

NEW HAMPSHIRE DEPARTMENT OF HEALTH AND HUMAN SERVICES

Disease Handbook for Childcare Providers

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<https://www.dhhs.nh.gov/dphs/cdcs/handbook.htm>

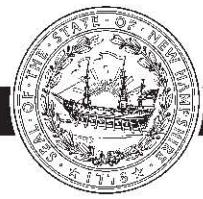


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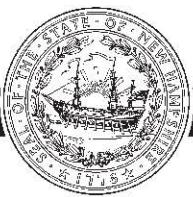
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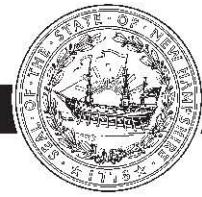


Introduction

The New Hampshire Division of Public Health Services, Bureau of Infectious Disease Control, prepared this manual for childcare providers and parents/guardians of children attending childcare. The disease fact sheets, which comprise most of this document, are intended to familiarize people with specific infectious disease problems commonly encountered in childcare. The fact sheets can be easily photocopied for distribution to parents and guardians.

In the event that any of the illnesses mentioned in this manual occur among children attending childcare, parents or guardians should be promptly notified by the childcare provider and urged to contact their family physician to obtain specific medical care advice.

Childcare directors should immediately notify the Bureau of Infectious Disease Control concerning any unusual disease occurrence in their facilities so that appropriate disease-control measures may begin promptly. To contact the Bureau of Infectious Disease Control call (603) 271- 4496.



NEW HAMPSHIRE DEPARTMENT OF HEALTH AND HUMAN SERVICES

Acknowledgements:

We extend our appreciation to the many individual and community partners who gave generously of their time and effort in the development of the original version of this manual, as well as those who participated in this update, including:

- The Berlin Health Department,
- Cheshire Medical Center,
- Concord Hospital Child Care Center,
- East Side Learning Center,
- Manchester Health Department,
- Nashua Health Department, and
- The current and former dedicated staff from the Division of Public Health Services.

Also, special thanks to the many childcare providers who gave us valuable input on the content, organization and design of this manual.

New Hampshire Department of Health and Human Services
Division of Public Health Services
Bureau of Infectious Disease Control

The Department of Health and Human Services' Mission is to join communities and families in providing opportunities for citizens to achieve health and independence.



NH Division of Public Health Services
Immunizations Required for Childcare Attendance

Vaccine	Recommended Schedule	Comment
DTaP (Diphtheria, Tetanus, a cellular pertussis)	2 months, 4 months, 6 months, 15-18 months, 4-6 years.	Age appropriately required for childcare attendance per routine childhood vaccination schedule. If the child has a contraindication to the pertussis vaccine they would receive a vaccine called DT which does not contain the pertussis antigen.
IPV (Polio)	2 months, 4 months, 6-18 months, 4-6 years	Age appropriately required for Childcare attendance per routine childhood vaccination schedule.
Hib (Haemophilus influenzae Type b)	2 months, 4 months, 6 months, 12-15 months	Age appropriately required for childcare attendance. If the child starts the series late or is behind, fewer doses may be required. If the child is unvaccinated, one dose at 15 months or older is adequate. The Hib vaccine is not required after 59 months of age.
MMR (measles, mumps, rubella)	12-15 months, second dose 4-6 years of age.	Age appropriately required for childcare attendance per routine childhood vaccination schedule. 2 nd dose must be at least 1 month after dose one.
Varicella (chickenpox)	12-15 months, second dose 4-6 years of age.	Age appropriately required for childcare attendance per routine childhood vaccination schedule. 2 nd dose must be at least 3 months after dose one (for children ages 12 months to 12 years). A laboratory test to confirm immunity is acceptable.
Hep B (hepatitis-B)	Birth, 1-2 months, 6-18 months.	Age appropriately required for childcare attendance.

Immunizations Recommended for Childcare Attendance

Vaccine	Recommended Schedule	Comment
Hep A (Hepatitis A vaccine)	12 months and at 18 months	Age appropriate recommended for childcare attendance per routine childhood vaccination schedule.
Influenza vaccine	6-months and older, one dose annually.	Recommended annually. If it's the first time receiving vaccine, two doses are required..
PCV-13 (pneumococcal)	2 months, 4 months, 6 months, 12-15 months.	Age appropriately recommended for childcare attendance, per routine childhood vaccination schedule. If the child starts the series late or is behind, fewer doses may be required. Recommended for certain high risk children over 59 months.
Rotavirus	Rotarix (RV1) 2 months, 4 months. OR Rotateq (RV5) 2 months, 4 months, 6 months.	Age appropriate recommended for childcare attendance per routine childhood vaccination schedule.

Recommended Immunization Schedule for children aged 18 years or younger approved by the Advisory Committee on Immunization Practice (ACIP), the American Academy of Pediatrics (AAP), and the American Academy of Family Practice (AAFP).

If you have any questions about a child's compliancy, please call the child's primary care provider or the New Hampshire Immunization Program (603-271-4482)

Additional Immunization Resources for Child Care Providers:
<https://www.dhhs.nh.gov/dphs/immunization/ccproviders.htm>



DISEASES THAT ARE PREVENTABLE WITH VACCINES

This group of diseases includes measles, mumps, rubella, varicella (chickenpox), polio, pertussis, diphtheria, tetanus, Haemophilus influenza type b, and 7 types of streptococcus pneumoniae, hepatitis B and hepatitis A. Prior to immunization programs, these diseases were a major cause of widespread illness, often with permanent medical complications and even death. Most of these diseases were a problem especially in children, although adults were also affected.

Who gets these diseases?

Some people believe that these diseases are no longer a problem in the United States or that children can't get them anymore. **This is not true!** These diseases are still circulating. Cases of these diseases do occur, particularly in unimmunized or inadequately immunized children and adults. Measles staged a strong comeback in the U.S. in the late eighties and early nineties in unimmunized preschool children and also in high school and college age students. From 1989-1991 there were 123 measles associated deaths reported. Forty-nine percent of these deaths were in children less than 5 years of age. Ninety percent of the fatal cases had no history of vaccination.

Children in childcare settings and their adult caretakers are especially at risk. This is because the children may be too young to be fully immunized and because the close contact that occurs in childcare facility allows easy spread of many diseases.

In this document, each vaccine preventable disease is presented briefly. Although it is unlikely that you will ever see a case of most of these diseases, it is **very important** that you be aware of them and of your vital role in preventing their spread. For further information, please contact your healthcare provider.

Division of Public Health Services
Bureau of Infectious Disease Control

How can the spread of these diseases be prevented?

1. All children in daycare must be immunized appropriately for their age, in accordance with the NH State Law: RSA 141:C-20. Specific information about immunization schedules can be found on the Immunization Requirements Section in this handbook and on the appropriate fact sheets.
2. It is recommended that all adults working in a childcare setting, including volunteers, should have proof of immunization or immunity to the following vaccine-preventable diseases: diphtheria, tetanus, pertussis, measles, mumps, rubella, hepatitis B, varicella, and polio. Although evidence of such immunization or immunity is not required for childcare workers, they are strongly recommended.
3. If a documented case of measles, mumps, rubella, polio, diphtheria, tetanus, varicella or pertussis occurs in your childcare facility, you **must** notify the New Hampshire Division of Public Health Services, Bureau of Infectious Disease Control.. Their staff will assist you in starting any necessary identification and vaccination of susceptible children and adults. They will also instruct you on procedures for closely watching for any additional cases and for notifying the parents.

Acceptable evidence of immunization or immunity in adults can be provided in several ways, which vary by the age of the adult and the **specific disease**, as listed below:

DISEASES THAT ARE PREVENTABLE WITH VACCINES (cont.).

Adult Vaccination Recommendations

Tetanus/diphtheria (Td) or tetanus, diphtheria, acellular pertussis (Tdap) – All adults need a Td booster every 10 years following the completion of the primary 3 dose series. A one-time dose of Tdap is now the vaccine of choice for any adult regardless of age who is due for a Td booster. Anyone who has close contact with infants less than 12 months of age should have the Tdap at least one month prior to contact. It is suggested an interval of 2 years or more since the last dose of Td, as the minimum interval prior to the administration of Tdap.

Measles

Born before 1957 (or) documentation of vaccination with at least two doses of live measles vaccine, with the first dose given on or after the first birthday and the second live dose at least 28 days from the first (or) laboratory evidence of immunity.

Mumps

Documentation of vaccination with live mumps vaccine on or after the first birthday (or) laboratory evidence of immunity (or) documentation of physician-diagnosed mumps is recommended.

Rubella

Documentation of vaccination with rubella vaccine on or after the first birthday (or) laboratory evidence of immunity is recommended. A history of rubella, without laboratory confirmation is **NOT** acceptable.

For women not immune, vaccination during pregnancy is **not** advised. Vaccine should be administered after delivery.

Varicella (Chickenpox)

- Written documentation of age appropriate vaccination,
- Anyone born in the United States before 1996,
- Laboratory evidence of immunity or laboratory confirmation of disease for anyone born after 1998.

Hepatitis B

Documentation of 3 doses of hepatitis B vaccine given at appropriate intervals (or) laboratory evidence of immunity is recommended.

Influenza

One dose of influenza vaccine is *highly* recommended annually for all childcare workers.



WHEN CHILDREN SHOULD BE EXCLUDED OR DISMISSED FROM A CHILDCARE SETTING

3.6.1 Management of Illness

A facility shall not deny admission to or send home a child because of illness unless one or more of the following conditions exist. The parent, legal guardian or other authorized by the parent shall be notified immediately when a child has a sign or symptom requiring exclusion from the facility, as described below: a) The illness prevents a child from participating comfortably in facility activities; b) The illness results in a greater care need than the childcare staff can provide without compromising the health and safety of the other children; or c) The child has any of the following conditions:

1. Temperature: Oral temperature 101 F or greater; rectal temperature 102 F or greater; axillary (i.e., armpit) temperature 100 F or greater, accompanied by behavior changes or other signs or symptoms of illness until medical evaluation indicates inclusion in the facility. Oral temperature shall not be taken on children younger than 4 years (or younger than 3 years if a digital thermometer is used). Only persons with specific health training shall take rectal temperature.
2. Symptoms and signs of possible severe illness (such as unusual lethargy, uncontrolled coughing, irritability, persistent crying, difficult breathing, wheezing, or other unusual signs), until medical evaluation allows inclusion.
3. Uncontrolled diarrhea, that is, increased number of stools, increased stool water, and/or decreased form that is not contained by the diaper, until diarrhea stops.

4. Vomiting illness (two or more episodes of vomiting in the previous 24 hours) until vomiting resolves or until a healthcare provider determines the illness to be non-communicable, and the child is not in danger of dehydration.
5. Rash with fever or behavior change, until a healthcare provider determines that these symptoms do not indicate a communicable disease.

Rationale:

Exclusion of children with many mild infectious diseases is likely to have only a minor impact on the incidence of infection among other children in the group. Thus, when formulating exclusion policies, it is reasonable to focus on the needs and behavior of the ill child and ability of staff in the out-of-home childcare setting to meet those needs without compromising the care of other children in the group.

Chicken pox, measles, rubella, mumps and pertussis are highly communicable illnesses for which routine exclusion of infected children is warranted. It is also appropriate to exclude children with treatable illnesses until treatment is received and until treatment has reduced the risk of transmission.

The presence of diarrhea, particularly in diapered children, and the presence of vomiting increase the likelihood of exposure of other children to the infectious agents that cause these illnesses. It may not be reasonable to routinely culture children who present with fever and sore throat or diarrhea. However, in some outbreak settings,

WHEN CHILDREN SHOULD BE EXCLUDED OR DISMISSED FROM A CHILDCARE SETTING

(cont.)

identifying infected children and excluding or treatment of them may be necessary.

Fever is defined as an elevation of body temperature above normal. The presence of fever alone has little relevance to the spread of disease and may or may not preclude a child's participation in childcare. The height of the fever does not necessarily indicate the severity of the child's illness. A child's over-exertion in a hot, dry climate may produce a fever. Life-threatening diseases, such as meningitis, cause a small proportion of childhood illness with fever. Generally, young infants show less fever with serious illness than older children. Infants and children older than 4 months should be excluded whenever behavior changes and/or signs or symptoms of illness accompany fever. Infants 4 months old or younger should be excluded when rectal temperature is 101 F or above, or axillary (i.e., armpit) temperature is 100 F or above, even if there has not been a change in their behavior.

It is unreasonable and inappropriate for childcare staff to attempt to determine which illnesses with fevers may be serious. The child's parents or legal guardians, with the help of their child's healthcare provider, are responsible for these decisions; therefore, parents should be informed promptly when their child is found to have a fever while attending childcare.

Excerpted from Caring For Our Children, National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs, The American Public Health Association (Washington DC) and the American Academy of Pediatrics (Elks Grove Village, IL), 2011.



WHEN STAFF SHOULD BE EXCLUDED OR DISMISSED FROM A CHILDCARE SETTING

A facility should not deny admission to or send home a staff member or substitute with illness unless one or more of the following conditions exists. The staff member should be excluded as follows:

- a) Chickenpox, as directed by Bureau of Infectious Disease Control;
- b) Shingles, only if the lesions cannot be covered by clothing or a dressing until the lesions have crusted;
- c) Rash with fever or joint pain, until diagnosed not to be measles or rubella;
- d) Measles, as directed by the Bureau of Infectious Disease Control;
- e) Rubella, as directed by the Bureau of Infectious Disease Control;
- f) Diarrhea illness, nausea and /or vomiting three or more episodes of diarrhea during the previous 24 hours or blood in stools, until 48 hours after the resolution of symptoms unless vomiting is identified as a non-communicable condition such as pregnancy or digestive disorder or deemed non-infectious by a healthcare professional;
- g) Hepatitis A virus, as directed by the Bureau of Infectious Disease Control;
- h) Pertussis, as directed by the Bureau of Infectious Disease Control;
- i) Skin infections (such as impetigo), until 24 hours after treatment has been initiated;
- j) Tuberculosis, as directed by the Bureau of Infectious Disease Control and the Tuberculosis program;
- k) Strep throat or other streptococcal infection, until 24 hours after initial antibiotic treatment and end of fever;
- l) Head lice, from the end of the day of discovery until the first treatment;

- m) Scabies, until after treatment has been completed;
- n) Purulent conjunctivitis, defined as pink or red conjunctiva with white or yellow eye discharge, often with matted eyelids after sleep, and including eye pain or redness of the eyelids or skin surrounding the eye, until examined by a physician and approved for readmission;
- o) *Haemophilus influenza* type b (Hib), until directed by the Bureau of Infectious Disease Control;
- p) Meningococcal infection, until directed by the Bureau of Infectious Disease Control;
- q) Respiratory illness, if the illness limits the staff member's ability to provide an acceptable level of childcare and compromises the health and safety of the children.
- r) There may be other communicable diseases that pose a threat to the public's health that are not specifically listed here for which it may be appropriate to restrict certain activities of cases, suspect cases, and close contacts until they are no longer infectious in consultation with the health department.

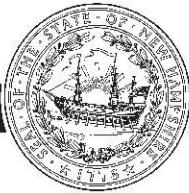
Childcare providers who have herpes cold sores should not be excluded from the childcare facility, but should:

- 1) Cover and not touch their lesions;
- 2) Carefully observe handwashing policies;
- 3) Refrain from kissing or nuzzling infants or children, especially children with dermatitis.

Excerpted from Care For Our Children, National Health and Safety Performance Standards: Guidelines for Out-Of-Home Childcare Programs, American Public Health Association, 2011.

Placeholder for “What Diseases Must Be Reported to Health Officials:

Should go to: <https://www.dhhs.nh.gov/dphs/cdcs/documents/reportablediseases.pdf>



Child Abuse

The NH Division for Children, Youth and Families (DCYF) is dedicated to assisting families in the protection, development, permanency and well being of their children and the communities in which they live. Child protection and family support services are provided by Child Protective Service Workers (CPSWs) in 12 District Offices throughout New Hampshire. Under certain circumstances, DCYF also provides voluntary services to families that request them. These are available to families that have not had a finding of abuse or neglect.

DCYF strives to protect children from abuse and neglect and to help families nurture their children into physically and emotionally healthy adults. The prevention and identification of child abuse and neglect is a community responsibility that depends on the cooperation of all community members. In situations where abuse, neglect or sexual abuse is suspected or if discussion with the family does not relieve concerns, then the Division for Children, Youth and Families should be contacted at **603-271-6562 or 1-800-894-5533 (In state only) 24 hours per day.**

If you suspect that a child is being abused or neglected, NH state law requires that you report your concerns to the DCYF Central Intake Unit immediately. Proof of abuse or neglect is not required before reporting. Early reporting often prevents greater harm to children and other family members. The same law that requires reporting (RSA 169-C) also states that any person who makes a report in good faith is immune from any civil or criminal liability. It is better to make your concerns known than to remain silent and possibly allow a child to be seriously harmed.



DIAPERING RECOMMENDATIONS

Changing diapers in a sanitary way is essential to prevent infectious organisms present in the stool from spreading. If the organisms, which cause infectious diarrhea, hepatitis-A, giardiasis and other illnesses, are accidentally ingested, the disease may be transmitted. You can help prevent illness by remembering the following guidelines as you diaper children.

Equipment Concerns For Diapering:

Changing area and surface

Children should be discouraged from remaining in or entering the diaper changing area. Keep the changing surface away from children, preferably at least 36 inches from the floor. Cover it with a smooth, moisture-resistant, easily cleanable material. For extra protection, use disposable single-service covers for each child. A changing table should be nonporous, kept in good repair, and cleaned and sanitized after each use to remove visible soil, followed by wetting with an approved sanitizing solution. Diaper changing should not be conducted on surfaces used for other purposes, especially not on any counter that is used during food preparation or mealtimes.

Hand washing sink and towels

The best hand washing sink is one equipped with both hot and cold running water mixed through one faucet (with a minimum water temperature at least 60-degrees and not greater than 120-degrees). Ideally, water controls should be foot, knee or wrist operated to avoid contamination of or by hands. The sink should be in the same room as the changing surface. Keep soap and towels nearby. Use single-service towels (e.g., paper towels) instead of cloth towels.

Disposable gloves

Although gloves are not necessary for diaper changing, they may reduce contamination of the caregiver's hands and reduce the presence of infectious disease agents under the fingernails and from the hand surfaces. Even if gloves are used, caregivers must wash their hands after each child's diaper changing to prevent the spread of disease-causing agents. Caregivers must remove the gloves using the proper technique otherwise the contaminated gloves will spread infectious disease agents.

Potty chairs

Use of potty chairs should be discouraged. If potty chairs are used, they should be emptied into a toilet, cleaned in a utility sink, sanitized after each use, and stored in the bathroom. After the potty is sanitized, the utility sink should also be sanitized. Potty chairs should not be washed in a sink used for washing hands. If potty chairs are used, they should be constructed of plastic or similar nonporous synthetic products. Wooden potty chairs should not be used, even if the surface is coated with a finish. The finished surface of wooden potty chairs is not durable and, therefore, may become difficult to wash and sanitize effectively.

Diapers

Use of disposable diapers is recommended to best reduce the risk of infections. Cloth diapers require more handling than disposable diapers (the more handling the greater chance of infection). When cloth diapers are used, no rising or dumping of contents of the diaper shall be performed at the childcare facility. Clean diapers should be stored away from dirty diapers. A child's diaper should be checked for wetness and feces at least hourly, and whenever the child indicates discomfort or exhibits behavior that suggests a soiled or wet diaper. Diapers should be changed when they are found to be wet or soiled.

DIAPERING RECOMMENDATIONS (cont.)

Diapering Procedures:

The following diaper changing procedure should be posted in the changing area and should be followed for all diaper changes.

Step 1: Get organized. Before you bring the child to the diaper changing area, wash your hands and bring what you need to the diaper-changing table:

- a) Non-absorbent paper liner large enough to cover the changing surface from the child's shoulders to beyond the child's feet;
- b) Fresh diaper, clean clothes (if you need them);
- c) Wipes for cleaning the child's genitalia and buttocks removed from the container or dispensed so the container will not be touched during diaper changing;
- d) A plastic bag for any soiled diapers;
- e) Disposable gloves, if you plan to use them (put gloves on before handling soiled clothing or diapers);
- f) A thick application of any diaper cream (when appropriate) removed from the container to a piece of disposable material such as facial or toilet tissues.

Step 2: Carry the child to the changing table, keeping soiled clothing away from you and any surface you cannot easily clean and sanitize after the change.

- a) Always keep a hand on the child;
- b) If the child's feet cannot be kept out of the diaper or from contact with soiled skin during the changing process, remove the child's shoes and socks so the child does not contaminate these surfaces with stool or urine during the diaper changing;
- c) Put soiled clothes in a plastic bag and securely tie the plastic bag to send the soiled clothes home.

Step 3: Clean the child's diaper area.

- a) Place the child on the diaper change surface and unfasten the diaper but leave the soiled diaper under the child;

- b) If safety pins are used, close each pin immediately once it is removed and keep pins out of the child's reach. Never hold pins in your mouth;
- c) Lift the child's legs as needed to use disposable wipes to clean the skin on the child's genitalia and buttocks. Remove the stool and urine from front to back and use a fresh wipe each time. Put the soiled wipes into the soiled diaper or directly into a plastic-lined, hands-free covered can.

Step 4: Remove the soiled diaper without contaminating any surface not already in contact with stool or urine.

- a) Fold the soiled surface of the diaper inward;
- b) Put soiled disposable diapers in a covered, plastic-lined, hands-free covered can. If reusable cloth diapers are used, put the soiled cloth diaper and its contents (without emptying or rinsing) in a plastic bag or into a plastic-lined, hands-free covered can to give to the parents or laundry service;
- c) If gloves are used, remove them using the proper technique and put them into a plastic-lined, hands-free covered can;
- d) Whether or not gloves are used, use a disposable wipe to clean the surface of the caregiver's hands and another to clean the child's hands, and put the wipes into the plastic-lined, hands-free covered can;
- e) Check for spills under the child. If there are any, use the paper that extends under the child's feet to fold over the disposable paper so a fresh, unsoiled paper surface is now under the child's buttocks.

Step 5: Put on a clean diaper and dress the child.

- a) Slide a fresh diaper under the child;
- b) Use a facial or toilet tissue to apply any necessary diaper creams, discarding the tissue in a covered, plastic-lined, hands-free covered can;
- c) Note and plan to report any skin problems such as redness, skin cracks, or bleeding;

DIAPERING RECOMMENDATIONS (cont.)

- d) Fasten the diaper. If pins are used, place your hand between the child and diaper when inserting the pin.

Step 6: Wash the child's hands and return the child to a supervised area.

- a) Use soap and water, no less than 60 degrees F and no more than 120 degrees F, at a sink to wash the child's hands, if you can.
- b) If the child is too heavy to hold for hand washing or cannot stand at the sink, use commercial disposable diaper wipes or follow this procedure:
 - I. Wipe the child's hands with a damp paper towel moistened with a drop of liquid soap;
 - II. Wipe the child's hands with a paper towel wet with clear water;
 - III. Dry the child's hands with a paper towel.

SOURCE: Caring For Our Children, National Health and Safety Performance Standards: Guidelines for Out-Of-Home Childcare Programs.
<http://cfoc.nrckids.org/>

Step 7: Clean and sanitize the diaper-changing surface.

- a) Dispose of the disposable paper liner used on the diaper changing surface in a plastic-lined, hands-free covered can;
- b) Clean any visible soil from the changing surface with detergent and water; rinse with water.
- c) Wet the entire changing surface with the sanitizing solution (e.g., spray a sanitizing bleach solution of $\frac{1}{4}$ cup of household liquid chlorine bleach in one gallon of tap water, mixed fresh daily);
- d) Put away the spray bottle of sanitizer. If the recommended bleach dilution is sprayed as a sanitizer on the surface, leave it in contact with the surface for at least two (2) minutes. The surface can be left to air dry or can be wiped dry after two (2) minutes of contact with the bleach solution.

Step 8: Wash your hands using proper technique.



PETS IN CHILDCARE FACILITIES

Infants and children less than 5 years old are more likely than most people to get diseases from animals. Reptiles (e.g., lizards, snakes, turtles), amphibians (e.g., frogs, toads, newts, salamanders), and young birds (e.g., baby chicks, ducklings) should not be permitted in rooms occupied by children. Children and infants should not have contact with these animals or items that have been in contact with these animals or their environments.

When bringing appropriate pets into a childcare facility, the following guidelines should be followed:

1. Children should always be properly supervised when animals are available.
2. Areas should be designated for animal contact. Such areas should be properly cleaned regularly and after animal contact. Food or drink should not be consumed in these areas.
3. No animals should be allowed to run freely.
4. All animals should be in good physical condition and vaccinated against transmittable diseases. Dogs, cats, and ferrets require proof of current rabies vaccination. Animals should be kept clean and free of intestinal parasites, fleas, ticks, mites, and lice.
5. All fecal material must be cleaned from the cage of any mammal or bird on an as needed basis, (at a minimum of one time per week), and appropriate sanitizer used. Reptiles, fish and insects must be cared for in a manner to minimize odor and maintain health. Persons cleaning cages must wear gloves, masks, and glasses or goggles. Cleaning should be performed by individuals >5 years old, under the supervision of an adult. Ideally, cleaning should be performed when other children are not in the room.

6. Wash hands with soap and warm water after contact with animals or their environment.

Because wild animals can carry diseases that are dangerous to people, children should not have direct contact with wildlife. Teach children never to handle unfamiliar animals, wild or domestic, even if the animal appears to be friendly.

For concerns about pets in a childcare facility please contact the Division of Public Health Services, Bureau of Infectious Disease and Control at (603) 271-4496.

For more information please view the Centers for Disease Control and Prevention's website:
<http://www.cdc.gov/healthypets/>



FOOD HANDLING FOR CHILDCARE SETTINGS

In order to prevent foodborne illness caused by bacteria, viruses and parasites, it is very important that food be handled properly. Persons who have signs or symptoms of illness, including vomiting, diarrhea or infectious skin lesions which can not be covered, or who are infected with foodborne pathogens (e.g., *Salmonella*, *Shigella*, *E. coli* O157:H7) should not handle food. Whenever possible, staff who diaper children and have frequent exposure to feces should not prepare food for others. Careful handwashing needs to be practiced at all times, especially for caregivers who prepare food.

Preparing, Eating and Storing Food

1. Wash hands well before and after touching food.
2. Wash utensils, platters, counter tops and cutting boards with hot soapy water before and after contact with raw meat or poultry products.
3. Staff who diaper children and have frequent exposure to feces should not prepare food for others.
4. Canned soup and poultry products should be eaten immediately after opening.
5. Fruits and vegetables should be rinsed well.
6. Wash meal service area before and after serving food with hot soapy water followed with a disinfectant solution. (Note: You can make your own disinfectant by mixing one tablespoon of bleach with one quart water prepared fresh daily.)
7. Wash children's hands before eating.
8. Use separate utensils for each child. If interrupted while feeding an infant, wash hands again before continuing and before feeding another child.
9. Oversee mealtime and encourage children not to share food, plates, or utensils. Like-

wise, do not allow children to eat foods that have been dropped on the floor.

10. Discard all food left on plates at the end of mealtime.
11. Do not reuse lunch bags or bags from other items because of possible contamination.
12. Food should be stored away from areas where diapering is done.

How to Properly Defrost Foods

1. Plan ahead to allow time for defrosting food properly.
2. Defrost food in the refrigerator. If defrosting outside the refrigerator, place food in a sealed plastic bag and immerse in cold water, changing the water frequently.
3. Do not refreeze foods unless the package label states that it is safe to refreeze.
4. Follow instructions for microwave defrost as given in operating manuals of microwave.

What to Do If the Freezer Fails or The Power Goes Out

1. Keep the refrigerator-freezer door closed.
2. If your refrigerator-freezer will be shut off for more than two hours, make immediate arrangements for alternate storage of food elsewhere. Transport food in insulated coolers or in thick layers of paper.
3. When the power comes back on, throw away any food with an unusual color or odor. Do not taste this food.
4. If refrigerated foods are above 40 F for more than two hours, most perishable foods will be need to be discarded.
5. Frozen foods can be refrozen if they are at or below 40 F or still contain ice crystals.

FOOD HANDLING FOR CHILDCARE SETTINGS (cont.)

Infant Formula

Prepared infant formula or bottled milk should be refrigerated and clearly labeled with the child's first and last names. Any formula or bottled breast milk not consumed by an infant may be used later in the day if dated and stored in the refrigerator. Otherwise, it should be discarded or returned to the parent at the end of the day.

Shopping Guidelines

1. Allow adequate transport time to and from grocery shopping to prevent spoilage of fresh or defrosting of frozen products.
2. Do not buy or use food from containers that are leaking, bulging or severely dented.
3. Do not buy jars that are cracked or have bulging lids or cans that are bulging or leaking.
4. Purchase meat and dairy products last. Refrigerate these products as soon as you get to the childcare center.

Refrigerating Food

1. Keep the refrigerator clean and establish a regular cleaning schedule.
2. Defrost the freezer when necessary. Ice buildup prevents refrigerators from cooling properly.
3. Avoid overcrowding in the refrigerator. The more crowded it is, the less cooling effect.
4. Check the gaskets regularly; they should be flexible to keep the cold air from leaking out.
5. Keep a thermometer and check the temperature inside on a regular basis. The temperature should be at or below 40 F.
6. Refrigerate perishable bag lunches. If refrigeration is not available, put a container filled with frozen water, a plastic bag with ice cubes or a cold or frozen beverage into the bag for storage.

Freezing Food

1. Wrap meat in freezer paper, plastic wrap or foil if not already wrapped properly.
2. Date packages using the oldest first.
3. Check the freezer temperature regularly. It should be at or below 0 F.

Leftover Food

1. Do not reuse leftovers that have already been served.
2. Refrigerate unused leftovers immediately. Store in small shallow covered containers. Date packages and discard if not used within 72 hours. Meat can be refrigerated safely for two days.
3. Reheat leftovers all the way through. Bring gravies to a rolling boil.

Proper Hand Washing Technique

Children and babies should have their hands washed: 1) upon arrival to the daycare facility, 2) before eating/preparing food, 3) after toileting/diapering changes, and 4) after touching body secretions 5) after playing outside, especially after playing sandboxes.

Adults (including staff, volunteers, students and parent helpers) should wash their hands: 1) when they arrive at the daycare facility, before starting work, 2) before eating/preparing food, or feeding children, 4) after toileting/diapering a child or using the bathroom themselves, and 4) after handling body secretions.

How to Properly Wash Your Hands

1. Use soap, preferably liquid, and warm running water.
2. Wash your hands for at least 10 seconds while rubbing your hands vigorously as you wash them.
3. Wash ALL surfaces including: back of hands, wrists, between fingers and under nails.

FOOD HANDLING FOR CHILDCARE SETTINGS (cont.)

4. Rinse your hands well. Leave water running.
5. Dry your hands with a single-use towel (e.g., a paper towel)
6. Turn off the water using a PAPER TOWEL instead of your bare hands.
7. Throw the paper towel away.



RASHES

Rashes may occur for many reasons and it is impossible to cover in this manual all the causes for a rash. In most cases, rashes that last for more than a day that are accompanied by fever and/or other symptoms of illness, or rashes that develop all over the body should be referred to a physician for diagnosis before a child returns to the childcare facility.

Sensitive rashes that are caused from plant sensitivity such as poison ivy, poison oak and poison sumac often have unusually shaped blister-like sores. The fluid in these blisters is not contagious to others. People react to direct contact from the plant or from indirect contact from clothing, or other objects contaminated from plant contact. (A family pet can also indirectly pass this to people when its fur is contaminated). It is best to consult a physician for treatment.

Hives is a rash that may happen when a person is hypersensitive to such things as certain foods, drugs, and bee stings. It may also be due to emotional factors. The rash is usually itchy, raised, reddish welts on the skin. Hives that are accompanied by difficulty breathing, unusual anxiety and hives occurring all over the body needs to be seen by a physician immediately.

Another common rash experienced by children during the summer months is known as Swimmer's Itch. It is a form of dermatitis (i.e., inflammation of the skin) that is caused by larvae of certain worms when they attempt to penetrate the skin. This results in a mild allergic reaction. The worms that cause Swimmer's itch are commonly found in water after being excreted from birds, waterfowl and mammals. Generally, no treatment is required for the rash since it goes away in a few days and does not cause lasting effects. Swimmer's Itch is not spread from person-to-person.



CAMPYLOBACTER

Campylobacteriosis is an intestinal illness caused by the bacterium Campylobacter of which there are many types.

Who gets this disease?

Anyone can. The illness occurs in all age groups.

How is it spread?

Campylobacter is spread by the fecal-oral route. Water, milk or food (especially poorly cooked poultry products) contaminated with Campylobacter, or contact with infected animals may also be a source of infection to people.

What are the symptoms?

Diarrhea (which may be severe and bloody), stomach cramps, abdominal pain, vomiting and fever are the usual symptoms.

How soon do symptoms appear?

The symptoms generally appear between one and seven days, but can take longer.

Can a person have this disease without knowing it?

Yes. Although symptoms usually go away after one to 10 days on their own, there may still be germs in the stools for several weeks if treatment is not given.

What is the treatment?

Although antibiotic therapy may not shorten the illness, it does shorten the amount of time the germ is passed in the stools. Therefore, in the childcare setting, treatment is recommended for adults and children with Campylobacter in their stools. This will reduce the chance of spread to others.

How can the spread of this disease be prevented?

1. Wash hands thoroughly after using the toilet and diapering children.
2. Wash hands thoroughly before preparing food.
3. Keep children who have diarrhea at home.
4. Wash children's toys frequently, especially if they have diarrhea.
5. Make sure children wash their hands after handling pets or have contact with animal feces.
6. Symptomatic staff with positive stool cultures for Campylobacter should be excluded from work.
7. Always treat raw poultry, beef and pork as if they are contaminated and handle accordingly.
8. Wrap fresh meats in plastic bags at the market to prevent blood from dripping onto other foods.
9. Refrigerate foods promptly; minimize holding at room temperature.
10. Avoid ingesting unpasteurized milk.
11. Use separate cutting boards for raw poultry and beef to prevent cross contamination with other foods.
12. Cutting boards and counters used for preparation should be washed immediately after use to prevent cross contamination with other foods.
13. Be certain all foods (especially beef and poultry products) are thoroughly cooked.

CAMPYLOBACTER (cont.)

Who should be excluded?

Any person with diarrhea shall be excluded from foodhandling, from childcare agencies and from direct care of hospitalized or institutionalized patients until 48 hours after resolution of symptoms. Children can return to childcare once they are no longer having diarrhea.

Reportable?

Yes. Campylobacteriosis is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



CHICKENPOX (VARICELLA) AND SHINGLES

Chickenpox is a very contagious disease caused by the varicella-zoster virus. It usually begins with a mild fever and an itchy rash. The rash starts with crops of small red bumps on the stomach or back and spreads to the face and limbs. The red bumps rapidly become blistered, oozy and then crust over. People may have only a few bumps or may be totally covered.

Once a person has had chickenpox, the varicella-zoster virus stays without symptoms in the body's nerve cells. In some people (for unknown reasons), the virus can become active again at some later time as "shingles" or zoster. This problem includes a red, painful, itchy, blistery rash, usually in the line along one side of the body. There is no fever. The virus is shed in the blister fluid of the rash and can cause chickenpox in a person who has not had it, if that person has direct contact with the infected shingles blisters.

Who gets this disease?

Anyone who is exposed to chickenpox and has not had it before has a very good chance of developing chickenpox. It is most common in school-aged children. If you have had chickenpox once, second attacks are very rare. Shingles is most common in adults, as a person must have already had chickenpox to develop shingles.

When a pregnant woman or a person with a weak immune system who has not had chickenpox is exposed he/she should contact a physician.

Chickenpox does not cause serious illness in healthy children. Adults may, occasionally, be seriously ill with chickenpox.

How is it spread?

Chickenpox is contagious from 1-2 days **before** the rash appears to until the blisters have become crusted over. *It is* spread by close contact (i.e., sharing breathing space or direct touching contact) with infected secretions from the nose, throat or rash.

How soon do symptoms appear?

The symptoms generally appear from 14-16 days after exposure but in some cases can occur as early as 10 days or as late as 21 days after contact. Chickenpox and shingles are usually diagnosed by the typical appearance of the rashes.

What is the treatment?

The chickenpox symptoms may be treated with anti-itching medicine and lotions, fever control, fluids and rest. Because of a possible association with Reye's Syndrome (i.e., vomiting, liver problems and coma), salicylate-containing products (i.e., aspirin) should not be used for fever control. Acetaminophen may be used for fever control. Scratching should be avoided because it can cause infection and scarring. A medication to decrease the severity of symptoms is available for high-risk children. This must be given within 24 hours of the onset of rash. Please consult the Division of Public Health Services, Bureau of Infectious Disease Control or the child's physician for more information.

CHICKENPOX (VARICELLA) AND SHINGLE

(cont.)

How can the spread of this disease be prevented?

The ACIP recommends that children attending daycare facilities and schools be vaccinated for chickenpox. New Hampshire currently **requires** varicella vaccination for school or daycare attendance. The two dose series should be completed at 12-15 months and again at 4-6 years.

The ACIP also recommends that daycare workers, who have no history of chickenpox disease, be tested for immunity. If testing shows susceptibility, 2 doses of varicella vaccine should be administered separated by one month.

Each childcare facility should have a system so that it is notified if a child or staff member develops chickenpox or shingles. This is so the facility may take appropriate measures if there is a pregnant or immunocompromised member in the facility. (Recently the Advisory Committee on Immunization Practice has recommended the use of varicella vaccine for susceptible persons who have been exposed to varicella).

The childcare facility should watch closely for early signs of chickenpox in other children for three weeks following the most recent case. If a child or staff member develops a suspicious rash, he/she should be sent to his/her healthcare provider so that the rash can be diagnosed. However, chickenpox is highly contagious and in spite of your best efforts, you will probably have several more cases if children have not already had the disease.

Who should be excluded?

Children should be excluded from daycare after the rash eruption first appears and until the vesicles become dry and crusted over. In certain situations exposed unvaccinated children without symptoms do need to stay at home. Generally exposed children, who have been vaccinated, do not need to stay at home. Adults with shingles should be excluded if vesicles/blisters cannot be covered.

Reportable?

Yes, chickenpox is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496



COMMON COLD & INFLUENZA

Common colds are mild infections of the nose and throat, which are very common in young children (and in adults who are around them), and are caused by many different viruses. Usually the viral illness causes some combination of stuffy nose, runny nose, sore throat, cough, runny eyes, ear fluid and fever.

Influenza (the flu) is also caused by a virus (e.g., influenza-A, influenza-B) and causes symptoms of fever, headache, sore throat, cough, muscle ache and fatigue. Most people with influenza feel too ill to attend childcare.

Occasionally, the common cold or influenza can be complicated by a bacterial infection such as an ear infection, sinus infections, or pneumonia. These complications can be treated with appropriate antibiotics after evaluation by their health care provider.

Who gets these diseases?

Anyone can. Young children may be sick with these illnesses several times per year. As the number of persons in contact with a child increases, so does the likelihood of exposure to the common viruses that cause the cold and flu.

How are they spread?

The viruses can be transmitted from one person to another in respiratory secretions (i.e., saliva, nasal discharge, and phlegm). Infected droplets may be scattered through sneezing or coughing or they may land on surfaces touched by other persons, who then touch their eyes, nose or mouth.

How soon do symptoms appear?

The symptoms of a **common cold** appear as soon as 12-72 hours after exposure. The symptoms of **influenza** appear in 1-4 days after exposure, and typically last 2-3 days.

What is the treatment?

While there is medication available, most health care providers suggest rest and plenty of fluids. To see if there is bacterial infection in addition to the viral infection, a healthcare provider should evaluate a child who has a high fever, persistent cough, or earache. Because of a possible association with Reye's Syndrome (i.e., vomiting, liver problems and coma), salicylate-containing products (i.e., aspirin) are not recommended for control of fever.

How can the spread of these diseases be prevented?

Influenza vaccine is the primary method of preventing influenza and its severe complications. The vaccine should be given annually beginning at 6 months of age. Two doses should be given the first year the child receives the influenza vaccine.

Annual influenza vaccination is *recommended* for all children aged 6 months through age 18 with priority given to the following persons for influenza vaccine if influenza vaccine supplies are limited:

- Children 6 months to 18 years
- Pregnant women
- Persons aged 50 years old and older
- Persons of any age with certain chronic medical conditions
- Persons who live with or care for persons at high risk

Additional ways to prevent the spread of these diseases:

- Get adequate rest, good nutrition, plenty of fluids
- Avoid people who are sick
- Observe children for symptoms of coughing, sneezing, headache, fatigue, fever. Notify parent to pick child up
- Remind children if they sneeze or cough into their hand or tissue, they must properly dispose of the tissue and wash their hands

COMMON COLD & INFLUENZA (cont.)

- Runny noses and eyes should be promptly wiped, then wash their hands
- Disposable tissues should be used. Keep tissues available
- Toys that children put in their mouths and frequently used surfaces (e.g., tables) should be washed and disinfected at least once each day
- The childcare facility should have fresh air and be aired out completely once a day, even in the winter months

Who should be excluded?

Children should be excluded if they have a fever or are unable to participate in general activities. Exclusion is of little benefit since viruses are likely to spread.

Reportable?

No. Influenza is not reportable, but please notify the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496 of influenza outbreaks. The common cold is not reportable.



CONJUNCTIVITIS (Pink Eye)

Conjunctivitis is an infection of the eyes commonly known as “pink eye”. Conjunctivitis can be purulent or nonpurulent. It is most often caused by a virus (like those which cause the common cold), but can also be caused by bacteria, allergies or chemicals. The conjunctiva – the clear layer over the whites of the eyes – becomes pink and there may be tearing and discharge from the eyes. Eyes may be itchy or even painful. In the morning, the discharge may make the eyelids stick together. Conjunctivitis is a mild illness. Viral conjunctivitis will go away by itself in one to three weeks.

Who gets this disease?

Anyone can get it. Conjunctivitis is caused by a virus or bacterium and is highly contagious. Preschoolers and school-age children have it most often and can spread it to people taking care of them or to each other.

How is it spread?

Both viral and bacterial conjunctivitis spread by contact with discharge from the eye. Children often pass it along by rubbing their eyes and getting discharge on their hands and then:

- a) Touches another child's eye.
- b) Touches another child's hands. The second child then touches his/her eyes.
- c) Touches an object. Another child touches the object and then puts his/her hands into his/her eyes.

Staff washing, drying or wiping a child's face and then using the same washcloth/towel/paper towel/tissue on another child's face can also pass it along. Staff could also get eye discharge on their hands when wiping a child's eyes and then pass it along as outlined above.

The incubation period varies depending upon the cause whether it is viral or bacterial; symptoms may develop in 5 –12 days depending on the cause. (Bacterial 24-72 hours, viral 12 hours to 12 days).

How is it diagnosed and treated?

Signs and symptoms of purulent conjunctivitis are white or colored discharge from the eye, eye redness, eyelid swelling, eye pain, and sometime fever. It is often difficult to tell if the cause is bacterial or viral. Occasionally the doctor will examine the discharge under the microscope or culture it. Often an antibiotic eye medicine will be given because treatment of bacterial conjunctivitis shortens the length of symptoms and decreases infectiousness. There is not treatment for viral conjunctivitis; it will go away by itself but may last a week or more.

Signs and symptoms of nonpurulent conjunctivitis are clear watery discharge from the eye, without eye redness or pain or fever.

How can the spread of this disease be prevented?

1. Follow hand washing and center cleanliness guidelines.
2. Teach children to avoid rubbing their eyes
3. Keep children's eyes wiped free of discharge.
4. Always use disposable tissues/towels for wiping and washing. **Never** use the same tissue/towel for more than one child.
5. **Always wash your hands after wiping a child's eyes.**
6. Teach children to wash their hands after wiping their eyes.
7. Dispose of tissues/towels in lined, covered container kept away from food and childcare materials.

CONJUNCTIVITIS (Pink Eye) cont.

8. Be sure articles that may touch children's eyes (e.g., pillowcases, sheets, towels binoculars, prisms, toy cameras) are washed well with soap and hot water at least once daily.

Who should be excluded?

It is recommended that children and staff with purulent conjunctivitis be excluded from childcare until examined by a *healthcare provider* and approved for re-admission, with or without treatment. Children with nonpurulent conjunctivitis do not need to be excluded from childcare.

Reportable?

No. Conjunctivitis is not reportable by New Hampshire state law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



DIARRHEA (Infectious Diarrhea)

Diarrhea is defined as: 1) an increase in the number of stools over what is normal for that person, and 2) stools which are not formed (i.e., loose and watery and take the shape of the container they are in). (NOTE: Breast-fed babies may have stools that are normally not formed).

There are two (2) general types of diarrhea: infectious and non-infectious.

Infectious Diarrhea is caused by a virus, parasite, or bacterium. It can spread quickly from person-to-person, especially in daycare centers. Some of the causes of infectious diarrhea, such as Campylobacteriosis, shiga-toxin producing E. coli, giardiasis, salmonellosis and shigellosis, are discussed in their own fact sheets found in this document. There are other agents that can also cause infectious diarrhea in children. These include parasites (e.g., cryptosporidiosis, amoeba) other bacterial (e.g., yersinia) and other viruses (e.g., Rotavirus). Although these other disease-causing organisms are not discussed in detail, the general principles outlined in this section are applicable to prevent the spread of any of these germs.

Non-infectious Diarrhea can be caused by toxins (e.g., certain types of food poisoning), chronic diseases (e.g., cystic fibrosis) or antibiotics (e.g., ampicillin). Non-infectious diarrhea DOES NOT spread from person-to-person.

Who gets it?

Anyone can catch infectious diarrhea. It can spread especially quickly among babies and young children who are not toilet-trained or who may not wash their hands well after going to the bathroom. It can also easily spread to the adults taking care of them and helping them with diapering and toileting.

How is it spread?

The germs that can cause infectious diarrhea are spread by fecal-oral route.

How is it diagnosed and treated?

The germs can be diagnosed by stool cultures or by looking at stool under a microscope for eggs or parasites. (The healthcare provider will ask for a stool sample and send it to a laboratory for analysis). The physician will decide on appropriate treatment.

How can the spread of diarrhea be prevented?

Hand washing is the most important way to stop the spread. Specific methods for preventing the spread of infectious diarrhea are discussed in each fact sheet.

Who should be excluded?

Any person with diarrhea shall be excluded from food handling, from childcare agencies and from direct care of hospitalized or institutionalized patients until 48 hours after resolution of symptoms.. Children who have 2 or more stools above their normal amount should be excluded as it impedes the caregiver's ability to care for the children and maintain sanitary conditions. For diarrhea caused by a specific agent, see the related fact sheet to learn if exclusion is necessary.

Reportable?

Non-specific diarrhea is not reportable. Clusters of diarrhea illness in a facility should be reported to the Division of Public Health Services, Bureau of Infectious Disease and Control at (603) 271-4496.



DIPHTHERIA

Diphtheria is a potentially serious bacterial infection of the nose and throat.

Who gets this disease?

Diphtheria occurs primarily among unimmunized or inadequately immunized people.

How is it spread?

The bacteria are spread by direct contact with discharge from the nose, throat, skin, eyes, or from sores of infected persons. Articles or food contaminated with discharge can also spread infection.

What are the symptoms?

Diphtheria causes a sore throat and swollen tonsils, with a grayish covering and swollen glands in the neck. It can lead to severe throat swelling that can block breathing. The bacteria also produce a toxin (a type of poisonous substance) that can cause severe and permanent damage to the nervous system and heart.

What is the Treatment?

Diphtheria is treated primarily with an antitoxin, along with antibiotics. Antibiotics are also given to the carriers of the diphtheria (e.g., people who test positive for diphtheria but who are not sick). Individuals who have been in contact with an infected person and are not adequately vaccinated should receive a booster.

How can the spread of this disease be prevented?

The combination vaccine Diphtheria, Tetanus and acellular Pertussis (DTap), is **required** for both childcare and school attendance. The Advisory Committee on Immunization Practices (ACIP) recommends immunizing children against diphtheria, along with pertussis and tetanus, beginning as early as six weeks of age. The five dose series should be completed at 2 months, 4

months, 6 months, and 15-18 months, and 4-6 years of age.

Patients and carriers of diphtheria should receive appropriate treatment and not return to childcare until *two* (2) cultures from both the nose and throat (and from skin sores in cutaneous diphtheria), are negative for the bacteria. These cultures should be taken at least 24 hours apart and no sooner than 24 hours after finishing antibiotic treatment. Where culture is impractical, isolation may be ended after 14 days of appropriate treatment.

Who should be excluded?

Children and staff should be excluded until bacteriological examination proves them not to be carriers.

Reportable?

Yes, Diphtheria is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



E. COLI 0157:H7

E. coli 0157:H7 is an intestinal illness caused by a bacterium that can cause severe bloody diarrhea, anemia, and –in some cases- kidney failure.

Who gets this disease?

Anyone is susceptible to this particular category of E. coli 0157:H7, but it most seriously affects young children and the elderly.

How is it spread?

This bacterium lives in a small number of healthy cattle. When the infected animal is slaughtered, the meat can become contaminated. The bacteria may also contaminate raw milk by being present on the cow's udder.

E. coli 0157:H7 is spread by eating contaminated food – most often undercooked beef, especially undercooked ground beef. Contaminated meat looks and smells normal. Drinking unpasteurized milk and swimming in or drinking sewage-contaminated water can also cause infection.

An infected person having diarrhea can pass the bacteria from one person to another if hand-washing habits are not adequate. This is more likely to happen among toddlers who are not toilet trained.

Young children usually continue to shed the bacteria in their stool a week or two following their illness.

What are the symptoms?

They vary from mild diarrhea to a bloody diarrhea with severe abdominal cramps and little or no fever. Vomiting may occur late in the illness. A small percent may develop hemolytic uremic syndrome (HUS), a condition that destroys the red blood cells and causes kidney failure. This is more likely to occur in children under five years of age and the elderly, and may lead to death.

How soon do symptoms appear?

Symptoms appear 12-72 hours after exposure with the average being 48 hours.

Can a person have this disease without knowing it?

Yes. The organism is identified through stool culture testing. Usually symptoms disappear in a few days but the bacteria can remain in the intestinal tract for several weeks.

What is the treatment?

Seek medical help for identification of the organism. Usually the person is treated for diarrhea dehydration with fluid replacement.

How can the spread of this disease be prevented?

1. Wash hands thoroughly after diapering and using the bathroom.
2. Avoid eating undercooked beef, especially hamburger.
3. Avoid drinking from unknown water sources,, raw milk, and unpasteurized apple juice.
4. Teach children good hand washing techniques

Who should be excluded?

Children who are infected with this bacterium will be excluded from childcare while they are symptomatic. Infected adults should be excluded from childcare centers, food handling, and direct care healthcare, until their stool cultures are free of E. coli 0157:H7 on two (2) consecutive specimens collected not less than 24-hours apart. If antibiotics have been given, the initial cultures should be obtained at least 48-hours after the last dose.

Reportable?

Yes. E. coli 0157:H7 is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



EASTERN EQUINE ENCEPHALITIS

What is eastern equine encephalitis?

Eastern equine encephalitis (EEE) is an uncommon but serious disease caused by EEE virus. EEE is an arbovirus (short for *arthropod-borne*, meaning spread by insects). The virus can be transmitted to horses, other animals, and in rare cases, people.

How do people get eastern equine encephalitis?

The EEE virus grows in birds that live in freshwater swamps. The virus has a complex life cycle involving birds and a specific type of mosquito, called *Culiseta melanura*. This particular mosquito does not bite people. Sometimes though, the virus can escape from its marsh habitat by means of other mosquitoes that feed on both birds and mammals. These mosquitoes can transmit the virus to animals and people.

