



BC Centre for Disease Control
AN AGENCY OF THE PROVINCIAL HEALTH SERVICES AUTHORITY

January 27th, 2009

ATTN: Medical Health Officers and Branch Offices
Public Health Nursing Administrators and Assistant Administrators
Holders of Communicable Disease Control Manuals

**Re: Revisions to Communicable Disease Control Manual:
Chapter II – Immunization Program**

**Sections of the Communicable Disease Control Manual, Chapter II –
Immunization Program have been revised and renamed:**

- Section IIA: Immunization Schedules
- Section IIB: Contraindications and Precautions for Immunization
- Section III: Immunization of Special Populations
- Section VII: Biological Products

The creation of new Sections in the Immunization Program Manual is a result of a field survey conducted more than a year ago and the suggestions received at that time for a more “user-friendly” manual. There is updated information in the manual, and specific information related to the introduction of INFANRIX hexa™, in Sections IIA and VII in particular.

Please note the following changes:

- PEDIACEL®, QUADRACEL® and ADACEL® have all been capitalized throughout the manual for consistency with the sanofi product monographs available at <http://www.sanofipasteur.ca/sanofi-pasteur2/front/index.jsp?codeRubrique=72>.
- Section II now has two parts: IIA “Immunization Schedules” and IIB “Contraindications and Routine Precautions for Immunization.”
- All the information and schedules for individuals at high risk of vaccine-preventable diseases previously found in Section II, Immunization Schedules have been moved to Section III, Immunization of Special Populations.

Administrative Circular 2009:01

- Appendices 1.0, 2.0, 4.0, 5.0, 6.0, and 7.0 have been moved from Section X, Appendices to Section III, Immunization of Special Populations. Appendix 8.0 has been removed from the manual.

(1) SECTION IIA – “IMMUNIZATION SCHEDULES:”

Section 1.0 “Routine Schedules:”

- Footnotes describing start dates for existing programs have been deleted from Schedules A, B, and C. These are “routine” schedules and vaccines indicated for individuals in each age group are included in recommended schedules.
- Minimum interval recommendations removed from footnotes in Schedules A, B, C, and D (except recommendation regarding Tdap booster for Grade 9 students). Refer to Minimum Intervals Between Vaccine Doses Table for more information.
- Footnote added to Schedules A, B, and C regarding minimum interval between tetanus-containing booster and Grade 9 dose of Tdap vaccine.

Page 1, Section 1.0 “Routine Schedules,” Subsection 1.1 “Schedule A: Basic Immunization Schedule When Starting With Infanrix hexa™ vaccine:”

- New schedule for use with INFANRIX hexa™ vaccine after new program is launched on February 1, 2009.
- Trade names for vaccines (i.e., INFANRIX hexa™, PEDIACEL®, QUADRACEL®, and ADACEL®) included in all schedules for clarity.
- Deleted pneumococcal vaccine at 18 months as this dose is not part of current routine schedule.
- Added meningococcal C conjugate vaccine at 4 months of age (for at risk infants only).
- HPV added to Grade 6 schedule (for girls only).
- HPV added to Grade 9 schedule (for girls only). Note that Grade 9 program is planned for 3 school years only.

Page 2, Subsection 1.1.1 “Schedule A: Basic Immunization Schedule When Starting With PEDIACEL® vaccine:”

- Follow this schedule when completing primary immunization series for those infants started on PEDIACEL® vaccine for their primary series or for infants who are not receiving INFANRIX hexa™ vaccine for any other reason.
- Deleted pneumococcal vaccine at 18 months as this dose is not part of current routine schedule.
- Added meningococcal C conjugate vaccine at 4 months of age (for at risk infants only).
- HPV added to Grade 6 schedule (for girls only).
- HPV added to Grade 9 schedule (for girls only). Note that Grade 9 program is planned for 3 school years only.

Page 3, Subsection 1.2 “Schedule B: Children \geq 1 year but $<$ 7 years when Starting Immunization:”

- Schedule for INFANRIX hexa™ inserted as this will be the recommended vaccine for this group.
- Footnote ❶ indicates that complete series of INFANRIX hexa™ (3 doses) must be administered before child is 7 years of age. If this is not possible, refer to Alternate Schedule B on page 4.
- Footnote ❷ directs health care provider to *BC Communicable Disease Manual, Chapter 2, Biological Products, Pneumococcal Conjugate Vaccine (Prevnar™) Completing a Pneumococcal Conjugate Vaccine Series* when determining schedule for completion of pneumococcal vaccine.
- Footnote ❸ clarifies that the vaccine given 6 months after 3rd dose of INFANRIX hexa™ may be either QUADRACEL® or ADACEL®, depending on the age of the child at that time.
- Vaccines indicated in Grade 6 and Grade 9 included in this schedule to clarify that a child who starts immunization between 1 and 7 years of age is eligible for these vaccines according to routine schedule.
- Note: vaccines indicated at Grade 6 and Grade 9 do not include hepatitis B, varicella, and meningococcal C conjugate as individuals following Schedule B are eligible for these vaccines prior to Grade 6 and Grade 9.

Page 4, Subsection 1.2.1 “Alternate Schedule B: Children \geq 1 year but $<$ 7 years when starting immunization:”

- Refer to Footnote ❶ for list of children for whom this schedule is appropriate (i.e., children who are unable to complete a series of INFANRIX hexa™ vaccine before 7 years of age; children who are delayed starting their immunization series and have started with PEDIACEL® vaccine; or children who are delayed starting immunization and whose parents refuse INFANRIX hexa™ vaccine.)

