



# SILVER MERIT

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# PUBLIC HEALTH®

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# Public Health Merit



1. Explain how the following diseases are contracted and how they may be prevented.
  - a. Tetanus: *It enters the body through a wound, like a puncture from a nail or knife. The disease is caused by a toxin produced by bacteria. The bacteria are found in soil, dust, and manure. Protection from the disease is through immunization that must be repeated every ten years.*
  - b. Influenza: *Influenza is a viral infection of the respiratory tract. Anti-influenza (flu) shots are recommended annually, especially for the elderly, the very young, caregivers, and those with chronic diseases. General treatment includes bed rest, analgesics, and plenty of fluids.*
  - c. Syphilis: *This sexually transmitted disease is spread through contact with syphilis sores. It can be transmitted from a mother to an infant, causing a stillbirth or death shortly after birth. The best protection from any sexually transmitted disease is abstinence from sexual contact. Penicillin or another antibiotic is used to treat syphilis.*
  - d. Hepatitis: *Hepatitis B is spread by exposure to infected blood and through sexual intercourse. Avoiding high-risk behaviors—use of unsterile needles, promiscuity, handling blood—and receiving the hepatitis B vaccine series provide protection. Hepatitis A is usually spread through poor hygiene and contact with contaminated feces. Good hygiene protects from this type of hepatitis.*
  - e. Emphysema: *This chronic lung disease is most often caused by long-term heavy smoking or extended exposure to dust particles. Preventative measures include not smoking and avoiding secondhand smoke and other airborne particles.*
  - f. AIDS: *The HIV virus that causes AIDS is transmitted through blood, semen, and other body fluids. The most effective prevention is abstinence and avoiding sexual contact. Blood transfusions are now screened. Infants may contract AIDS before birth because the virus passes through the placenta from the mother. Health-care workers are at high risk of contracting AIDS because of the nature of their work.*
  - g. Encephalitis: *It enters the body through the respiratory system or through the bite of a tick or mosquito. The rabies virus, for example, may cause the virus. Vaccination is one way to prevent the development of encephalitis.*
  - h. Meningitis: *This usually begins in a person's nose and throat. It is passed on by contact with respiratory and/or oral secretions, or a newborn can receive the bacteria from his or her mother during delivery. Antibiotic treatment is advised. Immunization with Haemophilus influenza (Hib) is very effective in preventing this disease. The Hib vaccine is one of the series of immunizations recommended for infants, toddlers, and the elderly.*
  - i. Salmonellosis: *This is transmitted to humans by contaminated foods. It can be transmitted through raw or undercooked eggs or infected poultry, milk, etc. The most effective prevention is handling food safely. Keep meats stored at the proper temperature in the refrigerator. Store eggs in the carton in the refrigerator. Do not thaw meat on the counter. Thoroughly cook eggs and meat. Don't use the same utensils and containers for raw and cooked meat. Thoroughly clean all surfaces with chemical cleaners. Always wash your*

*hands before and after food preparation.*

- j. Lyme disease: *This is transmitted after a bite from an infected tick. Prevent the disease by avoiding tick bites. Wear protective light-colored clothing, such as high boots and pants and long-sleeved shirts. It takes twenty-four to forty-eight hours for a tick attached to the body to pass on this disease. Inspecting the body and removing a tick will help keep from contracting the disease. Watch for a bull's-eye spot around a tick bite. Antibiotics are given to treat Lyme disease.*
  - k. Genital (type 2) herpes: *This type of herpes is a sexually transmitted disease. The best prevention is abstinence and avoiding sexual contact. Treatments are available to control the disease, but there is no cure.*
  - l. Lead poisoning: *A person exposed to large amounts of lead may develop lead poisoning. Exposure to lead may occur through the ingestion of lead paint chips, contamination of food or beverages in improperly lead-glazed ceramic ware, inhalation of leaded gas fumes, or occupational exposures without protection. Prevention involves eliminating or reducing the exposure to lead. The most important treatment is stopping the source of lead exposure. Monitoring the exposure through testing is required. Medications may be given, which help bind the lead and remove it from the body through the urinary tract.*
2. Select at least three health issues from each category below. Visit the state health agency or use its website to see how your city, state, or county addresses health issues. List health concerns, education, prevention, and statistics specific to the nine issues selected.