What are the symptoms of EEE?

Infection can cause a range of illnesses. Most people have no symptoms; others get only a mild flu-like illness with fever, headache, and sore throat. For people with infection of the central nervous system, a sudden high fever (103 to 106°), severe headache, and stiff neck can be followed quickly by seizures and coma. About one third of these patients die from the disease. Of those that survive, many suffer permanent brain damage and require lifetime institutional care.

How soon after exposure do symptoms appear?

Symptoms of EEE usually appear 4 to 10 days after the bite of an infected mosquito.

How is eastern equine encephalitis diagnosed?

Diagnosis is based on tests of blood or spinal fluid.

Who is at risk for eastern equine encephalitis?

Anyone can get EEE, but some people are at increased risk, such as people living in or visiting areas where the disease is common and people who work outside or participate in outdoor recreational activities in areas where the disease is common. Children and those over age 50 are more susceptible to the disease. The risk of getting EEE is highest from late July through September.

What is the treatment for eastern equine encephalitis?

There is no specific treatment for eastern equine encephalitis. Antibiotics are not effective against viruses, and no effective anti-viral drugs have yet been discovered. Care of the patient centers around treatment of symptoms and complications.

How common is eastern equine encephalitis?

EEE is a rare disease. An average of 6 cases are reported in the United States in most years. There is concern, however, that EEE is re-emerging. In NH, EEE has been found in horses, mosquitoes and several species of birds. In 2014, 3 cases of EEE were reported in humans in NH.

How can eastern equine encephalitis be prevented?

A vaccine is available for horses, but not for humans. Prevention of the disease centers around controlling mosquitoes and on individual action to avoid mosquito bites. To avoid being bitten by the mosquitoes that transmits EEE:

- If possible, stay inside between dusk and dawn, when mosquitoes are most active
- When outside between dusk and dawn, wear long pants and long-sleeved shirts

EASTERN EQUINE ENCEPHALITIS (cont.)

- Use an insect repellent with DEET or Picaridin according to the manufacturer's directions when outside. Oil of lemon eucalyptus and IR3535 have been found to provide protection similar to repellents with low concentrations of DEET
- Clothing can be treated with permethrin according to the manufacturer's directions
- When possible wearing long sleeves and pants while outside
- Put screens on windows and make sure they do not have holes
- Eliminate standing water and other mosquito breeding locations from your property. Do not alter natural water bodies. The management of ponds and wetlands is regulated by the Department of Environmental Services and any alterations require a permit before work may begin

For more information about eastern equine encephalitis, call the New Hampshire Department of Health & Human Services, Bureau of Infectious Disease Control at (603) 271-4496 or visit our website at www.dhhs.nh.gov or the Centers for Disease Control and Prevention at www.cdc.gov.



FIFTH DISEASE

Fifth disease is an illness caused by a virus called *human parvovirus B19*. Although people may be asymptomatic with the illness, most children with it develop a facial rash (i.e., “slapped check” appearance) and a lace-like rash on the trunk and extremities. The rash may reappear for several weeks following exposure to non-specific stimuli such as sunlight, change in temperature or emotional stress.

Except for the rash, the patient is typically otherwise well: but some give a history of mild general symptoms one to four days before rash onset. Fever, sore throat or pain and swelling in the joints may also occur.

Who gets this disease?

Although most commonly recognized in children, anyone is susceptible. Studies indicate previous infection with Fifth disease correlates with a lower risk of a second infection. Outbreaks in schools often begin in late winter or early spring and may continue until the school year is over.

In the U.S. about 50% of the adult population are already immune to the disease. Some studies indicate the pregnant women who are exposed to Fifth disease and subsequently develop infection may have an increased risk for fetal death. However, this risk is felt to be extremely low. There is no evidence that the infection during pregnancy causes fetal malformations (i.e., birth defects). Pregnant childcare workers should contact their obstetricians.

How is it spread?

The virus that causes Fifth disease has been found in the respiratory secretions of patients and is, therefore, most likely spread by direct person-to-person contact through the respiratory route.

How soon do symptoms appear?

It takes from 4-21 days after exposure to develop the characteristic rash illness of Fifth disease. People with the rash are past the period of infectiousness to others. The highest risk of transmitting the Fifth disease virus to others is felt to occur **before** the rash develops.

How is it diagnosed and treated?

A healthcare provider based on the characteristic rash and any other accompanying symptoms may diagnose Fifth disease. There is no specific treatment for Fifth disease.

How can the spread of this disease be prevented?

1. Because transmission of the Fifth disease virus usually occurs before the rash develops – when a child may seem well or has a non-specific illness – excluding children with the Fifth disease rash is of no proven value. However, **it is very important** for a healthcare provider to rule out other rash-causing illnesses (e.g., measles, chickenpox) that may require exclusion from childcare.
2. Transmission of infection can be lessened by routine hygienic practices for control of respiratory infections, which include hand washing and disposal of facial tissues containing respiratory secretions.
3. People with particular concerns about contracting Fifth disease (e.g., pregnant women) should consult their healthcare providers.

FIFTH DISEASE (cont.)

Who should be excluded?

Children with Fifth disease MAY attend daycare or school, as they are not contagious after onset of rash. Routine exclusion of pregnant women from the workplace where Fifth disease is occurring is not recommended.

Reportable?

No, Fifth disease is not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



GIARDIASIS

Giardiasis is an intestinal illness caused by *Giardia lamblia*, a microscopic parasite. The infectious form of the parasite is passed in the stool of an infected individual.

Who gets this disease?

Anyone can get Giardiasis. It is very common in childcare centers; especially those that have children under age three. It spreads easily among these children to their caretakers and families.

How is it spread?

The most common way a person becomes infected with giardia in the childcare setting is by the fecal-oral route. Eating food contaminated with the parasite may also infect a person. Food may become contaminated when the person preparing the food has giardiasis and has some infected stool on his/her hands because of poor hand washing habits.

Additionally, a person may become infected by drinking water that is contaminated with the parasite. Streams, ponds and springs in New Hampshire are frequently contaminated with giardiasis parasites. Water can also be contaminated with giardia when sewage enters the drinking water supply.

What are the symptoms?

The most common symptoms of a giardia infection are diarrhea, abdominal pain, cramping, decreased appetite and excess gas. There is usually no fever or vomiting. The diarrhea may last up to several months and can cause significant weight loss.

How soon do the symptoms appear?

The symptoms appear within 5-25 days or longer. The average incubation period is 1-3 weeks.

Can a person have this disease without knowing it?

Yes. Some people may have very mild infections that are not serious enough to cause them to go to a doctor. They may not feel sick at all. In some cases of giardia infection, parasites can be found in the stool from several days to several months after the symptoms have stopped.

What is the treatment?

Several drugs are effective in killing the giardia parasite. Treatment is usually necessary for persons with diarrhea.

How can the spread of this disease be prevented?

1. Wash hands thoroughly after using the toilet *and diapering a child*.
2. Wash hands thoroughly before preparing food.
3. Keep children who have diarrhea at home.
4. Staff with stool positive for giardia should not prepare food or feed children.

Who should be excluded?

Any person with diarrhea shall be excluded from food handling, from childcare agencies and from direct care of hospitalized or institutionalized patients until 48 hours after resolution of symptoms

Reportable?

Yes, giardiasis is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



HAEMOPHILUS INFLUENZAE

TYPE-B (aka Hib Disease)

Haemophilus influenzae type-b (Hib) is a bacterium that causes serious, sometimes fatal illnesses, most often in young children. Some of the diseases it can cause include: meningitis (an infection of the coverings of the brain), epiglottitis (an infection of the upper throat and entrance of the windpipe), cellulitis (an infection of the deep tissues, especially of the face and neck), septic arthritis (an infection and swelling of the joints), pneumonia (an infection of the lung), and bacteremia (blood stream) infections.

Who gets this disease?

This illness is primarily seen in unimmunized children under four years of age. Children under age two are most susceptible because their immune systems are not yet able to fight the bacteria. Rarely, older children and adults may develop infection.

It appears that in a setting such as the household or childcare facility – where there are young children and everyone is in close contact – there is an increased risk of one of these contacts developing Hib infection following a first case.

How is it spread?

The bacterium is passed from person-to-person by breathing in infected droplets of nose or throat fluids scattered in the air or by direct contact with these infected secretions. The bacteria cannot live on environmental surfaces – they quickly shrivel and die.

Like *meningococcus*, some people can “carry” this bacterium for a period of time without it causing illness. However, a carrier may spread the bacteria to another person who may then become ill. In a household or childcare center in which Hib infection has occurred, the number of

persons with nose or throat carriage is greatly increased; thus, risk of serious disease is also increased.

How is it diagnosed and treated?

Illnesses caused by *Haemophilus influenzae* type-b are diagnosed by signs and symptoms and by examining the blood and/or spinal fluid for white blood cells and bacteria. Spinal fluid is obtained by a physician performing a lumbar puncture (i.e., spinal tap).

How can the spread of this disease be prevented?

1. If a person develops an illness caused by Hib, close contacts of this patient (including family members and persons having intimate contact such as sleeping together, hugging and kissing) are at increased risk of developing the illness. In this situation a physician may recommend: 1) carefully watching for early symptoms of illness caused by *Haemophilus influenzae* and/or 2) taking a preventive antibiotic to eliminate the bacteria from the body before disease begins.
2. Any child or adult contact that develops symptoms consistent with Hib infection requires evaluation by a health care provider **regardless** of whether or not this person has taken preventive antibiotics.
3. A vaccination against Hib infection is available and the Advisory Committee on Immunization Practices (ACIP) recommends that all children begin the vaccine series against Hib infection at two months of age. The four dose series should be completed at 2 months, 4 months, 6 months, and 12-15 months.

HAEMOPHILUS INFLUENZA TYPE-B (cont.)

4. For unvaccinated children age 15 months or older only 1 dose of the Hib vaccine is required.
5. The Hib vaccine is **not** required for children over age 5.
6. Children in childcare aged 3-60 months are **required** to have age appropriate Hib vaccination in order to attend. Parents with specific questions about the Hib vaccine and their child should contact their child's physician. The vaccination is **not required** for school entry.
7. Notify parents or guardians about the occurrence of this illness and urge them to contact their physicians for specific medical care advice.
8. Contact the Bureau of Infectious Disease Control for recommendations about preventing the spread of this illness and assistance in implementing them.

Who should be excluded?

Children and staff who are ill with Hib infection should be excluded while they are ill and until 24 hours of antibiotic therapy has been completed.

Reportable?

Yes, *Haemophilus influenzae* infections are reportable by New Hampshire law to the Bureau of Infectious Disease Control at (603) 271-4496.



HAND, FOOT & MOUTH DISEASE

Hand, foot and mouth disease is a self-limited infection caused by the *Coxsackie A16* virus and enterovirus 71. Vesicular lesions (i.e., blisters) may appear in the mouth, on the sides of the tongue, inside the cheek and on the gums. Lesions may also occur on the palms, fingers, soles and buttocks. Most lesions persist for 7-10 days. A low-grade fever may accompany the illness for one to two days. The infection usually goes away without any serious complications.

Who gets this disease?

The infection is seen primarily in children under 10 years old but may also occur in adults. Outbreaks of hand, foot and mouth disease among groups of children in nursery schools and childcare centers during the summer and early fall are common.

How is it spread?

Having direct contact with nose and throat secretions of an infected person may spread the infection. It may also be spread by the aerosol droplet route (e.g., sneezing, coughing).

Additionally, the virus may also be spread by having contact with infected persons who may not seem sick (aka carriers) but are able to spread the infection since the virus may persist in the stool for several weeks after the acute illness is over.

What are the symptoms?

Vesicular lesions may occur in the mouth, on the sides of the tongue, inside the cheek and on the gums. Lesions also occur on the palms, fingers, soles and buttocks. Most lesions persist for 7-10 days. A low-grade fever may accompany the illness for one to two days.

How soon do symptoms appear?

People who are going to contract the infection usually do so three to six days after exposure.

Can a person have this disease without knowing it?

Yes. Infected persons who may not seem sick are able to spread infection. The virus may persist in the stool for several weeks after the acute illness is over.

How is it diagnosed and treated?

A healthcare provider may diagnose hand, foot and mouth disease based on clinical signs and symptoms. There is no specific treatment.

How can the spread of this disease be prevented?

1. Wash your hands thoroughly after using the toilet *and diapering a child*.
2. Wash hands thoroughly after handling respiratory discharges, stool and soiled articles of infected persons.
3. Discourage children from putting toys and other objects in their mouths.
4. Clean and disinfect toys and contaminated areas (e.g., diapering area, potty chairs, toilets) daily and when soiled.
5. Do not allow children to share drinking cups or eating utensils.
6. Teach children to sneeze and cough into a tissue, or into their elbow and away from other people.
7. Dispose of tissues and diapers properly; wash hands after sneezing, coughing, changing diapers and using the toilets.
8. Children may attend childcare if they feel well enough even if lesions are still present. In this situation, childcare staff should be especially careful to adhere to steps 1-7 above.
9. Grouping of symptomatic individuals, where practical, might be considered.

HAND, FOOT & MOUTH DISEASE (cont.)

Who should be excluded?

Exclusion from a childcare facility or school is not recommended. Special attention to hand washing after toileting is required.

Reportable?

No. Hand, foot and mouth disease are not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



HEPATITIS A

Hepatitis A is an infection of the liver caused by the hepatitis A virus.

Who gets this disease?

Anyone can. It can spread quickly in groups of small children who are not yet toilet-trained and who cannot wash their own hands well.

How is it spread?

Hepatitis A virus is passed out of the body in the stool and is spread by the fecal-oral route, just like infectious diarrhea. Contact with stool-contaminated food, drink or environment surfaces (e.g., toilet seat, changing table) can spread the infection.

What are the symptoms?

The symptoms vary greatly, ranging from none at all to severe illness. Early symptoms can include loss of appetite, nausea, aching, fever, and stomachache. Later signs can include dark colored urine, light colored stools and jaundice (i.e., yellowing of white of eyes, eyes or skin). (Note: jaundice occurs more often among adults than children). These symptoms usually last from one to two weeks, although some adults may be sick for several months.

How soon do symptoms appear?

After the hepatitis A virus is ingested, it is between 15-50 days before illness begins. Most commonly, it begins within 25-30 days.

Can a person have this disease without knowing it?

Yes. This is especially important in the childcare setting because most young children with hepatitis A do not become ill. Children with hepatitis A without symptoms who are in diapers could easily pass the virus to unsuspecting childcare facility staff and family members.

In addition, people with hepatitis A are most likely to spread the disease to others during a period extending from 14 days before developing symptoms to one week after symptoms develop. This means that a person may be infectious to others before even realizing he or she is ill.

What is the treatment?

There is no treatment that cures hepatitis A. However, there are two shots available to help prevent illness in people exposed to patients with hepatitis A. These protective shots – either hepatitis A vaccine or Hepatitis A immune globulin (IG) – must be given within two weeks of a person's exposure to hepatitis A in order for it to be helpful. A person's healthcare provider and the New Hampshire Division of Public Health Services, Bureau of Infectious Disease Control will assist in making recommendations about administering hepatitis A vaccine or IG to contacts.

How can the spread of this disease be prevented?

1. Hepatitis A vaccine is *recommended* for children 12-23 months. The Advisory Committee on Immunization Practices (ACIP), recommends immunizing children against Hepatitis A.
2. The two dose series should be given at 12 and 18 months of age. Children who are not vaccinated by age 2 years can be vaccinated at subsequent visits.
3. Wash hands thoroughly after using the toilet.
4. Wash hands thoroughly after diapering children.
5. Wash hands thoroughly before preparing food.

HEPATITIS A (cont.)

6. Clean toilet facilities thoroughly and wash hands afterward.
7. Discourage children from putting non-food items into their mouths since these items may be a source of the virus.

Who should be excluded?

Persons with hepatitis A (or suspected hepatitis A) should be excluded from daycare centers, food-handling occupations, and direct care of hospitalized and institutionalized patients for one week after the onset of symptoms (jaundice) or hepatitis A has been ruled out. A Public Health Professional will advise individuals regarding specific recommendations.

Reportable?

Yes, hepatitis A is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.

It is important that cases associated with a childcare center be reported as soon as possible. A Public Health Professional will give specific recommendations for immunization of the people exposed.



HEPATITIS B

Hepatitis B is a disease primarily of the liver caused by the hepatitis B virus.

Who gets this disease?

In the United States, hepatitis B is primarily a disease of young adults. Children can be infected during childbirth if the mother has the virus in her blood.

How is it spread?

Only blood, semen, vaginal fluids and saliva have been shown to be infectious. Most cases are transmitted by blood (i.e., getting blood from an infected person into the open skin or the eye, nose or mouth of another person), or through sexual contact. Note: salivary transmission has rarely occurred and generally through bites. The Hepatitis virus can live on the surface of objects for 7 days or more.

What are the signs and symptoms?

Hepatitis B signs and symptoms include loss of appetite, tiredness, abdominal pain, nausea, vomiting, and sometimes rash or joint pain. Jaundice (yellowing of eyes or skin), may be present in adults but it is often absent in children. Symptoms vary from none at all to severe illness.

Can a person have this disease without knowing it?

Yes. Some people may not have the illness serious enough to seek medical attention. People who contract hepatitis B may become chronic carriers of the virus and continue to be infectious for life especially if they are infected as young children.

What is the treatment?

No medical treatment is effective for acute hepatitis B. Most adults recover from hepatitis B without intervention.

How can the spread of this disease be prevented?

1. Hepatitis B vaccine is **required** for all children in childcare and school attendance for all children born after January 1, 1993. The Advisory Committee on Immunization Practices (ACIP), recommends immunizing children against hepatitis B. The three dose series should be completed at birth, 1-2 months of age, and 6-18 months of age. (Please see Immunization requirements page for adult immunization recommendations).
2. Standard precautions should be in effect at all times. Disposable gloves should be used when dealing with any bodily fluids (blood/body fluid-soiled items, surfaces or clothing), when administering first aid (nose bleeds, cuts, scrapes, etc).
3. Disinfect surfaces and objects that are contaminated with blood or other body fluids containing visible blood. One-part bleach to 10 parts of water can be used as a disinfectant for cleaning contaminated surfaces. The bleach mixture must be changed daily.
4. Wash hands immediately after contact with blood or other body fluids containing visible blood, even if gloves have been worn.

Who should be excluded?

Children and staff who have the hepatitis B virus in their blood may attend and/or work in childcare and schools. Hepatitis B carrier children with risk factors (e.g., biting, frequent scratching, generalized dermatitis) should be assessed for exclusion on an individual basis.

Reportable?

Yes. Hepatitis B is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



HIV/AIDS

The human immunodeficiency virus – or HIV for short – is the name of the virus that causes the condition known as AIDS (Acquired Immunodeficiency Syndrome). HIV attacks the body's immune system and makes it unable to fight-off certain infections and cancers.

How do children get HIV?

The primary method that children become infected with HIV is through maternal transmission (i.e., the transfer of HIV) from mother-to-child during pregnancy, childbirth or breastfeeding. If medical treatment is used in combination with obstetric care and an elective caesarian section, transmission is reduced to an only 2% chance of infant transmission.

Can HIV be spread in childcare settings?

No documented cases of HIV infection have been traced to kissing, biting, playing with an infected child, or sharing food, eating utensils, toys or bathroom facilities.

Sexual transmission of HIV

With individuals that are positive, HIV is found in blood, mother's milk, semen and vaginal secretions. HIV transmission as a result of anal, oral, or vaginal intercourse has been well documented. HIV infection can also occur as a result of sexual abuse in children.

How is HIV diagnosed?

For adults rapid HIV tests are available and are used in NH. To confirm a rapid test, people should still receive a blood test. A blood test involves testing for the HIV antibody. However, use of HIV-antibody testing in children less than 18 months old may be confounded by the presence of maternally acquired HIV antibodies. Other laboratory tests such as viral culture,

nucleic acid detection or antigen test are useful in determining HIV infection in these children.

What are the symptoms?

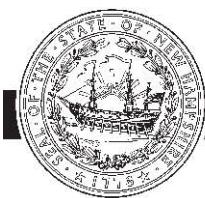
There are a wide range of signs and symptoms seen in HIV-infected children. Symptoms may include failure to thrive, weight loss, fever, mild or severe developmental delay, neurologic deterioration and severe, prolonged or recurrent infections. In general, the interval from HIV infection to the onset of symptoms is shorter in children than adults due to the developing and immature immune system. For this reason, HIV infected women should seek medical care and treatment early on in a pregnancy.

Should children with HIV be enrolled in childcare?

Yes. Studies continue to show **no evidence of transmission** of HIV within the childcare setting. HIV infected children should therefore be enrolled in daycare if their health, neurologic development, behavior and immune status are appropriate. The decision as to whether or not a child with known HIV infection may be enrolled in childcare should be made on a case-by-case basis. The decision is best made by the child's healthcare provider.

Reportable?

Yes, both HIV infection and AIDS are reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



IMPETIGO

Impetigo is a very common skin infection caused by *streptococcal* or *staphylococcal* bacteria. It may start at an injured spot on the skin, such as an insect bite, cut or burn. Bacteria can easily be spread by the person's hands to other areas of the body. In children, the face is often involved. The rash appears red, is elevated and may secrete fluid. The rash may have a flat honey-colored crust. The area may be itchy. The staph bacteria can cause blisters that break easily and leave raw red skin exposed. Impetigo caused by strep bacteria can be associated in very rare circumstances with the development of a kidney disease. Impetigo is most commonly seen in the warm summer months.

Who gets this disease?

Ordinarily the skin protects the body from bacteria. When the skin is broken (i.e., cut, scraped, bitten, scratched), bacteria can get under the surface, multiply and cause an infection.

Children – who typically touch everything and wash only under duress – are likely to have multiple cuts and scrapes on their bodies at all times, which make them more vulnerable to impetigo than adults. Most children have impetigo at least a few times during their growing up years; adults can get it as well.

How is it spread?

The bacteria are under, on and in the infected skin, and they are shed into the secretions and crusts. They can be spread to another person who directly touches the infected skin or a surface contaminated by the secretions or crusts. If the bacteria then gets under the top protective skin layer of the second person, they multiply and cause infection.

The incubation period for this disease is variable: Staph infections 4-10 days, Strep infections 1-3 days.

How is it diagnosed and treated?

Most of the time, impetigo can be diagnosed by the way it looks. Bacterial cultures are not usually needed. Strep and staph impetigo may look the same, although staph tends to cause blisters more often.

How can the spread of this disease be prevented?

1. If children hurt themselves and cause breaks in the skin, wash the area thoroughly with soap and water and dry carefully.
2. If you think a child may have impetigo:
 - a. Wash the rash with soap and water and cover it loosely with gauze, a bandage, or clothing.
 - b. Be sure anyone who touches the rash wears disposable gloves carefully.
 - c. Dispose of any soiled tissues, bandages and gloves carefully. Keep any dirty clothing in a plastic bag and give to the parent for laundering at home.
3. Ask the parents to have the child seen by his/her healthcare provider. Keep children's finger nails short as to prevent damage from scratching.

Who should be excluded?

It is recommended that untreated children and staff be excluded from the childcare facility until 24-hours after they have begun treatment.

Reportable?

No. Impetigo is not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



LYME DISEASE

Lyme disease is caused by a bacterium, *Borrelia burgdorferi*. In New England it is transmitted by a certain type of tick, commonly called the deer tick or black-legged tick (scientific name: *Ixodes scapularis*). Lyme disease may cause symptoms affecting the skin, nervous system, heart and/or joints of an individual. The NH Department of Health & Health Services made Lyme disease reportable in October 1990. During recent years, the incidence of Lyme disease has increased in New Hampshire.

Who gets this disease?

The bacterium that causes Lyme disease is transmitted within the natural cycle of the deer tick, which feed on animals such as mice, opossums, dogs and deer. Certain stages of the tick – especially the nymph and adult – can feed on a human; if the tick is infected with the bacteria it can cause infection in people. Cases of Lyme disease have also been reported in domestic animals. There is no evidence that Lyme disease is transmitted from person to person. For example, a person cannot get infected from touching, kissing, or having sex with a person who has Lyme disease. Lyme disease acquired during pregnancy may lead to infection of the placenta and possible stillbirth. However, no negative effects on the fetus have been found when the mother receives appropriate antibiotic treatment. There are no reports of Lyme disease transmission from breast milk.

People who spend time in wooded or grassy areas, including areas around the home, are at greater risk of Lyme disease. Although persons of all ages and gender are susceptible to Lyme disease, it is most common among children aged 5-9 and adults aged 55-59. Most cases of Lyme disease occur between April and October. Current data indicates that it is possible for someone to get Lyme disease more than once.

What are the symptoms?

The illness usually occurs during the summer months and generally starts as a large circular reddish expanding rash around or near the site of the tick bite. (NOTE: In some cases, a rash may not occur). Multiple rash sites may occur. During the rash stage, or occasionally prior to the rash, other symptoms such as fever, headache, fatigue, stiff neck and muscle and/or joint pain may be present. These may last for several weeks. If left untreated – within a few weeks to months after the rash onset – complications such as meningitis and heart abnormalities may occur and other body systems may be affected. Swelling and pain in the large joints may recur over many months or years.

How soon do symptoms appear?

Symptoms usually begin within a month of a tick bite, generally 3-32 days.

What is the treatment?

Current therapy includes the use of antibiotics. Early diagnosis improves the outcome of treatment.

How can the spread of this disease be prevented?

Special precautions to prevent exposure to ticks should be used. Apply insect repellent containing greater than 20% DEET, on clothes and exposed skin. Clothes (especially pants, socks, and shoes) may be treated with permethrin, which kills ticks on contact. Permethrin can also be used on tents and some camping gear. **Do not use permethrin directly on skin.** Always follow the manufacturer's instructions when applying any repellents. Long pants and long sleeves help keep ticks off skin. Pant legs may be tucked into socks or boots and shirt into pants to keep ticks on the outside of clothing. After being outdoors, wash and dry clothing at a high temperature to kill any

LYME DISEASE (cont.)

ticks that may remain on clothing. Perform tick checks after being outdoors. Early removal of ticks can reduce the risk of infection. If a tick is attached to the skin for less than 24 hours, the chance of getting Lyme disease is extremely small. Landscaping to reduce tick habitats and prevent deer and rodents around the home may be helpful.

How should a tick be removed?

To remove an attached tick, grasp it with one of the tick-removal tools found in stores or fine-tipped tweezers as close as possible to the attachment site (i.e., skin) and pull upward and out with a firm and steady pressure.

Do not handle the tick with bare hands, if using your fingers to remove a tick be sure to use a disposable towel when removing the tick. Be careful not to squeeze, crush, or puncture the body of the tick, which may contain infectious fluids. After removing the tick, thoroughly cleanse the area with an antiseptic. Seek medical attention if there is a concern about incomplete tick removal.

Do not attempt to remove ticks by using Vaseline, lit cigarettes, or other home remedies; doing so may actually increase the chances of contracting a tick-borne disease.

Who should be excluded?

Exclusion is not necessary since the disease is not spread from person-to-person.

Reportable?

Yes. Lyme disease is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



MEASLES

Measles (aka, rubeola, red measles or hard measles) is a very communicable viral illness that can be prevented by immunization. Usually it causes a rash, high fever, cough, runny nose and watery eyes. The disease lasts one to two weeks. Measles may be complicated by an ear infection or pneumonia. One out of every 1,000 children who gets measles develops an inflammation of the brain (i.e., encephalitis). Encephalitis can lead to convulsions, deafness or mental retardation. Approximately one child in every 10,000 who gets measles dies from it.

Who gets this disease?

Measles cases are generally limited to three groups: 1) children less than 15 months of age (who are too young to have been immunized), 2) those over 15 months of age but remain unvaccinated and 3) adolescents and young adults who may have received an earlier ineffective measles vaccine prior to 1968 OR graduated from school prior to the mandatory measles vaccination law OR who have received only one dose of live virus measles vaccine. Adults born prior to 1957 are generally considered to be immune against measles.

How is it spread?

Susceptible individuals spread measles by large infectious droplets or direct contact with the nasal or throat secretions of infected persons. Inhaling air that has tiny infectious droplets from sneezes and coughs also can spread it. **Measles is one of the most readily transmissible communicable diseases.** The communicable period is greatest prior to or just after rash onset.

What are the symptoms?

The first signs and symptoms of measles – which appear approximately 10-days after exposure – are similar to the common cold: cough, runny nose, fever greater than can reach as high as 103-105 degrees Fahrenheit, and red and watery eyes. After these cold-like symptoms a rash develops, typically beginning on the face and then spreading downward over the entire body. This rash lasts 4-10 days. Infected persons may also experience loss of appetite or diarrhea.

Infected persons are contagious from the appearance of the first cold symptom to four days after the appearance of the rash. A small percentage of immunized children may become infected if their bodies fail to respond adequately to the vaccine.

How can the spread of this disease be prevented?

The Advisory Committee on Immunization Practices (ACIP) recommends that children be immunized against measles between 12 to 15 months of age. Children who are immunized before 12 months of age need to be re-immunized.

Children 15 months and older are **required** to have one dose of measles vaccine for daycare and school admittance. A second dose of measles vaccine is **required** between 4-6 years of age.

Who should be excluded?

Children and staff with measles shall be excluded from the school or work for at least four days after the appearance of the rash. If children are unimmunized for medical, religious or other reasons they should be excluded for at least 2 weeks after the onset of the rash in the last case of measles reported in the child care setting.

MEASLES (cont.)

Reportable?

Yes. Measles is reportable immediately by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease and Control at (603) 271-4496.



MENINGOCOCCAL ILLNESS

Meningococcal Illnesses are caused by a bacterium called *Neisseria meningitidis* (*N. meningitidis*) and are serious, sometimes fatal illnesses. The most common illness is meningitis, an infection of the coverings of the brain. Meningitis caused by *N. meningitidis* must be treated immediately with hospitalization and IV (intravenous) antibiotics. The disease usually starts suddenly with fever, chills, and lethargy (i.e., a feeling of tiredness) and a rash with fine red "freckles" or purple splotches. With meningitis, older children and adults may complain of severe headache, neck pain and neck stiffness. In younger children, unusual irritability, poor appetite, excessive and high-pitched crying, vomiting and fever may be seen.

Who gets this disease?

Meningococcal illnesses affect children less than 5 years primarily affecting infants less than 24 months. It peaks again in adolescents 16-21 years of age. There is a high incidence *N. meningitidis* with people living in crowded living conditions such as barracks and institutions. Freshman college students living in dormitories have a higher incidence than other college students not living in dorms. This illness can affect any age group.

How is it spread?

The bacterium is passed from person to person when they are in very close contact. It is spread through infectious droplets of respiratory tract secretions (e.g., sneezing, coughing, nasal discharge, saliva). It can also be passed if people touch infected secretions then put their hands in their noses, eyes or mouths. However, the bacteria cannot live on environmental surfaces – they quickly shrivel and die.

People can carry the germs, without knowing it, in their noses, mouths or throats without ever getting sick themselves. This is called "carrying" the germ or being a "carrier". The germs can be spread from carriers to other people who may then develop a meningococcal illness. Obviously, sick people can also pass the germs on.

The time from exposure to illness can be from 2-10 days, but it is usually one to four days. After one infection has occurred in a facility, there will be more than the usual number of people carrying the germ, so the risk of spread and serious disease becomes greater.

How is it diagnosed and treated?

Meningococcal infections are diagnosed by signs and symptoms and by examining a sample of blood and/or spinal fluid for white blood cells and bacteria. Spinal fluid is obtained by a physician, who performs a lumbar puncture (i.e., spinal tap).

People with these infections almost always require hospitalization and are treated with antibiotics for 5-7 days.

How can the spread of this disease be prevented?

1. Meningitis Conjugate Vaccine is recommended for all children 11-12 years of age. It is also recommended for all children 13-18 years of age who have not been previously vaccinated. Unvaccinated college freshmen living in a dormitory should be vaccinated.
2. Meningitis Quadrivalent vaccine is available for children 2 years old and older.
3. If a person develops a meningococcal illness in a childcare center, all parents and staff must be notified immediately.

MENINGOCOCCAL ILLNESS (cont.)

4. If a person develops a meningococcal illness, close contacts of this patient (including family members and person having intimate contact such as sleeping together, hugging and kissing) are at increased risk of developing the illness. In this situation, a physician or public health professional may recommend: 1) watching for early symptoms of meningococcal illness, and/or 2) taking a preventive antibiotic to eliminate the bacteria from the body before disease begins.
5. Any child or adult who is a close contact and who develops symptoms such as fever or headache require prompt evaluation by a healthcare provider **regardless** of whether or not this person has taken the preventive antibiotic.
6. Monitor the situation closely for two to three weeks. Make sure all ill children are seen by their doctors and that you are notified if another person develops meningococcal disease.
7. Notify parents or guardians about the occurrence of this illness and urge them to contact their *healthcare provider* for specific medical advice.
8. Childcare centers should contact the NH Department of Health & Human Services, Bureau of Infectious Disease and Control for recommendations about preventing spread of this illness and for assistance in implementing them.

Who should be excluded?

Children with meningococcal disease are too ill to attend childcare.

Reportable?

Yes. Meningococcal illnesses are reportable by New Hampshire law to the NH Department of Health & Human Services, Bureau of Infectious Disease and Control at (603) 271-4496.



MRSA SKIN INFECTIONS

A frequent cause of skin infections is a bacteria called *Staphylococcus aureus* (Staph). Most of these skin infections are minor. However, staph bacteria can also cause more serious infections such as pneumonia and bloodstream infections. Some staph bacteria are resistant to certain antibiotics and are known as MRSA (methicillin-resistant *Staphylococcus aureus*).

What is a MRSA skin infection?

A MRSA skin infection can be a pimple, rash, boil, or an open wound. MRSA is often misdiagnosed as spider bites. MRSA bacteria are commonly found on the skin of healthy persons. MRSA infections often begin with an injury to the skin. Symptoms of MRSA infection include redness, warmth, swelling, tenderness of the skin, and boils or blisters. Sometimes it does not cause any problems; sometimes it causes minor infections, such as pimples or boils. If left untreated, it can cause serious infections.

How do MRSA skin infections spread?

MRSA lives on skin and survives on objects for 24 hours or more. MRSA can rub off on the skin of an infected person onto the skin of another person during rigorous skin-to-skin contact. Or, the MRSA bacteria can come off of the infected skin of a person onto a shared object, and get onto the skin of the next person who uses it. Examples of commonly shared objects include towels, soap, razors and athletic equipment.

How can I prevent myself or my family members from getting infected?

Wash your hands with soap and warm water. Keep cuts and scrapes clean with soap and water. Avoid skin contact and sharing personal items with anyone you suspect could have a MRSA skin infection. When using protective gloves to treat the infected area, remove and dispose of them

properly; wash your hands with soap and water. Do not share personal items with other persons.

What should I do if I think I have a skin infection?

Consult your healthcare provider as soon as possible if you think you have a skin infection. Early treatment can help you prevent the infection from getting worse. Be sure to follow directions from your doctor or healthcare provider closely, even when you start to feel better. Not taking all of your antibiotics leads to stronger, antibiotic-resistant bacteria.

If my healthcare provider told me that I have a MRSA skin infection, how do I keep others from getting infected?

- Keep the infected area covered with clean, dry bandages. Pus from infected wounds is very infectious.
- Wash your hands frequently with soap and warm water, especially after changing your bandages or touching the infected skin.
- Regularly clean your bathroom, kitchen, and all other rooms, as well as your personal items. Wash clothes and other items that become soiled with hot water or bleach, when possible.
- Drying clothes in a hot dryer, rather than air-drying them also helps to kill bacteria in clothes.
- Tell any healthcare provider that treats you during the infection that you have an MRSA skin infection.

Reportable?

No. MRSA is not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at 603-271-4496.

MRSA SKIN INFECTION (cont.)

For further information, refer to the Centers for Disease Control & Prevention website at www.cdc.gov or the NH Department of Health & Human Services website at www.dhhs.nh.gov .



MUMPS

Mumps is a viral illness that usually causes swelling and tenderness of the salivary glands, particularly the gland at the angle of the jaw. Headache, slight fever and earache are common. Possible complications include Meningitis (an inflammation of the coverings of the brain and spinal cord), Encephalitis (an inflammation of the brain), deafness and, particularly in adolescent or adult males, inflammation of the testicles. Mumps during pregnancy can result in loss of the fetus.

Who gets this disease?

Mumps may be seen in unimmunized children, or adolescents and young adults who graduated from school prior to laws requiring mumps immunization. Most adults born before 1957 have been infected by exposure to the disease and are probably immune.

How is it spread?

The mumps virus is found most often in saliva. It is transmitted by direct contact or by droplet spread of the virus in the air through sneezes and coughs. Mumps is most infectious 48 hours **prior** to the onset of symptoms.

What are the symptoms?

The most common symptoms are: 1) fever with headache and earache, loss of appetite and 2) swollen glands in front of and below the ear.

Symptoms appear 12-25 days after exposure. Infected persons are contagious from 1-2 days **before** to 5 days **after** swelling begins. A small percentage of immunized children may be infected with mumps if their bodies fail to respond adequately to the vaccine.

How can the spread of this disease be prevented?

The national Advisory Committee on Immunization Practices (ACIP) recommends that children be immunized against mumps. This is frequently combined with measles and rubella vaccine, which is **required** for childcare and school attendance. Children should receive this vaccine between 12-15 months of age and again between 4-6 years of age.

Who should be excluded?

A child or staff member with mumps should not return until five days after the onset of swelling. Any susceptible, unvaccinated child or staff member at a childcare center shall not return to the center until 26 days after onset of parotid gland inflammation in the last person with mumps in the center. Any person so excluded may return to the center immediately if he/she receives mumps vaccine.

Reportable?

Yes. Mumps is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



NOROVIRUS

What is Norovirus?

Noroviruses are a group of viruses that cause the “stomach flu”, or gastrointestinal (stomach or digestive) illness. Norovirus infection occurs occasionally in only one or a few people or it can be responsible for large outbreaks, such as in long-term care facilities.

Who gets Norovirus?

Norovirus infects people of all ages worldwide and anyone can become infected. There are many different strains of norovirus, which makes it difficult for a person’s body to develop long lasting immunity. Therefore, Norovirus illness can reoccur through a person’s lifetime. In addition, because of differences in genetic factors, some people are more likely to become infected and develop more severe illness than others.

How does someone get Norovirus?

Norovirus is spread from person to person via fecal-oral route, but can also be spread through the air during vomiting. Good hand washing is the most important way to prevent the transmission of Norovirus. Outbreaks have been linked to sick food handlers, ill healthcare workers, cases in facilities such as nursing homes spreading to other residents, contaminated shellfish, raw or unpasteurized milk, and water contaminated with sewage.

What are the symptoms of Norovirus?

The most common symptoms include nausea, vomiting, watery diarrhea, and stomach cramps. Fever is usually low grade or absent. Infected people generally recover in 24-60 hours and serious illness rarely occurs.

How soon after exposure do symptoms appear?

Symptoms of Norovirus illness usually begin about 24 –48 hours after ingestion of the virus.

How is Norovirus infection diagnosed?

Laboratory diagnosis can be performed in the New Hampshire Public Health Laboratories when there are multiple cases. Diagnosis is often based on the combination of symptoms and the short time of the illness.

What is the treatment for Norovirus infection?

No specific treatment is available. People who become dehydrated might need to be rehydrated by taking liquids by mouth. Occasionally, a patient may need to be hospitalized to receive intravenous fluids.

How can Norovirus be prevented?

While there is no vaccine for Norovirus, there are precautions people should take:

- ❖ Wash hands with soap and warm water after using the bathroom and changing diapers
- ❖ Wash hands with soap and warm water before preparing or eating any food
- ❖ Cook all shellfish thoroughly before eating
- ❖ Wash raw vegetables before eating
- ❖ Dispose of sewage in a sanitary manner

Who should be excluded?

Food handlers, healthcare workers and childcare workers should be excluded for 48 hours after resolution of symptoms. Children with non-specific diarrhea should be excluded until symptoms resolve.

NOROVIRUS (cont.)

Reportable?

No. Norovirus is not reportable by New Hampshire state law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.

For further information, refer to the Centers for Disease Control and Prevention website at:

<https://www.cdc.gov/>

Or the NH Department of Health & Human Services website at:

<https://www.dhhs.nh.gov/>



ORAL HERPES (aka, Cold Sores)

Oral herpes – which is also referred to as cold sores – is caused by a virus call *herpes simplex type 1*. This infection is commonly acquired for the first time in early childhood and may reappear throughout a person's lifetime.

Who gets this disease?

Anyone can get oral herpes.

How is it spread?

Oral herpes is spread through close person-to-person contact such as direct contact with saliva or the sores (e.g., kissing).

What are the symptoms?

There are initial infections and in some people recurrent sores (fluid-like blisters). In young children the initial infections may not cause any symptoms or can involve many sores within the mouth, on the cheeks, lips and/or gums. The sores will crust and heal within a few days. If the sores within the mouth are extensive, children can run a fever and refuse to drink or eat.

How soon do the symptoms appear?

In initial infections, it takes from 2 to 14 days from the time a person is exposed until the sores become apparent. Recurrent sores occur in individuals when the virus becomes active after being dormant.

What is the treatment?

Most cold sores heal in 3-4 days without treatment. There are ointments and medications available that may shorten the healing time but there is no cure for oral herpes. It is best to check with your physician to see if treatment is indicated.

How can the spread of this disease be prevented?

1. Frequent hand washing.
2. Caregivers should wear gloves when contact with sores is necessary (e.g., when applying medication).
3. Clean and disinfect mouthed toys daily or when soiled.
4. Do not kiss an infected person when lesions are present.

Who should be excluded?

No exclusion is necessary for mild oral herpes in children who are in control of their mouth secretions. Exclude children who do not have control of oral secretions when active sores are present inside the mouth.

Reportable?

No. Oral herpes is not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease and Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



PEDICULOSIS CAPITIS (Head Lice)

Head lice are tiny insects that live only on people's scalps and hair. The adults hatch from small eggs, called nits, which are attached to the individual hairs near the scalp. Nits may be found throughout the hair, but are most often located at the back of the scalp, behind the ears and the top of the head. The eggs hatch in 10-14 days, with new lice reaching adulthood in about 10 days. The female louse can live for 21-30 days, and lays about six to eight eggs a day. The lice live by biting and sucking blood from the scalp.

The major symptom of head lice is itching caused by the bite of the louse. Persistent scratching of the head and back of the neck should be viewed with suspicion. Often red bite marks and scratch marks can be seen on the scalp and neck and a secondary bacterial infection causes discharge and crusting. Swollen neck glands can also occur related to an infection from scratching.

Who gets this disease?

Contrary to popular belief, head lice are not a sign of unclean people or homes. They can occur at any age and to either sex. Anyone who has close contact with an infected person or shares personal items can become infested.

How is it spread?

Lice do not jump or fly. They cannot be caught from grass, trees, or animals. They are spread only by crawling from person-to-person directly or onto shared personal items, such as combs, brushes, head coverings, clothing, bedding and towels. Frequent bathing or shampooing will not prevent lice or eliminate them once they are established.

How is it diagnosed and treated?

Lice are less than 1/8-inch long and are usually light brown in color. They avoid light, which makes it difficult to see them. The diagnosis is

most often made by finding nits within a 1/4-inch of the scalp. Nits are tiny, plump, pearl gray colored; oval-shaped specks attached to the hair and cannot be easily moved up or down the hair (as could specks of dandruff). It helps to use a magnifying glass and natural light when searching for them. The best places to look are the hair on the back of the neck, behind the ears and the top of the head. Hatched eggs can be found further out on the hair shaft and are snow-white and conspicuous.

Treatment is directed at getting rid of the lice from both the infested person and his/her surrounding and personal items. All household members and persons with close physical contact with the infested person should be examined for lice and treated if infested (live lice are seen). Some healthcare providers may simultaneously treat all members of a household.

Treating the infested person.

Consult a physician before treating: (1) infants, (2) pregnant or nursing women, or (3) anyone with extensive cuts or scratches on the head or neck. For others, there are several medicines available to kill head lice. They are used like shampoo. Many head lice medications are available at your local drug store without prescription and some products are available by prescription. All of these products must be used carefully and according to direction.

There are several over-the-counter (OTC) name brand products which include A-2000 Pronto, R&C, Rid and Triple X that all contain the active ingredient Pyrethrins. Pyrethrins are natural extracts from the chrysanthemum flower. Though safe and effective, pyrethrins only kill crawling lice, not unhatched nits. A second treatment is recommended in 7-10 days to kill any newly hatched lice. Treatment failures are common.

PEDICULOSIS CAPITIS (Head Lice) cont.

Nix is another commonly available OTC medication that contains the active ingredient Permethrin. Permethrin is safe and effective and may continue to kill newly hatched lice for several days after treatment. A second treatment may be necessary in 7-10 days to kill any newly hatched lice that may have hatched after residual medication from the first treatment was no longer active. Treatment failures are common.

Prescription medications used to treat head lice include Lindane (Kwell) and Malathion (Ovide). Consult with your healthcare provider on the proper use of these prescription medications. For these medications, retreats in 7-10 days ONLY if crawling bugs are found.

Although these products will kill lice, none will kill 100% of the nits. Nit removal after shampooing may be time-consuming and difficult due to their firm attachment to the hair. A solution of vinegar and water may help make removal easier. Special, fine-tooth combs can be used to aid in nit removal. Most treatment requires retreatment in 7-10 days. A daily nit check for the next ten days is advisable. If there is evidence of new nits (less than $\frac{1}{4}$ -inch from the scalp) or newly hatched lice, it may be necessary to repeat treatment. (NOTE: Unless reinfection occurs, more than two treatments are unnecessary and can be dangerous).

Treating the surroundings/personal items in the childcare center.

Head lice can only survive 24-48 hours if they fall off a person and cannot feed. You don't need to spend a lot of time or money on cleaning activities. Follow these steps to help avoid reinfestation by lice that have recently fallen off the hair or crawled onto clothing or furniture.

1. Machine-wash in HOT water all washable items belonging to the daycare facility that may contain lice.

2. Non-washable (e.g., furry toys, pillows) can be put in a HOT dryer for 20-minutes or dry-cleaned.
3. Things that cannot be washed, dried, or dry-cleaned can be sealed in a plastic bag for two weeks, the duration of the life cycle of the louse.
4. Soak combs and brushes for 1 hour in rubbing alcohol, Lysol™, or wash with soap and hot (130 F) water.
5. Vacuum the floor and furniture. The risk of getting re-infested from a louse that has fallen onto the carpet or sofa is very small.
6. Insecticide sprays are not recommended and can be harmful to people and animals.

How can the spread of this disease be prevented?

1. General cleanliness at the center, as previously outlined, should be practiced.
2. Children should not share personal items such as clothing, brushes, combs, hats, etc.
3. Each child should have his/her own crib mat and should not switch.
4. Children's personal belongings should be stored separately.
5. Caregivers should learn to recognize nits and should help regularly check children's hair when there is a known case of head lice in the center.
6. If a case is identified, the center should follow cleaning procedures outlined above.

Who should be excluded?

Routine exclusion of school-aged children with head lice is not recommended. The child's parents or guardian should be notified when head lice is identified by a care provider or teacher. The child's parent or guardian should be telephoned/mailed or a note sent home with the child at the end of the school day stating that prompt, proper treatment of this condition is in the best interest of the child and his/her

PEDICULOSIS CAPITIS (Head Lice) cont.

classmates. A child **should** be allowed to return to school after proper treatment even if nits are still present. “No Nits Policies” are not effective and should be discouraged. Mass screenings are also not recommended but close contacts should be checked ideally.

Children in preschool or daycare settings who have visible live lice may need to be excluded only if direct head to head contact cannot be avoided.

Reportable?

No. Pediculosis is not reportable by New Hampshire law. However, the Bureau of Infectious Disease Control professionals are available for consultation at (603) 271-4496.



PERTUSSIS (Whooping Cough)

Pertussis is a very contagious bacterial infection of the respiratory tract. Usually it causes a persistent cough that follows a normal cold. The child has episodes of violent coughing that end with the typical high-pitched *Whoop*, and occasionally vomiting is seen. Between bursts of coughing the child appears well. Coughing attacks may continue to occur for 10-12 weeks. Pertussis is frequently complicated by pneumonia and ear infections, particularly in infants. Death from pertussis is rare.

Who gets this disease?

Pertussis occurs in all age groups. Untreated cases in older children and adults can spread pertussis to infants and young children at home. It is important that all infants and young children be up to date with pertussis vaccination. The most serious disease and complications are seen in infants and very young children.

How is it spread?

The bacterium is spread by direct contact with discharge from the nose or throat of an infected person, or by breathing in infected droplets in the air when an infected person coughs. The period of greatest risk of spread is during the early "cold" stage.

What are the symptoms?

The disease begins with the cold like symptoms such as runny nose and watery eyes, and cough. The cough becomes more persistent. Within 2 weeks the cough occurs as bouts of uncontrollable cough often with a "whoop" sound. Vomiting often follows the cough. The "whoop" sound may be absent in older children and adults.

What if a child is exposed to pertussis?

1. All close contacts younger than 7 years of age who have not completed the four-dose primary series should complete the series with the minimum intervals.
2. Close contacts who are 4-6 years of age and who have not yet received the second booster dose (usually the fifth dose of DTaP) should be vaccinated.
3. Any close contact 11 years old and older can receive a single dose of Tdap if it has been at least 2 years since the previous Td.
4. Your physician may recommend antibiotics for your child and all close contacts.

How can the spread of this disease be prevented?

A combination vaccine of Diphtheria, Tetanus and acellular Pertussis (DTaP) is **required** for both childcare and school attendance. The Advisory Committee on Immunization Practices (ACIP) recommends immunizing children against pertussis, along with diphtheria and tetanus, beginning as early as six weeks of age. The five dose series should be completed at 2 months, 4 months, 6 months, and 15-18 months, and 4-6 years of age. If the child has a contraindication to the pertussis vaccine, they would receive a vaccine called DT which does not contain the pertussis antigen.

A single booster dose of Diphtheria, Tetanus, and acellular Pertussis (Tdap) is recommended for adolescents 11-18 years of age who have completed the recommended childhood DTP/DTaP vaccination series and have not received Tetanus and diphtheria (Td) booster dose. Adults who are 18 and older should receive one dose of Tdap. If they have received the Td booster an interval of at least 2 years between Td and

PERTUSSIS (Whooping Cough) cont.

Tdap is encouraged to reduce the risk for local and systemic reactions after Tdap vaccination. The Td booster is recommended every 10 years thereafter to provide protection.

Reportable?

Yes. Pertussis is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



PINWORMS (*Enterobius Vermicularis*)

Pinworms are tiny worms that live in the lower intestine of people. Most often at night, female worms come out to the anus of an infected person and lay their microscopic eggs.

Who gets this disease?

Anyone can. It is particularly common in preschool and school-aged children and therefore in daycare centers.

How is it spread?

Pinworm eggs can be transferred orally from the infected individual to another person. The eggs can also be transferred indirectly through clothing, bedding, food and other contaminated articles.

What are the symptoms?

People may be without symptoms or they may have anal itching, feel irritable and/or have disturbed sleep.

How soon do the symptoms appear?

Symptoms usually appear between two-weeks and two-months. The life cycle requires two to six weeks to complete.

Can a person have this disease without knowing it?

Yes. Often, members of an infected child's household are also unknowingly infected and, if not treated, can reinfect a treated child and other people.

What is the treatment?

There are several medicines available to treat this infection. Often healthcare providers will treat the entire family if one member of the home is infected.

How can the spread of this disease be prevented?

