult formulation of Havrix®1440 should be used for those 16 - 18 years of age to address the licensing gap between Havrix®1440 and Vaqta pediatric when these are the only available products. This recommendation is required because the varied age approvals for Hepatitis A vaccine product lines in Canada. An adult dose (1.0 mL of Havrix®1440) in teens 16 – 18years of age will be immunogenic.

2019 August

Hepatitis A Vaccine (Inactivated Viral) (Vaqta®)

Supplier: Merck Frost

INDICATIONS	See Hepatitis A Vaccine Indications
INITIAL SERIES ❶❷❸❹	6 months up to and including 17 years of age❺: **Dose 1:** 0.5 ml (25U) **IM** **Dose 2:** 0.5 ml (25U) **IM** 24 weeks to 18 months after dose 1
	≥18 years of age: **Dose 1:** 1.0 ml (50U) **IM** **Dose 2:** 1.0 ml (50U) **IM** 24 weeks after dose 1
REINFORCEMENTS	Currently no recommendation for booster dose(s)
CONTRAINDICATIONS	History of anaphylactic reaction to a previous dose of any hepatitis A vaccine or to any component of VAQTA® vaccine or to latex.
VACCINE COMPONENTS	Potential allergens: neomycin, bovine albumin. Other components: formaldehyde, aluminum hydroxyphosphate sulphate, sodium borate.
ADVERSE EVENTS	Tend to be mild and transient. **Local:** Soreness and redness at injection site **Systemic:** Headache, fatigue, fever, malaise and gastrointestinal symptoms.
SPECIAL CONSIDERATIONS	Active immunization with hepatitis A vaccine is the first choice for protection against hepatitis A for travelers. Given the good serologic response to vaccine after the primary dose, simultaneous administration of Ig is **not** indicated even if the vaccine is given immediately before departure. Ig **may** be used for infants < 6 months and individuals for whom the vaccine is contraindicated. Post – vaccination testing is not indicated following a Hepatitis A vaccine series

❶ The hepatitis A vaccines HAVRIX®, VAQTA®, AVAXIM™, AVAXIM™ Pediatric, and ViVAXIM™ are interchangeable for children or adults at any scheduled dose, using the age-specific dosage for the particular product.

❷ Vaqta® does not contain a preservative; use immediately and discard any remainder.

❸ PediatricVaqta® is approved for use in children 1-17 years of age (inclusive). However, NACI indicates that hepatitis A vaccine may be provided, beginning at 6 months of age, to infants who are increased risk of infection or severe hepatitis A. Immune response may be blunted in some children less than 6 months of age due to interference with maternally-derived antibody. As maternal hepatitis A antibody status is usually not known, contact the immunization program manager to discuss giving Ig to infants < 6 months of age who are at risk for hepatitis A.

❹ For individuals who are HIV positive, please contact YCDC for most recent CD4 counts prior to i mmunization.

❺ A 1.0 mL of dose of adult formulation of Havrix®1440 should be used for those 16 - 18 years of age to address the licensing gap between Havrix®1440 and Vaqta pediatric when these are the only available products. This recommendation is required because the varied age approvals for Hepatitis A vaccine product lines in Canada. An adult dose (1.0 mL of Havrix®1440) in teens 16 – 18 years of age will be immunogenic.

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Hepatitis B Vaccine: Pre-exposure Indications

Provided free to: ❶❷

- All children ≤ 19 years of age.
- All Community Nursing personnel and Yukon Communicable Disease Control personnel.
- Household contacts of acute Hepatitis B cases or Hepatitis B chronic carriers.
- Sexual contacts of acute Hepatitis B cases or Hepatitis B chronic carriers.
- Users of illicit injectable drugs and their sexual partners.
- Persons sharing illicit drug snorting, smoking or injecting equipment.
- Males who have sexual contact with other males.
- Individuals who are HIV positive ❸❺
- Persons with multiple sexual partners or recent history of a sexually transmitted infection (STI).
- Anti-HCV positive individuals who do not have past or current evidence of hepatitis B infection.
- Individuals with significant chronic liver disease (including cirrhosis, candidates or recipients of liver transplant, and liver damage from hemachromatosis) who do not have past or current evidence of hepatitis B infection. ❸
- Hemophiliacs and others receiving repeated infusions of blood or blood products. Individuals with chronic kidney disease (predialysis, hemodialysis, and peritoneal dialysis clients) and candidates or recipients of a kidney transplant. ❸❹
- Previously unimmunized residents and staff of developmentally challenged known hepatitis B carriers whose behavior or medical condition increases risk to others
- Previously unimmunized children and staff in childcare settings in which there is a child infected with hepatitis B (upon order of Chief Medical Officer of Health).

Recommended but not provided free to:

- All Health Care Workers
- All employees who have been directed to receive this immunization, as per employer direction, must pay upfront for the immunization i.e. City of Whitehorse, Department of Highways & Public Works
- Persons visiting countries with high HBV endemic areas and/or having sexual or blood contact with local residents regardless of length of stay.

❶ Starting in 1994 YT has had either a school based or infant hepatitis B immunization program; therefore, many individuals born in 1983 through present day are immunized. If no records are available and the client is unable to recall receiving hepatitis B vaccine, proceed with hepatitis B vaccination as per indication.

❷ Pre-vaccination testing for HBsAg, anti-Hbc and anti-HBs is recommended for persons at high risk of having been infected (i.e., IDU, STW, individuals with HCV or chronic liver disease, and persons born in countries of high hepatitis B prevalence).

❸ **Routine Serology to determine protective status for hepatitis B is not recommended, except** in the following situations: Infants born to HBsAg positive mothers, health care workers and public safety workers at high risk for continued percutaneous or mucosal exposure to blood or body fluids, sex partners of persons with chronic HBV infection, chronic liver, chronic renal & HIV infection. If anti-HBs is < 10IU/L but is detectable, provide one dose of vaccine and retest 4 weeks after this dose. If level is ≥ 10 following this dose, no further vaccine is required. When anti-HBs is <10 IU/L after this one dose, complete the second vaccine series and retest 4 weeks after the last dose. Do not complete more than 2 complete Hepatitis B series.

❹ Hemodialysis clients require a specific hepatitis B vaccine dosage and series. See Section 5, Immunization of Special Populations, Chronic Kidney Disease.

❺ For individuals who are HIV positive, please contact YCDC for most recent CD4 counts prior to immunization.

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Hepatitis B Vaccine (Engerix®-B)
Pediatric presentation 10 mcg/0.5 ml; Adult presentation 20mcg/1.0 ml

Supplier: GlaxoSmithKline

INDICATIONS	INITIAL SERIES ❶❷❸❹❺❻
(1) See Hepatitis B Vaccine Pre-exposure Indications **(2)** See Hepatitis B Vaccine Post-exposure Indications **(3)** Use when there is a contraindication to RecombivaxHB® or when RecombivaxHB® is not available	(1) (2) & (3) Infants from birth, children, and adolescents to 19 years of age inclusive (except the routine infant program and neonates who will be contacts of chronic carriers) 3 dose schedule: Give 0.5 ml **IM** (10 mcg) at 0, 4 weeks and 24 weeks❷ Eligible adults ≥20 years of age 3 dose schedule: Give 1.0 ml **IM** (20 mcg) at 0, 4 weeks and 24 weeks
(4) Adolescents ≥11 years of age, but ≤15 years of age at the initiation **and** completion of series.	(4) **2 dose schedule:** Give 1.0 ml **IM** (20 mcg) at 0 and 24 weeks (Use **adult dose** formulation)❼
REINFORCEMENTS	None
CONTRAINDICATIONS	History of anaphylactic reaction to a previous dose of any hepatitis B vaccine or to any component of Engerix®-B.
VACCINE COMPONENTS	Aluminum hydroxide, and traces of yeast. Thimerosal ❷
ADVERSE EVENTS	Fever (≤37.7°C) and mild short-term soreness at injection site.

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Hepatitis B Vaccine (Engerix®-B)
Pediatric presentation 10 mcg/0.5 ml; Adult presentation 20mcg/1.0 ml

Supplier: GlaxoSmithKline

❶ Engerix®-B & RecombivaxHB® are interchangeable at any dose, using age-specific dosage and recommended schedule for the respective product. There must be a minimum of 24 weeks between doses 1 and 2 whenever both products are used in a 2-dose series.

❷ The single dose pediatric formulation (10 mcg/0.5 ml vial) and the adult single dose (20 mcg/1.0 ml) formulation are thimerosal-free.

❸ A minimum of 4 weeks must pass between dose 1 and 2. Dose 3 must be given at least 16 weeks after the 1st dose and 8 weeks after the 2nd dose. If the immunization series is interrupted after the 1st dose, the 2nd dose should be administered as soon as possible. If only the 3rd is delayed, administer as soon as possible. If years have lapsed between the 1st and 2nd dose, it may be prudent to assess antibody response post series, especially if the client is at significant risk.

❹ Hemodialysis clients require a specific hepatitis B vaccine dosage and series (see Hepatitis B Vaccine Program for Chronic Kidney Disease Clients).

❺ **Routine serology to determine protective status for hepatitis B is not recommended, except** in the following situations: Infants born to HBsAg positive mothers, health care workers and public safety workers at high risk for continued percutaneous or mucosal exposure to blood or body fluids, sex partners of persons with chronic HBV infection, chronic liver, chronic renal & HIV infection. If anti-HBs is < 10IU/L but is detectable, provide one dose of vaccine and retest 4 weeks after this dose. If level is ≥ 10 following this dose, no further vaccine is required. When anti-HBs is <10 IU/L after this one dose, complete the second vaccine series and retest 4 weeks after the last dose. Do not complete more than 2 complete Hepatitis B series.

❻ High risk infants who receive a birth dose of Hepatitis B vaccine and/or HBIg can complete their vaccine series with INFANRIX hexa® at 8 weeks, 16 weeks and 24 weeks of age.

Infants who have been given doses of Hepatitis B vaccine at birth **and** 4 weeks of age should be given PEDIACEL® vaccine at 8 weeks, 16 weeks and 24 weeks of age, and a 3rd dose of Hepatitis B vaccine at 24 weeks of age. These infants weighing < 2000 grams at birth will require a 4th dose of Hepatitis B vaccine at 32 weeks of age.

❼ There must be a minimum of 24 weeks between doses 1 and 2.

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Hepatitis B Vaccine Pre-Exposure (RecombivaxHB®)
Pediatric presentation: (5 mcg/0.5 ml); Adult presentation: (10 mcg/ 1mL); both thimerosal free
Supplier: Merck Frosst

INDICATIONS	INITIAL SERIES ❶❷❸❹❼
(1) Infants, weighing < 2000 grams at birth, whose father or other primary caregiver or household contact has chronic hepatitis B infection.	**(1) 4 dose schedule:** Give 0.5ml **IM** (5mcg) at birth Give INFANRIX hexa ® **IM** at 8 weeks,16 weeks and 24 weeks of age ❺
(2) Infants who are part of the routine Hepatitis B program and receiving PEDIACEL® in the primary series	**(2) 3 dose schedule:** Give 0.5 ml **IM** (5 mcg) at 8 weeks, 16 weeks and 24 weeks of age.
(3) Infants, weighing < 2000 grams at birth, who are receiving PEDIACEL® and whose father or other primary caregiver or household contact has chronic hepatitis B infection.	**(3) 4 dose schedule:** Give 0.5ml **IM** (5mcg) at birth, 4 weeks, 24 weeks **and** 32 weeks of age
(4) Infants and children and adolescents to19 years of age inclusive (except the routine infant program, neonates who will be contacts of chronic carriers, and those in indication 5).	**(4) 3 dose schedule:** Give 0.5 ml **IM** (5 mcg) at 0, 4 weeks and 24 weeks
(5) Adolescents ≥11years of age, but ≤15 years of age **at time of initiation & completion of series.**	**(5) 2 dose schedule:** Give 1.0 ml **IM** (10 mcg) at 0 and 24 weeks❻
(6) Eligible adults ≥20 years of age. See Hepatitis B Vaccine Pre-exposure Indications See Hepatitis B Vaccine Post-exposure Indications	**(6) 3 dose schedule:** Give 1.0 ml **IM** (10 mcg) at 0, 4 weeks and 24 weeks.

REINFORCEMENTS	None.
CONTRAINDICATIONS	History of anaphylactic reaction to a previous dose of any hepatitis B vaccine, to any component of RecombivaxHB® or to latex**.**
VACCINE COMPONENTS	Aluminum hydroxide, formaldehyde, yeast, and thimerosal when the 3 mL vial presentation is used.
ADVERSE EVENTS	Fever (≤37.7°C) and mild short-term soreness at injection site.

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Hepatitis B Vaccine Pre-Exposure (RecombivaxHB®)

Pediatric presentation: (5 mcg/0.5 ml); Adult presentation: (10 mcg/ 1mL); both thimerosal free

Supplier: Merck Frosst

❶ Engerix®-B & RecombivaxHB® are interchangeable at any dose, using age-specific dosage and recommended schedule for the respective product**.** There must be a minimum of 24 weeks between doses 1 and 2 whenever **both** products are used in a 2-dose series.

❷ A minimum of 4 weeks must pass between dose 1 and 2. Dose 3 must be given at least 16 weeks after the 1st dose and 8 weeks after the 2nd dose. If the immunization series is interrupted after the 1st dose, the 2nd dose should be administered as soon as possible. If only the 3rd is delayed, administer as soon as possible. If years have lapsed between the 1st and 2nd dose, it may be prudent to assess antibody response post series, especially if the client is at significant risk.

❸ Hemodialysis clients require a specific hepatitis B vaccine dosage and series (see Hepatitis B Vaccine Program for Chronic Kidney Disease Clients)

❹ A 0.5 ml (5mcg) Recombivax HB® dose represents a double dose for infants and children < 11 years of age, as per product monograph.

❺ Infants who have been given doses of Hepatitis B vaccine at birth and 4 weeks of age should be given PEDIACEL® vaccine at 8 weeks, 16 weeks and 24 weeks of age, and a 3rd dose of Hepatitis B vaccine at 24 weeks of age. These infants weighing < 2000 grams at birth will require a 4th dose of Hepatitis B vaccine at 32 weeks of age.

❻ While a second dose can be given 16 weeks – 24 weeks following the first dose, the dose is suggested at 24 weeks for consistent timing with other vaccine programs administered in the school setting.

❼ **Routine serology to determine protective status for hepatitis B is not recommended, except** in the following situations: Infants born to HBsAg positive mothers, health care workers and public safety workers at high risk for continued percutaneous or mucosal exposure to blood or body fluids, sex partners of persons with chronic HBV infection, chronic liver, chronic renal & HIV infection. If anti-HBs is < 10IU/L but is detectable, provide one dose of vaccine and retest 4 weeks after this dose. If level is ≥ 10 following this dose, no further vaccine is required. When anti-HBs is <10 IU/L after this one dose, complete the second vaccine series and retest 4 weeks after the last dose. Do not complete more than 2 complete Hepatitis B series.

2019 August

Hepatitis B Vaccine Post-Exposure Indications

Provided free to:

- Infant born to **known** HBsAg + mother. **Give HBIg and hepatitis B vaccine at birth.**❷
- Infant born to a mother who is at high risk for hepatitis B infection (intravenous drug use or sex trade work) and her infectious status at delivery is unknown or negative (possible window period); **give HBIg and hepatitis B vaccine at birth**. ❷
- Infants born to mother who has risk factors (other than IDU and/or STW) for hepatitis B infection and her infectious status at delivery is unknown or negative (possible window period). **Give hepatitis B vaccine at birth.** ❷
- Infant whose father or other primary care giver or household contact has chronic hepatitis B infection. **Give hepatitis B vaccine at birth.** ❷
- Infants from birth to <12 months of age if father or other primary caregiver are at high risk for hepatitis B infection and their infectious status is unknown or negative (possible window period). **Give hepatitis B vaccine at birth.** ❷
- Infant < 12 months of age whose mother has **acute** hepatitis B. ❶❷
- Household contacts (including infants) ❷of acute case or chronic carrier. ❶
- Sex with a person who has **acute or chronic** hepatitis B infection. ❶❸❹
- Percutaneous or mucosal exposure in the community (i.e. sexual assault, needle sticks) and household contacts with percutaneous or mucosal exposure (i.e. sharing of toothbrushes or razors) of **acute or chronic** hepatitis B infection. ❶❹

❶ Refer to Yukon Immunization Program, Section 16, Blood & Body Fluid Management for complete guidelines to assess need for HBIg and hepatitis B vaccine. These guidelines do not include post exposure to newborns. For newborn exposure see, Hepatitis B Vaccine Post Exposure (Recombivax HB).

❷ Post-vaccination testing (HBsAg and anti-HBs) of infants must be performed 4 weeks after completion of the hepatitis B vaccine series. If HBsAg is found, the infant is likely to become a chronic carrier. If the infant is negative for HBsAg and anti-HBs, a 2nd series of hepatitis B vaccine should be given and serological testing repeated 4 weeks post-series. See❶.

❸ For steady long-term sexual partners of chronic HBV carriers, test for HBsAg, anti-HBc and anti- HBs see section 16, chapter 4, p.21, Table 4 **Section 16 - Blood Body Fluid Exposure Management April 2013.pdf**

❹ Post-vaccination testing should be performed 4 weeks after completion of the hepatitis B vaccine series for **steady** sexual partners of HBV chronic carriers, household contacts of acute and chronic carriers, sexual assault victims and those with percutaneous or mucosal exposures.
See ❶.

2019 August

Hepatitis B Vaccine Post-Exposure Indications Yukon & HBIg Availability

Yukon & HBIg availability

HBIG for post exposure prophylaxis is located in the following rural community facilities throughout the territory:

Dawson City Hospital, Old Crow Health Center, and Watson Lake Hospital

When you receive the HBIg there will be a transfer log enclosed. It must be completed and faxed to the WGH Lab when either a client has received HBIg or the Lot has expired. Arrangements for the timely administration of HBIg will be made on a case by case basis via Yukon Communicable Disease Control or the Chief Medical Officer of Health. Should HBIg not be stocked in the community requesting it, arrangements will be made by YCDC to have it provided from/to the most feasible location. See Yukon Communicable Disease Guidelines, **Hepatitis B**, How to Access HBIg.

2019 August	
Hepatitis B Immune Globulin (HBIg) (BayHep BTM) **Supplier: Bayer**	
INDICATIONS**	**DOSAGE ❶❷**
(1) Infant born to HBsAG positive woman.	**(1)** Give HBIg 0.5 ml **IM immediately after birth**, along with first dose of hepatitis B vaccine series. ❸
(2) Infant born to woman at high risk for hepatitis B infection (i.e., intravenous drug use, sex trade work) whose infectious status is unknown or negative (possible window period).	**(2)** Give HBIg 0.5 ml **IM immediately after birth,** along with first dose of hepatitis B vaccine series. ❸
(3) Infant <12 months of age has mother with **acute** hepatitis B infection.	**(3)** Consider the immune stats of the infant and history of hepatitis B immunization and give HBIg 0.06ml/kg of body weight **IM** and hepatitis B vaccine as required. ❸❹❺
(4) Percutaneous or mucosal exposure to HBsAG positive source.	**(4)** Give HBIg 0.06ml/kg if body weight and hepatitis B vaccine **IM** as required, considering the client's immune status and history of hepatitis B immunization. ❹❺
(5) Sex with a person who has **acute or chronic** hepatitis B infection	**(5)** Give HBIg 0.06ml/kg of body weight **IM** as soon as possible following the last sexual exposure, along with hepatitis B vaccine series. ❹❺❻
REINFORCEMENTS	**Any at-high risk, known non-responder to two series of vaccine may require 2 doses of HBIG 4 weeks apart.**
CONTRAINDICATIONS	None
PRECAUTIONS **(continued on next page)**	• Human Ig products are among the safest blood-derived products available. The method of preparation includes one or more steps that exclude or inactivate hepatitis B, C and HIV; therefore the risk of transmission is extremely low. However, it is possible that unknown infectious agents may be present in such products. • Regarding HBIg and the administration of live vaccines see CIG (2013), visit: http://www.phac-aspc.gc.ca/publicat/cig- gci/p01-10-eng.php, Guidelines for the interval between Administration of Immune Globulin Preparations or Blood Products and MMR or Varicella Virus. • For full Hepatitis B Post-Exposure Prophylaxis guidelines see **Section 16, Blood & Body Fluid Exposure Management** or Yukon Communicable Disease Guidelines, **Hepatitis B** as appropriate. • Give HBIg with caution (i.e., in a setting capable of managing anaphylaxis) if the person has a history of anaphylactic reaction following receipt of any human Ig product, or a history of anaphylactic reaction to latex (assess risks versus benefits).

	2019 August
Hepatitis B Immune Globulin (HBIg) (BayHep B™)	**Supplier: Bayer**
PRECAUTIONS (cont'd)	• Clients with severe thrombocytopenia or coagulation disorders that contraindicate IM injections should not be given HBIg unless the benefits outweigh the risks. • HBIg does not contain preservatives. • **Vials are single dose use; discard unused contents.** • **HBIg must be given at a separate anatomic site from hepatitis B vaccine.** • The preferred site for the administration of HBIg is the ventrogluteal area, which may be used in those > 28 weeks of age. However, the vastus lateralis is most often used in infants and children up to 5 years of age.
ADVERSE EVENTS	Local pain and tenderness at injection site, urticarial and angioedema may occur.

