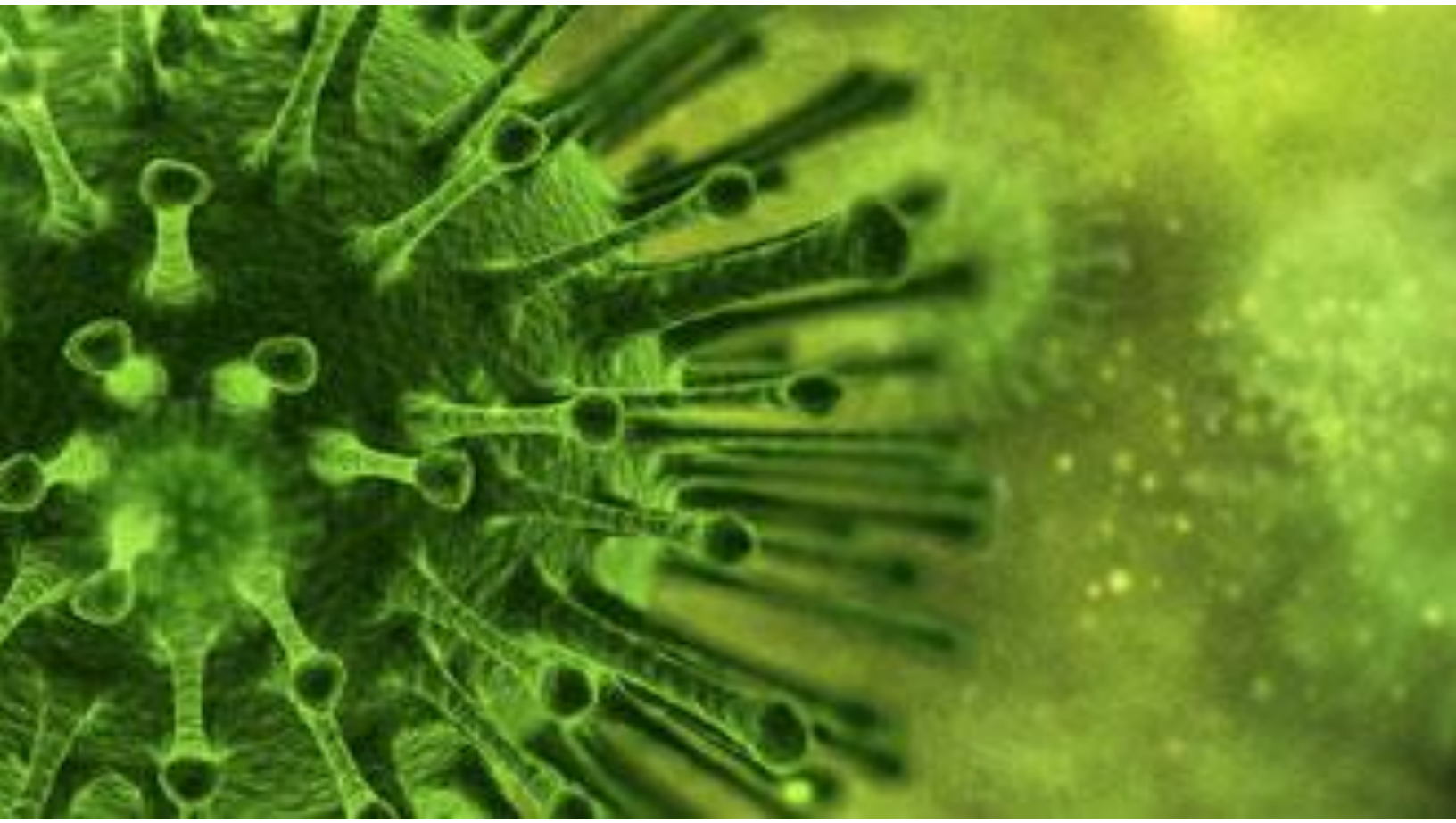
State of Alaska

Infectious Disease Management: Guidelines for Alaska Schools



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Section of Women's, Children's, & Family Health

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I. *INTRODUCTION/PURPOSE*[1, 2, 3]

Infectious diseases account for millions of school days lost each year for kindergarten through 12th grade public school students in the United States. In 2007, 58% percent of children nationwide aged 6-17 years missed 1-5 school days in the past year because of illness or injury. Alaska statistics for the same indicator is similar at 56% but has a higher than national rate for children missing 6-10 days of school in the past 12 months. Professional nurses were first introduced into the educational setting in the late 1800's for the purpose of prevention and control of communicable diseases in order to reduce absenteeism. Today the goal of keeping children healthy in schools continues to be an important and essential responsibility of school health service programs.

Schools inherently foster the transmission of infectious diseases because of the group setting in which people are in close contact and share supplies and equipment. However, schools can also be instrumental in keeping their communities healthy by:

- Encouraging sick students and staff to stay home and seek medical attention for severe illness
- Facilitating hand hygiene by supplying soap and paper towels and teaching/encouraging good hand hygiene and other disease prevention practices
- Vigilantly cleaning and disinfecting classroom materials and surfaces
- Providing messages in daily announcements and other venues about preventing infectious disease
- Adopting health practices such as safe handling of food and use of standard precautions when handling body fluids and excretions
- Encouraging students and staff to get annual influenza vaccinations

The purpose of the Alaska Division of Public Health's *Infectious Disease Management: Guidelines for Schools* is to provide the necessary information for school staff to identify and manage a student and/or staff member with a suspected or confirmed infectious condition in the school setting. These guidelines are based on current health information and are not intended to substitute individual student medical advice. Recommendations for handling infectious disease in schools may change as new information becomes available. The Alaska Division of Public Health, Section of Epidemiology is available to assist school nurses and other school personnel when infectious disease issues arise and can be reached at (907)269-8000. The School Health Nurse Consultant, also in the Division of Public Health, is another resource and may be contacted at (907)269-7368. Local public health nurses are available for infectious disease consultation as well.

II. *DEFINITIONS*[4, 5, 6, 7, 8]

Body fluids – Urine, feces, saliva, blood, nasal discharge, eye discharge, and injury or tissue discharge.

Bloodborne pathogens – Microscopic organisms that are present in human blood or body fluids (semen, vaginal secretions, breast milk) and which can cause disease in humans.

Carrier – A person or animal that harbors a specific disease-causing organism within his or her body, frequently in the absence of symptoms, and that is a potential source of infection to others.

Clean – The mechanical process of removing dirt and debris (e.g. blood, urine, feces) by scrubbing and washing with a detergent solution and rinsing with water.

Colonization – The presence and multiplication of microorganisms, without tissue invasion or damage, resulting in a carrier state.

Contagious or communicable disease – an infectious disease caused by a microorganism (e.g., bacterium, virus, fungus, parasite) that can be transmitted from individual to individual.

Contamination– The presence of, or reasonably anticipated presence of, a potentially infectious agent in or on the body, on any item or environmental surface, or in food or water.

Direct contact transmission – direct body surface to body contact and physical transfer of microorganisms between a susceptible host and an infected or colonized person.

Disinfect – To apply a chemical or physical agent to an article or surface in order to eliminate virtually all germs, lowering the risk of transmitting disease to humans. Chemical agents are products registered with the U.S. Environmental Agency (EPA) as "disinfectants." Heat is an example of a physical agent.

Exclusion – denying school admission of potentially infectious student or staff member or requiring them to leave if present.

Exposure – Contact with an infectious person, environment, or contaminated item or surface that may be capable of disease transmission. Exposures are divided into three categories: Percutaneous, mucous-membrane, and non-intact skin exposure to blood or other body fluids containing visible blood (Class I); Percutaneous, mucous-membrane, and non-intact skin exposure to body fluids or feces that do not contain visible blood (Class II); and Exposures of intact skin to blood or other body fluids containing visible blood (Class III).

Immunity – State of resistance to a communicable disease by a person as a result of an immune response generated by vaccination, previous infection or by other factors (e.g., maternal antibodies transferred in utero, antibody preparation made from human plasma such as immune globulin).

Incubation period – The period of time from exposure to an infectious agent to the appearance of the first symptom(s).

Indirect contact transmission– Contact and transmission of microorganisms by a susceptible person with a contaminated object (usually inanimate) or environmental surface.
Infectious agent – An organism that is capable of producing infection or infectious disease in humans.

Occupational exposure – Skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

Period of communicability – The period of time during which an individual may transmit a disease either directly or indirectly.

Preventive measures – Actions taken to prevent or reduce the transmission of disease from one source to another.

Regulated Waste– Blood in liquid form, articles and materials such as bandages, paper towels, tissues, sharps, etc. that are contaminated with blood or body fluids. Materials contaminated with liquid or semi-liquid blood or body fluids must be capable of releasing infectious substances if compressed or during routine handling. Bandages that are not saturated to the point of releasing blood or other potentially infectious materials if compressed would *not* be considered regulated waste. Items that are caked with dried blood or body fluids and are capable of releasing these materials during handling *are* considered regulated waste.

Reportable disease – Diseases identified by the Alaska Division of Public Health as reportable by health care providers and laboratories to the Section of Epidemiology.

Sanitize – Use of a chemical process that lowers the number of infectious agents on surfaces or objects to a safe level. The object or surface must be cleaned first. Sanitizing applies to a wide variety of housekeeping procedures for bathrooms, tabletops, food preparation surfaces, mouthed toys/objects, floors, doorknobs and cabinet handles. Sanitization is less rigorous than disinfection.

Sharps – Needles, broken glass, exposed dental wires, and other objects that are capable of puncturing human skin.

Standard Precautions – Guidelines recommended by the Centers for Disease Control and Prevention (CDC) to reduce the risk of transmission of blood-borne and other pathogens. Regardless of whether they contain blood, Standard Precautions apply to blood, all body fluids, secretions, excretions (except sweat), nonintact skin, and mucous membranes. The precautions are designed to reduce the transmission of microorganisms from both recognized and unrecognized sources of infection. Standard Precautions evolved from Universal Precautions with additional standards intended to protect not only employees but the population of the facility in general. Standard Precautions involve the use of barriers (i.e., personal protective equipment such as gloves), handwashing, and cleaning and sanitizing surfaces.

Transmission – Transfer or passage of a specific infectious agent either directly or indirectly from a source person, animal or inanimate object to a susceptible person. Direct transmission occurs when the infectious agent is transferred by direct contact, i.e., touching, kissing, sexual intercourse, biting or by direct projection of droplet spread, i.e., talking, sneezing, spitting, coughing, or singing. Indirect transmission occurs via contaminated objects or materials, e.g., toys, soiled clothing, bedding, cooking or eating utensils, food, water, or milk.

Transmission-based precautions – Procedures designed for individuals known or suspected to be infected with or carriers of highly transmissible or epidemiologically important pathogens for which additional precautions beyond Standard Precautions are needed. There are three types:

- Airborne precautions (Examples of such illnesses include measles, varicella, tuberculosis)
- Droplet precautions (Examples of such illnesses include meningitis, pneumonia, diphtheria, mycoplasma pneumonia, pertussis, influenza, mumps, rubella)
- Contact precautions (Examples of such illnesses include infections or colonization with multidrug-resistant bacteria, respiratory syncytial virus, impetigo, pediculosis, scabies)

Universal Precautions – An approach to infection control used by the Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor to protect employees from exposure to all human blood and other potentially infectious materials. The approach treats ALL human blood and certain human body fluids (semen, vaginal secretions, breast milk) as potentially infectious for bloodborne pathogens. Feces, nasal secretions, sputum, sweat, tears, urine, saliva and vomitus do not pose a risk of bloodborne pathogen transmission unless they contain visible blood or are likely to contain blood. Universal precautions include avoiding injuries from sharp instruments or devices and the use of personal protective equipment as barriers to prevent exposure when providing first aid or handling regulated waste.

Under-immunized – A person who has not received the recommended number or types of vaccines for his or her age according to the current national and state immunization schedules.

III. *BEST PRACTICE*

The Infectious Disease Guidelines for Alaska Schools was developed utilizing information from the following sources:

- Centers for Disease Control and Prevention http://www.cdc.gov/
- American Academy of Pediatrics: Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Edited by Susan S. Aronson, MD, FAAP and Timothy R. Shope, MD, MPH, FAAP.
- Federal Laws:
    - Occupational Safety & Health Administration http://www.osha.gov/law-regs.html
- State Laws: Available at http://www.legis.state.ak.us/basis/start.asp
    - AS 14.30.045 District or school suspension
    - AS. 14.30.120. Certificate of physical examination
    - AS. 14.30.125. Immunization
        - 4 AAC 06.055. Immunizations required
    - AS. 18.15.370 Reportable disease list
    - AS. 18.15.375 Epidemiological investigation
    - AS. 18.15.120 – 18.15.149 Tuberculosis control
        - 4 AAC 60.100 Physical examination for children
        - 7 AAC 12.566 Infection control
        - 7 AAC 12.571 Employee health program
        - 7 AAC 27.005 Reporting by health care providers
        - 7 AAC 27.016 Right of inspection
        - 7 AAC 27.213 Tuberculosis skin test
    - AS.18.60.880 Needlestick and Sharps Injury Protections for Healthcare Workers
    - AS 11.41.434. through 11.41.470 Mandatory Reporting and Alaska Criminal Law
    - AS 25.20.025. Examination and Treatment of Minors
- State of Alaska Division of Public Health, Section of Epidemiology
    - Epidemiology Procedure Manual http://www.epi.hss.state.ak.us/pubs/EpiProcManual.pdf
    - Conditions Reportable to Public Health http://www.epi.hss.state.ak.us/pubs/conditions/ConditionsReportable.pdf
    - Alaska Tuberculosis Program Manual http://www.epi.hss.state.ak.us/pubs/webtb/TB_Manual.pdf
    - State of Alaska Child Care & School Immunization Requirements Packet http://www.epi.hss.state.ak.us/id/iz/factsheet/IZReqPacket2010.pdf
    - Epidemiology HIV/STD Program http://www.epi.hss.state.ak.us/hivstd/default.stm
    - Foodborne & Waterborne Disease Information http://www.epi.hss.state.ak.us/id/dod/foodwater/default.htm
- National Association of School Nurses
    - Position Statement: Infectious Disease in the School Setting http://www.nasn.org/Portals/0/positions/2011psinfectious.pdf
    - Position Statement: Immunizations http://www.nasn.org/portals/0/positions/2010psimmunizations.pdf
    - Position Statement: Pediculosis Management in the School Setting http://www.nasn.org/Portals/0/positions/2011pspediculosis.pdf

- Issue Brief: Environmental Concerns in the School Setting
  http://www.nasn.org/Portals/0/briefs/2012briefenvironmental.pdf

IV. *PROTOCOLS*

Developing School Policies[4]

Schools should have methods/procedures for:

1. Educating school personnel regarding symptoms and management of communicable diseases.
2. Handling blood-borne pathogens (required by Occupational Safety and Health Administration).
3. Excluding students who are, or potentially are, communicable. Exclusion procedures should include educating and communicating with parents to keep children home with signs of communicable disease and to secure appropriate treatment.
4. Assuring compliance with state mandated immunizations. Immunization policies should include record-keeping and retrieval procedures regarding non-immunized children and the exclusion and follow-up of children who are not immunized against vaccine preventable diseases or who have contracted a communicable disease or infestation.
5. Assuring compliance with state mandated tuberculin screening including appropriate follow up of students with positive (abnormal) PPD tests.
6. Designating the school nurse (or other school official) as liaison with public health officials for conditions reportable to Public Health as well as communicating with a student's health care provider, with parental consent, when necessary.

How Infections Are Spread[4, 9, 10]

Infectious diseases are illnesses caused by specific organisms: viruses, bacteria, fungi, or parasites. Infectious diseases that can be spread from one individual to another are called *contagious* or *communicable* diseases. Contagious illnesses are among the major problems that school health programs face, causing absences and physical discomfort for students and staff. Many factors increase the risk of transmission of communicable diseases at school. These include close contact, sharing of objects that may serve as vehicles of transmission, inadequate personal hygiene supplies (such as soap and tissues) and individual susceptibility or compromised health status.

Knowing *how* communicable diseases are spread is the key to implementing proper infection prevention and control. The spread of an infectious disease requires a source of infection, a route of transmission, and a host susceptible to the infection.

Contact transmission of infectious microorganisms by skin, respiratory tract secretions, fecal matter, or blood is the most common way infectious diseases are spread in schools.

- ***Fecal-oral*** transmission occurs when objects contaminated with microscopic amounts of human or animal feces are placed in the mouth. This type of transmission can also occur when food or water is contaminated and then ingested. Organisms spread by this transmission route include: *Campylobacter, Cryptosporidium, E. coli*, *Giardia, hepatitis A*, *Salmonella, Shigella,* and a variety of intestinal viruses. Other infections like hand, foot and mouth disease and viral meningitis can also be spread through the stool of an infected person.

- ***Blood*** transmission of infections occurs when a cut or mucous membranes come into contact with an infected person's blood or body secretions. This type of transmission is very rare in school settings. Diseases such as *hepatitis B, hepatitis C, and the human*

immunodeficiency virus (HIV) can be spread by contact with infected blood. Infected students can possibly transmit these infections through biting if there is visible blood mixed with their saliva (i.e. from bleeding gums). *CMV (cytomegalovirus)* can be spread by body secretions like urine and saliva, and *mononucleosis* can be spread by saliva.

- ***Direct-contact transmission*** involves a direct person-to-person contact (touching), which results in the physical transfer of microorganisms. This can also happen indirectly by contact with contaminated surfaces like clothing. *Chickenpox (varicella), shingles (herpes zoster), impetigo, head lice, ringworm,* and *scabies* are all spread this way. *Sexually transmitted diseases* are types of direct contact.

- ***Indirect-contact transmission*** involves the contact of a susceptible person with a contaminated object, such as a toy, school equipment, or wound dressings. Infectious students can contaminate objects with infectious nose and throat discharges. When another person comes into contact with these objects and then touches their eyes, mouth, or nose, they can become infected.

Respiratory Route

- ***Droplet transmission*** occurs when droplets containing microorganisms generated from an infected person are propelled a short distance through the air (less than 3 feet) by coughing, sneezing, or talking. Before falling to the ground, droplets may be deposited on the mucous membranes of the eye, nose, or mouth of another person within three feet, resulting in disease transmission. Because these droplets are large particles that do not remain suspended in the air, droplet transmission should not be confused with airborne transmission (see below). Some of the infections (bacterial and viral) passed in this way are the *common cold, chickenpox, influenza, meningitis (viral and bacterial), mumps, rubella, pink eye (conjunctivitis), strep throat,* and *whooping cough (pertussis)*. Hands are the most common surfaces that spread droplets. Teaching children to cover their mouths or noses with their hands when they cough or sneeze actually helps to spread germs. Hands touch everywhere all the time. Unless good handwashing is performed right after using hands to cover a cough or sneeze, the hands will spread germs.

- ***Airborne transmission*** occurs when organisms travel as small particles or dried respiratory droplets that are generated when people sneeze, cough, laugh, or exhale. They hang in the air much like invisible smoke, can travel on air currents over considerable distances, and may be inhaled by a susceptible host within the same room or over a longer distance from the source. *Tuberculosis* and *measles* are two examples of diseases spread by airborne transmission.

Common vehicle transmission occurs when the infectious agent or its toxins are spread to many people from a single source. The most frequently implicated common vehicles are food and water, but vehicles may also include medications and equipment. Outbreaks of foodborne illnesses such as *Salmonella, Shigella,* and *E. coli* are often connected to a common source of contaminated food.

Vector-borne transmission occurs when infectious agents move from host to host via insect carriers, or vectors, such as mosquitoes, fleas, lice, or ticks. For example, mosquitoes may carry the *malaria* parasite or *West Nile virus*, and deer ticks may carry *Lyme disease* bacteria.

Infection Control Measures and Prevention[5, 11]

Hand hygiene

Several steps can be taken to prevent the spread of infectious diseases, and according to the Centers for Disease Control and Prevention (CDC), handwashing is the single most effective way to prevent the spread of disease. Schools should have adequate facilities for handwashing in multiple locations which should include warm water, soap or detergent, towels, waste receptacles and posted signs to instruct on handwashing technique. In order for handwashing to be effective, all staff and students should be taught proper technique and principles of handwashing.

When to Wash Hands

BEFORE:

- Preparing or serving food items
- Eating or drinking
- Caring for others who may be sick or injured
- Handling a newborn
- Touching contact lenses
- Wound care
- Touching medications
- Before putting on gloves to provide healthcare

AFTER:

- Using the toilet
- Changing diapers or cleaning up a child who has used the toilet
- Handling garbage
- Handling animals, their waste products or their items, food or treats
- Blowing your nose, coughing, sneezing or touching any body fluids
- Cleaning fish tanks, bird cages or other similar items
- Touching raw foods and prior to touching cooked foods
- Wound care
- Touching surfaces that could be contaminated
- Touching money
- Removing gloves
- Cleaning

How to Wash Hands

1. Wet hands with clean (warm or cold) running water.
2. Use plain non-antimicrobial liquid soap for most circumstances; use anti-microbial soap for specific circumstances, e.g., control of outbreaks or infections.
3. Lather well and vigorously scrub all surfaces of skin, nails, wrists and lower arms.
4. Wash hands thoroughly for at least 20 seconds. TIMING HINT: Hum the “Happy Birthday” song from beginning to end twice.
5. Rinse hands well under a stream of running water.

6. Dry hands with an air dryer or pat them dry with a fresh paper towel.
7. Use paper towels to turn off the water faucet, open any exit door and turn off bathroom lights.

Handwashing Considerations

- Artificial nails and rings carry germs.
- Disposable towels are more sanitary than multi-use towels.
- Running water is preferable to standing water.
- Fragrance-free soaps are less sensitizing.
- Germs thrive on moist surfaces (towels, sponges, etc.).
- Clean any non-disposable items in hot water, and wash them frequently.
- Never clean hands to the point of breaking the skin barrier.
- Avoid chapped or cracked skin on hands, use hand lotion to keep skin moist and intact.
- Appropriate hand sanitizers may be used *if soap and water are not available.*

Hand Sanitizers (waterless)

- Hand sanitizers should never replace standard handwashing with soap and water but ethanol alcohol-based hand sanitizer can be used when handwashing facilities are not available.
- Hand sanitizers must have an alcohol base of at least 60% in order to be effective.
- Apply enough of the product (fragrance-free gel or foaming form preferred) to the palm of the hand that will wet the hands for at least 15 seconds (or longer according to the manufacturer).
- Rub the product around the hands, between the fingers and under the nails until they are dry.
- Wash hands with soap and water as soon as feasible.
- Follow directions on the label to determine how many applications are recommended before washing hands with soap and water.
- Remember hand sanitizers are not effective against norovirus or Clostridium difficile spores or for visibly soiled hands.
- Take precautions to avoid accidental ingestion or abuse by students. Use with supervision in young children.

Hand Hygiene References /Resources:

- Centers for Disease Control and Prevention.
    - Handwashing: Clean Hands Saves Lives. Available at: http://www.cdc.gov/handwashing/
        - Health Promotion Materials. Videos, podcasts, posters, fact sheets, web features, social media and additional resources. http://www.cdc.gov/handwashing/resources.html
        - Education & Partnerships. Hygiene Partnerships and Educational Materials. http://www.cdc.gov/handwashing/partnerships.html
            - Healthy Schools, Healthy People, It's a SNAP! http://www.itsasnap.org/index.asp Hands-on initiative for schools designed to keep students in school and learning by promoting clean hands. The program goals: improve student

handwashing, reduce absenteeism and help the school community stay healthy.
- BAM! Body and Mind – Teachers Corner: Hand Washing Experiment. http://www.bam.gov/teachers/epidemiology_hand_wash.html
- CDC Features. Hand Hygiene Saves Lives http://www.cdc.gov/Features/HandHygiene/
- CDC Features. Wash Your Hands http://www.cdc.gov/Features/HandWashing/
- Keeping Hands Clean. http://www.cdc.gov/healthywater/hygiene/hand/handwashing.html#handwashing

- KidsHealth. Why is Hand Washing So Important? Available at: http://kidshealth.org/parent/general/sick/hand_washing.html. Information for parents, kids, and teens on handwashing.

Cough etiquette

- Cover your mouth and nose with a tissue when you cough or sneeze.
- Dispose of your used tissue in the waste basket.
- Cough or sneeze into your upper sleeve or elbow, not your hands, if you do not have a tissue.
- Wear a facemask to protect others, when indicated.
- Wash your hands often with soap and warm water for 20 seconds.
- Use an alcohol-based hand sanitizer when soap and water are not available.

Cough Etiquette References/ Resources

- Centers for Disease Control and Prevention. Seasonal Influenza (Flu). Good Health Habits. Cover your Cough. Available at: http://www.cdc.gov/flu/protect/covercough.htm Information and "Cover Your Cough" printable posters.

Environmental Control[4, 6, 13, 14, 15, 16, 17]

One of the most important steps in reducing the spread of infectious diseases in schools is cleaning, sanitizing and disinfecting surfaces that could be a potential risk to students and staff. Frequent, routine cleaning with detergent and water is the most useful method for removing germs on surfaces in schools. When necessary, an application of a sanitizer or disinfectant following routine cleaning will further reduce the number of germs on a surface to a level that will be unlikely to transmit infections and disease.

What is the difference between cleaning, sanitizing and disinfecting?

- **Cleaning physically removes dirt and contamination.** Cleaning is a mechanical process (scrubbing) that does not necessarily kill germs (bacteria, viruses, fungi and molds) but by removing them, it lowers their numbers and exposes any remaining germs to the effects of a sanitizer or disinfectant to be used later. Clean any surface that is visibly soiled. Cleaning with detergent and water then rinsing with water is the first step in keeping objects and surfaces in school as free of pathogens as possible.
- **Sanitizing reduces germs on inanimate surfaces or objects.** Sanitizing is a chemical process that lowers the number of germs on surfaces or objects to a safe level, as judged by public health standards or requirements. Cleaning of the surface or object before sanitizing should

occur first. Sanitizing is less rigorous than disinfecting and is applicable to a wide variety of routine housekeeping procedures.

- **Disinfecting destroys or inactivates most germs on inanimate surfaces or objects**. Disinfecting works by using chemicals to destroy harmful germs further lowering the risk of spreading infections. This process does not necessarily clean dirty surfaces or remove germs so a detergent should be used prior to application of a disinfectant. Disinfecting is recommended for spills of blood or body fluids.

Choosing products for cleaning, sanitizing and disinfecting

The U.S. Environmental Protection Agency (EPA) recommends that EPA-registered products be used whenever possible. Only a product with an EPA registration number on the label can make public health claims that they are effective in reducing or destroying germs.

In general, products that are EPA-registered as *detergent-disinfectant or hospital-grade germicides* are effective against different types of infectious agents and suitable for infection control in schools. Some products may not be effective for all types of infectious agents or germs. If an outbreak of a specific disease occurs, follow the instructions of the local public health department or the Division of Public Health Section of Epidemiology. The manufacturer's instructions and the EPA description also should provide information regarding the product's effectiveness against the specific bacteria/virus. Further information can be found at: http://www.epa.gov/oppad001/chemregindex.htm.

EPA-registered products will have a Material Safety Data Sheet (MSDS) that provides instructions for the safe use of the product and guidance for first aid response to an inadvertent exposure to the chemical. School personnel should have ready access to MSDS for all cleaning, sanitizing and disinfecting supplies used in the school as required by the Occupational Safety and Health Administration (OSHA).

> The facilities director must be aware of ALL cleaning, sanitizing, and disinfecting products used at school and keep on hand the corresponding MSDS information.

It is important to avoid introducing unneeded chemicals into the school environment and to use the least toxic cleaner, sanitizer and disinfectant for the particular job. Children are at greater risk for exposure to toxic chemicals and it is prudent to avoid the use of products that are labeled "toxic for children."[4] Green cleaners, those products that are low toxin containing, are designed to have less adverse effect on human health and the environment than traditional cleaners that may contain chemicals that are respiratory irritants or have other harmful effects. Many products are advertised as "green" yet still may contain some harmful ingredients. Less toxic products are those with ingredients that are plant-based with no ammonia, no bleach, no fragrance and more neutral pH (7). True green products are certified by an independent third party such as Green Seal (http://www.greenseal.org), Eco-Logo (http://www.ecologo.org/en/index.asp) or Design for the Environment (http://www.epa.gov/dfe).

To assure that cleaners, sanitizers and disinfectants are used safely in the school environment, school staff should:

- ✓ Use the products when children are not in the proximity. Provide adequate ventilation to prevent children and school staff from inhaling potentially toxic fumes or respiratory irritants. (Caring for Our Children)
- ✓ Use only products registered for use in the state of Alaska. The registration status of products is available on the Alaska Division of Environmental Health website http://www.dec.alaska.gov/eh/pest/index.htm. Green cleaners are also required to be registered and can be searched by product name.
- ✓ Use products only for purposes specifically stated on the product label.
- ✓ Follow all directions on the product label EXACTLY. Determine the appropriate application procedure, dilution, contact or "dwell" time and personal protective equipment (PPE) needed. PPE may include gloves, eye protection, masks, and/or gown or protective clothing.
- ✓ Use the right concentration when mixing sanitizing solutions. Too low a concentration will not effectively sanitize; too high a concentration can be dangerous.

Bleach Solution

Bleach has been used for years as a disinfectant in health care facilities. However, bleach is corrosive, an irritant (especially to students with asthma), the cause of many childhood poisonings, and can produce dangerous fumes if mixed with ammonia products. If an EPA-registered disinfectant is not available, bleach is an effective alternative.

The concentration of bleach solutions has changed in many areas of the country. Formerly, bleach used as a disinfectant was available in regular strength (5.25%) or ultra (6.0%) sodium hypochlorite. The new bleach solution available in many stores is 8.25% sodium hypochlorite, a higher concentration. If 8.25% solution is used, it must have an EPA-registered product designation on the label. Follow the instructions for diluting the product for sanitizing or disinfecting as well as the contact or dwell time, described below. Bleach should be plain, unscented liquid sodium hypochlorite; do not use scented, powdered, splash-less, or color-safe "bleach." Take care to read the label.

When bleach is used, follow safe preparation and use practices:

- ✓ Train staff in the proper use.
- ✓ Use only in well-ventilated areas and away from children.
- ✓ Wear gloves and eye protection. .
- ✓ Open a new bottle of bleach every month as bleach loses its effectiveness when stored.
- ✓ Select a clean and dry bottle made of opaque material and label the container with the name of the product, dilution and date prepared.
- ✓ Add the bleach to cool water with a funnel to reduce fumes. A solution of bleach and water loses its strength very quickly and easily. It is weakened by organic material, evaporation, heat, and sunlight. Therefore, bleach solution should be mixed fresh each day to make sure it is effective. Any leftover solution should be discarded at the end of the day. NEVER mix bleach with anything but fresh tap water! Other chemicals may react with bleach and create and release a toxic chlorine gas.
- ✓ Limit spraying onto surfaces; use a "pour" or "pump" bottle that does not produce aerosols.

- ✓ Apply the bleach AFTER cleaning the surface with detergent and rinsing with water.
- ✓ Bleach solution should be left on a surface to air dry. If the area/item is going to be used right away, let the bleach solution dwell for at least 2 minutes before wiping it off with a clean paper towel.

Bleach Concentrations: Regular strength (5.25%) or Ultra (6.0%)	
Purpose	Dilution
Sanitizing For all tasks that do not involve blood/body fluids	1:64 dilution - 1 tablespoon of 5.25 – 6% bleach to 1 gallon of water
Disinfecting For blood and body fluids, noroviruses and as a sporicide	1:10 dilution - 1 ½ cups of 5.25 - 6% bleach to 1 gallon of water Or…. 3 Tablespoons to 16 ounces of water NOTE: dwell time for sporicide = 5+ minutes

Bleach Concentrations: 8.25%	
Purpose	Dilution
Sanitizing For all tasks that do not involve blood/body fluids	2 tsp (1/3 oz.) of bleach to 1 gallon of water
Disinfecting For blood and body fluids, noroviruses and as a sporicide	½ cup (4 oz.) of bleach to 1 gallon of water NOTE: dwell time for sporicide = 5+ minutes

Bleach wipes and stable bleach solutions

- *Bleach wipes*-There are at least two EPA registered 1:10 bleach wipes on the market that also contain a detergent and are registered for use against *C. difficile* spores and noroviruses in addition to being effective against several types of vegetative bacteria.
- *Stable bleach solutions* – There is at least one EPA registered 1:10 bleach solution available that contains a detergent and is registered for use against *C. difficile* spores and noroviruses in addition to being effective against several types of vegetative bacteria.
- Use of these stabilized commercial products would address many of the safety concerns with mixing and using strong bleach solutions.

Frequency of cleaning, sanitizing and disinfecting

A chart to guide schools in the frequency and type of cleaning, sanitizing and disinfecting that is required for specific areas is available at:
http://www.healthychildcare.org/PDF/InfDiseases/M2_CleaningChartp.pdf

The frequency of cleaning and sanitation should be increased when:

- There is an outbreak of illness.
- There is known contamination.
- There is visible soil, blood or other body fluids.
- There are recommendations by local or state public health officials to control certain infectious diseases.

Other environmental controls and considerations

- Maintain storage areas for clean clothing, supplies, equipment and utensils that are separate from storage areas for soiled items.
- Maintain areas for storage and handling of food, first aid supplies, and medications that are not in close proximity to areas for soiled items.
- Do not eat, drink, smoke, handle contact lenses or apply cosmetics or lip balm in work areas where there is a reasonable likelihood of occupational body fluid exposure.
- Clean surfaces used for diapering and food handling, and items that have been mouthed by students, such as mats, wedges, and special chairs after each use.
- Place soiled disposable items such as gloves, paper towels, diapers, cover-up sheets, under-pads, and disposable items used to clean surfaces in the trash immediately. Waste cans should be covered receptacles lined with plastic bags and placed in areas where they are easy to use. The bags should be sealed and discarded daily. Avoid using cloth laundry bags.
- Establish an appropriate cleaning schedule for the custodial staff. There should be a plan for when and where to disinfect that employs a prudent and targeted use of disinfectants. Keep a written protocol on file.
- Pay special attention to cleanup of blood and body fluid spills and follow approved procedures for cleanup. Personal protective equipment (PPE), which has been used, must be handled so as to prevent skin and mucous membrane exposure and contamination of clothing. Linen (if used in the school setting) that is soiled with blood, body fluids, secretions, or excretions should be handled, transported, and processed in a manner that prevents skin and mucous membrane exposure and contamination of clothing. For further information regarding blood and body fluids see Bloodborne Pathogens and Universal/Standard Precautions.

Bloodborne Pathogens and Universal/Standard Precautions[8, 11, 13, 18, 19, 20, 21]

Sport and playground injuries, severe bites, used needles, and many other occurrences in school can expose students and staff to bloodborne pathogens. Bloodborne pathogens are infectious microorganisms in human blood or body fluids that can cause disease in humans. These pathogens include but are not limited to hepatitis B (HBV), hepatitis C (HCV), and human inmmunodeficiency virus (HIV).

OSHA Bloodborne Pathogen Standard

A bloodborne pathogen exposure control plan is mandated by the Occupational Health and Safety Administration (OSHA). OSHA's Bloodborne Pathogen Standard (29 CFR 1910.1030) prescribes safeguards to protect workers against the health hazards caused by bloodborne pathogens. The regulatory language may be accessed at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10051.

The Bloodborne Pathogen Standard addresses items such as exposure control plans, universal precautions, engineering and work practice controls, personal protective equipment, housekeeping, laboratories, hepatitis B vaccination, post-exposure follow-up, hazard communication and training, and recordkeeping. The standard places requirements on employers, including school districts, whose workers are at risk for *occupational exposure* (reasonably anticipated job-related contact with blood, certain body fluids or other potentially

infectious materials such as human tissues). A summary of these requirements for schools follows. Further information may be found at this link:
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=21010.

Exposure Control Plan

All schools must have an exposure control plan in place. The exposure control plan is the school district's written program that outlines the protective measure the district will take to eliminate or minimize employee exposure to blood and other potentially infectious materials. The plan must be available to all school employees and must be reviewed and updated annually. At a minimum, an exposure control plan must contain:

- Exposure determination which identifies job classifications, tasks, procedures that place the employee at risk for occupational exposure;
  - ✓ Examples of job classifications with *routine* occupational exposure in schools include: health care workers such as school nurses and health aides, safety/security such as those employees designated as first aid responders or safety officers, coaches and assistant coaches, building plan operators and/or custodial staff designated to clean up body fluids.
  - ✓ Examples of job classifications with *potential* occupational exposure in schools include: special education teacher and aides who may respond to emotionally impaired students during altercations, secretary/administrative assistants and other employees who are designated by the facility manager/supervisor to be a first aid responder to injuries on site.
    (Examples adapted from the Anchorage School District internal policy)
- Procedures for evaluating the circumstances surrounding exposure incidents;
- Provisions for Bloodborne Pathogen standard implementation in the school including compliance with:
  - ✓ Universal precautions
  - ✓ Engineering and work practices (e.g., sharps disposal containers, hand hygiene)
  - ✓ Personal Protective Equipment (PPE)
  - ✓ Housekeeping (including decontamination procedures and removal of regulated waste)
  - ✓ Hepatitis B vaccination
  - ✓ Post-exposure evaluation and follow-up
  - ✓ Communication of hazards to employees
  - ✓ Recordkeeping;
- Documentation of **annual** evaluation and implementation of effective safer medical devices designed to eliminate or minimize occupational exposure and solicitation of non-managerial healthcare workers employed by the district in this decision and implementation process.

Universal Precautions

Universal Precautions is OSHA's required method of control to protect employees from exposure to all human blood and other potentially infectious materials. Universal Precautions is an approach to infection control where *ALL* human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other blood borne pathogens. The standard applies to all employees who have occupational exposure to blood or other potentially infectious materials (OPIM).

OSHA's Universal Precautions refers to a set of protocols for handling body fluids properly. Bloodborne pathogens can be found in blood, semen, vaginal secretions, and breast milk. Body fluids that do NOT pose a risk of bloodborne pathogen transmission unless visibly contaminated with blood or are likely to contain blood include: urine, stool, saliva, emesis, nonpurulent respiratory secretions, tears, sweat or nasal discharge. Even though these other body fluids may not contain bloodborne pathogens, other infectious pathogens that cause other diseases may be present.

The Centers for Disease Control and Prevention (CDC) uses the term *Standard Precautions* to define precautions taken for all patients regardless of suspected or confirmed infection status. *Standard Precautions* evolved from *Universal Precautions* with additional standards intended to protect not only employees but the population of the facility in general. *Standard Precautions* combine the major features of *Universal Precautions,* and *Body Substance Isolation*, and are based on the principal that all blood, body fluids, secretions (including respiratory secretions), excretions (except sweat), non-intact skin and mucous membranes may contain transmissible infectious agents. Also, equipment or items in the environment likely to have been contaminated with infectious bodily fluids must be handled in a manner to prevent transmission of infectious agents. Both *Standard Precautions* and *Body Substance Isolation* procedures meet the OSHA Bloodborne Pathogen Standard requirements for *Universal Precautions*.

