Vaccine Preventable Diseases (Module 1)

1. □ □ Healthy people can be carriers of meningococcal bacteria.
2. □ □ With pertussis disease, thick mucous blocks the airways.
3. □ □ Encephalitis occurs in about 1 in every 1000 cases of measles.
4. □ □ Rubella infection in a pregnant woman can result in fetal malformations.
5. □ □ Children infected with Hepatitis B from their birth mother are less likely than adults to become chronic carriers of hepatitis B.
6. □ □ A person can only get shingles if they have had chickenpox disease or varicella vaccination.
7. □ □ There are four types of influenza: A, B, C, D.

8. A client tells you that she doesn’t want her child immunized because “it’s not necessary—those diseases are gone.” Which one of the following diseases has been eradicated globally by vaccination?
   a. Polio
   b. Smallpox
   c. Measles
   d. Tetanus
   e. Diphtheria

9. Prior to a vaccine being available, which disease was the primary cause of bacterial meningitis in children under 5 years of age?
   a. Meningococcal type C
   b. Pneumococcal
   c. Haemophilus Influenzae type B
   d. Meningococcal type A
The Immune System (Module 2)

T  F
10.  ☐  ☐ The innate immune response is not specific to the antigen.
11.  ☐  ☐ Antibodies in breast milk are only of the IgG class.
12.  ☐  ☐ B-Cells differentiate into plasma cells, which make antibodies.
13.  ☐  ☐ T-Cell independent antigens stimulate the interaction of T-Cells and B-Cells to generate the production of antibodies.
14.  ☐  ☐ The liver is part of the lymphatic system.
15.  ☐  ☐ The cells of the immune system are transported through the body via the lymphatic system.

16. Which one of the following is true about PASSIVE Immunity:
   a. Usually lasts a lifetime
   b. Produces an immune response similar to disease
   c. Transfers antibodies produced by one human or animal to another
   d. Is a T-lymphocyte mediated immune response

17. An antibody is:
   a. A cell that engulfs and digests solid substances.
   b. A material not normally present in the body that stimulates an immune response.
   c. A protein that resides in the T-cells.
   d. A protein produced by the body in response to stimulation by an antigen.

18. Which one of the following list is in chronological order?
   a. Antibody production, macrophages, Cell mediated immunity
   b. Virus, Innate Immunity, Adaptive Immunity
   c. Phagocytosis, Antibody production, Innate Immunity
   d. Bacteria, Adaptive Immunity, Innate Immunity
Vaccine Development and Evaluation (Module 3)

T      F
20. □ □ Pre-clinical trials involve human subjects.
21. □ □ All vaccines used in Canada must be approved by the Biologics and Genetic Therapies Directorate (BGTD).
22. □ □ IMPACT is a passive surveillance system in hospitals.

23. Before a vaccine is licensed in Canada, the vaccine must be developed and tested in which order?
a. Animal studies, Lab studies, Post licensing trials, Clinical trials
b. Animal studies, Lab studies, Clinical trials, Post licensing trials
c. Lab studies, Animal studies, Post licensing trials, Clinical trials
d. Lab studies, Animal studies, Clinical trials, Post licensing trials

Immunizing Agents (Module 4)

T      F
24. □ □ Recombinant vaccines are produced by genetic engineering.
25. □ □ Diphtheria is an example of a recombinant vaccine.
26. □ □ Toxoid vaccines are made up of inactivated bacterial toxins which stimulate the formation of antitoxin.
27. □ □ MMR contains thimerosal.
28. □ □ Formaldehyde prolongs the shelf life of the product.
29. □ □ Thimerosal inhibits bacterial contamination.
30. □ □ Antibiotics prevent bacterial contamination of the tissue culture cells in which the viruses are grown.
31. □ □ Bovine gelatin is added to improve vaccine viscosity.
32. □ □ Aluminum increases vaccine stability.
33. Which of the following are replicating vaccines?
   a. Diphtheria, Tetanus
   b. Hepatitis B, Hib
   c. Pneumococcal, meningococcal polysaccharide
   d. MMR, Varicella
   e. Influenza

Vaccine Immune Response (Module 5)

34. ☐ ☐ The first dose of an inactivated vaccine series primes the immune system, while the second or third dose produces a long term protective response.

35. ☐ ☐ Inactivated vaccines are affected by circulating maternal antibody.

36. ☐ ☐ Conjugate vaccines stimulate the immune system in creating a T-Cell dependent immune response.

37. ☐ ☐ The administration of multiple vaccines given at the same time impairs the immune response to one, or all of the vaccines.

38. ☐ ☐ Today, infants and children receive more vaccines than children 45 years ago; therefore, the total number of antigens the immune system must deal with is higher.

39. ☐ ☐ Potential antibody interference is the reason to defer MMR vaccine until one year of age.

40. ☐ ☐ Immune memory after the Hib conjugate vaccine is better than after natural disease in children younger than 24 months of age.

41. ☐ ☐ An infant's immune system has the theoretical capacity to respond to about 10,000 vaccines at one time.