❶ There is no upper limit to the volume of HBIg that can be administered.

❷ Provide a written record to a client who receives any immune globulin product.

❸ There is **no** outer time limit for administering HBIg in infants <12 months of age, when the infant's exposure to the known risk factor(s) is ongoing. For infants < 8.3 kg, give 0.5 ml HBIg.

❹ HBIg dose for all clients ≥8.3kg is 0.06ml/kg. Give HBIg as soon as possible, preferably within 48 hours of the exposure. For a percutaneous exposure, HBIg may be given up to 7days following the exposure. If the client presents >7 days following a percutaneous exposure, give Hepatitis B vaccine only. For permucosal or sexual exposures, see Section 16 Hepatitis B Post-Exposure Prophylaxis table 4, p. 21 located in, **Section 16, Blood & Body Fluid Management.**

❺ See CIG (2013) for maximum volume to be administered per site according to age.

❻ For **steady, long term** sexual partners of chronic hepatitis B carriers, test for HBsAg, anti-HBc and anti-HBs as per scope of practice. See **Yukon Communicable Disease Guidelines, Hepatitis B**

** **See Section 16, Blood & Body Fluid Management or Yukon Communicable Disease Guidelines, Hepatitis B, as appropriate, for complete guidelines**

2019 August

Hepatitis B Vaccine Post Exposure (RecombivaxHB®)
(Pediatric presentation: 5 mcg/0.5 ml; Adult presentation: 10 mcg/ 1mL; both thimerosal free)

Supplier: Merck Frosst

INDICATIONS	INITIAL SERIES❶❷❸❹
(1) Infants born to HBsAg positive mothers **(2)** Infant weighing <2000 grams at birth and requiring a birth dose of hepatitis B vaccine **(3)** Infant whose mother is at high risk and infectious status unknown **(4)** Infant whose caregiver or household contact is a chronic hepatitis B carrier	**(1) (2) (3) & (4)❺** **4 dose schedule:** Give 0.5 ml **IM** (5 mcg) at birth (must be given within 12 hours along with HBIg) **Follow with:** Give Infanrix hexa at 8 weeks, 16 weeks and 24 weeks.
POST EXPOSURE SCHEDULE FOR OTHER INDICATIONS	**(1)** Infants and children ≤15 years of age❻ **3 dose schedule:** Give 0.5 ml **IM** (5 mcg) at 0, 4 weeks and 24 weeks. **(2)** Adolescents ≥16 and <20 years of age. ❻ **3 dose schedule:** Give 0.5 ml **IM** (5 mcg) at 0, 4 weeks and 24 weeks. **(3)** Adults ≥20 years of age❻ **3 dose schedule:** Give 1.0 ml **IM** (10 mcg) at 0, 4 weeks and 24 weeks.
SPECIAL CONSIDERATIONS	Routine information regarding RecombivaxHB® vaccine is located on the pre-exposure vaccine page (e.g. vaccine interchangeability, contraindications, precautions, schedule variations, etc).

❶ Hemodialysis clients require a specific dose and series (See Hepatitis B Vaccine Program for Chronic Kidney Disease Clients)

❷ See Hepatitis B Vaccine Post-Exposure Indications and Blood & Body Fluid Management for complete guidelines to assess need for HBIg, hepatitis B vaccine, and serologic testing for all other groups (i.e., baseline and post exposure).

❸ Post-vaccination testing (HBsAg and anti-HBs) should be performed 4 weeks after completion of the hepatitis B vaccine series. If HBsAg is found, the child is likely to become a chronic carrier. If the infant is negative for HBsAg and anti-HBs, a 2nd series of hepatitis B vaccine should be given and serological testing repeated 4 weeks post 2nd series.

❹ Engerix®-B & RecombivaxHB® are interchangeable at any dose, using age-specific dosage and recommended schedule for the respective product. There must be a minimum of 24 weeks between doses 1 and 2 whenever **both** products are used in a 2-dose series

❺ Infants who have been given doses of Hepatitis B vaccine at birth **and** 1 month of age should be given PEDIACEL® vaccine at 2 months, 4 months and 6 months of age, and a 3rd dose of Hepatitis B vaccine at 6 months of age. These infants weighing < 2000 grams at birth will require a 4th dose of Hepatitis B vaccine at 8 months of age.

❻ Post-exposure vaccine schedules are individualized based on a number of factors (e.g. immune status of client and history of hepatitis B immunization) See Section Hepatitis B Post-Exposure Prophylaxis table located in, Section 16, Blood & Body Fluid Management.

2020 September

Hepatitis B Vaccine Higher Dose Schedule

The following immunocompromised individuals may respond sub-optimally to hepatitis B vaccine and therefore require higher doses of the antigen to elicit an adequate immune response. This includes those with:

- Congenital immunodeficiency
- Hematopoietic stem cell transplant (HSCT) recipients❶
- Solid organ transplant candidates and recipients
- HIV infection

See Section 5 of the Yukon Immunization Manual for complete list of clients who are indicated.

Individuals with advanced liver disease (e.g., cirrhosis, physician-diagnosed advanced liver disease related to hepatitis C infection) who are non-responsive to the initial hepatitis B vaccine series (standard dosing), should be immunized as per the 'Hepatitis B Vaccine Higher Dose Schedule' for the second series. If a Fibroscan® result is available, consider F3 or 4 as indicative of advanced liver disease.

This higher dose schedule is defined as follows:

	ENGERIX®-B			RECOMBIVAX HB®❸		
Age	**Dose**	**Volume**	**Schedule**	**Dose**	**Volume**	**Schedule**
0-15 years	20mcg	1.0mL	0, 1 and 6 months	10mcg	1.0mL	0, 1 and 6 months
16-19 years❷	40mcg	2.0 mL	0, 1, 2 and 6months	10mcg	1.0 mL	0, 1 and 6 months
≥20 years ❷	40mcg	2.0 mL	0, 1, 2 and 6months	40mcg	❸	0, 1 and 6 months

Post-vaccination serology: Measure anti-HBs at 1-6 months after completion of the vaccine series to ensure that an adequate immune response has been achieved. If anti-HBs is ≥ 10 IU/L, consider immune. If anti-HBs is < 10 IU/L, provide a second vaccine series and re-assess anti-HBs 4 weeks later. If anti-HBs remains < 10 IU/L, consider as a non-responder and susceptible to hepatitis B.

There is no benefit to further vaccination. If an exposure to blood or body fluids occurs, the client will require HBIg.

NOTE: If post-vaccination serology was done more than 6 months after completion of the vaccine series, results may not be predictive of actual protection. Consider as immune those with anti-HBs ≥ 10 IU/L.

However, if anti-HBs < 10 IU/L one of the following scenarios should be followed:

- anti-HBs is undetectable - provide a second series and retest 4 weeks later.
- anti-HBs is read as "detectable" but < 10 IU/L - provide one dose of vaccine and retest 4 weeks later.
  - If level after the above dose is still < 10 IU/L - complete the second vaccine series and retest 4 weeks later.
  - If level after the above dose is ≥ 10 IU/L, consider immune.

If anti-HBs remains < 10 IU/L after 2 vaccine series - consider as a non-responder and susceptible to hepatitis B.

If a client that would normally be a candidate for higher dose vaccine has already started but did not complete a normal dose series, the series should be completed with the normal dose and post-vaccination serology done as above to determine response. If anti-HBs is <10 IU/L, the second vaccine series should be at the higher dose.

Table continued on next page

2020 September

Hepatitis B Vaccine Higher Dose Schedule

Periodic monitoring for the presence of anti-HBs may be recommended by the specialist, for Immunocompromised persons and persons with chronic renal disease, taking into account the severity of the immunocompromised state and whether or not the risk for hepatitis B infection is still present. Booster doses should be offered if anti-HBs titres fall below 10 IU/L. If a higher vaccine dose was indicated for the initial vaccine series, a higher HB vaccine dose should be used for all subsequent immunizations.

❶ For HSCT clients contact Immunization Program Manager.
❷ If any dose in the series is given as ENGERIX®-B vaccine, the client will require a 4-dose series.
❸ Volume will depend on formulation of Recombivax HB® vaccine: HB 40 mcg = 1.0 mL; HB 10 mcg = 4 mL

2020 September

Hepatitis B Vaccine Program for Chronic Kidney Disease Clients

Chronic hemodialysis clients are at high risk for HBV infection because the process of hemodialysis requires vascular access for prolonged periods. In an environment where multiple clients receive dialysis concurrently, repeated opportunities exist for person-to-person transmission of infectious agents, directly or indirectly via contaminated devices, equipment and supplies, environmental surfaces or hands of personnel. Furthermore, hemodialysis clients are immunosuppressed, which increases their susceptibility to infection.

ELIGIBILITY:
All pre-dialysis, hemodialysis and peritoneal dialysis clients in hospital, community, home or self-care settings are eligible for this program. Vaccine administration often occurs at the dialysis facility; please verify if this has occurred prior to immunization and enter the appropriate immunization records into Panorama.

PRE-DIALYSIS AND DIALYSIS CLIENTS ❶❷

	ENGERIX®-B			RECOMBIVAX HB®		
Age	**Dose**	**Volume**	**Schedule**	**Dose**	**Volume**	**Schedule**
0-15 years	20 mcg	1.0 mL	0, 1 and 6 months	10 mcg❹	1.0 mL	0, 1 and 6 months
16-19 years ❻	40 mcg	2.0 mL	0, 1, 2 and 6 months	10 mcg❹	1.0 mL	0, 1, and 6 months
≥ 20 years of age❻	40 mcg	2.0 mL	0, 1, 2 and 6 months	40 mcg❸	1.0 mL	0, 1 and 6 months

Post-vaccination serology: measure anti-HBs 4 weeks after completion of a primary series. If anti- HBs is <10 IU/L, the client is a non-responder. Provide a second vaccine series and assess anti- HBs. If anti-HBs is <10 IU/L, the client, as a non-responder to 2 vaccine series, is susceptible to hepatitis B. **There is no benefit to further vaccination. If an exposure to blood or body fluids occurs, the client will require HBIg.**

❶ All doses of hepatitis B vaccine should be administered in the deltoid by the **IM** route, or for infants < 12 months of age, in the vastus lateralis.

❷ Pre-dialysis clients and dialysis clients receive the same dose volume of hepatitis B vaccine because there is no discrete level of renal function that correlates well with vaccine immunogenicity.

❸ Special formulation for adult dialysis clients (40mcg/1.0 mL).

❹ Use adult formulation (10mcg/1.0ml).

❺ Use thimerosal-free Recombivax HB® or pediatric Engerix®-B formulation. Dosage for this age group is based on NACI guidelines.

❻ If any dose in the series is given as Engerix®-B, a **4 dose series** is required.

2019 August

Hepatitis A and B Vaccine Combined (Inactivated Viral) (Twinrix®)

Supplier: GlaxoSmithKline

INDICATIONS	INITIAL SERIES ❶❷❸
(1) Persons ≥ 19 years old **See Hepatitis A Vaccine: Indications & Hepatitis B Vaccine: Indications for usage recommendations.**	**(1) Persons 19 years of age and older:** **3 dose schedule:** Give 1.0 ml **IM** at 0, 4 weeks and 24 weeks **Alternate rapid dosing schedule (3 +1 reinforcement):** **Give 1.0 mL IM at 0, 7 and 21 days (+reinforcement 1 year after dose 1).**
REINFORCEMENTS	**(1)** None (3 dose at regular intervals complete) • **For alternate rapid dosing schedule:** Give 1.0 mL **IM** 12 months after dose 1.
CONTRAINDICATIONS	History of anaphylactic reaction to a previous dose of any hepatitis A or hepatitis B-containing vaccine, to any component of Twinrix® vaccine, or to latex.
VACCINE COMPONENTS	Neomycin sulfate, formaldehyde, aluminum hydroxide, aluminum phosphate, 2-phenoxyethanol, polysorbate 20, and traces of yeast.
ADVERSE EVENTS	**Local:** rarely, redness, swelling and pain **Systemic:** fever (≤ 37.7° C), headache, malaise, fatigue, nausea

❶ Each 1.0 ml dose contains Havrix® 720 ELU and Engerix®-B 20 mcg

❷ If a client is to be given monovalent hepatitis A vaccine in place of a dose (or doses) of Twinrix®, the following vaccines may be used: HAVRIX®, VAQTA®, AVAXIM™, or AVAXIM™ Pediatric, administering the age-specific dosage for the particular product. If a client is to be given monovalent hepatitis B vaccine in place of a dose (or doses) of Twinrix®, the following vaccines may be used: Engerix®-B or RecombivaxHB® administering the age-specific dosage and number of doses for the particular product.

❸ The preferred injection site for children and adults is the deltoid muscle. For those <12 months of age, the preferred site is the vastus lateralis. The vaccine should **not** be administered in the gluteal region.

❹ Twinrix ® is licensed for persons ≥1 year of age. However, numerous studies have demonstrated the immunogenicity and safety of hepatitis A vaccine for infants at 6 months of age. Immune response may be blunted in some children less than 6 months of age due to interference with maternally derived antibody. As maternal hepatitis A antibody status is usually not known, give Ig to all infants < 6 months of age who are at risk for hepatitis A. Consult Immunization Program Manager to discuss giving Ig to infants < 6 months of age who are at risk for hepatitis A.

2019 August

Hepatitis A and B Vaccine Combined (Inactivated Viral) (Twinrix Junior®)

Supplier: GlaxoSmithKline

INDICATIONS ❶❷❸❹	INITIAL SERIES
(1) Persons ≥ 24 weeks and ≤18 years of age. **See Hepatitis A Vaccine: Indications & Hepatitis B Vaccine: Indications for usage recommendations.**	**(1) Three dose schedule:** Give **0.5 ml IM at**: 0, 4 weeks and 24 weeks. • **Alternate rapid dosing schedule (3 +1 reinforcement):** Give 0.5 ml IM at: 0, 7 and 21 days (+reinforcement one year after dose 1).
REINFORCEMENTS	(1) None for 3 dose series complete. • **For alternate rapid dosing schedule only: Give 0.5mL IM 12 months after dose 1.**
CONTRAINDICATIONS	History of anaphylactic reaction to a previous dose of any hepatitis A or hepatitis B-containing vaccine or to any component of Twinrix Junior® vaccine, or to latex.
VACCINE COMPONENTS	Neomycin sulfate, formaldehyde, aluminum hydroxide, aluminum phosphate, 2-phenoxyethanol, polysorbate 20 and traces of yeast.
ADVERSE EVENTS	**Local:** rarely, redness, swelling and pain. **Systemic:** fever (≤ 37.7° C), headache, malaise, fatigue, nausea

❶ Each 0.5 ml dose contains Havrix®360 ELU and Engerix®-B 10 mcg.

❷ If a client is to be given monovalent hepatitis A vaccine in place of a dose (or doses) of Twinrix®, the following vaccines may be used: HAVRIX®, VAQTA®, AVAXIM™, or AVAXIM™ Pediatric, administering the age-specific dosage for the particular product. If a client is to be given monovalent hepatitis B vaccine in place of a dose (or doses) of Twinrix®, the following vaccines may be used: Engerix®-B or RecombivaxHB®, administering the age-specific dosage and the number of doses for the particular product.

❸ The preferred injection site for children and adults is the deltoid muscle. For those < 12 months of age, the preferred site is the vastus lateralis. The vaccine should not be administered in the gluteal region.

❹ Twinrix Junior® is licensed for persons ≥1 year of age. However, numerous studies have demonstrated the immunogenicity and safety of hepatitis A vaccine for infants at 6 months of age. Immune response may be blunted in some children less than 6 months of age due to interference with maternally derived antibody. As maternal hepatitis A antibody status is usually not known, give Ig to all infants < 6 months of age who are at risk for hepatitis A. Consult Immunization Manager to discuss giving Ig to infants < 6 months of age who are at risk for hepatitis A.

2021 January

Human Papillomavirus Vaccine (GARDASIL®) (GARDASIL®9) [Quadrivalent (Types 6, 11, 16, 18) Recombinant] [NONAVALENT (Types 6, 11, 16, 18, 31, 33, 45, 52, and 58)]

Supplier: Merck Canada Inc.

INDICATIONS	INITIAL SERIES ❸❹❺❻❼❽❾
Recommended and provided free to: **(1)** Females and Males in grade 6 school year ❶❷ **(2)** Females and Males age 9-14 years initiating series prior to their 15th birthday outside of the school based program. ❶❷	**2 doses** in grade 6 (or before 15 years of age): **Dose1:** 0.5 ml IM (minimum of 24 weeks after dose one)* **Dose 2**: 0.5 ml IM ***If the interval between dose 1 & 2 is shorter than 150 days (5 months), follow 3 dose schedule – 3rd dose should be given at least 24 weeks after 1st dose and 12 weeks after the 2nd dose.**
(3) Females and Males **15 years of age to 26 years**. **(4)** Females and Males HIV+ (9 – 45 years of age). **(5)** Males high risk (9 – 26 years of age at time of 1st dose) – MSM; Street involved; **(6)** People who are Transgender (9 – 26 years of age at time of 1st dose).	**3 doses:** 0.5 ml IM 0.5 ml IM at 8 weeks 0.5 ml IM at 24 weeks
Recommended but NOT provided free to: **(7)** Females 27 years – 45 years of age at initiation of immunization series. **See Special Considerations**.	**3 doses:** 0.5 ml IM 0.5 ml IM at 8 weeks 0.5 ml IM at 24 weeks

REINFORCEMENTS	No booster doses are recommended at this time.
VACCINE COMPONENTS	Potential allergens: polysorbate 80, yeast protein. Other components: amorphous aluminum hydroxyphosphate sulfate, L-histidine, sodium borate.

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	2020 September
Human Papillomavirus Vaccine (GARDASIL®) (GARDASIL®9) [Quadrivalent (Types 6, 11, 16, 18) Recombinant] [NONAVALENT (Types 6, 11, 16, 18, 31, 33, 45, 52, and 58)] Supplier: Merck Canada Inc.	
ADVERSE EVENTS	Local: mild to moderate pain, redness, swelling Systemic: headache.
CONTRAINDICATIONS	1. History of anaphylactic reaction to a previous dose of HPV vaccine, or to any component of GARDASIL®, GARDASIL®9 2. Pregnancy. Although the vaccine has not been causally associated with adverse outcomes of pregnancy or adverse events to the developing fetus, the data on vaccination in pregnancy are limited. Administer vaccine series after completion of the pregnancy. If a woman is found to be pregnant after initiating the vaccine series, delay completion of the series until after pregnancy. If a vaccine dose has been administered during pregnancy, there is no indication for any intervention.
SPECIAL CONSIDERATIONS	• Individuals for whom HPV vaccine is recommended may be immunized even if already sexually active or have had a known HPV infection. The likelihood that they have been infected with all types of HPV contained in the vaccine is low and they stand to benefit from immunization.❼ • Provision of HPV9 vaccine for individuals at no charge, referred to YCDC or rural health centers by Yukon OB/GYN specialists, for individuals with CIN2+ with a demonstrated financial need, as determined by specialist. All other indications for immunization apply (age, dosing and spacing). Document high risk in Panorama under the Reason for Immunization Tab.

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2020 September

Human Papillomavirus Vaccine (GARDASIL®) (GARDASIL®9)
[Quadrivalent (Types 6, 11, 16, 18) Recombinant]
[NONAVALENT (Types 6, 11, 16, 18, 31, 33, 45, 52, and 58)]

Supplier: Merck Canada Inc.

❶ Those individuals receiving this series outside of the school based program, should be offered the series on the 2 dose schedule of 0 and 24 weeks if initiating before 15th birthday. Those initiating series on or after 15th birthday should be immunized with the 3 dose schedule of 0, 8 weeks and 24 weeks.

❷ Individuals who are known to have immune system defects associated with solid organ transplant, stem cell transplant, or HIV infection should receive HPV vaccine in the three dose schedule at 0, 8 weeks and 24 weeks. The immunosuppressed state results in a less robust immune response, and those with such conditions are at risk of persistent HPV infection and associated HPV disease if they become infected.

❸ Currently, routine HPV testing is not recommended before or after immunization. In addition, serologic tests are not routinely available in Canada.

❹ Individuals who are immunocompromised, either from disease or medication, can receive this vaccine; however, the immune response to vaccination and vaccine efficacy might be less than in immunocompetent individuals.

❺ Gardasil®/Gardasil®9 vaccine can be administered at the same visit as other age-appropriate vaccines, using a separate needle and syringe for each injection.

❻ If the schedule is interrupted, the vaccine series does not need to be restarted. If the series is interrupted after any dose, the subsequent dose should be given as soon as possible. The minimum interval schedule between dose one and dose two is 4 weeks, and between dose two and dose three is 12 weeks The minimum interval schedule should not be followed on a routine basis; it should only be used at the client – specific level based on health care provider assessment. The preferred schedule is 0, 8 weeks and 24 weeks.