NOTE: In its 2007 update, the CDC added respiratory hygiene/cough etiquette to their *Standard Precautions*. This includes the use of masks when providing healthcare to a person with a potential respiratory infection and encouraging the cover of coughs and sneezes.

What do these standards/precautions mean for schools? All students and staff should:

1) Treat all bodily fluids as if they are contaminated.
2) Keep all non-intact skin and open sores covered with appropriate bandaging.
3) Use personal protective equipment (PPE) as protective barriers to prevent exposure:
    - Gloves - Occupational exposure is defined by the BBP standard, 29 CFR 1910.1030(b) as ". . . reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties."
        - The only requirement for gloves is that they prevent contact with blood [29 CFR 1910.1030(d) (3) (ix)].
        - *Gloves shall be worn when it can be reasonably anticipated that the employee may have hand contact with blood, other potentially infectious materials, mucous membranes, and non-intact skin; when performing vascular access procedures except as specified in paragraph (d)(3)(ix)(D); and when handling or touching contaminated items or surfaces.*
        - *1910.1030(d) (3)(ix)(A) Disposable (single use) gloves such as surgical or examination gloves, shall be replaced as soon as practical when contaminated or as soon as feasible if they are torn, punctured, or when their ability to function as a barrier is compromised.*
        - *1910.1030(d) (3) (ix) (B) Disposable (single use) gloves shall not be washed or decontaminated for re-use.* Never reuse disposable gloves.

- *1910.1030(d) (3) (ix) (C) Utility gloves may be decontaminated for re-use if the integrity of the glove is not compromised. However, they must be discarded if they are cracked, peeling, torn, punctured, or exhibits other signs of deterioration or when their ability to function as a barrier is compromised.*
- Employers shall base the selection of the appropriate hand protection on an evaluation of the performed tasks. Different gloves will protect employees hands exposed to hazards such as those from skin absorption of harmful substances, severe cuts or lacerations, severe abrasions, puncture, chemical burns, thermal, burns, and harmful temperature extremes.
- If employees are using chemicals, Material Safety Data Sheets will specify what type of gloves will prevent absorption.
- Gloves should be available in the offices of custodians, nurses, coaches, principals, and staff in school settings where exposure to body fluids is likely to occur (e.g., pre-school, health office, gymnasium, athletic fields and playgrounds, etc.) School nurses and first aid responders are advised to carry gloves in a waist pack or pocket to have on-hand at all times. All other personnel should have access to first aid supplies that includes gloves.
- Do not use latex gloves when there is no risk of exposure to blood or other potentially infectious materials (OPIM).
- Hands should be washed before glove use and after gloves are removed.
- Gloves need not be worn when feeding students, or when wiping saliva from skin, unless blood is present or the caregiver has cuts or wounds on their hands.
- Take caution when removing gloves to not expose the skin to the contaminated outer cuff portion of the glove and remove them in a manner that the inside portion of the glove is now on the outside.
- Discard contaminated gloves in a lined waste receptacle. Immediately tie off the bag from the trash receptacle and dispose of it in appropriate general waste away from students.

- Use protective clothing, face masks or eye protection goggles when anticipating splattering of blood or body fluids.
- Use mouthpieces, resuscitation bags, pocket masks or other ventilation devices when available when providing mouth-to-mouth resuscitation.
- Wear masks when providing healthcare to a person with a potential respiratory infection.

4) Take care to prevent injuries using needles and other sharp instruments or devices. Do not recap or bend needles; use safety devices. Place needles, syringes and other sharp disposable objects in biohazard labeled, leak-proof, puncture-proof containers.
5) Use standard precautions when cleaning and disinfecting. Use the recommended decontamination procedure described in this document when cleaning blood or body fluids.
6) Wash hands and other contacted skin surfaces thoroughly with soap and warm running water as described in the handwashing section of this document and immediately after any accidental contact with blood and body fluids.
7) Dispose of contaminated materials appropriately. See the section on regulated waste, below.

8) Bag soiled towels and other laundry. Handle as little as possible and with minimum agitation. Follow decontamination procedure below.
9) Report any contact with contaminated body fluids by non-intact skin or mucous membranes immediately in accordance with the school district's exposure control plan.
10) Encourage and use cough etiquette.

A special note from OSHA and NIOSH: on latex allergy.

NIOSH Alert: Workers exposed to latex gloves and other products containing natural rubber latex may develop allergic reactions such as skin rashes; hives; nasal, eye, or sinus symptoms; asthma; and (rarely) shock.

- Workers with ongoing latex exposure from wearing latex gloves or using latex-containing medical supplies are at risk for developing latex allergy. Such workers include health care workers (physicians, nurses, aides, pharmacists, operating room employees, laboratory technicians, gardeners, food service workers, and housekeeping personnel) may also be at risk.
- Atopic individuals (persons with a tendency to have multiple allergic conditions) are at increased risk for developing latex allergy. Latex allergy is also associated with allergies to certain foods especially avocado, potato, banana, tomato, chestnuts, kiwi fruit, and papaya. People with spina bifida are also at increased risk for latex allergy.
- Latex allergy should be suspected in anyone who develops certain symptoms after latex exposure, including nasal, eye, or sinus irritation; hives; shortness of breath; coughing; wheezing; or unexplained shock. Any exposed worker who experiences these symptoms should be evaluated by a physician, because further exposure could cause a serious allergic reaction. A diagnosis is made by using the results of a medical history, physical examination, and tests.
- Testing is also available to diagnose allergic contact dermatitis. In this FDA-approved test, a special patch containing latex additives is applied to the skin and checked over several days. A positive reaction is shown by itching, redness, swelling, or blistering where the patch covered the skin.
- Once a worker becomes allergic to latex, special precautions are needed to prevent exposures during work as well as during medical or dental care. Certain medications may reduce the allergy symptoms, but complete latex avoidance (though quite difficult) is the most effective approach. Many facilities maintain latex-safe areas for affected patients and workers.
- The employer shall ensure that appropriate personal protective equipment, in the appropriate sizes, is readily accessible at the worksite or is issued to employees. Hypoallergenic gloves, glove liners, powderless gloves, or other similar alternatives shall be readily accessible to those employees who are allergic to the gloves normally provided [29 CFR 1910.1030(d)(3)(iii)].
- Among the alternatives are synthetic, low protein, and powder-free gloves. Powder-free gloves may reduce systemic allergic responses.
- For more information:
    1. Latex Allergy. Safety and Health Topics Page.

2. Potential for Sensitization and Possible Allergic Reaction To Natural Rubber Latex Gloves and other Natural Rubber Products. OSHA Safety and Health Information Bulletin (SHIB), (2008, January 28).
3. NIOSH Alert Preventing Allergic Reactions to Natural Rubber Latex in the Workplace. US Department of Health and Human Services (DHHS), National Institute for Occupational Safety and Health (NIOSH) Publication No. 97-135, (1997, June).

Engineering Controls

Engineering and work practice controls should be used to eliminate or minimize employee exposure to contaminated sharps. Controls such as sharps disposal containers, self-sheathing needles and safer medical devices (sharps engineered with sharps injury protections and needleless systems) must be appropriate, commercially available and effective safer medical devices designed to eliminate or minimize occupational exposure.

Sharps containers must be readily accessible to employees and located as close as feasible to the immediate area where sharps are used and can be anticipated to be found. The containers should be:

- Maintained upright throughout use, replaced routinely and not allowed to overfill;
- Closed immediately before removal or replacement to prevent spillage of contents during storage or transport.
- Placed in a secondary container if leakage is possible
- Labeled or color coded as a "Biohazard" with appropriate sign

The Needlestick Safety and Prevention Act of 2000 modified the Bloodborne Pathogen Standard by adding to OSHA's requirement for employers to identify, evaluate and implement safer medical devices. Safety devices should be evaluated annually and involve front-line employees in the evaluation and selection process. Employees must be trained on any new techniques and practices associated with new engineering controls. A log must be kept recording all sharps injuries. For further information regarding the OSHA requirements for safety devices see: http://www.osha.gov/SLTC/bloodbornepathogens/bloodborne_quickref.html

In addition, Alaska Statute 18.60.880 Needle stick and sharps injury protections for health care workers, requires employers to conduct evaluations of safety devices and include frontline works in the process. The statute is accessed here: http://touchngo.com/lglcntr/akstats/Statutes/Title18/Chapter60/Section880.htm

An online training program for safe injection practices may be accessed at: www.OneandOnlycampaign.org . The Centers for Disease Control and Prevention offers teaching tools at http://www.cdc.gov/sharpssafety/tools.html.

Training

OSHA requires that all employees with occupational exposure to body fluids participate in a training program at the time of their initial assignment and at least annually thereafter, at no cost to the employee. Training must include:

- ✓ An accessible copy of the BBP standard (29 CFR 1910.1030)
- ✓ Information on the epidemiology and symptoms of bloodborne diseases
- ✓ Information on modes of transmission of bloodborne pathogens
- ✓ Description of employer's Exposure Control Plan and how to get a copy
- ✓ How to recognize tasks that may involve exposure to blood or other potentially infectious materials
- ✓ Use and limitations of methods to reduce exposure, including engineering controls, work practices, and personal protective equipment
- ✓ Explanation of the signs and labels and/or color-coding required by OSHA
- ✓ Information on the hepatitis B vaccination including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine will be offered free of charge
- ✓ Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials including the method of reporting the incident and the medical follow-up that will be made available
- ✓ Information on post-exposure evaluation and follow- up that the employer is required to provide for the employee following an exposure incident
- ✓ An opportunity for interactive questions and answers, name and contact information of trainer
- ✓ Documentation of training must occur. The training record must be retained for 3 years from the training date.

Training resources for schools include the Alaska Department of Education & Early Development eLearning training course for Bloodborne Pathogens available at: http://www.eed.state.ak.us/elearning/.

Other training options include:
Safety Video Source http://www.safetyvideosource.com/p-362-bloodborne-pathogens-for-non-healthcare-employees.aspx
American Red Cross
http://www.redcross.org/portal/site/en/menuitem.d229a5f06620c6052b1ecfbf43181aa0/?vgnextoid=8b6fc0e92ba0d210VgnVCM10000089f0870aRCRD&vgnextchannel=aea70c45f663b110VgnVCM10000089f0870aRCRD#Pathogens

Hepatitis B Vaccination

Free hepatitis B vaccinations should be offered to all employees with occupational exposure to blood or other potentially infectious materials. The vaccine must be made available within 10 working days of the initial assignment, after appropriate training has been completed. Employees have the right to refuse the hepatitis B vaccine and/or any post-exposure evaluation and follow-up. However, the employee must be properly informed of the benefits of the vaccination and post-exposure evaluation through training. The employee also has the right to decide to take the vaccination at a later date if he or she so chooses and the school district must make it available at that time.

Regulated Waste

The OSHA definition of regulated waste refers to the following categories of waste that require special handling in schools:

- Liquid or semi-liquid blood or other potentially infectious materials (OPIM) that can release infectious substances if compressed or during routine handling.

- Items that are caked with dried blood or OPIM and are capable of releasing these materials during handling;
- Pathological or microbiological wastes containing blood or OPIM.
- Contaminated sharps (e.g. materials that will cause punctures or cuts to those handling them such as needles and scalpel blades)

Bandages that are not saturated to the point of releasing blood or OPIM if compressed would not be considered regulated waste. Similarly, discarded feminine hygiene products do not normally meet the criteria for regulated waste as defined by the Bloodborne Pathogens Standard. Beyond these guidelines, it is the employer's responsibility to determine the existence of regulated waste.

Regulated waste should be placed in containers that are:

- ✓ Closable
- ✓ Constructed to contain all contents and prevent leakage during handling, storage, transport or shipping
- ✓ Labeled with the standard fluorescent orange or orange-red biohazard label or color-coded in red bags or red containers
- ✓ Closed before removal to prevent spillage or protrusion during handling, storage, transport or shipping.
- ✓ Placed in a secondary container if leakage is possible.

Dispose of urine, vomitus or feces in the sanitary sewer system. Be sure to use the appropriate personal protective equipment (i.e. gloves and eye protection) to avoid any contact with infectious materials during the disposal process.

Schools should develop a relationship with local hospitals, rural health centers, medical providers or licensed hazardous waste contractors for the appropriate disposal of needles, sharps and other regulated waste.

Recommended Decontamination Procedure:

1. **Wash** hands thoroughly with soap and water.

2. **Clothing/laundry** – Laundry soiled with blood or other potentially infected materials is considered “contaminated laundry.” Whether the school does its own laundry (gym towels, sports uniforms, etc.) or sends it out, the goal is to remove infectious agents without contaminating other items or surfaces.

- Use gloves and other personal protective equipment (PPE) while handling contaminated laundry.
- Bag or contain at the location where it was used, do not rinse or sort in the location of use.
- Place in bag or container that prevents soak-though and/or leakage of fluids to the exterior. When transporting contaminated laundry, the bag or container should be labeled “BIOHAZARD” or color-coded in red.
- Wash and dry contaminated laundry separately from non-contaminated clothing.

- Wash in hot water (about 160 degrees F) and add 50-150 ppm of bleach (dry bleach is acceptable for fabric colors affected by liquid bleach) or commercially dry clean. To work effectively, the washing machine must not be overloaded.
- Dry laundry separately on a warm temperature setting.
- Clean laundry should never be placed in baskets or other receptacles that have held dirty laundry unless they are cleaned and disinfected between dirty and clean use.
- It may be best to discard certain soiled materials rather than risk exposure during cleaning.
- Student clothing that is soiled with body fluid, including feces, should be bagged and sent home for washing with appropriate directions to the parent/guardian.
- For further information regarding contaminated laundry see:
    - CDC: http://www.cdc.gov/HAI/prevent/laundry.html
    - OSHA: http://blogs.hcpro.com/osha/2009/01/ask-the-expert%E2%80%94healthcare-laundry-guidelines/

3. **Hard Surfaces** - Use disinfectant according to standards identified in the Environmental section of this document.

- Wear gloves and other appropriate PPE;
- Wipe up as much of the visible matter as possible with disposable paper towels and carefully place them in a leak-proof plastic bag that has been securely tied or sealed;
- Immediately use a detergent to clean the spill area and follow with a disinfectant;
- Non-disposable rags or mops should be treated as contaminated laundry. (see above instructions)
- Rinse non-disposable cleaning equipment (dustpans, buckets), clean with detergent followed by the disinfectant;
- Dispose of disinfectant solution promptly down a drainpipe;
- Wash hands thoroughly after removing and disposing of gloves.

4. **Rugs/Carpet/Upholstered Furniture** - Local school districts should stock absorbent agents specifically intended for cleaning body fluid spills.

- Wear gloves and other appropriate PPE;
- Cover spills with absorbent material, gently sweep up and discard in plastic bag. Leave for a few minutes to absorb the fluid and then vacuum or sweep up;
- Blot to remove body fluids from the fabric or carpet as quickly as possible; then disinfect by spot-cleaning with a combination detergent/ disinfectant, and shampooing, or steam-cleaning the contaminated surface;
- Use a wet/dry vacuum for carpet if such equipment is available;
- Dispose of the vacuum bag or sweepings in a plastic bag to minimize exposure to aerosols;
- Follow the manufacturer guidelines for cleaning vacuuming equipment;
- Wash hands thoroughly after removing and disposing of gloves.

5. Disposal of Needles and Sharps

- Do not bend, recap, or remove contaminated needle**s** and other sharps.
- Broken glassware, discarded needles, and other sharps should not be picked up directly with the hands. Cleanup should be accomplished using mechanical means such as a

brush and dustpan, tongs, or forceps, by staff wearing appropriate protective gloves. Broken glass should be disposed of in a container which keeps others from being cut.

- Place disposable needles and sharps in a closable, puncture resistant, leak proof, color coded (orange or red-orange container labeled "BIOHAZARD").[13, 18, 19, 21]

Post-Exposure Follow-Up

School employees should be instructed to treat the exposure site immediately post-exposure. They should:

- Use soap and water to wash areas exposed to potentially infectious fluids as soon as possible after exposure.
- Flush exposed mucous membranes with water.
- Flush exposed eyes with water or saline solution.
- Do NOT apply caustic agents, or inject antiseptics or disinfectants into the wound.

All exposure incidents must be reported to school district personnel identified in the Exposure Control Plan as responsible for follow-up, as soon as possible. The school district is responsible for providing the exposed employee with a confidential medical evaluation and follow-up. The following will need to be recorded in the health care provider's confidential medical record:

- ✓ Date and time of exposure.
- ✓ Details of the incident: where and how the exposure occurred, exposure site(s) on the body; if related to sharp device, the type and the brand of device. Discarded needles will not need to be tested for bloodborne pathogens as the reliability of the findings would be unknown.
- ✓ Details of the exposure: type and amount of fluid or material, severity of exposure
- ✓ Details of the exposure source, if known.
- ✓ Details of the exposed employee: Hepatitis B vaccination among other information.[20]

For guidance regarding an employee exposure, expert consultation can be obtained from:

- School district and local experts
- Post-Exposure Prophylaxis (PEP) Steps – available for purchase at http://www.mpaetc.org/Products/PEP-Steps-Quick-Guide-to-Postexposure-Prophylaxis or the PEPline at (888)448-4911, available daily from 9 am- 2 am (6 am- 11 pm PST). The PEPline guidances are a quick guide to assist in urgent decision-making for occupational exposures to HIV and hepatitis B and C. For further information, see the National HIV/AIDS Clinicians' Consultation Center: http://www.nccc.ucsf.edu/hiv_clinical_resources/pepline_guidances_for_occupational_exposures

Immunizations[4, 22, 23]

Immunizations help prevent serious illnesses and significantly reduce occurrences of communicable disease. Vaccine-preventable diseases can have dangerous consequences, including seizures, brain damage, blindness and even death.

State requirements

Alaska State statute and regulations require all students to be immunized or have a valid exemption (either a medical, or religious) *prior to entry* in a state public school district or nonpublic school offering pre-elementary education through 12th grade. Mandated vaccines for

school attendance include: diphtheria, tetanus, pertussis (whooping cough), polio, measles, mumps, rubella, hepatitis B, hepatitis A, haemophilus influenzae type B and varicella (chickenpox).

Students without the mandated immunizations may be admitted to school under two exemptions:

- Medical exemption – the student has a statement signed by a doctor of medicine(M.D.), doctor of osteopathy (D.O.), physician assistant, or advanced nurse practitioner licensed to practice in Alaska, stating that the immunization(s) would be injurious to the health of the child or members of the child's family or household.
- Religious exemption – the student has an affidavit signed by his parent or guardian affirming that the immunization(s) conflicts with the tenets and practices of the church or religious denomination of which the applicant is a member. The official State form is required, must be renewed annually and is required to be notarized for all religious exemptions.

(NOTE: Personal or philosophical exemptions are not allowed under Alaska regulations. Medical and religious exemption forms are found at: http://www.epi.hss.state.ak.us/id/iz/factsheet/IZReqPacket2013.pdf)

A student registering in a school where medical services are not available in the community on at least a weekly basis and who does not have the required immunizations may be provisionally admitted to school for a reasonable period of time, not to exceed 90 days of enrollment.

A homeless child or youth, as defined by 42 U.S.C. 11434a(2) (McKinney-Vento Homeless Assistance Act) who does not have the required immunizations, may be provisionally admitted to a public school program for a period of time not exceeding 30 days. The parent or legal guardian must sign a witnessed statement that the child has received the required immunizations and the child's immunization records are not immediately available. The Division of Public Health and the school district's homeless liaison are responsible for locating the required records. If the immunization records are not located during the provisional period or the records indicate that the child has not received the required immunizations, he/she must be vaccinated with the mandated immunizations. The student is permitted continued enrollment in the public school program while receiving the immunizations.

Schools should have documentation of the immunization status of all students on file. A valid immunization certificate consists of either a statement by a physician or a copy of a clinic or health center record listing the date that the required immunization was given.
A separate list of students who may be at risk for contracting vaccine-preventable diseases should be maintained at all times so that in the event of an outbreak, they can be quickly identified and if necessary, excluded from their routine school environment until the risk has passed. Children at risk for contracting vaccine-preventable disease include those:

- too young to receive vaccines;
- with medical or religious exemptions;
- admitted to school under provisional admittance causes allowed by state law.

In the event of a vaccine-preventable disease outbreak in a school, public health officials will provide guidance to the school staff. School staff will need to review all children's immunization records to identify those who have not received specific vaccines or who do not have valid

documentation of disease history/immunity. A susceptible child may need to be excluded from his/her routine school environment until (1) the child is vaccinated, (2) the child becomes ill with the disease and completely recovers, or (3) the danger of the outbreak has passed as determined by public health officials. For example, during measles outbreaks, susceptible children may be excluded for 18 days after the onset of symptoms of the last case in the community, which may result in school exclusion for several months.

The Alaska Immunization Program in the Division of Public Health offers a web-based tool for school districts to manage immunization compliance called *Self ImmAGE*. This program allows schools to

- Enter vaccine history for each child in the district
- Modify/correct previously entered information for an individual student
- Calculate and display a student's immunization status
- Forecast future immunization needs for each student
- Promote and inactivate, transfer or delete students
- Produce helpful reports such as exclusion letter(s), exemption list, immunization history, noncompliant student list, parent letter(s) and the State of Alaska Annual Self-Assessment Survey (submitted annually to the Alaska Immunization Program)

To learn more about *Self ImmAGE*, visit the Alaska Immunization Program website at: http://www.epi.hss.state.ak.us/id/immune.stm

The Alaska Immunization Program also maintains a state-wide, web-based Immunization Information System called VacTrAK. VacTrAK provides a confidential, population-based, computerized system to maintain immunization information for Alaskans of all ages. Currently, VacTrAK is available for enrolled Alaska health care providers who are administering vaccines. Future plans include implementation of a School Nurse Module. For further information about VacTrAK visit https://vactrak.alaska.gov/iweb/.

Further information on school immunization requirements and forms can be found in the *Alaska Child Care & School Immunization Requirements Packet*:
http://www.epi.hss.state.ak.us/id/iz/factsheet/IZReqPacket2013.pdf

For the Alaska Childhood & Adolescent ACIP recommended Immunization Schedule, see:
http://www.epi.hss.state.ak.us/id/iz/schedule/default.htm

Talking with Parents Inquiring About Vaccine Safety and Efficacy

Parents may voice concerns about vaccine safety and may be reluctant to follow the recommended immunization schedule or vaccinate their child(ren) at all. The result of this vaccine hesitancy is the risk for vaccine-preventable infectious disease outbreaks in populations that are not immunized or are under-immunized. These populations include students with medical or religious exemptions, persons with immunodeficiencies, infants and children who are too young to be fully immunized, persons with allergies to vaccine components, and the small percentage of vaccinated persons who do not develop immunity. School nurses and other school health professionals are at the forefront when parents inquire about vaccines and consider exemptions for the immunization. In responding to vaccine-hesitant parents, school nurses should encourage science-based materials that are available from respected

organizations. If parents have not already had a conversation with their health care provider regarding their individual child's specific needs, they should be encouraged to do so.

If an outbreak of a vaccine-preventable disease should occur within the school population, school districts and school nurses should work with the Section of Epidemiology and/or the local public health nurse to determine if those students with exemptions for immunizations or others not fully immunized need to be temporarily excluded from their routine school environment until the risk has passed.

For a listing of science-based resources compiled by the Immunization Action Coalition, see: http://www.immunize.org/catg.d/p2070.pdf

School Staff Immunizations

It is strongly recommended that school personnel be vaccinated (or show laboratory evidence of immunity) against diphtheria, tetanus, mumps, measles, polio, chickenpox (varicella), hepatitis A, and rubella (German measles). Further, adults should be vaccinated with a dose of Tdap which provides pertussis protection. It is especially important for women of childbearing age to be immune to rubella as this infection can cause complications for the developing fetus. Additionally, school personnel responsible for the provision of health services for students or are at risk for exposure to bloodborne pathogens should be encouraged to be vaccinated against hepatitis B.

Further resources:

- Centers for Disease Control and Prevention
  - Why Immunize: http://www.cdc.gov/vaccines/vac-gen/why.htm. Basics and common questions for parents.
  - What would happen if we stopped vaccinations: http://www.cdc.gov/vaccines/vac-gen/whatifstop.htm. At a glance what would happen with specific vaccine preventable diseases.
  - How Vaccines Prevent Diseases: http://www.cdc.gov/vaccines/vac-gen/howvpd.htm.
  - Some Common Misconceptions: http://www.cdc.gov/vaccines/vac-gen/6mishome.htm#Givingachildmultiple
  - For Parents: Vaccines for Your Children: http://www.cdc.gov/vaccines/parents/index.html Fact sheets, stories, videos and other materials for parents.
  - Understanding Vaccines and Vaccine Safety http://www.cdc.gov/vaccines/spec-grps/hcp/provider-resources-safetysheets.html
  - 10 Things you need to know about vaccines: http://www.cdc.gov/vaccines/vac-gen/10-shouldknow.htm.
- Herd Immunity animation: http://www.historyofvaccines.org/content/herd-immunity-0.
- National Network for Immunization Information http://www.immunizationinfo.org/
- Vaccine Education Center http://www.chop.edu/service/vaccine-education-center/home.html
- Immunization Action Coalition http://www.immunize.org/
- Centers for Disease Control and Prevention http://www.cdc.gov/vaccines/
- American Academy of Pediatrics http://www.aap.org/
- American Academy of Family Physicians http://www.aafp.org/online/en/home.html

- Institute for Vaccine Safety http://www.vaccinesafety.edu/
- The Vaccine Page http://www.vaccines.org/
- Every Child by Two http://www.ecbt.org/

Tuberculin Screening[24, 25, 26]

Local and state surveillance data are analyzed to provide an epidemiologic profile of TB in a given locale. Surveillance activities include: case detection, outbreak detection, contact investigation, targeted testing and treatment of latent TB infection (LTBI). The Alaska Tuberculosis Program works closely with school nurses, regional public health staff and Alaska Native Health Corporations in their surveillance activities to effectively prevent and control TB in Alaska.

In the first half of the 20th century, tuberculosis (TB) was endemic among Native Alaskans. In 2012, 66 cases of tuberculosis (TB) were reported to the Alaska Tuberculosis Program for an incidence of 9.0 cases per 100,000 population. In the United States tuberculosis incidence was 3.1 cases per 100,000 in 2010, a 9% decline from 20112. Alaska was one of 14 reporting areas with a tuberculosis rate that exceeds the national average. Previously, the proportion of TB cases in children less than 15 years of age was greater in Alaska compared to the U.S. overall. When looking at age data from 2003 to 2012, the median age of persons with TB in Alaska is similar to that of the United States. Alaska Native and Asian/Pacific Islanders continue to bear a disproportionate burden of TB in Alaska. The highest rates are found in the Northern and Southwest regions of the state.

Children, especially infants, are among the populations that have been demonstrated to be at risk for tuberculosis exposure, progression from exposure to disease or both. Others include foreign-born persons, human immunodeficiency virus (HIV)-infected persons, homeless persons, and detainees and prisoners.

Most children infected with the bacteria do not have signs or symptoms of disease. This is called latent infection (LTBI). Targeted testing for latent infection identifies children at high risk for developing TB who would benefit by treatment of LTBI, if detected.

State Requirements

Alaska law, 7 AAC 27.213, requires that children who enroll in kindergarten and grade seven or are enrolling in the district for the first time in grades kindergarten or higher for the first time, are to be tuberculin skin tested by the school or school district within 90 days of enrollment in school.

In addition, the Alaska Tuberculosis Program may require a district or non-public school to administer a tuberculin test to enrolled children in addition to those tests required in 7 AAC 27.213 if the Alaska Division of Public health makes a determination that there is evidence of increased risk of spread of tuberculosis in the community or communities where the district is located. Schools are notified in writing by the Alaska Tuberculosis Program if further TB testing is required for their students.

There is no exemption from tuberculin skin testing for religious belief or personal objection. The only exception to testing is if a physician provides a written statement that the test "…would be injurious to the health and welfare of the child or members of the family or household." If parents provide documentation of results from a PPD skin test given within six months prior to

school entry and/or the child has had a previous positive PPD test with a reading of 10 mm or more, a skin test is not required.

It is the school district's responsibility to suspend a child under AS 14.30.045(4) if "…(1) the child fails to submit to a PPD skin test required under this section; or (2) the child or a person acting on behalf of the child fails to provide the district or non-public school, within 30 days after referral under (c) of this section, a written and signed statement of a health care provider stating that the child is not infectious from tuberculosis to others."

Tuberculin skin testing of school children is typically administered by school nurses or, at schools lacking authorized personnel capable of conducting the testing, by public health nurses or contract nurses. The school district is responsible for obtaining a consent form signed by the parent or guardian prior to administration of a tuberculin skin test to a child in the parent's absence. All children with undocumented or previously negative tuberculin reactions should be skin tested.

By Alaska statute and regulation, a suspected or confirmed case of TB disease in Alaska must be reported to the Section of Epidemiology (907-269-8000) within five working days; however reports should be made as soon as possible.
http://www.epi.hss.state.ak.us/pubs/conditions/crForms.htm.

Schools are responsible for completing and sending the *School Tuberculin Testing Report* to the Alaska Tuberculosis Program annually by the deadline.
http://www.epi.hss.state.ak.us/pubs/webtb/TB_Manual.pdf

TB Testing of School Staff

Though annual TB testing of all school staff is no longer a requirement by the Alaska Tuberculosis Program, assessment of the risk of individuals for TB and their need for TB skin testing should be part of the routine health assessment of all adults who work in school district. Regular and substitute staff and volunteers who are at high risk of exposure to TB, according to criteria published by the Centers for Disease Control and Prevention, should have tuberculosis skin testing prior to employment. For further information see:
http://www.cdc.gov/tb/topic/testing/default.htm.

Mantoux TST

All TB skin testing is conducted using the Mantoux TST with Purified Protein Derivative (PPD) solution which has proven to be more diagnostically accurate than the previously preferred multi-needle monovac or tine test. Administration of a PPD test requires placement using a 27 gauge needle in a 1 cc syringe underneath the top layer of the skin on the forearm forming an elevated 6-10 mm diameter wheal with 5 tuberculin units of PPD (0.1 ml.). The wheal dissipates within a few minutes after the injection. Not all students are comfortable with this procedure and parents may be encouraged to be present for the test or to have the PPD administered by their health care provider.

Prior Bacille Calmette-Guérin (BCG) vaccination is not a contraindication to tuberculin skin testing. The interpretation of the tuberculin skin test (TST) results in children and staff who have received BCG vaccination is the same as for persons who have not received BCG vaccine.

The Mantoux TST can be administered to all persons, including pregnant women, persons who have previously been vaccinated with BCG, and human immunodeficiency virus (HIV)-infected persons. However, PPD should not be administered until four weeks after vaccination with live-virus vaccines.

The recommended time for assessing the Mantoux TST result is 48 to 72 hours after administration. However, a reaction that develops at the site of administration more than 72 hours later should be measured and considered the result. The diameter of induration (raised, hard area or swelling; redness by itself is not considered part of the reaction) in millimeters is measured transversely to the long axis of the forearm.

In Alaska, because of historic and continuing high rates of TB and latent TB infection, any person with a reaction of 10 mm or greater induration is considered TST positive. Additional tests are needed to determine if the person has latent TB infection or active TB disease. Children or adolescents with active TB will need to be excluded from school until the health care provider along with the Alaska Tuberculosis Program and/or the local public health nurse determines the student is able to return to school. All children and adolescents who have a positive TST result but no evidence of TB disease should be offered treatment for LTBI.

Further Resources:

- Centers for Disease Control and Prevention, Tuberculosis (TB). Available at: http://www.cdc.gov/tb/
- Alaska Tuberculosis Program's TB Manual: http://www.epi.hss.state.ak.us/pubs/webtb/TB_Manual.pdf.
- TB testing training resources for health care workers:
    - Mantoux Tuberculin Skin Test DVD Facilitator Guide: http://www.cdc.gov/tb/education/Mantoux/guide.htm
    - Tuberculosis Education for School Nurses: A Trainer's Guide: http://www.umdnj.edu/ntbc/products/tbedforschoolnurses.htm

Illness Symptoms and Management of Individuals Suspected of Communicable Disease[4]

Schools have a role in assessing the health of students. School personnel should be trained to monitor student's behavior and note any symptoms of illness.

Symptoms to watch for:

- Changes in behavior or appearance (irritability, less active)
- Severe coughing (student gets red or blue in the face, makes high-pitched croupy or whooping sound after coughing, has coughing "fits", vomits after coughing)
- Breathing trouble
- Signs of fever (flushed, shivering)
- Yellowish skin or eyes

- Pink eye (redness of eye; watering or discharge from the eye)
- Unusual spots or rashes (swelling, severe itching blisters)
- Infected skin sores (crusty, bright yellow, dry or moist areas of skin)
- Frequent scratching of the scalp or skin
- Diarrhea
- Gray or white stool
- Blood or mucous in the stool
- Dark, tea-colored urine
- Sore throat or trouble swallowing
- Headache
- Vomiting
- Loss of appetite

What to do when a student has symptoms:

- ✓ Inform the school nurse or designated staff.
- ✓ Inform the student's parents/guardians.
- ✓ Separate the student from the other students.
- ✓ Take the student's temperature.
- ✓ If a student is coughing or sneezing, remind her/him to cover her/his mouth and to wash her/his hands afterwards.
- ✓ After you touch a student who might be sick, avoid touching other students until you have washed your hands.
- ✓ Determine whether the child requires immediate medical attention, should be temporarily excluded from school or can be sent back to class and observed further.

When to seek immediate medical care:

- ❖ Difficulty breathing or unable to speak
- ❖ Fever in association with abnormal appearance, difficulty breathing, abnormal skin color
- ❖ Skin or lips that look blue, purple or gray
- ❖ Seizure – except for a child known to have seizures and a care plan is in place for management of seizures without calling EMS
- ❖ Unresponsive, decreasing responsiveness or acting strangely
- ❖ After a head injury - decreasing level of alertness, confusion, headache, vomiting, irritability, difficulty walking
- ❖ Vomiting blood
- ❖ Severe stiff neck with headache and fever
- ❖ Severe dehydration with sunken eyes, lethargy, no tears, not urinating
- ❖ Suddenly spreading purple (discoloration under the skin that appears red, darkening into purple or "purpura") or red rash that is spreading to new areas of the body
- ❖ A large volume of blood in the stool**s**
- ❖ Hot or cold weather injuries (frostbite, heat exhaustion)

General Exclusion Guidelines[4, 10]

School attendance is important for students. The decision to exclude students who have an infectious disease from school should be made in conjunction with the school nurse, the state or local public health agency, health care professionals, and/or parents/guardians. This guideline document, *Infectious Disease Management: Guidelines for Schools*, contains particular exclusion recommendations for numerous individual diseases and conditions. Refer to the disease fact sheet pertaining to the specific disease.

Generally, if any of the following conditions apply, exclusion from school should be considered:

- The student does not feel well enough to participate comfortably in usual activities.
- The student requires more care than school personnel are able to provide.
- The student has:
  - ✓ a high fever (above 101° F orally)
  - ✓ behavior changes
  - ✓ persistent crying
  - ✓ difficulty breathing
  - ✓ significant lack of energy
  - ✓ uncontrolled coughing
  - ✓ rash , if rapid spread and/or associated with fever or behavioral changes
  - ✓ diarrhea and/or blood or mucus in the stools not explained by dietary change, medication, or hard stools
  - ✓ vomiting, more than 2 times in the past 24 hours unless it is determined the cause is non-communicable
  - ✓ abdominal pain, persistent (more than 2 hours) or intermittent associated with fever, dehydration or signs/symptoms of illness
  - ✓ other signs suggesting a severe illness
  - ✓ a potentially contagious illness and exclusion is recommended by a health care provider, the state or local public health agency, or these guidelines.

Students should be allowed to return to school once the exclusion period is met, or a health care provider clears the student.

In cases where unvaccinated students are exposed to a vaccine preventable disease (such as measles, mumps, rubella, varicella, or pertussis), the state or local public health agency should be consulted in order to determine if exclusion of unvaccinated students is necessary.

School Staff Exclusion Considerations

Occasionally school personnel become ill with an infectious disease. When this occurs, the affected staff member should consult with the school nurse, school administration, the state or local public health agency, and/or health care provider to determine if they can work. If ill with diarrhea or vomiting, school personnel should not work until the illness is over. This is especially important for staff that work in the cafeteria or handle food in any manner. Pregnant women or potentially susceptible staff may need to confer with their health care provider and public health officials when specific infectious diseases are of local concern to determine if it is advisable to work or if exclusion may be necessary.

Reporting requirements[27]

Alaska law requires persons treating, or having knowledge of a reportable disease, whether the disease is suspected or confirmed, to report the case to the state. In most cases, reports are made by laboratories or health care providers. Certain circumstances will require the school nurse or school personnel to report these conditions, such as when a student is suspected of having measles, chickenpox, hepatitis A, B, or C, or when an outbreak occurs. A disease "outbreak" is defined as "a sudden and rapid increase in the number of cases of a disease or other condition of public health importance in a population." These guidelines contain reporting requirements for each disease or condition (see specific disease). A complete list of the diseases and conditions reportable to the state of Alaska is available at http://www.epi.hss.state.ak.us/pubs/conditions/ConditionsReportable.pdf.

Certain infectious diseases are public health emergencies and, if suspected or diagnosed, must be reported immediately. Other diseases need to be reported as soon as possible and must be made within five working days after first discovering or suspecting the existence of the disease. Refer to the above list to determine the action necessary. Call 907-269-8000 during regular business hours, and 800-478-0084 after hours. Have available as much information as possible regarding the student and condition to report, i.e., student's name, date of birth, sex, ethnicity, address, phone number, name and address of responsible health care provider, and pertinent lab results (if applicable). A Conditions Reportable to Public Health in Alaska Form is available at http://www.epi.hss.state.ak.us/pubs/conditions/crForms.htm.

Municipal or local ordinances may also specify reporting of a condition or situation to local health authorities (e.g., dog bites to Animal Control). It is important to be familiar with these local reporting requirements, as well.

The Family Education Rights and Privacy Act (FERPA) prohibits sharing of health-related information except in certain well-defined circumstances. Notifying the state or local public health agency of a reportable disease does not breach confidentiality laws.

THE ROLE OF THE SCHOOL NURSE[28]

The National Association of School Nurses: School-age children are a population at risk for contracting and spreading infectious diseases due to their inconsistent use of proper hand hygiene, cough etiquette and social distancing from others who may be displaying signs and symptoms of infection. Local and global communities must deal with on-going emerging and resurging infectious diseases that continue to threaten the well-being of children and youth. School nurses are highly qualified to identify symptomatic trends, prevent and manage infectious disease in the school setting, and access and interpret public health information.

Prevention and control of infectious disease is a primary role of the school nurse. The school nurse has the clinical knowledge, established relationships with families and school personnel, knowledge of community resources, and important connections to government health agencies necessary to be a health expert and leader in designing and implementing programs targeting infectious diseases.