1. Wash hands thoroughly after using the toilet and after diapering children.
2. Children should be bathed in the morning so that any eggs laid at night can be removed.
3. Wash hands thoroughly before preparing food.
4. If you suspect a child has pinworms, based on symptoms, this child should see a physician for the correct diagnosis and treatment.
5. Each child's dirty clothing should be stored separately in plastic bags and sent home for laundering.
6. All bedding and clothing should be washed in **HOT** water.
7. Every child should have his/her own crib or mat and should not switch sheets with other children. Mats should be kept clean.
8. Clean and vacuum play and sleeping areas daily for several days after diagnosis.

Who should be excluded?

Once the diagnosis of pinworms is made, the child should be appropriately treated. After the treatment the child does not need to be kept out of childcare.

Reportable?

No, pinworms are not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



POLIOMYELITIS (Polio)

Poliomyelitis is caused by a virus. Polio typically produces weakening of the muscles, sometimes to the point of requiring assistance to move about. The illness ranges widely in severity.

Who gets this disease?

Today, polio cases occur mainly among unimmunized young children or among members of groups that refuse immunization.

How is it spread?

The virus is spread by direct contact with infected stool and throat secretions. Infected persons are most contagious during 7-10 days before and after onset of symptoms.

What are the symptoms?

The illness ranges in severity from a mild, unnoticed febrile illness to meningitis (an inflammation of the covering of the brain and spinal cord), to paralysis and even death.

How can the spread of this disease be prevented?

Two types of polio vaccine have been available: trivalent oral polio vaccine (TOPV) and inactivated polio vaccine (IPV). The national Advisory Committee on Immunization Practices (ACIP) recommends four doses of polio vaccine. The four dose series should be completed at 2 months, 4 months, 6-18 months, and 4-6 years. The vaccine is **required** for both childcare and school attendance.

Who should be excluded?

Children and staff should be excluded during the acute phase of illness.

Reportable?

Yes. Poliomyelitis (polio) is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



RABIES

Rabies is a viral disease that attacks the central nervous system. It can be transmitted to people through contact with the saliva or brain and spinal cord tissue of a rabid animal as described below. It is a fatal disease for humans but may be effectively prevented. Rabies in certain animals, especially wildlife, is common throughout New Hampshire.

What are the signs of rabies in animals?

Animals may act friendly or become vicious. Animals that are usually active only at night may be found active during the day. Animal behavior may be unusually aggressive. Animals infected may seem withdrawn, hide in corners or refuse food. The most important thing to remember is that a rabid animal will usually be infectious to people or other animals for a varying period of time before a change in their appearance or behavior.

Who gets this disease?

People can get rabies through two types of exposure: bite exposure and non-bite exposure.

- **Bite exposure:** Any penetration of the skin by the teeth of an infected animal. All bites regardless of location, pose a potential risk for rabies.

- **Non-bite exposure:** Infectious saliva, brain or spinal cord tissue from a rabid animal comes into contact with the lining of a person's eye, nose or mouth or with a cut, abrasion or other pre-existing break in the person's skin.

What about bats and rabies?

Bats are responsible for the majority of domestically acquired human cases of rabies. People usually know when a bat has bitten or otherwise exposed them to rabies. However, because bats have small teeth that may not leave obvious marks, there are certain situations when a

person may be considered exposed to rabies even in the absence of an obvious bite, including:

- If a person awakens to find a bat in their room
- A bat is seen in the room of an unattended child, or
- A bat is seen in the room of a mentally impaired or intoxicated person.

People cannot get rabies from having contact with bat guano (feces), blood or urine. If an exposure is possible, and the bat is available, the local animal control authority should be contacted to aid in capturing the animal for testing.

What are the symptoms of rabies in humans?

Symptoms of rabies in people include apprehension, anxiety, headaches, fever, tiredness, paralysis, muscle spasm in the throat leading to fear of water, delirium/hallucinations, convulsions, and, in almost all cases, death. Symptoms are progressive and without medical intervention the usual duration is 2-6 days; death is often due to respiratory or cardiac failure.

What is the treatment?

If a person is bitten or has a non-bite exposure, immediately wash the wound thoroughly with soap and water for several minutes. (NOTE: flush an exposed eye, nose or mouth with water or saline). This is extremely important as it may prevent the rabies virus from entering the body tissue and prevent infection. Then, the person should be seen immediately by a physician or go to an emergency department for examination and any needed treatment.

If indicated, a series of shots should be given. One of the shots (Human Rabies Immune Globulin) is injected around the site of the

RABIES (cont.)

exposure to provide immediate protection while the rabies vaccine is given in the arm muscle. A total of 5 shots (4 shots of vaccine and one of Human Rabies Immune Globulin-may be more than one and is based on body weight) are given over one month. If an individual has had rabies vaccine in the past, this treatment will vary. To work best, these shots should be given as soon as possible after the exposure. If the animal has been caught and will be tested for rabies or quarantined for 10 days (dogs, cats, and ferrets only), treatment can usually be delayed until results are available or quarantine is over. Contact the local animal control authority to aid in capturing the animal for confinement and observation or testing.

Is there a cure?

There is no cure for rabies once the infected person becomes ill with the disease. Appropriate rabies immunizations given before the onset of illness are effective in preventing the disease. People whose work or hobbies bring them frequently into contact with potentially rabid animals should have a series of three rabies vaccine shots before they are exposed. They will then require only two vaccine shots after exposure.

How can the spread of this disease be prevented?

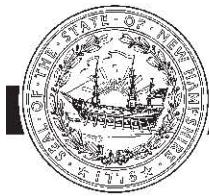
1. Do not handle wild animals. Teach children to avoid wildlife, strays and all other animals they don't know. Call the New Hampshire Fish and Game Department at (603) 271-3361 to report dead, sick or injured animals. Call the local animal control officer for domestic animal exposures.
2. If bitten by a wild or domestic animal, seek medical attention immediately and notify the local animal control officer.
3. All bites by wild animals or contact with their saliva or brain or spinal cord tissue

should be considered as possible exposure to rabies and must be evaluated medically.

4. Keep trash containers tightly closed. Garbage attracts animals like skunks and raccoons.
5. Vaccinate all dogs and cats against rabies and make sure their shots are kept up-to-date.
6. If another animal has injured a dog, cat or other pet, handle it only with thick rubber gloves and have it examined by a veterinarian right away. Saliva from an attacking rabid animal remains infectious on the attacked pet's fur until it has thoroughly dried.

Reportable?

Yes. Rabies in animals and humans is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



Ringworm (Tinea)

Tinea, more commonly called ringworm is a skin infection caused by a fungus that lives on the skin, surfaces of items, or household items – like bedding, clothing, or toys. Ringworm can affect any part of the body including the scalp.

Who get this disease?

Anyone can get the disease. It is transmitted through direct contact with the fungus including touching another person or surface containing the fungus. Ringworm can also be transmitted by contact with animals (e.g. cats and dogs).

What are the symptoms?

Ringworm affecting the skin causes a red, circular patch to form. The patch usually has a raised edge. Ringworm between the toes, or more commonly called athlete's foot, causes the skin between the toes to appear cracked and peeling. Ringworm of the scalp can cause redness of the scalp or loss of hair.

Symptoms typically appear between 4-14 days after contact with the fungus.

How is it diagnosed and treated?

A diagnosis of ringworm is made by a healthcare provider based on the clinical features of the skin. The healthcare provider may feel necessary to take a scraping of the skin for a culture.

Ringworm of the skin can be treated with an over-the-counter antifungal cream or lotion. Ringworm of the scalp can only be treated with a prescribed antifungal medication from the child's health care provider.

How can the spread of this disease be prevented?

1. Items frequently touched by children (i.e. toys and surfaces) should be washed or wiped down frequently. This can be done with a diluted bleach solution.
2. Children should not be allowed to walk barefoot
3. Do not allow children to share personal items like brushes or combs.
4. Children should wash their hands with soap and warm water after touching any animals
5. Socks should be changed daily or if they become wet for any reason.
6. While under treatment swimming pools should be avoided.

Who should be excluded?

The child's parent or guardian should be telephoned/mailed or a note sent home at the end of the school day stating that the child needs to be seen by his/her health care provider related to the potential for infection.

The child should be excluded until treatment is started.

Reportable?

No, ringworm is not reportable by New Hampshire law. However, the Bureau of Infectious Disease Control professionals are available for consultation at (603) 271-4496.



ROSEOLA (Exanthema Subitum)

Roseola is the most common viral rash illness that occurs in young children. It is sometimes referred to as Sixth Disease or, less commonly, "baby measles". Roseola is caused by a virus called human herpesvirus 6 (HHV-6) and, possibly, human herpesvirus 7 (HHV-7).

Who gets this disease?

Roseola usually occurs in children aged 6 months to 2 years of age. It is uncommon for the disease to occur in children under the age of 3 months or over the age of 4 years. There is no known risk to pregnant women. Cases are not seasonal and usually occur throughout the year.

How is Roseola spread?

Humans are the only known source for roseola. It is not known how the disease is spread or what the infectious period is. It is not considered to be very infectious.

How soon do symptoms appear?

Symptoms usually begin 4-10 days after exposure.

What are the symptoms?

Roseola usually begins with a high fever that lasts 3 to 5 days followed by a rash that lasts 1-2 days. When the fever disappears, a rash appears, usually on the face and body. Irritability, runny nose, eyelid swelling and tiredness are sometimes present during the time of the fever. Most children, however, are alert and playful during this time.

How is it diagnosed and treated?

While Roseola can be diagnosed through laboratory confirmation, a healthcare provider typically diagnoses the disease based on the symptoms. A rash occurring immediately after the fever breaks is characteristic of the disease.

The healthcare provider may recommend supportive treatment of symptoms but there is no treatment that is specific for roseola.

How can the spread of this disease be prevented?

There is no vaccine to prevent this disease, but good hand washing can help prevent the spread.

Who should be excluded?

Generally, a child with a rash and fever should be excluded from childcare until seen by a healthcare provider. A child with a rash and no fever may return to childcare. There are no recommendations for preventive therapy for other children attending the childcare or for childcare personnel.

Reportable?

No. Roseola is not reportable by New Hampshire state law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



Rotavirus

Rotavirus is a virus that causes diarrhea and vomiting. It is the most common cause of diarrhea in children under two years old.

What are the symptoms?

Rotavirus typically causes non-bloody diarrhea, nausea, and vomiting.

The symptoms usually last 3-8 days but the virus can be present before diarrhea begins and last up to three weeks after symptoms disappear.

How is the disease spread?

Rotavirus is spread by direct contact (fecal-oral route) with contaminated food or objects (i.e. toys or surfaces frequently touched by children).

How is it diagnosed and treated?

Your child's healthcare provider may make a diagnosis of rotavirus based on your child's symptoms. While not typically done, a stool sample may be collected and analyzed to confirm diagnosis.

There is no treatment for Rotavirus. The virus is self-limiting. Your child may need extra fluids in order to prevent dehydration. If you notice a decrease in your child's urine output or if your child cries with few or no tears, had a dry mouth, is unusually sleepy or fussy contact your child's healthcare provider.

How can the spread of the disease be prevented?

1. Good handwashing especially before preparing meals and after diapering a child.
2. Clean all meal preparation surfaces and surfaces children touch frequently.
3. Clean children's toys frequently – a diluted bleach mixture can be used to clean and sanitize items or surfaces.

The Advisory Committee on Immunization Practices (ACIP), recommends routine vaccination of children against Rotavirus. Two vaccines are available to prevent the spread of Rotavirus. Rotateq is a 3 dose series and is recommended to be given at 2 months, 4 months, and 6 months. Rotarix is a 2 dose series recommended to be given at 2 months and 4 months.

Who should be excluded?

Children should be excluded from childcare if they are experiencing more than 2 loose stools per day or diarrhea cannot be contained in diapers as it impedes the caregiver's ability to care for other children in a safe and sanitary manner.

Reportable?

No, rotavirus is not reportable by New Hampshire law. However, the Bureau of Infectious Disease Control professionals are available for consultation at (603) 271-4496.



RESPIRATORY SYNCYTIAL VIRUS INFECTION (RSV)

RSV is an infection of the small air passages of the lung causing bronchiolitis and pneumonia. RSV is most common in children under 1 year of age but it can affect anyone at any age. Most children have been infected with RSV by the time they turn 2 years of age, but only a few will develop serious illness. Re-infection can occur throughout life.

What are the symptoms of RSV?

Small infants may have irritability, decreased activity and breathing difficulties as early symptoms. Older children may have symptoms similar to any other respiratory infection, such as cough, sneezing, fever, runny nose, wheezing, and decrease in appetite.

How is RSV spread?

RSV is spread when the infected person sneezes or coughs the droplets into the air. The person who is at risk then inhales the virus from the air. The infection can be spread by direct contact with nasal or oral secretions from the infected person. Activities such as kissing the face of a child or coming into contact with surfaces that have been infected with secretions and then rubbing the eyes or nose can spread RSV. RSV is common in winter and early spring.

What is the incubation period for RSV?

The incubation period can range from 2 - 8 days but is usually 4 - 6 days.

How can RSV be prevented?

Steps can be taken to limit exposure and to help stop the spread of RSV infection:

- Cover coughs and sneezes,
- Wash hands frequently and correctly,

- Avoid sharing cups and eating utensils with others,
- Refrain from kissing others,
- Cleaning contaminated surfaces frequently (i.e., door knobs, toys, etc.)

Should the child with RSV be excluded?

Children with fever and respiratory symptoms should be excluded from childcare until they no longer have a fever. Children with respiratory symptoms should be kept separated from children with high-risk conditions.

Is RSV Reportable?

No. RSV is not reportable by New Hampshire state law to the Division of Public Health Services, Bureau of Infectious Disease Control; Public Health Professionals are available for consultation at (603) 271-4496.



RUBELLA (GERMAN MEASLES)

Rubella is a childhood viral disease, which causes a rash, low-grade fever and swollen glands in the area behind the ears. Some children may have a very mild illness with no rash at all. However, if a pregnant woman without protection against rubella is exposed to the disease, there could be harmful effects to her baby. **Pregnant women should consult their physician at once if they have been exposed to rubella!**

Who gets this disease?

Some young adults remain susceptible to rubella due to high school graduation prior to the school rubella vaccination laws. Rubella is most often seen in unimmunized children and in this susceptible adolescent and young adult group.

How is it spread?

The virus is spread by large droplets spread through the air from sneezing or coughing, or by direct contact with infected nasal or saliva secretions.

What are the symptoms?

1. A two to three day rash that begins on the face and quickly spreads downward over the entire body.
2. A low-grade fever of 101-degrees Fahrenheit or less.
3. Swollen glands behind the ears. (NOTE: this may appear before the rash). Joint and body pain is most commonly experienced in adults.
4. Symptoms appear 12-23 days after exposure; usually 16-18.

Infected persons are contagious from one week **before** to 5-7 days after the appearance of the rash. A small percentage of properly immunized children may be infected with rubella due to occasional vaccine failure.

How can the spread of this disease be prevented?

The national Advisory Committee on Immunization Practices (ACIP) recommends that children be immunized against rubella after 12-months of age. The two dose vaccine should be completed at 12-15 months of age and 4-6 years. This immunization is **required** for both childcare and school attendance. The vaccine is usually combined with measles and mumps vaccine.

Who should be excluded?

A child or staff member with rubella or suspect rubella should not return to daycare until seven days after the onset of the rash.

Reportable?

Yes. Rubella is reportable **immediately** by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



SALMONELLOSIS

Salmonella is an illness caused by the bacterium *Salmonella* of which there are numerous types. Salmonellosis most commonly causes intestinal illness but occasionally may infect the blood stream. The bacterium is passed in the stool of infected individuals.

Who gets this disease?

Any person can become infected with Salmonella. The disease is more likely to cause a severe infection in the very young, the very old and in people with underlying diseases, such as cancer.

How is it spread?

In the childcare setting, Salmonella is usually spread by the fecal-oral route. The bacterium can also be spread by contaminated food or drink. It is commonly found in uncooked or undercooked meat (especially beef), poultry and eggs, and unpasteurized milk. Salmonella can also be spread to children and adults from infected pets such as turtles, lizards, snakes, dogs, cats, ducklings, chickens and other birds. (NOTE: Because of this hazard, these types of animals should not be in childcare facilities.)

What are the symptoms?

The intestinal illness caused by Salmonella is characterized by diarrhea (mild or severe), fever, abdominal cramps and occasional vomiting.

How soon do symptoms appear?

The symptoms generally appear from 6-72 hours after exposure, usually appearing 12-36 hours. Sometimes symptoms take up to 7 days to appear.

Can a person have this disease and not know it?

Yes. Some people may not have symptoms serious enough to cause them to seek medical attention. In some cases of Salmonella infection, after the diarrhea illness is over the organism may be excreted in the stool for months to over a year. This is called the carrier state.

What is the treatment?

Although most people with Salmonellosis will recover on their own, in some cases healthcare providers may prescribe antibiotics. Some antibiotics may lengthen the amount of time the bacteria are found in the stool, however.

How can the spread of this disease be prevented?

1. Wash hands thoroughly after using the toilet *and diapering children*.
2. Wash hands thoroughly before preparing food.
3. Be certain all foods in the childcare center are thoroughly cooked – especially beef, poultry and eggs.
4. Any leftover food should be discarded.
5. Food preparation surfaces (e.g., tables, counters, cutting boards, kitchen utensils) should be carefully washed and disinfected after preparing food.
6. Unpasteurized milk (goat or cow) is frequently contaminated with Salmonella and other bacteria; it should **not** be used in a childcare setting.
7. Staff with active diarrhea or gastrointestinal (GI) illness should not work in a childcare facility until they are free of symptoms for 48 hours.
8. Keep children with diarrhea at home.
9. High-risk animals like turtles and lizards should not be in child care settings.

SALMONELLOSIS (cont.)

Who should be excluded?

Infected persons shall be excluded from foodhandling, working in a child care facility and from direct care of hospitalized and institutionalized patients until they are no longer infectious or symptomatic (48 hours after resolution of symptoms).

Reportable?

Yes. *Salmonella* is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



SCABIES

Scabies is a common skin infestation caused by microscopic parasites called a mite. The female mite burrows under the skin to lay her eggs, which subsequently hatch and start the infestation cycle again.

Symptoms of scabies do not appear until weeks after exposure. The skin reaction is probably due, in part, to a sensitization or “allergic” reaction to the mites. On re-exposure, symptoms can start within days. The infestation is in the form of an intensely itchy rash, which consists of red bumps and burrows (i.e., short, wavy, thread-like lines in the skin). Itching tends to increase at night.

Who gets this disease?

Anyone who has contact with the mite can become infested with scabies.

How is it spread?

The mite is spread by direct skin-to-skin contact, or by skin contact with clothes, bedding, etc. that the mites have crawled onto. The mites can survive only three days off the body and cannot jump or fly. They require direct contact with skin to spread. The incubation period for this disease is two to six weeks after exposure.

How is it diagnosed and treated?

It can be diagnosed by the typical appearance of the rash and accompanying symptoms and by examining skin scrapings under the microscope to see the mite or its' eggs.

Scabies is treated with one of several prescription mite-killing creams or lotions, which are applied once to the skin and then washed off after a specified period of time. Medicine to relieve the itching is often necessary. (Note: Even after effective therapy, itching can persist for up to 2 to 4 weeks). Treatment is recommended for all household members – even those without symptoms – due to the high likelihood of spread within a household. Prophylactic treatment is also recommended for people who have had direct skin-to-skin contact with an infected individual.

How can the spread of this disease be prevented?

1. Follow previously outlined principles of hand washing and cleanliness at the childcare facility.
2. Children should not share personal items, cribs, mats or clothing.
3. Each child's dirty clothing should be stored separately and sent home for laundering.
4. If a case of scabies occurs in the daycare facility:
 - a. Wash and dry on the hot cycle all washable items belonging to the center that came into contact with the child's skin during the 72 hours prior to treatment.
 - b. Difficult to wash items (e.g., stuffed toys, pillows) can be stored in tightly closed plastic bags for four days and then used again. (Note: The mite cannot live off the body for more than three days).
 - c. Thoroughly vacuum any carpet or upholstered furniture.

SCABIES CONT.

5. Pesticide sprays are not recommended and can be harmful to people and animals.
6. If a rash, which appears suspicious for scabies, is noticed on a child in the childcare center, tell the parents the child should be seen by a healthcare provider.

Who should be excluded?

Infected individuals should be excluded until treatment is completed. If two or more cases occur in the daycare center, call the Division of Public Health Services, Bureau of Infectious Disease Control for further recommendations.

Reportable?

No, scabies is not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for a consultation at (603) 271-4496.



SHIGELLOSIS

Shigellosis is an intestinal illness caused by *Shigella*, which is a family of bacteria that is comprised of 40 different types.

Who gets this disease?

Anyone can, but shigellosis is recognized more often in young children.

How is it spread?

Among small children in a childcare facility, the fecal-oral route usually spreads Shigella. It takes very few swallowed Shigella bacteria to cause infection (as opposed to Salmonella, which take many bacteria to cause infection); so it can easily become a problem in a childcare setting. Shigella can also be spread through stool-contaminated food, drink or water.

What are the symptoms?

Shigella can cause mild or severe diarrhea. In mild cases, a person may have only watery stools for several days. In severe cases, the diarrhea may have traces of blood or mucous and may lead to dehydration. Fever, severe cramps, vomiting, headache and even convulsions (in young children) can occur.

How soon do symptoms appear?

The symptoms usually occur 2-4 days after exposure, but it can be as long as seven days.

Can a person have this disease without knowing it?

Yes, Shigella can be in the stool of children or adult who are not sick and do not have diarrhea. These asymptomatic carriers may transmit infection; rarely the carrier state persists for months or longer.

What is the treatment?

Although most people with Shigellosis will recover on their own, antibiotics shorten both the length of the illness and the amount of time bacteria is passed in the stool, which is particularly important in daycare settings.

How can the spread of this disease be prevented?

1. Wash hands thoroughly after using the toilet or diapering a child.
2. Wash hands thoroughly before preparing food.
3. Keep children who have diarrhea at home.
4. Staff with positive stool cultures for Shigella should not prepare food or feed children.

Who should be excluded?

Infected persons shall be excluded from food handling, from childcare facilities and from direct care of hospitalized or institutionalized patients until stool cultures are free of Shigella on two consecutive specimens collected not less than 24 hours apart. If antibiotics have been taken, the initial cultures shall be obtained at least 48 hours after the last dose.

Reportable?

Yes. Shigellosis is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496,



STREP THROAT & SCARLET FEVER

Group-A *Streptococci* are bacteria that can cause a variety of illnesses, the most common of which are strep throat, scarlet fever and impetigo.

Strep Throat is a sore throat caused by this bacterium. Cold viruses, not strep bacteria, cause the vast majority of sore throats in both children and adults. Strep sore throats tend to be accompanied by fever, tender swollen neck glands, headache and stomach ache but can also occur with cough, runny nose, or other cold symptoms.

Scarlet Fever is a form of strep infection caused by bacteria that produce a substance, which causes a skin rash. The rash is usually red with fine bumps that feel like sand paper and is most noticeable on the neck, chest, groin, or on the inner surface of the knees, thighs and elbows. The rash does not usually involve the face, but cheeks are flushed and there is paleness around the mouth. The tongue may be reddish and look like the surface of a strawberry. The rash may only last a few hours. Scarlet fever is no more serious than strep throat.

Treatment of strep infections with antibiotics may not dramatically change the length or severity of the sore throat symptoms or rash. It is important to treat strep infections in children to prevent its spread to others and the possible development of rheumatic fever.

Note: Rheumatic Fever (i.e., abnormalities of the heart valves and inflammation of the joints) is very rare in the United States today, but can develop five to six weeks after any type of untreated strep infection. In rare instances, kidney disease can also occur following a strep infection.

Who can get this disease?

Anyone can get strep throat or scarlet fever, but it is uncommon in children under three years of age (as is rheumatic fever). It is most common in school-aged children, in winter months and in crowded situations (e.g., schools, childcare centers). Often if one person in a family gets it, other do also, especially brothers and sisters.

How is it spread?

During infections, strep is in nose and mouth secretions so it can be coughed, sneezed or smeared around on hands, dishes, food, toys and similar objects. The incubation period is two to five days. Unlike colds, children are probably not infectious during this incubation period. Children are most likely to pass strep to others when they have symptoms and until they have been on antibiotic treatment for 24 hours.

How soon do symptoms appear?

The symptoms generally appear within one to three days. Because of a possible association with Reye's Syndrome (i.e., vomiting, liver problems and coma), salicylate-containing products (i.e., aspirin) are not recommended for control of fever.

How are they diagnosed and treated?

The diagnosis of strep throat is made by a throat culture. It usually takes 24-48 hours to grow the bacteria. There are several recently developed rapid tests, which can diagnose a strep infection in less time. Strep infections are treated with an oral antibiotic for 10 days. Occasionally a healthcare provider may give a single long-lasting injection. Depending on the symptoms, the healthcare provider may give antibiotics immediately or wait for the throat culture results.

STREP THROAT & SCARLET FEVER

(cont.)

How can the spread of this disease be prevented?

1. Enforce handwashing and general cleanliness in the childcare facility. If a case of strep throat has been diagnosed, it is particularly important to remember that:
 - a. Staff and children should wash their hands after wiping/blowing noses and before eating or preparing food.
 - b. Toys and surfaces should be washed and disinfected daily.
 - c. Each child should have his/her own cup; preferably, disposable cups should be used.
 - d. Food should not be shared.
 - e. All eating utensils should be carefully washed in hot, soapy water, disinfected and air-dried. A dishwasher is best.
2. Keep children's noses clean and dry; wash hands immediately after wiping noses.
3. Teach children to cough/sneeze to one side toward the floor and into a tissue. They need to wash their hands afterward.
4. If there is a case of strep throat in the facility, children and staff who develop sore throat symptoms should be seen by their healthcare provider to be tested for strep. Generally, children and staff who do not have symptoms do not need to be cultured.

Who should be excluded?

Children and staff should be excluded until 24 hours after beginning antibiotic therapy and until there is no fever present.

Reportable?

No, this type of Streptococcal infection is not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



SWIMMER'S ITCH (Cercarial Dermatitis)

Swimmer's itch (Cercarial Dermatitis) is caused by human contact with a parasite that normally is found in some species of birds or small animals. The adult stage of the parasite lives in the animals' intestines and is shed into the water with excreted feces. Snails feed off the waste and release the young parasite (called cercaria) into the water. When this parasite burrows into a person's skin it causes an allergic, itchy rash. The parasite is commonly found at the water's surface and near the shore.

Who gets this disease?

Anyone who swims in water where this parasite lives is susceptible. The parasite may live in both fresh and salt water.

How is it spread?

Most commonly, individuals get the infection by swimming or wading in infested water and then allowing water to evaporate off the skin rather than drying the skin with a towel. The parasite (cercaria) will burrow underneath the person's skin. Because these parasites cannot develop inside a human, they soon die. The infection is not spread from person-to-person.

What are the symptoms?

The symptoms include an initial prickling sensation after leaving the water shortly followed by an itchy rash, which reaches maximum intensity in 2 to 3 days and can persist for a week. Scratching the area may result in secondary bacterial infections. Repeated exposure increases a person's sensitivity to the parasite, possibly resulting in more severe symptoms.

What is the treatment?

It is best to check with a physician for treatment. Sometimes medication is given to ease the itching and allergic reaction. If secondary infection develops, antibiotic treatment may be indicated.

How can Swimmer's Itch be prevented?

1. Avoid swimming in known infested waters. Swim in deeper water. The parasite is usually found in shallow waters. Babies sitting along the shore are most vulnerable.
2. Vigorously towel your entire body immediately upon leaving the water. This will help brush off any cercaria that may be on the skin, also rinsing off with a quick shower as soon as you leave the water may be helpful.
3. Use a waterproof sunscreen. This forms a chemical barrier that may prevent the parasite from sticking to the body.

Who should be excluded?

There is no need to exclude someone from a facility since Swimmer's Itch is not spread from person-to-person.

Reportable?

No, Swimmer's Itch is not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, public health professionals are available for consultation at (603)-271-4496.

For questions in sampling public swimming areas, please contact the NH Department of Environmental Services, Public Beach Sampling Program at (603) 271-0698.



TETANUS

Tetanus is a bacterium that lives in the soil and can enter the body through a cut or wound. The bacteria produce a poisonous substance – exotoxin – that causes the clinical illness.

Who gets this disease?

Tetanus occurs almost exclusively in unimmunized or inadequately immunized persons. Previously having tetanus does not result in immunity to subsequent infections. Vaccination is required after initial recovery.

How is it spread?

Unlike other vaccine-preventable diseases, tetanus is not spread from person-to-person. It occurs when the bacterium in soil or dust is introduced into the body through a wound.

What are the symptoms?

The poisonous exotoxin produced by the *Clostridium tetani* bacteria causes muscles to go into spasms of the face/neck, abdomen, or area where the initial infection occurred. Paralysis and death can result. Sometimes tetanus is called “lockjaw”.

How can Tetanus be prevented?

The Advisory Committee on Immunization Practices (ACIP) recommends immunizing children against tetanus – along with diphtheria and pertussis – beginning as early as six weeks of age. The diphtheria-tetanus-acellular pertussis (DTaP) vaccine is **required** for both childcare and school attendance. The five dose series should be completed at 2 months, 4 months, 6 months, and 15-18 months, and 4-6 years of age

Tdap/Tetanus diphtheria and acellular pertussis should be given once between the ages of 11-18 years. Booster doses of tetanus-diphtheria toxoid (Td) vaccine every 10 years after finishing the childhood primary immunization series are necessary to maintain protection against tetanus. Tdap is available as a one time dose for adults who have not recently received a tetanus vaccine. Also, it is important to be sure that all cuts, scrapes and puncture wounds are cleaned well with soap and water. Consult your healthcare provider for need of tetanus vaccine after a wound.

Who should be excluded?

There is no need for the child or the childcare worker to be excluded as tetanus is not spread from person-to-person.

Reportable?

Yes, tetanus is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



TUBERCULOSIS

Tuberculosis (TB) is a disease caused by a certain type of bacterium. A person *who is sick* with **active tuberculosis disease** may spread the germ when they cough or sneeze. If others inhale the bacteria from the air, they may become infected. But not everyone who is exposed will become infected. A person with Latent TB infection does not feel sick and cannot spread the germs to others.

Does infection mean you will be sick?

No. Many people were infected with TB many years ago when the disease was very common. Only 5-10% of people who are infected will ever get the disease unless they have an impaired immune system.

What is a TB test?

A skin test is a method of determining if a person has been infected with the TB germ. A positive TB skin test reaction, however, does NOT necessarily mean the person has TB disease.

Like the skin test there is a blood test that can test for tuberculosis infection. This test is often called an IGRA (Interferon gamma release assay). The IGRA does not diagnose active TB disease. The IGRA is currently not recommended for children under two.

How is the test given?

For the skin test—a small amount of PPD (purified protein derivative) is injected just under the surface of the skin on the forearm. In 48 to 72 hours, a healthcare provider or nurse will read the test by inspecting the skin.

The IGRA is a simple blood draw and there is no return visit for reading necessary and a doctor will help determine the results.

Who should have tuberculosis test?

Persons who have been exposed to an active case of TB, persons born in a foreign country (where TB is common), people infected with HIV (human immunodeficiency virus), healthcare workers and pre-school age childcare staff. It is a law that persons with a positive IGRA be reported to the Bureau of Infectious Disease Control.

Persons who have a documented positive reaction to a TB skin test do not need repeat skin tests. All persons with a positive skin test or a positive IGRA should be evaluated yearly for signs of active disease.

How can TB be prevented?

People who have a positive reaction to a TB skin test or a positive IGRA can prevent disease by taking medications.

Who should be excluded?

A person with a positive TB skin test or positive IGRA should have a medical examination and a chest x-ray and discuss with a healthcare provider about taking preventive therapy. Persons diagnosed or suspected to have active TB disease should be reported immediately to the Bureau of Infectious Disease Control and should be excluded from attending or working in a childcare center until they are determined to be non-infectious by both a healthcare provider and the Bureau of Infectious Disease Control.

Reportable?

Yes. Suspect and cases of active tuberculosis and persons with a positive IGRA are reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



WEST NILE VIRUS

What is West Nile virus?

West Nile virus (WNV) is an uncommon but serious mosquito-borne infection. The virus can be transmitted to horses, other animals, and, in rare cases, people.

How do people get West Nile virus?

WNV is spread by the bite of an infected mosquito. Mosquitoes become infected when they feed on infected birds. Infected mosquitoes can then spread WNV to humans and other animals when they bite. In a very small number of cases, WNV also has been spread through blood transfusions or organ transplants, breastfeeding and even during pregnancy from mother to baby. WNV is not spread through casual contact such as touching or kissing a person with the virus.

What are the symptoms of West Nile virus in humans?

Most WNV infections do not cause any symptoms. Mild WNV infections can cause fever, headache and body aches, often with a skin rash and swollen lymph glands. In a small percentage of people infected by the virus, the disease can be serious, even fatal. Most severe infections can cause headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, paralysis, and sometimes death.

How soon after exposure do symptoms appear?

Symptoms of WNV usually appear 2 to 14 days, but usually 2-6 days after the bite of an infected mosquito.

How is West Nile virus diagnosed?

Diagnosis is based on tests of blood or spinal fluid.

Who is at risk for West Nile virus?

Anyone can get WNV, but some people are at increased risk, such as people living in or visiting areas where the disease is common, or people who work outside or participate in outdoor recreational activities in areas where the disease is common. Persons older than 50 years of age are more likely to develop serious symptoms of WNV if they do get sick and should take special care to avoid mosquito bites. All donated blood is checked for WNV before being used. The risk of getting WNV through blood transfusions and organ transplants is very small, and should not prevent people who need surgery from having it. If you have concerns, talk to your health care professional.

What is the treatment for West Nile Virus?

There is no specific treatment for WNV. In more severe cases, intensive supportive therapy is indicated, i.e., hospitalization, intravenous (IV) fluids and nutrition, airway management, ventilator support (ventilator) if needed, and prevention of secondary infections (pneumonia, urinary tract, etc).

How common is West Nile virus?

WNV was first identified in NH in 2000. WNV has been found in horses, mosquitoes and several species of birds. Since 2010 three human cases of WNV were reported in the state.

How can West Nile virus be prevented?

A vaccine is available for horses, but not for humans. Prevention of the disease centers around controlling mosquitoes and on individual action to avoid mosquito bites. To avoid being bitten by the mosquitoes that transmit WNV:

West Nile Virus (cont.)

- If possible, stay inside between dusk and dawn, when mosquitoes are most active.
- When outside between dusk and dawn, wear long pants and long-sleeved shirts.
- Use an insect repellent with DEET or Picaridin according to manufacturer's directions when outside. Oil of lemon eucalyptus and IR3535 have been found to provide protection similar to repellents with low concentrations of DEET.
- Put screens on windows and make sure they do not have holes.
- Eliminate standing water and other mosquito breeding locations from your property. Do not alter natural water bodies. The management of ponds and wetlands is regulated by the Department of Environmental Services and any alterations require a permit before work may begin.

For specific concerns about West Nile virus, call the New Hampshire Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496. For further information, refer to the Centers for Disease Control and Prevention website at www.cdc.gov or the New Hampshire department of Health & Human Services website at www.dhhs.nh.gov.



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GLOSSARY

Antibody – A protein substance produced by the defense system in response to something foreign. Antibodies help protect against infections.

Asymptomatic – Without symptoms. For example, a child may have the hepatitis A virus in the stool and not have symptoms of illness, but will still be able to infect others.

Bacteria/Bacterium – One celled organism with a cell wall that can survive in and out of the body. They are much larger than viruses, and they can usually be treated effectively with antibiotics. Examples of bacteria include *Salmonella enteritidis* and *Bordetella pertussis*. Bacterium is singular, bacteria, plural.

Bloodborne – A disease that can be transmitted through the blood.

Carrier – A person who is infected with a specific organism, who has no symptoms of disease and who can spread the disease to others. For example, some children may be carriers of the organism *Haemophilus influenza* or *Giardia lamblia* and have no symptoms.

Chronic – An infection or illness that lasts a long time (i.e., months or years).

Communicable – When an infected person is capable of spreading infection to another person.

Contagious Period (Communicable Period) – The period of time when an infected person is capable of spreading infection to another person.

Contamination – The presence of infectious germs in or on the body, on environmental surfaces, on articles of clothing, or in food or water.

Diarrhea – Increased number of stools compared with a person's normal pattern, along with watery stools, and/or decreased stool form. Uncontrolled diarrhea is diarrhea that cannot be contained by the diaper or use of the toilet.

Direct Contact – Diseases that are spread by touching the infected area on another person's skin or occasionally by touching an object that is contaminated with infectious secretions or parasites.

Disinfection – Killing of germs outside of the body with chemical (e.g., bleach, alcohol), or physical (e.g., heat) agents. Surfaces should be cleaned first and then disinfected.

Enteric – Describing infections of the intestines (often with diarrhea).

Febrile – Having a fever.

Fever – An elevation of body temperature.

Hygiene – Protective measures taken by individuals to promote health and limit the spread of infectious diseases. These include: **a**) washing hands with soap and running water after using the toilet, after handling anything contaminated, and before eating or handling food; **b**) keeping hands, hair and unclean items away from the mouth, nose, eyes, ears, genitals and wounds; **c**) avoiding the use of common or unclean eating utensils, drinking glasses, towels, handkerchiefs, combs and hairbrushes; **d**) preventing exposure to droplets from the nose and mouth by covering the face when coughing or sneezing; **e**) washing hands thoroughly after caring for another person; and **f**) keeping the body clean by frequent (at least daily) baths or showers using soap and water.

GLOSSARY (cont.)

Immunity – The body's ability to fight a particular infection. For example, a child acquires immunity to diseases such as measles, mumps, rubella and pertussis after natural infection or by immunization. Newborns initially have the same immune status as their mothers. This type of immunity usually disappears within the first six months of life.

Immunizations – Vaccines that are given to children and adults to help them develop protection (antibodies) against specific infections. Vaccines may contain an inactivated or killed agent, or a weakened live organism. Childhood immunizations include protection against *diphtheria, pertussis, tetanus, polio, measles, mumps, rubella, Haemophilus influenza type b, hepatitis A, hepatitis B and varicella*. Adults need to be protected against measles, mumps, rubella, tetanus and diphtheria, and chicken pox.

Incubation Period – Time between exposure to an infectious agent and the beginning of symptoms.

Infection – When an infectious agent multiplies in the body.

Infectious – Capable of causing an infection.

Jaundice (icterus) – Yellowing of the eyes or skin.

Organisms – Living things. Often used as a general term for germs (e.g., bacteria, viruses, fungi, parasites) that can cause disease.

Parasite – An organism that lives on or in another living organism.

Pathogen – Disease causing organism.

Prophylaxis – Measures taken at the time of exposure of an infectious disease, or shortly thereafter, to try and prevent the disease. This may include medication or special immunization.

Purulent – Forming or containing pus.

Secretions – Wet material produced by cells or glands, which has a specific purpose in the body, such as saliva.

Systemic – Pertaining to a whole body rather than to one of its parts.

Transmission – The passing of an infectious organism or germ from a source of infection to a person. (Examples: person-to-person or animal to person).

Virus – A microscopic organism, smaller than bacteria, which may cause disease. Viruses can grow or reproduce only in living cells. Examples of viruses include hepatitis B, HIV and the common cold. .

Review

Risk Factors Of Stroke: Literature Review

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ARTICLE INFO

Article History

Submit : Dec 8, 2023

Revised : Dec 24, 2023

Accepted : Dec 27, 2023

Keywords:

Public Knowledge

Risk Factors

Stroke

ABSTRACT

Background: *Stroke is the most common cause of disease in the world and is the highest cause of death in Indonesia, so prevention is very important to minimise the incidence of stroke. The most appropriate effort to prevent stroke is to control stroke risk factors. The purpose of the literature review is to analyse the risk factors associated with stroke events in patients.*

Methods: *The method used is a literature review using a journal database from Pubmed, Science Direct, and Google Scholar. In the 2019-2023 range, with the keywords "stroke, factors causing stroke", and stroke, 220 articles were obtained*

Results: *Search for articles according to the criteria and obtain ten articles that are ready to be reviewed. These articles explain the risk factors for stroke. It is hoped that stroke patients will try to control stroke risk factors*

Conclusion: *This literature review shows that the risk factors for stroke are increasing due to a history of diseases such as hypertension, diabetes mellitus, age, gender, high cholesterol, obesity, lack of public knowledge about stroke and consumption of alcohol, smoking and drugs, including a lifestyle*

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 Cite this as

: Oliveira, A. B. de ., Muhith, A., & Zahro, C. (2023). Risk Factors Of Stroke: Literature Review. Journal of Applied Nursing and Health, 5(2), 347–354. <https://doi.org/10.55018/janh.v5i2.166>

Introduction

Stroke is the third leading cause of death in the world after cancer and heart disease and the leading cause of disability. Stroke can affect anyone, both young and old, male or female. All groups, both low and high socioeconomic groups and rural and urban communities suffer strokes ([Dhamoon et al.](#), 2021; [Jeong et al.](#), 2020; [Tang et al.](#), 2019). According to WHO (World Health Organization), 1 in 4 people are estimated to experience a stroke in their lifetime. Every year, as many as 15 million people in the world suffer a stroke, around 5 million people experience permanent

paralysis. The number of stroke cases in Southeast Asia is 4.4 million.

Indonesia ranks first in stroke sufferers in Asia. This causes the problem of stroke to become increasingly important and urgent. ([Riskeidas](#), 2018) data shows that the highest stroke incidence rate in Indonesia is in East Kalimantan Province (14.7%), while the lowest cases are in Papua Province (4.1%). The incidence of stroke increases with increasing age, where the age group 75 years and over has the highest cases (50.2%) and the lowest is 15-24 years old (0.6%). The prevalence of stroke between men and women is almost the same, namely 11% and 10.95%.



In 2013-2018, the prevalence of stroke in West Nusa Tenggara province increased by 4.5% to 8%. Based on data from the Praya City Health Office, there were 118 cases. Based on Praya Hospital Medical Records data in 2019, there were 209 stroke cases, and 22 people died (13.87%). In 2020, there were 221 stroke cases, and 53 people died (23.98%). In 2021, stroke cases increased significantly compared to the previous two years, namely 318 people, of which 168 were men (52.84%) and 150 women (47.16%), while 81 people died (26.79%).

Risk factors for stroke consist of factors that cannot be modified and can be modified. Risk factors that cannot be modified include age, race, gender and genetics, while risk factors that can be modified include hypertension, diabetes mellitus, atrial fibrillation, smoking and alcohol addiction. Hypertension is the main factor that causes stroke in around 95% of cases. Unhealthy lifestyle habits such as consuming fast food, preservatives, high salt, high sugar, lack of physical activity, fatigue, work stress and smoking also increase the risk of stroke ([Chishi et al., 2023](#); [Sykora et al., 2022](#); [Zhao et al., 2019](#)). Low knowledge regarding risk factors for stroke, both in terms of recognising stroke symptoms, stroke services that are not yet optimal, and low levels of individual compliance or compliance with stroke therapy programs to prevent recurrent strokes, is a weak point in stroke management in the world.

Based on data from Basic Health Research ([Riskeidas, 2018](#)) compared with Riskeidas 2013, it was found that there was a change in trend; there was a significant increase in patients with people suffering from stroke in old and productive age. Epidemiologists predict that currently and in the future, around 12 million people in Indonesia aged over 35 years will have the

potential to experience a stroke. Therefore, comprehensive efforts to control stroke risk factors are urgent in the health sector so that individuals in old age and productive age can avoid stroke attacks ([Grimaud et al., 2019](#); [Héja et al., 2021](#); [Kono et al., 2020](#); [Wilbers et al., 2020](#))

Methods

This method uses the method of *literature review*. Article searches were carried out in September 2023 using journal databases from Science Direct, Pubmed, and Google Scholar. Journal article searches were carried out systematically from the last four years, namely 2019-2023, with the search keywords "Stroke" and Risk Factors for Stroke. For relevant searches. The research will filter the articles as a whole from the selected references without the exception of the title and abstract so that more and more relevant articles are obtained.

Inclusion criteria on *systematic review* These are 1) Respondents are stroke patients, 2) the intervention focuses on risk factors for stroke, and 3) Article selection is not limited to methodology, population and results. Meanwhile, the exclusion criteria *systematic review* These are 1) research that is not related to risk factors for stroke, 2) research that is not conducted on stroke patients, 3) research that is not published such as final scientific papers (thesis, theses and dissertations), abstracts, conferences and case reports.

Articles that have been obtained from the database will be assessed using the PICO method in accordance with the inclusion and exclusion criteria, which contain 1) the title of the article, 2) the author and year of publication of the article, 3) the research methodology (population, sample, intervention and analysis). Research result.



Results

Searches for international research articles were obtained from Science Direct,

Google Scholar and PubMed. From the search results, further identification according to the inclusion and exclusion criteria resulted in 10 articles being obtained.

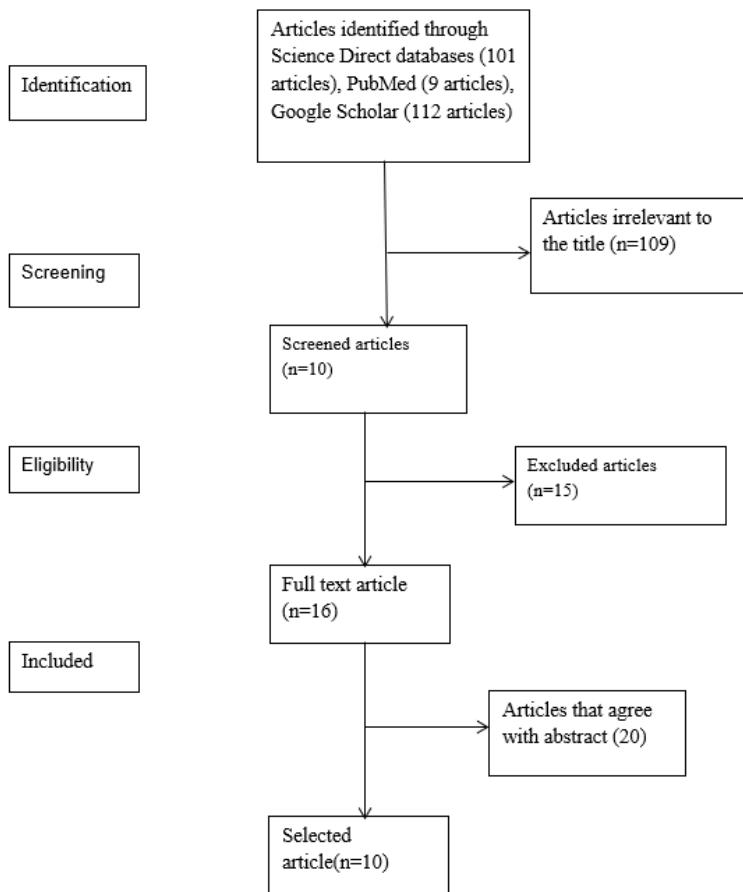


Figure 1. Literature Search Flow Diagram

Table 1. Data Distraction Method

No	Title, author, and year of publication	Research Methodology	Research result
1	Analysis of associated risk factors with the incidence of stroke: A Literature Review (NURHAYATI, 2021)	Design: descriptive non-experimental correlation, namely cross-sectional correlation method Subjects: 40 patients Variable: analysis of risk factors for stroke Instrument: Article search via Science Direct and Google Scholar	From the results of this research that was reviewed, it was obtained shows that the therapy given is a risk factor for stroke in stroke patients
2	Risk factors that influence stroke incidence (Utama & Nainggolan, 2022)	Design: Systematic literature review Subject: 10 articles Variable: risk factors that influence the incidence of stroke. Instrument: article search via Google Scholar, PubMed.	Of the ten articles that have been reviewed, the risk factors for stroke have increased, namely gender, genetics, age and lifestyle.
3	Analysis of risk factors for stroke (Kencana et al., 2022)	Design: case-control Subjects: The case group is stroke patients repeated for a total of 66 participants, the two control groups were examined for gender and history variables hypertension, DM, Dyslipidemias.	From the research results shows that ($p<0.05$ OR=2.941)
4	Analysis of risk factors for stroke in stroke patients (Manurung & Diani, 2015)	Design: observational Analytical with a case-control approach. Subjects: 84 patients (42 people for the case group and 42 people for control group) Variable: analysis of risk factors for stroke. Instrument: cleaner	The research results showed that based on statistical tests, the risk that could not be modified was obtained by historical factors, family illness with a p-value of 0,016; risk factors that can be modified are total cholesterol p-value of 0,000, hypertension with a p-value of 0,001, LDL with <i>p value</i> 0,002.
5	Risk factors for stroke (Lilipory et al., 2019)	Design: case-control using a retrospective approach. Subjects: 64 people with a	The results of this study are a risk factor for stroke, namely hypertension ($p= 0.00$ OR=8.52;

No	Title, author, and year of publication	Research Methodology	Research result
		ratio of 1:1 (32 cases and 32 controls)	95%. CI physic p=1.00, OR=0.80; 95% CI 0.21-2.95)
6	Factor analysis the occurrence of stroke and types of stroke	Design: retrospective Subject: 200 respondents Variable: analysis of risk factors for stroke	Results of this research showed that some respondents experienced ischemic stroke.
7	Risk factors for stroke	Design: observational analytical. Subjects: 47 respondents with a purposive sampling technique. Variable: risk factor the occurrence of a stroke Instrument: questionnaire with Spearman rank data analysis.	Results of this research indicates hypertension is associated with the risk of stroke (p=0.05 OR= 7.200), smoking is associated with the risk of stroke (p= 0.04; OR=8.144), obesity (p=0.000; OR=16.0000) hypertension and obesity are the most dominant factors.
8	Analysis of stroke risk factors (Anissa et al., 2020)	Design: Analytical observational with case-control Variable: analysis of risk factors for stroke. Subjects: 88 respondents with 44 cases and 44 controls.	Results of this research show that a history of hypertension and age are still risk factors for stroke
9	Risk factors for ischemic stroke and haemorrhage (Othadinar et al., 2019)	Design: descriptive Variable: Risk factor incidence of ischemic and hemorrhagic stroke Subjects: All ischemic and hemorrhagic stroke patients who stayed at the National Brain Center Hospital in 2018 2016-2017	The articles reviewed show that the factors are age, history of illness, hypertension, DM, and lifestyle, which influence the risk factors for stroke.
10	Risk factors for stroke in hypertensive patients (Dedi et al., 2023)	Design: observational with a population case approach from stroke research suffering as many as 150. Subjects: Researchers took a sample of 20%.	The research results showed that the respondents were healthy by 13(43%) and respondents who did not as many as 17 (56%)

Discussion

The research results of the ten journals reviewed proved that the risk factors for stroke were increasing due to a history of hypertension, DM, high cholesterol, age, gender and lifestyle. Stroke is the most common cause of death in the world after heart disease and the main cause of disability ([Akhtar et al.](#), 2022; [Sutherly et al.](#), 2021; [Tong et al.](#), 2022). Modern lifestyles have changed human attitudes and behaviour, including eating patterns, smoking, alcohol consumption and unhealthy lifestyles, so that people suffering from degenerative diseases (diseases caused by the function of body organs) are increasing and threatening lives. Some degenerative diseases that often occur in society are coronary heart disease, hypertension, DM, stroke and cancer.

Conclusion

This literature review shows that the risk factors for stroke are increasing due to a history of diseases such as hypertension, diabetes mellitus, age, gender, high cholesterol, obesity, lack of public knowledge about stroke and consumption of alcohol, smoking and drugs, including a lifestyle.

Authors Contributions

The author carries out tasks from data collection, data analysis, and discussions to making manuscripts.

Conflicts of Interest

There is no conflict of interest.