❼ Advise vaccine recipients that there are no data to suggest the vaccine will have any therapeutic effect on existing cervical lesions (i.e., vaccine does not prevent the consequences of current HPV infection). Although there is some emerging evidence that there is some reduction in recurrence of anal and cervical intraepithelial neoplasia when the HPV vaccine is used for clients in the endoscopy and colposcopy setting, these benefits are still to be confirmed, and there are no therapeutic indications for the use of the vaccine.

❽ Individuals who started an HPV series with Gardasil® and complete the series with Gardasil®9 are considered up to date for program purposes. Clients can be reassured that although a complete series of Gardasil®9 is currently recommended to ensure protection against the five additional HPV types in the vaccine, there is already substantial cross-protection against other strains not included in the Gardasil® vaccine, and even one dose of Gardasil®9 is likely to offer significant additional protection against these strains.

❾ While there are no supporting data at this time, a minimum interval of 6 months is recommended between completion of a Gardasil® series and initiation of a Gardasil®9 series.

September 2020

Seasonal Quadrivalent Influenza Vaccine (Inactivated Split Virion or Subunit)

****Recommended and provided free to all Yukon residents****

2020-2021 Seasonal Influenza Vaccine: Quadrivalent Inactivated Influenza Vaccines (QIIV) Contains:

- **A/Guangdong-Maonan/SWL1536/2019 (H1N1) pdm09-like virus;**
- **A/Hong Kong/2671/2019 (H3N2)-like virus;**
- **B/Washington/02/2019-like virus (B/Victoria lineage); and**
- **B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage).**

The A/Guangdong; A/Hong Kong; and B/Washington strains were not contained in the 2019/20 season vaccine.

Special attention should be given to encourage immunization in these high risk groups:

(1) People at high risk:

- Adults and children with the following chronic health conditions:
  - Cardiac or pulmonary disorders (e.g., bronchopulmonary dysplasia, cystic fibrosis, asthma);
  - Diabetes and other metabolic diseases;
  - Cancer; immune compromising conditions (due to underlying disease, therapy or both);
  - Renal disease;
  - Anemia and hemoglobinopathy;
  - Neurologic or neurodevelopment conditions (includes neuromuscular, neurovascular, neurodegenerative, neurodevelopmental conditions, and seizure disorders [and, for children, includes febrile seizures and isolated developmental delay], but excludes migraines and psychiatric conditions without neurological conditions);
  - morbidly obese (BMI ≥40);
  - Children 6 months to 18 years of age undergoing treatment for long periods with acetylsalicylic acid, because of the potential increase of Reye's syndrome associated with influenza;
- All children age 6 months to 59 months;
- Pregnant women (the risk of influenza-related hospitalization increases with the length of gestation (i.e., it is higher in the third trimester than the second);
- Adults ≥ 65 years of age;
- People of any age who are residents of nursing home and other chronic care facilities and;
- Indigenous people

(2) People capable of transmitting influenza to those at high risk:

- Healthcare workers (HCW) and other care providers in facilities and community settings who through their activities, are capable of transmitting influenza to those at high risk;
- Household contacts, both adults and children, of individuals at high risk, whether or not the individual at high risk has been vaccinated:
  - Household contacts of individuals at high risk;
  - Household contacts of infants less than 6 months of age, as these infants are high risk but cannot receive influenza vaccine;
  - Members of a household expecting a newborn during the influenza season;
- Those providing regular child care to children 6-59 months of age, whether in or out of the home; and
- Those who provide services within closed or relatively closed settings to people at high risk (e.g., crew on a ship).

(3) Others

- People who provide essential community services; and
- People who are in direct contact with poultry infected with avian influenza during culling operations.

Safety Issues Applicable to Influenza Vaccines

2019 August

1. Egg Allergic Individuals

Since the 2013/2014 influenza season, British Columbia guidelines have allowed for the immunization of egg allergic individuals (including those who have experienced anaphylaxis following egg ingestion) with inactivated influenza vaccine, in any setting, following standard vaccine administration practices. These changes were based on recommendations issued by the US Joint Task Force on Practice Parameters (2013) and were reflected in the SPECIAL CONSIDERATIONS section of each of the inactivated influenza vaccine product pages for the 2013/2014 season. [A]The 2019-2020 NACI statement on influenza also indicates that Egg allergy is not a contraindication for influenza vaccination as there is a low risk of adverse events associated with the trace amounts of ovalbumin allowed in influenza vaccines manufactured using eggs. Egg-allergic individuals may be vaccinated against influenza using any age-appropriate product including LAIV, without prior influenza vaccine skin test and with the and with the full dose, irrespective of a past serve reaction to egg, and in any setting were vaccines are routinely administered. This recommendation is supported by accumulating data on the safe immunization of these individuals using inactivated influenza vaccines.[BC]

2. Oculo-Respiratory Syndrome (ORS)

ORS, defined as the onset of bilateral red eyes and one or more associated symptoms (cough, wheeze, chest tightness, difficulty swallowing, hoarseness, or sore throat) that starts within 24 hours of influenza immunization, with or without facial edema, was found during the 2000-2001 influenza season; few cases have been reported since then. ORS is not considered to be an allergic response. Although the pathophysiologic mechanism underlying ORS remains unknown, it is considered distinct from an IGE-mediated allergic response. People who have a recurrence of ORS upon revaccination do not necessarily experience further episodes with future vaccinations.

Individuals who have experienced ORS without lower respiratory tract symptoms may be safely revaccinated with influenza vaccine. Individuals who experienced ORS with lower respiratory tract symptoms should have an expert review. Healthcare providers who are unsure whether an individual experiences ORS versus an immunoglobulin E (IgE) mediated hypersensitivity immune response should seek advice. Data on clinically significant adverse events do not support the preference of one vaccine product over another when revaccinating those who have previously experiences ORS.

For further details on ORS, consult the Canadian Immunization Guide and CCDR volume 31 at http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/05vol31/dr3121a-eng.php

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[A] Kelso JM, Greenhawt MJ, Li JT. Joint Task Force on Practice Parameters. Update on influenza vaccination of egg allergic patients. Ann Allergy Asthma Immunol. 2013 Oct;111(4):301-302. This updates the earlier published guideline: Kelso JM, Greenhawt MJ, et al. Adverse reactions to vaccine practice parameter 2012 update. J Allergy Clin Immunol. 2012; 130:25-43.

[B] Des Roches A, Paradis L, Gagnon R, et al. Egg-allergic patients can be safely vaccinated against influenza. J Allergy Clin Immunol. 2012; 130(5):1213-6.

[C] Greenhawt MJ, Spergel JM, Rank MA, et al. Safe administration of the seasonal trivalent influenza vaccine to children with severe egg allergy. Annals of Allergy, Asthma and Immunology. 2012; 109(6):426-30

2020 September

(FLUZONE®QUADRIVALENT) Quadrivalent Inactivated Influenza Vaccine (Inactivated Split Virion) (IIV4-SD)

Supplier: Sanofi Pasteur Limited

INDICATIONS	See Seasonal Quadrivalent Influenza Vaccine		
DOSES AND SCHEDULE	**Age Group**	**Dosage**	**Number of Doses**
	6 months-8 years	0.5 mL **IM**	1 or 2❶ ❷
	≥ 9 years	0.5 mL **IM**	1
BOOSTER DOSES	Yearly		
ADMINISTRATION	• Multi-dose vials that have been punctured and stored at +2°C to +8°C may be used up to the expiry date indicated on the vial label.		
CONTRAINDICATIONS	1. History of anaphylactic reaction to a previous dose of any type of influenza vaccine or to any component of FLUZONE® QUADRIVALENT 2. History of Guillain-Barré syndrome (GBS) within 6 weeks of receipt of a previous dose of influenza vaccine 3. Receipt of a CTLA-4 inhibitor (e.g., ipilimumab) alone or in combination with other checkpoint inhibitors for the treatment of cancer. Inactivated influenza vaccine should be given 8 weeks before starting treatment or 8 weeks after the last dose.		
PRECAUTIONS	• **Severe ORS after a previous dose of influenza vaccine.** (see p.27 for details)		
VACCINE COMPONENTS	**Potential allergens:** egg protein, thimerosal (50 µg per 0.5mL dose; 0.01% w/v) (see SPECIAL CONSIDERATIONS) **Other components:** formaldehyde, sodium phosphate-buffered, isotonic sodium chloride solution, Triton® X-100.		
ADVERSE EVENTS	• **Local: pain**, swelling, redness. • **Systemic**: myalgia, headache, fever, malaise. Infants and toddlers may also experience irritability, loss of appetite and vomiting. Fewer than 1 in 20 people may develop oculo-respiratory syndrome (ORS). Symptoms include red eyes, a cough, and/or sore throat and/or hoarseness.		
SPECIAL CONSIDERATIONS	• ***** Egg allergic individuals (see p.27)		

❶ Children under 9 years of age who have not previously received seasonal influenza vaccine require 2 doses given 4 weeks apart. If the child has received one or more doses of seasonal trivalent or quadrivalent influenza vaccine in any previous season, only a single dose is required this season.

❷ IIV4 or IIV3 may be given interchangeably with LAIV4. Either product can be used for the 1st or 2nd dose if LAIV4 is not available.

- Consult the NACI Statement on Influenza Vaccination for the current season.

2020 September	
(FLUZONE® HIGH DOSE) Influenza Virus Vaccine Trivalent Types A and B (Inactivated Split Virion) (IIV3-HD) **Supplier: Sanofi Pasteur Limited**	
INDICATIONS	• Long term care residents age 65 years and older The vaccine is not approved for use in those under 65 years of age.
DOSES AND SCHEDULE	• 1 dose given as 0.5 mL **IM**
ADMINISTRATION	• One dose of 0.5 mL in a pre-filled syringe and stored at +2°C to +8°C may be used up to the expiry date indicated on the vial label. • Give intramuscularly.
BOOSTER DOSES	• Annually
SEROLOGICAL TESTING	• Serological testing is not recommended before or after immunization.
CONTRAINDICATIONS	1. History of anaphylactic reaction to a previous dose of any type of influenza vaccine or any component of FLUZONE® HIGH-DOSE. 2. History of Guillain-Barre syndrome (GBS) within 6 weeks of receipt of a previous dose of influenza vaccine without another cause being identified. 3. Receipt of a CTLA-4 inhibitor (e.g., ipilimumab) alone or in combination with other checkpoint inhibitors for the treatment of cancer. Inactivated influenza vaccine should be given 8 weeks before starting treatment or 8 weeks after the last dose. Consult Specialist most informed about client's condition.
VACCINE COMPONENTS	Potential allergens: egg protein. Other components: formaldehyde, sodium phosphate-buffered isotonic, sodium chloride solution, Triton® X-100.
ADVERSE EVENTS	**Local:** pain, swelling, redness. **Systemic**: myalgia, headache, fever, malaise.
SPECIAL CONSIDERATIONS	• ***** Egg allergic individuals (see p.27)

	2020 September
(FLUMIST® QUADRIVALENT) Influenza Virus Vaccine Trivalent Types A and B (Live Split Virion) (LAIV4) **Supplier: Sanofi Pasteur Limited**	
INDICATIONS	**See Seasonal Quadrivalent Influenza Vaccine** **Intended for use in eligible individuals 2 – 17 years of age (inclusive).** The vaccine is not approved for use in those younger than 2 years or older than 59 years.
DOSES AND SCHEDULE	Children 2-8 years of age (inclusive): 1 or 2 doses given as 0.2 mL (0.1 mL in each nostril) **Intranasal spray**. Children under 9 years of age who have not previously received any seasonal influenza vaccine require 2 doses given 4 weeks apart. If the child has received 1 or more doses in any previous season, only a single dose is required. For children requiring 2 doses within the season, IIV4 or IIV3 may be given interchangeably with LAIV4 with either product used for the 1st or 2nd dose if LAIV4 is not available. Children and adolescents 9-17 years of age (inclusive): 1 dose given as 0.2 mL (0.1 mL in each nostril) **intranasal spray**.
ADMINISTRATION	**The shelf-life of FLUMIST® is considerably shorter than that of inactivated influenza vaccines. Be sure to check the expiry date as vaccine lots received in YT will expire during the period January 2021. LAIV-Q is an intranasal spray and is not for injection. DO NOT INJECT.** 1. Remove the rubber tip protector. Do not remove the dose-divider clip at the other end of the sprayer. 2. With the recipient sitting upright, place tip of the sprayer just inside a nostril to ensure vaccine is delivered into the nose. 3. In one motion depress the plunger **as rapidly as possible** until the dose-divider clip prevents you from going further. 4. Pinch and remove the dose divider clip from the plunger. 5. Place the tip of the sprayer just inside the **other nostril** and with a single motion depress the plunger **as rapidly as possible** to deliver the rest of the vaccine.
BOOSTER DOSES	Annually
SEROLOGICAL TESTING	Serological testing is not recommended before or after immunization.

2020 September

Influenza Vaccine (QUADRIVALENT Live attenuated influenza vaccine (LAIV4))
FLUMIST® QUADRIVALENT

Supplier: AstraZeneca Canada

CONTRAINDICATIONS	1. History of anaphylactic reaction to a previous dose of any type of influenza vaccine or any component of LAIV4. 2. Severe asthma or active wheezing (on high dose inhaled or oral steroids or medically attended wheezing in the 7 days prior to vaccination). 3. Adults and children with immunocompromising conditions. ❸ 4. HCWs working with immunocompromised individuals (See PRECAUTIONS 1st bullet). 5. Pregnancy. 6. Individuals 2-17 years of age receiving aspirin-containing therapy because of the association of Reye syndrome with aspirin and wild-type influenza infection. It is recommended that aspirin-containing products in children under 18 years of age be delayed for four weeks after receipt of LAIV-4. 7. History of Guillain-Barre syndrome (GBS) within 8 weeks of receipt of a previous dose of influenza vaccine without another cause being identified. 8. Receipt of a CTLA-4 inhibitor (e.g., ipilimumab) alone or in combination with other checkpoint inhibitors for the treatment of cancer. Inactivated influenza vaccine should be given 8 weeks before starting treatment or 8 weeks after the last dose.
PRODUCT COMPONENTS	Potential allergens: Ovalbumin, gelatin hydrolysate (porcine Type A), gentamicin, arginine hydrochloride. Other components: sucrose, dibasic potassium phosphate, monobasic potassium phosphate, monosodium glutamate.
PRECAUTIONS	• Vaccine recipients should be informed that LAIV4 is a vaccine that contains a weakened strain of influenza virus and could possibly be transmitted to another person through contact with respiratory secretions. An infection with this weakened virus could cause a serious infection in a small category of patients who are severely immunocompromised and receiving care in hospital in a protected environment (e.g., post bone marrow transplant). Both health care workers and close contacts of such patients should avoid contact with these patients for two weeks after getting LAIV-Q. If such contact cannot be avoided offer an inactivated influenza vaccine instead of LAIV4. • Antiviral agents interfere with the immune response to LAIV4. LAIV4 should not be administered to individuals while taking antiviral agents active against influenza (oseltamivir and zanamivir). Such individuals should receive inactivated influenza vaccine. If antiviral agents are administered from 48 hours before to 2 weeks after receipt of LAIV4, revaccinate when antiviral agents have been discontinued for at least 48 hours.

Influenza Vaccine (QUADRIVALENT Live attenuated influenza vaccine (LAIV4)) **FLUMIST® QUADRIVALENT** **Supplier: AstraZeneca Canada**	
SPECIAL CONSIDERATIONS	• ***** Egg allergic individuals (including those who have experienced anaphylaxis following egg ingestion) can be immunized with inactivated or live attenuated influenza vaccine in any setting attended by immunization service providers who are following standard vaccine administration practice. (see p. 25) • LAIV4 can be given concomitantly with, or any time before or after any other live vaccines. • LAIV4 can be given concomitantly with, or any time before or after a TB skin test. • LAIV4 can be safely given to children and adolescents with cystic fibrosis unless they have contraindications (e.g. immunosuppressive therapy) for its use.
ADVERSE EVENTS	Local: runny nose or nasal congestion. • Systemic: decreased appetite, weakness, headache, fever, sore throat, cough.

❶ Children under 9 years of age who have not previously received seasonal influenza vaccine require 2 doses given 4 weeks apart. If the child has received one or more doses of seasonal trivalent or quadrivalent influenza vaccine in any previous season, only a single dose is required this season.

❷ IIV4 or IIV3 may be given interchangeably with LAIV4. Either product can be used for the 1st or 2nd dose if LAIV4 is not available.

Consult the NACI Statement on Influenza Vaccination for the current season.

❸ LAIV4 may be considered for children 2-17 years of age with HIV infection and pediatric oncology clients, including autologous HSCT, who are ≥12 months post-treatment. Consult with Specialist for approval with each specific client before use.

2019 August	
Japanese Encephalitis Vaccine (IXIARO®) **Supplier: Valneva**	
INDICATIONS ❶	**INITIAL SERIES**
(1) Those ≥ 18 years of age who are traveling to endemic regions	**(1) 1st Dose:** 0.5 mL IM deltoid Day 0 **2nd Dose:** 0.5 mL IM deltoid Day 28 *series needs to be completed at least one week before travel to the high risk area
REINFORCEMENTS	One dose: 12 months from second dose in the initial series, when there is potential for re-exposure to JE, to develop an adequate antibody response.❷
CONTRAINDICATIONS	• Hypersensitive to Ixiaro or to any ingredient in the formulation or container of the vaccine. Individuals who show hypersensitivity reactions after receiving the first dose of the vaccine should not be given the second dose. • Individuals with the following conditions should be considered as relative contraindications and thorough assessment should be undertaken including risks and benefits. Consider discussion with the client's physician and/or CMOH - Pregnant or breastfeeding women - Persons with a bleeding disorder - Immunosuppressed persons due to disease or therapy • < 18 years of age • Vaccination with IXIARO must be postponed in persons with acute sever febrile conditions
VACCINE COMPONENTS	**Adjuvant/Preservative:** aluminum hydroxide **Others:** sodium chloride, potassium dihydrogen phosphate, disodium hydrogen phosphate.
ADVERSE EVENTS	**Local:** injection site pain, erythema, hardening, swelling and itching **Systemic**: dyspnea, neuritis and thrombocytopenia. Fatigue, headache, influenza like illness, myalgia, pyrexia **GI:** nausea,

❶ See Section 5, Immunization of Special Populations, International Travelers.

❷ If a person received the previous mouse brain-derived JE vaccine more than 3 years ago and requires re-immunization, a two dose primary series of the currently available Vero cell culture-derived JE vaccine (IXIARO®) should be administered.

2019 August

Measles/Mumps/Rubella Vaccine (Live Attenuated Viral) MMRII® & Priorix®

Suppliers: Merck Frosst, MMRII®; GlaxoSmithKline, Priorix®

INDICATIONS	INITIAL SERIES
(1) Infants at 12 months of age	**(1) Dose 1:** 0.5 ml **SC** **Dose 2:** 0.5 ml **SC** at 4-6 years (school entry) if not received previously Children entering school who require both a 2nd dose of MMR and of varicella vaccine may be immunized using combination MMRV (measles, mumps, rubella, varicella) vaccine.
(2) Select special populations	**(2)** As indicated in Section 5 – Immunization of Special Populations.
(3) Infants from 24 weeks but <12 months of age, if travelling to endemic areas. http://www.who.int/immunization/monitoring_surveillance/burden/vpd/surveillance_type/active/measles_monthlydata/en/	**(3) One dose of** 0.5 ml **SC** (upon return, give 2 additional doses at routine times)
(4) All individuals who require protection against measles, mumps, OR rubella **(see special considerations p.35)**	**(4) Dose 1:** 0.5 ml **SC** **Dose 2:** 0.5 ml **SC** (4 weeks later)

ADMINISTRATION	• Both products need to be reconstituted. Use the diluent provided with the vaccine. • **MMRII®**: Administer the entire volume of reconstituted product, which may be 0.5 – 0.7 mL • **Priorix®**: Administer the entire volume of reconstituted product, which may be 0.5 – 0.7 mL
SEROLOGICAL TESTING	Serological testing is not routinely recommended before or after immunization.
BOOSTER DOSE	No booster doses are recommended at this time.
CONTRAINDICATIONS	1. History of anaphylactic reaction to a previous dose of a measles/mumps/rubella-containing vaccine, to any component of the product (See SPECIAL CONSIDERATIONS). 2. Persons whose immune status may be suppressed as the result of disease or therapy consult the appropriate physician (i.e., either the primary care physician most familiar with the client's current medical status or a medical specialist) and consult the Immunization Program Manager or CMOH prior to administration. For high risk/immunocompromised clients only: separate the administration of MMR and varicella vaccine by least 4 weeks (See SPECIAL CONSIDERATIONS).