| <b>Family Health Issues</b> | <b>Community Health</b>         | <b>Environmental Health</b>  |
|-----------------------------|---------------------------------|------------------------------|
| AIDS/HIV                    | Tobacco education               | Air pollution control        |
| Hygiene education           | Cancer screening                | Air quality                  |
| Immunization schedules      | Hygiene education               | Bats                         |
| Immunizations for travel    | Poison                          | Food protection              |
| Lead-free environment       | Gun safety program              | Waste                        |
| Oral health                 | Firearm injury statistics/costs | Pollution prevention         |
| Reportable diseases         |                                 | Regulations                  |
| Tobacco use                 |                                 | Rodent control               |
| Vital statistics            |                                 | Safe kids coalition          |
|                             |                                 | Storm water coalition        |
|                             |                                 | Tire recycling center        |
|                             |                                 | Drinking water protection    |
|                             |                                 | Vehicle emissions inspection |
|                             |                                 | Food protection              |

*Review the boy's information about the nine health issues. Be sure that he has selected three issues from each category and included the required information about each.*

3. Complete the following:

- a. List the immunizations a child should receive prior to school enrollment and the disease(s) each immunization protects against. Give the recommended age for each immunization. Tell if the vaccination is part of a series of immunizations against a particular disease.

1. Birth: Hepatitis B

*Hepatitis B (Hep B) is a serious disease caused by a virus that attacks the liver. This virus is very contagious and dangerous to children. It is spread by direct contact with blood or secretions of someone who has or carries the virus. The virus can cause life-long infection, cirrhosis (scarring) of the liver, liver cancer, liver failure, and death. The hepatitis B vaccine protects a child from the hepatitis B virus. The hepatitis B vaccine is available for all age groups.*

2. One to four months: Hep B (second dose)

*The second dose should be administered at least one month after the first dose.*

3. Two months: DtaP, Hib, IPV

*The diphtheria tetanus acellular pertussis (DtaP) vaccination prevents diphtheria, tetanus, and pertussis. It is less likely to cause the mild to moderate problems that are seen after vaccinating with DTP. Both DTP and DtaP are very effective for preventing all three diseases, which are described below.*

- *Diphtheria causes a thick coating in the nose, throat, or airway. It can lead to breathing problems, heart failure, paralysis, or death.*
- *Tetanus causes serious painful spasms of all muscles. It can lead to a "locking" of the jaw so the patient cannot open his or her mouth or swallow. It can also lead to death.*
- *Pertussis causes coughing and choking for several weeks and makes it hard for infants to eat, drink, or breathe. It can lead to pneumonia, seizures, brain damage, or death.*

*Hib (Haemophilus influenzae B conjugate vaccine) is the primary type of vaccine used for infants. The vaccine is given to infants at two, four, and twelve months of age. It is also given to children between fifteen and seventy-one months (six years) if they never had any Hib vaccine, or if they received an incomplete series. It is used to protect against meningitis, pneumonia, pericarditis, and infections of the blood, bones, and joints.*

*IPV: The inactivated polio vaccine (IPV) is injected and protects a child from polio. Polio is a viral infection that can cause paralysis. The IPV vaccine is used instead of an oral polio vaccine for immune-deficient children or if there are immune-deficient household members.*

4. Four months: DtaP, Hib, IPV (second dose of all three)

5. Six months: DtaP, Hib (third dose of all three)

6. Six to eighteen months: Hep B (third dose), IPV (third dose given six months after second dose)

7. Twelve to fifteen months: Hib (fourth dose), MMR

- *The MMR is the immunization against three diseases: measles, mumps, and rubella. Measles, mumps, and rubella are all caused by viruses. They are spread through coughing and sneezing.*
- *Measles: A child with measles usually has a cough, runny nose, inflamed eyes, fever, and a reddish-brown rash. The rash starts at the hairline and spreads down the body. There can be serious complications, including encephalitis and pneumonia, from this disease.*
- *Mumps: Mumps causes the parotid glands to swell. A child with mumps has a swollen neck and/or jaw. Complications of mumps can be deafness or (rarely) sterility in males.*
- *Rubella: Rubella is sometimes called German measles. A child with rubella has a pink rash on the face and neck, which spreads down the body. It lasts about three days. Older children may also have a fever and inflamed nose and throat. Rubella is dangerous to unborn babies and can cause severe birth defects. Arthralgia, or joint pain, is a common side effect for adolescents.*

*The MMR vaccine is given a second time either with kindergarten immunizations or when a child starts junior high or middle school.*

8. *Twelve to eighteen months: Var*

*The Var vaccine is used to prevent varicella, commonly known as chickenpox, which is an extremely common and highly infectious disease. The complications of chickenpox could include illness, hospitalization, and death.*