Acknowledgment

Thank you to the reviewer and to those who have helped in this research

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Preventing Stroke

If you're like most Americans, you plan your future. When you take a job, you examine its benefit plan. When you buy a home, you consider its location and condition so that your investment is safe. Today, more and more Americans are protecting their most important asset—their brain. Are you?

Stroke ranks as the fourth leading killer in the United States. A stroke can be devastating to individuals and their families, robbing them of their independence. It is the most common cause of adult disability. Each year more than 700,000 Americans have a stroke, with about 160,000 dying from stroke-related causes. Officials at the National Institute of Neurological Disorders and Stroke (NINDS) are committed to reducing that burden through biomedical research.

A stroke, or “brain attack,” occurs when blood circulation to the brain fails.

What is a Stroke?

A stroke, or “brain attack,” occurs when blood circulation to the brain fails. Brain cells can die from decreased blood flow and the resulting lack of oxygen. There are two broad categories of stroke: those caused by a blockage of blood flow and those caused by bleeding into the brain. A blockage of a blood vessel in the brain or neck, called an ischemic stroke, is the most frequent cause of stroke and is responsible for about 80 percent of strokes. These blockages stem from three conditions: the formation of a clot within a blood vessel of the brain or neck, called thrombosis; the movement of a clot from another part of the body such as the heart to the brain, called embolism; or a severe narrowing of an artery in or leading to the brain, called stenosis. Bleeding into the brain or the spaces surrounding the brain causes the second type of stroke, called hemorrhagic stroke.

Two key steps you can take will lower your risk of death or disability from stroke: control stroke's risk factors and know stroke's warning signs. Scientific research conducted by the NINDS has identified warning signs and a large number of risk factors.

What are Warning Signs of a Stroke?

Warning signs are clues your body sends that your brain is not receiving enough oxygen. If you observe one or more of these signs of a stroke or “brain attack,” don’t wait, call a doctor or 911 right away!

- Sudden numbness or weakness of face, arm, or leg, especially on one side of the body
- Sudden confusion, or trouble talking or understanding speech
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, or loss of balance or coordination
- Sudden severe headache with no known cause

Other danger signs that may occur include double vision, drowsiness, and nausea or vomiting. Sometimes the warning signs may last only a few moments and then disappear. These brief episodes, known as transient ischemic attacks or TIAs, are sometimes called “mini-strokes.” Although brief, they identify an underlying serious condition that isn’t going away without medical help. Unfortunately, since they clear up, many people ignore them. Don’t. Paying attention to them can save your life.

Sometimes the warning signs [of a stroke] may last only a few moments and then disappear.

What are Risk Factors for a Stroke?

A risk factor is a condition or behavior that occurs more frequently in those who have, or are at greater risk of getting, a disease than in those who don’t. Having a risk factor for stroke doesn’t mean you’ll have a stroke. On the other hand, not having a risk factor doesn’t mean you’ll avoid a stroke. But your risk of stroke grows as the number and severity of risk factors increases.

Some factors for stroke can’t be modified by medical treatment or lifestyle changes.

- *Age.* Stroke occurs in all age groups. Studies show the risk of stroke doubles for each decade between the ages of 55 and 85. But strokes also can occur in childhood or adolescence. Although stroke is often considered a disease of aging, the risk of stroke in childhood is actually highest during the perinatal period, which encompasses the last few months of fetal life and the first few weeks after birth.
- *Gender.* Men have a higher risk for stroke, but more women die from stroke. Men generally do not live as long as women, so men are usually younger when they have their strokes and therefore have a higher rate of survival.

- *Race.* People from certain ethnic groups have a higher risk of stroke. For African Americans, stroke is more common and more deadly—even in young and middle-aged adults—than for any ethnic or other racial group in the United States. Studies show that the age-adjusted incidence of stroke is about twice as high in African Americans and Hispanic Americans as in Caucasians. An important risk factor for African-Americans is sickle cell disease, which can cause a narrowing of arteries and disrupt blood flow. The incidence of the various stroke subtypes also varies considerably in different ethnic groups.
- *Family history of stroke.* Stroke seems to run in some families. Several factors may contribute to familial stroke. Members of a family might have a genetic tendency for stroke risk factors, such as an inherited predisposition for high blood pressure (hypertension) or diabetes. The influence of a common lifestyle among family members also could contribute to familial stroke.

Some of the most important treatable risk factors for stroke are:

- **High blood pressure, or hypertension.** Hypertension is by far the most potent risk factor for stroke. Hypertension causes a two-to four-fold increase in the risk of stroke before age 80. If your blood pressure is high, you and your doctor need to work out an individual strategy to bring it down to the normal range. Some ways that work: Maintain proper weight. Avoid drugs known to raise blood pressure. Eat right: cut down on salt and eat fruits and vegetables to increase potassium in your diet. Exercise more. Your doctor may prescribe medicines that help lower blood pressure. Controlling blood pressure will also help you avoid heart disease, diabetes, and kidney failure.
- **Cigarette smoking.** Cigarette smoking causes about a two-fold increase in the risk of ischemic stroke and up to a four-fold increase in the risk of hemorrhagic stroke. It has been linked to the buildup of fatty substances (atherosclerosis) in the carotid artery, the main neck artery supplying blood to the brain. Blockage of this artery is the leading cause of stroke in Americans. Also, nicotine raises blood pressure; carbon monoxide from smoking reduces the amount of oxygen your blood can carry to the brain; and cigarette smoke makes your blood thicker and more likely to clot. Smoking also promotes

High blood pressure is by far the most potent risk factor for stroke.

aneurysm formation. Your doctor can recommend programs and medications that may help you quit smoking. By quitting, at any age, you also reduce your risk of lung disease, heart disease, and a number of cancers including lung cancer.

- **Heart disease.** Common heart disorders such as coronary artery disease, valve defects, irregular heart beat (atrial fibrillation), and enlargement of one of the heart's chambers can result in blood clots that may break loose and block vessels in or leading to the brain. Atrial fibrillation—which is more prevalent in older people—is responsible for one in four strokes after age 80, and is associated with higher mortality and disability. The most common blood vessel disease is atherosclerosis. Hypertension promotes atherosclerosis and causes mechanical damage to the walls of blood vessels. Your doctor will treat your heart disease and may also prescribe medication, such as aspirin, to help prevent the formation of clots. Your doctor may recommend surgery to clean out a clogged neck artery if you match a particular risk profile. If you are over 50, NINDS scientists believe you and your doctor should make a decision about aspirin therapy. A doctor can evaluate your risk factors and help you decide if you will benefit from aspirin or other blood-thinning therapy.
- **Warning signs or history of TIA or stroke.** If you experience a TIA, get help at once. If you've previously had a TIA or stroke, your risk of having a stroke is many times greater than someone who has never had one. Many communities encourage those with stroke's warning signs to dial 911 for emergency medical assistance. If you have had a stroke in the past, it's important to reduce your risk of a second stroke. Your brain helps you recover from a stroke by asking the unaffected brain regions to do double duty. That means a second stroke can be twice as bad.
- **Diabetes.** In terms of stroke and cardiovascular disease, having diabetes is the equivalent of aging 15 years. You may think this disorder affects only the body's ability to use sugar, or glucose. But it also causes destructive changes in the blood vessels throughout the body, including the brain. Also, if blood glucose levels are high at the time of a stroke, then brain damage is

*Stroke strikes fast.
You should, too.
Call 911.*

usually more severe and extensive than when blood glucose is well-controlled. Hypertension is common among diabetics and accounts for much of their increased stroke risk. Treating diabetes can delay the onset of complications that increase the risk of stroke.

- **Cholesterol imbalance.** Low-density lipoprotein cholesterol (LDL) carries cholesterol (a fatty substance) through the blood and delivers it to cells. Excess LDL can cause cholesterol to build up in blood vessels, leading to atherosclerosis. Atherosclerosis is the major cause of blood vessel narrowing, leading to both heart attack and stroke.
- **Physical inactivity and obesity.** Obesity and inactivity are associated with hypertension, diabetes, and heart disease. Waist circumference to hip circumference ratio equal to or above the mid-value for the population increases the risk of ischemic stroke three-fold.

Do You Know Your Stroke Risk?

Some of the most important risk factors for stroke can be determined during a physical exam at your doctor's office. If you are over 55 years old, the worksheet in this pamphlet can help you estimate your risk of stroke and show the benefit of risk factor control.

The worksheet was developed from NINDS-supported work in the well-known Framingham Study. Working with your doctor, you can develop a strategy to lower your risk to average or even below average for your age.

Many risk factors for stroke can be managed, some very successfully. Although risk is never zero at any age, by starting early and controlling your risk factors you can lower your risk of death or disability from stroke. With good control, the risk of stroke in most age groups can be kept below that for accidental injury or death.

Americans have shown that stroke is preventable and treatable. In recent years, a better understanding of the causes of stroke has helped Americans make lifestyle changes that have cut the stroke death rate nearly in half.

Scientists at the NINDS predict that, with continued attention to reducing the risks of stroke and by using currently available therapies and developing new ones, Americans should be able to prevent 80 percent of all strokes.

*Americans
should be
able to
prevent
80 percent
of all strokes.*

Score your stroke risk for the next 10 years—MEN

Key: **SBP** = systolic blood pressure (score one line only, untreated or treated); **Diabetes** = history of diabetes; **Cigarettes** = smokes cigarettes; **CVD** (cardiovascular disease) = history of heart disease; **AF** = history of atrial fibrillation; **LVH** = diagnosis of left ventricular hypertrophy; **untrd** = untreated; **trtd** = treated with medication

Points	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Age	54-56	57-59	60-62	63-65	66-68	69-72	73-75	76-78	79-81	82-84	85
SBP-untrd or SBP-trtd	97-105 97-105	106-115 106-112	116-125 113-117	126-135 118-123	136-145 124-129	146-155 130-135	156-165 136-142	166-175 143-150	176-185 151-161	186-195 162-176	196-205 177-205
Diabetes	No		Yes								
Cigarettes	No			Yes							
CVD	No				Yes						
AF	No					Yes					
LVH	No						Yes				
Your Points	10-Year Probability		Your Points	10-Year Probability		Your Points	10-Year Probability				
1	3%		11	11%		21	42%				
2	3%		12	13%		22	47%				
3	4%		13	15%		23	52%				
4	4%		14	17%		24	57%				
5	5%		15	20%		25	63%				
6	5%		16	22%		26	68%				
7	6%		17	26%		27	74%				
8	7%		18	29%		28	79%				
9	8%		19	33%		29	84%				
10	10%		20	37%		30	88%				
Compare with Your Age Group	Average 10-Year Probability of Stroke										
55-59	5.9%										
60-64	7.8%										
65-69	11.0%										
70-74	13.7%										
75-79	18.0%										
80-84	22.3%										

Source: D'Agostino, R.B.; Wolf, P.A.; Belanger, A.J.; & Kannel, W.B. "Stroke Risk Profile: The Framingham Study." *Stroke*, Vol. 25, No. 1, pp. 40-43, January 1994.

Score your stroke risk for the next 10 years-WOMEN

Key: **SBP** = systolic blood pressure (score one line only, untreated or treated); **Diabetes** = history of diabetes; **Cigarettes** = smokes cigarettes; **CVD** (cardiovascular disease) = history of heart disease; **AF** = history of atrial fibrillation; **LVH** = diagnosis of left ventricular hypertrophy; **untrd** = untreated; **trtd** = treated with medication

Points	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10															
Age	54-56	57-59	60-62	63-64	65-67	68-70	71-73	74-76	77-78	79-81	82-84															
SBP-untrd	95-106	107-118	119-130	131-143	144-155	156-167	168-180	181-192	193-204	205-216																
or SBP-trtd	95-106	107-113	114-119	120-125	126-131	132-139	140-148	149-160	161-204	205-216																
Diabetes	No			Yes																						
Cigarettes	No			Yes																						
CVD	No		Yes																							
AF	No						Yes																			
LVH	No				Yes																					
Your Points	10-Year Probability		Your Points	10-Year Probability		Your Points	10-Year Probability																			
1	1%		11	8%		21	43%																			
2	1%		12	9%		22	50%																			
3	2%		13	11%		23	57%																			
4	2%		14	13%		24	64%																			
5	2%		15	16%		25	71%																			
6	3%		16	19%		26	78%																			
7	4%		17	23%		27	84%																			
8	4%		18	27%																						
9	5%		19	32%																						
10	6%		20	37%																						
Compare with Your Age Group	Average 10-Year Probability of Stroke	<p>This example helps you assess your risk of stroke. Tally your points to score your stroke risk over the next 10 years.</p> <p>Martha, age 65, wanted to determine her risk for having a stroke, so she took this stroke risk profile. This is how she arrived at her 10-year probability risk for having a stroke:</p> <table> <tbody> <tr> <td>Age 65</td> <td>4 points</td> </tr> <tr> <td>SBP – treated, 107-113</td> <td>2 points</td> </tr> <tr> <td>Diabetes - No</td> <td>0 points</td> </tr> <tr> <td>Cigarettes - Yes</td> <td>3 points</td> </tr> <tr> <td>CVD -No</td> <td>0 points</td> </tr> <tr> <td>AF - Yes</td> <td>6 points</td> </tr> <tr> <td>LVH -No</td> <td>0 points</td> </tr> <tr> <td>TOTAL</td> <td>15 points</td> </tr> </tbody> </table>									Age 65	4 points	SBP – treated, 107-113	2 points	Diabetes - No	0 points	Cigarettes - Yes	3 points	CVD -No	0 points	AF - Yes	6 points	LVH -No	0 points	TOTAL	15 points
Age 65	4 points																									
SBP – treated, 107-113	2 points																									
Diabetes - No	0 points																									
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TOTAL	15 points																									
55-59	3.0%																									
60-64	4.7%																									
65-69	7.2%																									
70-74	10.9%																									
75-79	15.5%																									
80-84	23.9%																									

Interpretation: 15 points carries a 16 percent, 10-year probability of having a stroke. If Martha quits smoking she can reduce her points to 12, which carries a 9 percent, 10-year probability of having a stroke.

Her current point total does not mean Martha will have a stroke, but serves as a wake-up call to ways she can lower her risk or even prevent a stroke. A lower percent score doesn't mean that Martha won't have a stroke, only that she is at a lower risk of having one.

No matter what your score is, it is important to work on reducing your risk factors as Martha did in this example by quitting smoking.

The National Institute of Neurological Disorders and Stroke (NINDS)

Since its creation by Congress in 1950, the NINDS—a component of the National Institutes of Health—has grown to become the leading supporter of neurological research in the United States. Most research funded by the NINDS is conducted by scientists in public and private institutions such as universities, medical schools, and hospitals. Government scientists also conduct a wide variety of neurological research in the laboratories and branches of the NINDS itself. This research ranges from studies on the structure and function of single brain cells to tests of new diagnostic tools and treatments for those with neurological disorders. For more information, write or call the Institute's Brain Resources and Information Network (BRAIN):

BRAIN

P.O. Box 5801

Bethesda, MD 20824

800-352-9424

www.ninds.nih.gov



let's talk about

Risk Factors for Stroke

Knowing your risk factors for stroke is the first step in preventing a stroke. You can change or treat some risk factors, but others you can't. By having regular medical checkups and knowing your risk, you can focus on what you can change and lower your risk of stroke.



What risk factors can I change or treat?

- **High blood pressure.** This is the single most important risk factor for stroke because it's the leading cause of stroke. Know your blood pressure and have it checked every year. Normal blood pressure is below 120/80. If you have been told that you have high blood pressure, work with your healthcare provider to reduce it.
- **Smoking.** Smoking damages blood vessels. This can lead to blockages within those blood vessels, causing a stroke. Don't smoke and avoid second-hand smoke.
- **Diabetes.** Having diabetes more than doubles your risk of stroke. Work with your doctor to manage diabetes.
- **High cholesterol.** High cholesterol increases the risk of blocked arteries. If an artery leading to the brain becomes blocked, a stroke can result.
- **Physical inactivity and obesity.** Being inactive, obese, or both, can increase your risk of heart disease and stroke.
- **Carotid or other artery disease.** The carotid arteries in your neck supply most of the blood to your brain.

A carotid artery damaged by a fatty buildup of plaque inside the artery wall may become blocked by a blood clot. This causes a stroke.

- **Transient ischemic attacks (TIAs).** Recognizing and treating TIAs can reduce the risk of a major stroke. TIAs produce stroke-like symptoms but most have no lasting effects. Know the warning signs of a TIA and seek emergency medical treatment immediately.
- **Atrial fibrillation (AFib) or other heart disease.** In AFib the heart's upper chambers quiver (like a bowl of gelatin) rather than beating in an organized, rhythmic way. This can cause the blood to pool and clot, increasing the risk of stroke. AFib increases risk of stroke five times. People with other types of heart disease have a higher risk of stroke, too.
- **Certain blood disorders.** A high red blood cell count makes clots more likely, raising the risk of stroke. Sickle cell anemia increases stroke risk because the "sickled" cells stick to blood vessel walls and may block arteries.
- **Excessive alcohol intake.** Drinking an average of more than one drink per day for women or more than two drinks a day for men can raise blood pressure. Binge drinking can lead to stroke.

(continued)



- **Illegal drug use.** Drugs including cocaine, ecstasy, amphetamines, and heroin are associated with an increased risk of stroke.
- **Sleep apnea.** Sleep disordered breathing contributes to risk of stroke. Increasing sleep apnea severity is associated with increasing risk.

What are the risk factors I can't control?

- **Increasing age.** Stroke affects people of all ages. But the older you are, the greater your stroke risk.
- **Gender.** Women have a higher lifetime risk of stroke than men do. Use of birth control pills and pregnancy pose special stroke risks for women.
- **Heredity and race.** People whose close blood relations have had a stroke have a higher risk of stroke. African Americans have a higher risk of death and disability from stroke than whites. This is because they have high blood pressure more often. Hispanic Americans are also at higher risk of stroke.
- **Prior stroke.** Someone who has had a stroke is at higher risk of having another one.



Age, gender, heredity and race are among the stroke risk factors that you can't control.

HOW CAN I LEARN MORE?

- 1 Call 1-888-4-STROKE (1-888-478-7653) to learn more about stroke or find local support groups, or visit StrokeAssociation.org.
- 2 Sign up to get *Stroke Connection* magazine, a free magazine for stroke survivors and caregivers at strokeconnection.org.
- 3 Connect with others sharing similar journeys with stroke by joining our Support Network at strokeassociation.org/supportnetwork.

Do you have questions for the doctor or nurse?

Take a few minutes to write your questions for the next time you see your healthcare provider.

For example:

What are my risk factors for stroke?

What are the warning signs of TIAs and stroke?

My Questions:

We have many other fact sheets to help you make healthier choices to reduce your risk, manage disease or care for a loved one. Visit strokeassociation.org/letstalkaboutstroke to learn more.

Preventing and Managing Common Cold

Are you sneezing, or do you have a stuffy and runny nose? You might have a cold. Antibiotics do not work against viruses that cause colds and will not help you feel better.



What is Common Cold?

A common cold is a mild upper respiratory illness that resolves in a short period of time.

Symptoms

Symptoms of a cold usually peak within 2 to 3 days and can include:

- ◆ Sneezing
- ◆ Nasal congestion
- ◆ Sore throat
- ◆ Cough
- ◆ Fever (although most people with colds do not have fever)

When viruses that cause colds first infect the nose and sinuses, the nose makes clear mucus. This helps wash the viruses from the nose and sinuses. After 2 or 3 days, mucus may change to a white, yellow, or green color. This is normal and does not mean you need an antibiotic.

Some symptoms, especially runny or stuffy nose and cough, can last for up to 10 to 14 days. Those symptoms should improve over time.

Colds can have similar symptoms to flu. It can be difficult (or even impossible) to tell the difference between them based on symptoms alone.

Causes

More than 200 viruses can cause a cold, but rhinoviruses are the most common type. Viruses that cause colds can spread from person to person through the air and close personal contact.

When to Seek Medical Care

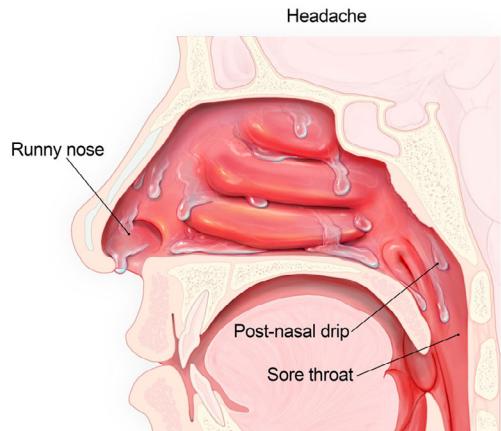
See a healthcare professional if you have:

- ◆ Trouble breathing or fast breathing
- ◆ Dehydration
- ◆ Fever that lasts longer than 4 days
- ◆ Symptoms that last more than 10 days without improvement
- ◆ Symptoms, such as fever or cough, that improve but then return or worsen
- ◆ Worsening of chronic medical conditions

This list is not all-inclusive. Please see a healthcare professional for any symptom that is severe or concerning.



Common Cold Symptoms



When you have a cold, mucus fills your nose and could cause post-nasal drip, headache, and a sore throat.

Talk to a healthcare professional right away if your child is under 3 months old with a fever of 100.4 °F (38 °C) or higher.



Treatment

There is no cure for a cold. It will get better on its own—without antibiotics. **Antibiotics won't help you get better if you have a cold.**

When antibiotics aren't needed, they won't help you, and their side effects could still cause harm. Side effects can range from mild reactions, like a rash, to more serious health problems. These problems can include severe allergic reactions, antimicrobial-resistant infections and *C. diff* infection. *C. diff* causes diarrhea that can lead to severe colon damage and death.

How to Feel Better

- ◆ Get plenty of rest.
- ◆ Drink plenty of fluids.
- ◆ Use a clean humidifier or cool mist vaporizer.
- ◆ Use saline nasal spray or drops.
 - » For young children, use a rubber suction bulb to clear mucus.
- ◆ Breathe in steam from a bowl of hot water or shower.
 - » For young children, sit with the child in a bathroom filled with steam from a running shower.
- ◆ Use throat lozenges or cough drops. Do not give lozenges to children younger than 4 years of age.
- ◆ Use honey to relieve cough for adults and children at least 1 year of age or older.

Ask your doctor or pharmacist about over-the-counter medicines that can help you feel better. Always use over-the-counter medicines as directed. Remember, over-the-counter medicines may provide temporary relief of symptoms, but they will not cure your illness.

Remember, always read over-the-counter medicine product labels before giving medicines to children. **Some over-the-counter medicines are not recommended for children of certain ages.**

- ◆ Pain relievers:
 - » Children younger than 6 months: only give acetaminophen.
 - » Children 6 months or older: it is OK to give acetaminophen or ibuprofen.
 - » Never give aspirin to children because it can cause Reye's syndrome. Reye's syndrome is a very serious, but rare illness that can harm the liver and brain.
- ◆ Cough and cold medicines:
 - » Over-the-counter cough/cold medicines are not recommended for children younger than 6 years old and can result in serious and sometimes life-threatening side effects; however, young children can have fever-reducing medicines. Contact your doctor or pharmacist about the correct dose and read and follow all directions.

Ask your doctor or pharmacist about the right dosage of over-the-counter medicines for your child's age and size. Also, tell your child's doctor and pharmacist about all prescription and over-the-counter medicines they are taking.

Prevention

CDC's Respiratory Virus Guidance provides practical recommendations and information to help people lower risk from a range of common respiratory viral illnesses. **CDC recommends that all people use core prevention strategies. These are important steps you can take to protect yourself and others:**

- ◆ Stay up to date with immunizations.
- ◆ Practice good hygiene (practices that improve cleanliness).
- ◆ Take steps for cleaner air.
- ◆ When you may have a respiratory virus:
 - » Use precautions to prevent spread.
 - » Seek health care promptly for testing and/or treatment if you have risk factors for severe illness; treatment may help lower your risk of severe illness.
- ◆ For more information, visit: www.cdc.gov/respiratory-viruses/guidance/respiratory-virus-guidance.

COMMON COLD FACT SHEET

What is the common cold?

The common cold is an infection that can be caused by many viruses, but rhinoviruses are most common. Most people get colds in the winter and spring, but it is possible to get a cold any time of the year.

Who can get the common cold?

Anyone. Adults have an average of two to three colds per year, and children have even more.

What are the symptoms of the common cold?

Symptoms of a cold usually include sore throat, runny nose, coughing, sneezing, watery eyes, headaches and body aches.

How soon do symptoms appear?

Symptoms usually begin in about two days for colds caused by rhinovirus, the most common virus that causes colds.

How is the common cold spread?

The common cold can spread through droplets in the air that are produced when an infected person coughs or sneezes. It can also spread when an infected person has close personal contact with an uninfected person. You can also get infected through contact with stool (poop) from an infected person. You can be exposed to droplets or stool when you shake hands with someone who has a cold, or touch an object or surface, such as a doorknob, that has viruses on it and then touch your eyes, mouth or nose.

Is there a vaccine for the common cold?

No.

How is the common cold treated?

There is no cure for the common cold. It is important to drink plenty of fluids and get lots of rest in order to get better. Non-prescription (over-the-counter) medicines may help reduce symptoms but will not make your cold go away any faster. Most people recover in approximately seven to 10 days. However, people with weakened immune systems, asthma or conditions that affect the lungs and breathing passages may develop serious illness, such as pneumonia.

How can people protect themselves against the common cold?

You can take the following steps to protect against a cold:

- Wash your hands often with soap and water, scrubbing your hands for at least 20 seconds
- Cover your nose and mouth with a tissue when you cough or sneeze
- Avoid touching your eyes, nose and mouth with unwashed hands
- Disinfect frequently touched surfaces, and objects such as toys and doorknobs
- Avoid personal contact, such as kissing or sharing cups or eating utensils, with people who are sick

Where can I get more information?

Information about the common cold and other related health topics can be found at www.cdc.gov. The DC Department of Health promotes the health and safety of the District residents. For additional information, please visit www.doh.dc.gov or call (202) 442-9371.



Review

Risk Factors Of Stroke: Literature Review

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ARTICLE INFO

Article History

Submit : Dec 8, 2023

Revised : Dec 24, 2023

Accepted : Dec 27, 2023

Keywords:

Public Knowledge

Risk Factors

Stroke

ABSTRACT

Background: *Stroke is the most common cause of disease in the world and is the highest cause of death in Indonesia, so prevention is very important to minimise the incidence of stroke. The most appropriate effort to prevent stroke is to control stroke risk factors. The purpose of the literature review is to analyse the risk factors associated with stroke events in patients.*

Methods: *The method used is a literature review using a journal database from Pubmed, Science Direct, and Google Scholar. In the 2019-2023 range, with the keywords "stroke, factors causing stroke", and stroke, 220 articles were obtained*

Results: *Search for articles according to the criteria and obtain ten articles that are ready to be reviewed. These articles explain the risk factors for stroke. It is hoped that stroke patients will try to control stroke risk factors*

Conclusion: *This literature review shows that the risk factors for stroke are increasing due to a history of diseases such as hypertension, diabetes mellitus, age, gender, high cholesterol, obesity, lack of public knowledge about stroke and consumption of alcohol, smoking and drugs, including a lifestyle*

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 Cite this as

: Oliveira, A. B. de ., Muhith, A., & Zahro, C. (2023). Risk Factors Of Stroke: Literature Review. Journal of Applied Nursing and Health, 5(2), 347–354. <https://doi.org/10.55018/janh.v5i2.166>

Introduction

Stroke is the third leading cause of death in the world after cancer and heart disease and the leading cause of disability. Stroke can affect anyone, both young and old, male or female. All groups, both low and high socioeconomic groups and rural and urban communities suffer strokes ([Dhamoon et al.](#), 2021; [Jeong et al.](#), 2020; [Tang et al.](#), 2019). According to WHO (World Health Organization), 1 in 4 people are estimated to experience a stroke in their lifetime. Every year, as many as 15 million people in the world suffer a stroke, around 5 million people experience permanent

paralysis. The number of stroke cases in Southeast Asia is 4.4 million.

Indonesia ranks first in stroke sufferers in Asia. This causes the problem of stroke to become increasingly important and urgent. ([Riskeidas](#), 2018) data shows that the highest stroke incidence rate in Indonesia is in East Kalimantan Province (14.7%), while the lowest cases are in Papua Province (4.1%). The incidence of stroke increases with increasing age, where the age group 75 years and over has the highest cases (50.2%) and the lowest is 15-24 years old (0.6%). The prevalence of stroke between men and women is almost the same, namely 11% and 10.95%.



In 2013-2018, the prevalence of stroke in West Nusa Tenggara province increased by 4.5% to 8%. Based on data from the Praya City Health Office, there were 118 cases. Based on Praya Hospital Medical Records data in 2019, there were 209 stroke cases, and 22 people died (13.87%). In 2020, there were 221 stroke cases, and 53 people died (23.98%). In 2021, stroke cases increased significantly compared to the previous two years, namely 318 people, of which 168 were men (52.84%) and 150 women (47.16%), while 81 people died (26.79%).

Risk factors for stroke consist of factors that cannot be modified and can be modified. Risk factors that cannot be modified include age, race, gender and genetics, while risk factors that can be modified include hypertension, diabetes mellitus, atrial fibrillation, smoking and alcohol addiction. Hypertension is the main factor that causes stroke in around 95% of cases. Unhealthy lifestyle habits such as consuming fast food, preservatives, high salt, high sugar, lack of physical activity, fatigue, work stress and smoking also increase the risk of stroke ([Chishi et al., 2023](#); [Sykora et al., 2022](#); [Zhao et al., 2019](#)). Low knowledge regarding risk factors for stroke, both in terms of recognising stroke symptoms, stroke services that are not yet optimal, and low levels of individual compliance or compliance with stroke therapy programs to prevent recurrent strokes, is a weak point in stroke management in the world.

Based on data from Basic Health Research ([Riskeidas, 2018](#)) compared with Riskeidas 2013, it was found that there was a change in trend; there was a significant increase in patients with people suffering from stroke in old and productive age. Epidemiologists predict that currently and in the future, around 12 million people in Indonesia aged over 35 years will have the

potential to experience a stroke. Therefore, comprehensive efforts to control stroke risk factors are urgent in the health sector so that individuals in old age and productive age can avoid stroke attacks ([Grimaud et al., 2019](#); [Héja et al., 2021](#); [Kono et al., 2020](#); [Wilbers et al., 2020](#))

Methods

This method uses the method of *literature review*. Article searches were carried out in September 2023 using journal databases from Science Direct, Pubmed, and Google Scholar. Journal article searches were carried out systematically from the last four years, namely 2019-2023, with the search keywords "Stroke" and Risk Factors for Stroke. For relevant searches. The research will filter the articles as a whole from the selected references without the exception of the title and abstract so that more and more relevant articles are obtained.

Inclusion criteria on *systematic review* These are 1) Respondents are stroke patients, 2) the intervention focuses on risk factors for stroke, and 3) Article selection is not limited to methodology, population and results. Meanwhile, the exclusion criteria *systematic review* These are 1) research that is not related to risk factors for stroke, 2) research that is not conducted on stroke patients, 3) research that is not published such as final scientific papers (thesis, theses and dissertations), abstracts, conferences and case reports.

Articles that have been obtained from the database will be assessed using the PICO method in accordance with the inclusion and exclusion criteria, which contain 1) the title of the article, 2) the author and year of publication of the article, 3) the research methodology (population, sample, intervention and analysis). Research result.



Results

Searches for international research articles were obtained from Science Direct,

Google Scholar and PubMed. From the search results, further identification according to the inclusion and exclusion criteria resulted in 10 articles being obtained.

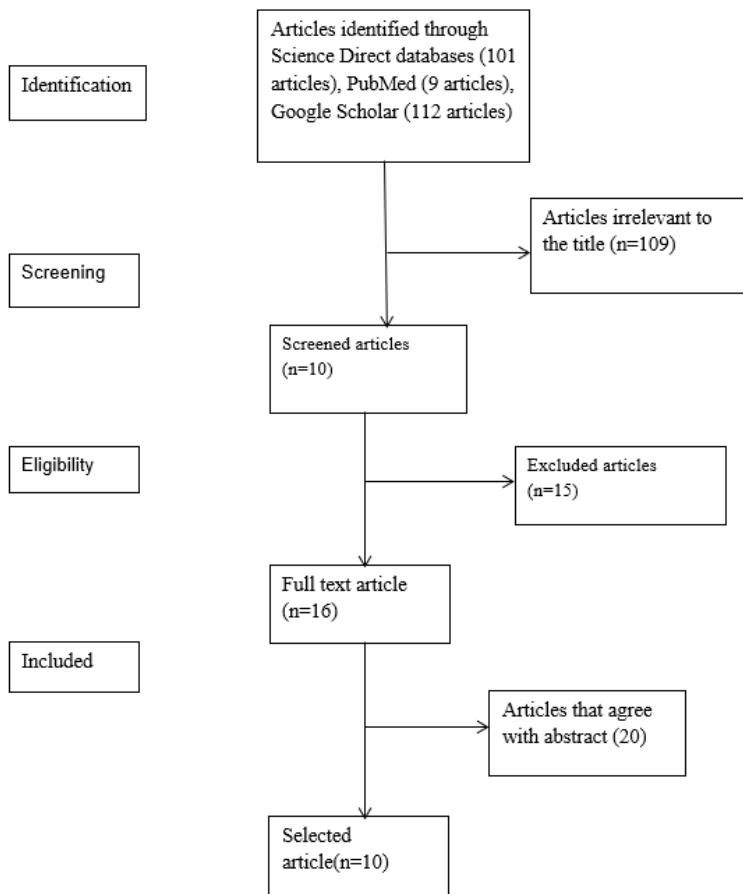


Figure 1. Literature Search Flow Diagram

Table 1. Data Distraction Method

No	Title, author, and year of publication	Research Methodology	Research result
1	Analysis of associated risk factors with the incidence of stroke: A Literature Review (NURHAYATI, 2021)	Design: descriptive non-experimental correlation, namely cross-sectional correlation method Subjects: 40 patients Variable: analysis of risk factors for stroke Instrument: Article search via Science Direct and Google Scholar	From the results of this research that was reviewed, it was obtained shows that the therapy given is a risk factor for stroke in stroke patients
2	Risk factors that influence stroke incidence (Utama & Nainggolan, 2022)	Design: Systematic literature review Subject: 10 articles Variable: risk factors that influence the incidence of stroke. Instrument: article search via Google Scholar, PubMed.	Of the ten articles that have been reviewed, the risk factors for stroke have increased, namely gender, genetics, age and lifestyle.
3	Analysis of risk factors for stroke (Kencana et al., 2022)	Design: case-control Subjects: The case group is stroke patients repeated for a total of 66 participants, the two control groups were examined for gender and history variables hypertension, DM, Dyslipidemias.	From the research results shows that ($p<0.05$ OR=2.941)
4	Analysis of risk factors for stroke in stroke patients (Manurung & Diani, 2015)	Design: observational Analytical with a case-control approach. Subjects: 84 patients (42 people for the case group and 42 people for control group) Variable: analysis of risk factors for stroke. Instrument: cleaner	The research results showed that based on statistical tests, the risk that could not be modified was obtained by historical factors, family illness with a p-value of 0,016; risk factors that can be modified are total cholesterol p-value of 0,000, hypertension with a p-value of 0,001, LDL with p value 0,002.
5	Risk factors for stroke (Lilipory et al., 2019)	Design: case-control using a retrospective approach. Subjects: 64 people with a	The results of this study are a risk factor for stroke, namely hypertension ($p= 0.00$ OR=8.52;

No	Title, author, and year of publication	Research Methodology	Research result
		ratio of 1:1 (32 cases and 32 controls)	95%. CI physic p=1.00, OR=0.80; 95% CI 0.21-2.95)
6	Factor analysis the occurrence of stroke and types of stroke	Design: retrospective Subject: 200 respondents Variable: analysis of risk factors for stroke	Results of this research showed that some respondents experienced ischemic stroke.
7	Risk factors for stroke	Design: observational analytical. Subjects: 47 respondents with a purposive sampling technique. Variable: risk factor the occurrence of a stroke Instrument: questionnaire with Spearman rank data analysis.	Results of this research indicates hypertension is associated with the risk of stroke (p=0.05 OR= 7.200), smoking is associated with the risk of stroke (p= 0.04; OR=8.144), obesity (p=0.000; OR=16.0000) hypertension and obesity are the most dominant factors.
8	Analysis of stroke risk factors (Anissa et al., 2020)	Design: Analytical observational with case-control Variable: analysis of risk factors for stroke. Subjects: 88 respondents with 44 cases and 44 controls.	Results of this research show that a history of hypertension and age are still risk factors for stroke
9	Risk factors for ischemic stroke and haemorrhage (Othadinar et al., 2019)	Design: descriptive Variable: Risk factor incidence of ischemic and hemorrhagic stroke Subjects: All ischemic and hemorrhagic stroke patients who stayed at the National Brain Center Hospital in 2018 2016-2017	The articles reviewed show that the factors are age, history of illness, hypertension, DM, and lifestyle, which influence the risk factors for stroke.
10	Risk factors for stroke in hypertensive patients (Dedi et al., 2023)	Design: observational with a population case approach from stroke research suffering as many as 150. Subjects: Researchers took a sample of 20%.	The research results showed that the respondents were healthy by 13(43%) and respondents who did not as many as 17 (56%)

Discussion

The research results of the ten journals reviewed proved that the risk factors for stroke were increasing due to a history of hypertension, DM, high cholesterol, age, gender and lifestyle. Stroke is the most common cause of death in the world after heart disease and the main cause of disability ([Akhtar et al.](#), 2022; [Sutherly et al.](#), 2021; [Tong et al.](#), 2022). Modern lifestyles have changed human attitudes and behaviour, including eating patterns, smoking, alcohol consumption and unhealthy lifestyles, so that people suffering from degenerative diseases (diseases caused by the function of body organs) are increasing and threatening lives. Some degenerative diseases that often occur in society are coronary heart disease, hypertension, DM, stroke and cancer.

Conclusion

This literature review shows that the risk factors for stroke are increasing due to a history of diseases such as hypertension, diabetes mellitus, age, gender, high cholesterol, obesity, lack of public knowledge about stroke and consumption of alcohol, smoking and drugs, including a lifestyle.

Authors Contributions

The author carries out tasks from data collection, data analysis, and discussions to making manuscripts.

Conflicts of Interest

There is no conflict of interest.

Acknowledgment

Thank you to the reviewer and to those who have helped in this research

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Preventing Stroke

If you're like most Americans, you plan your future. When you take a job, you examine its benefit plan. When you buy a home, you consider its location and condition so that your investment is safe. Today, more and more Americans are protecting their most important asset—their brain. Are you?

Stroke ranks as the fourth leading killer in the United States. A stroke can be devastating to individuals and their families, robbing them of their independence. It is the most common cause of adult disability. Each year more than 700,000 Americans have a stroke, with about 160,000 dying from stroke-related causes. Officials at the National Institute of Neurological Disorders and Stroke (NINDS) are committed to reducing that burden through biomedical research.

A stroke, or “brain attack,” occurs when blood circulation to the brain fails.

What is a Stroke?

A stroke, or “brain attack,” occurs when blood circulation to the brain fails. Brain cells can die from decreased blood flow and the resulting lack of oxygen. There are two broad categories of stroke: those caused by a blockage of blood flow and those caused by bleeding into the brain. A blockage of a blood vessel in the brain or neck, called an ischemic stroke, is the most frequent cause of stroke and is responsible for about 80 percent of strokes. These blockages stem from three conditions: the formation of a clot within a blood vessel of the brain or neck, called thrombosis; the movement of a clot from another part of the body such as the heart to the brain, called embolism; or a severe narrowing of an artery in or leading to the brain, called stenosis. Bleeding into the brain or the spaces surrounding the brain causes the second type of stroke, called hemorrhagic stroke.

Two key steps you can take will lower your risk of death or disability from stroke: control stroke's risk factors and know stroke's warning signs. Scientific research conducted by the NINDS has identified warning signs and a large number of risk factors.

What are Warning Signs of a Stroke?

Warning signs are clues your body sends that your brain is not receiving enough oxygen. If you observe one or more of these signs of a stroke or “brain attack,” don’t wait, call a doctor or 911 right away!

- Sudden numbness or weakness of face, arm, or leg, especially on one side of the body
- Sudden confusion, or trouble talking or understanding speech
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, or loss of balance or coordination
- Sudden severe headache with no known cause

Other danger signs that may occur include double vision, drowsiness, and nausea or vomiting. Sometimes the warning signs may last only a few moments and then disappear. These brief episodes, known as transient ischemic attacks or TIAs, are sometimes called “mini-strokes.” Although brief, they identify an underlying serious condition that isn’t going away without medical help. Unfortunately, since they clear up, many people ignore them. Don’t. Paying attention to them can save your life.

Sometimes the warning signs [of a stroke] may last only a few moments and then disappear.

What are Risk Factors for a Stroke?

A risk factor is a condition or behavior that occurs more frequently in those who have, or are at greater risk of getting, a disease than in those who don’t. Having a risk factor for stroke doesn’t mean you’ll have a stroke. On the other hand, not having a risk factor doesn’t mean you’ll avoid a stroke. But your risk of stroke grows as the number and severity of risk factors increases.

Some factors for stroke can’t be modified by medical treatment or lifestyle changes.

- *Age.* Stroke occurs in all age groups. Studies show the risk of stroke doubles for each decade between the ages of 55 and 85. But strokes also can occur in childhood or adolescence. Although stroke is often considered a disease of aging, the risk of stroke in childhood is actually highest during the perinatal period, which encompasses the last few months of fetal life and the first few weeks after birth.
- *Gender.* Men have a higher risk for stroke, but more women die from stroke. Men generally do not live as long as women, so men are usually younger when they have their strokes and therefore have a higher rate of survival.

- *Race.* People from certain ethnic groups have a higher risk of stroke. For African Americans, stroke is more common and more deadly—even in young and middle-aged adults—than for any ethnic or other racial group in the United States. Studies show that the age-adjusted incidence of stroke is about twice as high in African Americans and Hispanic Americans as in Caucasians. An important risk factor for African-Americans is sickle cell disease, which can cause a narrowing of arteries and disrupt blood flow. The incidence of the various stroke subtypes also varies considerably in different ethnic groups.
- *Family history of stroke.* Stroke seems to run in some families. Several factors may contribute to familial stroke. Members of a family might have a genetic tendency for stroke risk factors, such as an inherited predisposition for high blood pressure (hypertension) or diabetes. The influence of a common lifestyle among family members also could contribute to familial stroke.

Some of the most important treatable risk factors for stroke are:

- **High blood pressure, or hypertension.** Hypertension is by far the most potent risk factor for stroke. Hypertension causes a two-to four-fold increase in the risk of stroke before age 80. If your blood pressure is high, you and your doctor need to work out an individual strategy to bring it down to the normal range. Some ways that work: Maintain proper weight. Avoid drugs known to raise blood pressure. Eat right: cut down on salt and eat fruits and vegetables to increase potassium in your diet. Exercise more. Your doctor may prescribe medicines that help lower blood pressure. Controlling blood pressure will also help you avoid heart disease, diabetes, and kidney failure.
- **Cigarette smoking.** Cigarette smoking causes about a two-fold increase in the risk of ischemic stroke and up to a four-fold increase in the risk of hemorrhagic stroke. It has been linked to the buildup of fatty substances (atherosclerosis) in the carotid artery, the main neck artery supplying blood to the brain. Blockage of this artery is the leading cause of stroke in Americans. Also, nicotine raises blood pressure; carbon monoxide from smoking reduces the amount of oxygen your blood can carry to the brain; and cigarette smoke makes your blood thicker and more likely to clot. Smoking also promotes

High blood pressure is by far the most potent risk factor for stroke.

aneurysm formation. Your doctor can recommend programs and medications that may help you quit smoking. By quitting, at any age, you also reduce your risk of lung disease, heart disease, and a number of cancers including lung cancer.

- **Heart disease.** Common heart disorders such as coronary artery disease, valve defects, irregular heart beat (atrial fibrillation), and enlargement of one of the heart's chambers can result in blood clots that may break loose and block vessels in or leading to the brain. Atrial fibrillation—which is more prevalent in older people—is responsible for one in four strokes after age 80, and is associated with higher mortality and disability. The most common blood vessel disease is atherosclerosis. Hypertension promotes atherosclerosis and causes mechanical damage to the walls of blood vessels. Your doctor will treat your heart disease and may also prescribe medication, such as aspirin, to help prevent the formation of clots. Your doctor may recommend surgery to clean out a clogged neck artery if you match a particular risk profile. If you are over 50, NINDS scientists believe you and your doctor should make a decision about aspirin therapy. A doctor can evaluate your risk factors and help you decide if you will benefit from aspirin or other blood-thinning therapy.
- **Warning signs or history of TIA or stroke.** If you experience a TIA, get help at once. If you've previously had a TIA or stroke, your risk of having a stroke is many times greater than someone who has never had one. Many communities encourage those with stroke's warning signs to dial 911 for emergency medical assistance. If you have had a stroke in the past, it's important to reduce your risk of a second stroke. Your brain helps you recover from a stroke by asking the unaffected brain regions to do double duty. That means a second stroke can be twice as bad.
- **Diabetes.** In terms of stroke and cardiovascular disease, having diabetes is the equivalent of aging 15 years. You may think this disorder affects only the body's ability to use sugar, or glucose. But it also causes destructive changes in the blood vessels throughout the body, including the brain. Also, if blood glucose levels are high at the time of a stroke, then brain damage is

*Stroke strikes fast.
You should, too.
Call 911.*

usually more severe and extensive than when blood glucose is well-controlled. Hypertension is common among diabetics and accounts for much of their increased stroke risk. Treating diabetes can delay the onset of complications that increase the risk of stroke.

- **Cholesterol imbalance.** Low-density lipoprotein cholesterol (LDL) carries cholesterol (a fatty substance) through the blood and delivers it to cells. Excess LDL can cause cholesterol to build up in blood vessels, leading to atherosclerosis. Atherosclerosis is the major cause of blood vessel narrowing, leading to both heart attack and stroke.
- **Physical inactivity and obesity.** Obesity and inactivity are associated with hypertension, diabetes, and heart disease. Waist circumference to hip circumference ratio equal to or above the mid-value for the population increases the risk of ischemic stroke three-fold.

Do You Know Your Stroke Risk?

Some of the most important risk factors for stroke can be determined during a physical exam at your doctor's office. If you are over 55 years old, the worksheet in this pamphlet can help you estimate your risk of stroke and show the benefit of risk factor control.

The worksheet was developed from NINDS-supported work in the well-known Framingham Study. Working with your doctor, you can develop a strategy to lower your risk to average or even below average for your age.

Many risk factors for stroke can be managed, some very successfully. Although risk is never zero at any age, by starting early and controlling your risk factors you can lower your risk of death or disability from stroke. With good control, the risk of stroke in most age groups can be kept below that for accidental injury or death.

Americans have shown that stroke is preventable and treatable. In recent years, a better understanding of the causes of stroke has helped Americans make lifestyle changes that have cut the stroke death rate nearly in half.

Scientists at the NINDS predict that, with continued attention to reducing the risks of stroke and by using currently available therapies and developing new ones, Americans should be able to prevent 80 percent of all strokes.

*Americans
should be
able to
prevent
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of all strokes.*

Score your stroke risk for the next 10 years—MEN

Key: **SBP** = systolic blood pressure (score one line only, untreated or treated); **Diabetes** = history of diabetes; **Cigarettes** = smokes cigarettes; **CVD** (cardiovascular disease) = history of heart disease; **AF** = history of atrial fibrillation; **LVH** = diagnosis of left ventricular hypertrophy; **untrd** = untreated; **trtd** = treated with medication

Points	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Age	54-56	57-59	60-62	63-65	66-68	69-72	73-75	76-78	79-81	82-84	85
SBP-untrd or SBP-trtd	97-105 97-105	106-115 106-112	116-125 113-117	126-135 118-123	136-145 124-129	146-155 130-135	156-165 136-142	166-175 143-150	176-185 151-161	186-195 162-176	196-205 177-205
Diabetes	No		Yes								
Cigarettes	No			Yes							
CVD	No				Yes						
AF	No					Yes					
LVH	No						Yes				
Your Points	10-Year Probability		Your Points	10-Year Probability		Your Points	10-Year Probability				
1	3%		11	11%		21	42%				
2	3%		12	13%		22	47%				
3	4%		13	15%		23	52%				
4	4%		14	17%		24	57%				
5	5%		15	20%		25	63%				
6	5%		16	22%		26	68%				
7	6%		17	26%		27	74%				
8	7%		18	29%		28	79%				
9	8%		19	33%		29	84%				
10	10%		20	37%		30	88%				
Compare with Your Age Group	Average 10-Year Probability of Stroke										
55-59	5.9%										
60-64	7.8%										
65-69	11.0%										
70-74	13.7%										
75-79	18.0%										
80-84	22.3%										

Source: D'Agostino, R.B.; Wolf, P.A.; Belanger, A.J.; & Kannel, W.B. "Stroke Risk Profile: The Framingham Study." *Stroke*, Vol. 25, No. 1, pp. 40-43, January 1994.

Score your stroke risk for the next 10 years-WOMEN

Key: **SBP** = systolic blood pressure (score one line only, untreated or treated); **Diabetes** = history of diabetes; **Cigarettes** = smokes cigarettes; **CVD** (cardiovascular disease) = history of heart disease; **AF** = history of atrial fibrillation; **LVH** = diagnosis of left ventricular hypertrophy; **untrd** = untreated; **trtd** = treated with medication

Points	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10															
Age	54-56	57-59	60-62	63-64	65-67	68-70	71-73	74-76	77-78	79-81	82-84															
SBP-untrd	95-106	107-118	119-130	131-143	144-155	156-167	168-180	181-192	193-204	205-216																
or SBP-trtd	95-106	107-113	114-119	120-125	126-131	132-139	140-148	149-160	161-204	205-216																
Diabetes	No			Yes																						
Cigarettes	No			Yes																						
CVD	No		Yes																							
AF	No						Yes																			
LVH	No				Yes																					
Your Points	10-Year Probability		Your Points	10-Year Probability		Your Points	10-Year Probability																			
1	1%		11	8%		21	43%																			
2	1%		12	9%		22	50%																			
3	2%		13	11%		23	57%																			
4	2%		14	13%		24	64%																			
5	2%		15	16%		25	71%																			
6	3%		16	19%		26	78%																			
7	4%		17	23%		27	84%																			
8	4%		18	27%																						
9	5%		19	32%																						
10	6%		20	37%																						
Compare with Your Age Group	Average 10-Year Probability of Stroke	<p>This example helps you assess your risk of stroke. Tally your points to score your stroke risk over the next 10 years.</p> <p>Martha, age 65, wanted to determine her risk for having a stroke, so she took this stroke risk profile. This is how she arrived at her 10-year probability risk for having a stroke:</p> <table> <tbody> <tr> <td>Age 65</td> <td>4 points</td> </tr> <tr> <td>SBP – treated, 107-113</td> <td>2 points</td> </tr> <tr> <td>Diabetes - No</td> <td>0 points</td> </tr> <tr> <td>Cigarettes - Yes</td> <td>3 points</td> </tr> <tr> <td>CVD -No</td> <td>0 points</td> </tr> <tr> <td>AF - Yes</td> <td>6 points</td> </tr> <tr> <td>LVH -No</td> <td>0 points</td> </tr> <tr> <td>TOTAL</td> <td>15 points</td> </tr> </tbody> </table>									Age 65	4 points	SBP – treated, 107-113	2 points	Diabetes - No	0 points	Cigarettes - Yes	3 points	CVD -No	0 points	AF - Yes	6 points	LVH -No	0 points	TOTAL	15 points
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LVH -No	0 points																									
TOTAL	15 points																									
55-59	3.0%																									
60-64	4.7%																									
65-69	7.2%																									
70-74	10.9%																									
75-79	15.5%																									
80-84	23.9%																									

This example helps you assess your risk of stroke. Tally your points to score your stroke risk over the next 10 years.