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2019 August	
Measles/Mumps/Rubella Vaccine (Live Attenuated Viral) MMRII® & Priorix® **Suppliers: Merck Frosst, MMRII®; GlaxoSmithKline, Priorix®**	
CONTRAINDICATIONS (continued)	3. Family history of congenital immunodeficiency. See Yukon Immunization Program Manual, Section 4, Contraindications and Routine Precautions for Immunization. 4. Pregnancy: Counsel female recipients to avoid pregnancy for 1 month following immunization. Risk is theoretical and not observed. Inadvertent immunization during pregnancy is not considered a medical indication for therapeutic abortion and the pregnant woman should be reassured that teratogenicity from the vaccine has not been observed. 5. Physician-diagnosed significant thrombocytopenia after first dose of a MMR vaccine with no other cause identified. In such individuals the risk of recurrence of thrombocytopenia following a second dose of measles-containing vaccine is not known. Testing to confirm immunity to measles and mumps, the components for which a 2nd dose is recommended to ensure optimal protection, may help inform the decision.
VACCINE COMPONENTS	**MMRII®:** **Potential allergens:** hydrolyzed gelatin, neomycin, phenol red, fetal bovine serum, egg protein (SEE SPECIAL CONSIDERATIONS). **Other components:** sorbitol, Medium 199 with Hank's salts, sodium phosphate dibasic (anhydrous), sucrose, sodium bicarbonate, Minimum Essential Medium (Eagle's), potassium phosphate dibasic (anhydrous), monosodium L-glutamate monohydrate, potassium phosphate monobasic, recombinant human albumin. **PRIORIX®** **Potential allergens:** neomycin sulphate, egg protein (SEE SPECIAL CONSIDERATIONS). **Other components:** amino acids, lactose, mannitol, sorbitol.
PRECAUTIONS	• MMR immunization should be given on the same day or delayed until 4 weeks after administration of any other live vaccine. • For immunocompromised clients only: separate administration of MMR and varicella vaccine by at least 4 weeks. For additional information see Special Populations, Section 5 • Do TB skin testing on the same day as MMR immunization, or delay TB skin testing for ≥ 4 weeks. • Recent administration of an immune globulin preparation or blood product (see CIG, 2013, Recent Administration of Human Immune Globulin Products http://www.phac-aspc.gc.ca/publicat/cig-gci/p01-10-eng.php

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2019 August	
Measles/Mumps/Rubella Vaccine (Live Attenuated Viral) MMRII® & Priorix® **Suppliers: Merck Frosst, MMRII®; GlaxoSmithKline, Priorix®**	
PRECAUTIONS (continued)	• Woman who receive Rhlg postpartum and are eligible for MMR vaccine should generally wait 3 months before being vaccinated with this vaccine. However, if there is a risk of exposure to measles, mumps or rubella, a risk of pregnancy in the 3-month postpartum period, or a risk of the vaccine may not be given later, MMR vaccine may be given prior to discharge with a second dose at the recommended interval if indicated. If MMR vaccine is given within 3 months of receipt of Rhlg, serologic testing for rubella should be done 3 months postpartum and at least 1 month after the final dose. Women who have not mounted an antibody response should be revaccinated.
ADVERSE EVENTS	**Local**: Pain, redness, swelling, induration, wheal and flare reaction, urticarial. **Systemic**: Moderate fever, rash, malaise, headache, and nausea, myalgia, and paraesthesia; thrombocytopenia; encephalitis. Acute transient arthritis or arthralgia is uncommon in children, but frequency and severity increases with age. 25% of rubella susceptible post-pubertal females may experience arthralgia, and 10% may have arthritis-like signs and symptoms. Rubella vaccine does not cause chronic arthropathy.
SPECIAL CONSIDERATIONS	• In view of the cumulative data indicating the safety of MMR immunization in people with a history of anaphylactic hypersensitivity to hens' eggs NACI recommends that such individuals should be immunized according to guidelines without special precaution. As for all vaccines, NACI recommends immunization by personnel with the capability to manage adverse events including anaphylaxis following immunization.

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2019 August

Measles/Mumps/Rubella Vaccine (Live Attenuated Viral) MMRII® & Priorix®

Suppliers: Merck Frosst, MMRII®; GlaxoSmithKline, Priorix®

SPECIAL CONSIDERATIONS (continued)

Consider as immune who have had any of the following:

Measles; consider as immune:

- Birth date before January 1, 1970 (January 1, 1957 for health care workers) ❶;
- Birth date on or after January 1, 1970 (January 1, 1957 for health care workers) ❶ AND
  - Laboratory evidence of immunity to; or
  - Documentation of 2 doses of a live measles-containing vaccine at ≥ 12 months of age and given at least 4 weeks apart.

Mumps; consider as immune:

- Birth date before January 1, 1970 (January 1, 1957 for health care workers) ❶
- Birth date on or after January 1, 1970 (January 1, 1957 for health care workers) AND
  - Prior clinical diagnosis of acute mumps and laboratory confirmation of same; or
  - Documentation of 1 dose of a live mumps-containing vaccine for any susceptible adult born ≥1970. The following populations require documentation of 2 doses: children as per routine schedule; students of post-secondary educational settings and travellers to outside of North America. Health care workers require documentation of 1 dose if born between January 1, 1957 and December 31, 1969; 2 doses if born on or after 1970. To be considered valid all doses must be given at 12 months of age and older. If 2 doses are required they must be separated by 4 weeks.

Rubella; consider as immune:

Health care workers:

- There is no age above which immunity against rubella can be assumed for health care workers.

All Others:

- Birth date before January 1, 1957
- Birth date on or after January 1, 1957 AND
- Documented receipt of one dose of live rubella virus vaccine (most often given as MMR)
- Laboratory evidence of rubella immunity; or laboratory confirmed acute rubella infection.

❶ These persons are generally assumed to have acquired immunity to measles or mumps from natural infection. There may be susceptible individuals in this age group, however, and those without a history of measles or mumps vaccine or disease may be considered susceptible and offered MMR vaccine per the routine schedule.

The following tables summarize the number of doses of MMR vaccine recommended for Yukon residents based on its constituent components:

Health care workers

Year of birth	Measles	Mumps❷	Rubella❶	MMR vaccine
Prior to 1957	0 doses	0 doses	1 dose	1 dose
1957 – 1969	2 doses	1 dose		2 doses
1970+		2 doses		2 doses

All others

Year of birth	Measles	Mumps❷	Rubella❶	MMR vaccine
Prior to 1957	0 doses	0 doses	0 doses	0 dose
1957 – 1969			1 dose	1 dose
1970+	2 doses	1 or 2 doses		2 doses

❶One dose of MMR for rubella protection is recommended for all health care workers regardless of age, and for adults born after 1956 who do not have documentation of receiving 1 dose of rubella containing vaccine on / after their first birthday or laboratory evidence of immunity or laboratory confirmed rubella.
❷At least one dose of mumps vaccine is recommended for any susceptible adult born in 1970 and later. The following should receive two doses: children as per routine schedule, non-immune health care workers, students of post-secondary educational settings and travelers to outside of North America. Health Care workers should receive 1 dose if born between January 1, 1957 – December 31, 1969; 2 doses if born on or after 1970.

Measles, Mumps, Rubella and Varicella Vaccine (MMRV) PROQUAD® PRIORIX-TETRA® Supplier: Merck Canada Inc., PROQUAD®; GlaxoSmithKline Inc., PRIORIX-TETRA®	
INDICATIONS	**INITIAL SERIES**
(1) School entry dose (4 - 6 years of age)❶	**(1)** Routinely as second dose at 4 to 6 years of age: **1 Dose given as 0.5 mL up to 0.7 mL SC** (see ADMINISTRATION)
ADMINISTRATION	**PROQUAD®** • This product needs to be reconstituted. The reconstituted vaccine should be administered as soon as possible, and must be used within 30 minutes. • Administer the entire volume of the reconstituted product, which may be up to 0.7 mL. • This vaccine should be given SC route only. **PRIORIX-TETRA®** • This product needs to be reconstituted. The reconstituted vaccine should be administered as soon as possible, but may be kept up to 8 hours in the refrigerator (2 to 8°C) • The dose volume should be 0.5 mL after reconstitution. • This volume should be given via the SC route.
CONTRAINDICATIONS	1. History of anaphylactic reaction to a previous dose of measles, mumps, rubella or varicella-containing vaccine or any component of MMRV (See SPECIAL CONSIDERATIONS). 2. Persons with impaired immune function, including primary or secondary immunodeficiency disorders. Such individuals should be offered MMR and varicella vaccines by separate injection if indicated in Section 5: Special Populations. See also separate MMR and varicella vaccine product pages. 3. Pregnancy: Counsel female recipients to avoid pregnancy for 1 month following immunization. Risk is theoretical and has not been observed. Inadvertent immunization during pregnancy is not considered a medical indication for therapeutic abortion and the pregnant woman should be reassured that teratogenicity from the vaccine has not been observed. 4. Physician-diagnosed significant thrombocytopenia after first dose of MMR-containing vaccine with no other cause identified. In such individuals the risk of recurrence of thrombocytopenia following a second dose of measles-containing vaccine is not known. Testing to confirm immunity to measles and mumps, the components for which a 2nd dose is recommended to ensure optimal protection, may help inform the decision. 5. Active untreated TB. 6. Recent administration of an immune globulin preparation or blood product (see CIG, 2013, Recent Administration of Human Immune Globulin Products http://www.phac-aspc.gc.ca/publicat/cig-gci/p01-10-eng.php).

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2019 August	
Measles, Mumps, Rubella and Varicella Vaccine (MMRV) PROQUAD® PRIORIX-TETRA® **Supplier: Merck Canada Inc., PROQUAD®; GlaxoSmithKline Inc., PRIORIX-TETRA®**	
REINFORCEMENT	No booster doses are recommended at this time.
SEROLOGICAL TESTING	Serological testing is not routinely recommended before or after immunization.
PRODUCT COMPONENTS	**PROQUAD®** **Potential allergens**: hydrolysed gelatin, neomycin, bovine serum albumin, egg protein (See SPECIAL CONSIDERATIONS). **Other components:** Sucrose, urea, sorbitol, monosodium L-glutamate, sodium phosphate, recombinant human albumin, sodium bicarbonate, potassium phosphate, potassium chloride. **PRIORIX-TETRA®** **Potential allergens:** neomycin sulphate, egg protein (See SPECIAL CONSIDERATIONS). **Other components**: amino acids, lactose, mannitol, sorbitol.
PRECAUTIONS	• Those ≤ 18 years of age should avoid taking salicylates for 6 weeks following immunization with MMRV. This is based on the association between salicylate use and wild type varicella infection; Reye syndrome has not been reported in association with varicella vaccine. NACI recommends that children and teens on chronic salicylate therapy should be considered for immunization with close subsequent monitoring. • MMRV immunization should be given on the same day or delayed until 4 weeks after administration of any other live vaccine. • TB skin testing should be completed on the same day as MMRV immunization or after an interval ≥ 4 weeks.
SPECIAL CONSIDERATIONS	NACI recommends that egg allergic individuals (including those who have experienced anaphylaxis following egg ingestion) can be immunized with MMR containing vaccine in any setting attended by immunization service providers who are following standard vaccine administration practices.
ADVERSE EVENTS	**Local:** pain, redness, swelling. **Systemic:** fever, irritability, rash, parotitis. Thrombocytopenia and encephalitis have been very rarely associated with MMR vaccines. Though not yet established through post marketing surveillance, any association with MMRV vaccine is expected to be similar.
❶ Yukon is offering MMRV for the purpose of the second dose of these products to children entering school (ages 4 to 6). Although MMRV is approved from ≥ 12 months to 12 years of age it is not recommended as a first dose in those < 4 years of age due to an increased risk of febrile seizures. In children < 2 years of age, who have a family or personal history of seizures of any etiology separate MMR and varicella vaccines should be used.	

2019 August

Meningococcal B Vaccine (four component recombinant, adsorbed vaccine) BEXSERO®

Supplier: GlaxoSmithKline Inc.

INDICATIONS	INITIAL SERIES❶
Provided free to: **(1)** Close contacts 8 weeks to 55 years of age of a case of serogroup B invasive meningococcal disease who meet the public health criteria for chemoprophylaxis.❶	**(1)(2)** Infants 8 weeks to 20 weeks of age: **3 doses** given as 0.5 mL IM, given at least 4 weeks apart with a **4th dose** after 12 months of age. Infants 24 weeks to 44 weeks of age: **2 doses** given as 0.5 mL IM, given at least 8 weeks apart, with a **3rd dose** after 12 months of age and at least 8 weeks after dose 2. Children 12 months to 10 years of age: **2 doses** given as 0.5 mL IM, given at least 8 weeks apart. Individuals 11 years to 55 years of age: **2 doses** given as 0.5 mL IM, given at least 4 weeks apart.
(2) In consultation with CMOH, individuals 8 weeks to 55 years of age at risk during IMD outbreaks caused by N. meningitidis serogroup B or the emergence of hyperendemic and/or hypervirulent N. meningitidis strains that are predicted to be susceptible to vaccine.❶	

ADMINISTRATION	0.5 mL IM (supplied as a 0.5 mL suspension in a pre-filled syringe)
REINFORCEMENTS	The need for further doses has not been established.
SEROLOGICAL TESTING	Serological testing is not recommended before or after immunization.
CONTRAINDICATIONS	History of anaphylactic reaction to a previous dose of meningococcal B containing vaccine, or to any component of Bexsero®, or to latex.
PRODUCT COMPONENTS	Potential allergens: kanamycin, latex. Other components: aluminum hydroxide, histidine, sucrose.
PRECAUTIONS	Safety of this vaccine in pregnant or lactating women, or in adults over 55 years of age has not been established however vaccination should not be withheld when there is a clear risk of exposure to meningococcal disease.
SPECIAL CONSIDERATIONS	Acetaminophen may be given for the reduction of fever in infants and children up to two years of age. Give one dose at the time of vaccination, followed by two more doses four to six hours apart. The recommended dosage is 10-15mg/kg per dose. The use of acetaminophen to control fever associated with Bexsero® has not been found to reduce the immunogenicity of the vaccine.

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2019 August

Meningococcal B Vaccine (four component recombinant, adsorbed vaccine) BEXSERO®

Supplier: GlaxoSmithKline Inc.

ADVERSE EVENTS	**Infants and children** **Local**: Tenderness, erythema, induration, swelling. **Systemic**: fever, sleepiness, irritability, unusual crying. Higher proportion of systemic reactions, including temperature ˃38 °C, when given together with other routine vaccines. **Adolescents and adults** **Local**: pain, erythema, induration, swelling. **Systemic**: malaise, headache, myalgia. **Other: Kawasaki Disease** – At the time of approval, 7 cases of Kawasaki Disease were reported in phase 2 & 3 clinical studies, 6 of which were in vaccine recipients. This is higher than normal background levels however no causal relationship has been determined.

❶ In Canada, Bexsero® vaccine has been authorized for use in individuals 8 weeks to 17 years of age. However, data reported in clinical trials indicates that Bexsero® vaccine is immunogenic and safe when given to adults up to 55 years of age using a two dose schedule with an interval of at least one month between doses.

2019 August

Meningococcal C Conjugate (MCC) Vaccine NEISVAC-C®; MENJUGATE®

Supplier: Pfizer Canada Inc., NEISVAC-C®; GlaxoSmithKline Inc.; MENJUGATE®

INDICATIONS	INITIAL SERIES❶
(1) **NEISVAC-C®**: Two-dose program for infants <12 months of age. **MENJUGATE®**: Three-dose program for infants <12 months of age.	**(1) NEISVAC-C®** **Dose 1:** 0.5 ml **IM** at 8 weeks of age **or** age at presentation. (If age of presentation is ≥12 months, only one dose is required.) **Dose 2:** 0.5 ml **IM** at ≥ 12 months of age (at least 8 weeks after 1st dose)❷❸ **MENJUGATE®** **Dose 1:** 0.5 mL **IM** at 8 weeks of age or at age at presentation. (If age of presentation is ≥ 12 months, only one dose is required.) **Dose 2:** 0.5 mL **IM** at 24 weeks, (at least 8 weeks after dose 1). **Dose 3:** 0.5 mL IM at ≥ 12 months of age, (at least 8 weeks after dose 2).
(2) Children who received their last dose of any MCC vaccine when they were < 12 months of age	**(2) One dose:** 0.5 ml **IM.** at ≥ 12 months of age ❷
(3) Medically high risk children ≥ 8 weeks to < 12 months of age❻	**(3)** See p.42 Meningococcal Quadrivalent.
(4) Close contacts of a case of invasive meningococcal group C disease that meet the criteria for chemoprophylaxis❹❺ who have NOT been previously vaccinated with MCC vaccine as directed by YCDC	**(4) Age at presentation:** **≥ 8 weeks to < 12 months of age:** **Dose 1:** 0.5 ml **IM** **Dose 2:** 0.5 ml **IM** at least 8 weeks after 1st dose **Dose 3:** 0.5 ml **IM** at ≥ 12 months of age (at least 8 weeks after 2nd dose) **≥ 12 months of age** (any MCC vaccine may be used): **One dose**: 0.5 ml **IM** ❷
(5) Children who have not received a dose of Men-C-C vaccine after 12 months of age and who are born in 2004 and later.	**(5) One dose:** 0.5 ml **IM** ❷
(6) Adolescents and adults up to 24 years of age inclusive, who have not received a dose of Men-C-C containing vaccine ❼	**(6) One dose:** 0.5 ml **IM** ❷
ADMINISTRATION	**MENJUGATE®:** This product may need to be reconstituted.
CONTRAINDICATIONS	History of anaphylactic reaction to a previous dose of any meningococcal vaccine or to any component of Neis Vac-C, Menjugate vaccine, or to latex (in MENJUGATE® only).

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	2019 August
Meningococcal C Conjugate (MCC) Vaccine NEISVAC-C®; MENJUGATE® **Supplier: Pfizer Canada Inc., NEISVAC-C®; GlaxoSmithKline Inc.; MENJUGATE®**	
SEROLOGICAL TESTING	Serological testing is not recommended before or after immunization.
VACCINE COMPONENTS	**NeisVac – C**: **Potential allergens:** tetanus toxoid protein **Other components:** Aluminum hydroxide. **Menjugate**: **Potential allergens:** diphtheria CRM197, toxoid protein **Other components:** aluminum hydroxide, sodium dihydrogen phosphate monohydrate, disodium phosphate heptahydrate, mannitol.
ADVERSE EVENTS	**All:** redness, swelling and pain at injection site; headache, fever **Infants and toddlers:** crying, irritability, drowsiness, somnolence/impaired sleeping **Infants:** vomiting/nausea/diarrhea/loss of appetite.
SPECIAL CONSIDERATIONS	Upon storage, a white deposit and clear supernatant can be observed. Shake the vaccine well in order to obtain a homogenous suspension.

❶ There must be an interval of at least 24 weeks since the prior administration of a meningococcal polysaccharide vaccine and the administration of Neis Vac-C.
❷ Meningococcal C conjugate vaccines are interchangeable for those ≥ 12 months of age.
❸ If an infant has a history of receiving their last dose before 12 months of age, give an additional dose at ≥ 12 months of age.
❹ Administer concurrently with chemoprophylaxis or as soon as possible.
❺ A MCC vaccine is preferred in this situation as it provides longer duration of protection and induction of immunologic memory than does a meningococcal C-containing polysaccharide vaccine.
❻ See Meningococcal Quadrivalent Conjugate Vaccine for list of medical indications.
❼ These individuals are eligible up to 24 years of age (inclusive)

2020 September

Meningococcal Quadrivalent Conjugate Vaccine (Groups A, C, Y, W-135) MENVEO™; MENACTRA®

Supplier: GlaxoSmithKline Inc., MENVEO™; Sanofi Pasteur Limited., MENACTRA®

INDICATIONS❶	INITIAL SERIES
(1) Provided free to medically high risk individuals 8 weeks of age and older❶: • Functional or anatomic asplenia • Congenital immunodeficiency states (complement, properdin, factor D deficiency or primary antibody deficiencies). • Hematopoietic Stem Cell Transplant (adult and pediatric). • Solid organ or islet cell transplant (candidate or recipient). • Acquired complement deficiency due to receipt of the terminal complement inhibitor eculizumab (Soliris®) Refer to Yukon Immunization Program Manual, Section 5, for more information on specific medical conditions. **(2)** Close contacts (2 months of age and older) of a case of invasive meningococcal disease (serogroups A, Y, or W-135) who meet the public health criteria for immunoprophylaxis ❷ **(3)** Beginning school year 2016-2017, Adolescents born on or after January 1, 2002 and up to and including age 18.❹ **(4)** Recommended, but NOT provided free to: • research, industrial, and clinical laboratory personnel who are routinely exposed to *N. meningitidis* • military recruits • travellers for whom meningococcal vaccine is indicated • Post-Secondary Students over the age of 18.	**DOSES AND SCHEDULE:** **MENVEO® only**: 8 weeks – 11 months of age: 2 doses given as 0.5 mL IM, separated by 8 weeks, with a 3rd dose given between 12 – 23 months of age, and no sooner than 8 weeks after the 2nd dose. **MENVEO® only**: 12 - 23 months of age: 2 doses given as 0.5 mL IM, separated by 8 weeks. **MENVEO® or MENACTRA®:** 2 years of age and older: 1 dose given as 0.5 mL IM. (A dose of meningococcal C conjugate or a second dose of Menigococcal quadrivalent conjugate vaccine may also be indicated for high risk individuals. Refer to Yukon Immunization Program Manual, Section 5, for more information on specific medical conditions)

ADMINISTRATION	**MENVEO®**: This product needs to be reconstituted. **MENACTRA®**: No additional requirements.
REINFORCEMENTS	**Booster Doses:** For medically high risk clients ❸: • Vaccination initiated at ≤ 6 years of age: provide a booster dose 3 years later, and then every 5 years. • Vaccination initiated at ≥ 7 years of age: provide a booster dose every 5 years.