Page 6, Subsection 1.4 “Schedule C: Children 7 years to 17 years (inclusive) when Starting Immunization:”

- Revised definition of varicella susceptibility in footnote ❶ to include history of chickenpox disease in infants $<$ 12 months of age.
- Hepatitis B vaccine added as 2001 birth cohort is now part of this age range of 7 to 17 years inclusive. Hepatitis B vaccine has been included as part of the routine infant immunization schedule since March 1, 2001. Individuals who were born after January 1, 2001 and who present for immunization are eligible for Hepatitis B vaccine.
- Footnote ❷ clarifies that children who are new immigrants to Canada from areas of high hepatitis B prevalence and who present for immunization prior to Grade 6 are eligible for hepatitis B vaccine.
- Clarification that Hepatitis B vaccine in Grade 6 is only indicated for those individuals who have not been previously immunized.
- HPV information added.

Page 7, Subsection 1.5 “Schedule D: Unimmunized Adults Age 18 or Over When Beginning Immunization:”

- Hepatitis B and meningococcal vaccines added to schedule. Footnotes ④ and ⑤ detail eligibility for these vaccines based on birth cohort.
- Footnote ①: List of unimmunized adults at higher risk of exposure to wild polioviruses updated. Workers in refugee camps and military personnel added to list. Health Care Workers (HCWs) expanded to include all HCWs, not just those in close contact with individuals who may be excreting polioviruses.
- MMR vaccine recommendations updated. All individuals born on or after January 1, 1957 are eligible for two doses of vaccine for protection against measles. For mumps protection, two doses of vaccine are required for individuals born on or after January 1, 1970; one dose is required for individuals born 1957 to 1969. For rubella protection, one dose is required for all individuals.
- Revised definition of varicella susceptibility in footnote ③ to include history of chickenpox disease in infants < 12 months of age.
- Footnote regarding use of this schedule for immigrants with unknown immunization status deleted. Detailed information regarding immunization of new Canadians or those with unknown immunization status is included in *BC Communicable Disease Manual, Chapter 2, Section III – Immunization of Special Populations*.

Page 8, Subsection 1.6 “Schedule E: Reinforcing Immunization of Previously Immunized Adults:”

- Hyperlink to *Tetanus Prophylaxis in Wound Management* added.
- Wording under “Frequency of Immunization” for poliomyelitis changed to be consistent with wording in Chapter VII – Biological Products.
- Group eligible for MMR vaccine changed to “All individuals who require protection against measles, mumps, or rubella”. Frequency of MMR booster simplified to “A second dose is provided free.”
- Information from previous “Schedule F: Immunization of Individuals ≥ 65 Years of Age” now included in Schedule E.

Page 9, Section 2.0 “Guidelines for Immunization Schedules:”

- Added background information regarding immunization schedules.
- Recommended age for starting primary immunization is 2 months of age. Added 8 weeks for clarity.
- Statement added regarding importance of assessing client’s immunization status at each encounter. Listed factors that influence eligibility for routine and additional immunizations to assist health care provider with assessment.
- Information added regarding cohort eligibility (i.e., “once eligible, always eligible”). This applies as long as vaccine is approved for use in client’s current age group.

- Statements regarding re-immunization with MMR, polio, Hib, and Diphtheria/Pertussis/Tetanus vaccines moved to *Section III – Immunization of Special Populations: Unknown or Uncertain Immunization Status*.
- Statement added “Verbal report of history of varicella disease is a valid indicator of immunity.”
- Wording regarding completing an interrupted vaccine series changed for clarity.

Page 10, Section 3.0 “Minimum Intervals Between Vaccine Doses:”

- Definition of minimum interval and guidelines for use of minimum intervals moved here as it is background information.

Page 11, Subsection 3.1 “Minimum Intervals Between Vaccine Doses Table:”

- INFANRIX hexa™ added to table.
- Trade names (i.e., PEDIACEL® and INFANRIX hexa™) added for clarity.
- Footnotes re-ordered. Note references to “Completing a Conjugate Pneumococcal Vaccine Series” and “Hib Schedule When the Basic Schedule Has Been Delayed” are now included in footnotes.
- Footnote regarding use of Gardasil™ minimum spacing guidelines deleted. Information is in Chapter VII – Biological Products. Minimum Intervals Schedule is only for use when an individual is late starting an immunization schedule or falls behind the routine schedule by one month or more (i.e., it is always client specific).

Page 12, Section 4.0 “Timing and Spacing of Biological Products:”

- Moved from *Section III – Contraindications and Routine Precautions for Immunization*.
- Added recommendations regarding administration of multiple vaccines at one clinic visit.

Page 12, Subsection 4.1 “Timing and spacing of inactivated vaccines:”

- Term “inactivated” vaccines used to describe group of vaccines including recombinant, polysaccharide, conjugate, and acellular vaccines.
- Statements added to support safety and efficacy of concurrent administration of different inactivated vaccines.
- Information added regarding rationale for necessity of repeat doses of inactivated vaccines to achieve optimal protection.

Page 13, Subsection 4.2 “Timing and spacing of live attenuated vaccines:”

- Added background statement regarding need for live vaccines to replicate in order to elicit an immune response. Statement was added to support importance of separating live vaccines administered parenterally by at least 28 days if they are not given concurrently.

- Statement added to clarify that live vaccines given orally do not appear to have any effect on injectable live vaccines. “Live oral vaccines can be given at any time before or after live vaccines administered parenterally.”

Page 14, Table 1 “Types of vaccines:”

- Table added to clarify different categories of vaccines.

Page 15, Subsection 4.3 “Spacing of vaccine and antibody-containing products:”

- Combined information previously found in subsections “Recent administration of human immune globulin preparations or blood transfusions” relating to both live and inactivated vaccines.
- Section was re-titled to better reflect importance of antibody contained within immune globulin and blood products and its potential interference with immune response to vaccine.
- Information added regarding receipt of an antibody-containing product within 2 weeks after immunization with MMR or varicella vaccine.
- Added statement regarding RSV antibody.
- Added information regarding effect of administration of Rh immune globulin postpartum.