42. Immunological memory produced by vaccination:
   a. Is the long-term persistence of protection due to the presence of memory B-cells
   b. Is not always detectable by serological testing
   c. Provides a strong and rapid response following re-exposure to the specific antigen
   d. All of the above
43. Which one of the following statements is NOT true about polysaccharide vaccines?

a. A unique type of inactivated subunit vaccines composed of long chains of sugar molecules that make up the surface capsule of encapsulated bacteria.

b. The immune response to a pure polysaccharide vaccine is typically T cell independent, which means these vaccines are able to stimulate B cells without the assistance of T-helper cells.

c. T cell independent antigens are not consistently immunogenic in children < 2 years of age.

d. The antibody made in response to pure polysaccharide antigens is mostly of the IgG class.

44. Which one of the following statements is TRUE about conjugate vaccines?

a. Conjugation changes the immune response from T cell independent to T cell dependent, leading to increased immunogenicity in those < 2 years of age.

b. Immunogenicity of a protein antigen is improved by chemically linking the protein to a polysaccharide.

c. The antibodies produced by a conjugate vaccine are primarily IgM.

d. Conjugate vaccines stimulate B-Cells without the help of T-Cells.

45. Select the FALSE statement about the immune system and vaccines.

a. The challenge that vaccination presents to the immune system is not likely to be a significant addition to the daily load of foreign antigens.

b. The vaccines used today are much more highly purified than those used in the past.

c. The immune system is only able to recognize and respond to a limited number of organisms at any one time.

d. Vaccines stimulate the immune system to produce immunity against specific diseases.

Scheduling (Module 6)

T  F

46. □ □ Simultaneous administration of passive immunizing agents (immune globulin) and inactivated vaccine is not recommended for post exposure prophylaxis.

47. □ □ The minimum interval between the administrations of 2 live vaccines is 6 weeks.
48. □ □ There are no contraindications to simultaneous administration of any vaccines.

49. □ □ Pneumococcal conjugate and pneumococcal polysaccharide vaccines can be given at the same time.
   T F

50. □ □ Within the routine schedule, increasing the interval between doses in a series does not diminish the antibody response.

51. □ □ Giving vaccines at less than minimum intervals between doses in a series diminishes the antibody response.

52. □ □ The minimum number of weeks necessary between Hepatitis A and Hepatitis B vaccine administration is 4 weeks.

53. □ □ There are no minimal intervals between live and inactivated vaccines.

54. □ □ Hepatitis B boosters are indicated for Health Care Workers every 5 years.

Scenario:
A healthy 12-month old child received the first dose of DaPTP/Hib vaccine at 6 months of age. No other vaccines were administered.

55. Part 1: Based upon the scenario above, what vaccines should be given today?
   a. DaPTP/Hib, Pneumococcal Conjugate, MMR
   b. DaPTP/Hib, Pneumococcal Conjugate, MMR, Meningococcal Conjugate C, Varicella
   c. DaPTP/Hib, MMR
   d. MMR, Pneumococcal Conjugate, Varicella

56. Part 2: Based upon the scenario above, when should this child return for their next immunization?
   a. 4 weeks
   b. 8 weeks
   c. 16 weeks
   d. 24 weeks
57. A 12 month old child received varicella vaccine, and then was given MMR vaccine two weeks later. Which of the following would you do?
   
a. Repeat both vaccines on the same day in one month's time.
b. Repeat the varicella vaccine only, one month after first varicella dose.
c. Repeat the MMR vaccine only, one month after first MMR dose.
d. Do nothing now; give the next dose of MMR at 18 months of age.

Special populations (Module 7)

58. □ □ An immune compromising condition may reduce the degree and duration of protection from vaccination.
59. □ □ Immune compromised individuals should receive double volume doses of all vaccines, to increase vaccine effectiveness.
60. □ □ Large amounts and daily use of topical or inhaled steroids are a contraindication to vaccination.
61. □ □ Pneumococcal vaccine is contraindicated in persons with asplenia or hyposplenia.
62. □ □ Persons who are immune suppressed following a solid organ transplant should not receive live vaccines.
63. □ □ Persons with HIV infection should not receive inactivated vaccines.
64. □ □ Test for varicella antibodies before giving varicella vaccine to a 24 year old Health Care Worker with no history of varicella disease or vaccine.
65. □ □ Individuals new to Canada with no immunization record should be immunized as if they had never been immunized.
66. □ □ Pre-dialysis chronic kidney disease clients require a special formulation of hepatitis B vaccine.

Storage and Handling (Module 8)

67. □ □ “Cold Chain” refers to a system for distribution of vaccines that maintains the vaccine’s immunogenic properties from manufacturer's shipment to time of administration.
68. □ □ Some biological products must be protected from exposure to light.
69. □ □ The biological refrigerator temperature must be maintained between +0°C and +8°C.
70. □ □ Food and beverages can be stored in the vaccine refrigerator.
71. □ □ The fridge should be checked twice daily to determine if the temperature is appropriate.

72. □ □ When packing a cooler for clinic, taking vaccine out of original packaging will help to maintain the cold chain.

73. □ □ When vaccines in a community provider’s office have experienced a cold chain incident, contact Public Health for consultation.