Martha, age 65, wanted to determine her risk for having a stroke, so she took this stroke risk profile. This is how she arrived at her 10-year probability risk for having a stroke:

Age 65	4 points
SBP – treated, 107-113	2 points
Diabetes - No	0 points
Cigarettes - Yes	3 points
CVD -No	0 points
AF - Yes	6 points
LVH -No	0 points

TOTAL **15 points**

Interpretation: 15 points carries a 16 percent, 10-year probability of having a stroke.

If Martha quits smoking she can reduce her points to 12, which carries a 9 percent, 10-year probability of having a stroke.

Her current point total does not mean Martha will have a stroke, but serves as a wake-up call to ways she can lower her risk or even prevent a stroke. A lower percent score doesn't mean that Martha won't have a stroke, only that she is at a lower risk of having one.

No matter what your score is, it is important to work on reducing your risk factors as Martha did in this example by quitting smoking.

The National Institute of Neurological Disorders and Stroke (NINDS)

Since its creation by Congress in 1950, the NINDS—a component of the National Institutes of Health—has grown to become the leading supporter of neurological research in the United States. Most research funded by the NINDS is conducted by scientists in public and private institutions such as universities, medical schools, and hospitals. Government scientists also conduct a wide variety of neurological research in the laboratories and branches of the NINDS itself. This research ranges from studies on the structure and function of single brain cells to tests of new diagnostic tools and treatments for those with neurological disorders. For more information, write or call the Institute's Brain Resources and Information Network (BRAIN):

BRAIN

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800-352-9424

www.ninds.nih.gov



let's talk about

Risk Factors for Stroke

Knowing your risk factors for stroke is the first step in preventing a stroke. You can change or treat some risk factors, but others you can't. By having regular medical checkups and knowing your risk, you can focus on what you can change and lower your risk of stroke.



What risk factors can I change or treat?

- **High blood pressure.** This is the single most important risk factor for stroke because it's the leading cause of stroke. Know your blood pressure and have it checked every year. Normal blood pressure is below 120/80. If you have been told that you have high blood pressure, work with your healthcare provider to reduce it.
- **Smoking.** Smoking damages blood vessels. This can lead to blockages within those blood vessels, causing a stroke. Don't smoke and avoid second-hand smoke.
- **Diabetes.** Having diabetes more than doubles your risk of stroke. Work with your doctor to manage diabetes.
- **High cholesterol.** High cholesterol increases the risk of blocked arteries. If an artery leading to the brain becomes blocked, a stroke can result.
- **Physical inactivity and obesity.** Being inactive, obese, or both, can increase your risk of heart disease and stroke.
- **Carotid or other artery disease.** The carotid arteries in your neck supply most of the blood to your brain.

A carotid artery damaged by a fatty buildup of plaque inside the artery wall may become blocked by a blood clot. This causes a stroke.

- **Transient ischemic attacks (TIAs).** Recognizing and treating TIAs can reduce the risk of a major stroke. TIAs produce stroke-like symptoms but most have no lasting effects. Know the warning signs of a TIA and seek emergency medical treatment immediately.
- **Atrial fibrillation (AFib) or other heart disease.** In AFib the heart's upper chambers quiver (like a bowl of gelatin) rather than beating in an organized, rhythmic way. This can cause the blood to pool and clot, increasing the risk of stroke. AFib increases risk of stroke five times. People with other types of heart disease have a higher risk of stroke, too.
- **Certain blood disorders.** A high red blood cell count makes clots more likely, raising the risk of stroke. Sickle cell anemia increases stroke risk because the "sickled" cells stick to blood vessel walls and may block arteries.
- **Excessive alcohol intake.** Drinking an average of more than one drink per day for women or more than two drinks a day for men can raise blood pressure. Binge drinking can lead to stroke.

(continued)



- **Illegal drug use.** Drugs including cocaine, ecstasy, amphetamines, and heroin are associated with an increased risk of stroke.
- **Sleep apnea.** Sleep disordered breathing contributes to risk of stroke. Increasing sleep apnea severity is associated with increasing risk.

What are the risk factors I can't control?

- **Increasing age.** Stroke affects people of all ages. But the older you are, the greater your stroke risk.
- **Gender.** Women have a higher lifetime risk of stroke than men do. Use of birth control pills and pregnancy pose special stroke risks for women.
- **Heredity and race.** People whose close blood relations have had a stroke have a higher risk of stroke. African Americans have a higher risk of death and disability from stroke than whites. This is because they have high blood pressure more often. Hispanic Americans are also at higher risk of stroke.
- **Prior stroke.** Someone who has had a stroke is at higher risk of having another one.



Age, gender, heredity and race are among the stroke risk factors that you can't control.

HOW CAN I LEARN MORE?

- 1 Call 1-888-4-STROKE (1-888-478-7653) to learn more about stroke or find local support groups, or visit StrokeAssociation.org.
- 2 Sign up to get *Stroke Connection* magazine, a free magazine for stroke survivors and caregivers at strokeconnection.org.
- 3 Connect with others sharing similar journeys with stroke by joining our Support Network at strokeassociation.org/supportnetwork.

Do you have questions for the doctor or nurse?

Take a few minutes to write your questions for the next time you see your healthcare provider.

For example:

What are my risk factors for stroke?

What are the warning signs of TIAs and stroke?

My Questions:

We have many other fact sheets to help you make healthier choices to reduce your risk, manage disease or care for a loved one. Visit strokeassociation.org/letstalkaboutstroke to learn more.

Preventing and Managing Common Cold

Are you sneezing, or do you have a stuffy and runny nose? You might have a cold. Antibiotics do not work against viruses that cause colds and will not help you feel better.



What is Common Cold?

A common cold is a mild upper respiratory illness that resolves in a short period of time.

Symptoms

Symptoms of a cold usually peak within 2 to 3 days and can include:

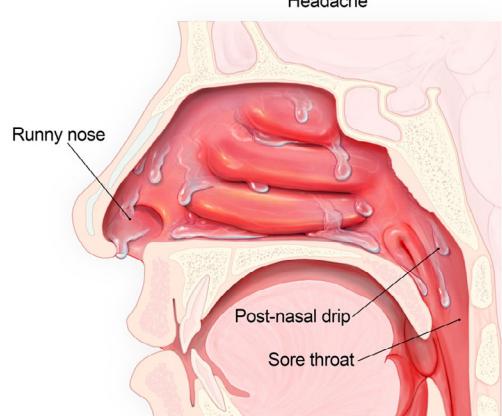
- ◆ Sneezing
- ◆ Nasal congestion
- ◆ Sore throat
- ◆ Cough
- ◆ Fever (although most people with colds do not have fever)

When viruses that cause colds first infect the nose and sinuses, the nose makes clear mucus. This helps wash the viruses from the nose and sinuses. After 2 or 3 days, mucus may change to a white, yellow, or green color. This is normal and does not mean you need an antibiotic.

Some symptoms, especially runny or stuffy nose and cough, can last for up to 10 to 14 days. Those symptoms should improve over time.

Colds can have similar symptoms to flu. It can be difficult (or even impossible) to tell the difference between them based on symptoms alone.

Common Cold Symptoms



When you have a cold, mucus fills your nose and could cause post-nasal drip, headache, and a sore throat.

Causes

More than 200 viruses can cause a cold, but rhinoviruses are the most common type. Viruses that cause colds can spread from person to person through the air and close personal contact.

When to Seek Medical Care

See a healthcare professional if you have:

- ◆ Trouble breathing or fast breathing
- ◆ Dehydration
- ◆ Fever that lasts longer than 4 days
- ◆ Symptoms that last more than 10 days without improvement
- ◆ Symptoms, such as fever or cough, that improve but then return or worsen
- ◆ Worsening of chronic medical conditions

Talk to a healthcare professional right away if your child is under 3 months old with a fever of 100.4 °F (38 °C) or higher.

This list is not all-inclusive. Please see a healthcare professional for any symptom that is severe or concerning.



Treatment

There is no cure for a cold. It will get better on its own—without antibiotics. **Antibiotics won't help you get better if you have a cold.**

When antibiotics aren't needed, they won't help you, and their side effects could still cause harm. Side effects can range from mild reactions, like a rash, to more serious health problems. These problems can include severe allergic reactions, antimicrobial-resistant infections and *C. diff* infection. *C. diff* causes diarrhea that can lead to severe colon damage and death.

How to Feel Better

- ◆ Get plenty of rest.
- ◆ Drink plenty of fluids.
- ◆ Use a clean humidifier or cool mist vaporizer.
- ◆ Use saline nasal spray or drops.
 - » For young children, use a rubber suction bulb to clear mucus.
- ◆ Breathe in steam from a bowl of hot water or shower.
 - » For young children, sit with the child in a bathroom filled with steam from a running shower.
- ◆ Use throat lozenges or cough drops. Do not give lozenges to children younger than 4 years of age.
- ◆ Use honey to relieve cough for adults and children at least 1 year of age or older.

Ask your doctor or pharmacist about over-the-counter medicines that can help you feel better. Always use over-the-counter medicines as directed. Remember, over-the-counter medicines may provide temporary relief of symptoms, but they will not cure your illness.

Remember, always read over-the-counter medicine product labels before giving medicines to children. **Some over-the-counter medicines are not recommended for children of certain ages.**

- ◆ Pain relievers:
 - » Children younger than 6 months: only give acetaminophen.
 - » Children 6 months or older: it is OK to give acetaminophen or ibuprofen.
 - » Never give aspirin to children because it can cause Reye's syndrome. Reye's syndrome is a very serious, but rare illness that can harm the liver and brain.
- ◆ Cough and cold medicines:
 - » Over-the-counter cough/cold medicines are not recommended for children younger than 6 years old and can result in serious and sometimes life-threatening side effects; however, young children can have fever-reducing medicines. Contact your doctor or pharmacist about the correct dose and read and follow all directions.

Ask your doctor or pharmacist about the right dosage of over-the-counter medicines for your child's age and size. Also, tell your child's doctor and pharmacist about all prescription and over-the-counter medicines they are taking.

Prevention

CDC's Respiratory Virus Guidance provides practical recommendations and information to help people lower risk from a range of common respiratory viral illnesses. **CDC recommends that all people use core prevention strategies. These are important steps you can take to protect yourself and others:**

- ◆ Stay up to date with immunizations.
- ◆ Practice good hygiene (practices that improve cleanliness).
- ◆ Take steps for cleaner air.
- ◆ When you may have a respiratory virus:
 - » Use precautions to prevent spread.
 - » Seek health care promptly for testing and/or treatment if you have risk factors for severe illness; treatment may help lower your risk of severe illness.
- ◆ For more information, visit: www.cdc.gov/respiratory-viruses/guidance/respiratory-virus-guidance.

COMMON COLD FACT SHEET

What is the common cold?

The common cold is an infection that can be caused by many viruses, but rhinoviruses are most common. Most people get colds in the winter and spring, but it is possible to get a cold any time of the year.

Who can get the common cold?

Anyone. Adults have an average of two to three colds per year, and children have even more.

What are the symptoms of the common cold?

Symptoms of a cold usually include sore throat, runny nose, coughing, sneezing, watery eyes, headaches and body aches.

How soon do symptoms appear?

Symptoms usually begin in about two days for colds caused by rhinovirus, the most common virus that causes colds.

How is the common cold spread?

The common cold can spread through droplets in the air that are produced when an infected person coughs or sneezes. It can also spread when an infected person has close personal contact with an uninfected person. You can also get infected through contact with stool (poop) from an infected person. You can be exposed to droplets or stool when you shake hands with someone who has a cold, or touch an object or surface, such as a doorknob, that has viruses on it and then touch your eyes, mouth or nose.

Is there a vaccine for the common cold?

No.

How is the common cold treated?

There is no cure for the common cold. It is important to drink plenty of fluids and get lots of rest in order to get better. Non-prescription (over-the-counter) medicines may help reduce symptoms but will not make your cold go away any faster. Most people recover in approximately seven to 10 days. However, people with weakened immune systems, asthma or conditions that affect the lungs and breathing passages may develop serious illness, such as pneumonia.

How can people protect themselves against the common cold?

You can take the following steps to protect against a cold:

- Wash your hands often with soap and water, scrubbing your hands for at least 20 seconds
- Cover your nose and mouth with a tissue when you cough or sneeze
- Avoid touching your eyes, nose and mouth with unwashed hands
- Disinfect frequently touched surfaces, and objects such as toys and doorknobs
- Avoid personal contact, such as kissing or sharing cups or eating utensils, with people who are sick

Where can I get more information?

Information about the common cold and other related health topics can be found at www.cdc.gov. The DC Department of Health promotes the health and safety of the District residents. For additional information, please visit www.doh.dc.gov or call (202) 442-9371.



PREVENTION AND TREATMENT OF VIRAL UPPER RESPIRATORY INFECTIONS

Non-influenza viral upper respiratory infections (URIs), or common colds, are the most common infections experienced by human beings. They account for more than 25 million doctor visits and 40 million lost days of school and work annually in the United States.^[1] These numbers dramatically increase when influenza infections are included. While there is no cure for these viral infections, there are many things that patients can do to decrease their likelihood of contracting such an illness and, if they do get it, to minimize the length and severity of symptoms. The following focuses on a number of approaches that might be woven into a Personal Health Plan (PHP).

MOVING THE BODY

Growing evidence indicates that moderate amounts of regular exercise improve immune function and decrease the risk of developing a URI.^[2] However, there is a transient depression of immune function with associated *increased* risk of URI after periods of intense, prolonged exercise such as training for and/or running in a marathon.^[3] For general health, including prevention of upper respiratory infections, consider recommending 30-40 minutes of aerobic exercise most days of the week at an intensity that allows talking but not singing.

SURROUNDINGS

A number of simple hygiene and environmental tactics can be used to prevent spreading or contracting viral URIs.^[4]

- Sneezing and coughing into tissues keeps the viruses from spreading, especially when the tissues are immediately discarded and hands are then washed.
- If no tissue is available, one should sneeze or cough into the bend of the elbow.
- Avoid, as much as is practical, prolonged contact with anyone who has a cold.
- The importance of hand-washing cannot be underestimated.
- Keep the hands out of contact with the eyes, nose and mouth.
- Keeping the kitchen and bathroom countertops clean is important, especially when someone in the family has a common cold. Children's toys should be washed before and after play when someone in the house has a cold.
- Focus on temperature and humidity. Keeping an affected individual's room warm but not overheated is important. If the air is dry, a cool-mist humidifier or vaporizer can moisten the air and help ease congestion and coughing. A clean humidifier may help to prevent the growth of bacteria and molds.

The common cold is also influenced by social factors, and both acute and chronic stress can increase the risk of infection. A series of studies showed that certain psychosocial variables predicted whether volunteers would become infected when they were exposed to one of

the most common viruses implicated in URIs. Variables that predicted infection and increased symptom severity and duration include childhood socioeconomic status, number and quality of social relationships, acute and chronic stress, and negative emotion.[1]

FOOD AND DRINK

GENERAL

Nutrition may be the single most important factor in optimizing immune function because it can have a positive or negative impact depending on dietary patterns. Antioxidant micronutrients (vitamins and minerals which are only required in small amounts) such as selenium, zinc, fatty acids, and vitamins E, A, and D help regulate the function of the immune system.[5] Nutritional and supplemental intake of flavonoid polyphenols seems to decrease URI incidence. Flavonoids are rich in foods such as dark-colored berries, green tea, onions, apples, citrus fruits, and soybeans.[6] Studies have shown that a diet insufficient in macronutrients (protein, carbohydrate, and fat) leads to more frequent bouts of chronic infections.[7] Although evidence is lacking, staying well-hydrated with a variety of fluids including water, broth, tea, etc., is frequently recommended. For more information, refer to the "[Food and Drink](#)" Whole Health Overview.

DIETARY SUPPLEMENTS

Note: Please refer to the [Passport to Whole Health](#), Chapter 15 on Dietary Supplements for more information about how to determine whether or not a specific supplement is appropriate for a given individual. Supplements are not regulated with the same degree of oversight as medications, and it is important that clinicians keep this in mind. Products vary greatly in terms of accuracy of labeling, presence of adulterants, and the legitimacy of claims made by the manufacturer.

Vitamin C

Some evidence supports use of vitamin C at doses ranging from 200-500 mg daily for prevention or early intervention at first onset of symptoms of a URI.[1] In a subset of studies in people living in extreme circumstances, including soldiers in subarctic exercises, skiers, and marathon runners, vitamin C has led to significant reductions in the risk of developing colds by approximately 50%. [8] When taken preventive, vitamin C may have a mild impact on common cold duration and severity, but this is of questionable clinical significance. Vitamin C consumption of 200 mg per day seems to be the threshold for this impact, and this can easily be obtained through nutrition, rather than supplementation. However, there may be benefit of using higher-dose vitamin C within the first 24 hours of an upper respiratory tract infection, up to 8g daily (in divided doses) for 5 days.[9,10]

While supplements can certainly be used, regular intake of vitamin C-rich fruits and vegetables such as citrus fruits (e.g., oranges and grapefruit) and their juices, red and green peppers, kiwifruit, broccoli, strawberries, cantaloupe, baked potatoes, and tomatoes are

likely to have additional health benefits (and be more pleasurable to consume) than swallowing a pill.

Zinc

Studies that have looked at concentrated dosing of zinc with URIs have had very mixed results. Overall, zinc-containing products seem to be beneficial for reducing the duration of symptoms of the common cold in adults by about 1.6 days, but adverse effects such as bad taste and nausea may limit their usefulness. Zinc from supplements taken prophylactically does not seem to prevent the common cold.[11] Zinc lozenges (dosed greater than or equal to 75 mg/day given within 25 hours of symptom onset) can decrease duration of URI symptoms, including cough.[12] Recommended doses range from 9-24 mg every 2 hours while awake and still symptomatic, starting within 48 hours of symptom onset. Regular use of higher doses can interfere with copper absorption. Nasal preparations have been associated with loss of smell.[1] As with vitamin C, including foods rich in zinc as part of a healthful diet can also be reasonably supported. Foods to consider include oysters, red meat, poultry, seafood such as crab and lobsters, and fortified cereals. Other foods containing lower levels of zinc include beans, nuts, whole grains, and dairy products.

Garlic (*Allium sativum*)

While there are dozens of reported health benefits of garlic, data is limited in its usefulness in upper respiratory infections. The data that does exist, however, supports that garlic has a role in decreasing frequency of URIs and shortening duration if a cold is experienced. Many garlic products are available, but they are of varying quality. It is preferred to eat raw or lightly cooked crushed garlic.[1] One palatable use of garlic is to pack a jar with garlic cloves and cover with honey. Let this sit in a lightly covered jar for two weeks. At first onset of URI symptoms, combine 1-2 tbs of the honey with 1-2 tbsp of lemon juice and one-half cup of warm water. Gargle and/or drink. The garlic cloves can be eaten, chopped in the tea, or used for cooking.

Honey

Honey has been studied as an antitussive in children and found to be better than both no treatment and diphenhydramine, but not better than dextromethorphan.[13] Honey can also add to the expectorant properties of other herbs when used in teas.[14]

RECHARGE

Sleep and immune function seem to influence each other. Both sleep deprivation and acute illness (such as a viral infection) increase inflammatory markers that have been found to make us more tired. Studies have shown that sleep deprivation leads to decreased immune function, leading to increased frequency of infections and decreased response to immunizations such as the influenza vaccine. In contrast, sleep strengthens the immune response; most immune cells' response to challenges (e.g., viral infections) peak at night.[15] Adequate sleep appears to be 7-8 hours per night. Too much sleep (greater than 10 hours), however, has been associated with increased risk of cardiovascular disease.[16]

FAMILY, FRIENDS, & CO-WORKERS

Interpersonal relationships are an extremely important aspect of our overall well-being. Indeed, their quality can impact how well our immune systems can protect us from disease. Studies have found that more negative or hostile behaviors during discussions focused on conflict, marital disruption, or the chronic stress of caring for a relative with Alzheimer's disease can suppress immune function. There is some evidence to suggest that *quality* interpersonal relationships can be protective against these types of immune changes.[17,18] Even in clinician- and provider-patient interactions, patients seem to recover more quickly from URIs when they feel cared for by their health care practitioner.[19] While encouraging patients to foster healthy relationships and treating them with sincere compassion may not "cure" a cold, it can significantly influence how often and how long patients are impacted by symptoms.

SPIRIT & SOUL

Individuals with higher levels of spiritual well-being, including participation in formal religion, seem to have better cardiovascular, neuroendocrine, and immune function.[20,21] Taking an appropriate spiritual history is a part of supporting overall health in all individuals, including optimizing immune function. For more information, refer to the "[Spirit and Soul](#)" Whole Health overview.

POWER OF THE MIND

MINDFULNESS MEDITATION

Mindfulness meditation has been studied in relation to immune function. This type of meditation is a practice that fosters an ability to take a step back and notice our reactions to external stimuli, giving people a chance to pause and choose how they will respond. Some studies have shown regular mindfulness practices to lead to more robust antibody responses to the influenza vaccine.[22] Others have failed to show this relationship, but they did correlate optimism, less anxiety, and lower perceived stress with high antibody levels following immunization.[23] Mindfulness meditation has also been associated with decreased symptom severity in the common cold.[24]

Resources and an introduction to a variety of centering practices including meditation and centering prayer can be found in the [Meditation for Health and Happiness](#) handout.

GUIDED IMAGERY

Guided Imagery is a technique used by trained professionals to help patients relax and focus on images associated with personal issues they are confronting. It may include interactive, objective guidance to encourage patients to find solutions to problems by exploring their existing inner resources. There has been some preliminary evidence that Guided Imagery in children that addresses stress and encourages relaxation may reduce the duration of symptoms due to upper respiratory tract URIs, including colds.[25]

DIETARY SUPPLEMENTS

ANDROGRAPHIS AND SIBERIAN GINSENG

Andrographis (*Andrographis paniculata*) is native to Asia with a long history of use in Indian medicine. Individual studies and systematic reviews support its role in treatment of URIs. A specific product called Kan Jang®, which combines andrographis with Siberian ginseng (*Eleutherococcus senticosus*), also seems to be superior to placebo, especially when started within 72 hours of symptom onset. There is preliminary evidence that andrographis, when taken prophylactically, can reduce the risk of developing a URI by 50% after two months of continuous treatment. This herb is generally well tolerated. It can, however, cause gastrointestinal distress, urticaria, fatigue, and headache. In high doses, it may cause transient elevation of liver enzymes.[1,26]

Dosing:

- For treating the common cold: A combination of a specific andrographis extract, standardized to contain 4-5.6 mg andrographolide, plus Siberian ginseng (Kan Jang, Swedish Herbal Institute) 400 mg, 3 times daily
- For preventing the common cold: 200 mg daily, 5 days per week
- For relieving fever and sore throat in pharyngotonsillitis: 3-6 gm daily
- For influenza: A combination of a specific andrographis extract 178-266 mg, standardized to contain 4-5.6 mg andrographolide, plus Siberian ginseng 20-30 mg (the product studied was Kan Jang, from the Swedish Herbal Institute), 3 times daily for 3-5 days[26]

ASTRAGALUS (*ASTRAGALUS MEMBRANACEUS*)

Astragalus is an important medicinal plant in Chinese medicine that seems to have antiviral and immune boosting properties.[1] Although data is limited, there is some preliminary evidence that supports its efficacy in reducing the risk of catching the common cold.[27]

Dosing:

- Tea: 3-6 tbsp of dried, chopped root, simmered in 2-4 cups of water for 10-15 minutes
- Capsule: 1-3 gm of dried, powdered root daily
- Tincture: 2-4 mL, 3 times daily

While astragalus is generally safe, it should not be used in an acute infection. Those with autoimmune diseases should consult with a clinician before use due to its immune-boosting effects.[14]

ECHINACEA (*ECHINACEA ANGUSTIFOLIA, ECHINACEA PALLIDA, ECHINACEA PURPUREA*)

There have been a plethora of studies and literature reviews around the efficacy of echinacea for the prevention and treatment of URIs. Overall, the data seems to support its role in decreasing the duration and symptom severity.[1,28] The best evidence appears to be for preparations containing *Echinacea purpurea* species and three specific commercial formulations. These are Echinaforce, made by Bioforce AG; EchinaGuard by Nature's Way; and Echinacin, by Madaus. A relatively large 2016 study (involving nearly 700 people) of Echinaforce showed a significant decrease in URI episodes when it was used for prevention, as well as decreased duration of URI and use of additional medications when it was used for URI treatment.[29]

The herb also seems to be most potent when taken as early as possible in the course of the illness and taken for 7-10 days.[30]

Dosing:

- Tea: Steep 1-2 tsp of Echinacea leaf/flower in 1 cup boiling water, or boil 1 tsp of root in 1-2 cups of water for 10 minutes.
- Tincture: When coming down with a cold, take either a tincture of Echinacea root or the expressed juice from fresh *E. purpurea* above-ground parts stabilized in alcohol. Every 2 hours, take 1-2 mL directly or diluted in water.
- Capsule: Dose varies on product.

Taken early in the onset of illness, echinacea shortens the duration of the illness by 1-2 days. Use with caution if a person is taking medications such as itraconazole, lovastatin, fexofenadine, or birth control pills due to potential inhibition of certain liver enzymes. Also use with caution in those with allergies to members of the Asteraceae (daisy) family.[14]

ELDERBERRY (*SAMBUCUS NIGRA*)

Clinical research shows that some elderberry extracts might reduce flu-like symptoms. Sambucol by Nature's Way at a dose of 15 mL (1 tbsp) four times daily seems to reduce the symptoms and duration of influenza infection when given within 48 hours of symptoms. On average, this elderberry extract seems to reduce the duration of symptoms by 56%. Another study of elderberry lozenges (ViraBLOC by HerbalScience) taken at 175 mg four times daily for 2 days, started within 24 hours of initial symptoms, significantly improved flu-like symptoms compared to placebo.[31] Avoid use of unripe berries and other plant parts as they contain compounds that can cause nausea, vomiting, diarrhea, dizziness, and confusion.[14]

AMERICAN GINSENG (*PANAX QUINQUEFOLIUS*)

Ginseng is considered an adaptogenic herb—one that brings balance, homeostasis, and healing. Several trials have shown decrease in episodes of cold and flu and decreased duration and severity and symptoms with regular use of this herb. The specific product was an American ginseng extract called CVT-E002 (Cold-FX made by Afexa Life Sciences, Canada), taken at 200 mg twice daily over a three- to four-month period during influenza season.[32] For treatment of acute infection, ginseng at 100 mg twice daily for 9 days has been used. Ginseng is generally well tolerated. The most common side effect is insomnia. It can also infrequently cause tachycardia, palpitations, and hypertension.[1]

PROBIOTICS

Probiotics are live bacteria that are thought to support healthy gastrointestinal function. A 2015 Cochrane review and meta-analysis of 12 studies involving 3,720 participants found that, while quality of evidence was low, regular intake of probiotics decreased the number and duration of URIs, antibiotic use, and URI-related absences from school.[33] Strains that appeared to be beneficial include *Lactobacillus rhamnosus* and *Lactobacillus GG* (in one study) and *Lactobacillus acidophilus* and *Bifidobacterium animalis*. The dose is 5-10 billion colony-forming units (CFUs) twice daily.[1]

BEE PROPOLIS

Propolis is a resinous material from poplar and conifer buds used by bees for maintaining their hives. Many propolis preparations are contaminated with beehive by-products. There is some evidence that propolis might decrease the duration of cold symptoms by 2.5 times compared with placebo in patients with rhinovirus infection. The typical dose is typically 500 mg daily.[34]

OSCILLOCOCCINUM

Homeopathy is a very safe modality for treatment of URIs, but studies vary in quality and size. Available data suggests some homeopathic remedies may be comparable to conventional treatment with fewer side effects.[35] Oscilloccoccinum is a homeopathic dilution of duck liver and heart extracts frequently used to prevent and treat infection with the influenza virus. While reviews of the studies show no evidence that it has a role in prevention of the flu, there is some preliminary evidence that it might reduce the duration of symptoms by a minimal amount (approximately 0.28 days).[36]

PELARGONIUM (*PELARGONIUM SIDOIDES*)/UMCKALOABO

Pelargonium is a genus of flowering plants mostly native to southern Africa that have long been used medicinally in that part of the world. Studies have shown efficacy of a product called Umckaloabo for URI symptoms of cough, fatigue, phlegm production, and hoarseness. The product is available in alcohol-containing and alcohol-free formulations. Dosing can be followed according to the packaging. Allergic reactions have been reported,

but the product generally seems to be safe.[1,14] EPs 7630 is a specific herbal extract from the roots of *Pelargonium sidoides* that has been shown to improve URI symptoms and lead to more rapid remission of symptoms.[37]

SINUPRET®

Sinupret® is an herbal combination product that has been found to have antiviral activity against several viruses known to cause the common cold.[38] It contains gentian root (*Gentiana lutea*), primrose flower (*Primula veris*), sorrel herb (*Rumex acetosa*), European elder flower (*Sambucus nigra*), and European vervain (*Verbena officinalis*). The dose is one tablet 3 times daily for 7-14 days. It is to be avoided in pregnant and lactating women and children.[39]

LICORICE (*GLYCYYRRHIZA GLABRA*)

The tissue-coating properties of licorice root give it utility in the symptomatic treatment of sore throats and coughs. Licorice also has antiviral activity again influenza viruses that seems to be related to increased interferon-gamma production by T cells and changes resulting in reduced virus uptake by cells.[28]

Dosage:

- Lozenge: 1 lozenge every few hours for several days to soothe inflamed tonsils and throats
- Tea: For nagging cough, especially when associated with URI causing nasal drip, boil 1-2 tsp of chopped licorice root in 2 cups water for 10 minutes. Strain, cool, and take a half cup 3-4 times daily for up to seven days.

The doses above are typically safe. However, the higher doses and long term use typically needed to treat gastritis or heartburn can cause hypertension and electrolyte imbalances if the deglycyrrhizinated (DGL) form of licorice is not used.[14]

SAGE

Sage mouthwashes and gargles have been approved for use against sore throat in Germany by the German Commission E.[40]

Dosage:

- Gargle: For a sore throat, steep 1 tsp chopped sage in 1 cup water for 10 minutes. Strain and drink or use as a gargle (+/- salt).[14]

THYME

The culinary herb thyme has antispasmodic and expectorant activities which allow it to calm coughs and help clear bronchial mucus.

Dosage:

- Tea: 1-2 tsp dried leaves and flowers can be steeped in 1 cup hot water and taken 3 times daily. Adding honey can increase the expectorant and antitussive properties. Covering the tea while steeping can help prevent important volatile oils from evaporating.[14]

THYME COUGH SYRUP

- 2 tbsp dried thyme (or 4 tbsp fresh)
- 1 tsp lemon juice
- 1 cup water
- 1/2 cup organic honey

Pour 1 cup of near-boiling water over thyme and steep 10 minutes, covered. Strain and add honey and lemon juice. Refrigerate for up to one week. For children 18 months and older, give 1 tbsp as needed. Those who don't like the flavor of thyme can substitute fennel seed and prepare it the same way. Simmer the seeds gently on low heat for 15 minutes, then strain.

EUCALYPTUS (*EUCALYPTUS GLOBULUS*)

Eucalyptus as an essential oil has a menthol-like effect that can relieve chest and sinus congestion. Consider recommending the following:

- Bring large saucepan of water to a boil and pour into heat-proof bowl.
- Add 2 drops eucalyptus oil, 2 drops lavender oil, and 2 drops tea tree oil.
- While keeping eyes closed, cover head and bowl with a towel and inhale vapors for three minutes.[14]
- All three oils can also be used in a bath. Add 6-7 drops in a full tub or 1 drop massaged under the collar bones while in the shower.

OTHER INTERVENTIONS

NASAL IRRIGATION

Nasal irrigation with saline solutions is one of the most effective treatments for chronic rhinosinusitis, and it empowers patients in that they are able to treat themselves without the need for physician input.[1] Here is an instructional handout on [Medicine Nasal Irrigation](#), including a comment on water quality.[41] While saline is frequently quite sufficient, at times the addition of 1 drop of eucalyptus oil or use of Alkalol (a product found at most major drug store chains) in the saline solution offers a menthol-like intensity

that can increase its decongestant effect. These both can be quite intense and patients should be warned about that if its use is suggested.

RESOURCE LINKS

- “[Food and Drink](https://www.va.gov/WOLEHEALTHLIBRARY/self-care/food-and-drink.asp)”: <https://www.va.gov/WOLEHEALTHLIBRARY/self-care/food-and-drink.asp>
- [Medicine Nasal Irrigation](https://www.fammed.wisc.edu/files/webfm-uploads/documents/research/nasalirrigationinstructions.pdf): <https://www.fammed.wisc.edu/files/webfm-uploads/documents/research/nasalirrigationinstructions.pdf>
- [Meditation for Health and Happiness](http://www.fammed.wisc.edu/sites/default/files/webfm-uploads/documents/outreach/im/module_meditation_patient.pdf):
http://www.fammed.wisc.edu/sites/default/files/webfm-uploads/documents/outreach/im/module_meditation_patient.pdf
- [Passport to Whole Health](https://www.va.gov/WOLEHEALTHLIBRARY/docs/Passport_to_WholeHealth_FY2020_508.pdf):
https://www.va.gov/WOLEHEALTHLIBRARY/docs/Passport_to_WholeHealth_FY2020_508.pdf
- “[Spirit and Soul](https://www.va.gov/WOLEHEALTHLIBRARY/self-care/spirit-soul.asp)”: <https://www.va.gov/WOLEHEALTHLIBRARY/self-care/spirit-soul.asp>

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“Prevention and Treatment of Viral Upper Respiratory Infection” was written by [Greta Kuphal](#), MD (2014, updated 2020).

This Whole Health tool was made possible through a collaborative effort between the University of Wisconsin Integrative Health Program, VA Office of Patient Centered Care and Cultural Transformation, and Pacific Institute for Research and Evaluation.

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Prevention and Treatment of Viral Upper Respiratory Infection

TABLE OF COMMUNICABLE DISEASES

Disease	Signs & symptoms	Incubation	Communicability	Prevention
Chicken pox – varicella zoster virus; viral disease	Esp seen winter & spring. Resp symptoms, malaise (not feeling well), low-grade fever followed by rash starting on face & trunk spreading to rest of body. Fluid filled vesicles rupture & scab over within 1 week.	10-21 days	Thru inhalation of airborne droplets & direct contact of weeping lesions & contaminated linens.	Mask patient. Provider should avoid contact if they've never had chicken pox. Vaccination now available (1995) and part of childhood immunizations. Pt isolated until all lesions crusted over and dry.
Common cold (viral rhinitis)	>200 strains of viruses cause the common cold. Course mild, often without fever and without muscle aching.	12 hours – 5 days (average 48 hours)	Direct contact, airborne droplet, contaminated hands and linens.	Handwashing
Conjunctivitis (pink eye)	The clinical syndrome begins with tearing, irritation & redness of eye(s) followed by edema of lids, photophobia (light sensitivity) & pus drainage. Course lasts from 2 days up to 2-3 weeks.	24-72 hours	Contact with discharge or upper respiratory tract of infected persons (fingers, clothing, eye make-up). Communicable during course of active infection.	Good personnel hygiene. Daily laundering of bed linens including pillowcase and towels. Use wash cloth on unaffected eye first and then launder after use. No school during acute stage. Tx with antibiotic eye medications.
Hepatitis – inflammation of the liver due to multiple causes (virus most common)	Signs & symptoms generally same for all forms: Headache; fever; weakness; joint pain; anorexia; nausea; vomiting; RUQ pain; jaundice; dark urine; clay-colored stools			Most important is avoidance of contact with blood and body fluids of all persons.
Hepatitis A – infectious or viral	May have no symptoms. Adults may have abdominal pain, loss of appetite, nausea, diarrhea, light colored stools, dark urine, fatigue, fever & jaundice.	15-50 days; average 30 days. Disease follows mild course &	Fecal-oral route. Virus lasts on hands about 4 hours. More	Vaccines in active areas (active immunity). Good handwashing.

Disease	Signs & symptoms	Incubation	Communicability	Prevention
Hepatitis A		lasts 2-6 weeks	comm. latter half of incubation & most during 1 st week of symptoms	There is no long term chronic infection.
Hepatitis B – serum hepatitis	It can take 1-9 months before symptoms develop. Some have mild flu-like symptoms. Dark urine, light colored stools, fatigue, fever & jaundice. Can develop acute hepatitis, cirrhosis, liver cancer.	4-25 weeks; average 8-12 weeks	Direct contact (blood, semen, vaginal fluid, saliva). Can become asymptomatic chronic carrier capable of transmitting disease to others.	Vaccination 90% effective. Virus stable on surfaces with dried blood for 7 days.
Hepatitis C Leading cause of cirrhosis & liver cancer.	Chronic condition in 85% of infected people. Liver fibrosis into cirrhosis in 20% of infected people.	2-25 weeks; avge 7-9 weeks. Disease may be dormant 10-20 years before symptoms.	Contact with infected blood primarily with IV drug use & sexual contact.	Since 1989 screen blood for HCV. No vaccine due to high mutation rate.
HIV – a virus that attacks the immune system & causes AIDS (a collection of signs & symptoms)	Mono-like syndrome, fatigue, fever, sore throat, lymphadenopathy, splenomegaly, rash, diarrhea. Skin lesions (Kaposi's sarcoma); opportunistic infections (Pneumocystic carinii pneumonia, Tb)	Variable. May develop detectable antibodies 1-3 months. Variable time from HIV infection to diagnosis of AIDS.	Bloodborne through blood & body fluids	Universal standard precautions Death is usually from the opportunistic diseases that take advantage of the patient's weakened systems.
Influenza (flu) Viral disease	Epidemics usually in winter. Sudden onset fever for 3-5 days, chills, tiredness, malaise (not feeling well), musculoskeletal aches, nasal discharge, dry cough, mild sore throat. Children can also experience GI symptoms of nausea, vomiting & diarrhea although this is uncommon in	1-4 days Peak flu season is late December through March.	Direct contact especially in crowded areas via airborne. The virus can persist on surfaces for hours but indirect contact is less	Vaccination available annually; most effective if received from September to mid-November. Treatment is symptomatic (rest, fluids, OTC med for fever &

Disease	Signs & symptoms	Incubation	Communicability	Prevention
Influenza	adults. "Stomach flu" with GI symptoms is caused by other viruses.		common. Contagious 1 day prior to being sick up to 3-7 days after 1 st symptom.	aches).
Measles (rubeola, hard measles)	Initially symptoms of severe cold with fever, conjunctivitis, swollen eyelids, photophobia, malaise, cough, nasopharyngeal congestion, red bumpy rash lasting about 6 days	7-14 days; average 10 days	Inhalation of infective droplets & direct contact. Highly communicable virus mostly before prodrome starts (early or impending disease time), to about 4 days after rash appears.	Handwashing critical. MMR vaccination part of childhood program.
Meningitis – inflammation of meninges caused by bacteria & viruses	Viral meningitis – most common type of meningitis; self-limited disease lasting 7-10 days. Bacterial – very serious infection; fever, chills, headache, nuchal rigidity (stiff neck) with flexion, arthralgia (achy joints), lethargy, malaise (ill feeling), altered mental status, vomiting, seizures.	2-4 days up to 10 days	Resp droplets; contact with oral secretions, crowding, close contact, smoking, lower socioeconomic status. Viral meningitis can also be spread via contact with feces of infected person.	Practice good handwashing. Mask for pt and self. Universal precautions. Post exposure antibiotics started within 24 hours. Vaccination now part of childhood series (Haemophilus influenza type B).
Monkeypox	Rare viral disease. 12 days after exposure get fever, headache, muscle aches, backache, swollen lymph nodes, tired. Rash 1-3 days after	12 days	From an animal with monkeypox if bitten or touch the animal's	No specific treatment. Possibly the smallpox vaccine to prevent against getting.

Disease	Signs & symptoms	Incubation	Communicability	Prevention
Monkeypox	fever; often starts on face as fluid filled bumps & the spreads.		blood, body fluids, or its rash. Person-to-person from large respiratory droplets during long periods of face-to-face contact or touching body fluids or contaminated objects of infected persons.	
MRSA – methicillin resistant staphylococcus aureus	Usually found in ill patients who are multidrug resistant. Often in open wounds, post-op wounds, around G-tube sites.		Usually spread from infected patients via hands of HCW & inanimate objects (B/P cuff, stethoscope).	Handwashing after any patient contact. Wear gloves when doing pt contact. Protective gowns when in contact with infected linens. Avoid sharing of equipment. HCW can be colonized with MRSA (not common) but often are not ill & are not at risk to other healthy persons (peers, family).
Mumps (Acute viral disease)	Painful enlargement of salivary glands. Feverish cold followed by swelling & stiffening of parotid salivary gland in front of ear. Often bilateral. Earache, difficulty chewing & swallowing. Glands tender to palpation.	12-25 days	Resp droplets & direct contact with saliva of infected pt. Communicable 3 days before to about 4 days after symptoms start. Risk of contracting	Standard BSI. MMR vaccination is standard for childhood immunizations. Adults born after 1956 should get at least 1 dose of MMR.

Disease	Signs & symptoms	Incubation	Communicability	Prevention
mumps			disease is minimal.	
Pertussis – whooping cough	1 st phase – common cold symptoms lasts 1-2 weeks. 2 nd phase lasts month or longer. No fever. Mild cough that can become severe & violent, productive. 3 rd phase – frequency and severity of coughing decreases.	6-20 days	Transmitted via respiratory secretions or in an aerosolized form. Highly contagious except in 3 rd phase. Communicability greatest before 2 nd phase.	Mask pt. DPT vaccination in childhood series (not sure how long immunity lasts).
Pneumonia	Chills, high fever, dyspnea, pleuritic chest pain worsened by deep inspiration, cough, crackles & wheezes heard on breath sounds		Highest risk are the non-healthy populations	Masks. Vaccination available esp for children <2 years old and adults >65 and for those post-splenectomy.
Rubella – German measles; virus	Generally milder than measles. Sore throat, low grade fever. Fine pink rash on face, trunk & extremities lasting about 3 days.	12-19 days	Inhalation of infective droplets	Mask pt. MMR vaccination part of childhood program.
SARS (severe acute respiratory syndrome)	Viral disease. Fever >100.4°F, chills, headache, body achiness, respiratory complaints (cough, SOB, dyspnea, pneumonia), pulse ox <94% room air, travel within 10 days of symptoms to Ontario, Canada, People's Republic of China, Vietnam, Taiwan, &/or Singapore OR close contact with symptomatic person within 10 days of symptoms.	Typically 2-7 days up to 10 days	Respiratory droplets when coughing or sneezing droplets into air. Can touch infectious material on environmental surfaces and bring to your eyes, nose,	Fit tested N-95 respirators for caregivers within 6 feet of patient. Patient to also wear N-95 mask. Caregivers to wear gloves, gowns, goggles, and face shields. Proper handwashing extremely important. Wear protective gear when

Disease	Signs & symptoms	Incubation	Communicability	Prevention
SARS			mouth by unwashed hands.	cleaning equipment and rig. Avoid aerosolizing infectious material.
Scabies	A parasitic disease of skin caused by a mite. Penetration is visible as papules, vesicles, or tiny linear burrows containing mites & their eggs. Lesions prominent around finger webs, anterior surfaces of wrists & elbows, anterior axillary folds, belt line, thighs, external genitalia in men, nipples & abd & lower portion of buttocks in women. Itching intense esp at night. Complications limited to lesions that get infected from scratching.	2-6 weeks before onset of itching. Reexposure – symptoms develop in 1-4 days.	Transmitted skin to skin contact. Transfer from underwear & bedclothes only if immediate contact. Communicable until eggs & mites are destroyed by tx, ordinarily 1 or occasionally 2 courses of tx 1 week apart.	Educate on mode of transmission & need for early diagnosis & tx. No work or school until day after tx started. Contact isolation. Disinfection for clothes & bed sheets used 48 hours prior to start of tx. Tx is a topical solution.
Shingles (varicella- zoster virus) Second outbreak of the chicken pox virus.	Localized manifestation of vesicle with red base on skin areas. They follow a nerve tract most often on the chest wall & are usually unilateral & linear. Severe pain & paresthesia (tingling, prickling sensation) are common. Rash or blisters present 1-14 days.		Shingles itself is not contagious but contact with someone with shingles could lead to chicken pox in someone who never had it	After chickenpox, the virus is dormant in nerve tissue; as we age, the virus may reappear as shingles when the dormant virus becomes active. Most common in persons >50.
Smallpox – serious, contagious & sometimes fatal disease (30% mortality rate). Last case in USA in 1949 (in the world was 1977 in Somalia). Caused by variola virus. Humans only	1st symptoms last 2-4 days: high fever, malaise (not feeling well), head & body aches, sometimes vomiting. Best to isolate the patient at time of fever & not to wait for development of rash. Next 4 days (most contagious): rash emerges 1 st as small red spots on tongue & in mouth. Spots turn into sores that break open & spread virus into mouth & throat. Then rash develops spreading on whole body	12-14 days but can range 7-17 days. Not contagious until the rash emerges.	Stable in aerosol form. Spread directly from person to person primarily by droplet or aerosol. Could also be spread via contaminated clothing or bed linens. Those most at risk are	No treatment currently. Vaccinations stopped in 1972 in the USA. Autoclave clothing & linens. Contaminated surfaces should be washed with hypochlorite (bleach) & quaternary ammonia. Treatment is supportive in nature. Vaccination within 3 days will prevent

Disease	Signs & symptoms	Incubation	Communicability	Prevention
known natural hosts of variola. One confirmed case qualifies as a public health emergency. (smallpox)	within 24 hours. Rash becomes raised bumps that become liquid filled. Next 5 days (still contagious): bumps become pustules (sharply raised, round & firm bumps). Next 5 days (still contagious): pustules begin to form a crust & then scab. Next 6 days (still contagious): scabs begin to fall off leaving marks on skin that eventually turn into pitted scars. Contagious until all scabs fall off: (about 3 weeks after rash appears). Scabs must be properly disposed of as they fall off		those with close contact (live in the same home or have spent at least 3 hours in the same room with someone who has smallpox).	or significantly modify smallpox for most. Vaccination 4-7 days post exposure may offer some protection or modify severity of disease. For those vaccinated, the site needs to be kept covered & dry. The bandage should be changed every 1-2 days keeping the site covered with clothing. Avoid spread of vaccinia virus to other parts of body with good handwashing especially after touching the bandage or vaccination site.
Tuberculosis (Tb) – bacterial disease	Primarily affects resp system. May spread to other organ systems. Development of disease about 6-12 months after infection. Chills, fever, fatigue, productive or non-productive chronic cough, weight loss, night sweats, hemoptysis. <u>TB infection</u> – person has the bacteria but are not sick & not capable of spreading the disease. May become ill if health status changes. May be treated prophylactically for now. <u>TB disease</u> – person ill, is capable of spreading the disease. Needs meds.	4-12-weeks Persons most susceptible: HIV, close contact with TB pt, immunocompromised, foreign borne in country with high TB rate, Some HCW & prison guards, malnourished, ETOH & drug users.	Most commonly through airborne resp droplets. Repeated exposure is generally necessary to become infected so prolonged exposure increases risk.	Universal precautions. Mask pt and self. The TB organism dies when exposed to light & air. Skin test annually. If the TB skin test is positive, will still need to be evaluated to determine if the TB is active. Incidence of TB rose in 1985, started to decline in 1992 to date probably due to improved control programs. TB can be cured with meds.
VRE – vancomycin-	Most susceptible are those with weak immune systems or those treated with		Highly communicable	Hardy germ; can survive on hard surfaces 5-7

Disease	Signs & symptoms	Incubation	Communicability	Prevention
resistant enterococcus. (VRE)	many antibiotics. Most often found in stool. Also in urine, blood, infected wounds, other body fluids (or wherever it can be carried by the bloodstream)		with direct & indirect contact	days & on hands for hours. Easy to kill with good handwashing. Protective gowns and gloves to be worn.

Disease	Signs & symptoms	Incubation	Communicability	Prevention
West Niles Virus (West Nile fever – mild disease with flu-like symptoms that last few days, no long term health effects). (West Nile Encephalitis or Meningitis– Less than 1% of those infected. The most severe form of infection. Encephalitis is inflammation of the brain and meningitis is inflammation of the membranes of the brain.	Most victims asymptomatic. <u>Mild infection</u> (20% of those infected): fever, headache, body aches, occ rash on trunk, swollen lymph glands. Symptoms generally last 3-6 days. <u>Severe infection</u> (less than 1%): headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis. Encephalitis reported more commonly than meningitis.	Usually 3-14 days Infection is suspected based on clinical symptoms and history and confirmed with a laboratory test measuring the antibodies that are produced early.	The disease is spread by a bite of an infected mosquito or blood transfusion of contaminated blood. The virus is in the blood a very short time; people develop an antibody for further protection. The disease is <u>not</u> transmitted from person to person.	Avoid activities that expose you to mosquito bites; use insect repellent sparingly and one that contains DEET. Use netting over infant carriers. Try to avoid the outdoors at dawn, dusk & early evening. There is no specific treatment, but supportive care for symptoms. Infections do not last very long.
Avian or Bird Flu A contagious disease of animals caused by viruses that normally affect only birds and occasionally pigs. Wild birds carry the disease but rarely get sick. Domesticated birds get sick &	Typical influenza-like symptoms: Fever, cough, sore throat, muscle aches, eye infections (conjunctivitis), acute respiratory distress, viral pneumonia.	Be cautious of patients with recent travel within last 10 days to countries with the bird flu activity: 9 Asian countries Russia Kazakhstan Mongolia Turkey Romania	Direct contact with infected poultry, contaminated surfaces and objects contaminated with animal feces. Human exposure is most likely during slaughter, defeathering, butchering and	Good handwashing before and after food preparation. Practice good hygiene during food preparation. Avoid contact with juices from raw poultry mixing with other items to be eaten. Properly and fully cook poultry. Fully cook eggs – no runny yolks. Normal cooking temperatures kill the virus. Thorough cleaning and disinfecting

Disease	Signs & symptoms	Incubation	Communicability	Prevention
Avian/bird flu die. Concern is mutation to humans		Now considered free of disease: Japan, the Republic of Korea, and Malaysia	preparation for cooking. The bird flu is <u>not</u> transmitted through fully and properly cooked food.	of surfaces in contact with raw poultry (soap and water is adequate). Patient treatment: treat patients with severe febrile respiratory illness with standard precautions (good handwashing) including gloves, gowns, eye protection if within 3 feet of patient, and airborne precautions (N95 mask). Continue precautions for 14 days after onset of symptoms. Recommended that healthcare workers get vaccinated with the current "flu" vaccine.