Page 16, Subsection 4.4 “Spacing of vaccines and blood donation:”

- New section.
- Note: Table is included for reference only. There is no expectation that health care providers would include this in pre-immunization screening.

Page 17, Subsection 4.5 “Tuberculin testing:”

- Statement added to clarify that any vaccine can be given at the same time as, or at any time after, tuberculin testing.
- If necessary, a tuberculin skin test can be given within 6 weeks of receipt of MMR or varicella vaccine. Recommendation made for follow up in this instance.
- As BCG immunization is not routinely done in B.C., recommendations for BCG vaccination were deleted.

(2) SECTION IIB “CONTRAINDICATIONS AND PRECAUTIONS FOR IMMUNIZATION:”

Page 1, Section 1.0 “Definitions:”

- Information was previously contained in *Section III – Contraindications and Routine Precautions for Immunization*.
- Definitions of contraindication and precaution included for clarity.

Page 2, Table 1: “Contraindications and Precautions for Vaccine Administration:”

- Table 1 adapted from Canadian Immunization Guide, 7th ed, 2006 (CIG) and included as an overview.

Page 3, Section 2.0 “Assessment for Contraindications and Precautions:”

- Wording changed to provide clearer guidance for health care provider.
- New recommendation added regarding need to assess for family history of congenital immunodeficiency if administering a live vaccine to an infant who is < 12 months of age. Signs or symptoms of congenital immunodeficiency may not be evident in infants prior to one year of age.
- Information added regarding assessment for previous history of Guillain Barré Syndrome.
- Note that “moderate to severe acute illness, with or without fever” is no longer a reason to defer routine immunization. More information is included in Section 5.0 “Conditions That Are NOT Contraindications to Immunization.”
- Updated list of potential “regional experts” to be consulted. Added phone number for on call clinical person at BCCDC Epidemiology Services.

Page 4, Section 3.0 “Severe Allergy to Vaccine Components:”

- Added list of potential allergens within any vaccine.
- Statement added to clarify that no currently licensed vaccine contains penicillin or penicillin derivatives.

Page 4, Subsection 3.1 “Anaphylactic reaction to eggs:”

- Added statement listing vaccines containing egg protein.
- Included recommendations regarding post-exposure use of RabAvert® vaccine for an egg-allergic individual.
- Added statements regarding the inability to eat eggs and atopic disease related to egg exposure not being reason to defer immunization.
- Statement removed regarding recommendations for immunization with MMR vaccine for egg-allergic individuals. No special precautions are recommended for these individuals. This is consistent with the Canadian Immunization Guide, 7th ed., 2006.
- Information regarding skin testing for children prior to influenza immunization has been deleted.

Page 5, Section 4.0 “Latex Allergy:”

- Wording changed for improved clarity.

Page 6, Subsection 4.1 “Latex Content in Vaccines:”

- Added table “Vaccines Containing Latex.” Information adapted from table provided by BCCDC Vaccine and Pharmacy Services.

Page 7, Section 5.0 “Conditions That Are Not Contraindications to Immunization:”

- New section.
- Information from various sections in *Section III – Contraindications and Routine Precautions for Immunization* collated in one new section for easier reference.
- Wording changed for consistency with Canadian Immunization Guide.
- New information added regarding potential family history of congenital severe immunodeficiency.

Page 9, Section 6.0 “References:”

- New section.

(3) SECTION III: “IMMUNIZATION OF SPECIAL POPULATIONS:”

Section III is now titled “Immunization of Special Populations” and presents information and recommendations related to the immunization of individuals who are members of Special Populations. Vaccine recommendations for each group are listed in table format under each group heading. Background information supporting the vaccine recommendations is provided following each table.

Information regarding hepatitis B immunization for certain individuals and referral forms for MMR and varicella vaccination previously contained in Section X Appendices has been incorporated into Section III.

All other information regarding contraindications and precautions for immunization (previously contained in Section III) is now contained in Section IIB.

Page 1, “Individuals at high risk for vaccine-preventable disease:”

- Introduction to new format for Section III.
- Clarification that all vaccine recommendations are for pre-exposure situations (with the exception of infants born to mothers who are HBsAg positive).
- It is important to consider all recommended vaccines, including routine vaccines for these individuals.

Page 2, Table 1 “Vaccines Recommended for Immunosuppressed Clients:”

- Table was previously in Section II.
- Conditions listed in table have been alphabetized and recommended vaccines updated to be consistent with current recommendations.

Page 3, Table 2 “Vaccines Recommended for Individuals with Other Health Conditions:”

- New table.

Page 3, Table 3 “Vaccines Recommended for Select Populations:”

- New table.

Page 4, Section 1.0 “Immunocompromised Individuals:”

- List of conditions associated with immunosuppression compiled and alphabetized.
- Vaccine recommendations are based on an understanding of the immunosuppression associated with each condition.

Page 5, Subsection 1.1 “Household Contacts of Immunocompromised Individuals:”

- New section.

Page 6, Subsection 1.2 “General Principles for Immunization of the Immunocompromised:”

- Additional supporting information added.

Page 7, Subsection 1.3 “Immunization with Inactivated Vaccines:”

- Clarification that there are no contraindications to inactivated vaccines for immunocompromised individuals. However, the individual’s response to vaccines may be suboptimal.
- Information added regarding importance of protection against encapsulated bacteria.