74. □ □ Vaccines experience an immediate loss of potency following freezing.

**Administration (Module 9)**

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<td>75. □ □ History of an anaphylactic reaction to eggs is a contraindication to receipt of influenza vaccine.</td>
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<td>76. □ □ A precaution is a condition in a vaccine recipient that may require an assessment of benefit-risk before immunizing.</td>
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<td>77. □ □ History of an anaphylactic reaction to a previous dose or component of the vaccine is a precaution for immunization with that vaccine.</td>
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<td>78. □ □ Pregnancy and severe immunosuppression are true contraindications for MMR immunization.</td>
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<td>79. □ □ History of a contact dermatitis following exposure to latex is a contraindication to the receipt of some vaccines.</td>
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<td>80. □ □ It is necessary to aspirate prior to administration of an intramuscular vaccine injection.</td>
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<td>81. □ □ Diluents for lyophilized vaccines are interchangeable.</td>
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<td>82. □ □ Vaccines should not be given in the dorsogluteal site.</td>
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**Reactions following Immunizations (Module 10)**

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<td>83. □ □ An immunizing provider should report an adverse event following immunization directly to their local public health office.</td>
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<td>84. □ □ Epinephrine can be administered in the same muscle mass that a vaccine was administered.</td>
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Question: 85 - 95.

Place each of these reactions into the appropriate category of local, systemic, or anaphylactic:

Headache; Fever; Swelling at the injection site; Generalized Hives; Tingling of the lips; Malaise; Pain and redness at the injection site; Loss of appetite; Swelling of the mouth & throat; Myalgia; Difficulty breathing

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96. Fifteen minutes after an adult receives a Td booster, she returns with a flushed face, nausea, and a rash at the injection site. How would you respond? Choose the appropriate response(s).

a. Tell her she has had an anxiety reaction and will be OK, have her lie down with legs elevated and observe further, give her a glass of orange juice.

b. Call 911/ambulance; apply tourniquets above the injection sites; immediately administer epinephrine SC into an immunization site.

c. Have her lie down with legs elevated and observe further; give her a dose of oral Benadryl.

d. Call 911/ambulance; immediately administer epinephrine IM into a thigh.

97. Shortly after you administer a meningococcal vaccine to a grade 7 student you notice swelling and a few hives at the injection site. How do you respond?

a. Call 911/ambulance; immediately administer epinephrine IM into a thigh.

b. Keep the student under direct observation for at least 30 minutes to ensure the reaction remains localized.

c. Give the student a dose of oral Benadryl and observe for at least 30 minutes to ensure the reaction remains localized.

d. Give the student a dose of IM Benadryl and observe for at least 30 minutes to ensure the reaction remains localized.
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### Documentation (Module 11)

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101. Documentation is necessary after an immunization. Which of the following information does NOT need to be documented?

   a. Expiry date of the vaccine  
   b. Lot number of the vaccine  
   c. Title of the person immunizing  
   d. Site of the immunization

### Legal and Ethical Aspects (Module 12)

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104. A 14 year old girl comes to the school clinic and states that she would like to receive the HPV vaccine even though her parents have signed a refusal for the vaccine. Which one of the following actions would you take?

   a. Do not give the vaccine.  
   b. Call the parent.  
   c. Obtain informed consent from the girl, and proceed with immunization
Population Health (Module 13)

T  F
105. □ □ Herd immunity is when a small number of the population or community at risk is resistant to the effects of specific disease-causing organisms or agents.

106. □ □ Herd immunity protects those people who can not be immunized because of certain medical conditions.

107. Which one of the following is NOT part of the Epidemiological Triangle?
   a. Vaccine
   b. Host
   c. Agent
   d. Environment

Communication - Part 1 & 2 (Module 14 & 15)

T  F
108. □ □ Many of the vaccines used today have been used for decades with no long-term adverse effects.

109. □ □ Although individuals may have mild side effects after an immunization, these side effects can be managed and will not last long.

110. □ □ Serious adverse reactions like seizures and arthritis occur frequently following vaccination.

111. □ □ The risk of complications from a vaccine preventable disease is much greater than the risk of a serious adverse reaction to the vaccine.

112. □ □ Encephalitis occurs in about 1:1000 cases of measles disease and in about 1:1,000,000 measles vaccinations given.

113. □ □ Research studies have shown that multiple vaccines given at the same time are almost as effective as when they are given on separate occasions.

114. □ □ Administration of multiple vaccines carries a much higher risk for serious adverse side effects as compared to the receipt of one vaccine.

115. □ □ Giving a child multiple vaccines provides them with protection as early as possible during the vulnerable early months of their lives.
116. What would you say in response to the claim that other approaches (e.g. herbs and vitamins, acupuncture, chiropractics, breastfeeding) provide safer protection from diseases than that provided by vaccines? Select all that apply.

a. Boosting the immune system through herbs or vitamins does not offer specific protection from viruses and bacteria that cause vaccine-preventable diseases.

b. There is new scientific evidence that acupuncture and chiropractics provide protection against vaccine-preventable diseases.

c. Babies who are breastfed generally have lower rates of infection so that they don’t need vaccination until after breastfeeding is discontinued.