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12/03

Revised 2/06

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Conversion Disorder (Functional Neurological Symptom Disorder)
Psychological Factors Affecting Other Medical Conditions
Factitious Disorder
Other Specified Somatic Symptom and Related Disorder
Unspecified Somatic Symptom and Related Disorder

Feeding and Eating Disorders

Pica
Rumination Disorder
Avoidant/Restrictive Food Intake Disorder
Anorexia Nervosa

Bulimia Nervosa
Binge-Eating Disorder
Other Specified Feeding or Eating Disorder
Unspecified Feeding or Eating Disorder

Elimination Disorders

Enuresis
Encopresis
Other Specified Elimination Disorder
Unspecified Elimination Disorder

Sleep-Wake Disorders

Insomnia Disorder
Hypersomnolence Disorder
Narcolepsy

Breathing-Related Sleep Disorders

Obstructive Sleep Apnea Hypopnea
Central Sleep Apnea
Sleep-Related Hypoventilation

Circadian Rhythm Sleep-Wake Disorders

Parasomnias

Non–Rapid Eye Movement Sleep Arousal Disorders
 Sleepwalking
 Sleep Terrors
Nightmare Disorder
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Restless Legs Syndrome
Substance/Medication-Induced Sleep Disorder

Other Specified Insomnia Disorder
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Erectile Disorder
Female Orgasmic Disorder
Female Sexual Interest/Arousal Disorder
Genito-Pelvic Pain/Penetration Disorder

Male Hypoactive Sexual Desire Disorder
Premature (Early) Ejaculation
Substance/Medication-Induced Sexual Dysfunction
Other Specified Sexual Dysfunction
Unspecified Sexual Dysfunction

Gender Dysphoria

Gender Dysphoria
Other Specified Gender Dysphoria
Unspecified Gender Dysphoria

Disruptive, Impulse-Control, and Conduct Disorders

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Intermittent Explosive Disorder
Conduct Disorder
Antisocial Personality Disorder
Pyromania
Kleptomania
Other Specified Disruptive, Impulse-Control, and Conduct Disorder
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Substance-Induced Disorders
 Substance Intoxication and Withdrawal
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Alcohol Withdrawal
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Unspecified Alcohol-Related Disorder

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Caffeine Withdrawal
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Unspecified Caffeine-Related Disorder

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Cannabis Use Disorder
Cannabis Intoxication
Cannabis Withdrawal
Other Cannabis-Induced Disorders

Unspecified Cannabis-Related Disorder

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Other Hallucinogen Use Disorder
Phencyclidine Intoxication
Other Hallucinogen Intoxication
Hallucinogen Persisting Perception Disorder
Other Phencyclidine-Induced Disorders
Other Hallucinogen-Induced Disorders
Unspecified Phencyclidine-Related Disorder
Unspecified Hallucinogen-Related Disorder

Inhalant-Related Disorders

Inhalant Use Disorder
Inhalant Intoxication
Other Inhalant-Induced Disorders
Unspecified Inhalant-Related Disorder

Opioid-Related Disorders

Opioid Use Disorder
Opioid Intoxication
Opioid Withdrawal
Other Opioid-Induced Disorders
Unspecified Opioid-Related Disorder

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Sedative, Hypnotic, or Anxiolytic Intoxication
Sedative, Hypnotic, or Anxiolytic Withdrawal
Other Sedative-, Hypnotic-, or Anxiolytic-Induced Disorders
Unspecified Sedative-, Hypnotic-, or Anxiolytic-Related Disorder

Stimulant-Related Disorders

Stimulant Use Disorder
Stimulant Intoxication
Stimulant Withdrawal
Other Stimulant-Induced Disorders
Unspecified Stimulant-Related Disorder

Tobacco-Related Disorders

Tobacco Use Disorder
Tobacco Withdrawal
Other Tobacco-Induced Disorders
Unspecified Tobacco-Related Disorder

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Other (or Unknown) Substance Use Disorder
Other (or Unknown) Substance Intoxication
Other (or Unknown) Substance Withdrawal
Other (or Unknown) Substance–Induced Disorders
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Major or Mild Neurocognitive Disorder Due to Traumatic Brain Injury
Substance/Medication-Induced Major or Mild Neurocognitive Disorder
Major or Mild Neurocognitive Disorder Due to HIV Infection
Major or Mild Neurocognitive Disorder Due to Prion Disease
Major or Mild Neurocognitive Disorder Due to Parkinson’s Disease
Major or Mild Neurocognitive Disorder Due to Huntington’s Disease
Major or Mild Neurocognitive Disorder Due to Another Medical Condition
Major or Mild Neurocognitive Disorder Due to Multiple Etiologies
Unspecified Neurocognitive Disorder

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Schizoid Personality Disorder
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Cluster B Personality Disorders
Antisocial Personality Disorder
Borderline Personality Disorder
Histrionic Personality Disorder
Narcissistic Personality Disorder
Cluster C Personality Disorders
Avoidant Personality Disorder
Dependent Personality Disorder
Obsessive-Compulsive Personality Disorder

Other Personality Disorders

Personality Change Due to Another Medical Condition
Other Specified Personality Disorder
Unspecified Personality Disorder

Paraphilic Disorders

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Exhibitionistic Disorder
Frotteuristic Disorder
Sexual Masochism Disorder
Sexual Sadism Disorder
Pedophilic Disorder
Fetishistic Disorder
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Unspecified Paraphilic Disorder

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Depressive Episodes With Short-Duration Hypomania
Persistent Complex Bereavement Disorder

Caffeine Use Disorder
Internet Gaming Disorder
Neurobehavioral Disorder Associated With Prenatal Alcohol Exposure
Suicidal Behavior Disorder
Nonsuicidal Self-Injury

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Highlights of Changes From DSM-IV to DSM-5
Glossary of Technical Terms
Glossary of Cultural Concepts of Distress
Alphabetical Listing of DSM-5 Diagnoses and Codes (ICD-9-CM and ICD-10-CM)
Numerical Listing of DSM-5 Diagnoses and Codes (ICD-9-CM)
Numerical Listing of DSM-5 Diagnoses and Codes (ICD-10-CM)
DSM-5 Advisors and Other Contributors

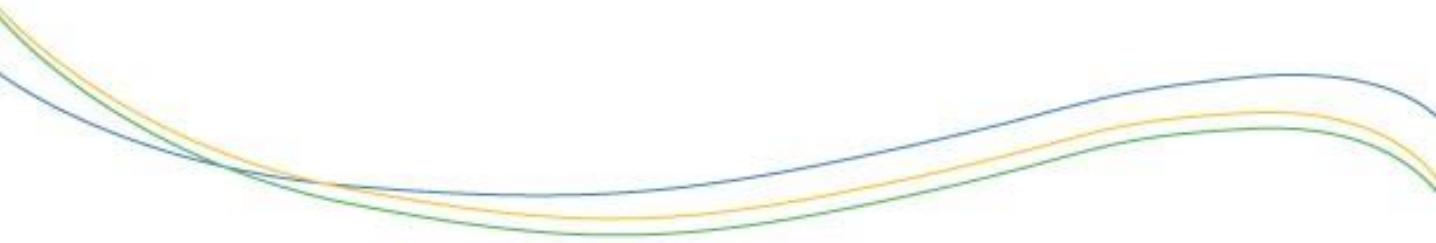
DSM is the manual used by clinicians and researchers to diagnose and classify mental disorders. The American Psychiatric Association (APA) will publish DSM-5 in 2013, culminating a 14-year revision process. For more information, go to www.DSM5.org.

APA is a national medical specialty society whose more than 36,000 physician members specialize in the diagnosis, treatment, prevention and research of mental illnesses, including substance use disorders. Visit the APA at www.psychiatry.org. For more information, please contact Eve Herold at 703-907-8640 or press@psych.org.

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Order DSM-5 and DSM-5 Collection
at www.appi.org



Quick Guide to Common Childhood Diseases



October 2021

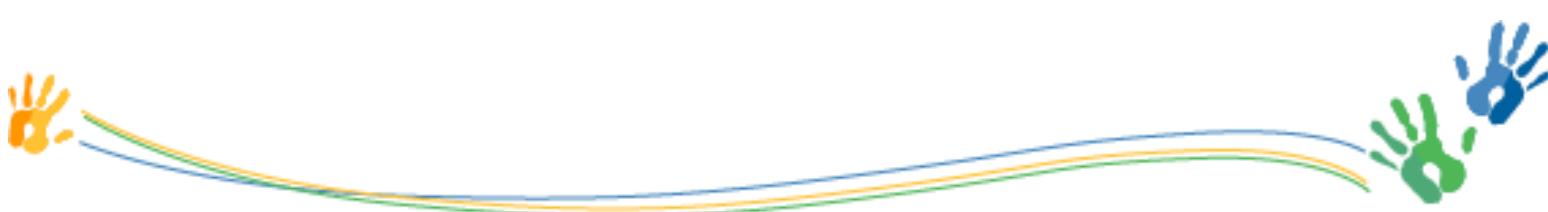


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Introduction

The purpose of *A Quick Guide to Common Childhood Diseases* is to provide general information about communicable diseases commonly experienced by young children. It is a quick reference intended to assist care providers with identifying common childhood diseases so that actions can be taken to decrease the spread of the illness or infestation to others.

Parents and caregivers who would like more information regarding the illnesses and infestations described in this guide or information on how to care for their sick child can refer to the [Resources](#) section guide.

This guide is for people who care for young children. This includes people who work in child care centres, early learning centres, preschools, schools, summer camps and anywhere else that groups of young children spend time together. When children work and play together in groups, there is an opportunity for the spread of a number of common childhood diseases that can be passed from one child to another. Early recognition of an illness or infestation and prompt action and treatment can significantly reduce the spread within a group setting.

The diseases and infestations described in this guide do not only affect children. Adults can also be affected and may develop symptoms and/or unknowingly spread an illness to a child.

Each infectious disease and infestation in this guide is described according to:

- **What is it?**
 - Basic facts about the infectious disease or infestation
- **What are the signs and symptoms?**
 - A list of some of the signs and symptoms (not every child will have every symptom of the illness)
- **How is it spread?**
 - A description of how the illness or infestation is spread
- **Incubation Period**
 - The length of time from when a child is first exposed to the illness or infestation to when the first symptoms appear
- **When is the person contagious?**
 - The time period during which an infected child is able to spread the illness or infestation to others
- **How to prevent the spread of the illness or infestation to other children**
 - Information regarding whether or not the child needs to be excluded from the school or child care centre
 - Strategies to decrease the spread of the illness or infestation within the group setting.



How Are Infections Spread?

Respiratory Infections: Many of the infections in this guide are spread by the respiratory system (nose, throat and lungs). They are spread through direct and indirect contact with the nose and throat secretions of an infected person. This can happen when:

- An infected person coughs or sneezes without a tissue to cover their nose and mouth. Tiny droplets containing the virus or bacteria travel through the air and can infect a person who is close by (less than a meter away).
- An infected person may have the virus or bacteria on their hands after coughing or sneezing. If they touch another person's hand or an object, the virus or bacteria may be left behind. The virus or bacteria can infect the next person when that person touches their eyes, nose or mouth. Some viruses and bacteria can live on objects like doorknobs, faucets, telephones and toys for many hours.
- People working with children assist them with using or disposing of tissues. When the tissue is contaminated with the nose and throat secretions of an infected child, the virus or bacteria can spread to the hands of the staff member when they touch the tissue.

Gastrointestinal Infections: Several of the infections in this guide affect the gastrointestinal system (stomach and intestines). The bacteria or virus is often found in contaminated food or water but can be spread from one person to another, especially in a child care centre where children are in diapers. These viruses and bacteria are primarily spread when:

- Contaminated food is not cooked or cleaned properly.
- Contaminated water is not treated properly.
- There is direct contact with the stool (feces) of an infected person. This might happen when a caregiver changes a child's diaper or assists a child with toileting. Even a tiny amount of stool on a caregiver's hand may contain virus or bacteria that can infect them if they touch their mouth or prepare food before washing their hands.
- There is indirect contact with infected stool. This might happen when a person with the virus or bacteria on their hands touches an object (e.g., faucet, light switch, doorknob or toy). The virus or bacteria can live on the object for long periods of time and be spread to anyone who touches the object.



How Are Infestations Spread?

Head lice are an infestation, not an infection. Head lice do not cause illness.

Ringworm, scabies and pinworms are also infestations.

Head lice, ringworm, scabies and pinworms are spread by direct or indirect contact with a person who has them when:

- People are very close together and skin or hair is touching.
- A person touches the affected area and then touches the hands or skin of another person.
- People share personal items including combs, hairbrushes, hats, helmets, headphones, towels, washcloths and clothing.

Stop the Spread of Infections and Infestations

To stop the spread of infections and infestations personal items such as hairbrushes, hats, toothbrushes, washcloths, towels, sippy cups or bottles should not be shared.

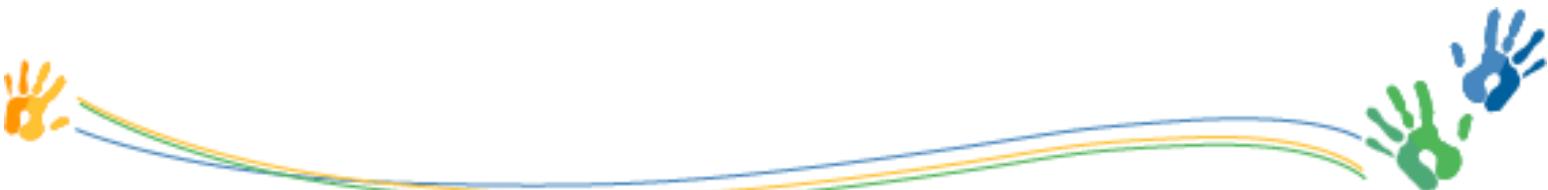
Wear disposable gloves anytime your hands may come into contact with blood or body fluids. This is especially important if you have a cut or open sore on your hands. For added protection, wash your hands after removing and disposing of the gloves.

Use household rubber gloves when cleaning or sanitizing.

Dispose of articles soiled with discharge from the nose and/or mouth, vomit or feces into a garbage bin, ideally with a pop-up lid. The bin should be lined with a disposable plastic bag to be tied and thrown out with the household/child care centre garbage.

Disinfect surfaces using a solution of household bleach (containing 5.25% sodium hypochlorite) diluted with water. A dilution of 1:100 or 1:50 is recommended for routine disinfection of surfaces and objects. Bleach solutions lose potency when stored so they should be prepared fresh daily.

- 1:100 is 1 part bleach to 99 parts water (5 mL of bleach to 495 mL of water)
- 1:50 is 1 part bleach to 49 parts water (10 mL of bleach to 490 mL of water)



A 1:10 dilution of bleach is recommended for cleaning up spills of blood or body fluids.

- Mix 1 part bleach with 9 parts water (5 mL of bleach to 45 mL of water).

Organic material such as blood or stool inactivates bleach. A surface visibly contaminated with blood or stool must be cleaned with water and detergent before being disinfected.

Clean and disinfect countertops, toys and diaper changing areas more frequently when a child with diarrhea is present.

For more information see:

[HealthLink BC File #97 – Contact with Blood or Body Fluids: Protecting Against Infection](#)

Coughing and Sneezing Etiquette

Cover your mouth and nose with a tissue when you cough or sneeze. If you don't have a tissue, cough or sneeze into your shirt sleeve, instead of your hands. By not coughing or sneezing into your hands you decrease the spread of disease through contaminated hands. Discard used tissues into a lined garbage bin and immediately wash your hands.

Teach children to cough or sneeze into a tissue or into their shirt sleeve instead of sneezing or coughing into their hands. Teach children to discard used tissues into a garbage bin and to wash their hands after coughing or sneezing.

Food Safety

To help prevent foodborne illness:

- Wash hands before food preparation
- Cook meat, poultry and seafood well
- Avoid drinking or serving unpasteurized milk and juice
- Wash all fruits and vegetables thoroughly before eating or serving
- Keep uncooked meat, poultry and seafood away from fruits and vegetables and other ready-to-eat foods
- Cover foods and store at recommended temperatures for recommended times.

Detailed information on proper food handling and food safety can be found in the HealthLink BC files listed below.

For more information see:

[HealthLink BC File #59a – Food Safety: Easy Ways to Make Food Safer](#)

[HealthLink BC File #59b – Food Safety for Fresh Fruits and Vegetables](#)

[HealthLink BC File #59d – Food Safety in Child Care Facilities](#)

[HealthLink BC File #72 – Unpasteurized Fruit/Vegetable Juices and Ciders: A Potential Health Risk](#)

[HealthLink BC File #03 – Pasteurized and Raw Milk](#)



Hand Washing

Hand washing is the best way to stop the spread of infections. Frequent hand washing has been shown to significantly decrease the incidence of colds, influenza and other infections. Young children should be supervised when washing their hands.

Use plain soap to wash hands. The addition of antibacterial products to soap does not improve your health and it can negatively affect you and the environment over time. The antibacterial products in soap can lead to an increase in antibiotic resistant organisms (for more information see page 9 "[Antibiotic Resistance](#)").

When to Wash Your Hands:

- Before preparing food
- Before and after eating or helping a child eat
- After using the washroom or helping a child use the washroom
- Before and after changing diapers
- After sneezing or coughing
- After blowing your nose or wiping a child's nose
- Before performing first aid or giving a child medicine
- After handling animals or animal waste
- After cleaning or handling garbage
- Before and after playing at the water table
- After playing outside or in the sandbox
- After playing with toys shared with other children

How to Wash your Hands:

- Wet your hands
- Apply soap
- Wash all parts of hands for at least 20 seconds
- Rinse your hands
- Dry your hands with a paper towel
- Turn off the tap with a paper towel

Although soap and water are the preferred method of hand hygiene, alcohol based hand rubs can be used if soap and water are not available. Alcohol based hand rubs should be at least 60% alcohol and do not need the addition of antimicrobial agents such as triclosan. When cleaning hands with an alcohol based hand rub, use enough hand rub to keep the hands wet for 15-30 seconds. Spread the hand rub to all areas of the hands, fingers and wrists until your hands are dry. Follow the directions on the bottle for additional information. If hands are visibly dirty, hand rubs are not an appropriate hand cleaner; soap and water are necessary to properly clean hands. Ensure that alcohol based hand rubs are kept away from heat sources and out of reach of children as they are flammable and poisonous if ingested.

For more information see:

Do Bugs Need Drugs? <http://www.dobugsneeddrugs.org/>

HealthLink BC File #85 – Hand Washing: Help Stop the Spread of Germs



HOW TO WASH YOUR HANDS



1 WET YOUR HANDS



2 APPLY SOAP



3 RUB HANDS TOGETHER



4 RINSE YOUR HANDS



5 DRY YOUR HANDS



6 TURN OFF TAP WITH PAPER TOWEL

LEAVE THE WASHROOM NEAT AND TIDY



Antibiotics

What are antibiotics?

Antibiotics are medicines used to kill bacteria. They are not useful for viral infections or allergies and they do not help with illnesses such as the common cold or influenza.

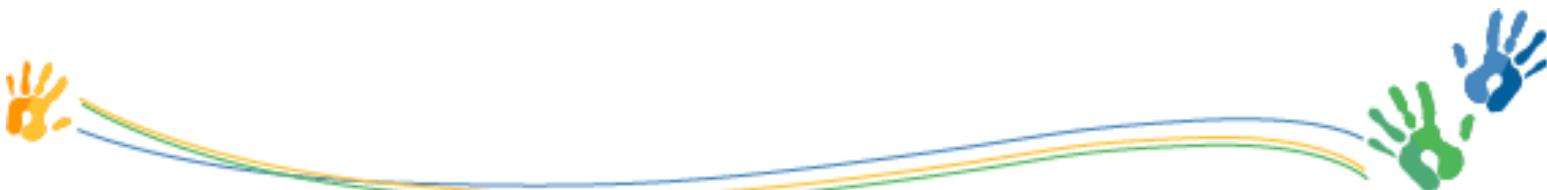
Cautions about antibiotics

Side effects: All medicines can cause side effects. Some people get diarrhea, nausea or a yeast infection when they take antibiotics. If you are having a problem with side effects, talk to your doctor, nurse practitioner or pharmacist.

Allergic reactions: All medicines can cause a reaction. This can sometimes be an emergency. Talk to your doctor, nurse practitioner or pharmacist about any allergies or past allergic reactions.

Antibiotic resistance

Frequent or inappropriate use of antibiotics can cause antibiotic resistance. Antibiotic resistance is when bacteria change over time to adapt and survive exposure to a medication that is used to kill or control its growth. When there is antibiotic resistance, a medication may no longer be effective at treating the infection. It is important to only take antibiotics for bacterial infections as directed by a doctor or nurse practitioner to avoid the effects of antibiotic resistance for your health and the health of communities.



Campylobacteriosis

What is it?	<p><i>Campylobacter</i> are bacteria that infect the intestinal tract. They are a common cause of diarrhea. When a person infected with the bacteria gets ill they have campylobacteriosis. The illness usually lasts less than 1 week. <i>Campylobacter</i> infection is diagnosed by testing a stool sample.</p> <p><i>Campylobacter</i> bacteria are found in the intestines of many animals including chickens, cows, pigs and sheep. When animals are slaughtered for food the bacteria from their intestines may contaminate the meat.</p>
What are the signs and symptoms?	<p>Signs and symptoms of campylobacteriosis may include:</p> <ul style="list-style-type: none">➤ Stomach pain➤ Mild to severe diarrhea which may be bloody➤ Nausea and vomiting➤ Fever
How is it spread?	<p>Campylobacteriosis is caused when a person ingests <i>Campylobacter</i> bacteria. This can occur by:</p> <ul style="list-style-type: none">➤ Eating undercooked poultry, meat or other foods that have been contaminated by these during food preparation➤ Drinking water or unpasteurized milk or juice contaminated with the bacteria➤ Touching the feces of infected people, pets (especially cats and dogs that may have fecal matter on their fur), birds and farm animals <p><i>Campylobacter</i> bacteria are not usually spread from one person to another unless a person is producing large amounts of diarrhea.</p>
Incubation period	Usually 2–5 days (range is 1–10 days)
When is the person contagious?	During the course of infection. A person may continue to pass the bacteria in their stool for several weeks after the illness.
How to prevent the spread of the illness to other children	<p>A child with campylobacteriosis should be excluded from school or a child care centre until 48 hours after their last episode of diarrhea or vomiting, or as advised by the local Health Authority. Anyone with symptoms should be excluded from food handling and child care.</p> <p>Ensure children wash their hands carefully after handling pets.</p>

For more information see:

[HealthLink BC File #58 – Campylobacter Infection](#)



Chickenpox (Varicella)

What is it?	<p>Chickenpox is caused by the varicella zoster virus. It is usually a mild illness in children but can be more serious in infants, teenagers, adults, pregnant women and those with weakened immune systems.</p> <p>For some people the virus can become active again later in life and cause shingles (for more information see Shingles).</p> <p>Chicken pox can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of chickenpox may include:</p> <ul style="list-style-type: none"> ➤ Fever ➤ Tiredness ➤ Headache ➤ Loss of appetite ➤ A rash that develops a few days after the first symptoms. It usually first appears on the face and scalp and spreads down the body to the arms and legs. The rash begins as small, red, flat spots that develop into itchy fluid-filled blisters. After the blisters break, open sores will crust over to form dry brown scabs. <p>Chickenpox usually lasts for about 10 days.</p>
How is it spread?	<p>Chickenpox is spread by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus when an infected person has coughed or sneezed ➤ Contact with an infected person's saliva through the sharing of foods or drinks or kissing ➤ Contact with fluid from chickenpox or shingles blisters <p>A pregnant woman with chickenpox can pass it to her baby during pregnancy</p>
Incubation period	Usually 10–21 days following contact with an infected person.
When is the person contagious?	From 1–2 days before the rash appears and until all of the blisters have crusted over (which is usually 5 days after the first blisters appear).
How to prevent the spread of the illness to other children	<p>Inform the school/child care centre administrator and parents when a case of chickenpox occurs in a school or child care centre. Public health can be contacted to support the development of protocols for notification of parents/guardians when such cases arise.</p> <p>Inform staff members who are pregnant or have a weakened immune system.</p>

For more information see:

[HealthLink BC File #44a – Facts About Chickenpox](#)

[HealthLink BC File #44b – Chickenpox \(Varicella\) Vaccine](#)

[HealthLink BC File #14e – Measles, Mumps, Rubella and Varicella \(MMRV\) Vaccine](#)



Cold Sores (Herpes simplex)

What is it?	<p>Cold sores (small blisters) on the mouth are usually caused by herpes simplex virus type 1. During the first outbreak of cold sores, the sores may spread to any part of the mouth.</p> <p>After a person is infected, the virus stays in their body and may cause cold sores to return throughout their lifetime. Recurrent infection on the lips is usually less serious than the first infection.</p>
What are the signs and symptoms?	<p>Signs and symptoms of cold sores may include:</p> <ul style="list-style-type: none"> ➤ Itching, burning or tingling around the mouth and lips ➤ Superficial clear blisters with a red base around the mouth and lips. The blisters crust over and heal within a few days. ➤ A sore mouth that makes eating, drinking and sleeping uncomfortable. ➤ Fever ➤ Sore throat ➤ Swollen lymph glands in the neck ➤ Drooling in small children
How is it spread?	<p>Cold sores are spread by contact with secretions from the throat and mouth of an infected person through:</p> <ul style="list-style-type: none"> ➤ Kissing ➤ Sharing eating utensils, drinking cups and toys that are put in the mouth ➤ Touching the cold sore directly <p>A person infected with the herpes simplex virus can spread it to others even if there are no blisters present.</p>
Incubation period	Usually 2–12 days following contact with an infected person.
When is the person contagious?	When the cold sore is open
How to prevent the spread of the illness to other children	<p>A child with cold sores should be excluded from school or a child care centre if it is their first attack with a cold sore and it causes drooling from the mouth or they have a weeping or open cold sore. They can return to school or a day care centre when the cold sore is crusted over.</p> <p>Teach children not to touch the sores and to wash their hands frequently. Ensure that a child with cold sores does not share toys that they have put in their mouth with other children.</p> <p>Ensure children do not kiss each other when they have cold sores or uncontrollable drooling. Avoid kissing a child or adult with cold sores.</p> <p>Keep children with cold sores away from newborn babies, children with eczema or severe burns and people with weakened immune systems.</p>

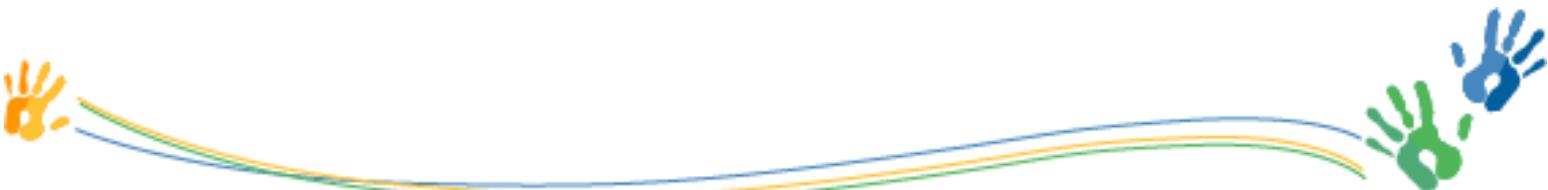
For more information see:
[HealthLink BC Health Topics – Cold Sores](#)



Croup

What is it?	<p>Croup is an infection of the upper airway with a virus. The infection causes the lining of the throat and larynx (voice box) to become red and swollen. Croup usually occurs in children under 5 years of age. When older children are infected the illness is called laryngitis.</p> <p>Croup often occurs a few days after the start of a cold and is caused by the same viruses that cause the common cold.</p> <p>If a child with croup is having difficulty breathing, try:</p> <ul style="list-style-type: none"> ➤ Warm mist – run a warm shower in a bathroom with the door closed. Sit in the bathroom with the child while the child breathes in the mist. ➤ If it is cold outside, bundle the child up and take him or her outside. The cold air may help the child's breathing and cough. ➤ Try to keep the child calm (crying will make the symptoms worse). ➤ Suggest that the parents take the child home or for medical treatment.
What are the signs and symptoms?	<p>Signs and symptoms of croup may include:</p> <ul style="list-style-type: none"> ➤ Cold-like symptoms that develop into a cough and fever ➤ Red swollen lining of the throat and larynx ➤ Raspy, hoarse voice ➤ Loud, barking cough ➤ High pitched noise when breathing in ➤ Tiredness <p>Symptoms of croup are often worse at night. Any activity that makes a child with croup breathe faster (e.g., crying) could make them sound worse.</p>
How is it spread?	<p>Croup is spread by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus after an infected child has coughed or sneezed ➤ Touching the hands or nose and throat secretions of an infected child ➤ Touching an object that has been contaminated with the virus
Incubation period	Usually 1–10 days, but depends on the virus causing the infection.
When is the person contagious?	From shortly before symptoms start until the end of active disease.
How to prevent the spread of the illness to other children	For cases of mild croup, a child may go to school or a child care centre if they feel well enough to attend.

For more information see:
[HealthLink BC Health Topics – Croup](#)



Cryptosporidiosis

What is it?	<p><i>Cryptosporidium</i> is a parasite that lives in the intestines of infected humans and animals. It is passed in the stool of an infected person or animal. <i>Cryptosporidium</i> parasites can survive for long periods of time (2–6 months) outside the body and are resistant to chlorine disinfection. A person infected with <i>Cryptosporidium</i> has cryptosporidiosis.</p>
What are the signs and symptoms?	<p>Signs and symptoms of cryptosporidiosis may include:</p> <ul style="list-style-type: none">➤ Frequent watery diarrhea➤ Stomach cramps➤ Nausea and vomiting and lack of appetite in children➤ Mild fever➤ Dehydration <p>Symptoms can come and go for up to 30 days but usually last 1–2 weeks. A person infected with <i>Cryptosporidium</i> may have no symptoms.</p>
How is it spread?	<p>Cryptosporidiosis is caused when a person ingests the parasite. This can occur by:</p> <ul style="list-style-type: none">➤ Swallowing contaminated water in lakes, rivers, ponds or swimming pools➤ Eating raw or undercooked food that is contaminated➤ Touching objects or surfaces (e.g., toys, bathroom fixtures such as taps and light switches, changing tables or diaper pails) contaminated with stool from an infected person➤ Touching the feces of pets or farm animals <p>The spread of <i>Cryptosporidium</i> is highest among children who are not yet toilet trained and their caregivers.</p>
Incubation period	Usually 2–10 days (average is 7 days)
When is the person contagious?	The parasites are shed in the stool as soon as symptoms begin. They continue to be found in stool for several weeks after recovery from the illness.
How to prevent the spread of the illness to other children	<p>A child with cryptosporidiosis should be excluded from school or a child care centre until 48 hours after their last episode of diarrhea or vomiting or as advised by the local Health Authority. Anyone with symptoms should be excluded from food handling and child care.</p> <p>Wash toys and surfaces with a 5% ammonia solution. A bleach solution is not effective against <i>Cryptosporidium</i>.</p> <p>Ensure children wash their hands after petting an animal.</p>

For more information see:

[HealthLink BC File #48 – Cryptosporidium Infection](#)



Escherichia coli (E. coli)

What is it?	<p>There are many strains of <i>E. coli</i> bacteria and most of them are harmless. Others cause diarrhea when a toxin is produced by the bacteria. Most people with <i>E. coli</i> infections recover completely within 5-10 days. Very young children and the elderly are more likely to develop severe illness and hemolytic uremic syndrome (HUS).</p> <p>HUS is an acute disease characterized by anemia, kidney failure and a low platelet count. Recovery is usually spontaneous but a child may need to be hospitalized and require dialysis during acute illness. About 5% of people who develop HUS will die. Children less than 5 years of age are most likely to develop HUS.</p>
What are the signs and symptoms?	<p>Signs and symptoms of <i>E. coli</i> infection may include:</p> <ul style="list-style-type: none"> ➤ Loose, watery diarrhea that may become bloody ➤ Abdominal cramps ➤ Vomiting ➤ Mild fever (usually less than 38.5°C) <p>Symptoms of HUS may include:</p> <ul style="list-style-type: none"> ➤ Decreased urine output ➤ Fatigue ➤ Pale skin
How is it spread?	<p><i>E. coli</i> are spread when a person ingests human or animal feces. This can occur by:</p> <ul style="list-style-type: none"> ➤ Eating raw or undercooked meat, especially ground meat such as hamburger ➤ Eating raw fruits and vegetables that are contaminated with the bacteria ➤ Drinking unpasteurized milk, juice or cider ➤ Touching objects or surfaces (e.g., toys, bathroom fixtures such as taps and light switches, changing tables or diapers pails) contaminated with stool from an infected person
Incubation period	Usually 3–4 days (range is 2–10 days)
When is the person contagious?	Usually for the duration of diarrhea (1 week or less for adults). Young children may continue to shed the bacteria in their stool for up to 3 weeks.
How to prevent the spread of the illness to other children	A child with an <i>E. coli</i> infection should be excluded from school or a child care centre until 48 hours after their last episode of diarrhea or vomiting or as advised by the local Health Authority. Anyone with symptoms should be excluded from food handling and child care.

For more information see:
[HealthLink BC File #02 – *E. coli* Infection](#)



Fifth Disease

What is it?	Fifth disease is an infection of the airways and lungs caused by a virus called human parvovirus B19. Fifth disease is sometimes called “slapped cheek” disease because of the appearance of a red rash on the face.
What are the signs and symptoms?	<p>Signs and symptoms of fifth disease may include:</p> <ul style="list-style-type: none"> ➤ Flu-like symptoms (e.g., fever, rash, cough or runny nose) may be present about 7 days before the onset of a rash ➤ A raised, red rash that first appears on a child's cheeks ➤ A red, spotty lace-like rash may appear on the arms, chest, back and thighs ➤ After the rash fades, it may continue to reappear for 1-3 weeks when a child is exposed to sunlight or heat (e.g., bathing) <p>More than 50% of adults have had fifth disease as a child and therefore they can't get it again. Adults, especially women, with fifth disease may experience joint pain. About 25% of people with fifth disease have no symptoms.</p>
How is it spread?	<p>Fifth disease is spread by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus after an infected person has coughed or sneezed ➤ Touching the hands of someone who is infected with the virus and in the contagious period ➤ Touching objects or surfaces contaminated with the virus <p>Fifth disease can be passed from a pregnant woman to her unborn baby. This could result in the baby having severe anemia or in a miscarriage or stillbirth, although this is rare.</p>
Incubation period	Usually 4–20 days following contact with an infected person.
When is the person contagious?	<p>Usually for 7–10 days before onset of the rash.</p> <p>Once the rash appears, the child can no longer spread fifth disease to others.</p>
How to prevent the spread of the illness to other children	<p>A child with fifth disease may go to school or a child care centre if they feel well enough to attend.</p> <p>Pregnant women who are contacts of an infected child should be encouraged to contact their health care provider to determine whether or not they are immune to fifth disease.</p>

For more information see:

[HealthLink BC File #54 – Fifth Disease Parvovirus Infection](#)



Giardiasis (Beaver Fever)

What is it?	<p><i>Giardia</i> is a parasite that infects the intestines of humans and animals. Once a person or animal is infected with <i>Giardia</i>, the parasite lives in the intestine and is passed in the stool. The parasite can live for long periods of time outside the body.</p> <p>A person infected with <i>Giardia</i> has giardiasis (sometimes referred to as Beaver Fever).</p>
What are the signs and symptoms?	<p>Signs and symptoms of giardiasis may include:</p> <ul style="list-style-type: none">➤ Diarrhea➤ Frequent loose and pale greasy stools➤ Stomach cramps➤ Bloating and gas➤ Nausea➤ Weight loss➤ Fatigue <p>Sometimes a person with giardiasis has no symptoms.</p>
How is it spread?	<p>Giardiasis is caused when a person ingests the parasite. This can occur by:</p> <ul style="list-style-type: none">➤ Drinking contaminated water➤ Eating raw or undercooked food that is contaminated with <i>Giardia</i>➤ Swallowing contaminated water in lakes, rivers, ponds or swimming pools➤ Contact with infected stool (e.g., when changing a diaper or assisting a child with toileting)➤ Touching objects or surfaces (e.g., toys, bathroom fixtures such as taps and light switches, changing tables or diaper pails) contaminated with stool from an infected person <p>A person who is not treated with medication may release <i>Giardia</i> parasites in their stool for several months after they recover from the illness.</p>
Incubation period	Usually 7–10 days (range is 3–25 days).
When is the person contagious?	For the entire period of infection which can often be months.
How to prevent the spread of the illness to other children	A child with giardiasis should be excluded from school or a child care centre until 48 hours after their last episode of diarrhea or vomiting or as advised by the local Health Authority. Anyone with symptoms should be excluded from food handling and child care.

For more information see:
[HealthLink BC File #10 – Giardia Infection](#)



Haemophilus influenzae type b (Hib)

What is it?	<p><i>Haemophilus influenzae</i> type b (Hib) was the most common cause of bacterial meningitis (an infection of the lining that covers the brain and spinal cord) in children younger than 5 years of age before the introduction of Hib vaccines. Since then the incidence of Hib disease has decreased significantly. The majority of cases in children now occur in unimmunized children or in children too young to have completed their primary series of vaccines at 2, 4 and 6 months of age.</p> <p>Hib bacteria can also cause infections of the epiglottis, bloodstream, joints, skin and lungs. Other types of <i>H. influenzae</i> can cause ear infections, sinusitis, bronchitis and other respiratory illnesses.</p>
What are the signs and symptoms?	<p>Signs and symptoms of Hib meningitis usually occur suddenly and may include:</p> <ul style="list-style-type: none"> ➤ Fever ➤ Headache ➤ Vomiting ➤ Tiredness ➤ Bulging fontanelle (soft spot of the skull) in infants ➤ Stiff neck and back in older children
How is it spread?	<p>Hib is spread by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the bacteria after an infected person has coughed or sneezed ➤ Close face-to-face contact ➤ Kissing or sharing food, utensils, drinks, soothers, bottles or toys used by other children
Incubation period	The length of the incubation period is not known but is thought to be short (2–4 days).
When is the person contagious?	<p>As long as the bacteria are present, which may be a long period if the individual is not treated with antibiotics.</p> <p>A child infected with Hib is no longer contagious after receiving antibiotics for 24–48 hours.</p>
How to prevent the spread of the illness to other children	<p>Contact local public health. A child with Hib should be excluded from school or a child care centre until 24–48 hours after starting antibiotics.</p> <p>Antibiotics may be recommended for contacts of an infected child.</p>

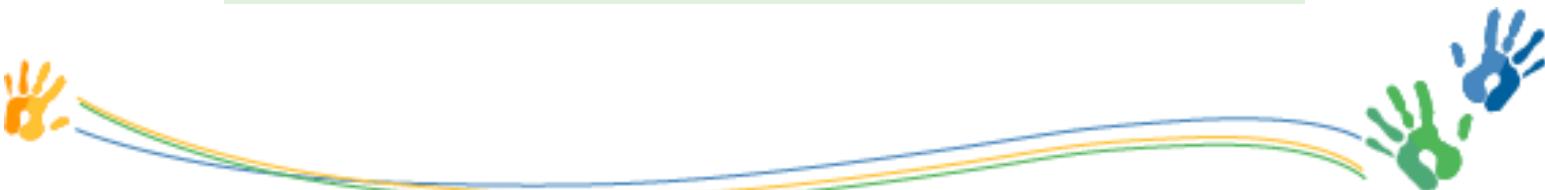
For more information see:

[HealthLink BC File #105 –Diphtheria, Tetanus, Pertussis, Hepatitis B, Polio, and](#)

[*Haemophilus influenzae* type b \(DTaP-HB-IPV-Hib\) Vaccine](#)

[HealthLink BC File #15b –Diphtheria, Tetanus, Pertussis, Polio, *Haemophilus influenzae* type b \(DTaP-IPV-Hib\) Vaccine](#)

[HealthLink BC File #16 – *Haemophilus influenzae* type b \(Hib\) Vaccine](#)



Hand, Foot and Mouth Disease

What is it?	Hand, foot and mouth disease is caused by a virus. It most commonly affects children under 10 years of age and occurs mainly in the summer and early fall.
What are the signs and symptoms?	<p>Signs and symptoms of hand, foot and mouth disease usually start suddenly and may include:</p> <ul style="list-style-type: none"> ➤ Fever ➤ Sore throat ➤ Headache ➤ Small painful blisters inside the mouth on the tongue and gums (which may last 4–6 days) ➤ Blisters that may appear on the palms of a child's hand, on their fingers and on the soles of their feet <p>Some people with hand, foot and mouth disease may not have any symptoms.</p>
How is it spread?	<p>Hand, foot and mouth disease is spread by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus after an infected person has coughed or sneezed ➤ Touching the nose and throat secretions of an infected person and then touching your own eyes, nose or mouth ➤ Touching an infected child's stool (e.g., when changing a diaper or assisting a child with toileting) ➤ Touching objects contaminated with the virus. <p>Hand, foot and mouth disease spreads very easily in child care centres and places where children are close together.</p>
Incubation period	Usually 3–6 days following contact with an infected person.
When is the person contagious?	Usually for the first week of the illness. However, the virus can remain in the body for weeks after the start of the illness.
How to prevent the spread of the illness to other children	<p>A child with hand, foot and mouth disease may go to school or a child care centre if they feel well enough to attend.</p> <p>Carefully dispose of (or clean, if applicable) articles soiled by discharge from an infected child's nose, throat or stool.</p>

For more information see:
[HealthLink BC File #64 – Hand, Foot and Mouth Disease](#)



Head Lice

What is it?	<p>Head lice are tiny insects that live on the scalp. Lice have 3 stages in their life cycle:</p> <ul style="list-style-type: none"> ➤ Nits (eggs) are whitish gray, tan or yellow ovals about the size of a grain of sand. They are found stuck to the hair, often behind the ears or at the back of the neck. Nits hatch in 9–10 days. ➤ Nymphs are young lice. They look like adult lice but are smaller. ➤ Adult lice are about the size of a sesame seed. They can live up to 30 days on a person's head. Adult lice move around on the scalp and are much more difficult to see than nits. <p>Nymphs and adult lice can live for up to 2 days away from the scalp. Eggs can live for 7–10 days away from the scalp but need the higher temperature near the scalp to hatch.</p> <p>Detection of a live louse is the best way to confirm head lice. The most effective method of detecting live lice is by using a fine tooth lice comb on dry or wet hair.</p>
What are the signs and symptoms?	<p>Signs and symptoms of head lice may include:</p> <ul style="list-style-type: none"> ➤ Itchy scalp (may be worse at night) ➤ Scratching marks or small red lesions like a rash <p>A child with head lice may not have any symptoms.</p>
How is it spread?	<p>Head lice are spread by:</p> <ul style="list-style-type: none"> ➤ Direct hair-to-hair contact (most common) ➤ Sharing hats, combs, hairbrushes, hair accessories, helmets or headphones <p>Head lice cannot fly or hop, but they can crawl very quickly. Head lice that live on people cannot live on pets such as cats and dogs.</p>
Incubation period	The period from the laying of eggs to emerging adult lice is 14–23 days.
How long can head lice be spread?	As long as live lice and nits are present.
How to prevent the spread of the infestation to other children	<p>A child with head lice does not need to be excluded from school or a child care centre. Provide parents with information regarding checking for head lice and treatment options.</p> <p>Discourage direct head-to-head contact between children. Children should be encouraged not to share things like hats, combs, hairbrushes, helmets or headphones. Items that may have been in prolonged or close contact with the child's head at the school or child care centre should be washed in hot water if possible. Items that can't be washed should be stored in a sealed air-tight plastic bag for 2 weeks or in the freezer for 48 hours.</p>

For more information see:
[HealthLink BC File #06 – Head Lice](#)



Hepatitis A

What is it?	<p>Hepatitis A is an infection of the liver caused by the hepatitis A virus. It is usually a mild illness and rarely causes permanent liver damage. Hepatitis A is usually more serious in adults than children.</p> <p>Hepatitis A can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of hepatitis A may include:</p> <ul style="list-style-type: none"> ➤ Fatigue ➤ Fever ➤ Nausea and vomiting ➤ Loss of appetite ➤ Abdominal pain ➤ Jaundice (yellowing of the skin and eyes) ➤ Dark urine <p>Most infants and young children infected with hepatitis A do not have any symptoms.</p>
How is it spread?	<p>The hepatitis A virus is found in the stool of an infected person. The virus is spread by:</p> <ul style="list-style-type: none"> ➤ Contact with the stool or hands of an infected person ➤ Touching objects contaminated with the virus ➤ Eating food prepared by an infected person who has not washed their hands properly ➤ Drinking contaminated water
Incubation period	Usually 15–50 days (average of 28 days).
When is the person contagious?	From about 2 weeks before symptoms begin until 1 week after jaundice begins.
How to prevent the spread of the illness to other children	<p>Contact local public health. Exclusion of a child or adult with hepatitis A from a child care centre is at the discretion of the Medical Health Officer. A person with hepatitis A should be excluded for 14 days from the onset of symptoms or 7 days from the onset of jaundice, whichever is longer.</p> <p>The hepatitis A vaccine or immune globulin may be recommended for people who were in contact with someone with hepatitis A.</p>

For more information see:

[HealthLink BC Health Topics – Hepatitis A](#)
[HealthLink BC File #33 – Hepatitis A Vaccine](#)



Impetigo

What is it?	Impetigo is a common skin infection caused by group A <i>Streptococcus</i> (strep) or <i>Staphylococcus aureus</i> (staph) bacteria. Infections usually start when bacteria enter the body through breaks in the skin, such as scrapes, cold sores, insect bites or patches of eczema. It is most common in the summer.
What are the signs and symptoms?	Signs and symptoms of impetigo may include: <ul style="list-style-type: none"> ➤ A rash that looks like clusters of red bumps or blisters surrounded by an area of redness. There may be fluid oozing from the blisters and they may develop a yellow (honey colored) or gray crust. ➤ Sores around the mouth and nose and on skin not covered by clothing
How is it spread?	Impetigo is spread by contact with: <ul style="list-style-type: none"> ➤ The rash or discharge from the rash of an infected person ➤ Secretions from the nose and throat of an infected person ➤ Objects such as towels, bed sheets and clothing that have been in contact with the sores of an infected person
Incubation period	Staph bacteria: 4–10 days following contact with an infected person. Strep bacteria: 1–3 days following contact with an infected person.
When is the person contagious?	As long as the rash continues to drain. After 24 hours of antibiotic treatment, a child with impetigo is no longer contagious.
How to prevent the spread of the illness to other children	A child with impetigo should be excluded from school or a child care centre until 24 hours after starting antibiotic treatment. Suggest that parents of a child suspected to have impetigo take their child to their health care provider for confirmation and treatment. Carefully dispose of (or clean, if applicable) articles soiled by discharge from the rash or nose and throat secretions of an infected child. Ensure children do not share clothing, towels, washcloths or bedding with other children. Wash linens in hot water and dry in a hot dryer.

For more information see:
[HealthLink BC File #81 – Impetigo](#)



Influenza

What is it?	<p>Influenza (the flu) is an infection of the upper airway caused by an influenza virus. Those at high risk of influenza-related complications include (but are not limited to) children under 5 years of age, adults over 65 years of age, people with chronic health conditions, and pregnant women. Influenza season in Canada is usually November through April.</p> <p>Influenza can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of influenza may include:</p> <ul style="list-style-type: none"> ➤ Fever ➤ Cough, sneezing, runny nose ➤ Headache ➤ Sore throat ➤ Body aches ➤ Fatigue and weakness ➤ Nausea, vomiting and diarrhea (more common in children than adults)
How is it spread?	<p>Influenza is spread by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus when an infected person has coughed or sneezed ➤ Contact with the hands of an infected person (e.g., shaking hands, holding hands) ➤ Touching an object contaminated with the influenza virus (the virus can live up to 2 days on hard surfaces) <p>Child care providers may get the virus on their hands by assisting a child to use a tissue and then spread it to other children by touching them.</p>
Incubation period	Usually 1–4 days following contact with an infected person
When is the person contagious?	Usually from 1 day before to 5 days after symptoms develop (young children may be able to spread the virus longer)
How to prevent the spread of the illness to other children	<p>A child with influenza may go to school or a child care centre if they feel well enough to attend.</p> <p>Carefully dispose of (or clean if applicable) articles contaminated with the nose and throat secretions of an infected child.</p>

For more information see:

[HealthLink BC File #12b – Facts about Influenza \(the Flu\)](#)

[HealthLink BC File #12d – Inactivated Influenza \(Flu\) Vaccine](#)

[HealthLink BC File #12e – Live Attenuated Influenza \(Flu\) Vaccine](#)



Measles

What is it?	<p>Measles is caused by the measles virus. It is one of the most contagious communicable diseases and a leading cause of deaths in children worldwide.</p> <p>Measles can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of measles may include:</p> <ul style="list-style-type: none"> ➤ Fever, cough, runny nose and red inflamed eyes ➤ Dusky red, blotchy rash that begins on the face and spreads all over the body beginning 3–7 days after symptoms start (rash lasts 4–7 days) ➤ Small red spots with white or bluish white centers in the mouth <p>A doctor or nurse practitioner may be able to diagnose measles based on a child's symptoms but a blood test is needed to confirm the diagnosis.</p>
How is it spread?	<p>Measles is spread by:</p> <ul style="list-style-type: none"> ➤ An infected person coughing, sneezing or breathing ➤ A person can become infected when they breathe in the air or touch an object contaminated with the measles virus. The virus can survive in small droplets in the air for several hours and infect people. ➤ Contact with the nose and throat secretions of an infected person
Incubation period	Usually 8–12 days (range of 7–18 days)
When is the person contagious?	From about 4 days before to 4 days after the rash appears.
How to prevent the spread of the illness to other children	<p>Contact local public health. A child with measles should be excluded from the school or child care centre until at least 4 days after the rash appears if there are susceptible individuals in the setting.</p> <p>The measles, mumps and rubella vaccine (MMR) may be recommended for individuals who are contacts of a case of measles.</p> <p>Immune globulin may be provided to prevent measles in exposed individuals who are unable to receive the MMR vaccine for any reason.</p> <p>Susceptible contacts of a case of measles who cannot receive the MMR vaccine or immune globulin may be excluded from the school or child care centre at the discretion of the Medical Health Officer.</p>

For more information see:

[HealthLink BC File #14b – Measles](#)

[HealthLink BC File #14a – Measles, Mumps, Rubella \(MMR\) Vaccine](#)

[HealthLink BC File #14e – Measles, Mumps, Rubella and Varicella \(MMRV\) Vaccine](#)



Meningitis

What is it?	<p>Meningitis is an inflammation of the lining that surrounds the brain and spinal cord. Meningitis can be caused by bacteria or viruses. A diagnosis of meningitis is made by a primary health care provider.</p> <p>Bacteria that cause meningitis include:</p> <ul style="list-style-type: none"> ➢ <i>Haemophilus influenzae</i> type b (Hib) (see Hib) ➢ <i>Neisseria meningitidis</i> (see Meningococcal Meningitis) ➢ <i>Streptococcus pneumoniae</i> ➢ Group B streptococcus <p>About 90% of cases of viral meningitis are caused by members of a group of viruses known as enteroviruses, including coxsackieviruses, echoviruses and polioviruses. Mumps virus and herpes simplex virus can also cause meningitis.</p>
What are the signs and symptoms?	<p>Signs and symptoms of meningitis may include:</p> <ul style="list-style-type: none"> ➢ High fever, headache, and stiff neck (common in anyone over the age of 2 years) ➢ Irritability, sleepiness, inactivity, vomiting and poor feeding in children less than 2 years of age ➢ Nausea, vomiting, discomfort when looking into bright lights, confusion and sleepiness ➢ Seizures may occur as the illness progresses
How is it spread?	<p>Viral meningitis is spread through contact with the nose and throat secretions of an infected person by:</p> <ul style="list-style-type: none"> ➢ Breathing air contaminated with the virus when an infected person has coughed or sneezed ➢ Kissing or sharing anything that is put in the mouth (e.g., food, drinks, baby bottles, soothers, sippy cups, lipstick, water bottles, mouth guards used for sports or mouthpieces of musical instruments) ➢ Touching the hands of an infected person (e.g., shaking hands or holding hands) or an object contaminated with the virus <p>The viruses that cause viral meningitis may also be found in the stool of an infected person. The viruses may be spread through contact with infected stool or an object contaminated with virus from the stool.</p>
Incubation period	For enteroviruses: about 3–7 days
When is the person contagious?	For enteroviruses: from about 3 days after infection to 10 days after developing symptoms.
How to prevent the spread of the illness to other children	Contact local public health. A child with viral meningitis can go to school or a child care centre if they feel well enough to attend.