Key components of school-based infectious disease management include: promotion of vaccines; individual and school-wide infection control measures; how to contain, manage, and prevent further spread of infectious diseases; and disease surveillance and reporting. School nurses play a critical role in managing these key components in the school setting.

In their role as the health professional in the school building, school nurses often partner with public health officials during an outbreak of an infectious disease. In preparation for an outbreak of a vaccine preventable infectious disease, it is important to have a listing of students with medical or religious exemptions and other children at risk (see Immunizations) readily available in a timely manner. Knowledge of staff that may be or are pregnant is another question the Alaska Section of Epidemiology will likely query the school about in the event of certain infectious disease outbreaks (e.g., varicella, measles, rubella, pertussis). Having this data already compiled can save valuable time in instituting outbreak containment measures.

Each of the specific disease information sheets found in this document contains more information on the role of the school nurse in individualizing control strategies targeted for the particular condition.

GENERAL RESOURCES

Resources are included throughout these guidelines for each section and specific disease; however, general resources that may prove helpful to school staff are listed below.

- Centers for Disease Control and Prevention:
    - Adolescent and School Health. Infectious Diseases at School. http://www.cdc.gov/healthyyouth/infectious/
    - BAM! CDC online destination for kids aged 9-13 years with interactive information to help make healthy lifestyle choices about a number of topics, including diseases. http://www.bam.gov/sub_diseases/index.html
    - Get Smart: Know When Antibiotics Work. http://www.cdc.gov/getsmart/index.html
    - Parent Notification Letter for Chickenpox (Varicella) http://www.cdc.gov/chickenpox/outbreaks/downloads/appx-d-daycare-ltr.pdf
- State of Alaska, Section of Epidemiology Bulletins http://www.epi.hss.state.ak.us/bulletins/bltnidx.jsp

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SPECIFIC DISEASE INFORMATION

The following fact sheets are intended to provide current, basic information for school health personnel when faced with a potential communicable disease in the school setting. Each fact sheet contains the infectious agent, a description of the disease, signs and symptoms, incubation period, mode of spread, period of communicability, control measures including exclusion and return to school, reporting requirements, follow up, treatment, the role of the school nurse, and further resources. **The diseases marked with an asterisk are vaccine preventable.**

An excellent resource for schools is *Managing Diseases in Child Care and Schools, A Quick Reference Guide*, published by the American Academy of Pediatrics (AAP). The 2nd edition was utilized in developing the *State of Alaska Infectious Disease Management: Guidelines for Schools*. A more recent, updated 3rd edition is available as of June 2013. Each of the fact sheets that follow utilized the AAP resource and the Centers for Disease Control and Prevention (CDC) for its content. Further references/resources are listed for each disease.

BED BUGS

INFECTIOUS AGENT: *Cimex lectularius*

DESCRIPTION/SIGNS & SYMPTOMS: Bed bugs are small, reddish-brown, flattened, oval shaped insects that feed on the blood of people while they sleep. They are wingless and are about the size of an apple seed. When bed bugs feed, their bodies swell. Bed bugs do not transmit disease but infestations can be difficult and expensive to control. Usually, bed bugs will hide during the day and only come out to feed during the night. Unlike head lice, they do not live on a person; however, they can move from one place to another in backpacks, clothing, luggage, books, and other items. Actual bed bug infestations in schools are uncommon. Bites occur all over the body, particularly on exposed areas, such as the face, neck, arms, and hands. Although the bite does not hurt at the time, there may be a resultant skin itch and red welts, similar to a mosquito bite. Wounds do not have a red spot in the center (like flea bites). Some persons do not develop welts at all and can carry bed bugs without knowing it. Bed bugs can cause significant anxiety and sleeplessness. Students living in an infested home may feel anxious or tired during the school day. Bed bugs have nothing to do with cleanliness or socioeconomic status, but there is still a stigma that can come with having bed bugs. As a result, parents may be hesitant to admit to having bed bugs, and students may not want others to know they have an infestation at home.

INCUBATION PERIOD: Bed bugs can live up to several months or even a year without food or water. They can withstand temperatures below zero for many days.

MODE OF SPREAD: Bed bugs can crawl onto or off of a person (or their belongings) at any time. Commonly, a few bed bugs will hitchhike to school from an infested home by hiding in a student's clothing or backpack. Bed bugs that come into the school in one student's backpack could be carried home by another student, making the school a potential hub for bed bug spread. Bed bugs are large enough to be seen, but they hide in cracks in furniture, floors, walls, suitcases or clothing. You may also notice small bloodstains from crushed insects or dark spots (droppings) on linens or bed coverings. Bed bugs may travel from one apartment to another.

CONTROL MEASURES:

REPORTING: Bed bugs are not a condition reportable to the Alaska Section of Epidemiology unless there are known outbreaks of an unusual number.

EXCLUSIONS: Students should not be excluded from school due to bed bugs.

RETURN TO SCHOOL: Exclusion is not required.

TREATMENT: Treat student as needed for bites.

FOLLOW-UP: Schools should not be closed due to bed bug presence**.** School health personnel should manage the case by re-inspecting student belongings, desk, classroom, etc. until the problem is resolved. Student belongings such as backpacks can be isolated and stored in tight-sealing plastic bags or bins both at home and school to prevent further spread of bed bugs.

ROLE OF SCHOOL NURSE:

- Be discreet and assure confidentiality when examining a student suspected of bed bug infestation.
- Remove/collect any bugs found for identification. Try to keep the specimens as intact as possible.
- Contact the student's parent or guardian, if a confirmed bed bug was found on a student, to inform them of the presence of a bed bug(s) on their child and/or send a letter home.
- If a student has an infestation at home:

    - Determine if the infested home is being treated. Home remedies and do-it-yourself treatments are usually insufficient and could cause negative health effects or produce potential hazards in the home.
    - Instruct parents to store their child's freshly laundered clothing in sealed plastic bags or container until they are put on in the morning. This prevents bedbugs from hiding in the clothing and being carried to school. Limit items going back and forth from home to school until infestation is treated.
    - Recommend inspection of backpacks, lunchboxes, and other items upon arrival at school on a daily basis. If possible, the school should offer to keep non-essential items overnight to help ensure the items are bed bug free.
    - Continue to use these measures until successful treatment of the home has been verified.
- The school principal or nurse should consider notifying parents of all children in the affected class or classes. Basic information about bed bugs including description, signs and symptoms, strategies to monitor for and eliminate infestation and where to get further assistance should be included in the notification.
- Ongoing pest management should be overseen by the building administrator or designee.

COMMENTS:

- Pesticide Use at Schools in Alaska: Alaska state regulations (18 AAC 90.300) require pesticide applicators to be licensed and certified in order to use, or supervise the use of, a pesticide at a school or public place. For more information on the State of Alaska Division of Environmental Health Pesticide Control Program contact 907-376-1870 or http://dec.alaska.gov/eh/pest/cpa.htm

REFERENCES/RESOURCES:

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Parasites – Bed Bugs.
http://www.cdc.gov/parasites/bedbugs/

State of Alaska. Section of Epidemiology. Bed Bug Information.
http://www.epi.alaska.gov/id/dod/bedbugs/default.htm.
Bed Bug Fact Sheet http://dhss.alaska.gov/dph/Documents/fs_BedBugs.pdf

Alaska Division of Environmental Health. Pesticide Control Program
http://dec.alaska.gov/eh/pest/index.htm
Pesticide Use at Schools
http://dec.alaska.gov/eh/docs/pest/Pesticide%20Use%20at%20Schools.pdf

State of Michigan. Bed Bugs: What Schools Need to Know
http://www.michigan.gov/documents/emergingdiseases/Bed_bugs_schools_293498_7.pdf

State of Arizona. Arizona Cooperative Extension. Pest Press. Bed Bugs Go to School.
http://mda.mo.gov/plants/ipm/pdf/ipm_bedbugs.pdf

State of Ohio. Central Ohio Bed Bug Task Force. School Information.
http://centralohiobedbugs.org/pdf/school_IDandMgmt_guidelines.pdf

New York City Department of Health & Mental Hygiene. Preventing and Getting Rid of Bed Bugs Safely. A Healthy Homes Guide. Available at: www.nyc.gov/html/doh/downloads/pdf/vector/bed-bug-guide.pdf

BITES - ANIMAL

INFECTIOUS AGENT – *Salmonella* and other bacteria*, rabies (Rhabdoviridae* family*)*

DESCRIPTION/SIGNS & SYMPTOMS: Reptiles and wild animals should not be allowed in any school program as bites and exposure to diseases can be serious. Salmonella inhabits the gastrointestinal tract of reptiles and contact with reptiles (e.g., skin, environment) may cause *Salmonella* infection in children. See Salmonellosis in this document for further information on Salmonella infection. Additionally and more often, bites from reptiles and wild animals may result in an infection from other bacteria.

Bites of some animals (e.g., bats, raccoons, skunks, stray dogs and cats) may transmit rabies virus. Rodents (mice, squirrels, and gerbils) rarely carry rabies. Rabies is a very serious viral infection that infects the nervous system. The majority of rabies reported to the Centers for Disease Control and Prevention (CDC) each year occurs in wild animals like bats, raccoons, skunks, and foxes. However, the virus can be spread by unimmunized pets and, in extremely rare cases, immunized pets that have been infected. The risk is high when the animal is unimmunized and the bite was unprovoked. The risk for rabies, particularly fox rabies, is highest in certain geographic locations in Alaska. See http://www.adfg.alaska.gov/index.cfm?adfg=disease.general1.

The early symptoms of rabies include fever, headache, and general weakness or discomfort. The progression of symptoms leads to insomnia, anxiety, confusion, excitation, hallucinations, hydrophobia (fear of water), difficulty swallowing, increased saliva, seizures, and paralysis. Once signs or symptoms develop, rabies is nearly always a fatal disease.

INCUBATION PERIOD: For rabies, the time from exposure until development of symptoms can vary but is generally 3-8 weeks. Since the virus grows along peripheral nerves to the central nervous system (CNS), the distance from the bite to CNS and the supply of nerves at the area of the bite are some of the factors that can influence the length of the incubation period.

MODE OF SPREAD: The rabies virus is transmitted through saliva or brain/nervous system tissue. This is usually from a bite, defined as penetration of the skin by the teeth. Non-bite exposures may also occur, defined as contamination of an open wound, abrasion, mucous membrane, or scratch with saliva or neural tissue from an infected animal. Contact with blood, urine, or feces from an infected animal does not constitute a rabies exposure. Rare cases have occurred from organ transplantation or occupational exposures in the laboratory.

PERIOD OF COMMUNICABILITY: The infectious period is the length of time that a rabid animal can potentially shed virus and infect another animal. In general, this period can start from a few days before clinical signs are evident until the animal dies. The time frame for dogs/cats is a maximum of 10 days, which is why there is a 10-day observation period following a bite to a human. If the dog/cat is still alive and not showing signs of illness after 10 days, the animal was not infectious (shedding virus) at the time of the bite. The period of viral shedding for wildlife may vary, which is the reason why there is no standard observation time for wildlife that bite humans.

CONTROL MEASURES

REPORTING: ***Animal bites themselves are not reportable to the Alaska Section of Epidemiology but may be required to be reported to local animal control authorities. Health care providers are legally mandated to report cases of human rabies or suspected exposure to***

rabies. The Alaska Section of Epidemiology provides 24/7 consultation about human-animal interaction that may be considered an exposure to rabies. **All questions about suspected cases in humans should be referred to the Section of Epidemiology at 907-269-8000 or 800-478-0084 after-hours.** If after consultation, post-exposure prophylaxis with vaccine/medication, the Alaska Section of Epidemiology will provide the medication to an appropriate health care facility as soon as possible. No statewide statistics on all dog bites are routinely collected. Persons should check their local authorities to determine what, if any, legal requirements are in place.
EXCLUSION: No exclusion is necessary unless any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.
RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.
TREATMENT: Clean injuries and use ice to minimize swelling. Notify parents. An animal bite that breaks or punctures the skin has a significant chance of producing a bacterial infection and can cause serious nerve or tendon laceration. Any wild animal or pet bite that breaks the skin should be evaluated by a health care professional for the need for preventative antibiotics and/or other treatment. A tetanus shot may be indicated.
FOLLOW-UP: Monitor wound for signs of infection. If post-exposure prophylaxis is indicated for exposure to rabies, the course involves a series of injections generally over a 2-week period.

ROLE OF SCHOOL NURSE:

- Teach children to avoid contact with stray, wild or dead animals.
- Encourage adult supervision when contact between children and animals.
- Cleanse any wound incurred at school immediately and thoroughly with soap and water.
- Encourage urgent medical attention particularly if rabies is suspected and/or the bite punctures the skin.

NOTE: Animal carcass disposal
Carcasses of animals should always be disposed of properly, i.e., burial or incineration, see http://dec.alaska.gov/eh/docs/sw/Animal_Carcass_Disposal.pdf

REFERENCES/RESOURCES:
American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Rabies. Available at: http://www.cdc.gov/rabies/index.html

Healthy Pets Healthy People. Available at: http://www.cdc.gov/healthypets/

Morbidity and Mortality Weekly Report. Compendium of Measures to Prevent Disease Associated with Animals in Public Settings, 2011. Appendix D, Guidelines for Animals in School and Child-Care Settings. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6004a1.htm?s_cid=rr6004a1_w

State of Alaska Section of Epidemiology. Rabies Information. Available at: http://www.epi.alaska.gov/id/rabies/default.htm

Alaska Rabies Prevention and Control Manual. Alaska Section of Epidemiology. 2011. Available at: http://www.epi.alaska.gov/id/rabies/RabiesControlManual.pdf.

State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.hss.state.ak.us/pubs/conditions/ConditionsReportable.pdf

BITES - HUMAN

INFECTIOUS AGENT: Various bacteria. If blood is involved, there is potential for bloodborne disease (hepatitis B, human immunodeficiency virus [HIV] and hepatitis C virus).

DESCRIPTION/SIGNS & SYMPTOMS: Human bites are usually caused by one person biting another and are common among young children. Superficial occlusive bites in young children do not usually lead to infectious disease issues. However, other situations in which one person comes in contact with another person's teeth is considered a biting incident. In a fight, for example, one person's knuckles may come into contact with another person's teeth, and if the skin is broken, the injury would be considered a bite. Human bites that break the skin have a high risk of infection and may also pose a risk of injury to tendons and joints. Human bites can be more serious than animal bites as there are germs in some human mouths that can cause infections that are hard to treat. If blood is drawn into the mouth of the biter, or if the biter breaks the skin and has bleeding gums or mouth sores, bloodborne disease could be a concern. Hepatitis B virus, human immunodeficiency virus (HIV) and hepatitis C virus are examples of blood-borne pathogens. The risk of transmission of these viruses, however, is very low in child care and school settings. Bites may produce symptoms that range from mild to severe including skin breaks or major cuts with or without bleeding, puncture wounds, bruising and crushing injuries.

INCUBATION PERIOD: Dependent on the bacteria or virus involved.

MODE OF SPREAD: Direct contact from broken skin, or blood drawn into the mouth of the biter.

PERIOD OF COMMUNICABILITY: Though the bite itself may not be contagious to others, resulting disease or wound drainage has the potential for communicability.

CONTROL MEASURES:

REPORTING: Human bites are not a condition reportable to the Alaska Section of Epidemiology. The parent/guardian should be notified of the bite.

EXCLUSION: No exclusion is necessary unless any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

TREATMENT: Provide first aid. Use protective gloves. If the wound is not bleeding severely, wash the wound thoroughly with soap and running water for 3- 5 minutes. If the wound is actively bleeding, apply direct pressure with a clean, dry cloth and elevate the area until the bleeding is controlled then cleanse the wound as above. Apply a clean dressing. If bruising, apply a cold compress. Refer all students whose skin is broken to a health care provider to evaluate. It is important for the student to receive early assessment and treatment in order to prevent infection. Antibiotics may be prescribed. Tetanus vaccine may be indicated.

FOLLOW-UP: Monitor for signs of infection.

ROLE OF SCHOOL NURSE:

- Provide first aid, notify the parent/guardian of the bite and refer to a health care professional if the skin is broken.
- Teach young children not to bite others. Focus on the injured child first then attempt to determine why the biting happened and address prevention of further behavior.

- Be aware that bites can be especially serious when there are signs of infection (redness, swelling, purulent discharge, pain) and when the bite occurred near the eyes or involved the face, hands, wrists or feet. A person with a weakened immune system will be more at risk for wound infection.
- Take care never to place a hand near the mouth of someone having a seizure.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

National Institute of Health Medline Plus: Human Bites. Available at: http://www.nlm.nih.gov/medlineplus/ency/article/000035.htm.

Medscape Reference: Human Bites. Available at: http://emedicine.medscape.com/article/881270-overview.

BOIL/ABSCESS/CELLULITIS

INFECTIOUS AGENT: Common skin bacteria (staphylococci and streptococci) are the cause of boils/abscesses/cellulitis. In recent years, a certain type of staphylococcus called Methicillin-resistant *Staphylococcus aureus* (MRSA) has become more likely to cause more serious infections. For more information, see MRSA in this document.

DESCRIPTION/SIGNS & SYMPTOMS: Boils are usually small areas (penny or nickel sized) with a thin covering of skin, while abscesses are large raised areas on the skin that are tender to touch and filled with purulent material (pus). Abscesses and boils may drain when the skin over the infected area opens and the fluid or pus comes out. Cellulitis is an infection of the deeper skin tissue. Signs and symptoms include redness, swelling, tenderness, pain, warmth and fever. The area of cellulitis can spread quickly. All of these skin infections are usually warmer than the surrounding normal areas of skin because of the body's reaction to the infection. These infections may begin from a tiny break in the skin from a scratch, puncture wound, bug bite or other causes and progress from there. Boils may also form with one or more hair follicles become infected with bacteria.

INCUBATION PERIOD: Incubation period unknown

MODE OF SPREAD: Direct person-to-person contact with purulent drainage (pus) and skin bacteria. Staphylococci and streptococci are present on the skin of most children and usually do not cause a problem. People who carry the bacteria in their noses, throats, and on their skin may pass the bacteria on to others. However, for an infection to occur, the bacteria must enter through a break in the skin. Infection can also occur when the bacteria becomes more aggressive and overpowers normal defenses against infection.

PERIOD OF COMMUNICABILITY: The period of communicability is the pre-scab time when uncovered boils and abscesses form and drain fluid or pus usually with staphylococcus and streptococcus bacteria. This period concludes when the lesions completely scab over or heal, or continue to be completely covered with a dry dressing. The initial lesion may develop rapidly from a pimple to soft tissue involvement in 24-48 hours and may continue forming a deeper, necrotic abscess within 72 hours.

CONTROL MEASURES:

REPORTING: Boils, abscesses and cellulitis are not conditions reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: No exclusion is necessary unless the lesion is draining and cannot be covered, or the covering cannot be maintained because the drainage comes through the covering to contaminate other surfaces. Exclusion should also be considered if any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

TREATMENT: Most boils, abscesses and cellulitis are self-limiting or respond well to basic interventions such as dressings, warm packs (for initial stages of boils and sluggish draining abscesses) and dispensing over-the-counter anti-inflammatory medications as directed by the family's health care professional. Infected children may need oral antibiotic treatment. Antibiotics should be given exactly as prescribed.

FOLLOW UP: Use good handwashing technique at all the times. Cover lesions if they are draining and assess dressings, as needed, to control any drainage. Practice universal/standard

precautions when changing bandages or dressings. Follow health care provider treatment plans. Monitor comfort/pain.

ROLE OF SCHOOL NURSE:

- Evaluate suspicious lesions and notify parents or guardians immediately of suspected onset of boils, abscesses or cellulitis. Refer the student to a health care provider if the boil does not resolve after 2 weeks, occurs with a fever, or symptoms progress (worsening pain, redness, swelling, tenderness). Urgent referral is necessary if cellulitis is suspected, particularly when fever is present.
- Instruct parents and students never to squeeze or lance the boil as this can spread infection.
- Educate students and staff about hand hygiene, clean dressing change technique and proper disposal of soiled materials.
- Educate students and staff on prevention measures including thoroughly cleansing even small cuts and scrapes, keeping lesions clean and covered until they heal, and avoidance of sharing personal items such as towels, sheets, razors, clothing and athletic equipment.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Mayo Clinic. Boils and carbuncles. Available at: http://www.mayoclinic.com/health/boils-and-carbuncles/DS00466.

Mayo Clinic. Cellulitis. Available at: http://www.mayoclinic.com/health/cellulitis/DS00450

Cellulitis of the eyelid

CHICKENPOX (VARICELLA)*

INFECTIOUS AGENT: Varicella zoster virus is a member of the herpes virus family. Humans are the only reservoir of the virus, and disease occurs only in humans.

DESCRIPTION / SIGNS & SYMPTOMS: Varicella infection is usually mild but can be serious, especially in young infants, adolescents and adults. The infection is often characterized by a short (1 or 2 days) prodromal period (low-grade fever, malaise) although this may be absent. A itchy rash develops consisting of crops of small red spots and bumps (typically 250–500 lesions) that progress to vesicles (blisters) and appear in 3 or more successive waves. The rash is more noticeable on the trunk than exposed parts of the body but may also occur inside the mouth, ears, genital areas and scalp. Fever, runny nose, headache and cough may occur. The blisters eventually resolve by crusting. Complications include secondary bacterial infections of skin lesions, pneumonia, cerebellar ataxia, and encephalitis.

Rarely, children get chickenpox a second time. It is also possible for children to develop a varicella infection in spite of being immunized with the vaccine. However, in both these situations, the cases are generally mild with less fever and fewer lesions and blisters.

INCUBATION PERIOD: The average incubation period for varicella is 14–16 days (range, 10–21 days).

MODE OF SPREAD: Varicella is transmitted from person to person by direct contact with the fluid from the chickenpox blisters and/or through the air with inhalation of aerosols from fluid of the skin lesions. In utero infection can also occur as a result of passage of virus across the placenta during a maternal varicella infection.

PERIOD OF COMMUNICABILITY: Varicella is highly contagious. The period of communicability is estimated to begin 1–2 days before the onset of rash. An infected person no longer spreads the virus when all lesions are crusted and no new blisters are forming, typically 4–7 days after onset of rash. This period may be longer in immunocompromised people.

CONTROL MEASURES:

VACCINATION: Varicella is a required vaccination (at 12-15 months with a booster dose at age 4-6) for school children in Alaska and is highly effective against preventing and spreading the infection. Vaccination of older children, teens, and adults who are susceptible (i.e., those who have not received 2 doses of vaccine or had the natural infection) is recommended.

REPORTING: ***Varicella is a reportable condition to the Alaska Section of Epidemiology.*** By Alaska statute and regulation, a suspected or confirmed case of varicella must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: Exclude the student until all lesions have crusted and no new blisters are forming (usually 6 days after the start of the rash). In addition, exclusion should also be considered if any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

TREATMENT: Relief of symptoms and prevention of skin infections constitute a typical treatment plan. Calamine lotion, colloidal oatmeal baths, and antihistamines may help relieve

some of the itching. Keeping fingernails trimmed short may help prevent skin infections caused by scratching. Use of non-aspirin medications, such as acetaminophen, to relieve fever may be indicated. Aspirin should not be given as it increases the risk of contracting Reye syndrome, a severe complication that affects the liver and brain and can cause death. Acyclovir, an antiviral medication, can reduce symptoms of varicella infection. However, to be most effective it must be given within 24 hours after the disease begins. This medication is most often prescribed for adolescents and for children with asthma or eczema rather than otherwise healthy young children.

FOLLOW UP: Monitor for signs or symptoms of infected lesions. Varicella vaccine, as soon as possible, is recommended for post-exposure administration for healthy unvaccinated people aged ≥12 months without other evidence of immunity. Vaccine administration may prevent or modify the disease process. Varicella Zoster Immune Globulin (VZIG) is also sometimes recommended for certain susceptible patients.

ROLE OF SCHOOL NURSE:

- Review immunization status of the school population and assure compliance with varicella vaccine. Talk with hesitant parents about vaccine safety and efficacy and provide them with reliable resources such as those listed under Immunizations in this document. Encourage them to discuss vaccination with their health care provider. Inform them that, depending on the specific circumstances, their child may be excluded from school/daycare to curtail an outbreak.
- Provide parents with treatment information, hygiene practices and signs/symptoms to that would indicate the need for a health care provider evaluation. These include: fever that lasts longer than 4 days, fever that rises above 102 degrees F, extreme illness, difficulty waking up or confusion, difficulty walking, stiff neck, frequent vomiting, difficulty breathing, severe cough and any areas of the rash or any part of the body that becomes significantly red, warm, or tender or begins to drain purulent material.
- Report any suspected varicella infection to the Alaska Section of Epidemiology, particularly if the child is not seen by a health care provider. Work with the Alaska Section of Epidemiology, as requested, to identify underimmunized or unimmunized children in a school where two or more cases of varicella infection have been identified. These individuals should be offered the vaccine and/or may need to be excluded from school until it is determined safe for them to return.

REFERENCES/RESOURCES:

American Academy of Pediatrics. Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Chickenpox (Varicella). Available at: http://www.cdc.gov/chickenpox/index.html

Control & Investigation of Varicella Outbreaks. http://www.cdc.gov/chickenpox/outbreaks/control-investigation.html

Vaccine Information Statements. http://www.cdc.gov/vaccines/pubs/vis/default.htm

State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and SocialServices. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

Epidemiology Bulletin. Varicella Daycare Center Outbreak – Kenai Peninsula. http://www.epi.alaska.gov/bulletins/docs/b2004_12.pdf

American Academy of Pediatrics. Healthychildren.org. Varicella (Chickenpox). Available at: http://www.healthychildren.org/English/health-issues/vaccine-preventable-diseases/Pages/Varicella-ChickenPox.aspx?nfstatus=401&nftoken=00000000-0000-0000-0000-000000000000&nfstatusdescription=ERROR%3a+No+local+token

National Institutes of Health: Medline Plus. Chickenpox. Available at: http://www.nlm.nih.gov/medlineplus/chickenpox.html#cat3


CYTOMEGALOVIRUS (CMV)

INFECTIOUS AGENT: A virus that is a member of the herpes virus family. This group of viruses includes herpes simplex virus types 1 and 2, varicella-zoster virus, roseola infantum, and Epstein-Barr virus.

DESCRIPTION/SIGNS & SYMPTOMS: In most cases, CMV causes no symptoms. Occasionally, children or adults with CMV will experience mononucleosis-like symptoms such as fever, swollen glands, and fatigue. Individuals infected with CMV may have the virus in their bodies for years without symptoms. Infection is life-long. Once infected with CMV, individuals develop immune responses that prevent re-infection. Most healthy people working with infants and children face no special risk from CMV infection. However, for women of childbearing age who have not previously been infected with CMV, there is a potential risk to a developing fetus, and these individuals should be referred to health care providers for counseling regarding risk of infection in that setting. Counseling may include testing for immunity against CMV infection, since antibody in infected individuals blocks transmission of the virus to the fetus. CMV can also be a serious infection for immunocompromised children and adults, but, in many cases, the infection comes from a reactivation of a virus carried by the individual rather than from an external source.

INCUBATION PERIOD: Unknown for person-to-person transmission, but probably several weeks to months.

MODE OF SPREAD: In school settings, the virus is transmitted by direct person-to-person contact. Infected individuals may continue to shed the virus in such body fluids as blood, saliva, urine, genital fluids, feces, and other secretions. Transmission occurs when infected body fluids come in contact with hands and then are passed to the nose or mouth of a susceptible person. Spread can also occur from mother to infant before, during and after birth; by blood transfusions from an infected person; and during kissing and sexual activities.

PERIOD OF COMMUNICABILITY: Life-long. The virus is shed at various times throughout life.

CONTROL MEASURES:

REPORTING: CMV is not a reportable condition to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: Because infections among healthy persons, including young children, are common and typically asymptomatic, efforts to prevent transmission among healthy children are not necessary. Do not exclude a student with CMV unless he or she is unable to participate in usual classroom activities or meets other exclusion criteria, such as fever with behavior change.

RETURN TO SCHOOL: If excluded for other exclusion criteria, the child may return to school when the criteria has resolved.

TREATMENT: There is no treatment for CMV infection in healthy individuals. However, immunocompromised individuals should consult a health care provider regarding appropriate treatment. Pregnant women who are exposed should be referred to their healthcare provider.

FOLLOW-UP: No follow-up of an infected individual is usually necessary. Almost all people will eventually be infected and may be unaware as they will not experience any illness symptoms.

ROLE OF THE SCHOOL NURSE:

- Educate staff members regarding CMV and risks associated with it.

- Educate students and staff to use universal/standard precautions and pay particular attention to proper handwashing. This is especially true for women of childbearing age who work with young children. Counsel pregnant women and immunocompromised individuals to contact their healthcare provider.
- Share prevention and control measures with students and staff including: do not kiss children on the lips or allow them to put their fingers or hands in another person's mouth; do not share cups or eating utensils.

REFERENCES/RESOURCES

American Academy of Pediatrics. Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Cytomegalovirus (CMV) http://www.cdc.gov/cmv/index.html

COMMON COLD (UPPER RESPIRATORY INFECTION)

INFECTIOUS AGENT: Over 200 viruses can cause the common cold. The rhinovirus is the most common type of virus that causes colds.

DESCRIPTION/SIGNS & SYMPTOMS: The term upper respiratory infection (URI) usually refers to a viral infection affecting the nose, throat, ears and eyes. Upper respiratory infections are common among infants in child care (7-9 per year), but become less common as children mature. Adults have an average of 4 colds per year. Upper respiratory infections exhibit one or more of the following signs and symptoms: cough, sore or scratchy throat (or tonsillitis), runny nose, sneezing, watery eyes, headache, fever and earache. These symptoms can last for up to two weeks.

INCUBATON PERIOD: 2 to 14 days

MODE OF SPREAD: Cold viruses are spread by direct or close contact with mouth or nose secretions or by touching contaminated objects. Coughing or sneezing can expel thousands of infectious viruses into the air.

PERIOD OF COMMUNICABILITY: The contagious period is usually a few days before the signs or symptoms appear and while clear runny secretions are present. The presence of green or yellow discharge from the nose is normal as the body discards mucus and other debris from the cold. Darker or greener mucus does not mean the child is more ill, contagious, or has a greater need for antibiotics.

CONTROL MEASURES:

REPORTING: Individual upper respiratory infections are not a reportable condition to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: No exclusion is necessary unless any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

TREATMENT: There is usually no antibiotic treatment necessary since the common cold is caused by a virus, not bacteria. Taking antibiotics, when not needed, can be harmful. Over-the–counter medications such as decongestants, pain relievers and throat lozenges may lessen the symptoms but products must be used as directed. Many over-the-counter products are not recommended for children younger than certain ages.

FOLLOW UP: Encourage evaluation by a healthcare provider if the child's temperature is higher than 100.4°F, the child has symptoms lasting more than 10 days, and/or symptoms that are not relieved by over-the counter medicines.

ROLE OF SCHOOL NURSE:

- Teach students and staff proper sneeze and cough etiquette and the use of disposable facial tissues. Teach everyone to remove any soil and wash their hands right after using facial tissues or having contact with mucus to prevent the spread of disease by contaminated hands. Dispose of all facial tissues after each use.
- Sanitize surfaces that are touched by hands frequently such as toys, tables, and doorknobs.
    - Encourage ventilation of the group environment with fresh outdoor air and maintain temperature and humidity conditions according to the following standards:

~Winter months: 65°F (18.3C) -75°F (23.9°C) with 30% - 40% relative humidity.
~Summer months: 68°F (20C) – 82°F (27.8°C) with 30% - 40% relative humidity.
~Air exchange: Minimum of 15 cubic feet per minute per person of outdoor air.

REFERENCES/RESOURCES:

American Academy of Pediatrics. Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Common Cold. http://www.cdc.gov/getsmart/antibiotic-use/URI/colds.html

Centers for Disease Control and Prevention. Get Smart: Know When Antibiotics Work. One page fact sheet: Runny Nose Q&As Guide for Parents. http://www.cdc.gov/getsmart/campaign-materials/print-materials/FactSheet-RunnyNose.html

DENTAL CARIES

INFECTIOUS AGENT: Dental caries or cavities are caused by acidic metabolites produced by bacteria that normally inhabit the mouth, where they feed on carbohydrates. (Particularly bacteria such as *Lactobacillus spp.*, *Streptococcus mutans*, and *Actinomyces spp.*)

DESCRIPTION/SIGNS AND SYMPTOMS: Tooth decay is a disease that is, by and large, preventable. Dental caries is a common and chronic disease process with significant consequences. These can be thought of as a chronic infection of enamel or dentine in which the microbial life in the oral cavity is responsible for damage. These bacteria produce acid that damages the hard surface enamel leading to holes in the teeth, commonly called cavities. It is possible for oral bacteria to invade compromised tissues of the body and produce disease in other areas.

Caries begin as a change in color of the tooth where the acid is starting to break down the hard enamel surface. These first appear as white spots at the gum line on the upper front teeth. If not treated early, the damage will continue. Next the tooth starts to look yellow, brown, or black in the area where decay of the tooth is happening. If the process is not stopped, the whole tooth can be eaten away by the acid. The tooth and gum area may become painful and eventually result in tooth loss.

According to the May 2000 Surgeon General's report, Oral Health in America, more than 51 million school hours are lost each year to dental-related conditions.

INCUBATION PERIOD: It is unknown and subject to variables such as oral flora, diet, oral hygiene, fluoride use and saliva production.

MODE OF SPREAD: The bacteria that cause caries are transmitted by sharing objects that enter the mouth. High caries rates run in families and are passed from mother to child from generation to generation. The children of mothers with high caries rates are at a higher risk of decay.

PERIOD OF COMMUNICABILTY: It is on-going and requires transmission of saliva from the primary caregiver to the child.

CONTROL MEASURES:

- Mother/caregiver should seek routine dental care. Reducing active dental decay in the mother/caregiver will reduce exposure of bacteria to the infant/child.
- Reduce the exposure of children to the bacteria that cause caries.
- Harden the enamel with appropriate exposure to fluoride.
- Limit the time and/or frequency of exposure to sugar-containing fluids and foods in the diet. Avoid carbonated beverages and juice drinks (juice drinks contain high-fructose corn syrup and 100% natural juice). Limit intake of 100% fruit juice to no more than 4 oz. per day.
- Encourage children to drink only water and milk between meals.
- Do not let children go to sleep with a bottle.

REPORTING: Dental caries infection is not a reportable condition to the Alaska Section of Epidemiology.

EXCLUSION: No exclusion is necessary unless any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.
RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.
TREATMENT: The American Academy of Pediatrics recommends that preventative dentistry begins with the first tooth. (**Over 40% - 50% of children will be affected by tooth decay before age 5)** An oral health risk assessment by a pediatric dentist is recommended by 6 months of age and no later than 12 months of age. The American Academy of Pediatric Dentistry recommends a dental check-up at least twice a year for most children. Some children need more frequent dental visits because of increased risk of tooth decay, unusual growth patterns or poor oral hygiene.
FOLLOW-UP: Follow up referrals to determine if the child has been seen by the dentist. Oral health issues affect children in poverty and minorities far more than other groups. These groups of children generally have greater difficulty accessing ongoing basic dental care. Provide resources for local low cost dentistry options, Denali KidCare and other programs that provide access to dental treatment.

ROLE OF THE SCHOOL NURSE:

- Instruct on proper dental hygiene, brushing twice a day with fluoride toothpaste, floss once a day.
- Include instruction and information regarding proper nutrition and dietary practices, and protection against oral injuries.
- Encourage regular dental check-ups.
- Assess at risk population, and assist in acquiring needed dental services in collaboration with dental providers. At risk population includes children with special health care needs, children of mothers with a high caries rate, children with demonstrable caries, plaque, demineralization, and/or staining, later-order offspring, and children in families of low socioeconomic status.
- Refer and follow up students with suspected dental caries. Recommend the parent seek dental care from a dentist skilled in pediatric assessment, prevention, and intervention.

REFERENCES/RESOURCES:

American Academy of Pediatrics. Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

The American Academy of Pediatrics: http://www2.aap.org/oralhealth/SOPDOH.html

Oral Health in America: A Report of the Surgeon General:
http://www2.nidcr.nih.gov/sgr/sgrohweb/home.htm

The American Dental Association
Classroom ideas and resources: http://www.ada.org/387.aspx

The American Academy of Pediatric Dentistry:
Parent Resource Center http://www.mychildrensteeth.org
Regular Dental Visits
http://digital.ipcprintservices.com/publication/repo30/17249/64412/64412.pdf
Healthy Smiles, Healthy Children http://www.aapd.org/foundation/

National Association of School Nurses, Oral Health Connections

Tool and Resources http://www.oralhealthconnections.org/ToolsResources

Programs that provide access to dental treatment
http://www.oralhealthconnections.org/LocateCare

Alaska Department of Health and Social Services, Division of Health Care Services

Denali Kidcare http://dhss.alaska.gov/dhcs/Pages/denalikidcare/default.aspx

DIARRHEAL ILLNESSES GENERAL GUIDELINES

Consider these general guidelines for each of the diarrheal illnesses that follow.

EXCLUSION: Students should be excluded for diarrhea if:

1. Stool is not contained in the diaper for diapered children.
2. Diarrhea is causing "accidents" for toilet-trained children.
3. Stool frequency exceeds two or more stools above normal for that child, because this may cause too much work for the caregivers/teachers and make it difficult for them to maintain sanitary conditions.
4. Blood or mucous in stools.
5. Stool that is black or very pale.
6. Dry mouth, no tears, or no urine output in 8 hours.
7. Jaundice (i.e., yellow skin or eyes) is present.

RETURN TO SCHOOL:

1. A health professional should clear the child for readmission for all cases of bloody diarrhea and diarrhea caused by *Shigella*, *Salmonella*, *E coli*, *Cryptosporidum* or *G intestinalis*.
2. In general, diapered children may return when stool is contained by the diaper (even if the stool remains loose) and when toilet-trained children do not have accidents.
3. Stool frequency should be reduced to fewer than two stools above normal for that child, even if the stools remain loose.
4. The child must be able to participate and staff able to care for the child without compromising their ability to care for the health and safety of the other children in the group.

FOLLOW UP: The affected but recovering child should be monitored for recurrent diarrhea and any other symptoms of a relapse, especially if the source of the infection is unidentified.

ROLE OF SCHOOL NURSE:

- Report outbreaks of diarrhea to the Alaska Section of Epidemiology.
- Refer all cases of bloody diarrhea to their healthcare provider.
- Exclude children with diarrhea until diarrhea resolves.
- Alert possible exposed family members and staff to watch for symptoms.
- Instruct students on the importance of taking the prescribed medication for the full length of time. Symptoms may improve before the parasitic infection is completely cleared.
- Watch for dehydration in the very young.
- Prevent sick children from being transferred for care to other groups or facilities where they may expose other susceptible children.
- Monitor the health of affected child(ren) throughout the symptomatic recovery period.
- Ensure that staff follow strict and frequent handwashing, diapering, toileting, food handling, and cleaning and sanitizing procedures.
    - Instruct staff and students on proper handwashing technique particularly after toilet use.
    - Work closely with teachers, aides and custodial staff to keep the classroom areas properly sanitized.