Pages 7, 8, and 9 Subsection 1.4 “Immunization with Live Vaccines:”

- Information added that serious adverse events may occur in immunocompromised individuals immunized with a live vaccine as a result of uncontrolled virus replication.
- Revised definition of varicella susceptibility to include history of chickenpox disease in infants < 12 months of age.
- Included links to Referral Form for MMR Vaccination and Referral Form for Varicella Vaccination.
- “Considerations for immunization with MMR and varicella vaccine for the following clients with immunosuppressing conditions:” included to provide more detail and supporting information to accompany Referral Forms for Varicella and MMR Vaccination.
- New recommendation for varicella immunization of individuals \geq 12 months of age with asymptomatic or mildly symptomatic HIV infection.
- Recommendation regarding family history of congenital immunodeficiency that may be documented as an overwhelming infection following natural infection or receipt of a live vaccine with or without death. This family history is a contraindication to the immunization of infants < 12 months of age with a live virus vaccine (e.g. MMR vaccine for an infant travelling to a measles endemic area).

Page 10, Subsection 1.4.1 “Referral Form for Varicella Vaccination:”

- Moved from Section X, Appendices.
- Added the following indications:
 - candidates for **all** solid organ transplant (previously had been just “those awaiting kidney or liver transplant.”
 - Chronic kidney disease/dialysis
 - ≥ 1 month after completion of high doses ($> 2\text{mg/kg}$ or > 20 mg daily) oral corticosteroid therapy more than 14 days duration.
- Revised definition of varicella susceptibility to include history of chickenpox disease in infants < 12 months of age and no history of varicella immunization.

Page 11, Subsection 1.4.2 “Referral Form for MMR Vaccination:”

- Moved from Section X, Appendices.
- Added the following indications:
 - Isolated:
 - Humoral (Ig) deficiency diseases
 - Neutrophil deficiency diseases
 - Complement deficiency diseases
 - ≥ 3 months after being cured of a malignant disease and the end of immunosuppressive treatment
 - ≥ 1 month after completion of high doses ($>2\text{mg/kg}$ or >20 mg daily) oral corticosteroid therapy
- List of “immunosuppressed clients” updated for consistency with recommendations in BC Communicable Disease Control Manual, Chapter 2, Section III and Section VII.
- Removed statement “4 weeks apart” from section of form to be completed by client’s medical specialist as recommendation for HSCT clients is to receive 2 doses of vaccine 6-12 months apart.

Page 12, Subsection 1.5.1 “Anatomic or functional asplenia:”

- Clarification that, if possible, immunizations should be given 14 days pre-splenectomy. However, unimmunized individuals who have had a splenectomy in the past or who have functional hyposplenism should be immunized as soon as their condition is identified.
- List of conditions known to be commonly associated with asplenia has been expanded to include Rheumatoid Arthritis. Individuals with any of the listed conditions may be asplenic and should be investigated further.
- Included brief description of the spleen’s role in the immune system.

Page 14, Subsection 1.5.2 “Congenital immunodeficiency states:”

- More detailed information included regarding recommended vaccines.

Page 15, Subsection 1.5.3 “Hematopoietic Stem Cell Transplantation (HSCT):”

- This section was previously titled “immunoblastic therapy.”
- Updated vaccine recommendations, including information regarding importance of post HSCT immunization of all individuals, regardless of whether transplant was allogeneic or autologous.
- Clarification that inactivated vaccines can be administered starting 12 months post transplant (except influenza which can be administered 6 months post transplant) and live vaccines can be considered 24 months post transplant.

Page 17, Table 4 “Worksheet for Immunization of Adult HSCT recipients (Those ≥ 18 Years of Age):”

- Moved from Section II.
- Footnote added regarding Referral Forms for MMR and Varicella Vaccinations.

Page 18, Table 5, “Worksheet for Immunization of Child HSCT recipients (Those < 18 Years of Age):”

- PENTACEL® deleted as this product no longer available in B.C.
- Information added to Footnote ❶: INFANRIX hexa™ is not appropriate for these clients.

Page 19, Subsection 1.5.4 “Illness that progressively weakens the immune system:”

- Previously titled HIV infection.
- Hepatitis A and B vaccines added to list of recommended vaccines.
- Footnote ❸ outlines new recommendation for varicella immunization of individuals ≥ 12 years of age with asymptomatic or mildly symptomatic HIV infection.
- Reference added to Referral Forms for MMR and Varicella vaccines.

Page 21, Subsection 1.5.5 “Immunosuppressive therapy:”

- Clarification that immunosuppressive therapy includes: long term steroids, cancer chemotherapy, radiation therapy, Cyclosporine, and Cyclophosphamide / infliximab.
- Statement regarding influenza immunization added.
- Clarification that immune memory is not usually lost following immunosuppressive therapy treatment.
- More detailed information added regarding corticosteroid therapy and immunization. Note: a period of 1 month should elapse between high dose steroid use and the administration of live vaccines.

Page 23, Subsection 1.5.6 “Chronic kidney disease and dialysis clients:”

- New section.
- Information provided regarding importance of immunization, especially to protect against hepatitis B, influenza, pneumococcal, and varicella infection.

Page 25, Table 6: “Hepatitis B Vaccine Program for Chronic Kidney Disease Clients”

- Table 6 is also in Section VII, and has been placed here for user convenience.
- Information in this table captures information from the “Algorithm for Hepatitis B Vaccinations for Patients with Chronic Kidney Disease” from Section X, Appendices.

Page 26, Table 7: “Hepatitis B Vaccination Guidelines for Clients with Chronic Kidney Disease”

- This table has been adapted from the original table in Section X, Appendices.
- It provides guidelines for the vaccination and testing of clients with chronic kidney disease, including the protocols for annual testing. These clients may receive a booster dose of hepatitis B vaccine or an annual vaccine series, depending on results of annual testing.
- Users are referred to the Communicable Disease Control Manual, Chapter 1, Hepatitis B, for interpretation of test results that are positive for HBsAg or anti-HBc.