For more information see:
[HealthLink BC Health Topics – Meningitis](#)



Meningococcal Meningitis

What is it?	<p>Meningococcal meningitis is an infection of the lining of the brain and spinal cord caused by <i>Neisseria meningitidis</i> bacteria. It can cause serious illness and death. The case fatality rate is 8–15%. The bacteria that cause meningitis can be found in the nose and throat of 5–10% of people at any time but less than 1% of these people will develop invasive meningococcal disease. Meningococcal bacteria also cause septicemia (an infection of the blood) and pneumonia (an infection of the lungs).</p> <p>Meningococcal disease can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of meningococcal meningitis occur suddenly and may include:</p> <ul style="list-style-type: none"> ➤ Fever ➤ Stiff neck ➤ Severe headache ➤ Nausea and vomiting ➤ Bulging fontanelle (soft spot of the skull) in infants ➤ Pinpoint rash <p>A diagnosis of meningococcal meningitis needs to be confirmed by a lab test.</p>
How is it spread?	<p>Meningococcal meningitis is spread through contact with the nose and throat secretions of an infected person by:</p> <ul style="list-style-type: none"> ➤ Breathing air contaminated with the bacteria when an infected person has coughed or sneezed ➤ Kissing or sharing anything that is put in the mouth (e.g., food, drinks, baby bottles, soothers, sippy cups, lipstick, water bottles, mouth guards used for sports or mouthpieces of musical instruments)
Incubation period	Usually less than 4 days (range is 1–10 days)
When is the person contagious?	From 7 days prior to the onset of symptoms until 24 hours after antibiotics are started.
How to prevent the spread of the illness to other children	<p>Contact local public health. A child with meningococcal meningitis should be excluded from school or a child care centre until 24 hours after antibiotics are started.</p> <p>A child diagnosed with meningococcal meningitis will be hospitalized and treated with antibiotics. Household and other close contacts (including children and staff in child care and preschool centres) will be offered antibiotics. For some types of meningococcal meningitis, close contacts will also be offered a vaccine. Antibiotics are not usually recommended for casual contacts (e.g., school or classroom contacts or transportation or workplace contacts).</p>

For more information see:

[HealthLink BC File #23a – Meningococcal C Conjugate \(Men-C\) Vaccine](#)

[HealthLink BC File #23b – Meningococcal Quadrivalent Vaccines](#)



Methicillin-Resistant *Staphylococcus aureus* (MRSA)

What is it?	<p>Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) are types of <i>Staphylococcus aureus</i> (staph) bacteria that have become resistant to certain antibiotics, including methicillin, that are used to treat a staph infection.</p> <p>Staph infections are relatively common and usually harmless. They have often been treated with antibiotics from the penicillin family. The frequent use of these antibiotics has resulted in some staph bacteria changing so that they can survive when these antibiotics are present. These types of staph bacteria are referred to as methicillin-resistant <i>Staphylococcus aureus</i> (MRSA).</p> <p>There are other types of antibiotics that can be used to treat MRSA infections. Most staph infections heal quickly when treated with antibiotics. More severe infections can lead to infections of the blood, bones, brain, heart or lungs.</p>
What are the signs and symptoms?	<p>Signs and symptoms of a staph infection or MRSA may include:</p> <ul style="list-style-type: none"> ➤ Red, painful bumps under the skin (i.e., boils or abscesses) ➤ Sores that contain pus or are covered with a honey colored crust ➤ A wound that looks like a spider bite ➤ Fever and chills
How is it spread?	<p>MRSA is spread by:</p> <ul style="list-style-type: none"> ➤ Direct skin-to-skin contact ➤ Touching surfaces or objects (e.g., doorknob, faucet, towels, bedding) contaminated with MRSA bacteria
Incubation period	Variable
When is the person contagious?	As long as the sores continue to drain.
How to prevent the spread of the illness to other children	<p>A child with MRSA can go to school or a child care centre if the sores are not draining or they can be covered with a dry dressing. The child should avoid activities such as sports that involve skin-to-skin contact until the infection is healed.</p> <p>Ensure children do not share washcloths, towels or bedding. Wash all linens in hot water and dry in a hot dryer.</p> <p>Carefully dispose of (or clean, if applicable) articles that are soiled with discharge from the child's sores.</p>

For more information see:

[HealthLink BC File #73 – Methicillin-Resistant Staphylococcus Aureus \(MRSA\)](#)



Molluscum Contagiosum

What is it?	Molluscum contagiosum is a viral infection of the skin caused by a poxvirus. The virus causes small bumps on the skin's surface. Molluscum contagiosum can be spread easily to others but is not harmful. Without treatment, the infection can last for 6 months to 2 years.
What are the signs and symptoms?	Signs and symptoms of molluscum contagiosum may include: <ul style="list-style-type: none"> ➤ Tiny painless bumps that appear on the skin anywhere on the body. The bumps become small, waxy, pinkish-white, raised lesions which may have a small crater in the center of them. ➤ The bumps may become swollen and red In children, the bumps most often appear on the face, body, legs and arms. In adults, they can appear anywhere on the body.
How is it spread?	Molluscum contagiosum is spread through direct skin-to-skin contact by touching: <ul style="list-style-type: none"> ➤ The lesions or the hands of an infected person ➤ A contaminated object (i.e., an object that has been touched by an infected person after they scratched the lesions) The lesions can be spread to another part of the body by scratching.
Incubation period	Range is 2 weeks to 6 months
When is the person contagious?	Unknown, probably for as long as the lesions exist
How to prevent the spread of the illness to other children	A child with molluscum contagiosum may go to school or a child care centre if they feel well enough to attend.

For more information see:

[HealthLink BC File #08i – Molluscum Contagiosum](#)



Mononucleosis (Mono)

What is it?	Mononucleosis (mono) is a disease caused by the Epstein-Barr virus (EBV). It is most common in adolescents and young adults. About half of the people infected with EBV develop symptoms.
What are the signs and symptoms?	Signs and symptoms of mono may include: <ul style="list-style-type: none"> ➤ Fatigue ➤ Fever ➤ Sore throat ➤ Swollen lymph glands ➤ Fatigue ➤ Enlarged liver and spleen ➤ Jaundice (yellowing of the skin and eyes) occurs occasionally
How is it spread?	Mono is spread through contact with the saliva of an infected person by: <ul style="list-style-type: none"> ➤ Kissing ➤ Sharing food, drinks or anything that children put in their mouths (e.g., toys, sippy cups, soothers) ➤ Touching objects contaminated with the virus from an infected person's saliva
Incubation period	Usually 4–6 weeks following contact with an infected person
When is the person contagious?	Uncertain, but prolonged. A child with mono is most contagious when symptoms are at their peak but may remain contagious for up to a year after the illness.
How to prevent the spread of the illness to other children	A child with mono may go to school or a child care centre when they feel well enough to attend. This may take 1–4 weeks or longer after symptoms appear. Carefully dispose of (or clean, if applicable) articles soiled with the nose and throat secretions of an infected child.

For more information see:

[HealthLink BC Health Topics – Mononucleosis \(Mono\)](#)



Mumps

What is it?	<p>Mumps is caused by the mumps virus. Many children may have mild or no symptoms but they can still spread the disease to others. Adults with mumps are more likely to experience complications than children.</p> <p>Complications of mumps include:</p> <ul style="list-style-type: none"> ➤ Meningitis (swelling of the lining of the brain and spinal cord) and encephalitis (swelling of the brain) ➤ Painful swelling of the testes or ovaries ➤ Temporary deafness <p>Mumps can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of mumps may include:</p> <ul style="list-style-type: none"> ➤ Fever ➤ Headache ➤ Swollen and painful salivary glands (found in front of and below the ear or under the jaw)
How is it spread?	<p>Mumps is spread through contact with the nose and throat secretions of an infected person by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus when an infected person has coughed or sneezed ➤ Touching the nose and throat secretions of an infected person ➤ Kissing, or sharing food, drinks or anything that is put in the mouth (e.g., cups, toys)
Incubation period	<p>Usually 16–18 days following contact with an infected person but can range from 12–25 days</p>
When is the person contagious?	<p>A child with mumps is most contagious 2 days before to 5 days after the onset of illness. However, mumps virus has been isolated from 7 days before to 9 days after the onset of salivary gland swelling.</p>
How to prevent the spread of the illness to other children	<p>Contact local public health. A child with mumps should be excluded from school or a child care centre for at least 5 days and up to 9 days after the onset of salivary gland swelling.</p> <p>Carefully dispose of (or clean, if applicable) articles soiled with the nose and throat secretions of an infected child.</p>

For more information see:

[HealthLink BC File #14c – Mumps](#)

[HealthLink BC File #14a – Measles, Mumps, Rubella \(MMR\) Vaccine](#)

[HealthLink BC File #14e – Measles, Mumps, Rubella and Varicella \(MMRV\) Vaccine](#)



Norovirus

What is it?	Norovirus is a very contagious virus that infects the digestive tract (stomach and intestine). A norovirus infection causes vomiting and diarrhea. Complications and severe illness from norovirus are rare. However, young children and the elderly may become dehydrated if they are unable to replace fluids lost due to vomiting and diarrhea.
What are the signs and symptoms?	<p>Signs and symptoms of norovirus infection usually develop suddenly and may include:</p> <ul style="list-style-type: none"> ➤ Nausea and vomiting ➤ Diarrhea ➤ Abdominal cramping ➤ Fever ➤ Chills <p>Symptoms usually last for 1–3 days.</p>
How is it spread?	<p>Norovirus is present in the stool and vomit of a person infected with the virus. The virus is spread by:</p> <ul style="list-style-type: none"> ➤ Direct contact with an infected child's stool or vomit ➤ Touching a surface or object contaminated with the virus. Norovirus can live for a long time on surfaces such as sinks, taps, counters and toys. ➤ Touching the hand of an infected person or a person who recently changed an infected child's diaper or assisted the child with toileting. ➤ Consuming food or drink prepared by an infected person or a person who recently changed an infected child's diaper or assisted the child with toileting ➤ Breathing in air contaminated with norovirus after an infected person has vomited
Incubation period	Usually 1–2 days
When is the person contagious?	People are most contagious when they are ill and in the first 3 days after they recover. Some people may be contagious for up to 2 weeks after becoming ill.
How to prevent the spread of the illness to other children	<p>A child with norovirus should be excluded from school or a child care centre until 48 hours after their last episode of diarrhea or vomiting or as advised by the local Health Authority. Anyone with symptoms should be excluded from food handling and child care.</p> <p>Carefully dispose of (or clean, if applicable) articles soiled with the vomit or stool from an infected child.</p>

For more information see:
[HealthLink BC File #87 – Norovirus](#)



Pertussis (Whooping Cough)

What is it?	<p>Pertussis is a very contagious respiratory illness caused by <i>Bordetella pertussis</i> bacteria. It can cause serious illness in children and adults. Infants under one year of age are at highest risk. Each year 1–3 deaths occur in Canada as a result of pertussis, mostly in young infants. If a pregnant woman has pertussis 2–3 weeks before giving birth, the newborn is at high risk of getting pertussis.</p> <p>Pertussis can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of pertussis may include:</p> <ul style="list-style-type: none"> ➤ Sneezing, runny nose, mild fever and a mild cough <p>After 1–2 weeks, the cough worsens. Coughing becomes severe with repeated forceful coughing spells that often end with a whooping sound before the next breath. A child will sometimes vomit after coughing. The cough can last for several weeks.</p> <p>Adults and adolescents who are infected with pertussis bacteria may not have any of the above symptoms or only have a mild illness.</p>
How is it spread?	<p>Pertussis is spread through contact with the nose and throat secretions of an infected person by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with pertussis bacteria when an infected person has coughed or sneezed ➤ Kissing or sharing food, drinks or anything that is put in the mouth (e.g., cups, toys) ➤ Touching the nose and throat secretions of an infected person or objects contaminated with the bacteria <p>Infected adults or adolescents with a mild illness or no symptoms can infect infants.</p>
Incubation period	Usually 7–10 days (range is 5–21 days)
When is the person contagious?	Usually from the time when the first symptoms develop (1–2 weeks before severe coughing starts) until about 3 weeks after the cough starts. A child who is started on antibiotics is not contagious after 5 days of antibiotic treatment.
How to prevent the spread of the illness to other children	<p>Contact local public health. Exclusion of a child with pertussis from school or a child care centre is at the discretion of the Medical Health Officer.</p> <p>Antibiotics may be recommended for high risk, close contacts of a child with pertussis (i.e., an infant under 1 year of age, a pregnant woman in her third trimester) or when there is a high risk person in the household, child care centre or school.</p>

For more information see:

[HealthLink BC File #15c – Pertussis \(Whooping Cough\)](#)

[HealthLink BC File #105 – Diphtheria, Tetanus, Pertussis, Hepatitis B, Polio and *Haemophilus influenzae* type b \(DTaP-HB-IPV-Hib\) Vaccine](#)

[HealthLink BC File #15b– Diphtheria, Tetanus, Pertussis, Polio, *Haemophilus influenzae* type b \(DTaP-IPV-Hib\) Vaccine](#)

[HealthLink BC File # – Tetanus, Diphtheria, Pertussis, Polio \(Tdap-IPV\) Vaccine](#)

[HealthLink BC File #18c – Tetanus, Diphtheria, Pertussis \(Tdap\) Vaccine](#)



Pink Eye (Conjunctivitis)

What is it?	Pink eye is an inflammation of the covering of the eyeball and the inside of the eyelid. It can be caused by bacteria, viruses, allergies or irritants (chemical or physical).
What are the signs and symptoms?	Signs and symptoms of pink eye may include: <ul style="list-style-type: none"> ➤ Teary, red, itchy eye(s) ➤ Swollen eyelids ➤ Pus or a thick discharge (yellow or yellowish-green color) that can make eyelids sticky, especially during sleep
How is it spread?	Pink eye caused by bacteria and viruses spreads easily through contact with the discharge from an infected child's eye by: <ul style="list-style-type: none"> ➤ Touching the discharge ➤ A child with pink eye touching the discharge from their eye and then touching another child ➤ Touching an object (e.g., tissue, facecloth, eye dropper, makeup applicator) contaminated with the discharge from the eye of an infected child Pink eye caused by bacteria or viruses can also be spread by breathing in air contaminated with the bacteria or viruses when an infected person has coughed or sneezed.
Incubation period	Usually 1–3 days following contact with an infected person
When is the person contagious?	If pink eye is caused by bacteria, a child who has started treatment with antibiotics will not be contagious after 24 hours. A child with pink eye caused by a virus can be contagious from before symptoms start until they end.
How to prevent the spread of the illness to other children	If a child is started on antibiotics for pink eye caused by bacteria they should be excluded from school or a child care centre until at least 24 hours after starting treatment. If pink eye is caused by a virus or other irritant, the child may return to school or a child care centre after seeing their health care provider. Ensure children do not share washcloths, towels or bedding. Carefully dispose of articles (or clean, if applicable) contaminated with secretions from a child's eye immediately after use.

For more information see:
[HealthLink BC File #82 – Pinkeye \(Conjunctivitis\)](#)



Pinworms

What is it?	Pinworms are tiny, white worms that live in the intestines. The female worms crawl out of the anus at night and lay their eggs on nearby skin. The eggs can live for up to 2 weeks outside of the body. Pinworms can be unpleasant and uncomfortable but they do not cause disease. Pinworm infections are common, especially among school aged and preschool aged children, and children attending a child care centre.
What are the signs and symptoms?	<p>Signs and symptoms of pinworm infection may include:</p> <ul style="list-style-type: none"> ➤ Intense itchiness around the anus and vagina, especially at night ➤ Sleeplessness ➤ Irritability <p>Children with pinworms often have no symptoms.</p>
How is it spread?	<p>Pinworms are spread by accidentally swallowing pinworm eggs. This can occur by:</p> <ul style="list-style-type: none"> ➤ Touching the hands of a child who has scratched the itchy area of the body where the eggs are present ➤ Touching objects (e.g., toys, toilet seats, baths, clothes or bedding) contaminated with pinworm eggs ➤ Ingesting eggs that have become airborne (e.g., by shaking a bedsheet) when breathing
Incubation period	1–2 months or longer from the time pinworm eggs are ingested.
When is the person contagious?	As long as female worms are still present and producing eggs.
How to prevent the spread of the infection to other children	<p>A child with pinworms can go to school or a child care centre after receiving appropriate treatment (usually one dose of a prescribed oral medication).</p> <p>Vacuum living areas.</p>

For more information see:
[HealthLink BC Health Topics – Pinworms](#)



Respiratory Syncytial Virus (RSV)

What is it?	<p>Respiratory syncytial virus (RSV) is a virus that causes upper and lower respiratory tract infections. It can cause bronchiolitis and pneumonia in young children and infants. Most children have been infected with RSV by 2 years of age.</p> <p>RSV is usually a mild illness that can be managed at home. Children who are at risk for more serious illness and hospitalization include:</p> <ul style="list-style-type: none"> ➤ Infants less than 6 months of age ➤ Premature infants ➤ Children with chronic lung or heart disease ➤ Children with weakened immune systems
What are the signs and symptoms?	<p>Signs and symptoms of RSV often resemble the common cold and may include:</p> <ul style="list-style-type: none"> ➤ Stuffy or runny nose ➤ Low grade fever or chills ➤ Cough ➤ Earache ➤ Rapid breathing or wheezing ➤ Listlessness, inactivity ➤ Decreased appetite <p>The symptoms of RSV may resemble other illnesses. A diagnosis of RSV is made by a doctor or nurse practitioner.</p>
How is it spread?	<p>RSV is spread through contact with the secretions from the eyes, nose and mouth of an infected child by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus when an infected person has coughed or sneezed ➤ Touching the secretions from an infected child's eyes, nose or mouth ➤ Touching surfaces that have been contaminated with the virus. RSV can live on hard surfaces (e.g., toys, doorknobs) for many hours and on the hands for 30 minutes or more.
Incubation period	Usually 4–6 days (range is 2–8 days)
When is the person contagious?	Usually for 3–8 days, starting right before the onset of symptoms
How to prevent the spread of the illness to other children	<p>A child with RSV can go to school or a child care centre if they feel well enough to attend.</p> <p>Carefully dispose of (or clean, if applicable) articles soiled by discharge from an infected child's eyes, nose or mouth.</p>

For more information see:

[HealthLink BC Health Topics – Respiratory Syncytial Virus \(RSV\) Infection](https://www.healthlinkbc.ca/health-topics/respiratory-syncytial-virus-rsv-infection)



Ringworm

What is it?	Ringworm is a skin infection caused by a fungus. It can be found on the scalp, body, groin or feet. Scalp ringworm is very contagious, especially among children. It mainly affects children between 3 and 9 years of age. Foot ringworm (athlete's foot) affects males more than females and is more common after puberty.
What are the signs and symptoms?	<p>Signs and symptoms of a ringworm infection may include:</p> <ul style="list-style-type: none"> ➤ A ring shaped rash that is reddish and may be itchy. The rash may be dry and scaly or wet and crusty. ➤ Patches of hair loss or hair thinning if the ringworm infection is on the scalp <p>Symptoms of foot ringworm may include foot itching, rash or blisters on the foot and scaling of the foot.</p>
How is it spread?	<p>Ringworm is spread by contact with:</p> <ul style="list-style-type: none"> ➤ An area of ringworm infection ➤ An object or surface (e.g., hairbrushes, combs, unwashed clothes or towels, pillows and pool or shower surfaces) contaminated with the fungus. The fungus can live for long periods of time on objects and surfaces. ➤ Infected animals such as dogs, cats and farm animals
Incubation period	Usually from 4–14 days
When is the person contagious?	As long as the rash is present
How to prevent the spread of the infection to other children	<p>A child with ringworm should be excluded from school or a child care centre until the child has seen their health care provider and has taken the first dose of prescribed medication.</p> <p>Ensure children do not share hairbrushes, combs, washcloths, towels or pillows.</p> <p>Advise children to avoid petting animals with bald spots.</p>

For more information see:
[HealthLink BC Health Topics – Ringworm of the Skin](#)



Roseola

What is it?	Roseola is a common illness caused by a virus. It mainly affects children between 6 months and 2 years of age. It rarely affects children after 4 years of age.
What are the signs and symptoms?	<p>Signs and symptoms of roseola may include:</p> <ul style="list-style-type: none"> ➤ A fever (sometimes > 39.5°C) that appears suddenly and lasts 3–5 days. The rapid rise in temperature may cause a febrile seizure. ➤ Swelling of the eyelids may occur ➤ A rosy, pink rash that usually develops as the fever is resolving. It first appears on the neck and chest, and then spreads to the rest of the body. The spots from the rash turn white when pressed gently and they may have a lighter color ring around them. The rash may last from a few hours to 2 days. ➤ Irritability ➤ Diarrhea and vomiting ➤ Swollen glands in the neck
How is it spread?	<p>Roseola is spread through contact with the nose and throat secretions of an infected person by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus when an infected person has talked, laughed, coughed or sneezed <p>Older siblings, caregivers and parents may spread the disease to children that have not had it.</p>
Incubation period	Usually 10 days following contact with an infected person (range is 5–15 days)
When is the person contagious?	<p>An infected child is probably most contagious during the period of high fever, before the rash develops.</p> <p>The exact duration of infectiousness is unknown. Many adults have the virus present in their saliva (even if they were infected as children) and may spread the disease to infants.</p>
How to prevent the spread of the illness to other children	A child with roseola can return to school or a child care centre when the fever and rash are gone and they feel well enough to attend.

For more information see:
[HealthLink BC File #83 – Roseola](#)



Rotavirus

What is it?	<p>Rotavirus is the most common cause of diarrhea and hospitalization due to diarrhea in children under 5 years of age. It usually affects children between 6 months and 2 years of age. The illness usually lasts 4–8 days.</p> <p>Children with rotavirus infection usually recover completely without treatment. Some children may need to be hospitalized for rehydration (replacement of lost fluids) due to diarrhea.</p> <p>In Canada, most rotavirus infections occur in later winter and early spring.</p> <p>Rotavirus can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of rotavirus may include:</p> <ul style="list-style-type: none"> ➤ Fever ➤ Vomiting ➤ Diarrhea ➤ Abdominal pain
How is it spread?	<p>Rotavirus is spread through contact with an infected child's stool by:</p> <ul style="list-style-type: none"> ➤ Changing an infected child's diaper or assisting a child with toileting ➤ Touching an object (e.g., toy, faucet, doorknob) contaminated with stool containing rotavirus. The virus is able to survive for long periods on hard surfaces, on hands and in water. <p>Children with rotavirus have large numbers of the virus in their stool. The virus spreads easily in a child care facility or family home.</p>
Incubation period	Usually 1–3 days
When is the person contagious?	During the acute stage of the illness and until the diarrhea has stopped.
How to prevent the spread of the illness to other children	A child with rotavirus should be excluded from a child care centre until 48 hours after the last episode of diarrhea or vomiting.

For more information see:

[HealthLink BC File #104a – Rotavirus Vaccine \(Rotarix®\)](#)



Rubella (German Measles)

What is it?	<p>Rubella, also known as German measles, is a very contagious illness caused by the rubella virus. It is usually a mild illness but can be very serious in pregnant women. Rubella can be confused with other rashes and needs to be confirmed by a lab test.</p> <p>Rubella infection during pregnancy can cause severe birth defects, miscarriage or stillbirth. Up to 85% of fetuses infected with rubella in the first 12 weeks of pregnancy will develop Congenital Rubella Syndrome (CRS). CRS can result in severe birth defects including deafness, eye problems, heart defects and damage to the liver, spleen and brain.</p> <p>Rubella can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of rubella may include:</p> <ul style="list-style-type: none"> ➤ A rash (which may be itchy) that starts on the face and spreads downwards and lasts about 3–5 days ➤ Fever ➤ Swelling and soreness of the lymph nodes behind the ears and at the back of the neck ➤ Discomfort ➤ Headache ➤ Runny nose ➤ Irritated eyes ➤ Joint soreness in adult women but this is rare in men and children <p>About 50% of people infected with rubella have no symptoms.</p>
How is it spread?	<p>Rubella is spread through contact with the nose and throat secretions of an infected person by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the rubella virus when an infected person has coughed or sneezed ➤ Touching objects contaminated with the virus ➤ Kissing or sharing food, drinks or anything that is put in the mouth
Incubation period	Usually 14–17 days (range 14–21 days)
When is the person contagious?	From 7 days before until 7 days after the onset of the rash. A child with rubella is most contagious when the rash first appears. An infant with CRS can shed the rubella virus in their nose and throat secretions and urine for up to one year.
How to prevent the spread of the illness to other children	<p>Contact local public health. A child with rubella should be excluded from school or a child care centre for 7 days after the appearance of the rash if susceptible individuals are present.</p> <p>Pregnant women working at the school or child care centre who are contacts of a child with rubella should contact their health care provider to determine whether or not they are immune to rubella.</p>

For more information see:

[HealthLink BC File #14d – Rubella](#)

[HealthLink BC File #14a – Measles, Mumps, Rubella \(MMR\) Vaccine](#)

[HealthLink BC File #14e – Measles, Mumps, Rubella and Varicella \(MMRV\) Vaccine](#)



Salmonellosis

What is it?	Salmonellosis is a food borne infection caused by <i>Salmonella</i> bacteria. The bacteria live in the intestines of people and animals and cause a diarrhea illness. Very young children, the elderly and those with weakened immune systems may have severe diarrhea which can lead to dehydration (loss of fluids) that requires treatment in a hospital.
What are the signs and symptoms?	<p>Signs and symptoms of salmonellosis occur suddenly and may include:</p> <ul style="list-style-type: none"> ➤ Stomach pain ➤ Diarrhea ➤ Fever ➤ Nausea and vomiting <p>Symptoms usually last 4–7 days and resolve without treatment.</p>
How is it spread?	<p><i>Salmonella</i> are present in the stool of infected people and animals. The bacteria are spread by:</p> <ul style="list-style-type: none"> ➤ Eating raw or undercooked poultry, meat or eggs contaminated with the bacteria ➤ Eating fruit and vegetables that have been contaminated ➤ Eating food prepared by an infected person who has not washed their hands ➤ Drinking or eating unpasteurized dairy products such as milk ➤ Handling animals and pets such as chicks, ducklings, hamsters, gerbils, turtles, lizards and snakes which can be infected with <i>Salmonella</i> bacteria
Incubation period	Usually 12–36 hours (range is 6–72 hours)
When is the person contagious?	Throughout the course of the infection. Some people, especially infants, may be contagious for months after the illness.
How to prevent the spread of the illness to other children	A child with salmonellosis should be excluded from school or a child care centre until 48 hours after their last episode of diarrhea or vomiting or as advised by the local Health Authority. Anyone with symptoms should be excluded from food handling and child care.

For more information see:
[HealthLink BC File #17 – Salmonellosis](#)



Scabies

What is it?	<p>Scabies is caused by tiny (microscopic) insect-like parasites called mites. The mites burrow under the upper layer of the skin to live and lay eggs. Symptoms of scabies occur due to an allergic reaction to the mites and their eggs.</p> <p>Scabies is not due to poor hygiene.</p>
What are the signs and symptoms?	<p>Signs and symptoms of scabies may include:</p> <ul style="list-style-type: none"> ➤ Intense itching, especially at night ➤ A pimple-like rash ➤ The presence of tiny burrows that look like grayish wavy, thread-like raised lines on the skin <p>The itching and rash may occur all over the body but the most common sites are the webbing between the fingers, the inside of the wrists and elbows, the breasts, the male genitals, the waist, back and buttocks</p> <p>In infants and young children, the rash can appear on the face, head, neck, palms and soles of the feet.</p>
How is it spread?	<p>Scabies is spread by:</p> <ul style="list-style-type: none"> ➤ Direct skin-to-skin contact with a person with scabies ➤ Sharing clothes, towels or bedding (less common) <p>Scabies mites can survive for up to 3 days when they are not in contact with human skin.</p>
Incubation period	<p>Usually 2–6 weeks in someone who has not had scabies. In someone who has had scabies, symptoms develop 1–4 days after re-exposure.</p>
When is the person contagious?	<p>Until mites and eggs have been destroyed by treatment with lotions, creams or pills prescribed by a health care provider.</p> <p>A person with a scabies infestation can spread scabies even if they do not have any symptoms.</p>
How to prevent the spread of the infestation to other children	<p>A child with scabies should be excluded from school or a child care centre until the child has completed one treatment.</p> <p>Inform parents of children in direct contact with a child with scabies so that all family members and close contacts of the child can be treated at the same time.</p> <p>Bedding, towels and clothing worn next to the skin in the 3 days before treatment should be washed with detergent in hot water and dried in a hot dryer. Any items that cannot be washed should be dry-cleaned or stored in a sealed air-tight plastic bag for 7 days.</p> <p>Vacuum carpets and soft or upholstered furniture.</p>

For more information see:
[HealthLink BC File #09 – Scabies](#)



Shigellosis

What is it?	Shigellosis is an infection of the intestines caused by <i>Shigella</i> bacteria. The bacteria are found in the stool of infected people and are very contagious.
What are the signs and symptoms?	<p>Signs and symptoms of shigellosis may include:</p> <ul style="list-style-type: none"> ➤ Diarrhea (often bloody) ➤ Fever ➤ Stomach cramps ➤ Nausea and vomiting <p>Shigellosis usually lasts 4–7 days. A severe illness with fever and seizures may occur in children who are less than 2 years old.</p>
How is it spread?	<p>Shigellosis is spread by contact with the stool from an infected person by:</p> <ul style="list-style-type: none"> ➤ Touching infected stool (e.g., changing a diaper or assisting a child with toileting) ➤ Touching an object that has been contaminated with the bacteria (e.g., toys, faucets, water in a children's water table or wading pool) ➤ Eating contaminated food or drinking contaminated water <p>Shigellosis can spread easily in child care centres, especially where there are children between 2 and 4 years of age.</p>
Incubation period	Usually 1–3 days
When is the person contagious?	<p>During acute illness and for up to 4 weeks after diarrhea stops.</p> <p>Treatment with antibiotics shortens the length of time a person is contagious.</p>
How to prevent the spread of the illness to other children	A child with shigellosis should be excluded from a school or child care centre until 48 hours after their last episode of diarrhea or vomiting or as advised by the local Health Authority. Anyone with symptoms should be excluded from food handling and child care.

For more information see:
[HealthLink BC File #80 – Shigellosis](#)



Shingles (Herpes Zoster)

What is it?	<p>Shingles, also called herpes zoster or zoster, is a painful skin rash caused by the varicella zoster virus. This is the same virus that causes chickenpox.</p> <p>After a person recovers from chickenpox, the virus stays in their body and lies inactive along certain nerves. In some people, the virus can become active years later and cause shingles which usually appears as a rash with blisters on one side of the face or body. About 1 in 5 people who get shingles may have severe pain that lasts for months or years after the rash has cleared.</p> <p>Shingles is more common in people over 50 years of age and those with weakened immune systems. Shingles can be prevented by immunization of those 50 years of age and older.</p>
What are the signs and symptoms?	<p>Signs and symptoms of shingles may include:</p> <ul style="list-style-type: none"> ➤ Pain, itching or tingling of the skin ➤ Fever ➤ Headache ➤ Nausea ➤ Chills ➤ A blister-type rash that develops in the same areas as the pain and tingling. Blisters usually crust over in about 7-10 days and disappear after 2–4 weeks.
How is it spread?	<p>Shingles cannot be spread from one person to another. However, the virus that causes shingles can be spread to another person and cause chickenpox. This is uncommon and requires contact with fluid from the shingles blisters. The virus is not spread through the nose and throat secretions of someone with shingles.</p>
Incubation period	<p>It would take about 10–21 days for a person who has come in contact with fluid from the shingles blisters to develop chickenpox.</p>
When is the person contagious?	<p>For about 7–10 days after the rash appears. Once the rash crusts over, the person is no longer contagious.</p>
How to prevent the spread of the illness to other children	<p>A child with shingles can go to school or a child care centre if the rash is covered and the child feels well enough to attend.</p>

For more information see:

[HealthLink BC File # 111 – Shingles Vaccines](#)

[HealthLink BC Health Topics – Shingles](#)



Streptococcal Infections: Scarlet Fever and Strep Throat

What is it?	Scarlet fever and strep throat are both caused by streptococcal bacteria. Rheumatic fever may occur as a result of untreated streptococcal infection.
What are the signs and symptoms?	<p>Signs and symptoms of scarlet fever and strep throat may include:</p> <ul style="list-style-type: none"> ➤ A very sore throat ➤ Pain when swallowing ➤ Fever ➤ Headache ➤ Swollen tonsils and lymph glands in the neck ➤ Abdominal pain ➤ Nausea and vomiting <p>Additional symptoms of scarlet fever include:</p> <ul style="list-style-type: none"> ➤ A red rash that looks like sunburn and feels like rough sandpaper. It most often begins on the chest and stomach and then spreads to the rest of the body. The rash usually lasts 2–7 days. ➤ Peeling of the skin once the rash fades ➤ Red, swollen lips, strawberry-like tongue ➤ Flushed cheeks and pale area around the mouth
How is it spread?	<p>Streptococcal bacteria are spread by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the bacteria when an infected person has coughed or sneezed ➤ Touching the nose and throat secretions of an infected person ➤ Touching objects contaminated with the nose and throat secretions of an infected person ➤ Kissing or sharing food, drinks or anything that is put in the mouth <p>Contaminated food and milk products can be sources of streptococcal outbreaks.</p>
Incubation period	Usually 1–3 days following contact with an infected person.
When is the person contagious?	<p>In untreated cases, 10–21 days. Untreated cases of strep throat may carry the bacteria for weeks or months.</p> <p>A child with a streptococcal infection is no longer contagious after 24 hours of antibiotic treatment.</p>
How to prevent the spread of the illness to other children	<p>A child with strep throat or scarlet fever should be excluded from school or a child care centre until 24 hours after starting antibiotics and they no longer have a fever.</p> <p>Carefully dispose of (or clean, if applicable) articles soiled by the nose and throat secretions of infected children.</p>

For more information see:

[HealthLink BC File #106 – Group A Streptococcal Infections](#)

[HealthLink BC Health Topics – Scarlet Fever](#)

[HealthLink BC Health Topics – Strep Throat](#)



Swimmer's Itch

What is it?	<p>Swimmer's itch is an itchy skin rash caused by an allergic reaction to larvae from a parasite. The larvae of the parasite are released from snails living in the water. When the larvae are released into the water, they swim around looking for a suitable host (e.g., ducks, geese, muskrats, beavers). If a person is swimming or wading in the water, the larvae may burrow into their skin and cause an allergic reaction and rash. The larvae cannot develop in humans, so they soon die.</p> <p>Children are most likely to be affected by swimmer's itch because:</p> <ul style="list-style-type: none"> ➤ They swim or wade in shallow water where the parasites are found ➤ They are not as likely to towel dry completely each time they come out of the water ➤ Their skin is more sensitive than adults
What are the signs and symptoms?	<p>Signs and symptoms of swimmer's itch may include:</p> <ul style="list-style-type: none"> ➤ Tingling, burning or itching of the skin (itching can be severe) ➤ Small reddish pimples or blisters <p>Itching may last up to a week or more but will gradually go away. Scratching can lead to secondary infections.</p>
How is it spread?	<p>Swimmer's itch is not spread from person-to-person. It is only spread by swimming or wading in water contaminated with the larvae of certain parasites.</p>
Incubation period	<p>Itching usually begins almost immediately but it can take 12 or more hours for the rash to appear</p>
When is the person contagious?	<p>A person with swimmer's itch is not contagious.</p>
How to prevent the spread of the illness to other children	<p>A child with swimmer's itch may go to school or a child care centre if they feel well enough to attend.</p>

For more information see:

[HealthLink BC File #52 – Swimmer's Itch](#)



Resources

British Columbia Centre for Disease Control

- Information about communicable diseases and health conditions for the public and health care professionals.
- Available at <http://www.bccdc.ca/health-info/diseases-conditions>

HealthLink BC

- Detailed information about the illnesses and infestations described in this guide and other health conditions and infectious diseases
- Available at: <https://www.healthlinkbc.ca>
- Links to:
 - HealthLinkBC Files: <https://www.healthlinkbc.ca/services-and-resources/healthlinkbc-files>
 - Health Topics: <https://www.healthlinkbc.ca/explore-health-topics>

Contact HealthLink BC:

- Anywhere in BC: Phone 8-1-1
- TTY (Deaf and hearing-impaired): phone 7-1-1

Preventing Illness in Child Care Settings

- Written specifically to assist child care facility operators with designing and implementing health and illness policies to guide decision-making about children who are ill
- Available at: <http://www.health.gov.bc.ca/library/publications/year/2003/com018.pdf>

ImmunizeBC

- Information about vaccines, vaccine-preventable diseases and immunization schedules
- Available at <https://immunizebc.ca>
- To locate a health unit you can use the health unit finder at <https://immunizebc.ca/finder>

Caring for Kids

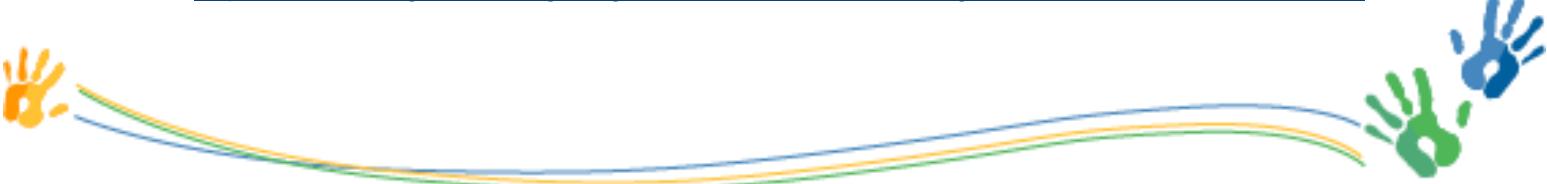
- Information for parents and caregivers about common childhood illnesses from the Canadian Paediatric Society
- Available at: <https://www.caringforkids.cps.ca>

Children's Hospital of Philadelphia, Conditions and Diseases

- Information for parents and caregivers about common childhood illnesses from the Children's Hospital of Philadelphia
- Available at: <https://www.chop.edu/conditions-diseases>

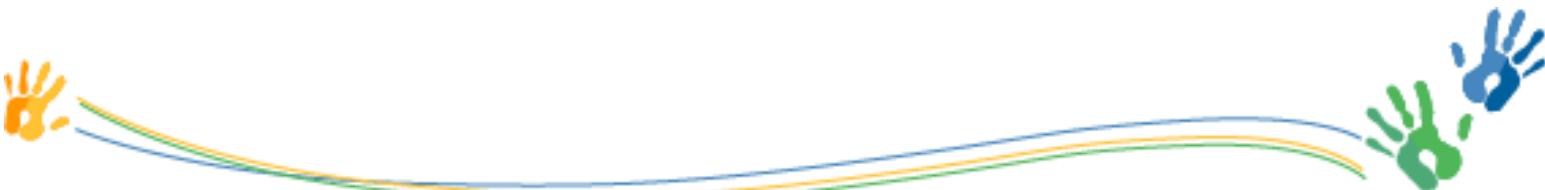
Do Bugs Need Drugs?

- A community education program promoting the wise use of antibiotics. The program includes information about how hand washing can stop the spread of infection and reduce the need for antibiotics. Available at <http://www.dobugsneeddrugs.org/>
- Information for early child care educators is available at: <http://www.dobugsneeddrugs.org/educational-resources/daycare-early-childhood-education/>
- Information for teachers of elementary school students is available at: <http://www.dobugsneeddrugs.org/educational-resources/k-gr3-british-columbia-curriculum/>



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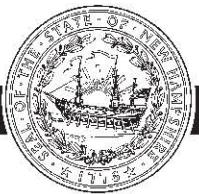




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NEW HAMPSHIRE DEPARTMENT OF HEALTH AND HUMAN SERVICES

Disease Handbook for Childcare Providers

New Hampshire Department of Health and Human Services
Division of Public Health Services
Bureau of Infectious Disease Control
29 Hazen Drive
Concord, NH 03301-6527

Tel: 603-271-4496
Fax: 603-271-0545

<https://www.dhhs.nh.gov/dphs/cdcs/handbook.htm>

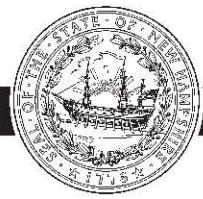


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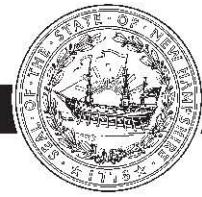


Introduction

The New Hampshire Division of Public Health Services, Bureau of Infectious Disease Control, prepared this manual for childcare providers and parents/guardians of children attending childcare. The disease fact sheets, which comprise most of this document, are intended to familiarize people with specific infectious disease problems commonly encountered in childcare. The fact sheets can be easily photocopied for distribution to parents and guardians.

In the event that any of the illnesses mentioned in this manual occur among children attending childcare, parents or guardians should be promptly notified by the childcare provider and urged to contact their family physician to obtain specific medical care advice.

Childcare directors should immediately notify the Bureau of Infectious Disease Control concerning any unusual disease occurrence in their facilities so that appropriate disease-control measures may begin promptly. To contact the Bureau of Infectious Disease Control call (603) 271- 4496.



NEW HAMPSHIRE DEPARTMENT OF HEALTH AND HUMAN SERVICES

Acknowledgements:

We extend our appreciation to the many individual and community partners who gave generously of their time and effort in the development of the original version of this manual, as well as those who participated in this update, including:

- The Berlin Health Department,
- Cheshire Medical Center,
- Concord Hospital Child Care Center,
- East Side Learning Center,
- Manchester Health Department,
- Nashua Health Department, and
- The current and former dedicated staff from the Division of Public Health Services.

Also, special thanks to the many childcare providers who gave us valuable input on the content, organization and design of this manual.

New Hampshire Department of Health and Human Services
Division of Public Health Services
Bureau of Infectious Disease Control

The Department of Health and Human Services' Mission is to join communities and families in providing opportunities for citizens to achieve health and independence.



NH Division of Public Health Services
Immunizations Required for Childcare Attendance

Vaccine	Recommended Schedule	Comment
DTaP (Diphtheria, Tetanus, a cellular pertussis)	2 months, 4 months, 6 months, 15-18 months, 4-6 years.	Age appropriately required for childcare attendance per routine childhood vaccination schedule. If the child has a contraindication to the pertussis vaccine they would receive a vaccine called DT which does not contain the pertussis antigen.
IPV (Polio)	2 months, 4 months, 6-18 months, 4-6 years	Age appropriately required for Childcare attendance per routine childhood vaccination schedule.
Hib (Haemophilus influenzae Type b)	2 months, 4 months, 6 months, 12-15 months	Age appropriately required for childcare attendance. If the child starts the series late or is behind, fewer doses may be required. If the child is unvaccinated, one dose at 15 months or older is adequate. The Hib vaccine is not required after 59 months of age.
MMR (measles, mumps, rubella)	12-15 months, second dose 4-6 years of age.	Age appropriately required for childcare attendance per routine childhood vaccination schedule. 2 nd dose must be at least 1 month after dose one.
Varicella (chickenpox)	12-15 months, second dose 4-6 years of age.	Age appropriately required for childcare attendance per routine childhood vaccination schedule. 2 nd dose must be at least 3 months after dose one (for children ages 12 months to 12 years). A laboratory test to confirm immunity is acceptable.
Hep B (hepatitis-B)	Birth, 1-2 months, 6-18 months.	Age appropriately required for childcare attendance.

Immunizations Recommended for Childcare Attendance

Vaccine	Recommended Schedule	Comment
Hep A (Hepatitis A vaccine)	12 months and at 18 months	Age appropriate recommended for childcare attendance per routine childhood vaccination schedule.
Influenza vaccine	6-months and older, one dose annually.	Recommended annually. If it's the first time receiving vaccine, two doses are required..
PCV-13 (pneumococcal)	2 months, 4 months, 6 months, 12-15 months.	Age appropriately recommended for childcare attendance, per routine childhood vaccination schedule. If the child starts the series late or is behind, fewer doses may be required. Recommended for certain high risk children over 59 months.
Rotavirus	Rotarix (RV1) 2 months, 4 months. <u>OR</u> Rotateq (RV5) 2 months, 4 months, 6 months.	Age appropriate recommended for childcare attendance per routine childhood vaccination schedule.

Recommended Immunization Schedule for children aged 18 years or younger approved by the Advisory Committee on Immunization Practice (ACIP), the American Academy of Pediatrics (AAP), and the American Academy of Family Practice (AAFP).

If you have any questions about a child's compliancy, please call the child's primary care provider or the New Hampshire Immunization Program (603-271-4482)

Additional Immunization Resources for Child Care Providers:
<https://www.dhhs.nh.gov/dphs/immunization/ccproviders.htm>



DISEASES THAT ARE PREVENTABLE WITH VACCINES

This group of diseases includes measles, mumps, rubella, varicella (chickenpox), polio, pertussis, diphtheria, tetanus, Haemophilus influenza type b, and 7 types of streptococcus pneumoniae, hepatitis B and hepatitis A. Prior to immunization programs, these diseases were a major cause of widespread illness, often with permanent medical complications and even death. Most of these diseases were a problem especially in children, although adults were also affected.

Who gets these diseases?

Some people believe that these diseases are no longer a problem in the United States or that children can't get them anymore. **This is not true!** These diseases are still circulating. Cases of these diseases do occur, particularly in unimmunized or inadequately immunized children and adults. Measles staged a strong comeback in the U.S. in the late eighties and early nineties in unimmunized preschool children and also in high school and college age students. From 1989-1991 there were 123 measles associated deaths reported. Forty-nine percent of these deaths were in children less than 5 years of age. Ninety percent of the fatal cases had no history of vaccination.

Children in childcare settings and their adult caretakers are especially at risk. This is because the children may be too young to be fully immunized and because the close contact that occurs in childcare facility allows easy spread of many diseases.

In this document, each vaccine preventable disease is presented briefly. Although it is unlikely that you will ever see a case of most of these diseases, it is **very important** that you be aware of them and of your vital role in preventing their spread. For further information, please contact your healthcare provider.

Division of Public Health Services
Bureau of Infectious Disease Control

How can the spread of these diseases be prevented?

1. All children in daycare must be immunized appropriately for their age, in accordance with the NH State Law: RSA 141:C-20. Specific information about immunization schedules can be found on the Immunization Requirements Section in this handbook and on the appropriate fact sheets.
2. It is recommended that all adults working in a childcare setting, including volunteers, should have proof of immunization or immunity to the following vaccine-preventable diseases: diphtheria, tetanus, pertussis, measles, mumps, rubella, hepatitis B, varicella, and polio. Although evidence of such immunization or immunity is not required for childcare workers, they are strongly recommended.
3. If a documented case of measles, mumps, rubella, polio, diphtheria, tetanus, varicella or pertussis occurs in your childcare facility, you **must** notify the New Hampshire Division of Public Health Services, Bureau of Infectious Disease Control.. Their staff will assist you in starting any necessary identification and vaccination of susceptible children and adults. They will also instruct you on procedures for closely watching for any additional cases and for notifying the parents.

Acceptable evidence of immunization or immunity in adults can be provided in several ways, which vary by the age of the adult and the **specific disease**, as listed below:

DISEASES THAT ARE PREVENTABLE WITH VACCINES (cont.).

Adult Vaccination Recommendations

Tetanus/diphtheria (Td) or tetanus, diphtheria, acellular pertussis (Tdap) – All adults need a Td booster every 10 years following the completion of the primary 3 dose series. A one-time dose of Tdap is now the vaccine of choice for any adult regardless of age who is due for a Td booster. Anyone who has close contact with infants less than 12 months of age should have the Tdap at least one month prior to contact. It is suggested an interval of 2 years or more since the last dose of Td, as the minimum interval prior to the administration of Tdap.

Measles

Born before 1957 (or) documentation of vaccination with at least two doses of live measles vaccine, with the first dose given on or after the first birthday and the second live dose at least 28 days from the first (or) laboratory evidence of immunity.

Mumps

Documentation of vaccination with live mumps vaccine on or after the first birthday (or) laboratory evidence of immunity (or) documentation of physician-diagnosed mumps is recommended.

Rubella

Documentation of vaccination with rubella vaccine on or after the first birthday (or) laboratory evidence of immunity is recommended. A history of rubella, without laboratory confirmation is **NOT** acceptable.

For women not immune, vaccination during pregnancy is **not** advised. Vaccine should be administered after delivery.

Varicella (Chickenpox)

- Written documentation of age appropriate vaccination,
- Anyone born in the United States before 1996,
- Laboratory evidence of immunity or laboratory confirmation of disease for anyone born after 1998.

Hepatitis B

Documentation of 3 doses of hepatitis B vaccine given at appropriate intervals (or) laboratory evidence of immunity is recommended.

Influenza

One dose of influenza vaccine is *highly* recommended annually for all childcare workers.



WHEN CHILDREN SHOULD BE EXCLUDED OR DISMISSED FROM A CHILDCARE SETTING

3.6.1 Management of Illness

A facility shall not deny admission to or send home a child because of illness unless one or more of the following conditions exist. The parent, legal guardian or other authorized by the parent shall be notified immediately when a child has a sign or symptom requiring exclusion from the facility, as described below: a) The illness prevents a child from participating comfortably in facility activities; b) The illness results in a greater care need than the childcare staff can provide without compromising the health and safety of the other children; or c) The child has any of the following conditions:

1. Temperature: Oral temperature 101 F or greater; rectal temperature 102 F or greater; axillary (i.e., armpit) temperature 100 F or greater, accompanied by behavior changes or other signs or symptoms of illness until medical evaluation indicates inclusion in the facility. Oral temperature shall not be taken on children younger than 4 years (or younger than 3 years if a digital thermometer is used). Only persons with specific health training shall take rectal temperature.
2. Symptoms and signs of possible severe illness (such as unusual lethargy, uncontrolled coughing, irritability, persistent crying, difficult breathing, wheezing, or other unusual signs), until medical evaluation allows inclusion.
3. Uncontrolled diarrhea, that is, increased number of stools, increased stool water, and/or decreased form that is not contained by the diaper, until diarrhea stops.

4. Vomiting illness (two or more episodes of vomiting in the previous 24 hours) until vomiting resolves or until a healthcare provider determines the illness to be non-communicable, and the child is not in danger of dehydration.
5. Rash with fever or behavior change, until a healthcare provider determines that these symptoms do not indicate a communicable disease.

Rationale:

Exclusion of children with many mild infectious diseases is likely to have only a minor impact on the incidence of infection among other children in the group. Thus, when formulating exclusion policies, it is reasonable to focus on the needs and behavior of the ill child and ability of staff in the out-of-home childcare setting to meet those needs without compromising the care of other children in the group.

Chicken pox, measles, rubella, mumps and pertussis are highly communicable illnesses for which routine exclusion of infected children is warranted. It is also appropriate to exclude children with treatable illnesses until treatment is received and until treatment has reduced the risk of transmission.

The presence of diarrhea, particularly in diapered children, and the presence of vomiting increase the likelihood of exposure of other children to the infectious agents that cause these illnesses. It may not be reasonable to routinely culture children who present with fever and sore throat or diarrhea. However, in some outbreak settings,

WHEN CHILDREN SHOULD BE EXCLUDED OR DISMISSED FROM A CHILDCARE SETTING

(cont.)

identifying infected children and excluding or treatment of them may be necessary.

Fever is defined as an elevation of body temperature above normal. The presence of fever alone has little relevance to the spread of disease and may or may not preclude a child's participation in childcare. The height of the fever does not necessarily indicate the severity of the child's illness. A child's over-exertion in a hot, dry climate may produce a fever. Life-threatening diseases, such as meningitis, cause a small proportion of childhood illness with fever. Generally, young infants show less fever with serious illness than older children. Infants and children older than 4 months should be excluded whenever behavior changes and/or signs or symptoms of illness accompany fever. Infants 4 months old or younger should be excluded when rectal temperature is 101 F or above, or axillary (i.e., armpit) temperature is 100 F or above, even if there has not been a change in their behavior.