- Ensure that food preparation areas are cleaned not only with soap & water, but also sanitized.
- Ensure proper sanitation or disposal of contaminated items.
- Pay close attention to reducing communal exposure to water, such as water tables. Water tables with free-flowing fresh water or individual water bins reduce transmission risk.
- Prevent contamination with human and animal feces.

REFERENCES/RESOURCES:

American Academy of Pediatrics. Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

DIARRHEAL ILLNESSES: CAMPYLOBACTERIOSIS

INFECTIOUS AGENT: bacteria of the genus *Campylobacter*

DESCRIPTION/SIGNS & SYMPTOMS: Bloody diarrhea, fever, vomiting, abdominal cramping, and malaise.

INCUBATION PERIOD: 1-7 days but it can be longer

MODE OF SPREAD: Contact with feces from infected birds, farm animals or pets, contaminated water, unpasteurized milk, contaminated food, under-cooked chicken or pork, and occasionally, person to person via the fecal-oral route. Outbreaks of *Campylobacter* are usually associated with unpasteurized milk or contaminated water.

PERIOD OF COMMUNICABILITY: Throughout the course of the infection, usually several days to several weeks. Without antibiotic treatment, the individual may excrete the bacteria for 2 – 3 weeks.

CONTROL MEASURES:

REPORTING: ***Campylobacteriosis is a reportable disease to Alaska Section of Epidemiology.*** By Alaska statute and regulation, a suspected or confirmed case of campylobacteriosis must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.
EXCLUSION: Yes, see Diarrheal Illnesses: General Guidelines.
RETURN TO SCHOOL: A healthcare professional must clear the child for readmission.
TREATMENT: Almost all persons infected with *Campylobacter* recover without specific treatment. In more severe cases, antibiotics may be prescribed. Extra fluids will be necessary as long as diarrhea lasts.
FOLLOW-UP: See Diarrheal Illnesses: General Guidelines.

ROLE OF SCHOOL NURSE: See Diarrheal Illnesses: General Guidelines.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Campylobacter. Available at: http://www.cdc.gov/nczved/divisions/dfbmd/diseases/campylobacter/ Accessed on 2/29/2012.

State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

DIARRHEAL ILLNESSES: CRYPTOSPORIDIOSIS "Crypto"

INFECTIOUS AGENT: A microscopic parasite *Cryptosporidum parvum* and *C. hominis* are the most prevalent in humans

DESCRIPTION/SIGNS & SYMPTOMS: Watery diarrhea (hallmark symptom), stomachache, nausea, vomiting, dehydration, fever, weight loss, generally feeling ill. Some people seem to get better only to have the diarrhea return in a few days. Symptoms come and go up to 30 days, but usually subside in 1 to 2 weeks. Cryptosporidiosis can cause severe and prolonged disease in persons with weakened immune systems.

INCUBATION PERIOD: Incubation period: 2 to 10 days, average 7 days.

MODE OF SPREAD: Contact and ingestion of something contaminated with infected persons' or animals' stool. Swallowing recreational water or drinking water contaminated with sewage or feces from humans or animals. Use special care when visiting zoos or petting zoos where students may have increased contact with animal feces. Eating uncooked contaminated foods: all fruits and vegetable should be thoroughly washed with uncontaminated water. Cryptosporidiosis is NOT spread by contact with blood. Outbreaks in child-care settings are most common during the late summer/early fall (August/September) but may occur at any time.

People with greater risk for exposure to contaminated materials:

- Children who attend day-care centers, including diaper-age children
- Child-care workers. Parents of infected children. International travelers
- Backpackers, hikers and campers who drink unfiltered, untreated water
- Persons who drink from untreated shallow, unprotected wells
- People, including swimmers, who swallow contaminated water

PERIOD OF COMMUNICABILITY: Cryptosporidiosis is communicable from the onset of symptoms through several weeks of potential shedding of spores which can occur after diarrhea ends.

CONTROL MEASURES:

REPORTING: ***Cryptosporidiosis is reportable to the State of Alaska Section of Epidemiology*****.** By Alaska statute and regulation, a suspected or confirmed case of cryptosporidiosis must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: Yes, see Diarrheal Illnesses: General Guidelines.

RETURN TO SCHOOL: A healthcare professional must clear the child for readmission.

TREATMENT: Most people who have healthy immune systems recover without treatment but Nitazoxanide has been approved by the FDA for treatment of cryptosporidiosis in people with healthy immune systems and is available by prescription. If the person is taking immunosuppressive drugs, these should be stopped or reduced if possible**.**

FOLLOW-UP: Public health officials may investigate for infection in contacts to determine the source of infection.

ROLE OF SCHOOL NURSE:

- At recreational water venues (pools and hot tubs, water parks, interactive foundations, lakes, streams):
    - If a student or staff is diagnosed with cryptosporidiosis, the student or staff person should not swim for at least 2 weeks after the diarrhea stops.
    - Students and staff should shower before entering the water.
    - Always use gloves and wash children thoroughly (especially their bottoms) with soap and water after they use the toilet or their diapers are changed and before they enter the water. Encourage frequent bathroom breaks and diaper checks. Change diapers in the bathroom, not at the poolside.

REFERENCES/RESOURCES:

American Academy of Pediatrics. Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

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State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

DIARRHEAL ILLNESSES: E COLI DIARRHEA (Escherichia coli)

INFECTIOUS AGENT: *Escherichia coli (E coli)*

DESCRIPTION/SIGNS & SYMPTOMS: Although many types of *Escherichia coli* bacteria live normally in the intestinal tract, at least 5 types are known to cause diarrhea. Signs and symptoms of *E coli* diarrhea include diarrhea (often bloody), abdominal pain, possible fever, vomiting and generally not feeling well. Two types, enteropathogenic *E coli* and *E coli* O157:H7, have caused numerous outbreaks in group-care settings. Infections with *E coli* O157:H7 may be associated with other severe problems, such as bleeding from irritation of the bowel, kidney damage, and blood cell damage, also known as hemolytic uremic syndrome. Outbreaks of *E coli* diarrhea have been associated with the death of young children.

INCUBATION PERIOD: 10 hours to 6 days: *E coli* O157:H7 averages 3-5 days, but ranges from 1-8 days.

MODE OF SPREAD: Ingesting the bacteria through food or water contaminated with human or animal (e.g., cattle, sheep, deer) feces, undercooked ground beef, unpasteurized milk, or other products contaminated with cattle feces. Spread can occur by contact with the feces of infected people. Contamination has occurred in improperly treated apple cider, raw vegetables, salami, yogurt, and soft cheeses. Swallowing lake water while swimming or drinking water in recreation areas is another mode for infection. Exposure to animal feces by direct contact with animals, as in petting zoos, farms, or other contact between animals and people is a source. Outbreaks in water parks have been reported. E-coli can be transmitted by those who have visited developing countries.

PERIOD OF COMMUNICABILITY: Typically *E coli* O157:H7 disappears from the feces by the time the illness and diarrhea is resolved but may be shed for several weeks, even after the symptoms go away. Young children tend to carry the organism longer than adults.

CONTROL MEASURES:

REPORTING: ***E coli diarrhea is reportable to the Alaska Section of Epidemiology*.** By Alaska statute and regulation, a suspected or confirmed case of *E coli* O157:H7 must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: Yes, if *E coli* O157:H7 is identified or the student meets other general exclusion guidelines.

RETURN TO SCHOOL: For *E coli* O157:H7, the student may return when public health officials provide approval, usually when test results from 2 consecutive stool cultures taken 24 hours apart are negative for the bacteria that caused the illness.

TREATMENT: Within one week, most cases of *E coli* diarrhea resolve without treatment. The goal is to maintain adequate hydration. No antibiotics should be given for *E coli* O157:H7 or medicine to counter diarrhea (especially in children) unless directed to do so under the care of a healthcare provider. The following treatments will assist in the healing process:

- Drink 8-10 glasses of clear liquid per day
- Drink at least one cup liquid for every loose stool
- Eat small meals throughout the day
- Eat some salty foods (to retain body fluids) : pretzels, soup, broth and sports drinks
- Eat foods with potassium (bananas, potatoes without the skin (avoid roughage)
- and watered down fruit juices

- With younger children with *E coli* diarrhea, give fluids for the first 4-6 hours; start with 1 oz. (2 TBS.) every 30 – 60 minutes. Also, try over-the-counter drinks such as Pedialyte or Infalyte (do not water them down). Pedialyte is also offered as a popsicle.

FOLLOW UP: See Diarrheal Illnesses: General Guidelines

ROLE OF THE SCHOOL NURSE:

- Educate staff, families and students to:
  - WASH THEIR HANDS thoroughly after contact with animals or their environments (at farms, petting zoos, fairs and even their own backyard).
  - Cook all meat thoroughly so there is no pink meat.
  - Prevent cross contamination in food preparation areas by thoroughly washing hands, counters, cutting boards and utensils after they touch raw meat.
  - Avoid raw milk, unpasteurized dairy products, and unpasteurized juices.
  - Avoid swallowing water when swimming or playing in lakes, ponds, streams, pools or other recreational water.
  - Prevent cross contamination in food preparation areas by thoroughly washing hands, counters, cutting boards and utensils after they touch raw meat.

REFERENCES/RESOURCES:

American Academy of Pediatrics. Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

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State of New York, Department of Health. *E coli* O157:H7 Infection. Available at: www.health.ny.gov/disseases/communicable/e.coli/fact_sheet.htm.

State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

DIARRHEAL ILLNESSES: GIARDIASIS

INFECTIOUS AGENT: *Giardia intestinalis, Giardia lamblia, or* Giardia duodenalis

DESCRIPTION/SIGNS & SYMPTOMS: Giardiasis is an intestinal infection caused by a parasite which is found on surfaces or in soil, food, or water that has been contaminated with feces from infected humans or animals. Symptoms include: diarrhea; malodorous, greasy stools; nausea, anorexia and decreased appetite; malaise; flatulence; abdominal distention and cramps; weakness; and, infrequently, fever. Some individuals with *Giardia* infection have no symptoms at all. Giardiasis produces symptoms more often in children than in adults. Some individuals may have symptoms that last for weeks to months.

INCUBATION PERIOD: From the time of ingestion of *G intestinalis* parasites until the onset of symptoms is 1-4 weeks (average 8 days).

MODE OF SPREAD: Giardia is spread via: swallowing *Giardia* picked up from surfaces (such as bathroom handles, changing tables, diaper pails, or toys) that contain stool from an infected person or animal; drinking water or using ice made from improperly treated water from lakes, streams, or wells; swallowing water while swimming or playing in lakes, rivers, springs, ponds, and streams; eating uncooked food that contains giardia organisms; having contact with someone who is ill with giardiasis.

PERIOD OF COMMUNICABILITY: The contagious period is variable but can be months. The person is most contagious during diarrhea phase.

CONTROL MEASURES:

REPORTING: ***Giardiasis is reportable to the State of Alaska Section of Epidemiology.*** By Alaska statute and regulation, a suspected or confirmed case of giardiasis must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: See Diarrheal Illnesses: General Guidelines.

RETURN TO SCHOOL: See Diarrheal Illnesses: General Guidelines.

TREATMENT: Many prescription drugs are effective in treating giardiasis. These antimicrobial drugs include: metronidazole, nitazoxanide (good for treating children), tinidazole, paromomycin, quinacrine and furazolidone. Infants and pregnant women are most likely to experience dehydration from the diarrhea caused by giardiasis and should be encouraged to drink increased fluids.

FOLLOW-UP: See Diarrheal Illnesses: General Guidelines.

ROLE OF SCHOOL NURSE:

- Teach staff, families and students to:
  - Avoid water (drinking or recreational) that may be contaminated.
  - Avoid eating food that may be contaminated.

REFERENCES/RESOURCES:

American Academy of Pediatrics. Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Giardia. Available at: http://www.cdc.gov/parasites/giardia/ and http://www.cdc.gov/healthywater/swimming/rwi/illnesses/giardia.html

MedScape: Pediatric Giardiasis**.** Available at: http://emedicine.medscape.com/article/998168-overview

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DIARRHEAL ILLNESSES: SALMONELLA INFECTION (SALMONELLOSIS)

INFECTIOUS AGENT: *Salmonella* bacteria

DESCRIPTION/SIGNS & SYMPTOMS: *Salmonellosis* is an intestinal infection caused by Salmonella bacteria. Certain conditions can introduce or produce large numbers of these bacteria into the intestines which can develop into serious, even life-threatening complications. Symptoms include: diarrhea, fever, abdominal cramps, nausea or vomiting and sometimes blood and mucus in the stools. Children are most likely to get salmonellosis and are most likely to have a severe infection. Persons usually recover completely but it may be several months before their bowel habits are entirely normal. No reptiles or amphibians should be allowed as classroom pets for children. *Salmonella* is a normal bacterial inhabitant of the intestinal tract of reptiles. Cages and all surfaces involved in the care of reptiles and amphibians should be considered likely to be contaminated with this organism and a source that spreads infection to children in group settings.

INCUBATION PERIOD: 6 – 48 hours

MODE OF SPREAD: *Salmonella* disease is spread through fecal-oral route from infected people and animals, especially from reptiles (turtles, lizards and snakes in particular) and poultry. This disease is often the result of ingestion of contaminated food, water, meats, eggs, and unpasteurized milk. *Salmonella* infections can develop from direct contact with infected objects or surfaces.

PERIOD OF COMMUNICABILITY: Half of the children still have *Salmonella* in stool 12 weeks after infection.

CONTROL MEASURES:

REPORTING: ***Salmonellosis is a reportable disease to the Alaska Section of Epidemiology***. By Alaska statute and regulation, a suspected or confirmed case of salmonellosis must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: See Diarrheal Illnesses: General Guidelines.

RETURN TO SCHOOL: A healthcare professional must clear the child for readmission for all cases of *Salmonella* infection. For children under five years of age, three negative test results from stool cultures are needed for children with *Salmonella serotype Typhi*, but other types of *Salmonella* do not require negative test results from stool cultures.

TREATMENT: Antibiotics usually are not indicated because they do not shorten the duration of the diarrheal disease. Hydration and nutritional supplements (with minimal roughage) to counter the electrolyte and fluid loss due to diarrhea should be the primary focus.

FOLLOW UP: The school nurse should monitor the health of affected child(ren) throughout the symptomatic recovery period, which may be as long as 12 weeks.

ROLE OF SCHOOL NURSE: See Diarrheal Illnesses: General Guidelines.

- Educate staff, families and students to:
  - Cook poultry, ground beef and eggs thoroughly. Do not eat or drink foods containing raw eggs or unpasteurized milk.
  - Wash hands, food preparation surfaces and utensils with soap and water immediately after they have been in contact with raw meats or poultry.

- Wash hands with soap after handling reptiles, birds, or baby chicks and after contact with pet feces.

REFERENCES/RESOURCES:

American Academy of Pediatrics. Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Salmonella. Available at: http://www.cdc.gov/salmonella/

State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

DIARRHEAL ILLNESSES: SHIGELLOSIS

INFECTIOUS AGENT: *Shigella* bacteria

DESCRIPTION/SIGNS AND SYMPTOMS: Shigellosis is a severe infection with high fever that may be associated with seizures in children less than 2 years old. Symptoms include: loose watery stools often with blood or mucus, fever, headache, and abdominal pain. Some persons who are infected may have no symptoms at all, but may still pass the *Shigella* bacteria to others. Persons with shigellosis in the United States rarely require hospitalization. Many cases of shigellosis are related to the spread of illness in child-care settings and the result of the spread of the illness in families with small children.

INCUBATION PERIOD: 1-7 days, average is 2-4 days

MODE OF SPREAD: *Shigella* is usually spread by direct or indirect fecal-oral transmission from a patient or carrier. *Shigella* infections may be acquired from eating contaminated food. Contamination of foods can occur from infected food handlers who do not use proper handwashing, vegetables harvested from a field with sewage in it, or flies that breed in infected feces. Water may also become contaminated if sewage runs into it or in recreational water when an infected person swims or plays in it. Very small numbers of organisms can cause infection.

PERIOD OF COMMUNICABILITY: If untreated, *Shigella* persists in stool for up to 4 weeks. Shigellosis usually resolves in 5 to 7 days.

CONTROL MEASURES: See Diarrheal Illnesses: General Guidelines

REPORTING: ***Shigella infection is a reportable disease to the Alaska Section of Epidemiology.*** By Alaska statute and regulation, a suspected or confirmed case of shigellosis must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: Exclude as in Diarrheal Illnesses: General Guidelines and once *Shigella* is identified exclude the student until treatment is complete and test results from two stool cultures taken at least 24 hours apart are negative.

RETURN TO SCHOOL: A health care provider must clear the child for readmission.

TREATMENT: While most persons usually recover quickly without antibiotic treatment, antibiotics are effective in shortening the duration of diarrhea and eliminating the *Shigella* bacteria. Antidiarrheal agents such as loperamide (Imodium) or diphenoxylate with atropine (Lomotil) can make the illness worse and **should be avoided.**

FOLLOW UP: Monitor the health of affected child(ren) throughout the symptomatic recovery period.

ROLE OF SCHOOL NURSE:

- Exclude the affected child from school and monitor other students for signs of disease.
- Reinforce proper handwashing techniques and sanitary food handling.

REFERENCES/RESOURCES:

American Academy of Pediatrics. Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

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State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

DIARRHEAL ILLNESSES: VIRAL GASTROENTERITIS (NOROVIRUS)

INFECTIOUS AGENT: *caliciviruses*

DESCRIPTION/SIGNS & SYMPTOMS: Norovirus is one of a larger group of *caliciviruses* that cause gastrointestinal illness, commonly called "stomach bug" or "stomach flu." Symptoms include: nausea, vomiting, diarrhea, and abdominal cramps. Low -grade fever, muscle aches, and headache may also occur. Vomiting is more common in children and diarrhea is more common in adults. Dehydration is the most serious and common complication among young children and elderly people.

INCUBATION PERIOD: The incubation period varies between 12-72 hours but usually within 24-48 hours.

MODE OF SPREAD: Norovirus is usually spread by person-to-person contact or through oral-fecal contamination of food or surfaces. Food associated with norovirus outbreaks have been linked to cold prepared, ready to eat foods (e.g., salads, coleslaw, sandwiches) and shellfish harvested in contaminated water. Outbreaks have also been associated with drinking water and recreational water (e.g., swimming pools, beaches) where persons may have ingested water contaminated with feces from an infected person. Norovirus may also be spread through the air during vomiting.

PERIOD OF COMMUNICABILITY: A person is infectious while the symptoms are present and at least three days after diarrhea or vomiting have stopped.

CONTROL MEASURES:

REPORTING: Norovirus is not a reportable condition to the Alaska Section of Epidemiology unless there is an unusual number or clustering.
EXCLUSION: See Diarrheal Illnesses: General Guidelines.
RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved. Persons should not be allowed to handle shared foods until asymptomatic for four days.
TREATMENT: Most people recover within two to three days after becoming ill. Supportive care may be needed to prevent dehydration.
FOLLOW-UP: Monitor the health of affected child(ren) throughout the symptomatic recovery period.

ROLE OF SCHOOL NURSE:

- Encourage good handwashing, especially prior to food handling and after toileting. This is considered the most important means of preventing viral gastroenteritis transmission.
- Educate staff and encourage appropriate disinfection of surfaces with solutions considered effective against *norovirus*.
- Report any unusual numbers of persons with gastroenteritis symptoms to appropriate supervisory and public health officials, and be prepared to follow recommended disease control measures.

REFERENCES/RESOURCES:

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Norovirus: factsheets. Available at: http://www.cdc.gov/ncidod/dvrd/revb/gastro/norovirus.htm.

Alaska Division of Public Health. Norovirus Fact Sheet. Available at: http://www.epi.alaska.gov/id/dod/norovirus/NorovirusFAQ.pdf

Mayo Clinic. Health Information. Viral gastroenteritis (stomach flu). Available at: http://www.mayoclinic.com/health/viral-gastroenteritis/DS00085

DIARRHEAL ILLNESSES: VIRAL GASTROENTERITIS (ROTAVIRUS*)

INFECTIOUS AGENT: The rotavirus belongs to the *Reoviridae* family. There are many different types of rotaviruses.

DESCRIPTION / SIGNS AND SYMPTOMS: Rotavirus is the most common cause of acute gastroenteritis (vomiting and severe diarrhea) in young children and, prior to the development of the rotavirus vaccine in 2006, almost all children were infected with the virus before their 5th birthday. Rotavirus caused numerous hospitalizations and trips to the emergency room prior to the vaccine. Though neither vaccination nor natural immunity can provide full immunity due to the numerous types of rotaviruses, repeat infections tend to be less severe. Symptoms include non-bloody diarrhea, nausea, vomiting, abdominal pain, fever and dehydration in some cases. The symptoms last for an average of 4-6 days. Children are most likely to be infected with rotavirus in the winter and spring.

INCUBATION PERIOD: 2-4 days

MODE OF SPREAD: The virus is stable in the environment and is spread via the fecal-oral route through ingestion of contaminated water or food or contact with contaminated surfaces or objects.

PERIOD OF COMMUNICABILITY: Infected individuals are contagious before and during the acute stage of the disease and later while virus shedding continues. Rotavirus is not usually detectable after about the 8th day of infection but may persist for up to three weeks after the illness.

CONTROL MEASURES:

VACCINATION: Rotavirus vaccines are very effective (85-98%) in preventing severe rotavirus disease in young children including the rotavirus infection often requiring hospitalization. The Centers for Disease Control and Prevention (CDC) recommends routine vaccination of infants with either of the two available vaccines: RotaTeq (3 doses: 2, 4, and 6 months) or Rotarix (2 doses: 2 and 4 months). Both vaccines are administered orally.

REPORTING: Rotavirus is not a condition reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: See Diarrheal Illnesses: General Guidelines

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

TREATMENT: There is no anti-viral medication to treat rotavirus infection. Treatment involves prevention of dehydration; oral glucose-electrolyte solution is adequate in most cases. Antibiotics and anti-motility drugs are contraindicated. About 1 out of 70 children with rotavirus gastroenteritis will require hospitalization for intravenous fluids.

FOLLOW-UP: For most people with a healthy immune system, rotavirus illness is a self-limiting disease lasting for only a few days. Observe for infection in others who may have been exposed.

ROLE OF THE SCHOOL NURSE:

- Advocate for vaccine prevention.
- Encourage and educate students and staff on hand hygiene, food handling, and cleaning/sanitizing procedures especially during outbreaks.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention. Diseases and Conditions. Rotavirus. Available at: http://www.cdc.gov/rotavirus/index.html

Vaccine Information Statements. http://www.cdc.gov/vaccines/pubs/vis/default.htm

Immunization Action Coalition. Diseases and Vaccines. Rotovirus Available at: http://www.immunize.org/rotavirus.

Mayo Clinic. Health Information. Viral gastroenteritis (stomach flu). Available at: http://www.mayoclinic.com/health/viral-gastroenteritis/DS00085

EAR INFECTION

INFECTIOUS AGENT: There are three common ear conditions: acute otitis media (AOM), otitis media with effusion (OME) and otitis externa (AOE or Swimmer's Ear). **Acute otitis media** (**AOM**) may be caused by bacteria or viruses. The usual bacteria responsible for AOM include *Streptococcus pneumonia*, *Haemophilus influenza*, and *Moraxella catarrhalis*. Viruses causing AOM include respiratory syncytial virus (RSV), rhinoviruses, influenza viruses, and adenoviruses. Most common is **otitis media with effusion** (**OME**) which may follow upper respiratory infections, or may be due to allergies or exposure to irritants such as cigarette smoke. **Otitis externa** (**OE**) is usually caused by bacteria such as Staphylococcus or Pseudomonas aeruginosa. A small percentage of cases may be fungal in origin.

DESCRIPTION/SIGNS & SYMPTOMS: AOM symptoms include acute ear pain and sometimes fever (~25% of cases).Drainage from the ear can occur, but typically only in the setting of a perforated tympanic membrane (eardrum). Children may pull on the affected ear. Infants and toddlers may be irritable. Excessive crying, problems hearing, sleep disturbances, difficulty with balance and headaches can accompany AOM. A provider examining the affected ear will make the diagnosis of AOM if there is evidence of middle ear inflammation (redness) and effusion (bulging) on exam.

OME is a build-up of fluid in the middle ear. It most commonly occurs during or after a viral upper respiratory infection. It is not associated with pain, fever, or redness of the eardrum. The most common complaint is hearing difficulty.

OE is caused by bacteria infecting the skin lining the ear canal. This most commonly occurs after exposure to water from a pool, lake, or stream—hence, the common name "swimmer's ear." Symptoms include intense pain accompanied by decreased hearing, drainage from the ear (which may be malodorous), and fever.

INCUBATION PERIOD: AOM incubation period depends on the virus or bacteria causing fluid build-up in the middle ear. **OME** usually follows an upper respiratory infection or AOM. **OE** usually has an incubation period of 4 – 10 days.

MODE OF SPREAD: Ear infections themselves are not contagious. Drainage from ear infections contain bacteria or viruses that may potentially be spread.

PERIOD OF COMMUNICABILITY: Period of communicability varies among younger children because they have less developed immune systems and less effective drainage from the nose and middle ear. If exposed to large groups of other children they can develop more frequent colds and have less time between colds to recover. Thus, fluid remains in the middle ear. If children lie on their backs to drink, then fluid follows the Eustachian tube at the back of the throat and collects in the middle ear. This collection of fluid leads to irritation and can act as a breeding ground for bacteria introduced to the middle ear.

CONTROL MEASURES:

REPORTING: Ear infections are not a reportable condition to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: No exclusion is necessary unless any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.
TREATMENT: AOM may be treated with ear drops that numb the ear drum or an oral pain-reducing medication (i.e., acetaminophen or ibuprofen); sometimes a health care provider may prescribe antibiotics, especially in children younger than 2 years old or severe cases. AOE usually resolves spontaneously but may need medical follow-up. OE is treated with ear drops that contain several medications such as an antibiotic, a steroid and an acidic solution to restore normal pH. Any ear problems may require over the counter medication for comfort.
FOLLOW-UP: Ear drainage should be handled as wound drainage using universal/standard precautions. Monitor hearing acuity in children with repeated ear infections.

ROLE OF THE SCHOOL NURSE:

- Monitor the child's behavior specific to ear infections and refer as needed. Though a red ear drum, upon otoscopic examination, is not necessarily a sign of infection, a referral to a health care provider should be made if associated with ear pain.
- Encourage parents and family members to consult with health care professionals if oral temperature of 100.4°F or greater; any child with ear drainage should be evaluated by a health care provider.
- Promote prevention by encouraging breast-feeding for 12 months and discourage parents from allowing children to lie on their back while drinking.
- Stress the importance of keeping the child up-to-date with recommended immunizations.
- Advocate for air quality free of smoke and pollutants.
- Teach preventative care for OE including rinsing out the ear with warm, clean water after swimming; drying the ears by allowing the water to drain out onto a towel.
- Stress the importance of rest and hydration during ear infections.
- Review the importance of completing the antibiotic, if prescribed.
- Educate staff, students and caregivers on good handwashing technique.
- Monitor hearing via audiology in children with repeated ear infections. Even mild hearing losses are educationally and medically significant. Early identification, referral and remediation of impairments are key to management in the school setting.

REFERENCES/RESOURCES:

American Academy of Pediatrics. Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Mayo Clinic. Ear infection (middle ear). Available at: http://www.mayoclinic.com/health/ear-infections/DS00303

Mayo Clinic. Swimmer's ear. Available at: http://www.mayoclinic.com/health/swimmers-ear/DS00473
Selekman J, ed. *School Nursing: A Comprehensive Text*. F.A. Davis Co. Philadelphia, PA: F.A. Davis Co; 2006.

FEVER

INFECTIOUS AGENT: A fever may be caused by pathogens (e.g. virus, bacteria), chronic disease, environmental conditions, strenuous exercise, heat exhaustion, reaction to medication or vaccination, or unknown conditions.

DESCRIPTION/SIGNS & SYMPTOMS: Fever is an elevation of the normal body temperature which ranges between 97°F (3.1°C) to 99°F (37.2°C). Oral temperatures above 101°F (38.3°C), rectal temperatures above 102°F (38.9°C), or axillary (armpit) temperatures above 100°F (37.8°C), usually are considered to be above normal in children. Most fevers are not harmful. Fever can be a symptom of the body fighting an infection. It is not a good indicator of severity of illness. Behavior is a more reliable indicator of the significance of illness.

I**NCUBATION PERIOD:** If caused by infection, the incubation period of a fever is variable depending on the causative pathogen.

MODE OF SPREAD: A fever, in itself, is not contagious. If a pathogen is the cause of the fever, then the mode of spread may be direct or indirect contact with infectious body fluid.

PERIOD OF COMMUNICABILITY: Not all fevers are communicable. Since fever has many causative factors, communicability can occur before, during or after the fever, depending on the cause. Some infections remain contagious long after a fever has resolved. Some infections that cause fever are not contagious at all (i.e., urinary tract infections).

CONTROL MEASURES:

REPORTING: Fevers are not a reportable condition to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: NO**,** unless the temperature exceeds 101° F and is associated with behavior change or other signs of illness. Exclude the student if he/she is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

TREATMENT: The causative factors and the child's response to the fever determine whether or not a visit to their health care provider is necessary. Treating the fever is not necessary unless the student is uncomfortable. Over the counter medication (such as acetaminophen or ibuprofen but never aspirin for children) may be considered for comfort and fever reduction. If school policy allows, follow protocols for administering over-the-counter medications. Any dosing of over-the-counter medication should follow the manufacturer's table of doses by weight and/or age. Maintain hydration with increased fluid intake.

FOLLOW UP: Follow up of causative factors may be indicated**.** Any fever lasting more than three days should be evaluated by a health care provider.

ROLE OF SCHOOL NURSE:

- Educate students and staff that the most effective way to prevent fever caused by infectious disease is handwashing.
- It is not necessary to cool a febrile child unless the fever is exceptionally high (above 106°F [41.1°C]); such instances are considered medical emergencies which require immediate health professional care.

- Due to a higher metabolic rate with fever, encourage increased water intake.
- If a febrile seizure occurs, monitor and record seizure activity. The student should be evaluated by a health care provider for any previously undocumented seizure activity.
- Encourage parents of infants, younger than 4 months, with a fever to have them evaluated by a medical professional. Any infant younger than 2 months with a fever should get medical attention immediately. The fever is not harmful; however, the illness causing it may be serious in this age group.
- Encourage medical evaluation for any fever lasting longer than three days for:
    - any child over age two; or
    - an adult with a fever of 103°F (39.4°C).

REFERENCES/RESOURCES:

Aronson, S.S., & Shope, T.R. (2009) American Academy of Pediatrics: *Managing Infectious Disease in Child Care and Schools: A Quick Reference Guide, 2nd Ed.* Elk Grove Village, IL.

Mayo Clinic. Fever. Available at: http://www.mayoclinic.com/health/fever/DS00077.

Mayo Clinic. Fever treatment: Quick guide to treating fever. Available at: http://www.mayoclinic.com/health/fever/ID00052.

FIFTH DISEASE (ERYTHEMA INFECTIOSUM)

INFECTIOUS AGENT: Human Parvovirus B19; the disease got its name because it was fifth in a list of historical classifications of common skin rash illnesses in children.

DESCRIPTION/ SIGNS & SYMPTOMS: About 20% of children and adults who get infected with this virus will not have any symptoms. For those who do, the first symptoms are mild and include a fever, runny nose and headache. After several days, a characteristic red "slapped-cheek" rash develops, followed shortly by a lace-like appearing rash proceeding from the trunk to arms, buttocks, and thighs. The rash may be itchy and may disappear and reappear after exposure to heat for weeks. Other symptoms include muscle aches and joint pain (which is more common in adults than children). The child usually no longer feels ill after the rash appears. The disease can be severe in people with sickle cell disease or certain blood disorders as well as those with compromised immune systems. After recovering from parvovirus infection, immunity generally protects the individual from the virus in the future.

INCUBATION PERIOD: The incubation period for fifth disease is 4 to 14 days, but can be as long as 21 days.

MODE OF SPREAD: Fifth Disease is spread by direct contact with respiratory secretions when an infected person coughs or sneezes. Outbreaks typically occur in late winter and early spring. Rarely, the virus is spread by exposure to blood or blood products or by a pregnant woman to her infant before birth.

PERIOD OF COMMUNICABILITY: Students are contagious until the rash appears.

CONTROL MEASURES:

REPORTING: Fifth disease is not a reportable disease to the Alaska Section of Epidemiology unless there are known outbreaks of an unusual number.

EXCLUSION: No exclusion is necessary unless any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others. Children with underlying blood disorders, such as sickle cell disease, or a compromised immune system should be excluded until given medical clearance by a health care provider as they may shed large amounts of virus and may appear ill.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

TREATMENT: There is no vaccine or medicine that prevents fifth disease. Treatment usually involves relieving symptoms with over-the- counter medications for fever, pain or itching. Children with an underlying blood disorder or compromised immune system should be treated by a health care provider.

FOLLOW UP: Usually none is indicated for healthy children as the illness is usually mild. Those students with weakened immune systems are at risk for more serious disease complications and may need extended medical follow up.

ROLE OF SCHOOL NURSE:

- Educate students, staff and caregivers regarding handwashing and following universal/standard precautions.

- Counsel students, staff and caregivers who have a compromised immune system or who are pregnant to consult with their health care provider.

REFERENCES/RESOURCES:

American Academy of Pediatrics. Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Parvovirus B19 and Fifth Disease. Available at: http://www.cdc.gov/parvovirusB19/fifth-disease.html.

HAEMOPHILUS INFLUENZAE TYPE B (HIB)*

INFECTIOUS AGENT: *Haemophilus influenza type b*

DESCRIPTION/SIGNS & SYMPTOMS: A severe bacterial infection, occurring primarily in infants and children under 5 years. Due to routine Hib vaccine since 1987, the incidence of Hib disease has decreased by 95%; rates of disease among Alaska Natives remain higher than in other populations in the United States. Hib disease primarily occurs in underimmunized children and among infants too young to have completed the series. Hib bacteria can cause pneumonia, meningitis, epiglottitis (severe swelling in the throat), and infections of the blood, joints, bones, skin and tissue lining of the heart. Symptoms depend on the site of the infection and may include: fever; vomiting; irritability; stiff neck; rapid onset of difficulty breathing; cough; warm, red and swollen joints; and swelling and discoloration of the skin, particularly around the cheek and eye.

INCUBATION PERIOD: The incubation period for Hib disease is unknown.

MODE OF SPREAD: Transmission is most likely through respiratory droplets (coughing and sneezing) and direct contact.

PERIOD OF COMMUNICABILITY: The period of time a person is able to spread the disease varies. Unless treated, it may be transmitted for as long as the organism is present in the nose and throat, even after symptoms have disappeared.

CONTROL MEASURES:

Hib vaccine is highly effective at preventing Hib disease. The Hib vaccine is a required immunization for children under age 5 attending child care or preschool in Alaska. Most people over 5 years old do not need Hib vaccine. Some older children or adults with special health conditions such as sickle cell disease, HIV/AIDS, or who have had removal of the spleen, bone marrow transplant, or cancer treatment should discuss vaccination with their health care provider.

REPORTING: ***Hib is a reportable disease to the Alaska Section of Epidemiology***. By Alaska statute and regulation, a suspected or confirmed case of Hib disease must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: Yes, exclude all children with proven Hib infection.

RETURN TO SCHOOL: The child identified with Hib infection may be readmitted after 24 hours of appropriate antibiotic therapy and when other exclusion criteria have resolved.

TREATMENT: Antibiotics are indicated for treatment of Hib disease.

FOLLOW UP: The single most important preventive measure is to maintain a high level of immunization in the community.

ROLE OF THE SCHOOL NURSE:

- Instruct staff and students on proper handwashing and precautions when sneezing and/or coughing, and avoiding the sharing of food and drink. Clean and sanitize surfaces.
- Ensure that exposed children who develop a fever are seen by a health professional as soon as possible.
- Work with the Alaska Section of Epidemiology, as requested, to identify underimmunized or unimmunized children in a school where two or more cases of Hib infection have been

identified. These individuals may need to take an antibiotic to prevent spread of this disease and should be offered the vaccine.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. *Haemophilus influenza* Disease(including Hib). Available at: http://www.cdc.gov/hi-disease/index.html

Vaccine Information Statements. http://www.cdc.gov/vaccines/pubs/vis/default.htm

State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

HAND-FOOT-AND-MOUTH DISEASE

INFECTIOUS AGENT: Hand-foot-and-mouth disease is a viral infection most commonly caused by coxsackievirus A16 or enterovirus 71.

DESCRIPTION/SIGNS & SYMPTOMS: Hand-foot-and-mouth disease is generally mild and most frequently seen in the summer and fall. Persons infected with the virus, including most adults, may not get all or any of the symptoms of the disease. The illness usually starts with fever, a vague feeling of being unwell (malaise), and a sore throat. One or two days after the fever starts, one or all of the following signs may develop:

- Painful sores develop in the mouth, starting as small red spots that blister and may become ulcers. The sores are often in the back of the throat.
- A skin rash (develops over one to two days) that appears flat or raised and red, sometimes with blisters on the palms of the ands and soles of the feet; it may also appear on the knees, elbows, genital area and buttocks.
- Vomiting and diarrhea may occur.

INCUBATION PERIOD: Three to five days

MODE OF SPREAD: Hand-foot-and-mouth disease is spread by the respiratory route (i.e., coughing, sneezing), direct contact with the viruses (i.e., nose and throat secretions, fluid in the blisters) and fecal-oral route.

PERIOD OF COMMUNICABILITY: Respiratory shedding of the virus is usually limited to a week or less. The virus may spread via fecal shedding for several weeks after the person's symptoms have subsided.

CONTROL MEASURES:

REPORTING: Hand-foot-and-mouth disease is not a reportable condition to the Alaska Section of Epidemiology unless there is an unusual number or clustering. Outbreaks occur more often in the spring to fall.

EXCLUSION: No exclusion is necessary unless any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others. Mouth sores with excessive drooling is a condition for temporary exclusion unless the child's health care provider or public health official states that the child is noninfectious. NOTE: Exclusion will not reduce disease transmission because some children will shed the virus without becoming recognizably ill, and other children who become ill may shed the virus for weeks in the stool.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

TREATMENT: Treatment focuses on relieving symptoms with over–the- counter medications for comfort to relieve pain and fever (note: aspirin should not be given to children), and mouthwashes or sprays that numb mouth pain. Hydration and awareness of nutrition is important when symptoms involve blisters in the mouth.

FOLLOW UP: Rare complications include viral meningitis or encephalitis. Temporary fingernail and toenail loss may occur within 4 weeks of having hand-foot-and-mouth disease.