Page 27, Subsection 1.5.7 “Chronic liver disease:”

- New section.

Page 28, Subsection 1.5.8 “Malignant Neoplasm (including leukemia and lymphoma)”

- New section.

Page 29, Subsection 1.5.9 “Candidate for or recipient of solid organ or islet cell transplant:”

- Table of recommended vaccines and background information provided as an overview.

Page 31, Table 8 “BC Children’s Hospital Multi-organ Transplant Clinic Accelerated Immunization Schedule For Children Expected To Be Transplanted Before 18 Months Of Age:”

- Moved from Section II.
- Footnote ❶ modified to stress importance of double µg dose for every dose of hepatitis B vaccine.
- Note added that INFANRIX hexa™ is not appropriate for this group due to hepatitis B dose recommendation.
- Varicella immunization recommended 6 weeks (previously 4-6 weeks) pre-transplant for consistency with Canadian Immunization Guide, 7th ed, 2006, Errata and Clarifications, March 2008.

Page 32, Table 9 “BC Children’s Hospital Multi-organ Transplant Clinic Routine Immunization Schedule for Children Expected to be Transplanted After 18 months of age:”

- Moved from Section II.
- Clarification that double µg dose of hepatitis B vaccine is indicated for every dose.
- Note added that INFANRIX hexa™ is not appropriate for this group.
- Varicella immunization recommended 6 weeks (previously 4-6 weeks) pre-transplant for consistency with Canadian Immunization Guide, 7th ed, 2006, Errata and Clarifications, March 2008.

Page 33, Table 10 “Worksheet for Immunization of Adult Solid Organ Transplant Candidates and Recipients:”

- Moved from Section II.
- Information added regarding IPV immunization. Three doses are recommended for adults. Unnecessary boxes shaded in.

Pages 34, 35, and 36 Subsection 2.1 “Infants at High Risk for Hepatitis B:”

- Added statement regarding risk of infant developing hepatitis B if born to HBsAg positive mother.
- Information from Appendices compiled:
 - Perinatal protocols for hepatitis B
 - Prophylaxis record for infants at high risk of hepatitis B
 - High risk neonatal hepatitis B programme (referral and information letter for physicians)
- Note: infant who receives hepatitis B vaccine at birth (with or without HBIG) is eligible for complete series of INFANRIX hexa™ vaccine according to routine schedule.
- Information regarding infants born at < 2000gms and requiring a birth dose of hepatitis B vaccine followed by 3 additional doses of hepatitis B vaccine has been removed. All infants who receive hepatitis B vaccine and a complete series of INFANRIX hexa™ will receive 4 doses of hepatitis B vaccine.
- High risk neonatal hepatitis B program (referral and information letter for physicians) – testing “anti-HBc” post immunization is deleted as per recommendations regarding testing and interpretation of results from BCCDC (Epidemiology and Hepatitis Services) and BC Children’s Hospital.

Page 38, Subsection 2.2 “Individuals with Bleeding Disorders:”

- Previously titled “Hemophilia.”
- Clarification that individuals receiving long term Coumadin or heparin therapy can be safely immunized.
- Added recommendation regarding administration of vaccine SC when efficacy known to be the same if vaccine administered SC or IM.

Page 39, Subsection 2.3 “Individuals with Chronic Heart or Lung disease:”

- New section.

Page 39, Subsection 2.4 “Chronic Cerebrospinal Fluid Leak:”

- New section.

Page 39, Subsection 2.5 “Cochlear Implant:”

- New section.

Page 40, Subsection 2.6 “Cystic Fibrosis:”

- New section.

Page 40, Subsection 2.7 “Diabetes Mellitus:”

- New section.

Page 41, Subsection 2.8 “Individuals with neurologic disorders:”

- Information divided into two subsections for clarity: pre-existing neurologic conditions and new neurologic conditions that develop anytime after immunization.
- Included additional information regarding infections that pose particular risk for individuals with pre-existing neurologic conditions.
- Background information provided regarding temporal association.

Page 42, Subsection 2.8.2 “Those who develop symptoms of a new neurologic condition at any time after immunization:”

- Detailed information regarding history of Guillain Barré Syndrome (GBS) added.

Pages 43 and 44, Subsection 2.9 “Women who are pregnant or planning a pregnancy:”

- New information added regarding MMR and varicella immunization postpartum, including recommendations when Rh immune globulin is also given postpartum.
- New information added regarding immunization with inactivated vaccines during pregnancy.
- Clarification that, although live vaccines are contraindicated during pregnancy, if a live vaccine is inadvertently administered to a pregnant woman there is no indication to terminate the pregnancy. Now includes an example of when a live vaccine during pregnancy may be indicated.
- Recommendation included regarding influenza immunization.

Page 45, Subsection 2.10 “Infants born prematurely:”

- Background information added regarding risk of influenza and pertussis.
- Information regarding additional dose of hepatitis B vaccine for infants born at <2000gm and given hepatitis B vaccine at birth deleted as all infants who receive hepatitis B vaccine at birth will now receive complete series of INFANRIX hexa™ (resulting in a total of 4 doses of hepatitis B vaccine).

Page 46, Section 3.0 “Select Populations:”

- New section created to capture information regarding immunization recommendations for groups of people who are eligible for additional vaccines or whose immunization plan requires added consideration.