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2020 September	
Meningococcal Quadrivalent Conjugate Vaccine (Groups A, C, Y, W-135) MENVEO™; MENACTRA® **Supplier: GlaxoSmithKline Inc., MENVEOTM; Sanofi Pasteur Limited., MENACTRA®**	
SERIOLOGICAL TESTING	• Serological testing is not recommended before or after immunization.
CONTRAINDICATIONS	• History of anaphylactic reaction to a previous dose of any meningococcal or diphtheria-containing vaccine, or any component of Menactra® or Menveo™.
SPECIAL CONSIDERATIONS	• The recommended interval between any meningococcal C conjugate vaccine and meningococcal quadrivalent conjugate vaccine is 4 weeks (regardless of which vaccine is given first). • Eligible individuals previously vaccinated with a polysaccharide meningococcal vaccine should be given meningococcal quadrivalent conjugate; this should be offered at least 6 months after vaccination with polysaccharide meningococcal vaccine.
PRODUCT COMPONENTS	**MENVEO®** **Potential allergens**: diphtheria CRM_{197} toxoid protein. **Other components**: potassium dihydrogen phosphate, sucrose, sodium dihydrogen phosphate monohydrate, disodium hydrogen phosphate bihydrate. **MENACTRA®** **Potential allergens**: diphtheria toxoid protein. **Other components**: Sodium phosphate dibasic anhydrous; sodium phosphate, monobasic.
ADVERSE EVENTS	**Local**: pain, redness, swelling, **Systemic**: headache, malaise, chills, fever, nausea, muscle soreness, fatigue, irritability and loss of appetite.

❶ MENVEO® is indicated for children 8 weeks-23months of age. Either vaccine may be used for those individuals 2 years of age and older. The National Advisory Committee on Immunization (NACI) indicates that either vaccine may be used in those over 55 years of age, beyond current approvals in the product monograph. For medically high risk individuals as listed above, Men-C-ACYW-135 should be given in place of Men-C-C as part of the routine schedule and administered according to age at presentation.

❷ If client is a close contact meeting public health criteria for Immunoprophylaxis this dose should be given as soon as serotype information is available. For immunization of contacts who have received prior meningococcal vaccine doses, see: http://www.hss.gov.yk.ca/pdf/ycdc_meningococcal.pdf. Vaccine may be administered concurrently with chemoprophylaxis.

❸ Booster dose should be offered as long as medical condition persists. As needed, a clinical opinion as to the persistence of the condition may be sought from the physician most responsible for the client's care.

❹ A dose of Men-C-ACYW-135 received in Grade 7 or later (i.e., min age of 11 years and 8 months) is considered a valid adolescent dose; however these children are still eligible for an additional adolescent dose in grade 9 or up to and including age 18.

2019 August

Meningococcal Quadrivalent Polysaccharide Vaccine (Groups A, C, Y, W-135) Menomune®

Supplier: Sanofi Pasteur Limited

INDICATIONS	DOSES AND SERIES ❷
Only use MENOMUNE® in individuals at high risk of invasive meningococcal disease when the use of meningococcal quadrivalent conjugate vaccine (Groups A, C, Y, W-135) or meningococcal C conjugate vaccine is contraindicated. See indications: Meningococcal Quadrivalent Conjugate vaccine (Group A,C,Y,W-135) and Meningococcal Conjugate Vaccine (Group C).❶	**12 weeks – 23 months of age:** 2 doses given as 0.5 mL **SC**, separated by 8-12 weeks.❷ **2 years of age and older:** 1 dose given as 0.5 mL SC.❷

ADMINISTRATION	This product needs to be reconstituted.
REINFORCEMENT ❸	Re-immunization is required for eligible children 12 weeks – 23 months of age at ongoing risk for meningococcal disease: 12 weeks-23 months of age: 6 months since last dose of MENOMUNE® 13-23 months of age: 1 year since last dose of MENOMUNE®
SEROLOGICAL TESTING	Serological testing is not recommended before or after immunization.
CONTRAINDICATIONS	History of anaphylactic reaction to a previous dose of any component of MENOMUNE® or to latex.
PRODUCT COMPONENTS	*Neisseria meningitidis* group-specific polysaccharide antigens (A, C, Y and W-135) 50 µg each, sodium chloride 4.25 - 4.75 mg, lactose (18) 2.5 - 5.0 mg, water for injection, thimerosal* (mercury derivative) 1:10,000 *for multidose presentation only **Potential allergens:** latex
ADVERSE EVENTS	**Local:** pain, redness, swelling. **Systemic:** headache, malaise, chills, fever.

❶ Contacts of a case of meningococcal disease should be provided vaccine as soon as serotype information is available. Vaccination can be given concurrently with chemoprophylaxis.

❷ There must be an interval of at least 2 weeks since the prior administration of a MCC vaccine and the administration of Menomune®.

❸ If child has been previously immunized with Menomune® and it is within the time period before re-vaccination is due, there is no need to administer vaccine.

2020 December

Palivizumab (SYNAGIS®)

Supplier: AbbVie

INDICATIONS	DOSES AND SERIES
Recommended and provided free to: • Premature infants that meet the criteria of the RSV program. Only to be administered to those who have received approval to be enrolled in the program ❶	15mg/kg body weight, by IM injection ❷ Refer to Yukon Immunization Program Manual, Section 5, for detailed information on the RSV prevention program process

ADMINISTRATION ❷	1) Upon arrival to the health facility, weigh the infant 2) Calculate appropriate dose to be administered based on step 1 3) Administer appropriate dose as per product monograph 4) Enter SYNAGIS® in Panorama 5) Observe client with same procedure as any immunization (15 Minutes) 6) Set date for next injection 7) Advise Immunization Program Manager by phone or email that Synagis® was administered. Include following information: Panorama client ID, weight, dose given, and date of next appointment.
REINFORCEMENT ❸	2nd dose: to be administered 21 days later (can be 18-24 days) Subsequent doses: to be administered 28-30 days later
STORAGE AND HANDLING	Should be kept in a monitored fridge at 2° to 8° Celsius. Do not freeze. Do not dilute or shake vial. Should be administered immediately after drawing up dose.
PRECAUTIONS	• Should be given with caution to patients with thrombocytopenia or any coagulation disorder, and those receiving anticoagulant therapy. • A moderate to severe infection or febrile illness may delay administration, unless stated by a physician. • Synagis® does not interfere with any other immunizations.
CONTRAINDICATIONS	Contraindicated in patients with known hypersensitivity to Palivizumab or other humanized monoclonal antibodies.
PRODUCT COMPONENTS	**Medicinal ingredients:** Palivizumab (humanized monoclonal antibody- 95% human antibody, 5% murine antibody) **Non-medicinal ingredients:** chloride, glycine, histidine
ADVERSE EVENTS	**Local:** pain, redness, swelling. **Systemic:** otitis media, upper respiratory tract infection, rhinitis, rash, fever.

❶ A physician in the Yukon must complete the Yukon RSV Protection Program application form each year. Each health centre is responsible for advising their community physician that Synagis® has been approved for their client. See Yukon Synagis® Acquisition Process in Section 5 pg. 43.

❷ Will come in single-use vials to be drawn up; dose calculated based on infant weight. Round off dose to nearest 5mg. See Section 5 for full details on RSV Prevention Program.

❸ To be administered during RSV season only (typically Nov to Apr). The end of the RSV season will be conveyed by the Immunization Program Manager.

2019 August

Pneumococcal Conjugate Vaccine (Prevnar®13)

Supplier: Pfizer Canada Inc.

INDICATIONS	INITIAL SERIES
(1) Healthy infants and children 8 weeks to 59 months of age - to start or complete a pneumococcal conjugate vaccine series	**(1) Healthy children:** **Dose 1:** 8 weeks of age: **0.5 mL IM** **Dose 2:** 16 weeks of age: **0.5 mL IM** **Dose 3:** ≥ 12 months of age: **0.5 mL IM** (at least 8 weeks after second dose).
(2) Children 8 weeks to 59 months of age who are at high risk of pneumococcal disease due to: ❶❷❸ • Sickle cell disease and other hemoglobinopathies • Immunosuppression related to disease [e.g., malignant neoplasm (including leukemia and lymphoma); HIV; multiple myeloma] or therapy (e.g., high dose, systemic steroids or severe rheumatoid arthritis requiring immunosuppressive therapy) • Congenital immunodeficiencies involving any part of the immune system, including B-lymphocyte (humoral) immunity, T-lymphocyte (cell-mediated) immunity, complement system (properdin or factor D deficiencies) or phagocytic function. • Receipt of hematopoietic stem cell transplant (HSCT) • Solid organ or islet cell transplant (candidate or recipient) • Chronic heart or lung disease (except asthma, unless management involves ongoing high dose oral corticosteroid therapy) • Chronic liver disease including cirrhosis, chronic hepatitis B, chronic hepatitis C • Chronic kidney disease • Diabetes, cystic fibrosis or chronic CSF leak • Chronic neurological conditions that may impair clearance of oral secretions • Cochlear implant (candidate or recipient) • Anatomic or functional asplenia (children up to and including 18 years of age**)** ❷	**(2) Children medically at high risk:** **Dose 1:** 8 weeks of age: **0.5 mL IM** **Dose 2:** 16 weeks of age: **0.5 mL IM** **Dose 3:** 24 weeks of age: **0.5 mL IM** **Dose 4:** ≥ 12 months of age: **0.5 mL IM**❶ (at least 8 weeks after third dose)
(3) All children to 59 months of age and asplenics ≤ 18 years of age who have completed a PVC 7 or PCV 10 vaccine series❹	**(3)** One dose **0.5 mL IM** at least 8 weeks after a previous PCV7 or PCV10 dose
(4) All individuals ≥60 months with HIV infection not been previously immunized with PCV 13 ❺❸	**(4)** One dose **0.5** ml IM ❺

(continued on next page)

2019 August

Pneumococcal Conjugate Vaccine (Prevnar®13)

Supplier: Pfizer Canada Inc.

INDICATIONS	INITIAL SERIES
(5) RECOMMENDED BY THE NATIONAL ADVISORY COMMITTEE ON IMMUNIZATION: **Recommended based on authorization from Specialist and/or CMOH:** • Children up to 18 years of age (inclusive) with asthma which required medical attention in the past 12 months.	**(5) One dose 0.5 mL IM**
Recommended based on authorization from Specialist and/or CMOH: **• Adults with:** • Asplenia (anatomical or functional) • Sickle cell disease or other hemoglobinopathies • Congenital immunodeficiencies involving any part of the immune system, including B-lymphocyte (humoral) immunity, T-lymphocyte (cell) mediated immunity, complement system (properdin, or factor D deficiencies), or phagocytic functions • Immunosuppressive therapy including use of long term corticosteroids, chemotherapy, radiation therapy, post-organ-transplant therapy, biologic and non-biologic immunosuppressive therapies for rheumatologic and other inflammatory diseases. • Malignant neoplasms including leukemia and lymphoma • Solid organ or islet cell transplant (candidate or recipient)	**(5) One dose 0.5 mL IM**

CONTRAINDICATIONS	History of an anaphylactic reaction to a previous dose of any pneumococcal vaccine, or to any component of Prevnar®13.
PRECAUTIONS	If PPV23 has already been administered, PCV13 should be administered at least one year later.
VACCINE COMPONENTS	**Potential allergens:** diphtheria CRM197 toxoid protein, polysorbate 80. **Other components:** succinic acid, aluminum phosphate
ADVERSE EVENTS	**Local:** Redness, swelling, tenderness at injection site; **Systemic:** fever (and rarely, febrile seizures in young children) headache, irritability, drowsiness, restless sleep, decreased appetite, vomiting, diarrhea, muscle and joint pain, rash.

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2019 August

Completing a Pneumococcal Conjugate Vaccine Series

Age at presentation for immunization	History of prior doses of PCV7, PCV10 or PCV13 given	Completion of series requires		AND Booster dose Healthy and High Risk ❷
		Healthy Infant	High Risk Infant ❶ ❷	
12 weeks to 44 weeks ❼	0 doses	2 doses ❸	3 doses ❸	One dose at ≥12 months of age ❹
	1 dose	1 dose ❸	2 doses ❸	One dose at ≥12 months of age ❹
	2 doses	0 doses	1 dose ❹	One dose at ≥12 months of age ❹
12 to 23 months	0 doses	2 doses ❺	2 doses ❺	**No booster dose**
	1 dose < 12 months	2 doses ❺	2 doses ❺	
	1 dose ≥ 12 months	1 dose ❺	1 dose ❺	
	2 doses < 12 mos.	1 dose ❹	2 doses ❺	
	1 dose < 12 mos. & 1 dose ≥ 12 mos	1 dose ❺	1 doses ❺	
24 to 59 months	0 doses	1 dose	1 dose	
	Any age- appropriate series incomplete by 24 months ❻	1 dose ❺	1 dose ❺	
	Complete PCV7 or PCV10 series ❻	1 doses ❺	1 dose ❺	

❶ When an infant has received one or two doses of vaccine, and is subsequently diagnosed with a high risk medical condition, use the table to complete the immunizations as "high risk." When a high risk condition is diagnosed after an infant has completed the 3 dose schedule for healthy children, further immunization will be determined on a case-by-case basis.

❷ High risk children should receive one dose of pneumococcal polysaccharide vaccine at 2 years of age, and at least 8 weeks after their final pneumococcal conjugate vaccine dose.

❸ When there is a delay in initiating or completing the vaccine series, use the minimum interval of 4 weeks between vaccine doses given in infancy. See Section 3 Immunization Schedules, 3.0 Minimum Intervals between Vaccine Doses.

❹ At least 8 weeks after the previous dose.

❺ 8 weeks between doses.

❻ A complete series is:

- Two (PCV7) or three (PCV7 [high risk] or PCV10) primary doses given at appropriate intervals and a 3rd or 4th dose given on or after 12 months of age and at least 8 weeks after previous dose, or
- A delayed or interrupted schedule that has been completed at a later age according to the information in this table.

❼ If an infant has a history of receiving their last dose before 12 months of age, give an additional dose at ≥ 12 months of age with a minimum interval of 8 weeks from last dose.

2019 August

Recommendations for Pneumococcal Immunization with 13-Valent Pneumococcal Conjugate Vaccine (PCV 13) and 23-Valent Pneumococcal Polysaccharide Vaccine (PPV 23) for Children at High Risk of Pneumococcal Disease (except those with HIV infection).

Age at presentation:	Previous doses PCV 13	Recommendations: ❶❷
≤ 23 months	None	PCV 13 as per primary high risk series schedule
24 to 59 months	None	2 doses of PCV 13, followed by one dose of PPV 23, 8 weeks after the dose of PCV 13. ❸ Once-only revaccination with PPV 23, 5 years after the first dose of PPV 23 ❺❻
	≤ 2 doses PCV13 before 24 months	2 doses of PCV 13, followed by one dose of PPV 23, 8 weeks after the dose of PCV 13. Once-only revaccination with PPV 23, 5 years after the first dose of PPV 23 ❺❻
	before 24 months	One dose of PPV 23 at 24 months of age, ❹ Once-only revaccination with PPV 23, 5 years after the first dose of PPV 23 ❺❻
	One dose of PPV 23	Two doses of PCV 13, 8 weeks apart, and 1 year after the administration of PPV 23. Once-only revaccination with PPV 23, 5 years after the first dose of PPV 23 ❺ ❻

❶ For list of children at high-risk for pneumococcal disease, see Pneumococcal Conjugate Vaccine (Prevnar®13)

❷ PPV 23 is provided free for high risk children.

❸ Children who have completed a PCV13 vaccine series before they are 2 years of age, and who are among the high risk groups for pneumococcal disease, should receive one dose of pneumococcal polysaccharide vaccine at 2 years of age, no sooner than 8 weeks after the last dose of PCV 13.

❹ If high risk children ≥ 2 years of age received pneumococcal polysaccharide vaccine first, offer pneumococcal conjugate vaccine at least 1 year after the polysaccharide vaccine.

❺ For list of high-risk conditions for which revaccination with PPV23 is recommended, see Pneumococcal Polysaccharide Vaccine (Pneumovax® 23).

❻ A complete series is:

- two PVC13 [healthy] or three PCV13 [high risk]) primary doses given at appropriate intervals and a 3rd (healthy) or 4th (high risk) dose given on or after 12 months of age and at least 8 weeks after previous dose, or
- a delayed or interrupted schedule that has been completed at a later age

2019 August

Recommendations for Pneumococcal Immunization With 13-Valent Pneumococcal Conjugate Vaccine (PCV 13) and 23-Valent Pneumococcal Polysaccharide Vaccine (PPV 23) for HIV infected individuals.

Age at presentation:	Previous doses PCV 13 &/or PPV23	Recommendations: ❶
≥ 60 months up to 120 months (5-10 years)	0 doses of PPV23 0 doses of PCV13	1 dose PCV13 followed by 1 dose PPV23 8 weeks later Once only revaccination with PPV23, 5 years after the first dose of PPV23
	1 dose of PPV23 0 doses of PCV13	1 dose of PCV13 one year post previous dose of PPV23 Once only revaccination with PPV23, 5 years after the first dose of PPV23
	2 doses PPV23 0 doses of PCV13	1 dose PCV13 at least 1 year post last dose of PPV23
	PCV13 series completed 0 doses of PPV23	One dose of PPV 23 at 24 months of age Once-only revaccination with PPV 23, 5 years after the first dose of PPV 23 ❷
All individuals >10 years of age	0 doses of PPV23 0 doses of PCV13	1 dose of PCV13 followed by 1 dose PPV23 8 weeks later Once only revaccination of PPV23, 5 years after the first dose of PPV23
	1 dose of PPV23 0 doses of PCV13	1 dose of PCV13 at least one year post last dose of PPV23 Once only revaccination of PPV23, 5 years after the first dose of PPV23 and at least 8 weeks post PCV13
	2 doses PPV23 0 doses of PCV13	1 dose PCV13 at least 1 year post last dose of PPV23

❶ PPV 23 & PCV13 is provided free for HIV infected individuals.

❷ A complete series is:

- two PVC13 [healthy] or three PCV13 [high risk]) primary doses given at appropriate intervals and a 3rd (healthy) or 4th (high risk) dose given on or after 12 months of age and at least 8 weeks after previous dose, **or**
- a delayed or interrupted schedule that has been completed at a later age

2021 January

Pneumococcal Polysaccharide Vaccine (Pneumovax® 23)

Supplier: Merck Canada Inc.

INDICATIONS	INITIAL SERIES
Recommended and provided free to: • All persons ≥ 65 years of age • All residents of Extended or Intermediate Care Facilities	**1 dose:** 0.5 ml SC or IM
Recommended and provided free to: • All persons **≥ 2 years of age** with: o Diabetes o Alcoholism o Cystic fibrosis o Chronic CSF leak o Chronic liver disease including cirrhosis, chronic Hepatitis B, Hepatitis C o Chronic heart or lung disease❸ o Cochlear implant (candidate or recipient) o Homelessness❹ and/or illicit drug use❺ o Cigarette smokers	**2 doses❼❿⓫:** 0.5mL SC or IM + booster of 0.5mL, to ensure they receive at least one dose after age 65.
Recommended and provided free to: • All persons **≥ 2 years of age** with: o Anatomic or functional asplenia ❶ o Sickle cell disease o Immunosuppression related to disease (e.g., malignant neoplasm (including leukemia and lymphoma); HIV❾; multiple myeloma) ❷ or therapy (e.g., high dose, systemic steroids or severe rheumatoid arthritis requiring immunosuppressive therapy) o Congenital immunodeficiency states (e.g., complement, properdin or factor D deficiency) o Chronic kidney disease o Receipt of hematopoietic stem cell transplant (HSCT) ❻ o Solid organ or islet cell transplant (candidate or recipient)	**2 doses❼❿⓫⓬:** 0.5mL SC or IM + booster of 0.5mL 5 years later. **A 3rd dose may be administered after age 65 to these clients, if 2nd dose was given prior to this age.**

2021 January

Pneumococcal Polysaccharide Vaccine (Pneumovax® 23)

Supplier: Merck Canada Inc.

REINFORCEMENTS	• Booster doses should be administered as above, with all doses 5 years apart. Client may receive 1, 2, or 3 doses. See bullets below.
CONTRAINDICATIONS	History of an anaphylactic reaction to a previous dose of a pneumococcal vaccine or to any component of Pneumovax® 23 vaccine
VACCINE COMPONENTS	**Potential allergens**: none. **Other components**: phenol.
PRECAUTIONS ❽	• Adverse reaction may intensify if revaccination occurs within 2 years • Pneumococcal vaccination should be administered at least two weeks prior to the initiation of immunosuppressive therapy.
ADVERSE EVENTS	**Local:** Soreness and erythema; rarely severe arthus reaction (rarely) **Systemic:** Fever

❶ Give vaccine at least 14 days before splenectomy, or, if not possible 14 days post-splenectomy. If there is concern that the patient may not present later for immunization, give at hospital discharge.