ROLE OF SCHOOL NURSE:

- Educate students, staff and caregivers regarding handwashing, cough etiquette and following universal/standard precautions.
- Encourage the family to seek advice from their health care provider if the child is unable to drink or eat, or if the child seems very ill.

REFERENCES/RESOURCES:

American Academy of Pediatrics. Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Hand-Foot-and-Mouth Disease (HFMD). http://www.cdc.gov/hand-foot-mouth/index.html

HEAD LICE

INFECTIOUS AGENT: A small tan colored insect called *Pediculus humanus capitis*, the head louse, specific to humans. Animals do not carry lice that are spread to humans.

DESCRIPTION/SIGNS & SYMPTOMS: Head lice are the size of a sesame seed and feed on blood drawn from the scalp. Lice lay gray/white oval-shaped eggs (nits) that are firmly attached to hair 3-4 mm from the scalp. Complaints of itching or scratching on the head and neck are the main symptoms. Nits are most often found glued to hair shafts behind the ears and at the nape of the neck. Open sores and crusting from secondary bacterial infection associated with scratching may be evident. Swollen lymph nodes associated with the infection may be present. Head lice are not a health hazard or sign of poor hygiene and are found in all social economic groups.

INCUBATION PERIOD: It takes 10-14 days from laying of eggs to hatching of nits. Adults live for days to weeks depending on temperature and humidity and can reproduce 2-3 weeks after hatching. Lice cannot live for more than 48 hours away from the scalp. Nits, cannot hatch at temperatures lower than those found close to the scalp (i.e., within 1/4 of an inch).

MODE OF SPREAD: Lice crawl but cannot hop or fly. Live lice are spread by head-to-head contact with an already infested person or, by contact with items recently used by an infested person. These items include combs, brushes, barrettes, hats, scarves, coats, sports uniforms, towels, stuffed animals. Mattresses, bed clothing, carpet, and fabric-covered furniture may become infested.

PERIOD OF COMMUNICABILITY: A person is contagious as long as they are infested with live lice.

CONTROL MEASURES:

REPORTING: Head lice is not a condition reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: Exclude a student with an active infestation **from the end of the school day** until after the first treatment and free of <u>live</u> lice. Students who have completed their first treatment should not be excluded from school if nits are present ("no-nit" policies are discouraged). Nits found on the hair shaft more than a quarter inch from the scalp are likely already hatched or dead.

RETURN TO SCHOOL: When live lice have been treated.

TREATMENT: Over-the-counter and prescription treatments are available. Treatment instructions should be followed closely due to the potential side effects. Flammable or toxic substances, such as gasoline or kerosene, should never be used. Nits can survive treatment, so a second treatment is often needed 7 to 10 days after the first treatment. Removing nits from wet hair using a nit comb may be considered. Repeating nit removal with a nit comb every 2-3 days can decrease the chance of self-re-infestation. Checking for re-infestation should continue for 2-3 weeks.

FOLLOW-UP: Monitor for signs of re-infestation for 2-3 weeks.

ROLE OF SCHOOL NURSE:

- Educate students, staff and caregivers verbally and with materials related to prevention.
    - Avoid head-to-head contact during play and other activities at home, school, and other elsewhere (e.g., sports activities, playground, slumber parties, camp).

    - Do not share clothing such as hats, scarves, coats, sports uniforms, hair ribbons, or barrettes.
    - Do not lie on beds, couches, pillows, carpets, or stuffed animals that have recently been in contact with an infested person.
- Provide parents/guardians of infested students with treatment instructions for their child and other household members. In-home control measures include:
    - Treat with a FDA approved pediculicide product, as above. Treat all infested household members and close contacts at the same time.
    - Soak combs and brushes in hot water (at least 130°f) for 5-10 minutes.
    - Launder clothing and linens that have been worn in the past two days at 130°F and dry on the hot setting. Dry cleaning clothing and bedding is also effective.
    - Seal clothing and other personal articles (e.g., toys, stuffed animals, bedding, other fabrics) that cannot be washed or dry cleaned, in a plastic bag for two weeks.
    - Vacuum floor and fabric furniture, particularly where the infested person recently sat or lay.
    - Do NOT use chemical sprays or fogs to fumigate as they are unnecessary for control of head lice and can be toxic if inhaled or absorbed through the skin.
- Examine students who have had contact with an infested student. Children observed scratching their head should also be checked. Checking entire classrooms or schools has not shown to be effective at controlling spread. Maintain privacy and confidentiality.
- Recommend student clothing and personal items be stored separately at school.
- Referral to a health care provider may be necessary, especially if the infestation continues after treatment which may indicate that the lice are resistant to the treatment. If a particular chemical fails to work, repeated use of that chemical is unlikely to be successful. An alternate product that has been shown to be effective should be tried.
- Monitor for signs of re-infestation but be aware that the itching results from an allergic reaction to the saliva of the lice and will often persist for weeks after the infestation has resolved.

REFERENCES/RESOURCES:

American Academy of Pediatrics. Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Parasites – Lice- Head Lice. Available at: http://www.cdc.gov/parasites/lice/head/index.html.

- Head lice information for schools. http://www.cdc.gov/parasites/lice/head/schools.html

National Association of School Nurses. Position Statement: Pediculosis in the School Community. 2011. Available at: http://www.nasn.org/Portals/0/positions/2011pspediculosis.pdf

- Head Lice – Pediculosis Captitis webpage: http://www.nasn.org/ToolsResources/HeadLicePediculosisCapitis

Frankowski B, Gocchini J, and Council on School Health and Committee on Infectious Diseases. Head Lice. *Pediatrics.* 2010; 126; 392-403. Available at: http://www.pediatrics.org/cgi/content/full/126/2/392.

HEPATITIS A*

INFECTIOUS AGENT: Hepatitis A is caused by the hepatitis A virus (HAV).

DESCRIPTION/SIGNS & SYMPTOMS: HAV infection causes a self-limited disease and liver inflammation that rarely (mostly in older adults) results in chronic infection or chronic liver disease. Children younger than 6 years usually have few or no signs or symptoms. Older children and adults symptoms include: fever, jaundice (i.e., yellowing of skin or whites of the eyes), fatigue, abdominal discomfort, loss of appetite, nausea, vomiting, joint pain, dark-brown urine, grey-colored stools and, occasionally, diarrhea.

INCUBATION PERIOD: Approximately 28 days (range: 15–50 days).

MODE OF SPREAD: HAV is spread by the fecal-oral route. Hepatitis A virus is found in large quantities in the feces (or stool) of an infected person. Hepatitis A is spread by contact with people who are infected or through contact with contaminated objects, food, water, or drinks. Child-care and school settings have been found to play a significant role in the community-wide spread of hepatitis A. In schools, outbreaks have been associated with home-prepared snacks that were brought in to share. In child care settings, the first sign of hepatitis A may be in adult care givers. Because young people usually have few or no signs or symptoms, spread within and outside a group-care setting may occur before the initial case is recognized.

PERIOD OF COMMUNICABILITY: HAV replicates in the liver and is shed in high concentrations in feces from 2 weeks before to 1 week after the onset of clinical illness. Hepatitis A virus can survive on surfaces for months.

CONTROL MEASURES:

VACCINATION: Hepatitis A is a required vaccination (2 doses; initial dose is recommended at 12 months of age with a second dose 6 months later) for children in Alaska and is the best way to prevent HAV infection.

REPORTING: ***Hepatitis A infection is a reportable disease to the Alaska Section of Epidemiology*.** By Alaska statute and regulation, a suspected or confirmed case of hepatitis A infection must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease. Consult with public health officials: the need to provide vaccine or immune globulin for other students and house-hold contacts will be determined.

EXCLUSION: Children and adults, especially food handlers, with hepatitis A infection should be excluded from school. Instructions should be given to follow-up with a health care provider.

RETURN TO SCHOOL: Infected individuals may be readmitted one week after the onset of the illness and after all contacts have received vaccine or immune globulin as recommended. Other exclusion criteria must be resolved and the student should be able to participate in usual activities. Staff must be able to care for the child without compromising the health and safety of others.

TREATMENT: The person should receive medical monitoring; treatment is supportive care: adequate rest, nutrition and fluids.

FOLLOW UP: Older children and adolescents may continue to feel ill, sometimes for 6 months. Adult staff may be out of work for a month or longer.

ROLE OF SCHOOL NURSE: Promote good hygiene for infection control.

- Reinforce instructions in proper handwashing especially after diaper changing, using the toilet and before any activity that potentially involves food or the mouth.

- Clean and sanitize all surfaces appropriately; the hepatitis A virus can survive on surfaces for months.
- Routinely check that children hepatitis A vaccinations are compliant with Alaska statutes and regulations.
- Work with public health officials to determine the need for vaccine or immune globulin for students and staff exposed. If immune globulin is to be effective, it should be given within 2 weeks of exposure.

REFERENCES/RESOURCES:

American Academy of Pediatrics. Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition. Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

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State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

HEPATITIS B*

INFECTIOUS AGENT: Hepatitis B is a viral infection caused by the hepatitis B virus (HAB)

DESCRIPTION/SIGNS & SYMPTOMS: Hepatitis B virus causes a short-term illness with liver inflammation that may lead to chronic infection, liver failure, liver cancer and serious illness. Symptoms range from mild to severe. The primary signs and symptoms are: flu-like illness (e.g., muscle aches, nausea, vomiting, fever), jaundice (e.g., yellowing of skin or whites of eyes, dark urine), loss of appetite, nausea, vomiting, abdominal pain, clay-colored stools, joint pains, and fatigue. Young children may show few or no signs or symptoms. Most people recover fully, but some carry the virus in their blood for a lifetime. The younger a person is when infected with Hepatitis B virus, the greater his or her chance of developing chronic disease.

INCUBATION PERIOD: Hepatitis B virus has an incubation period of 45 to 160 days, with an average of 90 days.

MODE OF SPREAD: Hepatitis B is usually spread when blood, semen, or another body fluid from a person infected with the hepatitis B virus enters the body of someone who is not infected. This can happen through sexual contact with an infected person or sharing needles, syringes, or other drug-injection equipment. Hepatitis B virus can also be passed from an infected mother to her baby at birth. Uncommon modes of spread are: saliva (when blood is present), contact with open sores or the fluid that comes from open sores (wound exudate), direct exposure to blood after an injury, bites, or scratches that caused a skin break introducing blood or body fluids from a carrier to another person. Sharing razors or toothbrushes with an infected person can spread the virus. HAB is NOT spread by food or water or by eating utensils, breastfeeding, hugging, kissing, holding hands, coughing or sneezing.

PERIOD OF COMMUNICABILITY: The person is contagious as long as the virus is present in his/her blood which can be life-long. HAB can remain contagious on surfaces for 7 days or more.

CONTROL MEASURES:

VACCINATION: Hepatitis B is a vaccine-preventable disease, a vaccine required for school attendance in Alaska. Infants should receive vaccine at or soon after birth, again at 2 months of age and a third dose at 3 months. School staff who are expected, as a condition of their employment, to come into contact with blood are required to be offered the vaccine by the school district under Occupational Safety and Health Administration (OSHA) regulations. Universal/standard precautions should be followed when blood or blood-containing body fluids are handled.

REPORTING: ***Hepatitis B infection is a reportable disease to the Alaska Section of Epidemiology*****.** By Alaska statute and regulation, a suspected or confirmed case of hepatitis A must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: Yes, if a child with known hepatitis B infection exhibits any of the following: weeping sores that cannot be covered; a bleeding problem; biting or scratching behavior that would lead to bleeding by the child with hepatitis B; generalized dermatitis that may produce wounds or weepy tissue fluids; and if the child meets other general exclusion criteria, such as fever with behavior change. NO, if the child has none of the above symptoms.

RETURN TO SCHOOL: A child may return to school when skin lesions are dry or covered, when the student is able to participate in usual activities and staff determine that they are able to care for the child without compromising the health and safety of others.

TREATMENT: There is no medication available to treat acute hepatitis B infection. The recommended care during this time is adequate rest, nutrition and fluids, although some people may need to be

hospitalized. People with a chronic hepatitis B condition should be monitored regularly for signs of liver disease and evaluated for treatment with medications approved for chronic hepatitis B infection.
FOLLOW UP: Symptoms of hepatitis B infection usually last a few weeks but some people can be ill for as long as 6 months. Monitor general healing of any lesions.

ROLE OF THE SCHOOL NURSE:

- Teach and ensure the practice of standard/universal precautions for students and staff. Follow appropriate procedures for cleaning up blood spills including wearing appropriate personal protective equipment, absorbing the spill or cleaning it first with detergent and water, disinfecting with appropriate disinfectants or 1:10 bleach solution and disposing of soiled items in plastic bags with secured ties.
- Monitor those infected with hepatitis B in the recovery phase and those individuals who may have been exposed to the virus.
- Routinely check that students' hepatitis B vaccinations are compliant with the current state law.
- Ensure all lesions and open sores are covered at all times.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

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HEPATITIS C

INFECTIOUS AGENT: Hepatitis C is a viral infection caused by hepatitis C (HCV) virus.

DESCRIPTION/ SIGNS & SYMPTOMS: HCV causes inflammation of the liver. Acute hepatitis C infection is a short-term illness. Approximately 75%-85% of people go on to develop chronic hepatitis C, or a lifelong infection. Many people with hepatitis C infection do not have symptoms and do not know they are infected. Symptoms of chronic hepatitis C infection can take up to 30 years to develop. Damage to the liver can silently occur during this time. When symptoms do appear, they are often a sign of advanced liver disease. For both acute and chronic disease, symptoms are the same and may vary in severity: fever, fatigue, loss of appetite, nausea, vomiting, abdominal pain, dark urine, grey-colored stools, joint pain, and jaundice.

INCUBATION PERIOD: If symptoms occur with acute infection, they can appear anytime from 2 weeks to 6 months after exposure.

MODE OF SPREAD: HVC can be spread when blood from one person infected with the hepatitis C virus enters the body of someone who is not infected. This may occur by: sharing of needles or other equipment related to drug injection; sexual activity especially with an HIV infected partner; by blood products received prior to 1992; from sharing personal items contaminated with an infected person's blood such as a razor or toothbrush; or at birth from an infected mother.

PERIOD OF COMMUNICABILITY: Acute hepatitis C is a short-term illness that occurs within the first 6 months after someone is exposed to the hepatitis C virus. For reasons that are not known some people clear the virus without treatment. Those people who do not, have a lifelong infection and remain carriers.

CONTROL MEASURES:

There are no vaccines available for hepatitis C infection at this time.

REPORTING: ***Hepatitis C infection is a reportable disease to the Alaska Section of Epidemiology.*** By Alaska statute and regulation, a suspected or confirmed case of hepatitis A must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: Yes, if a child with known hepatitis C exhibits any of the following: weeping sores that cannot be covered; a bleeding problem; biting or scratching behavior that would lead to bleeding by the child with hepatitis C; generalized dermatitis that may produce wounds or weepy tissue fluids; and if the child meets other general exclusion criteria, such as fever with behavior change. NO, if the child has none of the above symptoms.

RETURN TO SCHOOL: A child may return to school when skin lesions are dry or covered, when the student is able to participate in usual activities and staff determine that they are able to care for the child without compromising the health and safety of others.

TREATMENT: Since acute hepatitis C may not cause symptoms, it often goes undiagnosed and therefore untreated. When it is diagnosed, doctors recommend adequate rest, nutrition, fluids, and evaluation for antiviral medications.

FOLLOW UP: Monitor general recovery and for serious signs and symptoms that may develop over time.

ROLE OF THE SCHOOL NURSE:

- Teach and ensure the practice of standard/universal precautions for students and staff. Follow appropriate procedures for cleaning up blood spills including wearing appropriate personal protective equipment, absorbing the spill or cleaning it first with detergent and water, disinfecting with appropriate disinfectants or 1:10 bleach solution and disposing of soiled items in plastic bags with secured ties.
- Monitor those infected with hepatitis C in the recovery phase and those individuals who may have been exposed to the virus.
- Ensure all lesions and open sores are covered at all times.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

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State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

HERPES SIMPLEX (COLD SORES/FEVER BLISTERS)

INFECTIOUS AGENT: Herpes simplex virus (HSV) types 1 and 2.

DESCRIPTION / SIGNS & SYMPTOMS: Herpes simplex virus (HSV) infections are characterized by skin or mouth blisters or sores that can be very itchy and painful. Other symptoms include: fever; irritability; and tender, swollen lymph nodes. Once a person is infected, these viruses remain in nerve cells, and HSV eruptions tend to recur at the same places on the body again and again.

HSV type 1 is extremely common and generally causes infection in children and, although uncomfortable, is rarely serious. The first infection typically occurs in childhood, is mild, and often goes unnoticed. However, it may present in the form of *gingivostomatitis,* characterized by fever and widespread painful ulcerations in the mouth. HSV usually recurs as single or multiple blisters around the lip ("cold sores"). HSV-1 dermatitis/conjunctivitis (*herpes gladiatorum*) has been diagnosed in wrestlers and other contact-sport participants.

HSV type 2 is the cause of most cases of genital herpes. It occurs primarily in adults and is typically sexually transmitted. (See Sexually Transmitted Diseases, Genital Herpes for more information)

After the initial outbreak, the virus is usually dormant in the skin or in the nerves until something triggers another eruption. In some people, overexposure to sunlight, fever, physical or emotional stress, hormonal changes, or certain foods and drugs seem to reactivate the virus. In rare cases, the herpes virus can infect the brain and other parts of the nervous system. This complication is usually seen only in immunocompromised individuals.

INCUBATION PERIOD: 2 to 20 days

MODE OF SPREAD: HSV is shed in the secretions of the blisters and ulcers. Spread of both HSV1 and HSV2 requires direct contact of virus-containing secretions with a mucous membrane inside the mouth, lining of the eyes, rectum, or genitals, or with broken skin such as cuts. A child with inner mouth lesions who sucks their thumb can cause infection on a finger/thumb, in the eye (*herpetic keratitis* — recurrent ulcerations of the cornea), or other places on the skin. Less commonly, it can be spread through articles contaminated by the fluid from the sores (clothing, toys, desktops), or by drinking out of the same glass or using the same eating utensils as someone who has sores.

Transmission may also occur in sports with skin-to-skin contact. Because herpes viruses can survive as long as 4 hours on any surface, mouthed objects contaminated by virus-containing saliva may transmit infections of the mouth. Virus shedding occurs at lower levels in infected individuals with no signs or symptoms.

PERIOD OF COMMUNICABILITY: Cases are contagious until the sores heal. During the first infection, people shed the virus for a least a week; people with recurrent sores shed the largest amount of virus for 3-4 days after signs or symptoms appear. Virus shedding occurs at lower levels in infected individuals with no signs or symptoms.

CONTROL MEASURES: Anyone who may come in contact with blisters on students, for example, in the changing of a dressing or diaper, should wear gloves. Follow hand hygiene guidelines. To control spread of *herpes gladiatorum*, educate athletes and trainers about the risk, conduct routine examinations before wrestling contacts, exclude wrestlers with suspicious lesions, and refer them for diagnosis and treatment. Sanitizing of mats with a dilute bleach solution and airing of mats is also recommended as a standard precaution.

REPORTING: HSV is not a reportable disease to the Alaska Section of Epidemiology unless there is an unusual number or clustering.
EXCLUSION: Exclusion from school should only be considered for children with HSV mouth blisters or ulcers who do not have control of oral secretions or if other general exclusion criteria is present. Exclude from contact sports.
RETURN TO SCHOOL: If excluded, when lesions are healed and exclusion criteria have resolved.
TREATMENT: There is no cure for HSV infections. However, to shorten the duration of the disease, antiviral therapy for HSV infections is the treatment of choice and over-the-counter medications may help reduce the irritation while the sores heal.
FOLLOW UP: Referral to a health care provider is optimal but usually not warranted.

ROLE OF SCHOOL NURSE:

- Educate staff in hand hygiene guidelines including the wearing of gloves for those staff that may come in contact with lesions.
- Encourage regular sanitizing of mouthed toys, utensils and other items and surfaces that have come into contact with saliva or have been touched by children affected.
- Contact parent/guardians and educate as needed related to control measures.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

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Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS)

INFECTIOUS AGENT: Human immunodeficiency virus (HIV). There are two types: HIV-1 and HIV-2. HIV-1 is most prevalent type in the United States. HIV-2 is generally found in Western Africa and some parts of Europe.

DESCRIPTION/SIGNS & SYMPTOMS: Acquired Immune Deficiency Syndrome (AIDS) is the most advanced form of HIV disease. As the disease progresses, people infected with HIV may become immunocompromised and increasingly vulnerable to infection. Children may fail to grow and develop as expected. Symptoms of HIV/AIDs may include: weight loss, fatigue, enlarged lymph nodes, swelling of the salivary glands, frequent infections such as pneumonia, diarrhea, yeast, thrush, enlargement of the liver and spleen, tumors and inflammation of the heart, liver, kidneys, or salivary glands. HIV/AIDS is a lifelong chronic infectious condition.

INCUBATION PERIOD: The time from HIV infection to the development of detectable antibodies is generally 1 to 3 months. Progression of HIV infection to AIDS varies from person to person but can occur in less than one year.

MODE OF SPREAD: In children, the most common mode of transmission of HIV is perinatal (mother to child) transmission in utero, during labor and delivery, and through breastfeeding.

In adults, HIV infection is most commonly spread during sexual contact when bodily fluids of an infected person come into contact with open sores or mucous membranes of a partner. Sharing injectable drug needles and syringes are also common transmission routes.

HIV is not spread by casual social contact in the workplace or school. It is not spread through non-bloody saliva, tears, stool or urine, sharing food, eating utensils, dishes, toilet facilities, skin to skin touching or insect bites.

PERIOD OF COMMUNICABILTY: Persons with HIV/AIDS are potentially infectious for life, although treatment with antiretrovirals can significantly reduce infectivity.

CONTROL MEASURES:

REPORTING: ***HIV is a reportable disease to the Alaska Section of Epidemiology***. By Alaska statute and regulation, a suspected or confirmed case of HIV disease must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: None, with the exception of:

- symptoms that require exclusion based on the child's individual care plan which is to be developed in consultation with the student's health care provider;
- risk of exposure to infectious diseases circulating in school setting, in consultation with the student's health care provider;
- weeping skin lesions that cannot be covered;
- bleeding that cannot be contained in a dressing; or
- general exclusion criteria, such as fever with behavior change.

A public health authority with expertise in HIV prevention/transmission should be consulted as needed. Further guidance is available at the Alaska Division of Public Health, HIV/STD Program at (907) 269-8000.

RETURN TO SCHOOL: If the student was excluded because of risk of their exposure to infections from classmates in the school or group setting, the child may return to school when the child's health care provider determines it is safe. If excluded for skin lesions in the HIV infected student, the student may return when the lesions are dry or covered and general exclusion criteria have resolved.

TREATMENT: Antiretroviral therapy may slow the progression of HIV to AIDS, and improve the health of infected persons. In addition, individuals on antiretroviral therapy may be less infectious to others.

FOLLOW-UP: Monitor for conditions identified in the individualized health care plan. Monitor the school environment for infectious diseases that may place the student with HIV at risk due to their immunocompromised status. Alert the parents immediately if exposure occurs.

ROLE OF SCHOOL NURSE:

- Ensure confidentiality. Identity of students with HIV or AIDS should be known only to the people providing direct care to the student. The penalties for a breach of confidentiality are severe.
- Work with the parents, health care provider and student to develop an individualized healthcare plan for the student.
- Notify parents/guardians of their child's known or suspected exposure to chickenpox, tuberculosis, fifth disease, diarrheal diseases, measles, or other infectious disease.
- Teach and ensure the practice of universal/standard precautions for all students and staff. When cleaning up blood spills wear appropriate personal protective equipment, absorb the spill or clean it first with detergent and water, disinfecting with appropriate disinfectants or 1:10 bleach solution. Dispose of soiled items in plastic bags with secured ties.
- Ensure lesions and open sores are covered and dressings are dry at all times.
- Educate the student and family about HIV transmission and prevention and universal/standard precautions for body fluids and blood.
- Assist public health authorities in locating, counseling, and referral for testing of all suspected or known contacts of infected individuals.
- School health education should stress that HIV is transmitted through bodily fluids including blood and that unprotected sex and sharing drug paraphernalia increase the risk of HIV infection.
- School health education should stress that HIV cannot be contracted by toilet facilities or casual physical contact.

REFERENCES/RESOURCES:

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State of Alaska Section of Epidemiology online at: http://www.epi.hss.state.ak.us/default.jsp

National Resource Center for Health and Safety in Child Care and Early Education online at: http://nrckids.org.

State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

IMPETIGO

INFECTIOUS AGENT: *Streptococcal* or *staphylococcal* bacteria.

DESCRIPTION/SIGNS & SYMPTOMS: Impetigo can occur in people of any age but is more common in children. Impetigo can affect skin anywhere on the body, although it most often occurs on the face around the mouth, nose and ear lobes. Bacteria on the skin can enter the body through breaks in the skin and grow there, causing infection and inflammation. Impetigo may also occur on skin where there is no visible break. Small itchy red papules or fluid filled blisters with crusted yellow scabs are the principal lesions. Blisters will eventually burst to reveal areas of red skin that may weep fluid. Gradually, a tan or yellowish-brown crust will cover the affected area, making it look as if it is coated with honey or brown sugar.

INCUBATION PERIOD: 7 to 10 days after the bacteria attach to the skin

MODE OF SPREAD: Direct contact from an infected person or from contaminated surfaces (desk tops, clothing, bedding, towels, etc.). As long as lesions exist, bacteria can be spread to another person who has direct contact with the skin or a surface contaminated by discharge or crusts.

PERIOD OF COMMUNICABILITY: Cases are contagious until the skin sores are treated with antibiotics for at least 24 hours or the crusting lesions are no longer present.

CONTROL MEASURES: When students suffer an injury that causes a break in the skin, wash the area *thoroughly* with soap and water and dry it carefully.

REPORTING: Impetigo is not a condition reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering.
EXCLUSION: Exclude affected students until 24 hours after beginning treatment. If the student is old enough to not touch the area after washing and covering it, he/she will not need to be excluded until the end of the day.
RETURN TO SCHOOL: After 24 hours of antibiotic treatment, topical or systemic.
TREATMENT: Antibiotics (topical, oral or other systemic) should be prescribed to treat impetigo. Topical antibiotics are more effective if the 'honey scab' is removed during cleaning. Antibiotics will decrease spread of disease and the risk of secondary infections, and speed healing.
FOLLOW UP: Monitor lesions and ensure they are loosely covered (until dried completely) to allow airflow for healing and to avoid contact with other students. Be aware that lesions could involve antibiotic-resistant staphylococcal bacteria such as Methicillin-resistant *Staphylococcus Aureus,* or MRSA.

ROLE OF SCHOOL NURSE:

- Educate students to wash wounds *thoroughly* with soap and water anytime they suffer an injury that causes a break in the skin.
- Educate/teach students and staff handwashing techniques and to not share towels, clothing and other personal articles. Place contaminated clothing in a plastic bag.
- Clean infected area and dispose of contaminated materials appropriately.
- Ensure surfaces are cleaned and sanitized.
- Encourage parents/guardians to have the student examined by their health care provider, especially if antibiotic treatment does not seem to be effective.
- Administer prescribed medications if needed at school.
- Educate teachers to monitor that bandages are kept in place.
- Report group outbreaks to the Alaska Section of Epidemiology.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

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INFLUENZA*

INFECTIOUS AGENT: caused by a group of influenza viruses; two main types of influenza viruses, types A and B, are responsible for seasonal influenza epidemics every year.

DESCRIPTION/SIGNS & SYMPTOMS: Influenza, also known as the "flu", is an upper respiratory infection that can cause mild to severe illness, and at times lead to death. In general, healthy children tolerate influenza well and suffer only a few days of discomfort. Persons most at risk for complications from influenza are the elderly, pregnant women, people with chronic medical conditions, and young children. Influenza is characterized by its sudden onset of symptoms which may include:

- Fever*
- Headache
- Chills
- Muscle or body aches
- Sore throat
- Cough
- Mild pinkeye
- Fatigue
- Abdominal pain
- Nausea and vomiting (more common in children, these symptoms alone or just fever are often caused by other factors, not the influenza virus)

*It is important to note that not everyone with influenza will have a fever.

INCUBATION PERIOD: Symptoms typically start 1 – 4 days after the virus enters the body.

MODE OF SPREAD: Influenza viruses are spread person-to-person by respiratory droplets (via sneezing and coughing) or by contact with hands, articles and/or surfaces recently contaminated with respiratory secretions.

PERIOD OF COMMUNICABILITY: 1 day before symptoms develop (meaning a person is contagious before even knowing they are ill) and up to 5-7 days after becoming sick. Some people, especially children and people with weakened immune systems, may be contagious an even longer time.

CONTROL MEASURES:

VACCINATION: An annual influenza vaccine is the best way to prevent the flu and its spread. Current recommendations are for all persons aged 6 months and older to be vaccinated annually. There are two types of flu vaccines:

- **The "flu shot"**–an inactivated vaccine (containing killed virus) that is given with a needle. The seasonal flu shot is approved for use in people 6 months of age and older, including healthy people, people with chronic medical conditions and pregnant women.
- **The nasal–spray flu vaccine** –a vaccine made with live, weakened flu viruses that do not cause the flu (sometimes called LAIV for "Live Attenuated Influenza Vaccine"). LAIV is approved for use in healthy people 2-49 years of age who are not pregnant.

REPORTING: Except by laboratories, influenza is not a reportable disease to the Alaska Section of Epidemiology unless there is an unusual number or clustering of respiratory illness, spikes in absenteeism or ***if a novel strain of influenza virus is suspected or diagnosed*. The latter is considered a public health emergency that must be reported IMMEDIATELY to the Alaska Section of Epidemiology by calling 907-269-8000 during business hours or 1-800-478-0084 after hours**.

EXCLUSION: No exclusion is necessary unless any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others. NOTE: pandemic influenza of moderate severity requires different and more stringent management strategies as determined by public health officials.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved. The Centers for Disease Control and Prevention (CDC) recommends persons stay home for at least 24 hours after a fever has dissipated without the use of fever-reducing medication.

TREATMENT: Most people with mild influenza do not need medical care or antiviral drugs. Rest and consuming fluids is the generally recommended treatment. Those people who are at a greater risk of flu-related complications (including young children, elderly persons, pregnant women and people with chronic medical conditions) should contact their health care providers. The health care provider will determine whether influenza testing and possible treatment is needed. If started within 2 days of illness onset, antiviral medication can reduce the duration of uncomplicated influenza by approximately 1 day. *Caution: aspirin (or products containing salicylates) should never be used in any viral illness, but particularly if influenza or chickenpox is suspected, because of the association of Reye's Syndrome with aspirin use in these illnesses.*

FOLLOW UP: Monitor students for complications such as pneumonia, bronchitis, and sinus and ear infections. An individual with high fever, persistent cough, or earache should be evaluated by a health care provider to determine whether there is a bacterial co-infection that requires antibiotic treatment. Chronic health conditions such as asthma may be exacerbated.

ROLE OF SCHOOL NURSE:

- Encourage and, when possible, facilitate seasonal influenza vaccination for the whole school population.
- Provide education on preventative and healthy hygiene measures. Remind students and staff to:
  - ✓ Stay home when they are ill.
  - ✓ Cough into their sleeve or cover their nose and mouth with a tissue when they cough or sneeze. Throw the tissue in the trash immediately after they use it; do not reuse the tissue.
  - ✓ Wash their hands often with soap and water, and every time after they cough or sneeze. Alcohol-based hand cleaners are effective when soap and water are not available.
  - ✓ Avoid touching their eyes, nose or mouth; germs spread through bodily orifices.
  - ✓ Avoid close contact with people who are ill.
- Evaluate the severity of illness and refer students to their health care provider when indicated. Emergency warning signs in children include:
  - Fast breathing or trouble breathing
  - Bluish skin color
  - Not drinking enough fluids
  - Not waking up or interacting
  - Being so irritable that the child does not want to be held
  - Flu-like symptoms improve but then return with fever and worse cough
  - Fever with a rash

REFERENCES/RESOURCES:

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LYME DISEASE

INFECTIOUS AGENT: Lyme disease is caused by a bacterium, *Borrelia burgdorferi*, transmitted to humans through a bite of an infected blacklegged tick (West Coast). On the East Coast and Midwest, the common name for this tick is the deer tick.

DESCRIPTION/SIGNS & SYMPTOMS: A characteristic gradually expanding, large, circular or oval shaped rash with a central clearing (resembles a "bulls eye"), called Erythema migrans (EM), appears after a tick bite. Though this skin reaction is the classic rash, EM may not be present in all cases. Symptoms include fever, headache, mild neck stiffness, swollen lymph nodes, flu-like signs or symptoms. In some people the general symptoms may be the only evidence of the infection. If left untreated, the infection can spread to the joints, heart, and nervous system causing arthritis, neurologic problems, carditis or meningitis.

INCUBATION PERIOD: 3-31 days from tick bite to appearance of rash.

MODE OF SPREAD: Lyme disease is transmitted when infected ticks attach and feed on humans long enough (in most cases, 36-48 hours or more). Lyme disease is not transmitted through air, food, water or from the bites of mosquitoes, flies, fleas, lice or other ticks (such as the American dog tick, Lone star tick, Rocky Mountain wood tick or brown dog tick).

PERIOD OF COMMUNICABILITY: Lyme disease is not contagious but may be acquired during pregnancy or through a blood transfusion.

CONTROL MEASURES: Alaska is one of only four states that have not reported indigenous Lyme disease. There have been several cases of *imported* Lyme disease in Alaska where a person has transported a tick(s) on their person after being in a tick habitat. Avoid tick habitats (tall grassy areas, bushes, wooded areas), if possible. When in tick habitats, dress in light-colored clothing with long sleeves and long pants tucked into socks. Wear a circular brimmed hat, and closed shoes or knee-high rubber boots. Use permethrin on clothing and use DEET sparingly on exposed skin. Inspect skin and scalp and clothing after possible tick exposure. To remove a tick, it should be grasped with tweezers close to skin and gently pulled straight out without twisting motions.

REPORTING: *Lyme disease is reportable to the Alaska Section of Epidemiology*. By Alaska statute and regulation, a suspected or confirmed case of Lyme disease must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: No exclusion is necessary unless any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

TREATMENT: Lyme disease is treatable with a recommended 2-4 week course of antibiotics. If treated with appropriate antibiotics in the early stages of Lyme disease, recovery usually is rapid and complete. The diagnosis of any tick-borne disease is confirmed with a blood test.

FOLLOW-UP: Symptoms of fatigue, pain, joint and muscles aches can last for more than 6 months in 10-20% of the cases. These persistent or recurrent symptoms may indicate Post-Treatment Lyme Disease Syndrome (PTLDS). Students suffering with PTLDS may need academic accommodations. PTLDS will subside over time in most persons.

ROLE OF SCHOOL NURSE:

- Notify parents if a tick is discovered attached to the student or if a suspicious rash is noted and encourage evaluation by a health care provider, as needed.
- Remove the tick with tweezers and cleanse the site. If any parts of the tick remain in the skin, the wound should be soaked to soften the tissue and the remaining parts removed (as for a splinter).
- Educate parents and the student about the disease.
- Assist in development of academic accommodations necessary for students with PTLDS.
- Teach proper use of insect repellents such as DEET (see below in resources).

OTHER TICK-BORNE DISEASES: Ticks also transmit the following conditions; therefore, control measures are the same as for Lyme disease. All of these conditions are treatable with antibiotics.

- **Rocky Mountain Spotted Fever (RMSF)** - signs and symptoms include: severe headache, fever, muscle aches, nausea, vomiting, and a red bumpy rash that begins on wrists and ankles and proceeds toward the center of the body. The illness may be severe or fatal in some cases. Incubation period is 2-14 days after tick bite.
- **Ehrlichiosis** - signs and symptoms include are similar to RMSF except the rash is less common. It is less severe than RMSF. Incubation period is 1-2 weeks after tick bite.
- **Tularemia** – signs and symptoms include fever, chills, muscle aches, headache. It may involve a painful bite site with swollen and draining lymph nodes. This occurs from tick or wild animal contact, handling dead animals, most commonly rabbits, ingestion of contaminated water or inadequately cooked meat. Incubation period is 3-5 days (range 1-21).
- **Babesiosis** – signs and symptoms include fever, chills or sweats, muscle or joint aches, nausea or vomiting. It is transmitted by the same tick that causes Lyme disease. Incubation period is 1-9+ weeks.

REFERENCES/RESOURCES:

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MEASLES (Rubeola)*

INFECTIOUS AGENT: *Rubeola* virus

DESCRIPTION/SIGNS AND SYMPTOMS: Measles is a highly contagious respiratory disease caused by a virus; the virus and disease share the same name of rubeola. The signs and symptoms are as follows: fever, cough, runny nose, and red, watery eyes. Tiny white spots with bluish-white centers can be found in the mouth (called Koplik spots) followed by a red or reddish-brown rash that begins at the hairline and spreads downward to the neck, trunk, arms, legs and feet. Complications include diarrhea, ear infection, pneumonia, brain inflammation, convulsions, deafness, mental retardation, or death.

INCUBATION PERIOD: 8 to 12 days from exposure to onset of signs and symptoms.

MODE OF SPREAD: The virus lives in the mucus of nose and throat of the infected person and is spread through direct contact with respiratory secretions or inhalation of droplets sprayed through the air. The virus can live on surfaces for up to 2 hours.

PERIOD OF COMMUNICABILITY: Measles is so contagious that 90% of non-immune persons close to the infected individual will become infected with the rubeola virus. The period of contagiousness is 1 to 2 days before the first signs or symptoms appears (3 to 5 days before the rash) until 4 days after the appearance of the rash.

CONTROL MEASURES:

Measles can be prevented by the combination MMR (measles, mumps and rubella) vaccine. In Alaska, MMR is required for school entry and should be administered at 12 months of age with a second vaccination at 4-6 years.

REPORTING*: Measles infection is considered a public health emergency that, if suspected or diagnosed, must be reported IMMEDIATELY to the Alaska Section of Epidemiology* **by calling 907-269-8000 during business hours or 1-800-478-0084 after hours.**

EXCLUSION: Students need to be excluded. Students who do not have an MMR on file or are exempted from immunization need to be excluded unless they receive the vaccination within 72 hours of exposure. Unimmunized children with immune deficiencies should be excluded.

RETURN TO SCHOOL: Readmission may take place 4 days after the rash onset and when the child is able to participate in usual activities and staff determine that they can care for the child without compromising the health and safety of others. Excluded unimmunized students may return to school when public health officials determine it is safe, usually 2 weeks after the onset of rash in the last case of measles.

TREATMENT: Treatment of measles is essentially supportive care with adequate rest, maintenance of good hydration and replacement of fluids lost through diarrhea or vomiting. Intravenous rehydration may be necessary if dehydration is severe. Secondary infections should be treated with antibiotics. Because vitamin A deficiency is associated with severe disease from measles, the World Health Organization recommends all children diagnosed with measles receive vitamin A supplementation regardless of their country of residence. Postexposure prophylaxis should be considered in unimmunized contacts. This involves the administration of the measles vaccine or human immunoglobulin (Ig). Human Ig prevents or modifies rubeola disease if administered within 6 days of exposure to an unimmunized susceptible person. Immunocompromised contacts, infants and pregnant women are recommended to receive human immune globulin.