Page 46, Subsection 3.1 “Health and Child Care Workers:”

- Moved from Section II.
- Most pertinent information included in table format for easy reference.
- Recommendation regarding immunization with polio vaccine updated and is now consistent with information in BC Communicable Disease Control Manual, Chapter 2, Section IIA and Section VII. A complete primary series and a single booster dose is recommended for all health care workers.
- Mumps information updated to include recommendation that individuals born between 1957 and 1969 receive one dose of mumps-containing vaccine and individuals born in or after 1970 receive two doses of mumps-containing vaccine (or have evidence of laboratory confirmed mumps disease).
- Clarification that, as MMR is the only vaccine available in B.C. for protection against measles, mumps, or rubella, it is indicated whenever protection against any of the antigens is required.

Page 50, Subsection 3.2 “Inmates of provincial correctional institutions:”

- New section.

Page 50, Subsection 3.3 “International travelers:”

- Information added regarding appropriate sources of information for clients.

Page 50, Subsection 3.4 “Males who have sexual contact with other males:”

- New section.

Page 51, Subsection 3.5 “Individuals new to Canada:”

- Most pertinent information included in table format.
- Reference added to assist with translation of foreign terms.
- Added information and guidance for analyzing records of individuals from another country.
- Clear direction to re-immunize individual if any doubt regarding whether vaccines administered outside Canada were immunogenic.
- Reference added to assist with viewing immunization schedules used in different countries.
- List of important tests added to assist health care provider in decision making process regarding necessary vaccines.
- Recommendation regarding tuberculin testing added.

Page 55, Subsection 3.6 “Uncertain immunization status / inadequate immunization records:”

- New section.

Page 56, Section 4.0 “References:”

- New section.

(4) SECTION VII: BIOLOGICAL PRODUCTS**The following pages have been removed from Section VII:**

Page 1, Pentacel: this product was replaced by PEDIACEL®.

Pages 16, 17, 21 & 22, Engerix®-B: this vaccine is available when there is a contraindication to RecombivaxHB®, but the product has not been used routinely for the infant or grade 6 programs.

Pages 74 & 75, Typhoid vaccine, Vivotif L®: this product is discontinued.

Page 1, INFANRIX hexa™ vaccine

- New page
- Indications for INFANRIX hexa™ vaccine:
 - Primary series for infants born on or after December 1, 2008 starting at 2 months of age
 - Primary series for high risk infants who have received a birth dose of HBIg and/or Hepatitis B vaccine
 - 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
- Note: INFANRIX hexa™ presentation contains latex in the plunger and syringe cap.
- Information regarding booster dosing is provided as INFANRIX™ hexa vaccine is indicated for the **primary series** only.
- Note this last statement in “Special Considerations:” “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”.

Page 2, PEDIACEL® vaccine

- Changes to “Indications” section: PEDIACEL® is indicated for:
 - Primary series and booster for infants and children 2-59 months of age who have had one or more doses of PEDIACEL®
 - Primary series for high risk infants who have had doses of hepatitis B vaccine at birth **and** 1 month of age.
 - Booster dose at 18 months of age for infants who have received a primary INFANRIX hexa™ series or a primary PEDIACEL® series.

Page 4, Haemophilus b Conjugate Vaccine (Act-HIB®)

- “Severe rheumatoid arthritis requiring immunosuppressive therapy” added to “Indications” as an example of immunosuppression due to therapy.

- As an example of immunosuppression related to disease, added “congenital immunodeficiency states such as complement, properdin or factor D deficiency.”
- Footnote ③ changed as vaccine schedules for HSCT recipients now located in BC Communicable Disease Control Manual, Chapter 2, Section III - Tables 4 and 5.

Page 14, Hepatitis B Vaccine Pre-exposure Indications

- New footnote ② added for consistency with Communicable Disease Control guidelines for control of Hepatitis B: “Prevaccination testing for HBsAg, anti-HBc and anti-HBs is recommended for persons at high risk of having been infected (i.e., IDU, STW, and persons born in a country of high Hepatitis B prevalence”). Footnotes reordered.
- Eligibility date for infants corrected to January 1, 2001 as program commenced March 1, 2001 for infants starting at 2 months of age.
- Deleted indication: “children under 7 years of age whose families have immigrated to Canada from regions of high hepatitis B prevalence (e.g. Asia and Africa)” as hepatitis B vaccine is indicated for all children in this age group due to having a birthdate of January 1, 2001 or later.

Page 16, Hepatitis B Vaccine (Engerix®-B)

- New page
- “Indications”: vaccine may be used pre - and post – exposure to hepatitis B. Engerix®-B is indicated when there is a contraindication to the use of RecombivaxHB®.
- “Initial Series”: includes the basic 0 – 1 – 6 month schedule and a link to the Canadian Immunization Guide for detailed information on dosages.
- Footnote ⑥ added to provide direction to use INFANRIX hexa™ for completion of vaccine series following a dose of Hepatitis B vaccine and/or HBIG at birth. PEDIACEL® is indicated for infants who have received doses of hepatitis B vaccine at birth **and** at one month of age, with a dose of Hepatitis B vaccine at 6 months of age.

Pages 17 & 18, Hepatitis B Vaccine Pre-exposure ((RecombivaxHB®) (10 mcg/1.0 ml) (Pediatric (Pediatric presentation: 5 mcg/0.5 ml, thimerosal free)

- “Indications” (1): All high risk infants who receive hepatitis B vaccine at birth, including high risk infants weighing less than 2000 grams, can complete their Hepatitis B vaccination with INFANRIX hexa™ at 2, 4 and 6 months of age.
- “Indications”(2): Infants who are receiving PEDIACEL® in a primary series will receive RecombivaxHB®™ at 2, 4 and 6 months of age for the routine Hepatitis B infant vaccine program.
- Footnote ④: Clarification that 5 mcg (0.5 ml) of RecombivaxHB® is a double µg dose for individuals <11 years of age. Although a “routine” pediatric dose

with this presentation is 0.25 ml, the decision in BC in 2001 was to use the complete content of the vial (0.5 ml) as the routine dose. This reduces the potential for contamination when the vial is used for two separate doses, and minimizes the risk that a high risk infant might receive an inadequate dose.