❷ Give vaccine before initiation of immunosuppression therapy, and early in the course of HIV infection. See Recommendations for PCV13 and PPV23 for individuals with HIV infection p.49 for intervals between PCV13 and PPV23 immunizations. Contact YCDC for most recent CD4 counts prior to immunization.

❸ Except hypertension and asthma, unless management involves ongoing high dose oral corticosteroids

❹ Homelessness to be defined by local jurisdiction.

❺ Crack cocaine smokers have been shown to be at increased risk of invasive pneumococcal disease.

❻ HSCT recipients ≥ 2 years of age: must follow re-immunization schedule specific to province in which treatment was given, and contact Immunization Program Manager.

❼ Children who are among the high risk groups for pneumococcal disease and who have completed the PCV vaccine series before they are 2 years of age, should receive one dose of pneumococcal polysaccharide vaccine at 2 years of age, no sooner than 8 weeks after the last dose of PCV. If high risk children ≥ 2 years of age received pneumococcal polysaccharide vaccine first, offer pneumococcal conjugate vaccine at least 1 year after the polysaccharide vaccine.

❽ PNEUMOVAX® 23 can be given simultaneously with varicella zoster vaccine, influenza, Hib, and meningococcal vaccines, using separate syringes/needles at separate sites.

❾ See pg 49 for PCV13 & PPV23 for more detail on vaccine series for HIV infected children and adults.

❿ If both pneumococcal conjugate vaccine (PCV) and PPV23 are recommended, the age appropriate PCV series should be administered first, followed at least 8 weeks later by PPV23. If PPV23 has already been administered, PCV should be administered at least one year later.

⓫ These clients should receive one dose before age 65 and one dose after age 65. All doses must be administered 5 years apart.

⓬ Specific clients, as listed above, may receive a 3rd dose if indicated. If under age 60 at time of first dose, they should receive their first dose, 2nd dose 5 years later, 3rd dose after age 65 AND at least 5 years later. If second dose is after age 65, a 3rd dose will not be needed.

2019 August	
Polio Vaccine (Inactivated) (Imovax ®Polio) (vero cell origin) **Supplier: Sanofi Pasteur**	
INDICATIONS	**INITIAL SERIES❹**
Provided free to: **(1)** Infants and children < 4 years of age who do not require diphtheria, pertussis, tetanus, or Hib.	**(1) Infants and children < 4 years of age:** Dose 1: 0.5 ml SC Dose 2: 0.5 ml SC give 4 to 8 weeks after dose 1 Dose 3: 0.5 ml SC give 24 weeks-12 months after dose 2 Dose 4: 0.5 ml SC at school entry (this dose is not necessary if dose 3 was given on or after the 4th birthday)
(2) Children ≥ 4 years and ≤ 17 years of age who do require polio immunization **(3**) Adults who have previously received less than a full primary course of IPV or OPV regardless of interval since the last dose, should receive the remaining doses. ❶❹	**(2) Individuals ≥ 4 years of age:** Dose 1: 0.5 ml SC Dose 2: 0.5 ml SC give 4 to 8 weeks after dose 1 Dose 3: 0.5 ml SC give 24 weeks-12 months after dose 2 Note: Give 1 dose 0.5 ml SC to children ≥ 7 years of age who have not received a polio booster on or after their 4th birthday **(3) Use schedule above as appropriate based on previous doses received.**
(4) Previously unimmunized children and adult solid organ transplant (SOT) candidates and recipients who do not require diphtheria or tetanus vaccine❸	**(4) Use schedule (1) or (2) above as appropriate for age**
(5) Select Special Populations see Section 5 ❸	
Recommended but not provided free: Adults who are at higher risk of exposure to wild polioviruses: • Travelers to areas of countries where wild polioviruses are circulating❷❹ • Workers in refugee camps in polio endemic areas. • Laboratory workers handling specimens that may contain polioviruses	**See REINFORCEMENTS (next page)**

2019 August

Polio Vaccine (Inactivated) (Imovax ®Polio) (vero cell origin)

Supplier: Sanofi Pasteur

REINFORCEMENTS	• A single booster dose (10 years after the primary series) is recommended for individuals ≥ 18 years of age who are at increased risk of exposure to wild polioviruses and who completed an IPV or OPV series in childhood.❹ • No additional doses of IPV are recommended for travellers < 18 years of age who have completed an IPV or OPV vaccine series.❹
CONTRAINDICATIONS	History of anaphylactic reaction to any polio-containing vaccine, or to any IPV vaccine component.
VACCINE COMPONENTS	2-phenoxyethanol, formaldehyde, residual calf serum protein, neomycin, streptomycin, polymyxin B, Medium199 Hanks
ADVERSE EVENTS	Minor local reactions, fever.

❶ Routine polio immunization is not considered necessary for previously unimmunized **adults** in Canada who do not intend to travel to areas in which polio outbreaks occur **except** for those in Indication (3) & (4) above.

❷ Previously unimmunized travelers who will depart in less than 4 weeks should receive a single dose of IPV. The remaining doses of vaccine should be given later at the recommended intervals.

❸ Please contact the medical specialist most familiar with the client's care and vaccine program manager prior to immunization for this indication.

❹ According to the World Health Organization, as of April 2016, trivalent oral polio vaccine (OPV) was replaced with either bivalent or monovalent OPV. In order to ensure protection against all 3 poliovirus types, any doses of OPV received on or after April 1, 2016 are not considered as a valid dose within the routine Yukon immunization schedule. Therefore, individuals presenting with a record of OPV received on or after this date will require re-immunization with IPV or IPV containing vaccine for any of these doses.

2019 August

Rabies Vaccine Pre-exposure [Human Diploid Cell Vaccine (HDCV)] (Inactivated) IMOVAX®

Supplier: Sanofi Pasteur

Rabies Vaccine Pre-exposure [Purified Chick Embryo Cell Vaccine] (PCECV) (RabAvert®)

Supplier: GlaxoSmithKline Inc.

INDICATIONS	**PRE-EXPOSURE PROPHYLAXIS** The Yukon population at large and most travelers to epizootic areas, not in any of the higher risk groups below are at very low risk of rabies - no immunization necessary. **Recommended but not provided free to the following persons at risk of contact with the rabies virus:** **High Risk:** • Rabies research lab workers • Rabies biologicals production workers • Bat biologists **Moderate Risk:** • Rabies diagnostic lab workers • Spelunkers • Veterinarians and staff, and animal control workers in rabies epizootic areas • Wildlife biologists and wildlife workers • Hunters and trappers in high risk areas such as the far north **Low Risk:** • Vets and staff, and animal control and wildlife workers in areas of low rabies disease (enzootic) • Vet students and animal health tech students • Children and travelers visiting foreign epizootic areas for 1 month or more. Travelers to foreign epizootic areas trekking/hiking for any length of time, and far from a major medical center.
INITIAL SERIES ❶	**PRE-EXPOSURE PROPHYLAXIS**: **3 dose series:** • 1.0ml given IM per dose (2.5 IU): **1st dose on day 0, 2nd dose on day 7, 3rd dose any time from day 21 through 28**
ADMINISTRATION❷	**DO NOT GIVE RABIES VACCINE IN THE GLUTEAL REGION** While NACI considers the **IM** route of administration as the gold standard, in the event of a rabies vaccine shortage **or** an opportunity presents to immunize a group of up to six people at the same time, consideration may be given to using the **ID route** for pre-exposure immunization provided there is enough time to assess the neutralizing antibody level at least **2 weeks** after administration, so that the adequate protection can be ensured. **For ID administration** the dose volume is reduced to 0.1 mL. Rabies vaccine must be used promptly after reconstitution.

(continued on next page)

	2019 August
Rabies Vaccine Pre-exposure [Human Diploid Cell Vaccine (HDCV)] (Inactivated) IMOVAX® **Supplier: Sanofi Pasteur** **Rabies Vaccine Pre-exposure [Purified Chick Embryo Cell Vaccine] (PCECV) (RabAvert®)** **Supplier: GlaxoSmithKline Inc.**	
ADMINISTRATION	• IMOVAX® Rabies is pink to red in color following reconstitution. Also, it does not contain any preservative and should be used immediately after reconstitution or discarded. • For infants and children < 12 months of age, the site for immunization is the anterolateral thigh for IM injection. • For infants ≥12 months of age and adults, the preferred site is the deltoid muscle for IM injection.
SEROLOGICAL TESTING AND BOOSTER DOSES ❷	As required 1.0 ml **IM**. An acceptable antibody level is ≥ 0.5 IU/ml. **High risk:** test clients every 24 weeks and boost when level falls below 0.5 IU/ml. **Moderate risk:** test clients every 2 years and boost when level falls below 0.5 IU/ml. **Low risk:** booster only following subsequent exposure, or as determined by post-exposure serology.
CONTRAINDICATIONS	1. Persons with an anaphylactic reaction to a previous dose of rabies vaccine, IMOVAX® Rabies, any component of IMOVAX® Rabies, or to latex. Those with severe hypersensitivity to eggs should be immunized with IMOVAX®. 2. Severe allergic or neuroparalytic reactions during the course of a rabies vaccine series pose a serious dilemma. The risk of exposure to rabies must be carefully considered before a decision is made to discontinue rabies vaccine.
VACCINE COMPONENTS	**Imovax® Rabies** (Human Diploid Cell Vaccine or HDCV): **Potential allergens:** neomycin, phenol red. **Other components:** Human albumin **RabAvert®** (Purified Chick Embryo Cell Vaccine or PCECV): **Potential allergens**: polygeline (processed bovine gelatin), chicken protein, ovalbumin, neomycin, chloretetracycline, amphotericin B. **Other components:** human serum albumin, potassium glutamate, sodium EDTA.
PRECAUTIONS	• Persons receiving high doses of steroids or immunosuppressive therapy should receive vaccine by the IM route and have a rabies antibody titre 7 – 14 days after completion to ensure an adequate response has developed. If titre is inadequate, give one booster dose and retest. • The intradermal route should not be used in a person on chloroquine or planning to start chloroquine within 4 weeks of series completion. • There are insufficient data regarding concurrent use of mefloquine with rabies immunization.

(continued on next page)

2019 August

Rabies Vaccine Pre-exposure [Human Diploid Cell Vaccine (HDCV)] (Inactivated) IMOVAX®

Supplier: Sanofi Pasteur

Rabies Vaccine Pre-exposure [Purified Chick Embryo Cell Vaccine] (PCECV) (RabAvert®)

Supplier: GlaxoSmithKline Inc.

ADVERSE EVENTS	**IMOVAX®Rabies**: **Local:** injection site pain, erythema, swelling, pruritus and induration. **Systemic:** headache, nausea, abdominal pain, myalgia, arthralgia, malaise, fever and dizziness. **RabAvert®**: **Local:** Injection site pain, tenderness, swelling, erythema and induration at the injection site lasting for 2 to 3 days. **Less common systemic reactions:** malaise, myalgia, arthralgia, fatigue headache, fever and occasional lymphadenopathy, nausea and rash. While earlier rabies vaccines (Semple and SMB rabies vaccine) were associated with Guillain-Barré Syndrome, the occurrence of this syndrome following use of the vaccines now used in North America is not above background rates.

❶ Whenever possible the immunization series should be completed with the same product. However, if this is not feasible, Imovax® and RabAvert® are interchangeable in terms of indications for use, immunogenicity, efficacy, and safety.

❷ An acceptable antibody level is ≥ 0.5 IU/mL. Results are available from: PHSA Laboratory telephone: 1-877-747-2522. Have serum sample taken and administer first dose of rabies vaccine while awaiting results. It is very likely the rabies antibody titre result will not be available by day 7: administer 3rd dose of rabies vaccine on day 7.

Rabies Post Exposure Prophylaxis

2019 August

Refer to Yukon Communicable Disease Guidelines, Section 7, Rabies, for further information available at: http://www.hss.gov.yk.ca/disease_guidelines.php.

Key documents/information that needs to be reviewed are within Section 7, Rabies and include:

- Rabies Risk Assessment Form
- Rabies Post-Exposure Prophylaxis (RPEP)
- Release of biologicals for RPEP
- Administration arrangements

2020 September

Human Rabies Immune Globulin (RabIg) (HYPERRAB® S/D)

Supplier: Grifols Canada Inc.

INDICATIONS❶	Doses and Schedule❷❸
RABIES POST-EXPOSURE PROPHYLAXIS (RPEP): ❹ • As determined by Yukon Chief Medical Officer of Health. • 1st dose of Rabies Vaccine is given in conjunction with RabIg. Rabies vaccine and RabIg must be administered with separate needles and syringes at **separate anatomical sites** If a rabies vaccine series has been started or completed elsewhere and it was not given in accordance with the current WHO standards, or if the vaccine was a nerve tissue vaccine (Semple vaccine), administer RabIg (on day 0) in conjunction with the 1st dose of another full course of rabies vaccine.	**RABIES POST-EXPOSURE PROPHYLAXIS:** • The recommended dosage for children and adults is the same: 20 IU/kg of body weight. **NOTE: IMPORTANT TO READ FORMULATION YOU HAVE IN STOCK, AS THERE ARE TWO:** • The dose of RabIg is calculated as: [20 IU/kg x weight in kg] = ___mL **150 IU/mL** **OR** [20 IU/kg x weight in kg] = ___mL **300 IU/mL** **Do not exceed recommended dose due to interference with active antibody production.**

ADMINISTRATION	
	Caution – There are two formulations in stock, be sure to check formulation before calculation of dosage and administration RabIg is supplied in 2 mL vials, each 1.0 mL = 150 IU **OR** RabIg is supplied in 1 mL vial, each 1.0 mL = 300 IU **Infiltrate as much RabIg as possible deep into and around the wound(s) in order to neutralize the virus.** • When more than one wound site exists, each site should be infiltrated with a portion of the RabIg, using a separate syringe and needle for each infiltration. • If there are extensive wounds, where the calculated dose of RabIg (by weight) is **not** adequate in volume to infiltrate all wounds, the HyperRAB® dose may be diluted with an equal volume of dextrose, 5% (DW5) in water to create an adequate volume to infiltrate all wounds. Do not dilute with normal saline. • Infiltration of wounds in some anatomical sites (finger tips) must be carried out with care in order to avoid increased pressure in the tissue compartment (compartment syndrome). • Any remaining volume should be injected intramuscularly at a site distant from vaccine administration. The deltoid should not be used for RabIg administration. Both deltoid sites should be reserved for administration of rabies vaccine.

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	2020 September
Human Rabies Immune Globulin (RabIg) (HYPERRAB® S/D)	**Supplier: Grifols Canada Inc.**
ADMINISTRATION (continued)	• When there is no wound site, the preferred site for the administration of RabIg is age specific. The ventrogluteal area, which may be used in those > 28 weeks of age. However, the vastus lateralis is most often used in infants and children up to 5 years of age. • Large volumes of immune globulin for IM injection (greater than 2 mL for children or greater than 3-5 mL for adults, depending on muscle mass) should be divided and injected at two or more sites. • RabIg contains no preservatives. Vials are single dose use. Once entered, discard any unused contents.
BOOSTER DOSES	None
CONTRAINDICATIONS	None
PRODUCT COMPONENTS	Potential allergens: none. Other components: glycine.
PRECAUTIONS	• Give RabIg with caution (i.e., in an emergency room setting) if the client has a history of anaphylactic reaction • Human Ig products are among the safest blood-derived products available. The method of preparation includes one or more steps that exclude or inactivate hepatitis B, C and HIV; therefore, the risk of transmission is extremely low. However, it is possible, that unknown infectious agents may be present in such products. The benefits of use of rabies immunoglobulin after exposure to rabies far outweigh the theoretical risk of receipt of a blood product. • Persons with IgA deficiency have the potential for developing antibodies to IgA and could have an anaphylactic reaction to subsequent blood products that contain IgA. Therefore, RabIg should only be given to such persons if the expected benefits of use of rabies immunoglobulin after exposure far outweigh the risks, and should be administered in an emergency room setting. • Special measures should be considered when administering IM injections to people with bleeding disorders. A smaller gauge needle (23 gauge or smaller) should be used and steady, firm pressure should be applied to the injection site for 5 minutes. If there is concern that the injection may stimulate bleeding, the client should connect with their medical specialist.
SPECIAL CONSIDERATIONS	• Document receipt of RabIg in the client's electronic record (e.g., Panorama) and/or chart. The following information must be recorded: trade name of product, date, lot number, dosage, route, and site(s). • Provide a written record to individuals who receive any immune globulin product. • Regarding RabIg and the administration of live vaccines see CIG guidelines.

Continued on next page

2020 September

Human Rabies Immune Globulin (RabIg) (HYPERRAB® S/D)

Supplier: Grifols Canada Inc.

ADVERSE EVENTS	**Local:** soreness or stiffness of local muscles. Systemic: fever A potential increased risk of thrombosis (blood clots) has been observed within 24 hours of receipt of immune globulin products, especially when given in large doses (i.e., more than 10 mL). Additional risk factors include: age 45 years and older, history of thrombosis or those with risk factors for thrombosis (e.g., obesity, high blood pressure, diabetes, prolonged periods of immobilization, use of estrogens, a history of heart disease, blood clotting disorders, indwelling central vascular catheters, or diseases that thicken the blood).

❶ Since vaccine induced antibodies begin to appear within one week, there is no value in administering RabIg more than 8 days after initiation of vaccine.

❷ When notification of an exposure is delayed, RPEP may be started as late as 24 weeks or more after an exposure.

❸ The deltoid should **not** be used for RabIg administration. Both deltoid sites should be reserved for administration of rabies vaccine.

❹ **See Yukon Communicable Disease Guidelines, Section 7.6, Rabies for information on how obtain RabIg.**

	2019 August
Rabies Vaccine Post-exposure [Human Diploid Cell Vaccine (HDCV)] (Inactivated) Imovax®Rabies; RabAvert® **Supplier: Sanofi Pasteur Limited., Imovax®Rabies; GlaxoSmithKline Inc., RabAvert®**	
INDICATIONS	• As determined by Yukon Medical Officer of Health as outlined in Yukon Communicable Disease Guidelines, Section 7, Rabies. • When RabIg is recommended, administer RabIg on day 0 of vaccine series.
DOSES AND SCHEDULE ❶❸	**(1) Unimmunized immunocompetent individuals and those who have previously completed a course of rabies pre or post-exposure prophylaxis using a non-WHO approved vaccine or schedule**: **4 dose schedule:** Dose 1: Give 1 mL **IM** on day 0 as soon as possible after exposure along with **RabIg** (see next pages) Dose 2 through 4: Give 1 mL **IM** on day 3, 7, and 14 **(2) Previously immunized with a full course of documented rabies pre or post-exposure vaccine using a WHO approved rabies vaccine and schedule** (see Yukon Communicable Disease Control Guidelines, Section 7, Rabies) **or those with prior documented anti-rabies antibody level of ≥ 0.5IU/mL:** **2 dose schedule:** Do not give RabIg Dose 1: Give 1 mL **IM** on day 0 as soon as possible after exposure Dose 2: Give 1 mL **IM** on day 3 **(3) RPEP Started in another country** RPEP received in another country may or may not be adequate. In determining the value of biologicals administered overseas, a case-by-case assessment must be made. Contact **Yukon Communicable Disease Control.** **(4) Unimmunized immunocompromised persons and those on chloroquine:** **5 dose schedule:** Dose 1: Give 1 mL **IM** on day 0 as soon as possible after exposure along with **RabIg** (see next pages) Doses 2 through 5: Give 1 mL **IM** on day 3, 7, 14, and 28
ADMINISTRATION	**DO NOT GIVE RABIES VACCINE IN THE GULTEAL REGION** For infants and children < 12 months of age, the site for immunization is the anterolateral thigh. For infants ≥ 12 months of age and adults the preferred site is the deltoid muscle.