FOLLOW UP: Monitor for complications such as pneumonia, ear infections, or diarrhea as 30% of measles cases develop one or more complications. Monitor hearing, as permanent hearing loss can result from ear infections caused by measles virus.

ROLE OF SCHOOL NURSE:

- Report any suspected measles infection to the Alaska Section of Epidemiology immediately. Work with public health officials to determine those students who should be excluded from school due to their under- or unimmunized status.
- Educate the staff on signs and symptoms of measles.
- Review all immunization records for students and staff. Ensure all staff are immunized, have documentation of having the disease or were born before 1957 (presumed immune).
- Teach and use good handwashing techniques.

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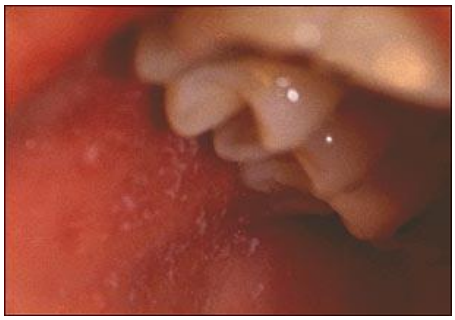

Koplik spots

MENINGITIS*

INFECTIOUS AGENT: Meningitis can be caused by microorganisms like bacteria, viruses, and, less commonly, parasites and fungi. These microorganisms infect blood and the cerebrospinal fluid (CSF). Meningitis can also develop from non-infectious causes, including certain diseases (e.g., cancers, lupus), head injury, brain surgery or certain drugs. The infectious agents most commonly responsible for bacterial meningitis include meningococcus (*Neisseria meningitidis*), pneumococcus (*Streptococcus pneumoniae*), and *Haemophilus influenza* type B (Hib). Most viral meningitis cases in the United States are caused by enteroviruses. Other viral infections that can lead to meningitis include mumps, herpesvirus (e.g., Epstein-Barr), herpes simplex viruses, varicella-zoster, measles, influenza, viruses spread through mosquitoes and other insects, and in rare cases, a virus spread by rodents.

DESCRIPTION/SIGNS AND SYMPTOMS: Meningitis is the inflammation of the meninges (the membranes that cover the brain and spinal cord. Meningitis from pneumococcus bacteria and Hib are not as common with current immunizations available. Most commonly seen today is viral meningitis which can be confused with bacterial meningitis in early stages. Meningitis infection may cause a sudden onset of fever, stiff neck and headache. Other symptoms include nausea, vomiting, loss of appetite, irritability, increased sensitivity to light (photophobia) and change in mental state (confusion, drowsiness, seizures, and coma). Fever may be associated with a blood red rash of meningococcus.

INCUBATION PERIOD: For viral meningitis (enterovirus): 3 to 6 days. For Hib: Unknown
For meningococcus and *S pneumoniae*: Less than 4 days

MODE OF SPREAD: Bacterial meningitis is spread through exchange of respiratory and throat secretions and with direct contact with an infected person, (e.g., coughing, kissing) and not by casual contact. Enteroviruses are most often spread through the fecal-oral route, commonly through diaper changing or using the toilet without proper handwashing. Enterorviruses can also be spread by respiratory secretions (saliva, sputum, or nasal mucus) of an infected person. Shedding from the respiratory tract usually lasts a week or less, while shedding from the fecal-oral route can last several weeks.

PERIOD OF COMMUNICABILITY: Bacterial meningitis: For Hib, meningococcus and *S. pneumonia*e, contagiousness lasts until after 24 hours of antibiotic treatment.
Viral meningitis: The period of communicability for enterovirus viral meningitis is up to a week or less from the respiratory tract but shedding of the virus in feces can continue for several weeks.

CONTROL MEASURES:

VACCINATION: Vaccines are available for three types of bacterial meningitis.

- Haemophilus influenzae type b (Hib) vaccine is a required immunization for children under age 5 attending child care or preschool in Alaska and is highly effective in preventing Hib disease.
- Streptococcus pneumoniae (pneumococcus) may be prevented by the pneumococcal conjugate vaccine (PCV13) and is recommended for children as a series of 4 doses between 2 months and 15 months of age.
- Neisseria meningitides (meningococus) immunization is available by the meningococcal conjugate vaccine (MCV4). Two doses of MCV4 are recommended for adolescents 11 though 18 years of age: the first dose at 11 or 12 years of age, with a booster dose at age 16.

Vaccinations included in the childhood vaccination schedule that protect against some diseases that can lead to viral meningitis include: polio, measles and mumps (MMR) and chickenpox (varicella-zoster vaccine).

REPORTING*: Suspected meningococcal meningitis is a public health emergency that must be reported to the Alaska Section of Epidemiology immediately* by calling 1-907-269-8000 during business hours or 1-800-478-0084 after hours.

EXCLUSION: The student needs to be excluded as soon as suspected.

RETURN TO SCHOOL: The student may return to school when cleared to return by their health care provider.

TREATMENT: Bacterial meningitis can be treated effectively with antibiotics and it is important that treatment be started as soon as possible. There is no specific treatment for viral meningitis. A hospital stay may be necessary in more severe cases or for people with weakened immune systems.

FOLLOW UP: Most persons with viral meningitis completely recover on their own within 7-10 days. While most people with bacterial meningitis recover with antibiotics, it can cause serious complications, such as brain damage, hearing loss or learning disabilities. Preventative antibiotics may be recommended for close contacts of people with meningococcal meningitis.

ROLE OF SCHOOL NURSE

- Refer any student with signs and symptoms of bacterial meningitis to their health care provider immediately and report the suspected case to the Alaska Section of Epidemiology. Work closely with public health officials to determine close contacts who may benefit from antibiotics or those students who are unimmunized or under-immunized who may need vaccination.
- Teach exposed staff, parents, and students to be aware of the signs and symptoms of meningitis and seek medical assistance immediately if suspected bacterial meningitis.
- Monitor the school population immunization status according to the latest recommendations.
- Educate parents, students and staff on the recommended immunizations, including the meningoccocal conjugate vaccine at ages 11 or 12 and 16.
- Teach illness prevention which includes hand hygiene and cough etiquette, disposal of contaminated tissues after each use, cleaning and sanitizing contaminated surfaces, avoiding close contact with people who are sick and avoidance of sharing drinks, eating utensils and other personal items.

REFERENCES/RESOURCES:

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MOLLUSCUM CONTAGIOSUM

INFECTIOUS AGENT: *Molluscipoxvirus*, a virus

DESCRIPTION/ SIGNS AND SYMPTOMS: Molluscum is a common viral skin disease that causes wart-like lesions that are flesh-colored, pink, translucent, or yellow with a dimple or pit in the center. Each lesion is typically 3-5 mm in diameter; these can occur anywhere on the body but are most often found on the trunk, face or extremities. The lesions are usually painless, but can become itchy, sore, or swollen.

INCUBATION PERIOD: Between 2-7 weeks, but may be as long as 6 months

PERIOD OF COMMUNICABILITY: Unknown

MODE OF TRANSMISSION: Skin to skin (direct contact), autoinoculation (by scratching, picking lesions), and sharing items (e.g., towels, sport gear, bar soap, hair brushes, watches) can spread the virus. Very mildly contagious, it is most often spread to other areas of the infected child's body, rather than other children. Students with molluscum contagiosum should not participate in contact sports (e.g., wrestling, football, basketball) unless the lesions can be covered by clothing or bandages. Shared gear (balls, helmets, gloves) should be avoided unless all bumps are covered. Swimming should also be avoided unless the lesions can be covered with watertight bandages.

CONTROL MEASURES:

REPORTING: Molluscum contagiosum is not a condition reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: No exclusion is required.

RETURN TO SCHOOL: Exclusion is not required.

TREATMENT: A health care provider should provide the diagnosis because there are other causes of growths on the skin, both infectious and non-infectious, but medical treatment is usually not required**.** The viral infection typically resolves within 6-12 months without medical intervention. Treatment options include freezing the lesions, laser therapy or surgical removal. Molluscum contagiosum may respond to oral cimetidine or topical therapies. Students with lesions in the genital area should consult with a health care provider.

FOLLOW-UP: Do not allow the student pick at their lesions as this may cause a bacterial infection or further spread of the viral infection. If lesions appear infected, the health care provider should re-evaluate.

ROLE OF SCHOOL NURSE:

- Reinforce good handwashing technique.
- Discourage sharing of towels and other personal items.
- Discourage picking and scratching of lesions. Offer cold compresses or bag of ice wrapped in a paper towel for comfort and to eliminate itching.
- Molluscum is considered only mildly contagious and does not generally need to be covered unless the student is involved in contact sports or swimming.
- Refer students to their health care provider for differential diagnosis. Molluscum in the genital area will need medical follow up.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

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MONONUCLEOSIS

INFECTIOUS AGENT: *Epstein-Barr Virus* (EBV), a member of the herpes virus family

DESCRIPTION/SIGNS & SYMPTOMS: EBV is a very common human virus found worldwide. Most people become infected with EBV sometime during their lifetime. Many children become infected with EBV and these infections usually cause mild or no symptoms. When EBV occurs during adolescence or young adulthood, it causes mononucleosis ("mono") 35% to 50% of the time. Symptoms include fever, fatigue, sore throat and swollen lymph nodes. Inflammation of the spleen and liver complications can develop. Rarely, heart problems or involvement of the central nervous system occurs. Clinical diagnosis is based on review of symptoms and diagnostic blood tests. EBV remains dormant or latent in a few cells in the throat or blood for the rest of the person's life.

INCUBATION PERIOD: Estimated to be 30-50 days

MODE OF SPREAD: EBV is transmitted by person-to-person contact through transfer of saliva (e.g., kissing on the mouth, sharing objects contaminated with saliva such as toothbrushes, cups, toys). Transmission by air or blood does not normally occur. Most individuals exposed to people with mononucleosis have previously been infected with EBV and are not at risk for development of mononucleosis.

PERIOD OF COMMUNICABILITY: The specific period of communicability is unknown. The *Epstein-Barr* virus can be excreted (shed) during active infection and intermittently throughout the life of earlier infected, healthy individuals, therefore, transmission of the virus is almost impossible to prevent.

CONTROL MEASURES:

REPORTING: Mononucleosis is not a condition reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: Exclusion should be based on severity of symptoms. No exclusion is necessary unless any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others. Contact sports or activities involving risk of injury should be avoided by persons with an enlarged spleen.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved. Medical clearance is recommended prior to return to full activity.

TREATMENT: There is no specific treatment for mononucleosis, other than symptomatic care. No antivirals or vaccines are available. Occasionally steroids are prescribed to control the swelling of the throat and tonsils.

FOLLOW-UP: EBV infection seldom lasts more than 4 months; lingering illness may signal chronic EBV infection and should be investigated further to determine if it meets the criteria for chronic fatigue syndrome.

ROLE OF THE SCHOOL:

- Reinforce good handwashing technique and educate about transmission of illness through transfer of saliva.
- Individuals should not prepare food for others or donate blood while symptomatic.
- Reinforce cleaning and sanitizing of toys, personal items, and shared utensils, cups, etc.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

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MOSQUITO-BORNE DISEASES

INFECTIOUS AGENT: Of the diseases spread by infected mosquitoes in the United States, most are caused by viruses. Malaria is a mosquito-borne disease caused by a parasite which occurs commonly in the tropical areas of the world.

DESCRIPTION/SIGNS & SYMPTOMS: Horses and birds are the two main hosts that serve as reservoirs for mosquito-borne viruses. Mosquitos become infected when they feed on these infected hosts. Malaria is uncommon in the United States except among international travelers. Examples of mosquito-borne viruses in the United States include West Nile virus, eastern equine encephalomyelitis (EEE), St. Louis Encephalitis (SLE), La Crosse encephalitis, and western equine encephalomyelitis (WEE). Alaska, thus far, has been spared by diseases borne by mosquitoes which other parts of the United States and the world experience. Due to our short summers and mosquito seasons, experts feel that the establishment of certain mosquito-borne diseases in Alaska is unlikely. However, Alaskans travel to and students transfer from infected areas where mosquito-borne diseases are more prevalent. Signs and symptoms include: fever, headache, body aches, swollen lymph nodes, nausea, vomiting, rash, convulsions, coma, paralysis (in West Nile virus disease, paralysis of the facial muscles [Bell palsy] has been noted). In children, West Nile virus and EEE produce no signs or symptoms or a mild headache and fever. In outbreaks, more severe illness may occur, especially among adults.

INCUBATION PERIOD:

West Nile virus …… 2 to 14 days
EEE ……. 3 to 10 days
SLE ……. 4 to 14 days
La Crosse encephalitis …… 5 to 15 days
WEE …….. 2 to 10 days

MODE OF SPREAD: Transmission of the virus or parasite is spread through the bite of an infected mosquito and is not spread person-to-person. In a very small number of cases, West Nile disease also has been spread by blood transfusion, organ donation, breastfeeding and during pregnancy from mother to baby.

PERIOD OF COMMUNICABILITY: These mosquito-borne diseases are not contagious.

CONTROL MEASURES:

Avoiding and preventing mosquito bites is the best practice for controlling mosquito borne diseases.

REPORTING: ***West Nile virus infection is a reportable disease to the Alaska Section of Epidemiology.*** By Alaska statute and regulation, a suspected or confirmed case of hepatitis A must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease. Since some mosquito-borne diseases originate from birds, the public should also report dead bird sightings (without handling the bird) to local public health officials. This is important to identify areas of possible risk and to receive instructions for disposal of the bird(s).

EXCLUSION: No exclusion is necessary unless any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

TREATMENT: Since the major class of mosquito-borne diseases is viral, there is no specific treatment. Symptomatic and supportive treatment includes adequate rest, hydration and nutrition.

FOLLOW UP: Monitor the resolution of symptoms. Most cases resolve on their own although even healthy people have become sick for several weeks. In severe cases, hospitalization may be necessary to receive supportive treatment. Monitor all sores and lesions for the occurrence of secondary infections.

ROLE OF SCHOOL NURSE:

- Consider a mosquito-borne disease when signs and symptoms occur in a student or staff who recently traveled from an infected area of the United States or internationally.
- Educate students, staff and families on safe and effective strategies for avoiding mosquito bites including staying inside at dusk and dawn and wearing long sleeves, pants and socks when outside at these times. Eliminating standing water in wading pools, buckets, pet dishes, flowerpots, fire pits and old tires will minimize mosquito presence and breeding opportunities.
- Teach proper use of insect repellents such as DEET (see below in resources).

REFERENCES/RESOURCES:

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MRSA (Methicillin-resistant *Staphylococcus aureus)*

INFECTIOUS AGENT: Methicillin-resistant *Staphylococcus aureus*

DESCRIPTION/SIGNS & SYMPTOMS: MRSA is a type of staph infection that is resistant to a certain antibiotic related to penicillin and amoxicillin, called methicillin. MRSA infections have been most commonly diagnosed in hospitalized patients. Now MRSA is found in the community and, when acquired outside of the hospital, it is referred to as community-associated MRSA, or CA-MRSA. Most CA-MRSA infections are skin infections that appear as pustules or boils and are red, swollen, and painful and may spontaneously drain pus. These lesions commonly occur at sites of visible skin trauma such as cuts, abrasions, or insect bites. Sometimes boils and abscesses can progress to cellulitis (see Boil/Abscess/Cellulitis), an enlarged red area of skin that extends beyond the boil. Cellulitis may be associated with fever. Rarely, the infection spreads from the skin into the deeper tissues, causing a rapidly spreading, dangerous, and very painful infection called fasciitis. It is impossible to tell the difference between MRSA and other staphylococci based on appearance but MRSA is more troublesome because of its more aggressive nature in its resistance to some antibiotics. Symptoms of MRSA in areas other than the skin include fever, tiredness, pain and swelling of the joints or bones, and cough when the infection is in the lungs.

INCUBATION PERIOD: Unknown

MODE OF SPREAD: Transmission is by close skin-to-skin contact, direct contact with open sores or boils and sharing of personal items such as towels, clothing, razors, and uniforms that had contact with the infected wound or bandages. Crowded conditions and poor hygiene contribute to MRSA's spread. Athletes with active infection or open wounds can spread the infection to others who come in contact with the wounds or infectious materials and in common-use water facilities such as swimming pools.

PERIOD OF COMMUNICABILITY: MRSA can be spread by carriers (persons who carry Methicillin-resistant *Staphylococcus aureus* but have no symptoms) anytime there is a break in the skin. People who have actively draining sores are more contagious.

CONTROL MEASURES:

REPORTING: MRSA is not a condition reportable to the Alaska Section of unless there is an unusual number or clustering. Consult school district policy about notification of skin infections.

EXCLUSION: Unless directed by a health care provider, students with MRSA infections should not be excluded from attending school unless the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others. Exclusion from school and sports activities should be reserved for those with wound drainage that cannot be covered and contained with a clean, dry bandage and for those who cannot maintain good personal hygiene.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved or, if excluded on the advice of a health care provider, when medical release is obtained.

TREATMENT: Treatment of MRSA will vary by the type and location of the infection. Treatment for skin infections may include having the health care provider drain the infection and, in some cases prescribe an antibiotic. A culture should be taken to determine the best antibiotic choice. At this time, there is no effective and long-lasting way to rid children, families, or centers of MRSA.

FOLLOW-UP: Monitor wounds and ensure they are appropriately covered until healed. If an antibiotic is prescribed, educate regarding the importance of taking all the doses even if the infection appears to be resolving. If the infection does not appear to be improving within a few days, recommend health care provider re-evaluation.

ROLE OF SCHOOL NURSE:

- Clean and cover any infected skin lesions and refer the student to a health care provider. Educate students, parents and staff that skin infections should be evaluated and treated by a health care provider to rule out MRSA and ensure timely and appropriate treatment.
- Monitor the student with a MRSA infection to assess the healing progress and ensure that open areas remain covered at all times.
- Educate students, parents and staff to complete all antibiotic prescriptions and never share antibiotics with other people or save unfinished antibiotics to use at another time.
- Educate students, parents and staff on good hygiene practices, universal/standard precautions and to avoid sharing of towels and other personal items.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Methicillin-resistant Staphylococcus Aureus (MRSA) Infections. Available at: http://www.cdc.gov/mrsa/index.html.

- Prevention of MRSA Infections http://www.cdc.gov/mrsa/prevent/index.html
- Information and Advice about MRSA for School Officials http://www.cdc.gov/mrsa/groups/advice-for-school-officials.html
- Prevention of MRSA Infections in Athletic Facilities http://www.cdc.gov/mrsa/prevent/athletic.html

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MUMPS*

INFECTIOUS AGENT: Mumps virus, a member of the family *Paramyxoviridae*, genus *Rubulavirus*

DESCRIPTION/SIGNS & SYMPTOMS: Mumps is a highly contagious viral illness that usually presents with a few days of fever, headache, muscle aches, fatigue and loss of appetite followed by swelling of one or more of the salivary glands. Up to half of people who get mumps have very mild or no symptoms, and therefore do not know they were infected with mumps. Though most often a mild illness, mumps can have serious complications. Adolescent boys may experience painful swelling of the testicles and girls may have swelling of the ovaries causing abdominal pain. Other complications include meningitis, deafness, kidney problems and inflammation of the joints. Loss of the fetus can occur in the first trimester of pregnancy. In the United States, the incidence of mumps has declined dramatically since the wide use of the vaccine starting in the late 1960s.

INCUBATION PERIOD: Symptoms typically appear 16-18 days after infection, but this period can range from 12-25 days after infection.

MODE OF SPREAD: Mumps is spread by direct contact with droplets of saliva or mucus from the mouth, nose, or throat of an infected person, usually when the person coughs, sneezes or talks. Sharing of personal items used by an infected person, such as cups or soft drink cans, or contact with contaminated surfaces or objects can also spread the virus.

PERIOD OF COMMUNICABILITY: Most mumps transmission likely occurs from 1 to 2 days before to 5 days after swelling of glands. Therefore, the CDC recommends isolating mumps patients for 5 days after their glands began to swell. Unapparent infections can be communicable.

CONTROL MEASURES:

VACCINATION: Mumps is vaccine preventable disease. Students are required to have 2 doses of Measles, Mumps, Rubella (MMR) vaccine or MMRV (varicella combined) to attend school in Alaska. The first dose is recommended at 12 months and the second dose at 4-6 years of age.

REPORTING: ***Mumps is a reportable disease to the Alaska Section of Epidemiology***. By Alaska statute and regulation, a suspected or confirmed case of mumps must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: Students with mumps infection need to be excluded. Work with the Section of Epidemiology to determine unimmunized or underimmunized exposed students who would need to be excluded if an outbreak occurs.

RETURN TO SCHOOL: Students may return to school 5 days after onset of swelling and when the child is able to participate in normal activities. Those students excluded due to immunization status may return to school when public health officials determine it is safe which may be as long as a month after the last case.

FOLLOW UP: A student recovering from mumps may need extra academic support and possibly a modified schedule until fully recovered which may be several weeks. Susceptible students must be carefully monitored.

TREATMENT: There is no specific treatment for mumps. Supportive care (adequate rest, fluids, nutrition and fever reduction) should be given as needed.

ROLE OF SCHOOL NURSE:

- Exclude the student suspected for mumps infection and refer them to their health care provider. Report suspected mumps infections to the Alaska Section of Epidemiology.
- Monitor immunization status of the school population. Work with public health officials to identify unimmunized or underimmunized contacts to determine exclusion and vaccination needs. Susceptible staff are those who do not have 2 documented doses of MMR, a positive mumps IgG, a history of physician diagnosed infection, or birth before 1957. Pregnant women should notify their health care provider.
- Educate students, parents and staff on prevention of illness which includes hand hygiene, cough etiquette, avoidance of ill persons, cleaning and sanitizing surfaces, and not to share eating or drinking utensils.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Mumps. Available at http://www.cdc.gov/mumps/index.html.

- MMR Vaccine Information Statement. http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-mmr.pdf
- MMRV Vaccine Information Statement. http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-mmrv.pdf

Immunization Action Coalition. Mumps. Available at http://www.immunize.org/mumps.

Heymann, David L. (2008): American Public Health Association: Control of Communicable Disease Manual, 19 Ed. Washington, DC.

State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

PIN WORMS (HUMAN)

INFECTIOUS AGENT: *Enterobius vermicularis*

DESCRIPTION/SIGNS & SYMPTOMS: A pinworm ("threadworm") is a small, thin, white roundworm (nematode) called *Enterobius vermicularis* that lives in the large intestine. The adult worm migrates to the anal area. Pinworms are about the length of a staple. While an infected person sleeps, female pinworms leave the intestine through the anus and deposit their eggs on the surrounding skin. Pinworm infection occurs most commonly in school-aged and preschool-aged children, caretakers and household members of a person with a pinworm infection, and institutionalized persons. Symptoms are itching of the perianal region, insomnia, and restlessness. In female patients the worms may migrate to the vagina causing itching and white or yellowish discharge. They may also irritate the urethra, giving pain on urination. Some infected people have no symptoms.

INCUBATION PERIOD: Once pinworm eggs are ingested, the incubation period is 1-2 months or longer for the female to mature and move to the anus.

MODE OF SPREAD Pinworm infection is spread via the fecal-oral route by the transfer of pinworm eggs from the anus to someone's mouth. Transmission can be direct (e.g., by hand) or indirect (e.g., toys, clothing, bedding, food, toilet seats, and baths). People become infected, usually unknowingly, by ingesting the pinworm eggs that are on fingers, under fingernails, or on clothing, bedding, and other contaminated objects and surfaces. Because of their small size, pinworm eggs sometimes can become airborne and ingested while breathing. Dogs and cats do not harbor *E. vermicularis*.

PERIOD OF COMMUNICABILITY A person remains infectious as long as female pinworms are depositing eggs on the perianal skin. Eggs can survive 2-3 weeks in an indoor environment.

CONTROL MEASURES:

REPORTING: Pin worms is not a condition reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: No exclusion is required.

RETURN TO SCHOOL: Exclusion is not required.

TREATMENT: A health care provider should be consulted before treating a suspected case of pinworm infection. Pinworm infection can be treated with either prescription or over-the-counter medications. The drugs of choice are mebendazole, pyrantel pamoate, and albendazole. Treatment involves two doses of medication with the second dose being given 2 weeks after the initial dose. All household contacts and caretakers of the infected person should be treated at the same time. Good hand hygiene is essential (e.g., proper handwashing, maintaining clean short fingernails, avoiding nail biting, avoiding scratching the perianal area). Infected people should shower in the morning as this removes a large proportion of the eggs. Frequent changing and laundering of underclothing, bedding, towels, bed clothing may decrease the chance of autoinfection and transmission.

FOLLOW-UP: Reinfection occurs easily; control can be difficult in schools and child care centers due to this high rate of reinfection. Playmates, classmates, close contacts and household members should be considered possible sources of infection. In institutions, mass and simultaneous treatment, repeated in 2 weeks, can be effective.

ROLE OF SCHOOL NURSE:

- Notify parents/guardians of a student with suspected pinworm infection and recommend consultation for treatment by a health care provider.
- Report a pinworm outbreak to the Alaska Section of Epidemiology and work with public health officials on control measures.
- Provide educational materials to students, parents and staff.
- Monitor for signs of re-infestation.
- Stress the importance of handwashing as the most effective means to prevent pinworm infection.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Parasites – Enterobiasis (also known as Pinworm Infection). Available at: http://www.cdc.gov/parasites/pinworm/.

Pinworm Infection (*Enterobius vermicularis*). In: The Red Book: *2003 Report of the Committee on Infectious Diseases*, 26th Ed. Elk Grove Village, IL. American Academy of Pediatrics; 2006:486-487.

State of Maine Department of Education School Health Manual: Communicable Disease. Available at: http://www.maine.gov/education/sh/communicablediseases/pinworm.pdf.

PINK EYE (Conjunctivitis)

INFECTIOUS AGENT: Conjunctivitis can result from many causes including viruses, bacteria, allergens, contact lens use, chemicals, fungi and certain systemic diseases. Viral conjunctivitis is most often caused by *adenoviruses* but can also be caused by *herpesviruses*, *rubella*, *rubeola*, *picornaviruses*, and Newcastle disease virus. The most common bacterial causes of conjunctivitis are *Streptococcus pneumoniae, Haemophilus* species*, Staphylococcus aureus* and *Pseudomonas aeruginosa*. Gonococcal, Chlamydia infections can also cause conjunctivitis. Allergic conjunctivitis is caused by the body's reaction to certain substances to which it is allergic such as pollens, dust mites, animal dander, molds, cosmetics, contact lenses and lens solutions. Chemicals such as those in chlorine and soaps or air pollutants can cause irritant conjunctivitis.

DESCRIPTION/SIGNS & SYMPTOMS: Conjunctivitis is an irritation and sometimes an infection of the tissues lining the inside of the eyelid and the eye. One or both eyes can be affected. Symptoms include eye itchiness, eye pain, watery eyes, and an excess amount of blood visible in the whites of the eye and eyelid (giving the eye a pink appearance). Sensitivity to light can accompany symptoms. When a bacterial or viral infection causes conjunctivitis, there is usually discharge (white to yellow in color) from the eye. The infected eye(s) may be crusted shut in the morning with bacterial conjunctivitis. Allergic conjunctivitis is more often found in both eyes simultaneously and itching and excess tearing is common.

INCUBATION PERIOD: Bacterial: unknown because the bacteria that cause it are commonly present in most individuals and do not usually cause infection. Viral: usually 1 to 12 days; sometimes occurs early in the course of a viral respiratory tract disease. Allergies: variable; the reaction may be immediate or delayed for many hours or days after the contact with the allergen.

MODE OF SPREAD: Bacterial and viral conjunctivitis can be spread by direct contact with discharge from the eye or by contact with objects contaminated with eye discharge. Contaminated fingers, clothing, towels, shared eye makeup applicators, etc. may spread the infection.

PERIOD OF COMMUNICABILITY: Bacterial and viral conjunctivitis are highly contagious. Bacterial conjunctivitis is contagious as long as a person has symptoms or until approximately 24 hours after beginning antibiotic eye drops or ointment. Viral conjunctivitis is contagious as long a person has signs and symptoms. Conjunctivitis caused by allergies and chemical irritation is not contagious.

CONTROL MEASURES:

VACCINATION: There is no vaccine that prevents all types of conjunctivitis but there are vaccines that prevent some viral and bacterial diseases that may be associated with conjunctivitis. These vaccines include rubella, measles, varicella (chickenpox), shingles, pneumococcal, and *Haemophilus influenzae* type B (Hib).

REPORTING: Conjunctivitis is not a condition reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: Students should not be excluded once indicated therapy is implemented unless: a) they meet other general exclusion criteria, such as fever with behavior change, b) the student is unable to participate and staff determine they cannot care for the child without compromising the health and safety of other children, c) the student's behavior is such that they cannot avoid close contact with other students, or d) their health care provider or public health officials recommend exclusion.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

It is recommended by the Centers for Disease Control and Prevention (CDC) that students with bacterial conjunctivitis stay home until antibiotic treatment has started.

TREATMENT: Many topical antibiotics (e.g., eye drops, ointment) are effective in treating bacterial conjunctivitis and can shorten the course of the illness. Most respond to antibiotics and resolve in several days. Not all cases of conjunctivitis need medical care. A health care provider should be seen if:

- Moderate to severe pain in the eye(s) occurs
- Vision problems, such as sensitivity to light or blurred vision (once any discharge is wiped from the eye) occurs
- Intense redness of the eye(s) is evident
- Symptoms persist, become worse, or when a person is suspected of having a severe form of viral conjunctivitis (e.g., caused by herpes simplex or varicella-zoster virus which threatens vision)
- The person is immunocompromised (e.g., due to cancer, HIV, or other medical conditions or treatments)
- Bacterial conjunctivitis is being treated with antibiotics and does not appear to be responding after 24 hours of treatment.

FOLLOW UP: Monitor infected and exposed students. Viral conjunctivitis is usually mild, lasting 3-5 days but can sometimes take 2-3 weeks to clear up, especially if complications occur. One form of viral conjunctivitis, caused by *adenovirus*, can cause epidemics. Encourage frequent handwashing. Ensure good cleaning and sanitizing practices are being followed. Dispose of soiled tissues in a sanitary manner.

ROLE OF SCHOOL NURSE: Educating students with bacterial or viral conjunctivitis is important to limit spread. These students should be encouraged to:

- Wash hands often and well and always after touching the affected eye.
- Keep hands away from the infected eye.
- Avoid using the same eye drop dispenser/bottle for the infected eye and uninfected eye.
- Not share eye drops, tissues, washcloths, towels, pillowcases, or handkerchiefs etc. with others, including family members.
- Wash any discharge from around the eyes several times a day. Use tissue or a cotton ball and discard immediately after use. Clean eyeglasses frequently.
- Use washcloth, towel, and pillowcase only once and wash them thoroughly.
- Not use other people's eye cosmetics and throw away cosmetics that may have come in contact with an infected eye to prevent re-infection at a later date.
- Not use swimming pools.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Conjunctivitis (Pink Eye). Available at: http://www.cdc.gov/conjunctivitis/index.html.

PNEUMONIA*

INFECTIOUS AGENT: Pneumonia is primarily caused by a viral or, less commonly, a bacterial infection. The most common bacterial cause of pneumonia is *Streptococcus pneumoniae* (pneumococcus) and the most common viral causes are influenza, parainfluenza, and respiratory syncytial viruses. In children less than 1 year of age, respiratory syncytial virus (RSV) is the most common cause of pneumonia. Other common bacterial and viral causes of pneumonia in the U.S. include *Staphylococcus aureus* and *adenovirus*.

DESCRIPTION/SIGNS & SYMPTOMS: Pneumonia is an inflammation of the lungs that is often secondary to an upper respiratory infection (starting in the nose and throat area) that spreads to the lower respiratory tract (lungs). Pneumonia can cause mild to severe illness in people of all ages. Those most at risk include adults 65 years or older, children younger than 5 years, people with underlying medical conditions (e.g., asthma, diabetes, AIDS) and people who smoke. Globally, pneumonia causes more deaths than any other infectious disease. The most common symptoms are coughing, chills, fever, chest pain, rapid and difficulty breathing, nausea, vomiting and fatigue.

INCUBATION PERIOD: The incubation period varies as pneumonia is a condition that is caused by a variety of types of organisms.

MODE OF SPREAD: The bacteria and viruses are spread by direct person-to-person contact, by droplet spread when a person coughs or sneezes, or by direct contact with nasopharyngeal secretions.

PERIOD OF COMMUNICABILITY: The contagious period depends on the germ causing the pneumonia.

CONTROL MEASURES:

VACCINATION: Several types of pneumonia are vaccine preventable. Vaccines that prevent bacterial or viral infections that may cause pneumonia include pneumococcal, *Haemophilus influenzae* type b (Hib), pertussis (whooping cough), varicella (chicken pox), measles, and influenza (flu) vaccine.

REPORTING: Pneumonia is not a condition reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering. Several diseases leading to a pneumonia infection are reportable (e.g., Hib, pertussis, varicella, measles).

EXCLUSION: No exclusion is necessary unless any general exclusion criteria are present (fever with behavior change, rapid or distressed breathing or persistent severe cough), the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

TREATMENT: When pneumonia is suspected, the person should see a health care provider as soon as possible. Although cough suppressants, expectorants, or fever-lowering drugs may be helpful, they should not be started without discussing their use with the health care provider. Cough suppressants may not be recommended as coughing helps clear the infection from the lungs. Pneumonia can usually be treated by antibiotics and antiviral drugs. Drinking plenty of fluids to stay hydrated will assist in treatment and recovery.

FOLLOW-UP: Depending on the severity of the individual's pneumonia, hospitalization or further follow up by a health care provider may be necessary.

ROLE OF SCHOOL NURSE:

- Prevention is key. Encourage vaccination for the above vaccines. Encourage and, when

possible, facilitate seasonal influenza vaccination for the whole school population.

- Encourage and educate students and staff on good handwashing techniques, cough etiquette, proper disposal of tissues after each use and sanitizing of surfaces.
- Educate students, staff and parents on lowering risks for pneumonia such as limiting exposure to cigarette smoke.
- Notify parents/guardians of students with symptoms of pneumonia and refer them to a health care provider.
- Be aware bacteria and viruses causing pneumonia are most common in the fall, winter, and spring when children spend more time indoors in close contact with others. Ensure adequate ventilation and space to reduce crowding.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Pneumonia Can Be Prevented – Vaccines Can Help. Available at: http://www.cdc.gov/Features/Pneumonia/.

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Pneumococcal Infections. In: *The Red Book: 2003 Report of the Committee on Infectious Diseases, 26th Ed.* Elk Grove Village, IL. American Academy of Pediatrics; 2006:490-500.

WebMD. Understanding Pneumonia – the Basics. http://www.webmd.com/lung/understanding-pneumonia-basics.

RESPIRATORY SYNCYTIAL VIRUS (RSV)

INFECTIOUS AGENT: The respiratory syncytial virus.

DESCRIPTION/SIGNS & SYMPTOMS: RSV can cause upper respiratory infections (e.g., colds) and lower respiratory infections (e.g. bronchiolitis, pneumonia). More severe in infants and young children, RSV is the number one cause of bronchiolitis (i.e., inflammation of the small airways) in children under one year of age. Infants and young children may require hospitalization. Almost all children have had RSV infection by the second birthday but people of any age can get another RSV infection. Generally, later infections are less severe; the elderly and those people with weakened immune systems are at higher risk for development of severe RSV infection if re-infected. Symptoms usually begin with a runny nose and decreased appetite then progress to coughing, fever and sneezing. Wheezing may also occur.

INCUBATION PERIOD: Usually 4-6 days (range 2-8 days) after exposure.

MODE OF SPREAD: RSV is spread by direct contact with nasal or mouth secretions, inhalation of droplets spread by sneezing or coughing, indirect contact with the virus on environmental surfaces. The virus can live on surfaces (e.g., doorknobs, tables, desks) for many hours and for 30 minutes or more on hands.

PERIOD OF COMMUNICABILITY: Usually people with RSV are contagious for 3-8 days but young infants and people with weakened immune systems can transmit the virus for 3-4 weeks.

CONTROL MEASURES:

REPORTING: RSV is not a condition reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: No exclusion is necessary unless any general exclusion criteria are present (e.g., rapid or labored breathing and refer them immediately to a health care provider), the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

TREATMENT: There is no specific treatment for RSV. The severity of symptoms will determine if the child should be hospitalized. In most severe cases of disease, infants may require supplemental oxygen, suctioning of mucus from the airways or intubation (breathing tube inserted) with mechanical ventilation.

FOLLOW UP: In most cases, including those requiring hospitalization, full recovery occurs within one to two weeks.

ROLE OF THE SCHOOL NURSE:

- Encourage and educate students and staff to use good hand hygiene especially after before and after any activity involving food or touching the mouth, nose and eyes.
- Encourage and teach cough etiquette and disposal of tissues immediately after use.
- Encourage frequent sanitization of environmental surfaces especially commonly touched surfaces during the winter and early spring when outbreaks can be expected.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Respiratory Syncytial Virus Infection (RSV). Available at: http://www.cdc.gov/rsv/index.html.

RINGWORM (TINEA)

INFECTIOUS AGENT: Despite the name, ringworm is not caused by a worm but by dermatophyte, a type of fungus.

DESCRIPTION/SIGNS & SYMPTOMS: Dermatophytes cause skin, hair and nail infections. Many types of dermatophytes cause infection in humans including Trichophyton rubrum and Trichophyton tonsurans, which are transmitted from person to person. Animals (e.g., dogs and cats) can transmit another common dermatophyte called Microsporum canis. Other dermatophtes (i.e., tinea pedis and tinea cruris) cause infections of the skin between the toes (athlete's foot) and of the groin (jock itch). Ringworm , in most cases, is a superficial skin fungal infection that is not serious and is easily treated topically. Skin lesions appear as red, circular patches with raised edges and central clearing. Between the toes, they cause cracking and peeling. Ringworm on the scalp usually makes a bald patch of scaly skin. A chronic infection of the nails may cause thickening, discoloration, and brittleness.

INCUBATION PERIOD: Symptoms typically appear between 4 and 14 days following exposure.

MODE OF SPREAD: Ringworm is spread by direct contact with the rash on an affected human or animal or by direct contact with an object (e.g., combs, brushes, towels, clothing, bedding) contaminated with the fungi. Ringworm may be more common in people who have suppressed immune systems, who have close contact with animals, and those who are involved in contact sports such as wrestling.

PERIOD OF COMMUNCIABILITY: Ringworm is mildly contagious. Cases are contagious as long as the fungus is present in the skin lesion. The fungus is no longer present when the lesion starts to shrink. Once oral medication has begun, the lesion(s) are no longer contagious.