- Footnote ⑤ added to provide direction for infants who have received doses of hepatitis B vaccine at birth and at one month of age.

Page 19, Hepatitis B Vaccine Post-exposure Indications

- Deleted indication: “children < 7 years of age if residing with a person who is at high risk of acquiring hepatitis B infection (e.g., IDU, STW, men who have sex with men, etc). Hepatitis B vaccine is indicated for all children in this age group due to having a birthdate of January 1, 2001 or later.
- Footnote ②: deleted recommendation that infant be tested for anti-HBc post-vaccination as per recommendations regarding testing and interpretation of results from BCCDC (Epidemiology and Hepatitis Services) and BC Children’s Hospital.

Page 20, Hepatitis B Vaccine Post-exposure (RecombivaxHB®) (10 mcg/1.0 ml) (Pediatric presentation: 5 mcg/0.5 ml, thimerosal free)

- “Indications” (1), (2), (3), and (4) more clearly stated
- “Initial Series”: deleted recommendation (2) for high risk infants weighing less than 2000 grams. All high risk infants who receive hepatitis B vaccine at birth, including high risk infants weighing less than 2000 grams, can complete their Hepatitis B vaccination with INFANRIX hexa™ at 2, 4 and 6 months of age.
- Footnote ⑤ added to provide direction for infants who have received doses of hepatitis B vaccine at birth and at one month of age.

Page 26, Immune Globulin (Ig) (GamaSTAN™ S/D)

- Deleted “except for IVIG” from Contraindication #1. Intravenous administration of GamaSTAN™ is not indicated.

Pages 35 & 36, Measles/Mumps/Rubella Vaccine (Live Attenuated Viral) MMRII™ & Priorix™

- “Indications” (4) broadened to “All individuals who require protection against measles, mumps, OR rubella”. The corresponding footnotes ④ and ⑤ clarify the recommendations for MMR vaccine based on birthdate:
 - Individuals born prior to 1957 are considered to have acquired natural immunity to measles and mumps.
 - **Measles protection:** 2 doses of a measles - containing vaccine are Recommended for all individuals born on or after January 1, 1957 who do not have a history of laboratory confirmed measles disease.
 - **Mumps protection:** 2 doses of a mumps – containing vaccine are recommended for all individuals born on or after January 1, 1970; one dose is recommended for all individuals born January 1, 1957 to December 31, 1969 who do not have evidence of mumps immunity.

- **Rubella protection:** one dose of vaccine is recommended for all individuals who do not have evidence of rubella immunity. One dose of a rubella - containing vaccine is considered evidence of immunity.
- Recommendation to use “Referral Form for MMR Vaccination” added to “Contraindications and “Special Considerations” sections.
- Family history of congenital immunodeficiency added to “Contraindications”. Link provided to Section II B, 2.0 Assessment for Contraindications and Precautions.
- Information added to “Adverse Events” regarding the risk of transient arthralgia and arthritis in post-pubertal females.
- Information from previous footnote ④ regarding theoretical risk to fetus if MMR is inadvertently administered during pregnancy moved to “Contraindications” #3.
- “Special Considerations”: deleted recommendation regarding travelers >18 years of age. This group is now included with indication (4) as described above.
- Information added to this section regarding individuals for whom consultation with the client’s specialist regarding MMR vaccine prior to vaccine administration is recommended. Hyperlink to the Referral Form for MMR Vaccination in the BCCDC Communicable Disease Control Manual, Chapter 2, Section III is included.

Page 39, Meningococcal C Conjugate (MCC) Vaccine (Neis Vac-C)

- Clarification under “Initial Series” that only one dose of vaccine is required when an infant born on or after April 1, 2005 presents for vaccination at ≥ 12 months of age.

Pages 41& 42, Meningococcal Quadrivalent Conjugate Vaccine (Menactra™)

- Wording changed in “Indications” (1) for consistency with “Indications” on Meningococcal C Conjugate vaccine pages (i.e., medically high risk individuals)
- The word “age” was added to “Immunize with Menactra™ when ≥ 2 years of ...”
- Footnote ⑤ clarifies a contraindication for Menactra™: “**any** prior history of Guillain-Barre syndrome (GBS) is a “relative” contraindication to Menactra™ vaccine. Immunization may be considered if the benefit of vaccination outweighs the potential risk of recurrence of GBS if the vaccine is given.”

Pages 44, 47 & 49: Pneumococcal Vaccines

- Added indication of “Congenital immunodeficiency states (e.g., complement, properdin or factor D deficiency).
- “Severe rheumatoid arthritis requiring immunosuppressive therapy” added to examples of immunosuppressing therapies included in “Indications.”

Page 45, Pneumococcal Conjugate Vaccine (Pevnar™) Completing a Pneumococcal Conjugate Vaccine Series

- Footnote ⑤ hyperlink changed to reflect current location of “Minimum Intervals Between Vaccine Doses” table in BCCDC Communicable Disease Control Manual, Chapter 2, Section IIA, Immunization Schedules, 3.0.