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	2019 August
Rabies Vaccine Post-exposure [Human Diploid Cell Vaccine (HDCV)] (Inactivated) Imovax®Rabies; RabAvert® **Supplier: Sanofi Pasteur Limited., Imovax®Rabies; GlaxoSmithKline Inc., RabAvert®**	
ADMINISTRATION	Imovax® Rabies is pink to red in color following reconstitution. Neither vaccine contains any preservative and should be used immediately after reconstitution or discarded. Administer entire contents of the reconstituted vaccine.
SEROLOGICAL TESTING AND RE-VACCINATION❷	Those on high doses of steroids, chloroquine, or immunosuppressed at the time of immunization should have a rabies antibody titre 7 to 14 days after series completion. If the rabies antibody titre is below 0.5 IU/mL a second series of rabies vaccine should be given. If the titre remains below 0.5 IU/mL consult the medical officer of health for further management.
CONTRAINDICATIONS	**1.** There are NO contraindications to rabies vaccine given for post-exposure purposes. **2.** Severe allergic or neuroparalytic reactions during the course of a rabies vaccine series pose a serious dilemma. The risk of exposure to rabies must be carefully considered before a decision is made to discontinue rabies vaccine in consultation with the Medical Officer of Health. **3.** Rabies vaccine and RabIg must not be administered in the same anatomical site. Use separate needles and syringes for each product. **DO NOT GIVE RABIES VACCINE IN THE GLUTEAL REGION.**
VACCINE COMPONENTS	**Imovax® Rabies** (Human Diploid Cell Vaccine or HDCV): **Potential allergens**: neomycin, phenol red. **Other components:** Human albumin **RabAvert®** (Purified Chick Embryo Cell Vaccine or PCECV): **Potential allergens:** polygeline(processed bovine gelatin), chicken protein, ovalbumin, neomycin, chloretetracycline, amphotericin B. **Other components:** human serum albumin, potassium glutamate, sodium EDTA.
PRECAUTIONS	• Administer vaccine in an emergency room setting if history of an anaphylactic reaction to a previous dose of rabies vaccine or to any of the components of the vaccine.
ADVERSE EVENTS **(continued on next pg)**	IMOVAX®Rabies: Local: injection site pain, erythema, swelling, pruritus and induration. Mild systemic reactions: headache, nausea, abdominal pain, myalgia, arthralgia, malaise, fever and dizziness. RabAvert®: Local: Injection site pain, tenderness, swelling, erythema and induration at the injection site lasting for 2 to 3 days. Less common systemic reactions are malaise, myalgia, arthralgia, fatigue headache, fever and occasional lymphadenopathy, nausea and rash. While earlier rabies vaccines (Semple and SMB rabies vaccine) were associated with Guillain-Barré Syndrome, the occurrence of this syndrome following use of the vaccines now used in North America is not above background rates.

2019 August

Rabies Vaccine Post-exposure [Human Diploid Cell Vaccine (HDCV)] (Inactivated) Imovax®Rabies; RabAvert®

Supplier: Sanofi Pasteur Limited., Imovax®Rabies; GlaxoSmithKline Inc., RabAvert®

❶ Whenever possible the immunization series should be completed with the same product. However, if this is not feasible, Imovax®Rabies and RabAvert® are interchangeable in terms of indications for use, immunogenicity, efficacy, and safety.

❷ An acceptable antibody level is ≥ 0.5 IU/mL. Results are available from: PHSA Laboratory telephone: 1-877-747 2522. Have serum sample taken and administer first dose of rabies vaccine while awaiting results. It is very likely the rabies antibody titre result will not be available by day 7: administer 3rd dose of rabies vaccine on day 7.

❸ For complete information refer to Yukon Communicable Disease Guidelines, Section 7, Rabies, also available at: http://www.hss.gov.yk.ca/disease_guidelines.php.

	2019 August
Rh_o (D) Immune Globulin (RhIg) (WinRho™) ❶ ❷ ❸ **Supplier: Cangana Corporation**	
INDICATIONS	(1) Recommended for the prevention of Rh immunization of Rh_o (D) negative woman at risk of developing Rh antibodies, to prevent haemolytic disease of the newborn. The reduction of Rh alloimmunization is from 13% to 1 to 2 %
DOSE	Dose 1: 300 µg **IM 28 weeks of gestation** Dose 2: 300 µg **IM within 72hours after delivery**
CONTRAINDICATIONS	• **Do not give Ig intravenously** • Rh_o (D) positives individuals including babies • Rh_o (D) negative women who are Rh immunized as evidenced by standard manual Rh antibody screening tests. • Individuals with a history of anaphylactic or other severe systemic reaction to immune globulins.
PRECAUTIONS	• Human Ig products are amongst the safest blood-derived products available. As the method of preparation includes one or more steps that exclude or inactivate hepatitis B, C and HIV, the risk of transmission is considered to be extremely low. However, it is possible that unknown infectious agents may be present in such products. • Persons with severe thrombocytopenia or coagulation disorders that contraindicate IM injections should not be give IM Ig unless the benefits outweigh the risks. • Give Ig with caution (i.e., in a setting capable of managing anaphylaxis) if the client has a history of anaphylactic reaction following receipt of any human Ig product, or history of anaphylactic reaction to glycine or to latex (assess risks versus benefits). • Persons with IgA deficiency have the potential for developing antibodies to IgA and could have an anaphylactic reaction to subsequent administration of blood products that contain IgA. Therefore, Ig should only be given to such persons if the expected benefits outweigh the risks. • Ig contains no preservatives. Vials are single use. Once entered, discard any unused contents. • The preferred site for the administration of Ig is the ventrogluteal area. • Should either be given at the same time as MMR or the MMR should be deferred 12 weeks post injection of the Rh_o (D) Immune Globulin. If administration of Ig is necessary less than **14 days** after MMR or varicella vaccine, repeat vaccine as per recommended intervals as in CIG.
ADVERSE EVENTS	**Local:** pain and injection site tenderness

❶ **A Physician's order by prescription is always required.**
❷ Order through Whitehorse General Hospital Lab on a stores order form, (and phone Lab and give the patient's name, estimated date of confinement, whether the request is for the 28 week or post-delivery injection, and the name of attending physician)
❸ See product monograph for further information.

	2019 August
Rotavirus Vaccine (Human rotavirus, live attenuated, oral vaccine); Rotarix®, RotaTeq® **Supplier: GlaxoSmithKline., Rotarix®; Merck Canada Inc., RotaTeq®**	
INDICATIONS	**INITIAL SERIES ❶❷❸❹❺❻❼❽**
For routine immunization of infants beginning at 2 months age. Series must be completed by 8 months of age.	RotaTeq®: 3 doses given as 2.0 mL by mouth at 2, 4, and 6 months of age. Rotarix®: 2 doses given as 1.5 mL by mouth at 2 and 4 months of age.
ADMINISTRATION	• Give entire contents of applicator. • If infant spits out or regurgitates any of the vaccine dose, no replacement dose should be administered.
REINFORCEMENTS	No booster doses are recommended at this time.
CONTRAINDICATIONS	1. History of anaphylactic reaction to a previous dose of rotavirus vaccine, or to any component of Rotarix® or RotaTeq® depending on vaccine given. 2. Infants with a history of intussusception. 3. Infants with a suspected or known immunocompromising condition should not receive rotavirus vaccine without consultation with a physician specialist or expert in the condition. 4. Infants diagnosed with Severe Combined Immunodeficiency (SCID.) 5. Uncorrected congenital gastrointestinal conditions (e.g., Meckel's diverticulum.)
PRECAUTIONS	1. Acute gastroenteritis: in infants with *moderate to severe* gastroenteritis, rotavirus vaccine should be deferred until the condition improves unless deferral will result in scheduling of the first dose at more than 20 weeks less 1 day of age. Infants with *mild* gastroenteritis can be vaccinated. 2. Pre-existing chronic gastrointestinal conditions: the safety and efficacy of rotavirus vaccines has not been established in children with pre-existing chronic gastrointestinal disease. However, infants with chronic gastrointestinal disease who are not receiving immunosuppressive therapy are likely to benefit from rotavirus vaccination and therefore can be vaccinated.
VACCINE COMPONENTS	**RotaTeq®:** **Potential allergens:** fetal bovine serum, polysorbate 80. **Other components:** sucrose, sodium citrate dehydrate, sodium phosphate monobasic monohydrate, sodium hydroxide, porcine circovirus types 1 and 2. **Rotarix®:** **Potential allergens:** none. **Other components:** Dulbecco's Modified Eagle Medium (DMEM), di-sodium adipate, porcine circovirus type 1.

(continued on next page)

2019 August

Rotavirus Vaccine (Human rotavirus, live attenuated, oral vaccine); Rotarix®, RotaTeq®

Supplier: GlaxoSmithKline., Rotarix®; Merck Canada Inc., RotaTeq®

ADVERSE EVENTS	RotaTeq®: **Local**: diarrhea, abdominal pain (<1%), flatulence (<1%). **Systemic**: dermatitis (<1%), irritability. Rotarix®: **Local**: diarrhea, vomiting. **Systemic**: fever, nasopharyngitis, bronchospasm, irritability. A small increased risk of intussusception of between 1 and 7 cases per 100,000 doses in the 7 days following both the first and second doses (as per CIG).

❶ Preterm infants who are healthy and not hospitalized can receive rotavirus vaccine.

❷ Infants who have had rotavirus gastroenteritis before receiving the full course of vaccinations should still initiate or complete the rotavirus vaccine schedule because the initial infection frequently provides only partial immunity.

❸ RotaTeq®, max age for first dose is 5 months less a day of age; Rotarix®, max age for first dose is 5 months less 1 day of age.

❹ There should be a minimum interval of 4 weeks between doses.

❺ All doses should be administered by 8 months of age.

❻ There are no restrictions on the infant's consumption of food or liquid, including breast milk, either before or after vaccination.

❼ Rotavirus vaccine may be administered at any time before, concurrently with, or after administration of any blood product, including antibody-containing products.

❽ There are no data on the interchangeability of RotaTeq® and Rotarix® vaccines. Whenever possible, the series should be completed with the same product. However, if the product used for a previous dose(s) is not known, complete the series with the available product. If any dose in the series was RotaTeq®, a total of 3 doses of vaccine should be administered.

2019 August

Tetanus Diphtheria (Td) Adsorbed

Supplier: Sanofi Pasteur Limited

INDICATIONS	DOSE
1) Booster dose for persons ≥7 years of age if both diphtheria and tetanus are required, but Pertussis is not required. **2)** Adults ≥ 18 years of age who have not been immunized, including immigrants with unknown immunization status	**(1)** 0.5 ml **IM** every 10 years ❶ **(2)** Administer one dose of Tdap followed by two doses of Td: 1st Td: 0.5 ml **IM** 4 weeks after Tdap 2nd Td: 0.5 ml **IM** 24 weeks – 12 months after 1st Td dose
REINFORCEMENTS	Every 10 years❶ • Adults who have not received one dose of acellular pertussis (Tdap) should receive a single dose of Tdap instead of Td (see Tetanus-Diphtheria-acellular Pertussis)
CONTRAINDICATIONS	1. History of anaphylactic reaction to a previous dose of any tetanus or diphtheria-containing vaccine, or to any Td vaccine component. 2. When a contraindication exists to tetanus toxoid and a client sustains a major or unclean wound TIG should be given (see Tetanus Immune Globulin (TIg) (HYPERTET ™S/D). History of Guillain-Barré syndrome (GBS) occurring within 8 weeks of receipt of a tetanus – containing vaccine.
VACCINE COMPONENTS	Aluminum phosphate and formaldehyde.
PRECAUTIONS	• Persons who experience a major local reaction or high fever following a dose of Td should not be given another dose for at least 10 years. • When travel to a developing country is planned >5 years after the last Td dose, it may be prudent to offer an early booster, since some developing countries may not be able to guarantee the safe administration of a booster dose if required.
ADVERSE EVENTS	Discomfort, pain, swelling, redness at injection site.
SPECIAL CONSIDERATIONS	For wound prophylaxis, Td and Tetanus Immune Globulin should be administered using separate syringes and different sites.

❶ Tetanus toxoid **should not be given routinely** to clients who have received a booster dose in the previous 5 years.

2019 August

Diphtheria-Tetanus- Acellular Pertussis - Polio Adsorbed (Tdap-IPV) (Adacel-Polio)

Supplier: Sanofi Pasteur

INDICATIONS	DOSE
Recommended and provided publically funded to: **(1)** School Entry Booster age 4 – 6 years ❶ **(2)** Adults who have not received a dose of acellular pertussis after 14 years and are eligible for IPV❸ **(3)** Children and adolescents aged 7-17 (inclusive) who missed school entry booster	**One dose:** • 0.5 mL **IM**
(4) Children and adolescents aged 7-17 (inclusive) who have not started or completed their primary series, and Hib is not indicated❷ • Unimmunized children and adolescents • Incompletely immunized clients that started the DTaP containing series **after their 1st birthday** **(5)** Adults aged 18 years and older who are not immunized or incompletely immunized with a primary series❷	**3 doses:** • 0.5mL IM • 0.5mL IM 4-8 weeks after 1st dose • 0.5mL IM 6-12 months after 2nd dose
(6) Children and adolescents aged 7-17 (inclusive) who have not started or completed their primary series, and Hib is not indicated❷❹: • Incompletely immunized clients that started the DTaP containing series **before their 1st birthday**	**4 doses:** • 0.5mL IM • 0.5mL IM 4-8 weeks after 1st dose • 0.5mL IM 4-8 weeks after 2nd dose • 0.5mL IM 6-12 months after 3nd dose

CONTRAINDICATIONS	1. History of anaphylactic reaction to a previous dose of DPT, DTaP, Tdap or IPV-containing vaccine or to any vaccine component 2. Children less than 4 years of age. 3. History of Guillain-Barré syndrome (GBS) within 8 weeks of receipt of a tetanus – containing vaccine.
VACCINE COMPONENTS	aluminium phosphate, phenoxyethanol, polymyxin B sulphate, neomycin, streptomycin, formaldehyde, glutaraldehyde, polysorbate80
ADVERSE EVENTS	**Minor local**: redness, swelling, pain **Minor systemic**: fever, headache, nausea, diarrhea, body aches, tiredness
SPECIAL CONSIDERATIONS	Hypotonic-hyporesponsive episodes are not a contraindication to diphtheria, tetanus or acellular pertussis-containing vaccines, and continued immunization with all antigens is recommended.

❶ Routinely, this is the 5th dose in a tetanus containing series. It is not necessary if the 4th dose of PEDIACEL® or QUADRACEL® was given after the 4th birthday.

❷ See Section 3 Schedules and Minimum Interval Table for doses required and which tetanus containing series to use. 3 and 4 dose series above encompass a complete series. No minimum interval between a dose of Td and Tdap-IPV when Tdap-IPV is being used for pertussis and polio protection.

❸ Tdap-IPV will be provided publically funded for those who are eligible for publically funded Tdap and publically funded polio. As well as those who are eligible for publically funded Tdap and non-publically funded polio (e.g. travelers) See Section 8, Biological Products, Polio Vaccine (Inactivated) (Imovax ®Polio) for full indications.

❹ As only 3 doses of polio are required, Tdap may be used as one of the doses in this series, ensuring the recommended intervals for polio are maintained.

2019 August

Tetanus-Diphtheria-acellular Pertussis (Tdap); ADACEL®, BOOSTRIX®

Supplier: Sanofi Pasteur Limited., ADACEL®; GlaxoSmithKline Inc., BOOSTRIX®

INDICATIONS ❶ ❷	INITIAL SERIES
(1) **Reinforcing** dose for all grade 9 students ❶❸❺	**(1)** One dose: 0.5 ml **IM**
(2) Children and adolescents from ≥ 7 years to 17 years of age (inclusive) who have not received any doses of tetanus or diphtheria **(3)** Children and adolescents from ≥ 7 years to 17 years of age (inclusive) who have not received any doses of pertussis vaccine **(4)** Immigrants from ≥ 7 years to 17 years of age (inclusive) with unknown immunization status	**(2) (3) & (4)** Dose 1: 0.5 ml **IM** Dose 2: 0.5 ml **IM** 4 weeks later Dose 3: 0.5 ml **IM** 24 weeks to 12 months after dose 2
(5) Children and adolescents from ≥ 7 years to 17 years of age (inclusive) whose 3 dose primary series of tetanus or diphtheria or pertussis vaccine is incomplete❹	**(5)** One to two doses of Tdap (0.5 ml **IM**) at time of presentation to complete the primary series of 3 doses, followed by another dose of 0.5 ml **IM** in grade 9
(6) Children and adolescents from ≥ 7 years to 17 years of age (inclusive) who have received 3 – 4 doses of tetanus/diphtheria/pertussis-containing vaccine at < 7 years of age, but have not received the school entry booster	**(6)** One dose of Tdap (0.5 ml IM) at time of presentation, followed by another dose of 0.5 ml IM in grade 9
(7) Adults ≥ 18 years of age who have not been immunized, including immigrants with unknown immunization status	**(7)** One dose of Tdap (0.5ml **IM**) followed by two doses of Td
(8) HSCT recipients ≥ 7 to <18 years of age	**(8)** Three doses of Tdap (0.5ml **IM**) at 0, 4 weeks, and 12 months.
(9) HSCT recipients ≥ 18 years of age **(10)** Solid organ transplant candidates or recipients ≥ 7 years of age who have not been previously immunized.	**(9)& (10)** One dose of Tdap (0.5ml **IM**) followed by two doses of Td/IPV
(11) All adults who have not received a dose of acellular pertussis ≥ 19 years of age of age. ❺	**(11)** One dose of Tdap (0.5ml **IM**)
(12) All Pregnant women (≥ 27 weeks gestation) regardless of a pertussis containing immunization history. ❻	**(12)** One dose of Tdap (0.5ml **IM**)
(13) All new mothers who have not received a pertussis containing immunization with this recent pregnancy.	**(13)** One dose of Tdap (0.5ml **IM**)

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2019 August

Tetanus-Diphtheria-acellular Pertussis (Tdap); ADACEL®, BOOSTRIX®

Supplier: Sanofi Pasteur Limited., ADACEL®; GlaxoSmithKline Inc., BOOSTRIX®

REINFORCEMENTS	Publicly funded as per indication **(11) (12) & (13).**
CONTRAINDICATIONS	1. History of an anaphylactic reaction to a previous dose of any tetanus, diphtheria, or pertussis-containing vaccine or to any component of BOOSTRIX® vaccine. 2. History of Guillain-Barré syndrome (GBS) occurring within 8 weeks of receipt of a tetanus – containing vaccine. 3. < 4 years of age.
VACCINE COMPONENTS	**ADACEL®:** **Potential allergens:** none **Other components:** Aluminium phosphate, 2-phenoxyethanol, formaldehyde, glutaraldehyde **BOOSTRIX®:** **Potential allergens:** none **Other components:** aluminium hydroxide, aluminium phosphate.
ADVERSE EVENT	**Minor local:** redness, tenderness, swelling, induration, pain **Minor systemic:** headache, decreased energy, generalized body-ache, nausea, diarrhea, fever, sore or swollen joints

❶ There is no minimum interval between a previous ***booster*** dose of a ***tetanus/diphtheria*** –containing vaccine (e.g: Td) and Tdap when Tdap is being given for pertussis protection. Children who have had a tetanus, diphtheria, and pertussis combined vaccine (Tdap) at 10 years of age or older do not require an additional dose of Tdap in grade 9.

❷ Approved for use in those ≥4 years of age with no upper age limit.

❸ Give Tdap to high school students who missed their grade 9 booster.

❹ For example, if the student had received one dose of a tetanus/diphtheria/pertussis – containing vaccine, give two doses of Tdap separated by a period of 24 weeks - 12 months. If the student had received two doses of a tetanus/diphtheria/pertussis – containing vaccine, give one dose of Tdap.

❺ The high school Tdap booster given at age 14-16 years is **not** considered a dose of acellular pertussis in adulthood. At this time, an additional dose of acellular pertussis is recommended 5 years after the Grade 9 (14-16 years of age) dose.

❻ NACI recommends immunization with Tdap vaccine should be offered in every pregnancy, irrespective of previous Tdap immunization history. Immunization with Tdap vaccine should ideally be provided between 27 and 32 weeks of gestation. Immunization between 13 and 26 weeks of gestation may also be considered in some situations (e.g. pregnancies with an increased risk of preterm delivery) to allow for longer placental exposure to higher antibody levels and maximization of antibody transfer. While it is preferable that immunization is administered in sufficient time before birth (i.e. 4 weeks) to allow optimal transfer of antibodies and direct protection of the infant against pertussis, it should be considered until the end of pregnancy, as it has the potential to provide partial protection. If immunization was provided early in pregnancy (e.g. prior to recognition of pregnancy), it is not necessary to re-immunize after 13 weeks of gestation.

2019 August

Tetanus Immune Globulin (TIg) (HYPERTET®S/D)

Supplier: Grifols Canada Ltd.

INDICATIONS❶	DOSE
1) TIg is indicated for prophylaxis against tetanus following a major or unclean wound in individuals whose immunization history is incomplete or uncertain (See Tetanus Prophylaxis in Wound Management.) **2)** TIg is indicated when a contraindication to a tetanus toxoid-containing vaccine exists and an individual sustains a major or unclean wound. **3)** TIg is indicated in individuals known to have a significant immune deficiency state (i.e. HIV) regardless of their immunization history, following any major or unclean wound.	Give 250 units **IM** (entire syringe) to adults and children who require TIg. ❷ TIg is supplied in a 250unit single dose pre-filled disposable syringe. The syringe fill volume for each lot is adjusted to ensure a potency of 250 IU/syringe. The actual fill volume for HyperTet syringes typically ranges between 0.75 ml and 1.3 ml. The needle on the pre-filled syringe is fixed and cannot be changed.