CONTROL MEASURES:

REPORTING: Ringworm is not a reportable disease to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: The student with ringworm should be excluded at the end of the school day if he/she has multiple, exposed suspected ringworm lesions that cannot be covered or direct skin contact with others cannot be prevented. Students who are not able to cover skin lesions during contact sports should be excluded from sports activities that would involve direct contact with the skin lesions.

RETURN TO SCHOOL: Readmit to school and/or sports activities if receipt of different diagnosis from health care provider and/or once treatment is started.

TREATMENT: The particular medication and duration of treatment is based on the location of the infection. Scalp infections usually require treatment with an oral antifungal medication. Infections of other areas of skin are usually treated with topical antifungal medications. Nail infections can be challenging to treat, and may be treated with oral and/or topical antifungal medications. The course of treatment may extend from 2-6 weeks or more.

FOLLOW-UP: Monitor lesions. If no improvement after topical antifungals, if widespread or severe, or the infection returns frequently, the student may need to be re-evaluated by the health care provider and oral antifungals prescribed. Skin lesions should be covered. Siblings and household contacts should be examined and early treatment given to those infected.

ROLE OF THE SCHOOL NURSE:

- Educate coaches of direct contact sports to monitor for skin lesions.
- Ensure students keep affected areas covered.

- Educate students to not share bike helmets, hats, combs, brushes, barrettes, scarves, clothing bedding or towels.
- Encourage good hygiene, particularly regular handwashing.
- Pets with skin disease should be seen by a veterinarian.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Dermatophytes. Available at: http://www.cdc.gov/fungal/dermatophytes/.

WebMD Ringworm Pictures Slideshow. Available at: www.webmd.com/skin-problems-and-treatments/slideshow-ringworm .

ROSEOLA

INFECTIOUS AGENT: Roseola is a viral infection caused by the Human Herpesvirus 6.

DESCRIPTION/SIGNS & SYMPTOMS: Roseola is generally seen in children less than four years of age, primarily between 6 and 24 months of age. The virus can cause a high fever (above 103 degrees) lasting 3-7 days. A red raised rash starting on the trunk and spreading to arms and legs appears as the fever is resolving, usually on the fourth day. The fever may cause seizure activity in rare cases. Other symptoms include a sore throat, runny nose, and cough that can accompany or precede the fever. Fatigue, swollen lymph nodes, decreased appetite, mild diarrhea and swollen eyelids may also occur. Some children infected with roseola have signs and symptoms too mild to be readily noticeable.

INCUBATION PERIOD: 9-10 days

MODE OF SPREAD: The virus is spread through an infected person's respiratory secretions or saliva. The virus sometimes is found in nasal and throat excretions of healthy people who have had the disease in the past. Healthy adults are the most likely source of transmission to children. Saliva from three fourths of adults without symptoms contains infectious virus.

PERIOD OF COMMUNICABILITY: Not known. The infection is contagious even if no rash is present. Unlike other viral illnesses that spread rapidly, roseola rarely results in an outbreak.

CONTROL MEASURES:

REPORTING: Roseola is not a condition reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: No exclusion is necessary unless any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

TREATMENT: There is no specific treatment for roseola; care is symptomatic (i.e., over-the-counter medication for fever, other than aspirin that has been linked to Reye's syndrome with viral infections). Ensure adequate rest, nutrition and fluids. If seizure activity occurs, emergency care is indicated.

FOLLOW UP: Alert exposed family members and staff to watch for symptoms. Complications are rare; most otherwise healthy children and adults recover completely and quickly (within a week).

ROLE OF THE SCHOOL NURSE:

- Educate student, parents and staff on the nature of the illness. Inform parents while the fever phase of the illness can cause concern, once the rash appears, the child is in the recovery period.
- Stress the importance of good handwashing technique.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Mayo Clinic. Roseola. Available at: http://www.mayoclinic.com/health/roseola/DS00452

RUBELLA (GERMAN MEASLES)*

INFECTIOUS AGENT: Rubella virus

DESCRIPTION/SIGN & SYMPTOMS: Rubella is an acute viral disease that causes fever and rash for 2-3 days. Symptoms are often mild, and up to 50% of infections may be subclinical or unapparent. In older children and adults there is often a 1-5 day period of low-grade fever, malaise, swollen lymph nodes and upper respiratory symptoms preceding the rash. The red or pink rash usually occurs on the face initially and then spreads down the body. Joint pain occurs frequently in adults. Rubella can cause birth defects if acquired by a pregnant woman (most severe in early gestation, there is a 20% chance of damage to the fetus): deafness, cataracts, heart defects, mental retardation, and liver and spleen damage. Congenital Rubella Syndrome (CRS) can also lead to fetal death. CRS is the main objective of rubella vaccination programs in the United States.

INCUBATION PERIOD: The incubation period of rubella is 16-18 days, with a range of 12 to 23 days.

MODE OF SPREAD: Rubella is spread by contact with an infected person, through coughing and sneezing, and by direct contact with nose or throat secretions. Rubella may be transmitted by persons with subclinical or asymptomatic cases.

PERIOD OF COMMUNICABILITY: Rubella is only moderately contagious. The disease is most contagious 3-4 days before and when the rash first appears, but the virus may be shed from 7 days before to 5–7 days or more after rash onset. Infants with CRS shed large quantities of virus from body secretions for up to 1 year and can therefore transmit rubella to persons caring for them who are susceptible to the disease.

CONTROL MEASURES:

VACCINATION: Rubella is a vaccine-preventable disease; after the vaccine was licensed in 1969, the number of rubella cases in the United States declined rapidly. However, outbreaks can occur in groups of susceptible individuals who refuse immunizations, cannot be vaccinated or are foreign-born immigrants who come from areas where vaccination is not routine. Rubella can be imported into the U.S. at any time and where outbreaks occur, unfortunately CRS cases typically follow. Rubella is a required vaccination for school attendance in Alaska. The combination Measles-Mumps-Rubella (MMR) vaccine is recommended at 12-15 months of age with a second dose at 4-6 years of age before entering school.

REPORTING: ***Rubella is a reportable disease to the Alaska Section of Epidemiology***. By Alaska statute and regulation, a suspected or confirmed case of rubella must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: Students with diagnosed rubella should be excluded from school for 7 days after the onset of the rash.

RETURN TO SCHOOL: The student may return to school after 7 days from the onset of the rash, when other exclusion criteria have resolved, and when able to participate in usual classroom activities.

TREATMENT: There is no "cure" for rubella, only supportive treatment (bed rest, fluids, and fever reduction).

FOLLOW UP: Complications are not common but can include encephalitis (brain infection) and blood/bleeding problems.

ROLE OF SCHOOL NURSE:

- Review immunization records of all students to confirm appropriate immunization status.
- Educate parents and families on the modes of transmission and the importance of rubella immunization.
- Work closely with the Section of Epidemiology should an outbreak occur. Students who are unimmunized or underimmunized should be excluded until they provide documentation of immunization or until public health officials determine it is safe for them to return (may be more than 3 weeks).
- Recommend female staff of child-bearing age have their immunity documented because of the risk of CRS in early pregnancy.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Rubella Disease In-Short (German Measles) website. Available at: http://www.cdc.gov/vaccines/vpd-vac/rubella/in-short-adult.htm.

Vaccine Information Statements. http://www.cdc.gov/vaccines/pubs/vis/default.htm

Epidemiology and Prevention of Vaccine-Preventable Diseases. Rubella. Available at: http://www.cdc.gov/vaccines/pubs/pinkbook/rubella.html

Immunization Action Coalition website. Available at: http://www.immunize.org/rubella.

State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

SCABIES

INFECTIOUS AGENT: Scabies *(sarcoptes scabiei* var. *hominis)* is a microscopic human itch mite.

DESCRIPTION/ SIGNS & SYMPTOMS: Scabies is a human parasitic disease of the skin caused by a mite. The mite burrows into the upper layers of skin, where it lives and lays its eggs. Scabies presents as a rash of pink or red bumps or blisters. The itchy rash is an allergic response to the mite. Commonly affected areas include the wrists, armpits, buttocks, genitalia, elbows, and webbing between the fingers or toes, but can be found just about anywhere on the body. Often the lesions can be found in lines or tracks where the mites have burrowed beneath the skin. Scabies causes severe itching, usually worse at night. A definitive diagnosis, though not necessary, can only be made from scrapings.

INCUBATION PERIOD: In a person who has not been previously infected, the incubation period is approximately 4-6 weeks. If a person has been previously infected with scabies, the lesions can appear in 1-4 days after re-infection.

PERIOD OF COMMUNICABILITY: Infested individuals can transmit the disease until the mites and eggs are destroyed, usually after the first or second treatment. Scabies can live on a person for 1-2 months but survive only 48-72 hours off a human host.

MODE OF TRANSMISSION: Scabies is transmitted by direct and physical contact with an affected individual or through immediate contact with contaminated clothing or linens. Mites do not reproduce or survive without a human host, therefore, inanimate objects (like toys and desks) and surfaces are not important in the spread of scabies.

CONTROL MEASURES:

REPORTING: Scabies is not a condition reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: Exclude a student with a suspected, active infestation and refer to a health care provider for diagnosis and treatment.

RETURN TO SCHOOL: Persons with confirmed scabies may return to school after treatment has been completed (usually overnight).

TREATMENT: The only currently recommended medications (topical lotions or creams) to treat scabies are by prescription only. The most common cream is permethrin 5%. There are no approved over-the-counter treatments available. Household members and close contacts should be treated concurrently. Retreatment may be necessary if itching continues for more than 2-4 weeks or if new burrows or rash continue to appear. Additional medication may be prescribed for itching if it is severe. Laundering of clothing, bedding, and towels worn or used by the infested person (and close contacts) in the previous three days in hot water and hot drying cycle is also recommended.

FOLLOW UP: The infected person's close contacts should be monitored for symptoms, or may be treated prophylactically. Lesions caused by scratching can result in a secondary infection.

ROLE OF SCHOOL NURSE:

- Exclude students with suspected scabies and refer for medical evaluation and treatment.
- Educate parents on laundering of bedding, clothing, and towels. Items that cannot be washed should be bagged in plastic for at least 72 hours.
- Inform parents and student that itching can persist for many weeks after treatment even when the treatment is successful in killing the mites and eggs.

- Refer again to the health care provider for re-evaluation if new burrows or rash continues to appear and when itching continues for more than 2-4 weeks.
- Monitor for secondary infections.
- Educate students not to share clothing or towels.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Parasites-Scabies. Available at: http://www.cdc.gov/parasites/scabies .

Bear B, Lewis KD. *Manual of School Health*. Second Edition. St Louis: Saunders; 2002.

MedlinePlus. Scabies. Available at: http://www.nlm.nih.gov/medlineplus/ency/article/000830.htm.

SEXUALLY TRANSMITTED DISESASES (STDs)
GENERAL GUIDELINES

STDs may also be referred to as Sexually Transmitted Infections, or STIs. STDs reviewed in this document are limited to common ones about which school nurses and school personnel may need some knowledge. Refer to Centers for Disease Control and Prevention (CDC) online at: http://www.cdc.gov/std/ for information about STDs not referenced in this document.

Sexually active teens are at risk for STDs. Many people with STDs may not have symptoms and not be aware that they are infectious and able to spread disease. Teens may not define oral or anal sex as "having sex" and so may not appreciate the risk of STDs with these types of exposures. Teens may be embarrassed and hesitant to seek health care due to concerns about confidentiality. It is important for the school nurse to reassure teens that reproductive health care services for teens, with some exceptions, are, by law, confidential. Teens need to understand that "confidential" means their parents and other adults are prohibited from having access to STD health care information with the exception of suspected sexual abuse. The possibility of sexual abuse must be considered if infections occur in pre-pubertal children and must be reported to appropriate authorities. Teens need to be made aware of the fact that all school and health care providers are mandated reporters of suspected or known child sexual abuse.

MODE OF SPREAD: STDs are transmitted through oral, anal, or vaginal sexual contact. People with an STD are generally contagious until treatment is fully completed, although some STDs, including HIV, herpes and genital warts, carry risk of lifelong communicability.

CONTROL MEASURES:

REPORTING: ***The following sexually-transmitted diseases are reportable to the Alaska Section of Epidemiology within 5 working days of being suspected or diagnosed:***

- Chlamydia
- Gonorrhea
- Hepatitis B
- HIV infection/AIDS
- Syphilis

Refer to http://www.epi.hss.state.ak.us/default.jsp for current information about reporting.
EXCLUSION: No exclusions or environmental interventions are necessary since STDs require direct and intimate physical contact (oral, anal and/or vaginal) for transmission.
RETURN TO SCHOOL: Exclusion is not required. Students who are experiencing uncomfortable symptoms associated with an STD may feel a need to remain at home until treatment relieves those symptoms.
FOLLOW UP: Education should include risk reduction planning. Educate people to use condoms, limit number of sexual partners and avoid sexual contact when having symptoms. For bacterial infections, sexual activity must be avoided until the infected individual and current partner(s) are treated and, as advised by their health care provider, are no longer infectious. This means a time period of sexual abstinence following receipt of antibiotics. Current CDC treatment guidelines may be found online at: http://www.cdc.gov/std/treatment/

TREATMENT: Bacterial infections are treated with appropriate antibiotics and must be followed by a prescribed time period of sexual abstinence until the treated patient is no longer infectious.

Treatment for non-bacterial infections varies. Refer to current CDC treatment guidelines for more details: http://www.cdc.gov/std/treatment/

ROLE OF THE SCHOOL NURSE: Age appropriate education aimed at reducing the risk of infection by:

- Encouraging abstinence
- If sexually active:
    1. Limit the number of sexual partners
    2. Get tested before having sex with a new partner
    3. Appropriately and consistently using male latex condoms
    4. Avoid sexual contact when having symptoms or when partners have symptoms

The school nurse is a trusted helper who can educate the student about avoiding sexually-transmitted infections, and potential need for medical evaluation and treatment. Students need to know that the law protects their confidentiality with the exception of suspected or known sexual abuse, and that:

1. Minors, persons younger than age 18, can consent to reproductive health services without parent consent, and
2. Health care providers are required by law to report suspected or known sexual abuse even without the minor's consent.

The school nurse needs to refer to CDC's current comprehensive recommendations for care of pregnant women suspected or known to be infected with an STD.

REFERENCES/RESOURCES:

Centers for Disease Control and Prevention. *Sexually Transmitted Diseases Treatment Guidelines, 2010*. MMWR 2010; 59(NO. RR-12)

Alaska Statutes AS 25.20.025. Examination and Treatment of Minors. Available at: http://www.legis.state.ak.us/basis/statutes.asp#25.20.025

Mandatory Reporting and Alaska Criminal Law AS 11.41.434 through 11.41.470.
Sexual abuse of a minor.
Available at: http://www.legis.state.ak.us/basis/statutes.asp#11.41.434

State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at:
http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

STD: CHLAMYDIA

INFECTIOUS AGENT: *Chlamydia trachomatis*, a bacterium.

DESCRIPTION/SIGNS & SYMPTOMS: Chlamydia (CT) is the most frequently reported bacterial STD in the U.S. Alaska has had one of the highest CT infection rates of all states since 2000. In Alaska, in 2010, 85% of CT infections reported were in persons 15-29 years of age. The majority of people who are infected do not have symptoms. CT is detected using a laboratory test. Absence of symptoms is common. Symptoms of CT, when present, are similar to those of gonorrhea.

CDC recommends routine annual testing of all sexually active adolescent females and adult women younger than 26.

Women with documented CT infections have a high rate of reinfection within 6 months of treatment. CDC recommends repeat testing of all women who have been diagnosed with CT 3-6 months after treatment, regardless of whether their sex partners were treated.

Complications of CT in women include pelvic inflammatory disease which can lead to ectopic pregnancy, infertility, and chronic pelvic pain. Refer to pelvic inflammatory disease for detailed information.

Complications of CT in men include epididymitis, infertility and reactive arthritis (Reiter's syndrome).

INCUBATION PERIOD: 7 to 14 days or longer

MODE OF SPREAD: Vaginal, anal or oral sex with an infected partner. Infections may also be spread from mother to infant during vaginal childbirth.

PERIOD OF COMMUNICABILTY: May be well before the infected person experiences symptoms. If symptoms are present, they often occur 1 – 3 weeks post-exposure. In absence of treatment, infected individuals are considered infectious, a state which may persist for months, and which often leads to re-infection of previously treated partners. Infection does not confer immunity and re-infection is very common.

CONTROL MEASURES:

REPORTING: ***CT is a reportable disease to the Alaska Section of Epidemiology***. By Alaska statute and regulation, a suspected or confirmed case of *Chlamydia trachomatis* infection must be reported to the Section of Epidemiology (907-269-8000) within five working days of suspecting the existence of the disease.

EXCLUSION: None

RETURN TO SCHOOL: Exclusion is not required.

TREATMENT: Treatment is with CDC recommended antibiotic regimen. Concurrent treatment of sex partner(s) is essential to prevent re-infection or continued spread of disease. Public health workers often presumptively treat the sex partners of a laboratory confirmed CT case pending return of the results of the sex partner's test.

FOLLOW UP: Education should include risk reduction planning. Assure prompt testing and immediate treatment when CT infection is suspected. Provide education about prevention of transmission and/or re-infection, by avoiding sexual activity for 7 days post-treatment. Outreach to find, educate, test and treat all sexual partners of lab-confirmed CT case patient, within 60 days of case diagnosis.

ROLE OF SCHOOL NURSE: Teens may experience embarrassment and hesitance to be examined for fear that others will find out about their receiving health care. It is important for the school nurse to reassure teens that reproductive health care services for teens, with some exceptions, are, by law, confidential. Teens need to understand that "confidential" means their parents and other adults are prohibited from having access to STD health care information with the exception of suspected sexual abuse. The possibility of sexual abuse must be considered if infections occur in pre-pubertal children and must be reported to appropriate authorities. Teens need to be made aware of the fact that all school and health care providers are mandated reporters of suspected or known child sexual abuse.

Provide prompt referral of symptomatic students for medical evaluation:

- Follow up with the primary healthcare provider to assure timely report of disease or suspected disease to public health authorities.
- Immediate referral to a health care provider if the school nurse observes symptoms suggestive of CT infection in prepubescent girls or boys (for example, discharge or complaints of burning). If CT is confirmed, the school nurse is mandated to assure that a report of suspected child sexual abuse is made to the appropriate authorities. This needs to be done in coordination with the child's health care provider.

The school nurse should work closely with local public health disease investigators once CT is laboratory-confirmed to:

- Assist public health staff, as requested, to identify, locate, and educate potentially-infected sexual partners.
- Encourage prompt referral for medical evaluation, lab testing and adequate treatment of all potentially-infected sexual partners.

Provide appropriate education aimed at reducing the risk of infection by:

- Encouraging abstinence
- If sexually active:
    1. Limit the number of sexual partners
    2. Get tested before having sex with a new partner
    3. Appropriately and consistently using male latex condoms
    4. Avoid sexual contact when having symptoms or when partners have symptoms

Re-infection is common and CDC recommends re-testing of lab-confirmed case patients 1 – 3 months post-treatment to assure that re-infection has not occurred. Re-infection increases the risk for pelvic inflammatory disease. The school nurse needs to refer to CDC's current comprehensive recommendations for care of pregnant women suspected or known to be infected with CT.

REFERENCES/RESOURCES:

Centers for Disease Control and Prevention. Diseases and Conditions. Sexually Transmitted Diseases (STDs). Chlamydia. Available at http://www.cdc.gov/std/chlamydia/

Centers for Disease Control and Prevention. *Sexually Transmitted Diseases Treatment Guidelines, 2010*. MMWR 2010; 59(NO. RR-12)

State of Alaska Section of Epidemiology. Reported Chlamydia Cases, by Age, Race, and Sex – Alaska, Jan-Dec 2010. Available at: http://www.epi.alaska.gov/hivstd/std2010/2010DataWeb.pdf

State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

STD: GENITAL HERPES

INFECTIOUS AGENT: Herpes simplex virus (HSV) HSV-1 and HSV-2. Most cases of recurrent genital herpes are caused by HSV-2.

DESCRIPTION/SIGNS & SYMPTOMS: Recurrences and subclinical shedding are much less frequent for genital HSV-1 infection than for genital HSV-2 infection. Most persons infected with HSV-2 have not been diagnosed with genital herpes. Many such persons have mild or unrecognized infections but shed virus intermittently in the genital tract. As a result, the majority of genital herpes infections are transmitted by persons unaware that they have the infection or who are asymptomatic when transmission occurs. Genital herpes may be recurrent and has no cure. Single or multiple fluid-filled sores may appear anywhere on the genitalia. Sores spontaneously rupture to form shallow ulcers that can be very painful. The ulcers resolve spontaneously with minimal scarring. The first occurrence usually lasts about 12 days. Subsequent, usually milder, occurrences last about 4 days. The interval between clinical episodes is called the latent period. Viral shedding occurs intermittently during latency and sexual transmission of HSV may occur at these times. The clinical diagnosis of genital herpes is both nonsensitive and nonspecific. When sores or ulcers are present in the genital area or a pattern of recurrence has developed, herpes infection is likely. The patient's prognosis, and the type of counseling needed, depends on the type of genital herpes (HSV-1 or HSV-2) causing the infection; therefore, the clinical diagnosis of genital herpes should be confirmed by laboratory testing. Central nervous system involvement, development of sores at other sites, and fungal infections are the most frequently encountered complications.

INCUBATION PERIOD: Usually 2 to 14 days

MODE OF SPREAD: Direct person to person sexual contact, including oral, vaginal, anal

PERIOD OF COMMUNICABILTY: Lifetime, in the presence or absence of clinical symptoms

CONTROL MEASURES:

REPORTING: Genital herpes is not a condition reportable to the Alaska Section of Epidemiology.
EXCLUSION: None
RETURN TO SCHOOL: Exclusion is not required.
TREATMENT: The antiviral drug acyclovir can **reduce** shedding of the virus, diminish pain and accelerate healing time. However, the virus may be shed intermittently for years and possibly lifelong.
FOLLOW UP: Education should include risk reduction planning. Educate people to use condoms, limit number of sexual partners and avoid sexual contact when having visible lesions. Management of genital HSV should address the chronic nature of the disease and go beyond the treatment of acute episodes of genital ulcers. When the school nurse becomes aware of a student with symptoms suggesting herpes infection, referral to medical evaluation and treatment, as well as supportive counseling about need for medical care, and education to prevent transmission to others, is recommended.

ROLE OF SCHOOL NURSE: Teens may experience embarrassment and hesitance to be examined for fear that others will find out about their receiving health care. It is important for the school nurse to reassure teens that reproductive health care services for teens, with some exceptions, are, by law, confidential. Teens need to understand that "confidential" means their parents and other adults are prohibited from having access to STD health care information with the exception of suspected sexual

abuse. The possibility of sexual abuse must be considered if infections occur in pre-pubertal children and must be reported to appropriate authorities. Teens need to be made aware of the fact that all school and health care providers are mandated reporters of suspected or known child sexual abuse.

The student diagnosed with HSV-2 should be informed that:

- Persons infected with either HSV-1 or HSV-2 should remain sexually abstinent when having symptoms
- Symptoms may be recurrent
- Asymptomatic viral shedding is common and can transmit the disease to partners during those times. This is more common with HSV-2 and during the first 12 months after acquiring HSV-2.
- Suppressive therapy may help prevent and/or reduce symptoms
- Sex partners should be notified that they may not have symptoms and need to seek medical care
- Properly used male latex condoms may reduce the risk of transmission to partners
- HSV-2 infected persons are at increased risk for HIV acquisition

Appropriate education aimed at reducing the risk of infection by:

- Encouraging abstinence
- If sexually active:
    1. Limit the number of sexual partners
    2. Get tested before having sex with a new partner
    3. Appropriately and consistently using male latex condoms
    4. Avoid sexual contact when having symptoms or when partners have symptoms

School nurses may reinforce medical advice concerning use of medication, provide individual supportive counseling, and refer those with infections to community support groups.

The school nurse needs to refer to CDC's current comprehensive recommendations for care of pregnant women suspected or known to be infected with herpes.

REFERENCES/RESOURCES:

Centers for Disease Control and Prevention. Diseases and Conditions. Sexually Transmitted Diseases (STDs). Genital Herpes. Available at: http://www.cdc.gov/std/Herpes/default.htm

Centers for Disease Control and Prevention. *Sexually Transmitted Diseases Treatment Guidelines, 2010*. MMWR 2010; 59(NO. RR-12)

STD: GENITAL HPV INFECTION*

INFECTIOUS AGENT: *Human papilloma* virus (HPV).

DESCRIPTION/SIGNS & SYMPTOMS: There are more than 40 types of HPV that can infect the anogenital areas of males and females. These HPV types can also infect the mouth and throat. HPV can cause serious health problems, including genital warts, certain cancers and a rare respiratory condition in which the warts grow in the throat (recurrent respiratory papillomatosis). Genital HPV infection is very common. It is estimated that more than 50% of sexually active persons become infected at least once in their lifetime. Most genital HPV infections are asymptomatic, unrecognized, and self-limiting. Approximately 80% of HPV infections clear the system without treatment. Currently there is no way to tell who will develop health problems and who will not.

Genital warts are usually flat, papular, or elongated growths on the genital mucosa. Diagnosis of genital warts is usually clinical, made by visual inspection.

There are two high-risk HPV types (16 and 18) that cause cervical cancer. Other HPV-related cancers in men and women include penile, vulvar, vaginal, and anal cancers, as well as a subset or oropharyngeal cancers. Cervical cancer typically does not cause symptoms until it is quite advanced which is why it is important for women to have regular screening examinations. The types of HPV that can cause genital warts are not the same as the types of HPV that can cause cancers and there is no evidence that indicates that the presence of genital warts is associated with the development of cervical cancer.

INCUBATION PERIOD: 1 month to several years (usually 2 to 3 months)

MODE OF SPREAD: Direct sexual contact, oral, vaginal or anal. In rare circumstances, HPV can be transmitted from mother to infant during vaginal delivery.

PERIOD OF COMMUNICABILTY: Unknown. Genital warts can be transmitted to others even when no visible sign of warts are present and even after warts are treated.

CONTROL MEASURES:

VACCINATION: Quadrivalent HPV vaccine protects against 90% of HPV types that cause genital warts, as well as HPV types that cause cervical cancer. The vaccine is most effective when all doses are administered before the onset of sexual activity.
REPORTING: HPV is not a condition reportable to the Alaska Section of Epidemiology.
EXCLUSION: None
RETURN TO SCHOOL: Exclusion is not required.
TREATMENT: For genital warts, treatment is aimed at removal of the warts using topical applications, liquid nitrogen or surgical excision. Treatment for genital warts likely reduces but probably does not eradicate HPV infectivity. In most patients, treatment can induce wart-free periods. If left untreated, visible genital warts may resolve on their own, remain unchanged, or increase in size or number. Cervical cancer is most treatable when it is detected early.
FOLLOW-UP: Education should include risk reduction planning.

ROLE OF SCHOOL NURSE: Teens may experience embarrassment and hesitance to be examined for fear that others will find out about their receiving health care. It is important for the school nurse to reassure teens that reproductive health care services for teens, with some exceptions, are, by law, confidential. Teens need to understand that "confidential" means their parents and other adults are

prohibited from having access to STD health care information with the exception of suspected sexual abuse. The possibility of sexual abuse must be considered if infections occur in pre-pubertal children and must be reported to appropriate authorities. Teens need to be made aware of the fact that all school and health care providers are mandated reporters of suspected or known child sexual abuse.

Counsel, educate, and refer for medical evaluation and treatment of suspected lesions. Educate the student about strategies to prevent transmission, including:

- The types of HPV that cause genital warts are almost always different from the types that can cause cancer.
- It is not known how long a person remains contagious after warts are treated.
- It is unclear whether informing subsequent sex partners about a past diagnosis of genital warts is beneficial to the health of those partners.
- Genital warts commonly recur after treatment, especially in the first 3 months.
- Refrain from sexual activity until the warts are gone or removed.
- Correct and consistent male condom use can lower the chance of giving or getting genital warts, but such use is not fully protective because HPV can infect areas that are not covered by a condom.
- Quadrivalent HPV vaccine protects against 90% of HPV types that cause genital warts.

Appropriate education aimed at reducing the risk of infection by:

- Encouraging abstinence
- If sexually active:
    1. Limit the number of sexual partners
    2. Get tested before having sex with a new partner
    3. Appropriately and consistently using male latex condoms
    4. Avoid sexual contact when having symptoms or when partners have symptoms

REFERENCES/RESOURCES:

Centers for Disease Control and Prevention. Diseases and Conditions. Sexually Transmitted Diseases (STDs). Human Papillomavirus (HPV). Available at: http://www.cdc.gov/hpv/

Centers for Disease Control and Prevention. *Sexually Transmitted Diseases Treatment Guidelines, 2010*. MMWR 2010; 59(NO. RR-12)

STD: GONORRHEA

INFECTIOUS AGENT: *Neisseria gonorrhoeae* (GC), a bacterium.

DESCRIPTION/SIGNS & SYMPTOMS: Alaska has episodically high rates of GC so the index of suspicion should be high when students with symptoms present. While any sexually active person can be infected, the highest reported rates of infection are among teenagers and young adults.

The majority of urethral infections caused by GC among men produce symptoms which may include painful or difficult urination, increased frequency of urination and urethral discharge.

Among women, GC infections might not produce recognizable symptoms until complications such as Pelvic Inflammatory Disease have occurred.

With anal, rectal and/or oral sexual contact, anorectal and pharyngeal infections may occur and often produce no symptoms.

Co-infection with chlamydia (CT) is common among patients diagnosed with GC so standards of care recommend treatment for CT whenever GC treatment is provided.

INCUBATION PERIOD: 1 to 14 days, commonly 2 to 7 days

MODE OF SPREAD: Vaginal, anal or oral sex with an infected partner.

PERIOD OF COMMUNICABILITY: May extend for months in untreated persons.

CONTROL MEASURES:

REPORTING: ***GC is a reportable disease to the Alaska Section of Epidemiology***. By Alaska statute and regulation, a suspected or confirmed case of gonorrhea must be reported to the Section of Epidemiology (907-269-8000) within five working days of suspecting the existence of the disease.

EXCLUSION: None

RETURN TO SCHOOL: Exclusion is not required.

TREATMENT: GC is treated with antibiotics. Given high incidence of CT co-infection among those with GC, treatment of GC should include treatment for CT. Concurrent treatment of sex partner(s) is essential to prevent re-infection or continued spread of disease. Public health workers often presumptively treat the sex partners of a laboratory confirmed GC case pending return of the results of the sex partner's test.

FOLLOW UP: Following treatment, infected persons are potentially infectious for seven days. Abstinence should be adhered to for seven days post-treatment. Education should include risk reduction planning. **Because of emerging drug-resistance, CDC recommends persons with GC are counseled to seek care promptly if symptoms persist following treatment.**

ROLE OF SCHOOL NURSE: Teens may experience embarrassment and hesitance to be examined for fear that others will find out about their receiving health care. It is important for the school nurse to reassure teens that reproductive health care services for teens, with some exceptions, are, by law, confidential. Teens need to understand that "confidential" means their parents and other adults are prohibited from having access to STD health care information with the exception of suspected sexual

abuse. The possibility of sexual abuse must be considered if infections occur in pre-pubertal children and must be reported to appropriate authorities. Teens need to be made aware of the fact that all school and health care providers are mandated reporters of suspected or known child sexual abuse.

The school nurse should work closely with local public health disease investigators once gonorrhea is laboratory-confirmed to:

- Assist public health staff, as requested, to identify, locate, and educate potentially-infected sexual partners.
- Encourage prompt referral for medical evaluation, lab testing and adequate treatment of all potentially-infected sexual partners.

Provide appropriate education aimed at reducing the risk of infection by:

- Encouraging abstinence
- If sexually active:
    1. Limit the number of sexual partners
    2. Get tested before having sex with a new partner
    3. Appropriately and consistently using male latex condoms
    4. Avoid sexual contact when having symptoms or when partners have symptoms

If the school nurse observes symptoms suggestive of GC infection in prepubescent girls or boys (for example, discharge or complaints of burning on urination) immediate referral to a health care provider for medical evaluation is necessary. If GC is confirmed, the school nurse is **mandated**, by Alaska State Law, to report suspected child sexual abuse to authorities, in coordination with the health care provider.

The school nurse needs to refer to CDC's current comprehensive recommendations for care of pregnant women suspected or known to be infected with GC.

REFERENCES/RESOURCES:

Centers for Disease Control and Prevention. Diseases and Conditions. Sexually Transmitted Diseases (STDs). Gonorrhea. Available at: http://www.cdc.gov/std/Gonorrhea/.

Centers for Disease Control and Prevention. *Sexually Transmitted Diseases Treatment Guidelines, 2010*. MMWR 2010; 59(NO. RR-12)

Centers for Disease Control and Prevention. *Sexually Transmitted Diseases Treatment Guidelines, 2010*: *Oral Cephalosporins No Longer a Recommended Treatment for Gonococcal Infections*. August 10, 2012/61(31); 590-594.

State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

STD: PUBIC LICE (Crabs)

INFECTIOUS AGENT: *Pediculosis pubis*, the pubic lice or crab louse.

DESCRIPTION: Symptoms range from slight discomfort to intolerable itching. A presumptive diagnosis is made when a patient with a history of recent exposure to pubic lice has itchy red spots or bumps in the genital region. Cases also commonly notice lice or nits on pubic hair. Students with public lice should be evaluated for other STDs.

INCUBATION PERIOD: The louse life cycle is composed of 3 stages (eggs, nymphs, adults). The average life cycle of the pubic or crab louse is about one month. At optimal body temperatures, eggs hatch in 7 – 10 days, while the nymph stage of crab lice lasts 13-17 days.

MODE OF SPREAD: Usually by direct sexual contact with an infested person.

PERIOD OF COMMUNICABILITY: Crab lice remain viable as long as the infested person is not treated. Crab lice can survive for 2 days off the host without feeding, while their eggs can remain viable away from the host for up to 7-10 days.

CONTROL MEASURES:

REPORTING: Pubic lice infestation is not a condition reportable to the Alaska Section of Epidemiology.

EXCLUSION: None.

RETURN TO SCHOOL: Exclusion is not required.

FOLLOW UP: Educate people to limit number of sexual partners and avoid sexual contact when having symptoms. Infested student must inspect for presence of lice or nits daily, remove from genital or other hair, and monitor for signs such as severe itching. The infested student should be counseled to inform all sexual partners of infestation and advise partners to receive treatment if symptomatic. Bedding and clothing should be decontaminated. This may be achieved with washing and hot drying in the dryer or placing items in a plastic bag away from body contact for at least 72 hours. Fumigation of living areas is not necessary and can be toxic.

TREATMENT: Family members of the infested student need education about over-the-counter treatment recommendations, which are the same as used for head lice. A second treatment 7 to 10 days after the first treatment is recommended to kill any hatching lice eggs that were not killed by initial treatment. Thorough cleaning of infested articles such as bedding and clothing means machine washing and drying using the hot settings. Articles that cannot be washed, including toys, fabrics, upholstered furniture should be kept in a plastic bag, or not used by people for at least 72 hours. Vacuuming floors, carpets, mattresses and furniture helps remove eggs.

ROLE OF SCHOOL NURSE: Teens may experience embarrassment and hesitance to be examined for fear that others will find out about their receiving health care. It is important for the school nurse to reassure teens that reproductive health care services for teens, with some exceptions, are, by law, confidential. Teens need to understand that "confidential" means their parents and other adults are prohibited from having access to STD health care information with the exception of suspected sexual abuse. The possibility of sexual abuse must be considered if infections occur in pre-pubertal children and must be reported to appropriate authorities. Teens need to be made aware of the fact that all school and health care providers are mandated reporters of suspected or known child sexual abuse.

- Counsel and educate the student about symptoms, transmission, recommended treatment, environmental control measures, and the risk of re-infestation. School nurses serve as education resource for families and school staff.
- Be aware that pubic lice are usually found on adults, so pubic lice found on children may be a sign of sexual abuse.
- Recommend that a student with pubic lice be screened for other sexually-transmitted infections.
- Educate students and staff on the potential transmission of public lice through sharing of towels or other personal items.

Provide appropriate education aimed at reducing the risk of infection by:

- Encouraging abstinence
- If sexually active:
    1. Limit the number of sexual partners
    2. Get tested before having sex with a new partner
    3. Appropriately and consistently using male latex condoms
    4. Avoid sexual contact when having symptoms or when partners have symptoms

REFERENCES/RESOURCES:

Centers for Disease Control and Prevention. Diseases and Conditions. Sexually Transmitted Diseases (STDs). Parasites – Lice – Pubic "Crab" Lice. Available at: http://www.cdc.gov/parasites/lice/pubic/index.html

Centers for Disease Control and Prevention. *Sexually Transmitted Diseases Treatment Guidelines, 2010*. MMWR 2010; 59(NO. RR-12)

STD: SYPHILIS

INFECTIOUS AGENT: *Treponema pallidum* (*T. pallidum),* a bacterium.

DESCRIPTION/SIGNS & SYMPTOMS: Syphilis can affect the entire body, and the three stages of early syphilis (less than a years' duration) are: primary, secondary, and latent. Symptoms vary and can be indistinguishable from other diseases. In primary syphilis, one or more sores, called chancres, appear at the site of exposure, usually around the mouth, genitals or anus. The sore is typically painless, small, round and indurated. The chancre(s) generally resolves after one to three weeks without treatment. If adequate treatment is not received, the infection progresses to the secondary stage. In this stage, a rash develops in one or more areas of the body. The rash can appear as the chancre is fading or can be delayed for weeks. The rash often appears both on the palms of the hands and on the bottoms of the feet. A rash may also appear on other parts of the body with different characteristics, some of which resemble other diseases. Sometimes the rash is so faint that it is not noticed. Even without treatment, the rash usually clears up within four weeks. In addition to the rash, second-stage symptoms can include fever, swollen lymph glands, sore throat, patchy hair loss, headaches, weight loss, muscle aches, and tiredness. Transmission occurs through direct contact with the infectious exudates from obvious or concealed, moist, early lesions of the skin and mucous membranes of an infected person; exposure nearly always occurs during sexual intercourse (oral, anal, and/or vaginal). Complications of late (greater than 1 year duration), latent syphilis include neurosyphilis (dementia, paralysis, wasting, pain, visual and/or hearing loss, and neurologic signs), cardiovascular syphilis (thoracic aortic aneurysm, aortic insufficiency), and localized gumma formation (a soft, tumor-like growth of tissues). Identifying and referring people suspected of having sexual contact with a person with infective chancres is key to preventing the spread of syphilis. Members of the bisexual community and men who have sex with men are of particular concern because of the potential for syphilis outbreaks and co-infection with HIV.

Presumptive diagnosis of syphilis is possible with the use of two types of serologic tests:

- Nontreponemal tests or RPR
- Treponemal tests such as FTA-ABS, TP-PA or EIAs

Persons with a reactive nontreponemal tests should receive a treponemal test to confirm the diagnosis of syphilis. Most patients who have reactive treponemal tests will have reactive tests for the remainder of their lives, regardless of treatment or disease activity.