Pages 51& 52, Polio Vaccine (Inactivated) (Imovax® Polio) (vero cell origin)

- “Indications” (3): Wording changed to “Children and adults who are at higher risk of exposure to wild polioviruses”. The list of individuals is reordered for clarity. Workers in refugee camps and military personnel added to list of individuals at higher risk of exposure to wild polioviruses.
- Note: This section previously referred to “health care workers in close contact with individuals who may be excreting the viruses.” The broader description “health care workers” means that all health care workers are eligible for polio vaccine. Health care workers who have previously completed a series of polio vaccine during childhood are eligible for a single booster dose of polio vaccine.
- Note: Residents of communities in which a visitor or new refugee/immigrant may be excreting polioviruses are eligible for a basic series of polio vaccine but not for a booster dose. This recommendation is consistent with the Canadian Immunization Guide, 7th ed. (2006).
- Recommendations listed under “Indication (3)” and “Reinforcements” are now consistent with BCCDC Communicable Disease Manual, Chapter 2, Section IIA - Immunization Schedules.
- Previously unimmunized solid organ transplant candidates and recipients and HSCT recipients are eligible for vaccine. These indications are now consistent with BCCDC Communicable Disease Manual, Chapter 2, Section III - Immunization of Special Populations.

Pages 64 & 65, Tetanus-Diphtheria-acellular Pertussis (Tdap) (ADACEL®)

- “Indications” (7) added to clarify recommendations for HSCT recipients who are ≥ 7 to <18 years of age. Indication (8) now contains recommendations for HSCT recipients who are ≥ 18 years of age.
- Footnote ①: Information added to statement: “There should be a minimum of 2 years (**6 month minimum interval for Grade 9 dose of ADACEL® only**) since receipt of a previous **booster** dose of a tetanus/diphtheria –containing vaccine.” There is no evidence of an increase in adverse events when the Grade 9 booster of ADACEL® is administered following a minimum interval of 6 months since receipt of a tetanus/diphtheria-containing vaccine.

Page 66, Tetanus-Diphtheria-Inactivated Poliomyelitis Adsorbed (Td/IPV)

- “Indications”: HSCT recipients and solid organ transplant candidates or recipients are listed separately.
- “Initial Series” (3) provides a separate schedule for HSCT recipients.

Page 67, Tetanus Immune Globulin (Tig) (HYPERTET™S/D)

- Information added to “Dose” considerations: “The needle on the pre-filled syringe is fixed and cannot be changed.”

Page 76, Varicella Zoster Immune Globulin (VariZIG™)

- Recommendation regarding “allogeneic stem cell transplant recipients” specifically is replaced with a recommendation that all HSCT recipients (allogeneic or autologous) are eligible for VariZIG™ if exposed to varicella.
- Recommendation is consistent with Canadian Immunization Guide, 7th ed. (2006).

Page 78, 79 & 80, Varicella Vaccine (live attenuated viral) Varivax® and Varilrix®

- “Indications” reformatted for clarity.
- Indication (4) Susceptible Immunocompromised Children and Adults has been updated for consistency with the Referral Form for Varicella Vaccination, now located in BCCDC Communicable Disease Control Manual, Chapter 2, Section III.
- Recommendations for adults with acute lymphocytic leukemia and > 3 months after being cured of a malignant disease included with recommendations for children.
- A recommendation for varicella vaccine for HIV positive adults has been added. Varicella vaccine may be considered for all individuals ≥ 12 months of age with asymptomatic or mildly symptomatic HIV infection (CDC class N1 or A1) and with age-specific CD4 percentages of ≥ 25%. (“Adults with asymptomatic HIV infection” has been deleted from list of “Contraindications”).
- Recommendation for individuals who completed high dose corticosteroid therapy ≥ 1 month before presentation included.
- Revised definition for varicella susceptibility in footnote ❶ includes a history of varicella disease at < 1 year.
- Footnote ❷: Recommendation is to administer last dose of vaccine 6 weeks (previously 4-6 weeks) before transplantation. Recommendation is consistent with Canadian Immunization Guide, 7th ed. (2006) Errata/Clarifications, March 2008.

(5) SECTION X: APPENDICES

All sections, with the exception of “3.0 Adverse Events Following Immunization – Temporal Criteria,” have been moved to Section III – Special Populations. This table is now 1.0.

Please remove and destroy the following from the Communicable Disease Control Manual, Chapter II – Immunization Program:

Immunization Program Table of Contents Dated November 2008
Sections II, III, VII, and X

Please insert the following replacements in the Communicable Disease Control Manual, Chapter II – Immunization Program:

(1) Immunization Program Table of Contents Dated January 2009

(2) Section IIA – Immunization Schedules

Table of Contents
 Pages 1 – 17 Dated January 2009

(3) Section IIB –
 Table of Contents
 Pages 1 – 9 Dated January 2009

(4) Section III – Immunization of Special Populations

Table of Contents
 Pages 1 – 54 Dated January 2009

(5) Section VII – Biological Products

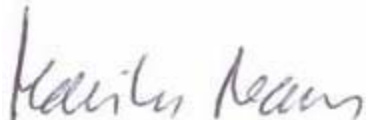
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(6) Section X – Appendices

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If you have any questions or concerns, please contact Karen Pielak, Nurse Epidemiologist or Cheryl McIntyre, Associate Nurse Epidemiologist at telephone (604) 660-6061, fax (604) 660-0197 or by email at karen.pielak@bccdc.ca or cheryl.mcintyre@bccdc.ca

Sincerely,



Dr. Monika Naus,
Medical Director, Immunization Program
Associate Director
Epidemiology Services
B C Centre for Disease Control

pc: Dr Perry Kendall
Provincial Health Officer
Ministry of Health Services

Dr. Eric Young
Deputy Provincial Health Officer
Ministry of Health Services

Dr. Bob Fisk
Medical Consultant
Non-Communicable Disease
Ministry of Healthy Living and Sport

Craig Thompson
Manager, CD Prevention --Immunization
Ministry of Healthy Living and Sport

Warren O'Briain
Executive Director
Comm Disease and Addiction Prevention
Ministry of Healthy Living and Sport