REINFORCEMENTS	None if Td vaccine is given concurrently with TIg. ❸❹
CONTRAINDICATIONS	TIg should not be given intravenously.
PRECAUTIONS	• Human Ig products are among the safest blood-derived products available. The method of preparation includes one or more steps that exclude or inactivate hepatitis B, C and HIV; therefore, the risk of transmission is considered to be extremely low. However, it is possible that unknown infectious agents may be present in such products. • Regarding TIg and administration of live vaccines (MMR & Varicella) see Immune Globulin Preparations or Blood: Timing Intervals For Vaccines Containing Live Measles, Mumps, Rubella, or Varicella Virus in CIG. • Give TIg with caution (i.e., in a setting capable of managing anaphylaxis) if the client has a history of anaphylactic reaction following receipt of any human Ig product, or a history of anaphylactic reaction to latex (assess risks versus benefits). • Persons with IgA deficiency have the potential for developing antibodies to IgA and could have an anaphylactic reaction to subsequent administration of blood products that contain IgA. Therefore, TIg should only be given to such persons if the expected benefits outweigh the risks. • In clients who have severe thrombocytopenia or any coagulation disorder that would contraindicate IM injections, TIg should be given only if the expected benefits outweigh the risks. • **TIg must be given at separate anatomic sites from a tetanus toxoid-containing vaccine.** • The preferred site for the administration of TIg is the ventrogluteal area, which may be used in those > 28 weeks of age. However, the vastus lateralis is most often used in infants and children up to 5 years of age.

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2019 August

Tetanus Immune Globulin (TIg) (HYPERTET®S/D)

Supplier: Grifols Canada Ltd.

ADVERSE EVENTS	**Local:** tenderness, erythema and stiffness of local muscles that may persist for several hours. **Systemic:** mild fever or malaise

❶ Provide a written record to a client who receives any immune globulin product.

❷ As per CIG, The recommended dose of TIg for adults and children is 250 units by IM injection. It is advisable to administer the entire contents of the vial of TIg regardless of the child's size; theoretically the same amount of toxin will be produced in a child or adult's body by the infecting tetanus organism. For more info, see CIG.

❸ If a contraindication to a tetanus toxoid-containing vaccine exists or a client refuses a tetanus toxoid-containing vaccine, and a client sustains a major or unclean wound, consider offering a 2nd dose of TIg 30 days post the 1st dose of TIg.

❹ Tetanus Immune Globulin does not interfere with the development of active immunity from a tetanus toxoid-containing vaccine

2019 August

Tetanus Prophylaxis in Wound Management

History of Tetanus Immunization	Clean, minor wounds		All other wounds ❶	
	Tetanus Toxoid-Containing Vaccine ❷	TIg	Tetanus Toxoid-Containing Vaccine ❷	TIg
Uncertain or < 3 doses	Yes	No	Yes	Yes
Primary immunization complete ❸❹	No ❺	No	No ❻	No ❼

❶ Such as, but not limited to, wounds contaminated with dirt, feces, soil, and saliva; puncture wounds; tearing away of body parts or structures; and wounds resulting from missiles, crushing, burns and frostbite.

❷ May have been given as Td, Tdap, or Td/IPV. Monovalent tetanus toxoid is not available in Canada.

❸ For additional information on the primary immunization schedule, refer to the Td, Tdap, or Td/IPV vaccine pages.

❹ Wound management for children < 7 years of age would be based on specific spacing and doses required as per INFANRIX hexa®, PEDIACEL® and QUADRACEL™ vaccine pages.

❺ Yes, if > 10 years since last tetanus containing booster.

❻ Yes, if > 5 years since last tetanus containing booster.

❼ No, unless individuals are known to have a significant humoral immune deficiency state (e.g., HIV, agammaglobulinemia), since immune response to tetanus toxoid may be sub-optimal.

In adults, if a tetanus toxoid containing vaccine is required it may be administered as Tdap (if not previously administered ≥ 14 years of age) or as Td. See individual product information in this section.

Note: Tetanus-diphtheria (Td) / Tetanus-diphtheria- acellular pertussis (Tdap) vaccine and Tetanus Immune Globulin (TIg) should be administered using separate syringes and different sites. If a contraindication exists for a tetanus toxoid-containing vaccine, TIg would be given where tetanus immunization is required.

	2019 August
Tuberculin Skin Test (Mantoux) Tubersol ® **Supplier: Sanofi Pasteur**	
INDICATIONS	***Recommended and provided free to everyone.*** ***Target groups include:*** • *Suspected cases of TB* • *Individuals referred for medical diagnostic reason* • *Contacts of a known case of TB* • *HIV positive individuals and persons at significant risk for HIV infection* • *International travelers who will be residing in countries where TB is endemic and travelers returning from prolonged visits to endemic areas.* • *Establishment of a baseline prior to possible exposure to TB (as a requirement for an educational program, volunteer position or employment)* • *Self-referral*
INITIAL SERIES	***PPD 5 TU 0.1 ml ID*** *in anterior forearm (flexor or dorsal surface) between the wrist and the elbow* • *For contact tracing, if the initial skin test is negative, a second test should be given 8 – 12 weeks after the last date of contact*
REINFORCEMENTS	***2–STEP TESTING:*** • *A second test, done 7 - 21 days after the first test, may be required in certain situations see Yukon Health & Social Services Tuberculosis Manual, YCDC.* • *A small percentage of persons will only react after a second test or will react to a greater degree (so called "boosting" effect).*
ROUTE	*Intradermally*
CONTRAINDICATIONS	1. *History or documentation of previous positive reaction to tuberculin testing (because of the severity of the reaction at the test site: vesiculation, ulceration or necrosis)* 2. *Documentation of previous active TB* 3. *History of an anaphylactic reaction to a previous test using Tubersol® or a similar product, or to any component of Tubersol®* 4. *Individual with severe burns or eczema* 5. *Individuals with severe viral infections or live-virus vaccination in the past 4 weeks (to avoid negative reactions).*

	2019 August
Typhoid Vaccine (Salmonella Typhi Vi Capsular Polysaccharide) (Typherix®) (Typhim Vi®) **Supplier: Typhim Vi®, GlaxoSmithKline**	
INDICATIONS ❶	**Routine vaccination is not recommended in Canada.** **Recommended but not provided free to:** • Travelers ≥ 2 years of age to countries where typhoid fever is endemic or epidemic, or where sanitary conditions may be doubtful and where travellers may be exposed to potentially contaminated food and water.
INITIAL SERIES	**Adults and children ≥ 2 years of age:** One dose: 0.5 ml **IM**
REINFORCEMENTS ❶	Adults and children ≥ 2 years old **every 2 years** as required: **0.5 ml IM**
CONTRAINDICATIONS	History of anaphylactic reaction to a previous dose of any typhoid vaccine or to any component of Typherix® or to latex.
VACCINE COMPONENTS	Sodium phosphate dihydrate, disodium phosphate dihydrate, phenol.
PRECAUTIONS	An adequate immune response may not be achieved in clients receiving immunosuppressive treatment or in clients who are immunocompromised.
ADVERSE EVENTS	**Local:** Soreness, redness and swelling at the injection site **Systemic:** Headache and fever.
❶ The typhoid vaccines Vivotil®, Typhim Vi®, Typherix®, and ViVAXIM™ are interchangeable for children or adults at any scheduled dose, using the age-specific dosage for the particular product.	

	2019 August
Varicella Vaccine (live attenuated viral) Varivax® III and Varilrix® **Supplier: Varivax® III, Merck Canada; Varilrix®, GlaxoSmithKline Inc.**	
INDICATIONS❶❷❸❹❺	INITIAL SERIES
(5) All children 12 months of age – school age (4 – 6 years)❺	**(1) Two dose series as of April 1, 2012** • **Routine Dose 1:** 0.5 mL **SC** at 12 months of age • **Routine Dose 2:** given at school entry (4-6 years of age) as MMRV, see Section 3-Immunization Schedules
(6) All susceptible children, ages 7 – 12 years, presenting on or after April 1, 2012 ❺	**(2)(3):** For age 7 years - 12 years of age: • Routinely, 1 dose given as 0.5 mL **SC** for those with one prior dose. • For unimmunized, 2 doses given as 0.5 mL **SC**, 12 weeks apart.
(7) Other susceptible individuals 13 years of age and older.	For ≥ 13 years of age❹ - Two dose series: • **Dose 1**: 0.5 mL **SC** • **Dose 2**: 0.5 mL **SC** at least 6 weeks after dose 1 (however, if interval was 4 weeks apart, no need to repeat)❹
(8) Select special populations as indicated see Section 5-Immunization of Special Populations.	**Before vaccination, receive approval from appropriate physician (i.e. either the primary care provider most familiar with the client's current medical status or a medical specialist).**
ADMINISTRATION	• Both products need to be reconstituted. Use the diluent provided with the vaccine. • Administer the entire volume of the reconstituted product.
REINFORCEMENTS	Not indicated at this time
SEROLOGICAL TESTING	• Serological testing is not routinely recommended before or after immunization. • For recommendations for immunocompromised clients see Section 5 – Immunization of Special Populations.
PRODUCT COMPONENTS	**VARIVAX®III:** Potential allergens: hydrolyzed gelatin, fetal bovine serum, neomycin. Other components: sucrose, urea, monosodium L-glutamate, sodium phosphate dibasic, potassium phosphate monobasic, potassium chloride. **VARILRIX®:** Potential allergens: neomycin sulphate. Other components: amino acids, lactose, mannitol, sorbitol.
ADVERSE EVENTS	**Local:** pain, redness, swelling. Rates of these events are slightly higher following 2nd dose. **Systemic:** varicella-like rash, fever. Rates of these events are lower following 2nd dose.

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2019 August	
Varicella Vaccine (live attenuated viral) Varivax® III and Varilrix® **Supplier: Varivax® III, Merck Canada; Varilrix®, GlaxoSmithKline Inc.**	
CONTRAINDICATIONS	1. Immunocompromised as a result of disease or therapy: consult the appropriate health care provider (either the primary care physician most familiar with the client's current medical status or a medical specialist) and obtain a written referral regarding the appropriateness of varicella vaccine administration to persons whose immune status may be suppressed as a result of disease or therapy. See Section 5 – Immunization of Special Populations, Specific Immunocompromising Conditions. 2. Solid organ transplant recipients; varicella vaccination should have been completed prior to transplantation. 3. Family history of congenital immunodeficiency. See Section 4 – Contraindications and Routine Precautions. 4. Children or adults with chronic inflammatory diseases (e.g., inflammatory bowel disease, collagen-vascular disease) receiving significant immunosuppressive therapy. However, they may be immunized at least 6-12 weeks after they have completed or temporarily stopped the immunosuppressive therapy. 5. History of an anaphylactic reaction to a previous dose of any varicella vaccine, or to any component of the vaccine. 6. Pregnancy. Women of childbearing age should avoid pregnancy for 1 month following vaccination. If a pregnant woman is inadvertently vaccinated, or becomes pregnant in the month following vaccination, it should be reported to the company [immunization with VARIVAX® III should be reported to Merck Canada Inc., Medical Services (1-800-684-6686), immunization with VARILRIX® should be reported to GlaxoSmithKline Inc. (1-800-387-7374)]. 7. Active untreated TB.
PRECAUTIONS	• Varicella immunization should be given on the same day or delayed until 4 weeks after administration of any other live vaccine. • For certain immunocompromised clients only: separate administration of MMR and varicella vaccine by at least 4 weeks (expert opinion BC Children's Hospital). For additional information, see Section 5 – Immunization of Special Populations, Specific Immunocompromising Conditions. • Recent administration of an immune globulin preparation or blood product. See CIG,(2013) • Women who receive RhIg postpartum and are eligible for varicella vaccine should generally wait 3 months before being vaccinated with this vaccine. However, if there is a risk of exposure to varicella, a risk of pregnancy in the 3-month postpartum period, or a risk the vaccine may not be given later, varicella vaccine may be given prior to discharge with a 2nd dose at the recommended interval if indicated. If varicella vaccine is given within 3 months of receipt of RhIg, serologic testing for varicella should be done 3 months postpartum and at least 1 month after the final dose. Women who have not mounted an antibody response should be revaccinated.

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2019 August

Varicella Vaccine (live attenuated viral) Varivax® III and Varilrix®

Supplier: Varivax® III, Merck Canada; Varilrix®, GlaxoSmithKline Inc.

PRECAUTIONS	• Those less than 18 years of age should avoid taking salicylates for 6 weeks following immunization with varicella vaccine. This is based on the association between salicylate use and wild type varicella infection; Reye syndrome has not been reported in association with varicella vaccine. NACI recommends that children and teens on chronic salicylate therapy should be considered for immunization with close subsequent monitoring. • Varicella vaccine may have reduced effectiveness if given concurrently with antivirals active against varicella zoster virus such as acyclovir, valacyclovir, or famciclovir. People taking long-term antiviral therapy should discontinue these drugs, if possible, at least 24 hours before administration of varicella vaccine and should not restart antiviral therapy until 14 days after vaccination. • Do TB skin testing on the same day as varicella immunization or delay TB skin testing for ≥ 4 weeks.
SPECIAL CONSIDERATIONS	• Special attention should be paid to identification of susceptible persons who are at increased risk of disease acquisition or disease severity. • Interchangeability: there are no data on the interchangeability of VARIVAX® III and VARILRIX®. However, there is no biological reason for an inferior response to a series using both vaccines. For programmatic reasons a different product may be used for the 2nd dose. • School children who have received their school entry vaccines prior to the launch of the 2nd dose varicella school entry program may be offered varicella vaccine opportunistically. • Older children who previously received a single dose of varicella vaccine should be offered a 2nd dose of vaccine opportunistically.

❶ As of April 2012, Yukon offers a 2 dose series to all susceptible clients ages 12 months & older.

❷ Children who have a history of varicella disease after their first dose do not require a second dose, as they will have developed immunity. If disease history is uncertain, provide a second dose.

❸ As of June 2018, a varicella susceptible person is one without a history of lab confirmed varicella or herpes zoster after 12 months of age and without a history of age appropriate varicella immunization. Individuals with a documented exemption in the immunization registry prior to this date due to previous disease will be considered immune. A self-reported history of varicella or physician diagnosed varicella is adequate only if disease occurred before 2004.

Note: Adults who have emigrated from tropical/subtropical areas are less likely to have acquired chickenpox in childhood and are more often susceptible to VZV than those who grew up in temperate climates. There is evidence that this may be less true for those who lived in urban settings.

❹ For those 13 years of age and older, the recommended interval between 2 doses of varicella vaccine is 6 weeks; this is also the minimum interval to be used when scheduling a 2nd dose. However, if an interval as short as 4 weeks was used, the dose does not need to be repeated.

❺ If protection against MMR is also required for persons 4 – 12 years of age (inclusive), combination MMRV vaccine may be used.

	2020 December
Varicella Zoster Vaccine (Recombinant) (SHINGRIX®) **Supplier: GlaxoSmithKline Inc.**	
INDICATIONS	**Recommended and provided free to ❶❷❸:** • Individuals 65-70 years of age for the prevention of shingles, including those who: o Have been previously vaccinated with live zoster vaccine (ZOSTAVAX II) o Have had a previous episode of shingles **Recommended but not provided free to❶❷❸❹:** • Individuals 50 years of age and older
INITIAL SERIES	2 doses given as 0.5 mL **IM**, 2 to 6 months apart
REINFORCEMENTS	Not indicated at this time.
ADMINISTRATION	Product needs to be reconstituted. Use the diluent provided with the vaccine. Administer the entire volume of the reconstituted product.
SEROLOGICAL TESTING	Serological testing is not recommended before or after immunization❶
CONTRAINDICATIONS	1. History of anaphylactic reaction to a previous dose of SHINGRIX, or to any component of SHINGRIX 2. Active herpes zoster infection
PRECAUTIONS	1. Delay immunization of individuals with severe acute illness until recovery. 2. SHINGRIX should be used with caution in those who are pregnant or breastfeeding as there are no data on its use in these populations
VACCINE COMPONENTS	Potential allergens: polysorbate 80. Other components: Quillaja saponaria Molinara fraction 21, 3-O-desacyl-4'-monophosphoryl lipid A, dipotassium phosphate, sodium dihydrogen phosphate dihydrate, sucrose, cholesterol, dioleoyl phosphatidylcholine, disodium phosphate anhydrous, potassium dihydrogen phosphate.
ADVERSE EVENTS	**Local:** Mild to moderate pain, redness, swelling **Systemic:** Myalgia, fatigue, headache, chills, fever, nausea, diarrhea, vomiting, stomach pain

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2020 December

Varicella Zoster Vaccine (Recombinant) (SHINGRIX®)

Supplier: GlaxoSmithKline Inc.

SPECIAL CONSIDERATIONS	• SHINGRIX® and diluent should be stored to maintain cold chain (2-8°C). • It is recommended that the vaccine be administered immediately after reconstitution to minimize loss of potency. Discard reconstituted vaccine if it is not used within 30 minutes.

❶ SHINGRIX® is indicated for the prevention of shingles in individuals with prior chickenpox infection. Given that nearly all Canadians eligible for this vaccine will have had prior varicella exposure, even if a diagnosis of varicella cannot be recalled, routine serological testing is not recommended. There is no known safety risk associated with vaccination of healthy individuals who are varicella-susceptible. However, in the rare circumstance that an individual is known to be serologically varicella susceptible, they should be immunized with 2 doses of varicella vaccine rather than zoster vaccine.

❷ SHINGRIX® may be considered for immunocompromised adults on a case by case basis. Please contact the Immunization Program Manager.

❸ There should be an interval of at least 1 year between receipt of live zoster vaccine and administration of SHINGRIX®. There should also be an interval of at least 1 year between an episode of shingles and administration of SHINGRIX®.

❹ SHINGRIX® is indicated for ages 50+. Clients aged 50-64, and 71 and older, may be eligible to pay for and/or obtain a prescription for this product as long as other indications are met.

	2019 August
Yellow Fever (YF-VAX®)	**Supplier: Sanofi Pasteur**
INDICATIONS ❶ ❷ ❸ ❺ **INDICATIONS** ❶	**Recommended but not provided free to:** **(1) International travelers from 9 months of age to < 60 years of age, visiting yellow fever endemic areas** Single dose of **0.5 mL SC** ❷❸
REINFORCEMENTS	Not required as of July 2016, a single dose is considered valid for life. ❼
CONTRAINDICATIONS	< 9 months of age Severe egg allergy Immunosuppressed persons due to disease or therapy ❻ History of thymoma, thymectomy, or myasthenia gravis❻ History of anaphylactic reaction to Yellow Fever vaccine or any of its components including latex Pregnancy ❻
PRECAUTIONS	Individuals with the following conditions should undergo thorough assessment including risks and benefits❻ Breastfeeding women ❺ ≥ 60 years of age for booster dose❻
VACCINE COMPONENTS	No adjuvants, no preservatives. Contains residual egg proteins, sorbitol, gelatin, sodium chloride.
ADVERSE EVENTS	**5 - 10 days after injection possible:** 2%-5% mild headaches, myalgia, fevers, or other minor symptoms for 5 – 10 days. Severe reactions following yellow fever vaccine increases with age. Risk between 60-69 years old is 4/100,000 doses and ≥ 70 years old is 7.5/100,000 doses. These serious reactions include YEL-AVD (Multi organ failure) and YEL-AND (Post vaccine encephalitis, Guillain-Barre syndrome, autoimmune central or peripheral nervous system involvement.) ❹

(continued on next page)

2019 August

Yellow Fever (YF-VAX®)

Supplier: Sanofi Pasteur

❶ Only administered at Whitehorse Health Centre. See discussion Section 5 Immunization of Special Populations. Requires completion of the International Certificate of Vaccination or Prophylaxis for Yellow Fever, or medical exemption for Yellow Fever Immunization required regions.

❷ Freeze dried product, requiring reconstitution

❸ Give Varicella or M.M.R. on the same day or 4 weeks apart from vaccine administration. PPD ≥ 6 weeks after live vaccine. Live vaccines can be given any time after PPD. No time restriction on oral cholera and oral typhoid

❹ YEL-AVD: Yellow Fever Associated Viscerotropic disease & YEL-AND: Yellow Fever Associated Neurotropic disease.

❺ Administration of Yellow Fever (YF) Vaccine to actively breastfeeding females is a relative contraindication due to a probable transmission of vaccine strain YF virus through breast milk. If travel to an endemic area is required, the vaccination with YF vaccine is a lesser risk than that of acquiring the disease.

❻ For age over 60 years, the risks and benefits of YF vaccine deserve careful evaluation and consultation with the client. This evaluation should include the necessity of travel, the risks and benefits of vaccination, and the destination-specific risk for exposure to YF. In general, serious reactions to YF vaccine are more common in travelers over age 60. However, YEL-AVD and YEL-AND are seen almost exclusively in the first time recipients of YF vaccine. Thus, the precautions apply particularly to first-time candidates for YF vaccine over 60 years of age. For these clients, consultation with a physician and/or MOH prior to immunization is recommended.

❼ Country requirements are subject to change at any time. It is important for travellers to ensure that they know the requirements of the country to which they are travelling by checking with the relevant consulate or embassy. Period of validity: in accordance with the amendment to the IHR (2005) adopted by the World Health Assembly in resolution WHA67.13, from 11 July 2016 the period of validity for all certificates of vaccination against yellow fever changes from 10 years to the duration of the life of the person vaccinated, including for certificates already issued and new certificates. Accordingly, as of 11 July 2016, valid certificates of vaccination presented by arriving travellers cannot be rejected on the grounds that more than 10 years have passed since the date on which vaccination became effective, as stated on the certificate. Boosters or revaccination cannot be required. See http://www.who.int/ith/2017-ith-annex1.pdf?ua=1.