All patients infected with syphilis should be tested for HIV.

INCUBATION PERIOD: 10 days to 3 months (usually 3 weeks)

MODE OF SPREAD: Almost always by exposure during oral, vaginal or anal intercourse.

PERIOD OF COMMUNICABILITY: Sexual transmission of *T. pallidum* is thought to occur only when mucocutaneous syphilitic lesions or other exudate-producing symptoms are present. Although such manifestations are uncommon after the first year of infection, persons exposed sexually to a patient who has syphilis in any stage should be evaluated clinically and serologically and treated with a recommended drug regimen.

CONTROL MEASURES:

REPORTING: *Syphilis is a reportable disease to the Alaska Section of Epidemiology*. By Alaska statute and regulation, a suspected or confirmed case of syphilis must be reported to the Section of Epidemiology (907-269-8000) within five working days of suspecting the existence of

the disease.
EXCLUSION: None
RETURN TO SCHOOL: No exclusion is required
TREATMENT: Treatment is with antibiotics, most often a form of penicillin. The type of preparation used, the dosage, and the length of treatment depend on the stage and clinical manifestation of the disease.
FOLLOW UP: Education should include risk reduction planning. Once suspected, referral for prompt medical evaluation including lab testing should be promptly made. Clinical and serological evaluation should be performed 6 months and 12 months after treatment; more frequent evaluation may be necessary.

ROLE OF SCHOOL NURSE: Teens may experience embarrassment and hesitance to be examined for fear that others will find out about their receiving health care. It is important for the school nurse to reassure teens that reproductive health care services for teens, with some exceptions, are, by law, confidential. Teens need to understand that "confidential" means their parents and other adults are prohibited from having access to STD health care information with the exception of suspected sexual abuse. The possibility of sexual abuse must be considered if infections occur in pre-pubertal children and must be reported to appropriate authorities. Teens need to be made aware of the fact that all school and health care providers are mandated reporters of suspected or known child sexual abuse.

Diagnosis of skin rashes is often challenging. Students with undiagnosed rashes should be referred for medical evaluation. The school nurse will need to follow up with the healthcare provider to determine the cause of any worrisome and undiagnosed rash.

If the school nurse observes symptoms suggestive of syphilis infection in prepubescent girls or boys (for example, a painless chancre sore, skin rashes, palmer rash) refer immediately for medical and lab evaluation. If syphilis is confirmed, the school nurse is **mandated** to report suspected child sexual abuse, in coordination with the health care provider.

The school nurse should work closely with local public health disease investigators once syphilis is laboratory-confirmed to:

- Assist public health staff, as requested, to identify, locate, and educate potentially-infected sexual partners.
- Encourage prompt referral for medical evaluation, lab testing and adequate treatment of all potentially-infected sexual partners.

Provide appropriate education aimed at reducing the risk of infection by:

- Encouraging abstinence
- If sexually active:
    1. Limit the number of sexual partners
    2. Get tested before having sex with a new partner
    3. Appropriately and consistently using male latex condoms
    4. Avoid sexual contact when having symptoms or when partners have symptoms

The school nurse needs to refer to CDC's current comprehensive recommendations for care of pregnant women suspected or known to be infected with syphilis.

REFERENCES/RESOURCES:

Centers for Disease Control and Prevention. Diseases and Conditions. Sexually Transmitted Diseases (STDs). Syphilis. Available at: http://www.cdc.gov/std/syphilis/default.htm.

Centers for Disease Control and Prevention. *Sexually Transmitted Diseases Treatment Guidelines, 2010*. MMWR 2010; 59(NO. RR-12)

State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

STD: TRICHOMONAS

INFECTIOUS AGENT: *Trichomonas vaginalis* (*T. vaginalis*), a protozoan.

DESCRIPTION/SIGNS & SYMPTOMS: *T. vaginalis* is a common and persistent infection of the genitourinary tract. Many with this infection have no symptoms. If symptoms are present, women usually have a yellow-green, malodorous frothy vaginal discharge. This is usually accompanied by vaginal itching. Men may have urethritis. For both men and women, *T. vaginalis* infection can lead to cystitis. Diagnosis of *T. vaginalis* may be by wet mount visualization in the medical office or by laboratory test.

INCUBATION PERIOD: 4 to 28 days

MODE OF SPREAD: Vaginal, anal or oral sex with an infected partner.

PERIOD OF COMMUNICABILITY: Until effective treatment is completed.

CONTROL MEASURES:

REPORTING: Trichomonas is not a condition reportable to the Alaska Section of Epidemiology.
EXCLUSION: None
RETURN TO SCHOOL: Exclusion is not required.
TREATMENT: Treatment is with prescription medication.
FOLLOW UP: Education should include risk reduction planning. Re-infection is common. Infected students with lab-confirmed infections should be counseled to abstain from sexual activity until they and their partners have all been treated and have no further symptoms. All sexual partners should be treated for the infection, whether or not they have symptoms.

ROLE OF SCHOOL NURSE: Teens may experience embarrassment and hesitance to be examined for fear that others will find out about their receiving health care. It is important for the school nurse to reassure teens that reproductive health care services for teens, with some exceptions, are, by law, confidential. Teens need to understand that "confidential" means their parents and other adults are prohibited from having access to STD health care information with the exception of suspected sexual abuse. The possibility of sexual abuse must be considered if infections occur in pre-pubertal children and must be reported to appropriate authorities. Teens need to be made aware of the fact that all school and health care providers are mandated reporters of suspected or known child sexual abuse.

Refer any students with symptoms for medical evaluation. Following treatment students should be counseled to return to medical care if symptoms do not subside or if they reoccur.

Provide appropriate education aimed at reducing the risk of infection by:

- Encouraging abstinence
- If sexually active:
    1. Limit the number of sexual partners
    2. Get tested before having sex with a new partner
    3. Appropriately and consistently using male latex condoms
    4. Avoid sexual contact when having symptoms or when partners have symptoms

REFERENCES/RESOURCES:

Centers for Disease Control and Prevention. Diseases and Conditions. Sexually Transmitted Diseases (STDs). Trichomoniasis. Available at http://www.cdc.gov/std/trichomonas/STDFact-Trichomoniasis.htm

Centers for Disease control and Prevention. *Sexually Transmitted Diseases Treatment Guidelines, 2010*. MMWR 2010; 59(NO. RR-12)

STREP THROAT (Streptococcal Pharyngitis) and SCARLET FEVER

INFECTIOUS AGENT: *Streptococcus pyogenes*. (Group A beta-hemolytic streptococci),

DESCRIPTION/SIGNS & SYMPTOMS: Strep throat is characterized by the acute onset of a very red, painful throat often accompanied by fever, difficulty swallowing, tender and swollen lymph nodes, headache, stomach ache, and decreased appetite. White patches (pus) may appear on the back of the throat, and a "strawberry tongue" may be observed. The majority of sore throats in children and adults are caused by cold viruses, *not* strep bacteria. Children presenting with runny nose, cough, and congestion are more likely to have a viral illness. A throat culture (or rapid strep test with culture backup) is necessary to make the diagnosis of strep throat.

Scarlet fever is a skin rash caused by a strep infection of the throat or another area of the body. The rash usually consists of fine, red bumps that feel sandpapery and usually appear on the neck, chest, groin, and/or inner surface of the knees, thighs, and elbows. It may last only a few hours. Children who have scarlet fever are generally not any sicker than children with strep throat who do not have the rash.

A well-known, though relatively uncommon, complication of strep throat **is rheumatic fever**. Rheumatic fever is an inflammatory disease that can involve the heart, joints, skin, and brain. The risk of rheumatic fever is reduced by prompt treatment with a full course of appropriate antibiotics.

INCUBATION PERIOD: 2-5 Days

MODE OF SPREAD: Direct contact, respiratory droplets, close contact promotes the spread of the infection, particularly among household members and those in crowded conditions. NOTE: the bacteria that cause strep throat can also cause impetigo.

PERIOD OF COMMUNICABILITY: People with strep throat are generally most infectious during their acute illness. They continue to be infectious until they have received antibiotic treatment for 24 hours. Untreated cases will continue to be contagious for 2 – 3 weeks. Many people (5-20%) carry the bacteria in their nose and throat and are not ill, but the risk of transmission is minimal.

CONTROL MEASURES:

REPORTING: Streptococcus pyogenes (Group A streptococcus) is not a reportable disease to the Alaska Section of Epidemiology in the milder forms (strep throat or scarlet fever) unless there is an unusual number or clustering. ***Streptococcus pyogenes is reportable*** if the bacteria invade other parts of the body such as the blood, muscle, or lungs, known as invasive Group A Streptococcus (GAS) disease. Toxic shock syndrome and necrotizing fasciitis (the "flesh eating bacteria") are severe forms of GAS disease.

EXCLUSION: Exclude the student with strep throat or a rash suspicious of scarlet fever.

RETURN TO SCHOOL: The student may return to school after 24 hours of antibiotic treatment and when the student feels well enough to participate in regular activities.

TREATMENT: Antibiotics (usually penicillin) are used to treat strep throat. Treatment instructions should be followed in order to prevent rheumatic fever and infectious complications.

FOLLOW UP: Even if untreated, most children and adults with group A streptococcus infections recover fully on their own. Some develop suppurative (infectious) complications including ear infections, sinusitis, abscesses in the tonsils or infection of the lymph nodes. Non-suppurative (non-infectious) complications can also occur, including rheumatic fever (affecting the heart,

joints, skin, and/or nervous system) and post-infectious glomerulonephritis (affecting the kidneys). Rheumatic fever can develop 5–6 weeks after the occurrence of any type of untreated strep infection.

ROLE OF SCHOOL NURSE:

- Refer all suspected cases of streptococcus infection to health care provider. If cough/runny nose are major symptoms, strep is unlikely and testing for strep is not usually indicated.
- Educate parents/students on the importance of completing treatment to avoid complications.
- Ensure the student does not return to school prior to 24 hours after start of treatment.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Sore Throat. Available at: http://www.cdc.gov/getsmart/antibiotic-use/URI/sore-throat.html.

Group A Streptococcus http://www.cdc.gov/getsmart/antibiotic-use/URI/sore-throat.html.


Scarlet Fever Rash

STY (aka Stye, Hordeolum)

INFECTIOUS AGENT: Caused by bacteria, especially the bacterium *staphylococcus*

DESCRIPTION/SIGNS & SYMPTOMS: A mild infection in the eyelid at the base of the eyelashes or near the edge of the eyelid. There may be mild pain and a red lump at or near the edge of the eyelid. The lesion may enlarge, develop a head similar to a pimple, burst and spontaneously drain. Tearing and crusting around the eyelids can occur. Though usually small and superficial at the lid margin, a sty can sometimes form internally where a large abscess may be observed through the skin or conjunctival surface. Styes are usually unilateral. Visual acuity is not affected.

INCUBATION PERIOD: Unknown

MODE OF SPREAD: Styes may drain pus that contains bacteria. This may be contagious to others through direct or indirect contact. Touching eyes with unwashed hands can transfer bacteria to the eyelids.

PERIOD OF COMMUNICABILITY: Styes are contagious when they are draining but the drainage period is usually brief.

CONTROL MEASURES:

REPORTING: Styes are not a reportable condition to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: No exclusion is necessary unless the sty is actively draining, other exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

TREATMENT: Most styes will resolve on their own. Applying a warm compress for ten minutes, 3 or 4 times daily can encourage spontaneous drainage and healing. Medical attention should be obtained if the sty does not improve after 48 hours or if cellulitis develops. Antibiotics in the form of eye drops or a topical cream may be prescribed. Oral antibiotics may be necessary if the infection persists or spreads beyond the eyelid. The sty may need to be lanced and drained to relieve pain and pressure.

FOLLOW UP: Occasionally a sty may progress to cellulitis which is indicated by redness and swelling of the eyelid and beyond to the cheek or other parts of the face. Monitor healing.

ROLE OF THE SCHOOL NURSE:

- Reinforce good handwashing technique.
- Monitor for changes in appearance and comfort level.
- Instruct student not to rub or touch eyes because doing so may spread infection. Discourage popping or squeezing the sty in an effort to drain it.
- Recommend and provide warm compresses applied 2 to 3 times daily
- Instruct the student to discontinue the use of eye makeup as well as eye lotions and creams because they may be infected.
- Instruct the student to discontinue wearing contact lenses because the sty may cause an infection to spread to the cornea with the continued use of contact lenses.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Mayo Clinic. Sty. Available at: http://www.mayoclinic.com/health/sty/DS00257.

TETANUS*

INFECTIOUS AGENT: Tetanus is a disease of the nervous system caused by a toxin (poison) produced by the bacterium *Clostridium tetani*.

DESCRIPTION/SIGNS & SYMPTOMS: Early symptoms include spasms of the jaw muscles ("lockjaw"), stiffness in the neck and abdominal muscles, and difficulty swallowing. Later symptoms are severe muscle spasms, generalized tonic seizure-like activity, and severe autonomic nervous system disorders. Other symptoms include elevated temperature, sweating, elevated blood pressure, and episodic rapid heart rate. Spasms may occur frequently and last for several minutes. Complications include bone fractures, abnormal heart rhythm, hypertension, and secondary infection. Death occurs in about 10-20% of all cases, with the highest rates occurring among neonates and older people. Since vaccines have been available, tetanus cases have fallen by over 96%.

INCUBATION PERIOD: The incubation period is 8 days but can range from 3-21 days.

MODE OF SPREAD: *C. tetani* spores can be found in the soil and in the intestines and feces of many household and farm animals and humans. The bacteria enter the body through a break in the skin as with a cut, scratch, or wound including splinters, self-piercing and self-tattooing. Intravenous drug users are also at risk.

PERIOD OF COMMUNICABILITY: Tetanus is not transmitted from person to person.

CONTROL MEASURES:

VACCINATION: Tetanus is a vaccine preventable disease. Tetanus toxoid (contained in Tdap, DT, DtaP, and Td vaccines) can prevent tetanus. Tetanus vaccination is a required for Alaska school attendance. The usual schedule is a primary series at 2, 4, 6, and 15-18 months of age. A booster dose is given at 4-6 years of age and Tdap is required within 10 years of the last tetanus/diphtheria-containing vaccine. Td is recommended every 10 years thereafter.

REPORTING: ***Tetanus is a reportable disease to the Alaska Section of Epidemiology***. By Alaska statute and regulation, a suspected or confirmed case of tetanus must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: A student with tetanus is not contagious. No exclusion is necessary unless any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.

TREATMENT: Treatment consists of basic life support, supportive treatment and management of complications. Spasms can continue for 3-4 weeks; complete recovery may take months.

FOLLOW UP: A student recovering from tetanus may need extra academic support and possibly a modified schedule until fully recovered.

ROLE OF SCHOOL NURSE ROLE:

- Review immunization records of all students to confirm appropriate immunization status.
- Educate students about proper wound care to avoid tetanus and other infections.
- Refer a student with an unclean wound to their health care provider for evaluation of the need for tetanus vaccine if it has been more than 5 years since the last dose.

- Provide immunization records and remind graduating seniors of the need for tetanus immunization every 10 years as an adult.

REFERENCES/RESOURCES:

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Tetanus in Short (Lockjaw). Available at: http://www.cdc.gov/vaccines/vpd-vac/tetanus/in-short-both.htm.

Vaccine Information Statements. http://www.cdc.gov/vaccines/pubs/vis/default.htm

Immunization Action Coalition. Tetanus. Available at: http://www.immunize.org/tetanus/.

State of Alaska Section of Epidemiology, Division of Public Health, Department of Health and Social Services. *Conditions Reportable to Public Health*. Available at: http://www.epi.alaska.gov/pubs/conditions/ConditionsReportable.pdf

THRUSH (CANDIDIASIS)

INFECTIOUS AGENT: *Candida albicans*

DESCRIPTION/SIGNS & Symptoms: Thrush, also known as oropharyngeal candidiasis, is a fungal infection that occurs when there is an overgrowth of a yeast, called *Candida. Candida* usually live in small amounts on the skin and mucous membranes but an environmental imbalance can cause the yeast to multiply and cause symptoms. These symptoms include white patches on the inside of cheeks and on the gums and tongue. Redness or soreness of the affected areas, difficulty swallowing, and cracking at the corners of the mouth are other symptoms. Candidiasis occurs most frequently among babies less than a month old, the elderly, those on broad-spectrum antibiotics, individuals with diabetes mellitus, and in those with weakened immune systems. Specific immunocompromising conditions that predispose to candidiasis include HIV/AIDS, cancer treatments, organ transplantation, diabetes, corticosteroid use, and common variable immunodeficiency (CVID).

INCUBATION PERIOD: Unknown

MODE OF SPREAD: The yeast that causes thrush is widespread in the environment, normally lives on the skin, and is found in the mouth and stool. A warm and moist environment (e.g., the mouth) fosters growth and spread. Person-to-person transmission can occur from mother to infant (i.e., vaginally at birth) and from infant to mother (i.e., breastfeeding).

PERIOD OF COMMUNICABILITY: Candida yeasts normally live on the skin or mucous membranes in small amounts. If the environment inside the mouth or throat becomes imbalanced, the yeast cells can then multiply and cause symptoms.

CONTROL MEASURES:

REPORTING: Thrush is not a condition reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering.
EXCLUSION: Exclusion is not required.
RETURN TO SCHOOL: No exclusion required.
TREATMENT: Candida infections should be treated with prescription anti-fungal medication.
FOLLOW UP: Untreated thrush can lead to invasive candidiasis that occurs when the *Candida* yeasts enter the bloodstream and spread to other parts of the body necessitating treatment with oral or intravenous antifungal medication for several weeks.

ROLE OF SCHOOL NURSE:

- Understand that repetitive or severe thrush could signal immune problems.
- Educate staff on good handwashing and sanitizing toys and other items mouthed by infected individuals.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Oral Candidiasis. Available at: http://www.cdc.gov/fungal/Candidiasis/thrush/.

TUBERCULOSIS (TB)

INFECTIOUS AGENT: Tuberculosis is caused by the bacteria *Mycobacterium tuberculosis*. These organisms are sometimes called tubercle bacilli.

DESCRIPTION/SIGNS & SYMPTOMS: Tuberculosis (TB) is an infection that usually involves the lungs, but can affect other parts of the body. Not everyone infected with TB bacteria becomes sick. Many people, and most children, infected with the bacteria do not have any signs or symptoms. This is called latent infection (LTBI). People with latent TB infection are not infectious and cannot spread the TB bacteria to others. However, the TB bacteria can become active in the body causing the bacteria to multiply and the individual to be sick and infectious with TB disease. For individuals whose immune systems are compromised, especially those with HIV infection, the risk of developing TB disease is much higher than for people with normal immune systems. Infants and young children are at increased risk of progression to active disease, if infected. Signs and symptoms of active TB disease include:

- chronic cough, coughing up sputum or blood, pain in the chest when breathing or coughing
- loss of appetite, weight loss, growth delay
- fever, night sweats, chills
- weakness, fatigue, malaise

Infection is most often identified by a positive Mantoux tuberculin skin test (TST) or blood test result (Interferon Gamma Release Assays). All children and adolescents with a positive tuberculin skin test or blood test should promptly undergo clinical evaluation to rule out active TB disease. The evaluation should include a history, physical examination, and a chest x-ray.

INCUBATION PERIOD: Individuals can have a positive TST 8 – 10 weeks after exposure if infected. The bacteria can be carried in the body for many years without active disease. In fact, in most people the latent infection never causes any disease. Unlike adults and older adolescents who most commonly have reactivation disease, active TB disease in infants and children is usually related to primary TB and this may occur quickly (i.e., within 1 to 6 months) after they first become infected.

MODE OF SPREAD: Infection in children is nearly always the result of close contact with an adult who has TB. Tuberculosis is spread by the respiratory route through coughing or sneezing, usually in an indoor environment. TB is NOT spread from clothes, drinking glass, eating utensils, handshake, toilet or other surfaces.

PERIOD OF COMMUNICABILITY: Individuals with latent TV infection (LTBI), but without active disease, are never contagious. Generally, infants and young children with active TB are not contagious because they do not form cavities in their lungs with secretions that contain the TB bacterium and, when they cough, they do not create enough force to expel large numbers of TB germs into the air. Adolescents and adults who have active TB may spread the bacteria by coughing, sneezing or singing. Prompt diagnosis and initiation of effective treatment in persons with active TB reduces the likelihood of transmission to others and ensures the best outcome for the individual who has active TB.

CONTROL MEASURES:

VACCINATION: BCG (Bacille Calmette Guérin) vaccine is a live virus vaccine widely used in many countries to protect infants and children against severe forms of TB disease. BCG is NOT used in the United States. Further information about BCG and TB skin testing can be found in the Alaska Tuberculosis Program Manual at http://www.epi.hss.state.ak.us/pubs/webtb/TB_Manual.pdf.

REPORTING: ***TB is a reportable disease to the Alaska Section of Epidemiology***. By Alaska statute and regulation, a suspected or confirmed case of tuberculosis must be reported to the

Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: YES, for any newly active or diagnosed cases of TB (NOT LTBI) until these cases are reviewed by a health care professional in consultation with the Alaska Tuberculosis Program and cleared to return to school. Also exclude and treat caregivers/teachers with active disease. The Alaska Tuberculosis Program should be consulted for contact investigation recommendations and assistance.

RETURN TO SCHOOL: The student may return to school after clearance by the Alaska Tuberculosis Program and provider. Generally, adolescents and adults with active tuberculosis can be considered non-infectious when: they have been on appropriated treatment for at least two (2) weeks; demonstrate clinical improvement; and have three (3) negative sputum smears for acid fast bacilli (AFB). Decisions to allow young children to return to school should always be made in consultation with the Alaska Tuberculosis Program.

TREATMENT: All children and adolescents who have a positive TST or blood test but no evidence of TB disease should be offered treatment for LTBI once active TB has been ruled out. Regimens for treatment of LTBI range from 12 weeks to 9 months. All intermittent regimens - e.g. twice weekly dosing, must be done by Directly Observed Therapy (DOT). School nurse are often a great resource for the administration of intermittent LTBI regimens in school settings. Students with active TB are also treated by DOT with multiple drugs for a minimum of 6 months. This usually occurs outside of the school setting.

FOLLOW UP: In collaboration with the public health nursing case manager, monitor the health of children and staff during the treatment period for adverse reactions to the drugs.

ROLE OF SCHOOL NURSE: The school nurse is key to observing and identifying the early signs and symptoms of tuberculosis and conducting tuberculin skin tests on students as required by the State of Alaska. The school nurse should:

- Monitor sick children and staff to rule out the presence of TB.
- Administer the Mantoux TST (PPD) within 90 days of enrollment to each child who enrolls in grades kindergarten and seven, is new to the school district, or, additionally, as required by the Section of Epidemiology. Refer any student with a positive PPD skin test to their health care provider for further evaluation and notify the Section of Epidemiology. Record the result of a PPD skin test in the permanent health record of the child. For further information regarding tuberculin screening, see tuberculin screening in this document or refer to the Alaska Tuberculosis Program Manual at http://www.epi.hss.state.ak.us/pubs/webtb/TB_Manual.pdf.
- Ensure that children and staff take all prescribed medication. Directly observed treatment, performed by public health authorities, is essential.
- Encourage children and staff with previously positive skin test results to be evaluated by their health professionals anytime they develop an illness that involves fever, night sweats, weight loss, or persistent coughing to assess their need for treatment and any risk of contagion related to their TB status.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

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URINARY TRACT INFECTION

INFECTIOUS AGENT: Bacteria, most commonly *Escherichia coli* (E. coli)

DESCRIPTION/SIGNS & SYMPTOMS:
A urinary tract infection (UTI) is an infection in one or more parts of the urinary system which includes the kidneys, the tubes that join the kidneys and bladder (ureters), the bladder, and the tube that leaves the bladder to the external opening (urethra). An infection occurs when bacteria enter the system (generally ascending through the urethra) and multiply in the bladder. Symptoms include painful or burning urination, increased urgency or frequency of urination, fever, and burning or pain in the lower abdomen. In young children who are potty trained, loss of urinary control can occur in the daytime with little warning. Blood in the urine may be a sign, but is also caused by other problems.

INCUBATION PERIOD: Usually a few days

MODE OF SPREAD: Infection usually occurs from fecal bacteria on the skin that enter the urethra, particularly in girls. Urinary tract infections are more common in children with constipation and in children who do not fully empty their bladders during voiding. Rarely, urinary tract infections are caused by bacteria from the blood stream entering the kidneys.

PERIOD OF COMMUNICABILITY: Urinary tract infections are not transmitted from person to person, so are not contagious.

CONTROL MEASURES:

REPORTING: UTI is not a reportable condition to the Alaska Section of Epidemiology.
EXCLUSION: No exclusion is necessary unless any general exclusion criteria are present, the student is unable to participate in usual activities, or staff determine that they are unable to care for the child without compromising the health and safety of others.
RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved.
TREATMENT: Referral to a health care provider is indicated**.** Antibiotics are typically prescribed.
FOLLOW UP: Untreated lower urinary tract infections can progress to cause severe kidney infection (pyelonephritis). Permanent kidney damage can occur from UTI if untreated, especially in young children. Encourage completion of the entire course of antibiotics even as symptoms are relieved.

ROLE OF SCHOOL NURSE:

- Refer a child with symptoms of UTI to their healthcare provider. Diagnosis and proper treatment is important as untreated UTI can lead to kidney damage.
- Teach family, students (girls) to wipe from front to back to avoid spreading fecal bacteria from the rectum into the urinary and vaginal area.
- Encourage the student to drink plenty of fluids. Provision of a water bottle for the student may encourage intake.
- Encourage the student to empty their bladder regularly and advocate for bathroom privileges as needed.

If the student has an indwelling catheter:

- Encourage the family and student to wash their hands with soap and water or to use an alcohol-based hand sanitizer before and after touching the catheter.

- Avoid disconnecting the catheter and drain tube.
- Make sure the catheter is secured to the leg to prevent pulling and irritation.
- Keep the bag lower than the bladder to prevent urine from back flowing to the bladder.
- Empty the bag regularly. The drainage spout should not touch anything while emptying the bag.
- Keep the catheter tubing free of twists or kinks.
- Follow sterile technique if student needs intermittent urethral catheterization at school.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention. Catheter-Associated Urinary Tract infections. Frequently Asked Questions. Available at: http://www.cdc.gov/HAI/ca_uti/cauti_faqs.html.

Mayo Clinic. Urinary Tract Infection (UTI). Available at: http://www.mayoclinic.com/health/urinary-tract-infection/DS00286.

VOMITING (Emesis)

INFECTIOUS AGENT: Both bacteria and viruses as well as other agents and non-infectious conditions may cause vomiting. Infectious vomiting is often caused by viral gastroenteritis, mistakenly called "stomach flu." Some non-contagious causes of vomiting include gastroesophageal reflux, head injury, motion sickness, food poisoning, pregnancy, allergy (e.g., milk), anaphylaxis, medications, social anxiety disorder and diseases (e.g., Crohn's, diabetes, thyroid disease).

DESCRIPTION/SIGNS & SYMPTOMS: Vomiting is the exiting of stomach contents through the mouth. Rarely nausea and vomiting is indicative of a serious or life-threatening condition. Prolonged or severe vomiting may cause dehydration. Fever and diarrhea may accompany vomiting in a child who has an infection.

INCUBATION PERIOD: If infectious, the incubation period will depend on the infectious agent causing vomiting.

MODE OF SPREAD: Spread is via direct contact with infectious vomitus.

PERIOD OF COMMUNICABILITY: Depends on the infectious organism.

CONTROL MEASURES:

REPORTING: Vomiting is not a condition reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering.

EXCLUSION: Exclude a child with vomiting if: a) he/she has vomited more than 2 times in a 24 hour period and vomiting is not from a known condition for which the child has a care plan, b) fever accompanies vomiting, c) vomiting is green in color, resembles coffee grounds or is bloody, d) signs of dehydration (infrequent urination, dark-colored urine, excessive thirst, dry mouth and weakness, dizziness or lightheadedness upon standing), e) there is a recent history of head injury, or f) the child looks or acts very ill.

RETURN TO SCHOOL: The student may return to school when exclusion criteria have resolved, the student is able to participate in usual activities and staff determine they are able to care for the child without compromising the health and safety of others.

TREATMENT: Self-care measures and treatment of the cause.

FOLLOW UP: Refer any child with continued, unexplained bouts of vomiting and/or unexplained weight loss to their health care provider.

ROLE OF THE SCHOOL NURSE:

- Encourage good handwashing and sanitization of surfaces.
- Educate and encourage staff to use universal/standard precautions when in contact with vomitus.
- Contact parents and refer for immediate medical attention if:
    - Nausea and vomiting are accompanied by head injury
    - Nausea and vomiting are accompanied by pain or severe headache
    - The student is unable to eat or drink for 12 hours or is unable to keep liquids down for 8 hours and/or has signs of dehydration
    - Vomitus contains blood, resembles coffee grounds, or is green.
- Instruct student and parents on self-care measures:
    - Take small sips of cold, clear, carbonated or sour drinks such as ginger ale, lemonade and water.

- Start with easily digested foods such as gelatin, crackers and toast. When successful in keeping these foods down, progress to cereal, rice, fruit and salty or high-protein, high carbohydrate foods. Avoid fatty or spicy foods. Wait to try solid foods until about six hours after the last episode of vomiting.
- Rest, as too much activity can make nausea worse.
- Avoid strong odors and other triggers.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Mayo Clinic. Nausea and vomiting. Available at: http://www.mayoclinic.com/health/nausea/MY00572.

WARTS (Common)

INFECTIOUS AGENT: *Human papilloma* virus (HPV)

DESCRIPTION/SIGNS & SYMPTOMS: There are more than 100 types of HPV and different types of the virus cause different types of warts. Most warts are harmless, like common warts, while others can cause serious disease such as cervical cancer. See sexually transmitted diseases, in this document, for information regarding HPV causing genital warts. Common warts appear as dome-shaped skin growths that may become a raised area with small bumps within it. Often common warts are found on the hands and are painless but may be painful when they occur on the feet. Black dots, which are small clotted blood vessels, may appear in the warts. Children and young adults are more at risk for developing common warts as are people with weakened immune systems.

INCUBATION PERIOD: Unknown, estimated to range from 3 months to several years.

MODE OF SPREAD: Person to person through direct close contact and indirectly by touching towels or objects used by the person who has the virus. Warts usually spread by breaks in the skin such as a scrape or hangnail.

PERIOD OF COMMUNICABILITY: May be contagious as long as the wart is present. Because warts shed HPV, new warts can appear as quickly as old ones resolve.

CONTROL MEASURES:

REPORTING: Common warts are not a condition reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering.
EXCLUSION: No exclusion is required.
RETURN TO SCHOOL: Exclusion is not required.
TREATMENT: Many warts do not require treatment. Treatment is a personal choice and not required for infection control. Home treatment is often effective in curing common warts. Over-the-counter medicated solutions or patches (containing 17% salicylic acid) used daily may be successful especially when soaking the wart in warm water for 10-20 minutes before application and filing dead skin with a pumice or nail file between treatments. Studies on the use of duct tape show mixed results but covering the wart with regular gray duct for 6 days then soaking and filing, as above, may be effective. When home treatment is not helping, a health care provider may offer freezing (cryotherapy or liquid nitrogen therapy), topical medications, or minor surgery to remove the wart(s).
FOLLOW UP: Warts do not need to be covered like an oozing sore.

ROLE OF THE SCHOOL NURSE:

- Educate the student, parents and staff family regarding good handwashing technique and to avoid sharing of towels.
- Encourage the student to reframe from picking at their warts as this can cause spread of the virus to other sites and/or bacterial infection.
- Encourage students to keep their hands dry as warts are difficult to control in a moist environment.
- Reassure student and parents that warts will resolve in time and that they are not caused by the same *human papilloma* viruses that cause genital warts or cervical cancer.
- Refer student to a health care provider if signs of bacterial infection.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Mayo Clinic. Common Warts. Available at: http://www.mayoclinic.com/health/common-warts/DS00370.

WHOOPING COUGH (PERTUSSIS)*

INFECTIOUS AGENT: Bacterium*, Bordetella pertussis*

DESCRIPTION/ SIGNS & SYMPTOMS: Pertussis is a very contagious respiratory infection, commonly known as whooping cough, which causes a range of illnesses from a mild cough to severe disease. Pertussis may be severe in infants and young children, especially those who have not had at least 3 doses of vaccine. More than half of infants younger than 1 year of ages who get the disease must be hospitalized. Severe disease can result in neurological symptoms and possibly death. Initial onset begins with cold-like symptoms and a cough. Fever is usually absent or low-grade. The cough progresses, usually after 1 -2 weeks, until the person develops a series of violent, rapid coughing fits. Coughing spells may be followed by vomiting, breathlessness, change in facial color, and/or a high-pitched whooping sound. For teens and adults, the "whoop" is often not there and the infection is generally milder. The cough may last as long as 3 months.

INCUBATION PERIOD: 6 to 21 days, usually 7 to 10 days.

MODE OF SPREAD: Transmission is from person to person by direct contact with nose/throat discharges through coughing and sneezing of an infected person. Many infants who get the disease are often infected by older siblings, parents or caregivers who do not realize their chronic coughing is actually pertussis.

PERIOD OF COMMUNICABILITY: The contagious period is from the beginning of symptoms until 2 weeks after the cough begins. A case is most contagious in the early stages. Individuals are virtually noncontagious after the third week of the cough, or after 5 days of appropriate antibiotic treatment.

CONTROL MEASURES:

VACCINATION: Pertussis is a vaccine preventable disease and vaccination is required for school admission. Children should get 5 doses of DTaP, one dose at each of the following ages: 2, 4, 6, 15-18 months and 4-6 years. A dose of Tdap is recommended at age 11 or 12. Children and adolescents who did not get a complete series of DTaP shots by age 7 should complete the series using a combination of Td and Tdap. All adults should get a booster of Td every 10 years; adults under 65 who have never gotten a Tdap should get a dose of Tdap as their next booster dose. Adults 65 and older *may* get one booster dose of Tdap. It is now recommended that pregnant women receive a booster dose of Tdap during *each* pregnancy.

REPORTING: ***Pertussis is a reportable disease to the Alaska Section of Epidemiology***. By Alaska statute and regulation, a suspected or confirmed case of pertussis (whooping cough) disease must be reported to the Section of Epidemiology (907-269-8000) within five working days after suspecting the existence of the disease.

EXCLUSION: Exclude infected students.

RETURN TO SCHOOL: After 5 days of appropriate antibiotic treatment and the student is able to participate fully in activities. An untreated student may return once 3 weeks have elapsed since onset of illness.

TREATMENT: Suspected pertussis cases should be referred to a health care provider for diagnosis, testing and treatment. Specimens are collected from the nasal passages. Antibiotics are prescribed for the affected individual. In households that have infant children (younger than 12 months of age), prophylactic antibiotics are prescribed for all household and other close contacts. In school settings, institutional policy will determine whether prophylaxis is needed

for staff (e.g., school nurses) and exposed and incompletely immunized children. The Alaska Section of Epidemiology is available for consultation and guidance.

FOLLOW UP: Emphasize the importance of taking the prescribed medication until it is completed, as symptoms may improve before the infection is completely cleared.

ROLE OF THE SCHOOL NURSE:

- Review immunization status of all children and staff. Encourage vaccination of all individuals, particularly in families with new infants.
- Work with the Alaska Section of Epidemiology, as requested, to identify underimmunized or unimmunized students and staff in a school where pertussis infection has been identified. These individuals may need to take prophylactic antibiotics, should be offered the vaccine and/or may need to be excluded from school until it is determined safe for them to return. Monitor incompletely immunized children for respiratory signs and symptoms for 21 days after last contact with an infected child.
- Monitor staff for respiratory symptoms and recommend evaluation by their healthcare provider if cough develops within 21 days of exposure.
- Encourage staff to talk with their healthcare provider about prevention and pertussis vaccination. Educate staff that all adults should get a booster of Td every 10 years and those under 65 years of age who have never received a Tdap should get one at their next scheduled booster dose. Adults 65 and older *may* get one booster dose of Tdap, especially if they expect to be in close contact with an infant.
- Instruct students and staff on good handwashing technique.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

Centers for Disease Control and Prevention (CDC). Diseases and Conditions. Pertussis (Whooping Cough) Available at: http://www.cdc.gov/pertussis/about/index.html

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YEAST DIAPER RASH (Candidiasis)

INFECTIOUS AGENT: *Candida* yeasts

DESCRIPTION/SIGNS & SYMPTOMS: A diaper rash is a common form of inflamed skin (dermatitis) that can be traced to various causes. A yeast diaper rash may start as a simple infection and spread to surrounding regions. The area covered by diapers – buttocks, thighs, genitals – are especially vulnerable because of the moist, warm environment which is a breeding ground for yeast. Use of antibiotics can deplete the bacteria that keep yeast in check resulting in an overgrowth of yeast in the diaper area. Babies whose breast-feeding mothers are on antibiotics are also vulnerable. The signs and symptoms of a yeast rash are: redness in the diaper area, rash that is worse in the skin creases, redness often bordered by red pimples and a shiny appearance with sores, cracking or oozing in severe cases.

INCUBATION PERIOD: Unknown, and can develop very rapidly (within a few hours under the right conditions).

MODE OF SPREAD: *Candida albicans* is present in the intestinal tract and mucous membranes and on the skin of healthy people. A warm, moist environment fosters growth and spread.

PERIOD OF COMMUNICABILITY: The yeast that infects the diaper area is widespread in the environment. Repetitive or severe *candida* diaper rash can signal immune problems.

CONTROL MEASURES:

REPORTING: Yeast diaper rash is not a condition reportable to the Alaska Section of Epidemiology unless there is an unusual number or clustering.
EXCLUSION: No exclusion is required.
RETURN TO SCHOOL: Exclusion is not required.
TREATMENT: Over-the counter treatment such as ointments and creams designed specifically for babies, in combination with exposure to air and frequent diaper changes, are often successful. Avoid washing the area with soap or disposable, scented wipes. A child whose rash does not respond to these measures should be referred to a health care provider for evaluation. Topical antifungal skin creams, may be prescribed.
FOLLOW UP: Frequent diaper changes, air exposure and avoidance of chaffing by materials against the skin are important for healing.

ROLE OF THE SCHOOL NURSE:

- Reassure parents and staff that rashes occur and do not necessarily reflect improper or poor care. It is important to identify the cause and type of rash in order to treat it as quickly as possible.
- Administer medications as prescribed by the healthcare provider.
- Educate/instruct staff in best practices for hand hygiene, universal/standard precautions and care of the diapered student.

REFERENCES/RESOURCES:

American Academy of Pediatrics. *Managing Infectious Diseases in Child Care and Schools, A Quick Reference Guide, 2nd Edition.* Aronson S, Shope T, eds. Elk Grove Village, IL: American Academy of Pediatric; 2009.

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