9. *Fifteen to eighteen months: DtaP (fourth dose)*

10. *Four to six years: DtaP (fifth and final dose), MMR (second dose), IPV (fourth and final dose)*

b. *List the vaccinations you should receive periodically into adulthood.*

*Tetanus and influenza vaccinations*

4. *Schedule a visit to a commercial food-handling establishment, such as a restaurant or a butcher shop in a supermarket. Interview the manager or a food handler after observing the food preparation, handling, and storage. Determine if food handlers are aware of and following proper food-handling procedures and the regulations regarding food handling. Ask about the results of the facility's last health inspection. Write a report of your findings.*

*Read the boy's report of his dialogue with the manager or food preparer. Review the information to see that the boy included descriptions of the food preparation, handling, and storage. His report should include his observations as to whether proper procedures and regulations are being followed, as well as the results of the last inspection.*

*Food handlers are the vital component in the interaction between the kitchen environment and the food that is being prepared.*

*Harmful microorganisms, which cause illness, can enter the kitchen environment via dust, dirty packaging, insects, rodents, sick workers, or raw meats and vegetables. It is the food handler who makes the difference. By following proper food-handling practices, these microorganisms can be reduced to a minimum in food.*

*Food handlers should have a good working knowledge of the following:*

- *recognizing hazardous foods and their proper storage temperatures*
- *using adequate cooking temperatures*

- *preventing food contamination*
  - *cleaning and sanitizing procedures for utensils, surfaces, and other kitchen equipment*
  - *proper hand washing*
5. Interview a food service worker or health inspection officer. Write a report and include the following information:
- a. Explain what causes microorganisms to grow.  
*Improper storage (letting food sit out, cooling without breaking meat quantity into smaller bulk) and cooking temperatures, not washing hands, dirty environment, handling food.*
  - b. Describe how these microorganisms can be kept from spreading or how they can be killed.  
*Proper storage temperatures, not leaving food out, proper cooking temperatures, using clean containers. Prepared food must not come in contact with raw food preparation surfaces or utensils. Store raw food on lower shelves in the refrigerator. Use separate cutting boards for raw versus prepared food. Do not allow acidic foods to come into direct contact with non-corrosion resistant and toxic metals. Insure food is wholesome and unadulterated, water is potable, and milk and milk products are pasteurized.*
  - c. Explain how dishes and utensils should be washed to kill the microorganisms.  
*Some ideas may include: Prerinse the dishes, wash them using warm water and soap, then rinse the dishes three times using hot water each time. At home, prerinse the dishes before putting them in the dishwasher. Food contact surfaces are equipment and utensils whose surfaces normally come into contact with food and those surfaces on which food may drain, drip, or splash. The effective cleaning and sanitizing of food contact surfaces serve two primary purposes: (1) Reduces the chance of contaminating safe food during processing, preparation, storage, and service by physically removing soil and bacteria and other microorganisms; and (2) minimizes the chances of transmitting disease organisms to the consumer by achieving bacteriologically safe eating utensils. Although the practice of “washing” is known, many do not understand and/or appreciate the principles and exactness of the process. For the most part, chemistry plays a very important part in the cleaning and sanitizing process. Washing equipment and utensils until visibly clean is just not enough.*
  - d. Explain the concern regarding the diseases that insects and rodents spread. Describe how insects and rodents can be controlled in any food preparation area.  
*All rodents and many insects found in food establishments are considered vectors because they can transmit diseases to people by coming in contact with food and food contact surfaces of equipment. Therefore, these animals and insects must be given serious concern when they are found in a food establishment, and every action must be taken to eliminate them.*  
*Control insects and rodents through sanitation, trapping, mouse proofing, and poisoning.*
6. List the job requirements of a health inspector/public health investigator in your state. List the duties of this position.  
*Answers will vary according to your state’s requirements. Examples may include a bachelor’s degree in chemistry, microbiology, food quality control, epidemiology, entomology, food technology, food science, food processing technology, food sanitation, dairy science, biology, environmental sanitation, or environmental health. Experience may be required for a position that the primary responsibility involves the application of scientific techniques in the areas of environmental health protection and sanitation of food establishments or quality control of food*

*products at a wholesale food manufacturing facility. Some states require that this position be filled by a licensed doctor, nurse, dentist, or other health-care provider.*

*Duties may include the inspection of restaurants, supermarkets, child-care centers, and nursing home kitchens; the analysis of complaints about a food preparation facility; and the investigation of cases of contagious diseases, such as measles, tuberculosis, or hepatitis A.*