It is unreasonable and inappropriate for childcare staff to attempt to determine which illnesses with fevers may be serious. The child's parents or legal guardians, with the help of their child's healthcare provider, are responsible for these decisions; therefore, parents should be informed promptly when their child is found to have a fever while attending childcare.

Excerpted from Caring For Our Children, National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs, The American Public Health Association (Washington DC) and the American Academy of Pediatrics (Elks Grove Village, IL), 2011.



WHEN STAFF SHOULD BE EXCLUDED OR DISMISSED FROM A CHILDCARE SETTING

A facility should not deny admission to or send home a staff member or substitute with illness unless one or more of the following conditions exists. The staff member should be excluded as follows:

- a) Chickenpox, as directed by Bureau of Infectious Disease Control;
- b) Shingles, only if the lesions cannot be covered by clothing or a dressing until the lesions have crusted;
- c) Rash with fever or joint pain, until diagnosed not to be measles or rubella;
- d) Measles, as directed by the Bureau of Infectious Disease Control;
- e) Rubella, as directed by the Bureau of Infectious Disease Control;
- f) Diarrhea illness, nausea and /or vomiting three or more episodes of diarrhea during the previous 24 hours or blood in stools, until 48 hours after the resolution of symptoms unless vomiting is identified as a non-communicable condition such as pregnancy or digestive disorder or deemed non-infectious by a healthcare professional;
- g) Hepatitis A virus, as directed by the Bureau of Infectious Disease Control;
- h) Pertussis, as directed by the Bureau of Infectious Disease Control;
- i) Skin infections (such as impetigo), until 24 hours after treatment has been initiated;
- j) Tuberculosis, as directed by the Bureau of Infectious Disease Control and the Tuberculosis program;
- k) Strep throat or other streptococcal infection, until 24 hours after initial antibiotic treatment and end of fever;
- l) Head lice, from the end of the day of discovery until the first treatment;

- m) Scabies, until after treatment has been completed;
- n) Purulent conjunctivitis, defined as pink or red conjunctiva with white or yellow eye discharge, often with matted eyelids after sleep, and including eye pain or redness of the eyelids or skin surrounding the eye, until examined by a physician and approved for readmission;
- o) *Haemophilus influenza* type b (Hib), until directed by the Bureau of Infectious Disease Control;
- p) Meningococcal infection, until directed by the Bureau of Infectious Disease Control;
- q) Respiratory illness, if the illness limits the staff member's ability to provide an acceptable level of childcare and compromises the health and safety of the children.
- r) There may be other communicable diseases that pose a threat to the public's health that are not specifically listed here for which it may be appropriate to restrict certain activities of cases, suspect cases, and close contacts until they are no longer infectious in consultation with the health department.

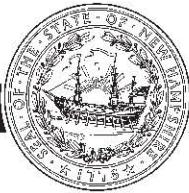
Childcare providers who have herpes cold sores should not be excluded from the childcare facility, but should:

- 1) Cover and not touch their lesions;
- 2) Carefully observe handwashing policies;
- 3) Refrain from kissing or nuzzling infants or children, especially children with dermatitis.

Excerpted from Care For Our Children, National Health and Safety Performance Standards: Guidelines for Out-Of-Home Childcare Programs, American Public Health Association, 2011.

Placeholder for “What Diseases Must Be Reported to Health Officials:

Should go to: <https://www.dhhs.nh.gov/dphs/cdcs/documents/reportablediseases.pdf>



Child Abuse

The NH Division for Children, Youth and Families (DCYF) is dedicated to assisting families in the protection, development, permanency and well being of their children and the communities in which they live. Child protection and family support services are provided by Child Protective Service Workers (CPSWs) in 12 District Offices throughout New Hampshire. Under certain circumstances, DCYF also provides voluntary services to families that request them. These are available to families that have not had a finding of abuse or neglect.

DCYF strives to protect children from abuse and neglect and to help families nurture their children into physically and emotionally healthy adults. The prevention and identification of child abuse and neglect is a community responsibility that depends on the cooperation of all community members. In situations where abuse, neglect or sexual abuse is suspected or if discussion with the family does not relieve concerns, then the Division for Children, Youth and Families should be contacted at **603-271-6562 or 1-800-894-5533 (In state only) 24 hours per day.**

If you suspect that a child is being abused or neglected, NH state law requires that you report your concerns to the DCYF Central Intake Unit immediately. Proof of abuse or neglect is not required before reporting. Early reporting often prevents greater harm to children and other family members. The same law that requires reporting (RSA 169-C) also states that any person who makes a report in good faith is immune from any civil or criminal liability. It is better to make your concerns known than to remain silent and possibly allow a child to be seriously harmed.



DIAPERING RECOMMENDATIONS

Changing diapers in a sanitary way is essential to prevent infectious organisms present in the stool from spreading. If the organisms, which cause infectious diarrhea, hepatitis-A, giardiasis and other illnesses, are accidentally ingested, the disease may be transmitted. You can help prevent illness by remembering the following guidelines as you diaper children.

Equipment Concerns For Diapering:

Changing area and surface

Children should be discouraged from remaining in or entering the diaper changing area. Keep the changing surface away from children, preferably at least 36 inches from the floor. Cover it with a smooth, moisture-resistant, easily cleanable material. For extra protection, use disposable single-service covers for each child. A changing table should be nonporous, kept in good repair, and cleaned and sanitized after each use to remove visible soil, followed by wetting with an approved sanitizing solution. Diaper changing should not be conducted on surfaces used for other purposes, especially not on any counter that is used during food preparation or mealtimes.

Hand washing sink and towels

The best hand washing sink is one equipped with both hot and cold running water mixed through one faucet (with a minimum water temperature at least 60-degrees and not greater than 120-degrees). Ideally, water controls should be foot, knee or wrist operated to avoid contamination of or by hands. The sink should be in the same room as the changing surface. Keep soap and towels nearby. Use single-service towels (e.g., paper towels) instead of cloth towels.

Disposable gloves

Although gloves are not necessary for diaper changing, they may reduce contamination of the caregiver's hands and reduce the presence of infectious disease agents under the fingernails and from the hand surfaces. Even if gloves are used, caregivers must wash their hands after each child's diaper changing to prevent the spread of disease-causing agents. Caregivers must remove the gloves using the proper technique otherwise the contaminated gloves will spread infectious disease agents.

Potty chairs

Use of potty chairs should be discouraged. If potty chairs are used, they should be emptied into a toilet, cleaned in a utility sink, sanitized after each use, and stored in the bathroom. After the potty is sanitized, the utility sink should also be sanitized. Potty chairs should not be washed in a sink used for washing hands. If potty chairs are used, they should be constructed of plastic or similar nonporous synthetic products. Wooden potty chairs should not be used, even if the surface is coated with a finish. The finished surface of wooden potty chairs is not durable and, therefore, may become difficult to wash and sanitize effectively.

Diapers

Use of disposable diapers is recommended to best reduce the risk of infections. Cloth diapers require more handling than disposable diapers (the more handling the greater chance of infection). When cloth diapers are used, no rising or dumping of contents of the diaper shall be performed at the childcare facility. Clean diapers should be stored away from dirty diapers. A child's diaper should be checked for wetness and feces at least hourly, and whenever the child indicates discomfort or exhibits behavior that suggests a soiled or wet diaper. Diapers should be changed when they are found to be wet or soiled.

DIAPERING RECOMMENDATIONS (cont.)

Diapering Procedures:

The following diaper changing procedure should be posted in the changing area and should be followed for all diaper changes.

Step 1: Get organized. Before you bring the child to the diaper changing area, wash your hands and bring what you need to the diaper-changing table:

- a) Non-absorbent paper liner large enough to cover the changing surface from the child's shoulders to beyond the child's feet;
- b) Fresh diaper, clean clothes (if you need them);
- c) Wipes for cleaning the child's genitalia and buttocks removed from the container or dispensed so the container will not be touched during diaper changing;
- d) A plastic bag for any soiled diapers;
- e) Disposable gloves, if you plan to use them (put gloves on before handling soiled clothing or diapers);
- f) A thick application of any diaper cream (when appropriate) removed from the container to a piece of disposable material such as facial or toilet tissues.

Step 2: Carry the child to the changing table, keeping soiled clothing away from you and any surface you cannot easily clean and sanitize after the change.

- a) Always keep a hand on the child;
- b) If the child's feet cannot be kept out of the diaper or from contact with soiled skin during the changing process, remove the child's shoes and socks so the child does not contaminate these surfaces with stool or urine during the diaper changing;
- c) Put soiled clothes in a plastic bag and securely tie the plastic bag to send the soiled clothes home.

Step 3: Clean the child's diaper area.

- a) Place the child on the diaper change surface and unfasten the diaper but leave the soiled diaper under the child;

- b) If safety pins are used, close each pin immediately once it is removed and keep pins out of the child's reach. Never hold pins in your mouth;
- c) Lift the child's legs as needed to use disposable wipes to clean the skin on the child's genitalia and buttocks. Remove the stool and urine from front to back and use a fresh wipe each time. Put the soiled wipes into the soiled diaper or directly into a plastic-lined, hands-free covered can.

Step 4: Remove the soiled diaper without contaminating any surface not already in contact with stool or urine.

- a) Fold the soiled surface of the diaper inward;
- b) Put soiled disposable diapers in a covered, plastic-lined, hands-free covered can. If reusable cloth diapers are used, put the soiled cloth diaper and its contents (without emptying or rinsing) in a plastic bag or into a plastic-lined, hands-free covered can to give to the parents or laundry service;
- c) If gloves are used, remove them using the proper technique and put them into a plastic-lined, hands-free covered can;
- d) Whether or not gloves are used, use a disposable wipe to clean the surface of the caregiver's hands and another to clean the child's hands, and put the wipes into the plastic-lined, hands-free covered can;
- e) Check for spills under the child. If there are any, use the paper that extends under the child's feet to fold over the disposable paper so a fresh, unsoiled paper surface is now under the child's buttocks.

Step 5: Put on a clean diaper and dress the child.

- a) Slide a fresh diaper under the child;
- b) Use a facial or toilet tissue to apply any necessary diaper creams, discarding the tissue in a covered, plastic-lined, hands-free covered can;
- c) Note and plan to report any skin problems such as redness, skin cracks, or bleeding;

DIAPERING RECOMMENDATIONS (cont.)

- d) Fasten the diaper. If pins are used, place your hand between the child and diaper when inserting the pin.

Step 6: Wash the child's hands and return the child to a supervised area.

- a) Use soap and water, no less than 60 degrees F and no more than 120 degrees F, at a sink to wash the child's hands, if you can.
- b) If the child is too heavy to hold for hand washing or cannot stand at the sink, use commercial disposable diaper wipes or follow this procedure:
 - I. Wipe the child's hands with a damp paper towel moistened with a drop of liquid soap;
 - II. Wipe the child's hands with a paper towel wet with clear water;
 - III. Dry the child's hands with a paper towel.

SOURCE: Caring For Our Children, National Health and Safety Performance Standards: Guidelines for Out-Of-Home Childcare Programs.
<http://cfoc.nrckids.org/>

Step 7: Clean and sanitize the diaper-changing surface.

- a) Dispose of the disposable paper liner used on the diaper changing surface in a plastic-lined, hands-free covered can;
- b) Clean any visible soil from the changing surface with detergent and water; rinse with water.
- c) Wet the entire changing surface with the sanitizing solution (e.g., spray a sanitizing bleach solution of $\frac{1}{4}$ cup of household liquid chlorine bleach in one gallon of tap water, mixed fresh daily);
- d) Put away the spray bottle of sanitizer. If the recommended bleach dilution is sprayed as a sanitizer on the surface, leave it in contact with the surface for at least two (2) minutes. The surface can be left to air dry or can be wiped dry after two (2) minutes of contact with the bleach solution.

Step 8: Wash your hands using proper technique.



PETS IN CHILDCARE FACILITIES

Infants and children less than 5 years old are more likely than most people to get diseases from animals. Reptiles (e.g., lizards, snakes, turtles), amphibians (e.g., frogs, toads, newts, salamanders), and young birds (e.g., baby chicks, ducklings) should not be permitted in rooms occupied by children. Children and infants should not have contact with these animals or items that have been in contact with these animals or their environments.

When bringing appropriate pets into a childcare facility, the following guidelines should be followed:

1. Children should always be properly supervised when animals are available.
2. Areas should be designated for animal contact. Such areas should be properly cleaned regularly and after animal contact. Food or drink should not be consumed in these areas.
3. No animals should be allowed to run freely.
4. All animals should be in good physical condition and vaccinated against transmittable diseases. Dogs, cats, and ferrets require proof of current rabies vaccination. Animals should be kept clean and free of intestinal parasites, fleas, ticks, mites, and lice.
5. All fecal material must be cleaned from the cage of any mammal or bird on an as needed basis, (at a minimum of one time per week), and appropriate sanitizer used. Reptiles, fish and insects must be cared for in a manner to minimize odor and maintain health. Persons cleaning cages must wear gloves, masks, and glasses or goggles. Cleaning should be performed by individuals >5 years old, under the supervision of an adult. Ideally, cleaning should be performed when other children are not in the room.

6. Wash hands with soap and warm water after contact with animals or their environment.

Because wild animals can carry diseases that are dangerous to people, children should not have direct contact with wildlife. Teach children never to handle unfamiliar animals, wild or domestic, even if the animal appears to be friendly.

For concerns about pets in a childcare facility please contact the Division of Public Health Services, Bureau of Infectious Disease and Control at (603) 271-4496.

For more information please view the Centers for Disease Control and Prevention's website:
<http://www.cdc.gov/healthypets/>



FOOD HANDLING FOR CHILDCARE SETTINGS

In order to prevent foodborne illness caused by bacteria, viruses and parasites, it is very important that food be handled properly. Persons who have signs or symptoms of illness, including vomiting, diarrhea or infectious skin lesions which can not be covered, or who are infected with foodborne pathogens (e.g., *Salmonella*, *Shigella*, *E. coli* O157:H7) should not handle food. Whenever possible, staff who diaper children and have frequent exposure to feces should not prepare food for others. Careful handwashing needs to be practiced at all times, especially for caregivers who prepare food.

Preparing, Eating and Storing Food

1. Wash hands well before and after touching food.
2. Wash utensils, platters, counter tops and cutting boards with hot soapy water before and after contact with raw meat or poultry products.
3. Staff who diaper children and have frequent exposure to feces should not prepare food for others.
4. Canned soup and poultry products should be eaten immediately after opening.
5. Fruits and vegetables should be rinsed well.
6. Wash meal service area before and after serving food with hot soapy water followed with a disinfectant solution. (Note: You can make your own disinfectant by mixing one tablespoon of bleach with one quart water prepared fresh daily.)
7. Wash children's hands before eating.
8. Use separate utensils for each child. If interrupted while feeding an infant, wash hands again before continuing and before feeding another child.
9. Oversee mealtime and encourage children not to share food, plates, or utensils. Like-

wise, do not allow children to eat foods that have been dropped on the floor.

10. Discard all food left on plates at the end of mealtime.
11. Do not reuse lunch bags or bags from other items because of possible contamination.
12. Food should be stored away from areas where diapering is done.

How to Properly Defrost Foods

1. Plan ahead to allow time for defrosting food properly.
2. Defrost food in the refrigerator. If defrosting outside the refrigerator, place food in a sealed plastic bag and immerse in cold water, changing the water frequently.
3. Do not refreeze foods unless the package label states that it is safe to refreeze.
4. Follow instructions for microwave defrost as given in operating manuals of microwave.

What to Do If the Freezer Fails or The Power Goes Out

1. Keep the refrigerator-freezer door closed.
2. If your refrigerator-freezer will be shut off for more than two hours, make immediate arrangements for alternate storage of food elsewhere. Transport food in insulated coolers or in thick layers of paper.
3. When the power comes back on, throw away any food with an unusual color or odor. Do not taste this food.
4. If refrigerated foods are above 40 F for more than two hours, most perishable foods will be need to be discarded.
5. Frozen foods can be refrozen if they are at or below 40 F or still contain ice crystals.

FOOD HANDLING FOR CHILDCARE SETTINGS (cont.)

Infant Formula

Prepared infant formula or bottled milk should be refrigerated and clearly labeled with the child's first and last names. Any formula or bottled breast milk not consumed by an infant may be used later in the day if dated and stored in the refrigerator. Otherwise, it should be discarded or returned to the parent at the end of the day.

Shopping Guidelines

1. Allow adequate transport time to and from grocery shopping to prevent spoilage of fresh or defrosting of frozen products.
2. Do not buy or use food from containers that are leaking, bulging or severely dented.
3. Do not buy jars that are cracked or have bulging lids or cans that are bulging or leaking.
4. Purchase meat and dairy products last. Refrigerate these products as soon as you get to the childcare center.

Refrigerating Food

1. Keep the refrigerator clean and establish a regular cleaning schedule.
2. Defrost the freezer when necessary. Ice buildup prevents refrigerators from cooling properly.
3. Avoid overcrowding in the refrigerator. The more crowded it is, the less cooling effect.
4. Check the gaskets regularly; they should be flexible to keep the cold air from leaking out.
5. Keep a thermometer and check the temperature inside on a regular basis. The temperature should be at or below 40 F.
6. Refrigerate perishable bag lunches. If refrigeration is not available, put a container filled with frozen water, a plastic bag with ice cubes or a cold or frozen beverage into the bag for storage.

Freezing Food

1. Wrap meat in freezer paper, plastic wrap or foil if not already wrapped properly.
2. Date packages using the oldest first.
3. Check the freezer temperature regularly. It should be at or below 0 F.

Leftover Food

1. Do not reuse leftovers that have already been served.
2. Refrigerate unused leftovers immediately. Store in small shallow covered containers. Date packages and discard if not used within 72 hours. Meat can be refrigerated safely for two days.
3. Reheat leftovers all the way through. Bring gravies to a rolling boil.

Proper Hand Washing Technique

Children and babies should have their hands washed: 1) upon arrival to the daycare facility, 2) before eating/preparing food, 3) after toileting/diapering changes, and 4) after touching body secretions 5) after playing outside, especially after playing sandboxes.

Adults (including staff, volunteers, students and parent helpers) should wash their hands: 1) when they arrive at the daycare facility, before starting work, 2) before eating/preparing food, or feeding children, 4) after toileting/diapering a child or using the bathroom themselves, and 4) after handling body secretions.

How to Properly Wash Your Hands

1. Use soap, preferably liquid, and warm running water.
2. Wash your hands for at least 10 seconds while rubbing your hands vigorously as you wash them.
3. Wash ALL surfaces including: back of hands, wrists, between fingers and under nails.

FOOD HANDLING FOR CHILDCARE SETTINGS (cont.)

4. Rinse your hands well. Leave water running.
5. Dry your hands with a single-use towel (e.g., a paper towel)
6. Turn off the water using a PAPER TOWEL instead of your bare hands.
7. Throw the paper towel away.



RASHES

Rashes may occur for many reasons and it is impossible to cover in this manual all the causes for a rash. In most cases, rashes that last for more than a day that are accompanied by fever and/or other symptoms of illness, or rashes that develop all over the body should be referred to a physician for diagnosis before a child returns to the childcare facility.

Sensitive rashes that are caused from plant sensitivity such as poison ivy, poison oak and poison sumac often have unusually shaped blister-like sores. The fluid in these blisters is not contagious to others. People react to direct contact from the plant or from indirect contact from clothing, or other objects contaminated from plant contact. (A family pet can also indirectly pass this to people when its fur is contaminated). It is best to consult a physician for treatment.

Hives is a rash that may happen when a person is hypersensitive to such things as certain foods, drugs, and bee stings. It may also be due to emotional factors. The rash is usually itchy, raised, reddish welts on the skin. Hives that are accompanied by difficulty breathing, unusual anxiety and hives occurring all over the body needs to be seen by a physician immediately.

Another common rash experienced by children during the summer months is known as Swimmer's Itch. It is a form of dermatitis (i.e., inflammation of the skin) that is caused by larvae of certain worms when they attempt to penetrate the skin. This results in a mild allergic reaction. The worms that cause Swimmer's itch are commonly found in water after being excreted from birds, waterfowl and mammals. Generally, no treatment is required for the rash since it goes away in a few days and does not cause lasting effects. Swimmer's Itch is not spread from person-to-person.



CAMPYLOBACTER

Campylobacteriosis is an intestinal illness caused by the bacterium Campylobacter of which there are many types.

Who gets this disease?

Anyone can. The illness occurs in all age groups.

How is it spread?

Campylobacter is spread by the fecal-oral route. Water, milk or food (especially poorly cooked poultry products) contaminated with Campylobacter, or contact with infected animals may also be a source of infection to people.

What are the symptoms?

Diarrhea (which may be severe and bloody), stomach cramps, abdominal pain, vomiting and fever are the usual symptoms.

How soon do symptoms appear?

The symptoms generally appear between one and seven days, but can take longer.

Can a person have this disease without knowing it?

Yes. Although symptoms usually go away after one to 10 days on their own, there may still be germs in the stools for several weeks if treatment is not given.

What is the treatment?

Although antibiotic therapy may not shorten the illness, it does shorten the amount of time the germ is passed in the stools. Therefore, in the childcare setting, treatment is recommended for adults and children with Campylobacter in their stools. This will reduce the chance of spread to others.

How can the spread of this disease be prevented?

1. Wash hands thoroughly after using the toilet and diapering children.
2. Wash hands thoroughly before preparing food.
3. Keep children who have diarrhea at home.
4. Wash children's toys frequently, especially if they have diarrhea.
5. Make sure children wash their hands after handling pets or have contact with animal feces.
6. Symptomatic staff with positive stool cultures for Campylobacter should be excluded from work.
7. Always treat raw poultry, beef and pork as if they are contaminated and handle accordingly.
8. Wrap fresh meats in plastic bags at the market to prevent blood from dripping onto other foods.
9. Refrigerate foods promptly; minimize holding at room temperature.
10. Avoid ingesting unpasteurized milk.
11. Use separate cutting boards for raw poultry and beef to prevent cross contamination with other foods.
12. Cutting boards and counters used for preparation should be washed immediately after use to prevent cross contamination with other foods.
13. Be certain all foods (especially beef and poultry products) are thoroughly cooked.

CAMPYLOBACTER (cont.)

Who should be excluded?

Any person with diarrhea shall be excluded from foodhandling, from childcare agencies and from direct care of hospitalized or institutionalized patients until 48 hours after resolution of symptoms. Children can return to childcare once they are no longer having diarrhea.

Reportable?

Yes. Campylobacteriosis is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



CHICKENPOX (VARICELLA) AND SHINGLES

Chickenpox is a very contagious disease caused by the varicella-zoster virus. It usually begins with a mild fever and an itchy rash. The rash starts with crops of small red bumps on the stomach or back and spreads to the face and limbs. The red bumps rapidly become blistered, oozy and then crust over. People may have only a few bumps or may be totally covered.

Once a person has had chickenpox, the varicella-zoster virus stays without symptoms in the body's nerve cells. In some people (for unknown reasons), the virus can become active again at some later time as "shingles" or zoster. This problem includes a red, painful, itchy, blistery rash, usually in the line along one side of the body. There is no fever. The virus is shed in the blister fluid of the rash and can cause chickenpox in a person who has not had it, if that person has direct contact with the infected shingles blisters.

Who gets this disease?

Anyone who is exposed to chickenpox and has not had it before has a very good chance of developing chickenpox. It is most common in school-aged children. If you have had chickenpox once, second attacks are very rare. Shingles is most common in adults, as a person must have already had chickenpox to develop shingles.

When a pregnant woman or a person with a weak immune system who has not had chickenpox is exposed he/she should contact a physician.

Chickenpox does not cause serious illness in healthy children. Adults may, occasionally, be seriously ill with chickenpox.

How is it spread?

Chickenpox is contagious from 1-2 days **before** the rash appears to until the blisters have become crusted over. *It is* spread by close contact (i.e., sharing breathing space or direct touching contact) with infected secretions from the nose, throat or rash.

How soon do symptoms appear?

The symptoms generally appear from 14-16 days after exposure but in some cases can occur as early as 10 days or as late as 21 days after contact. Chickenpox and shingles are usually diagnosed by the typical appearance of the rashes.

What is the treatment?

The chickenpox symptoms may be treated with anti-itching medicine and lotions, fever control, fluids and rest. Because of a possible association with Reye's Syndrome (i.e., vomiting, liver problems and coma), salicylate-containing products (i.e., aspirin) should not be used for fever control. Acetaminophen may be used for fever control. Scratching should be avoided because it can cause infection and scarring. A medication to decrease the severity of symptoms is available for high-risk children. This must be given within 24 hours of the onset of rash. Please consult the Division of Public Health Services, Bureau of Infectious Disease Control or the child's physician for more information.

CHICKENPOX (VARICELLA) AND SHINGLE

(cont.)

How can the spread of this disease be prevented?

The ACIP recommends that children attending daycare facilities and schools be vaccinated for chickenpox. New Hampshire currently **requires** varicella vaccination for school or daycare attendance. The two dose series should be completed at 12-15 months and again at 4-6 years.

The ACIP also recommends that daycare workers, who have no history of chickenpox disease, be tested for immunity. If testing shows susceptibility, 2 doses of varicella vaccine should be administered separated by one month.

Each childcare facility should have a system so that it is notified if a child or staff member develops chickenpox or shingles. This is so the facility may take appropriate measures if there is a pregnant or immunocompromised member in the facility. (Recently the Advisory Committee on Immunization Practice has recommended the use of varicella vaccine for susceptible persons who have been exposed to varicella).

The childcare facility should watch closely for early signs of chickenpox in other children for three weeks following the most recent case. If a child or staff member develops a suspicious rash, he/she should be sent to his/her healthcare provider so that the rash can be diagnosed. However, chickenpox is highly contagious and in spite of your best efforts, you will probably have several more cases if children have not already had the disease.

Who should be excluded?

Children should be excluded from daycare after the rash eruption first appears and until the vesicles become dry and crusted over. In certain situations exposed unvaccinated children without symptoms do need to stay at home. Generally exposed children, who have been vaccinated, do not need to stay at home. Adults with shingles should be excluded if vesicles/blisters cannot be covered.

Reportable?

Yes, chickenpox is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496



COMMON COLD & INFLUENZA

Common colds are mild infections of the nose and throat, which are very common in young children (and in adults who are around them), and are caused by many different viruses. Usually the viral illness causes some combination of stuffy nose, runny nose, sore throat, cough, runny eyes, ear fluid and fever.

Influenza (the flu) is also caused by a virus (e.g., influenza-A, influenza-B) and causes symptoms of fever, headache, sore throat, cough, muscle ache and fatigue. Most people with influenza feel too ill to attend childcare.

Occasionally, the common cold or influenza can be complicated by a bacterial infection such as an ear infection, sinus infections, or pneumonia. These complications can be treated with appropriate antibiotics after evaluation by their health care provider.

Who gets these diseases?

Anyone can. Young children may be sick with these illnesses several times per year. As the number of persons in contact with a child increases, so does the likelihood of exposure to the common viruses that cause the cold and flu.

How are they spread?

The viruses can be transmitted from one person to another in respiratory secretions (i.e., saliva, nasal discharge, and phlegm). Infected droplets may be scattered through sneezing or coughing or they may land on surfaces touched by other persons, who then touch their eyes, nose or mouth.

How soon do symptoms appear?

The symptoms of a **common cold** appear as soon as 12-72 hours after exposure. The symptoms of **influenza** appear in 1-4 days after exposure, and typically last 2-3 days.

What is the treatment?

While there is medication available, most health care providers suggest rest and plenty of fluids. To see if there is bacterial infection in addition to the viral infection, a healthcare provider should evaluate a child who has a high fever, persistent cough, or earache. Because of a possible association with Reye's Syndrome (i.e., vomiting, liver problems and coma), salicylate-containing products (i.e., aspirin) are not recommended for control of fever.

How can the spread of these diseases be prevented?

Influenza vaccine is the primary method of preventing influenza and its severe complications. The vaccine should be given annually beginning at 6 months of age. Two doses should be given the first year the child receives the influenza vaccine.

Annual influenza vaccination is *recommended* for all children aged 6 months through age 18 with priority given to the following persons for influenza vaccine if influenza vaccine supplies are limited:

- Children 6 months to 18 years
- Pregnant women
- Persons aged 50 years old and older
- Persons of any age with certain chronic medical conditions
- Persons who live with or care for persons at high risk

Additional ways to prevent the spread of these diseases:

- Get adequate rest, good nutrition, plenty of fluids
- Avoid people who are sick
- Observe children for symptoms of coughing, sneezing, headache, fatigue, fever. Notify parent to pick child up
- Remind children if they sneeze or cough into their hand or tissue, they must properly dispose of the tissue and wash their hands

COMMON COLD & INFLUENZA (cont.)

- Runny noses and eyes should be promptly wiped, then wash their hands
- Disposable tissues should be used. Keep tissues available
- Toys that children put in their mouths and frequently used surfaces (e.g., tables) should be washed and disinfected at least once each day
- The childcare facility should have fresh air and be aired out completely once a day, even in the winter months

Who should be excluded?

Children should be excluded if they have a fever or are unable to participate in general activities. Exclusion is of little benefit since viruses are likely to spread.

Reportable?

No. Influenza is not reportable, but please notify the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496 of influenza outbreaks. The common cold is not reportable.



CONJUNCTIVITIS (Pink Eye)

Conjunctivitis is an infection of the eyes commonly known as “pink eye”. Conjunctivitis can be purulent or nonpurulent. It is most often caused by a virus (like those which cause the common cold), but can also be caused by bacteria, allergies or chemicals. The conjunctiva – the clear layer over the whites of the eyes – becomes pink and there may be tearing and discharge from the eyes. Eyes may be itchy or even painful. In the morning, the discharge may make the eyelids stick together. Conjunctivitis is a mild illness. Viral conjunctivitis will go away by itself in one to three weeks.

Who gets this disease?

Anyone can get it. Conjunctivitis is caused by a virus or bacterium and is highly contagious. Preschoolers and school-age children have it most often and can spread it to people taking care of them or to each other.

How is it spread?

Both viral and bacterial conjunctivitis spread by contact with discharge from the eye. Children often pass it along by rubbing their eyes and getting discharge on their hands and then:

- a) Touches another child’s eye.
- b) Touches another child’s hands. The second child then touches his/her eyes.
- c) Touches an object. Another child touches the object and then puts his/her hands into his/her eyes.

Staff washing, drying or wiping a child’s face and then using the same washcloth/towel/paper towel/tissue on another child’s face can also pass it along. Staff could also get eye discharge on their hands when wiping a child’s eyes and then pass it along as outlined above.

The incubation period varies depending upon the cause whether it is viral or bacterial; symptoms may develop in 5 –12 days depending on the cause. (Bacterial 24-72 hours, viral 12 hours to 12 days).

How is it diagnosed and treated?

Signs and symptoms of purulent conjunctivitis are white or colored discharge from the eye, eye redness, eyelid swelling, eye pain, and sometime fever. It is often difficult to tell if the cause is bacterial or viral. Occasionally the doctor will examine the discharge under the microscope or culture it. Often an antibiotic eye medicine will be given because treatment of bacterial conjunctivitis shortens the length of symptoms and decreases infectiousness. There is not treatment for viral conjunctivitis; it will go away by itself but may last a week or more.

Signs and symptoms of nonpurulent conjunctivitis are clear watery discharge from the eye, without eye redness or pain or fever.

How can the spread of this disease be prevented?

1. Follow hand washing and center cleanliness guidelines.
2. Teach children to avoid rubbing their eyes
3. Keep children’s eyes wiped free of discharge.
4. Always use disposable tissues/towels for wiping and washing. **Never** use the same tissue/towel for more than one child.
5. **Always wash your hands after wiping a child’s eyes.**
6. Teach children to wash their hands after wiping their eyes.
7. Dispose of tissues/towels in lined, covered container kept away from food and childcare materials.

CONJUNCTIVITIS (Pink Eye) cont.

8. Be sure articles that may touch children's eyes (e.g., pillowcases, sheets, towels binoculars, prisms, toy cameras) are washed well with soap and hot water at least once daily.

Who should be excluded?

It is recommended that children and staff with purulent conjunctivitis be excluded from childcare until examined by a *healthcare provider* and approved for re-admission, with or without treatment. Children with nonpurulent conjunctivitis do not need to be excluded from childcare.

Reportable?

No. Conjunctivitis is not reportable by New Hampshire state law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



DIARRHEA (Infectious Diarrhea)

Diarrhea is defined as: 1) an increase in the number of stools over what is normal for that person, and 2) stools which are not formed (i.e., loose and watery and take the shape of the container they are in). (NOTE: Breast-fed babies may have stools that are normally not formed).

There are two (2) general types of diarrhea: infectious and non-infectious.

Infectious Diarrhea is caused by a virus, parasite, or bacterium. It can spread quickly from person-to-person, especially in daycare centers. Some of the causes of infectious diarrhea, such as Campylobacteriosis, shiga-toxin producing E. coli, giardiasis, salmonellosis and shigellosis, are discussed in their own fact sheets found in this document. There are other agents that can also cause infectious diarrhea in children. These include parasites (e.g., cryptosporidiosis, amoeba) other bacterial (e.g., yersinia) and other viruses (e.g., Rotavirus). Although these other disease-causing organisms are not discussed in detail, the general principles outlined in this section are applicable to prevent the spread of any of these germs.

Non-infectious Diarrhea can be caused by toxins (e.g., certain types of food poisoning), chronic diseases (e.g., cystic fibrosis) or antibiotics (e.g., ampicillin). Non-infectious diarrhea DOES NOT spread from person-to-person.

Who gets it?

Anyone can catch infectious diarrhea. It can spread especially quickly among babies and young children who are not toilet-trained or who may not wash their hands well after going to the bathroom. It can also easily spread to the adults taking care of them and helping them with diapering and toileting.

How is it spread?

The germs that can cause infectious diarrhea are spread by fecal-oral route.

How is it diagnosed and treated?

The germs can be diagnosed by stool cultures or by looking at stool under a microscope for eggs or parasites. (The healthcare provider will ask for a stool sample and send it to a laboratory for analysis). The physician will decide on appropriate treatment.

How can the spread of diarrhea be prevented?

Hand washing is the most important way to stop the spread. Specific methods for preventing the spread of infectious diarrhea are discussed in each fact sheet.

Who should be excluded?

Any person with diarrhea shall be excluded from food handling, from childcare agencies and from direct care of hospitalized or institutionalized patients until 48 hours after resolution of symptoms.. Children who have 2 or more stools above their normal amount should be excluded as it impedes the caregiver's ability to care for the children and maintain sanitary conditions. For diarrhea caused by a specific agent, see the related fact sheet to learn if exclusion is necessary.

Reportable?

Non-specific diarrhea is not reportable. Clusters of diarrhea illness in a facility should be reported to the Division of Public Health Services, Bureau of Infectious Disease and Control at (603) 271-4496.



DIPHTHERIA

Diphtheria is a potentially serious bacterial infection of the nose and throat.

Who gets this disease?

Diphtheria occurs primarily among unimmunized or inadequately immunized people.

How is it spread?

The bacteria are spread by direct contact with discharge from the nose, throat, skin, eyes, or from sores of infected persons. Articles or food contaminated with discharge can also spread infection.

What are the symptoms?

Diphtheria causes a sore throat and swollen tonsils, with a grayish covering and swollen glands in the neck. It can lead to severe throat swelling that can block breathing. The bacteria also produce a toxin (a type of poisonous substance) that can cause severe and permanent damage to the nervous system and heart.

What is the Treatment?

Diphtheria is treated primarily with an antitoxin, along with antibiotics. Antibiotics are also given to the carriers of the diphtheria (e.g., people who test positive for diphtheria but who are not sick). Individuals who have been in contact with an infected person and are not adequately vaccinated should receive a booster.

How can the spread of this disease be prevented?

The combination vaccine Diphtheria, Tetanus and acellular Pertussis (DTap), is **required** for both childcare and school attendance. The Advisory Committee on Immunization Practices (ACIP) recommends immunizing children against diphtheria, along with pertussis and tetanus, beginning as early as six weeks of age. The five dose series should be completed at 2 months, 4

months, 6 months, and 15-18 months, and 4-6 years of age.

Patients and carriers of diphtheria should receive appropriate treatment and not return to childcare until *two* (2) cultures from both the nose and throat (and from skin sores in cutaneous diphtheria), are negative for the bacteria. These cultures should be taken at least 24 hours apart and no sooner than 24 hours after finishing antibiotic treatment. Where culture is impractical, isolation may be ended after 14 days of appropriate treatment.

Who should be excluded?

Children and staff should be excluded until bacteriological examination proves them not to be carriers.

Reportable?

Yes, Diphtheria is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



E. COLI 0157:H7

E. coli 0157:H7 is an intestinal illness caused by a bacterium that can cause severe bloody diarrhea, anemia, and –in some cases- kidney failure.

Who gets this disease?

Anyone is susceptible to this particular category of E. coli 0157:H7, but it most seriously affects young children and the elderly.

How is it spread?

This bacterium lives in a small number of healthy cattle. When the infected animal is slaughtered, the meat can become contaminated. The bacteria may also contaminate raw milk by being present on the cow's udder.

E. coli 0157:H7 is spread by eating contaminated food – most often undercooked beef, especially undercooked ground beef. Contaminated meat looks and smells normal. Drinking unpasteurized milk and swimming in or drinking sewage-contaminated water can also cause infection.

An infected person having diarrhea can pass the bacteria from one person to another if hand-washing habits are not adequate. This is more likely to happen among toddlers who are not toilet trained.

Young children usually continue to shed the bacteria in their stool a week or two following their illness.

What are the symptoms?

They vary from mild diarrhea to a bloody diarrhea with severe abdominal cramps and little or no fever. Vomiting may occur late in the illness. A small percent may develop hemolytic uremic syndrome (HUS), a condition that destroys the red blood cells and causes kidney failure. This is more likely to occur in children under five years of age and the elderly, and may lead to death.

How soon do symptoms appear?

Symptoms appear 12-72 hours after exposure with the average being 48 hours.

Can a person have this disease without knowing it?

Yes. The organism is identified through stool culture testing. Usually symptoms disappear in a few days but the bacteria can remain in the intestinal tract for several weeks.

What is the treatment?

Seek medical help for identification of the organism. Usually the person is treated for diarrhea dehydration with fluid replacement.

How can the spread of this disease be prevented?

1. Wash hands thoroughly after diapering and using the bathroom.
2. Avoid eating undercooked beef, especially hamburger.
3. Avoid drinking from unknown water sources,, raw milk, and unpasteurized apple juice.
4. Teach children good hand washing techniques

Who should be excluded?

Children who are infected with this bacterium will be excluded from childcare while they are symptomatic. Infected adults should be excluded from childcare centers, food handling, and direct care healthcare, until their stool cultures are free of E. coli 0157:H7 on two (2) consecutive specimens collected not less than 24-hours apart. If antibiotics have been given, the initial cultures should be obtained at least 48-hours after the last dose.

Reportable?

Yes. E. coli 0157:H7 is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



EASTERN EQUINE ENCEPHALITIS

What is eastern equine encephalitis?

Eastern equine encephalitis (EEE) is an uncommon but serious disease caused by EEE virus. EEE is an arbovirus (short for *arthropod-borne*, meaning spread by insects). The virus can be transmitted to horses, other animals, and in rare cases, people.

How do people get eastern equine encephalitis?

The EEE virus grows in birds that live in freshwater swamps. The virus has a complex life cycle involving birds and a specific type of mosquito, called *Culiseta melanura*. This particular mosquito does not bite people. Sometimes though, the virus can escape from its marsh habitat by means of other mosquitoes that feed on both birds and mammals. These mosquitoes can transmit the virus to animals and people.

What are the symptoms of EEE?

Infection can cause a range of illnesses. Most people have no symptoms; others get only a mild flu-like illness with fever, headache, and sore throat. For people with infection of the central nervous system, a sudden high fever (103 to 106°), severe headache, and stiff neck can be followed quickly by seizures and coma. About one third of these patients die from the disease. Of those that survive, many suffer permanent brain damage and require lifetime institutional care.

How soon after exposure do symptoms appear?

Symptoms of EEE usually appear 4 to 10 days after the bite of an infected mosquito.

How is eastern equine encephalitis diagnosed?

Diagnosis is based on tests of blood or spinal fluid.

Who is at risk for eastern equine encephalitis?

Anyone can get EEE, but some people are at increased risk, such as people living in or visiting areas where the disease is common and people who work outside or participate in outdoor recreational activities in areas where the disease is common. Children and those over age 50 are more susceptible to the disease. The risk of getting EEE is highest from late July through September.

What is the treatment for eastern equine encephalitis?

There is no specific treatment for eastern equine encephalitis. Antibiotics are not effective against viruses, and no effective anti-viral drugs have yet been discovered. Care of the patient centers around treatment of symptoms and complications.

How common is eastern equine encephalitis?

EEE is a rare disease. An average of 6 cases are reported in the United States in most years. There is concern, however, that EEE is re-emerging. In NH, EEE has been found in horses, mosquitoes and several species of birds. In 2014, 3 cases of EEE were reported in humans in NH.

How can eastern equine encephalitis be prevented?

A vaccine is available for horses, but not for humans. Prevention of the disease centers around controlling mosquitoes and on individual action to avoid mosquito bites. To avoid being bitten by the mosquitoes that transmits EEE:

- If possible, stay inside between dusk and dawn, when mosquitoes are most active
- When outside between dusk and dawn, wear long pants and long-sleeved shirts

EASTERN EQUINE ENCEPHALITIS (cont.)

- Use an insect repellent with DEET or Picaridin according to the manufacturer's directions when outside. Oil of lemon eucalyptus and IR3535 have been found to provide protection similar to repellents with low concentrations of DEET
- Clothing can be treated with permethrin according to the manufacturer's directions
- When possible wearing long sleeves and pants while outside
- Put screens on windows and make sure they do not have holes
- Eliminate standing water and other mosquito breeding locations from your property. Do not alter natural water bodies. The management of ponds and wetlands is regulated by the Department of Environmental Services and any alterations require a permit before work may begin

For more information about eastern equine encephalitis, call the New Hampshire Department of Health & Human Services, Bureau of Infectious Disease Control at (603) 271-4496 or visit our website at www.dhhs.nh.gov or the Centers for Disease Control and Prevention at www.cdc.gov.



FIFTH DISEASE

Fifth disease is an illness caused by a virus called *human parvovirus B19*. Although people may be asymptomatic with the illness, most children with it develop a facial rash (i.e., “slapped check” appearance) and a lace-like rash on the trunk and extremities. The rash may reappear for several weeks following exposure to non-specific stimuli such as sunlight, change in temperature or emotional stress.

Except for the rash, the patient is typically otherwise well: but some give a history of mild general symptoms one to four days before rash onset. Fever, sore throat or pain and swelling in the joints may also occur.

Who gets this disease?

Although most commonly recognized in children, anyone is susceptible. Studies indicate previous infection with Fifth disease correlates with a lower risk of a second infection. Outbreaks in schools often begin in late winter or early spring and may continue until the school year is over.

In the U.S. about 50% of the adult population are already immune to the disease. Some studies indicate the pregnant women who are exposed to Fifth disease and subsequently develop infection may have an increased risk for fetal death. However, this risk is felt to be extremely low. There is no evidence that the infection during pregnancy causes fetal malformations (i.e., birth defects). Pregnant childcare workers should contact their obstetricians.

How is it spread?

The virus that causes Fifth disease has been found in the respiratory secretions of patients and is, therefore, most likely spread by direct person-to-person contact through the respiratory route.

How soon do symptoms appear?

It takes from 4-21 days after exposure to develop the characteristic rash illness of Fifth disease. People with the rash are past the period of infectiousness to others. The highest risk of transmitting the Fifth disease virus to others is felt to occur **before** the rash develops.

How is it diagnosed and treated?

A healthcare provider based on the characteristic rash and any other accompanying symptoms may diagnose Fifth disease. There is no specific treatment for Fifth disease.

How can the spread of this disease be prevented?

1. Because transmission of the Fifth disease virus usually occurs before the rash develops – when a child may seem well or has a non-specific illness – excluding children with the Fifth disease rash is of no proven value. However, **it is very important** for a healthcare provider to rule out other rash-causing illnesses (e.g., measles, chickenpox) that may require exclusion from childcare.
2. Transmission of infection can be lessened by routine hygienic practices for control of respiratory infections, which include hand washing and disposal of facial tissues containing respiratory secretions.
3. People with particular concerns about contracting Fifth disease (e.g., pregnant women) should consult their healthcare providers.

FIFTH DISEASE (cont.)

Who should be excluded?

Children with Fifth disease MAY attend daycare or school, as they are not contagious after onset of rash. Routine exclusion of pregnant women from the workplace where Fifth disease is occurring is not recommended.

Reportable?

No, Fifth disease is not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



GIARDIASIS

Giardiasis is an intestinal illness caused by *Giardia lamblia*, a microscopic parasite. The infectious form of the parasite is passed in the stool of an infected individual.

Who gets this disease?

Anyone can get Giardiasis. It is very common in childcare centers; especially those that have children under age three. It spreads easily among these children to their caretakers and families.

How is it spread?

The most common way a person becomes infected with giardia in the childcare setting is by the fecal-oral route. Eating food contaminated with the parasite may also infect a person. Food may become contaminated when the person preparing the food has giardiasis and has some infected stool on his/her hands because of poor hand washing habits.

Additionally, a person may become infected by drinking water that is contaminated with the parasite. Streams, ponds and springs in New Hampshire are frequently contaminated with giardiasis parasites. Water can also be contaminated with giardia when sewage enters the drinking water supply.

What are the symptoms?

The most common symptoms of a giardia infection are diarrhea, abdominal pain, cramping, decreased appetite and excess gas. There is usually no fever or vomiting. The diarrhea may last up to several months and can cause significant weight loss.

How soon do the symptoms appear?

The symptoms appear within 5-25 days or longer. The average incubation period is 1-3 weeks.

Can a person have this disease without knowing it?

Yes. Some people may have very mild infections that are not serious enough to cause them to go to a doctor. They may not feel sick at all. In some cases of giardia infection, parasites can be found in the stool from several days to several months after the symptoms have stopped.

What is the treatment?

Several drugs are effective in killing the giardia parasite. Treatment is usually necessary for persons with diarrhea.

How can the spread of this disease be prevented?

1. Wash hands thoroughly after using the toilet *and diapering a child*.
2. Wash hands thoroughly before preparing food.
3. Keep children who have diarrhea at home.
4. Staff with stool positive for giardia should not prepare food or feed children.

Who should be excluded?

Any person with diarrhea shall be excluded from food handling, from childcare agencies and from direct care of hospitalized or institutionalized patients until 48 hours after resolution of symptoms

Reportable?

Yes, giardiasis is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



HAEMOPHILUS INFLUENZAE

TYPE-B (aka Hib Disease)

Haemophilus influenzae type-b (Hib) is a bacterium that causes serious, sometimes fatal illnesses, most often in young children. Some of the diseases it can cause include: meningitis (an infection of the coverings of the brain), epiglottitis (an infection of the upper throat and entrance of the windpipe), cellulitis (an infection of the deep tissues, especially of the face and neck), septic arthritis (an infection and swelling of the joints), pneumonia (an infection of the lung), and bacteremia (blood stream) infections.

Who gets this disease?

This illness is primarily seen in unimmunized children under four years of age. Children under age two are most susceptible because their immune systems are not yet able to fight the bacteria. Rarely, older children and adults may develop infection.

It appears that in a setting such as the household or childcare facility – where there are young children and everyone is in close contact – there is an increased risk of one of these contacts developing Hib infection following a first case.

How is it spread?

The bacterium is passed from person-to-person by breathing in infected droplets of nose or throat fluids scattered in the air or by direct contact with these infected secretions. The bacteria cannot live on environmental surfaces – they quickly shrivel and die.

Like *meningococcus*, some people can “carry” this bacterium for a period of time without it causing illness. However, a carrier may spread the bacteria to another person who may then become ill. In a household or childcare center in which Hib infection has occurred, the number of

persons with nose or throat carriage is greatly increased; thus, risk of serious disease is also increased.

How is it diagnosed and treated?

Illnesses caused by *Haemophilus influenzae* type-b are diagnosed by signs and symptoms and by examining the blood and/or spinal fluid for white blood cells and bacteria. Spinal fluid is obtained by a physician performing a lumbar puncture (i.e., spinal tap).

How can the spread of this disease be prevented?

1. If a person develops an illness caused by Hib, close contacts of this patient (including family members and persons having intimate contact such as sleeping together, hugging and kissing) are at increased risk of developing the illness. In this situation a physician may recommend: 1) carefully watching for early symptoms of illness caused by *Haemophilus influenzae* and/or 2) taking a preventive antibiotic to eliminate the bacteria from the body before disease begins.
2. Any child or adult contact that develops symptoms consistent with Hib infection requires evaluation by a health care provider **regardless** of whether or not this person has taken preventive antibiotics.
3. A vaccination against Hib infection is available and the Advisory Committee on Immunization Practices (ACIP) recommends that all children begin the vaccine series against Hib infection at two months of age. The four dose series should be completed at 2 months, 4 months, 6 months, and 12-15 months.

HAEMOPHILUS INFLUENZA TYPE-B (cont.)

4. For unvaccinated children age 15 months or older only 1 dose of the Hib vaccine is required.
5. The Hib vaccine is **not** required for children over age 5.
6. Children in childcare aged 3-60 months are **required** to have age appropriate Hib vaccination in order to attend. Parents with specific questions about the Hib vaccine and their child should contact their child's physician. The vaccination is **not required** for school entry.
7. Notify parents or guardians about the occurrence of this illness and urge them to contact their physicians for specific medical care advice.
8. Contact the Bureau of Infectious Disease Control for recommendations about preventing the spread of this illness and assistance in implementing them.

Who should be excluded?

Children and staff who are ill with Hib infection should be excluded while they are ill and until 24 hours of antibiotic therapy has been completed.

Reportable?

Yes, *Haemophilus influenzae* infections are reportable by New Hampshire law to the Bureau of Infectious Disease Control at (603) 271-4496.



HAND, FOOT & MOUTH DISEASE

Hand, foot and mouth disease is a self-limited infection caused by the *Coxsackie A16* virus and enterovirus 71. Vesicular lesions (i.e., blisters) may appear in the mouth, on the sides of the tongue, inside the cheek and on the gums. Lesions may also occur on the palms, fingers, soles and buttocks. Most lesions persist for 7-10 days. A low-grade fever may accompany the illness for one to two days. The infection usually goes away without any serious complications.

Who gets this disease?

The infection is seen primarily in children under 10 years old but may also occur in adults. Outbreaks of hand, foot and mouth disease among groups of children in nursery schools and childcare centers during the summer and early fall are common.

How is it spread?

Having direct contact with nose and throat secretions of an infected person may spread the infection. It may also be spread by the aerosol droplet route (e.g., sneezing, coughing).

Additionally, the virus may also be spread by having contact with infected persons who may not seem sick (aka carriers) but are able to spread the infection since the virus may persist in the stool for several weeks after the acute illness is over.

What are the symptoms?

Vesicular lesions may occur in the mouth, on the sides of the tongue, inside the cheek and on the gums. Lesions also occur on the palms, fingers, soles and buttocks. Most lesions persist for 7-10 days. A low-grade fever may accompany the illness for one to two days.

How soon do symptoms appear?

People who are going to contract the infection usually do so three to six days after exposure.

Can a person have this disease without knowing it?

Yes. Infected persons who may not seem sick are able to spread infection. The virus may persist in the stool for several weeks after the acute illness is over.

How is it diagnosed and treated?

A healthcare provider may diagnose hand, foot and mouth disease based on clinical signs and symptoms. There is no specific treatment.

How can the spread of this disease be prevented?

1. Wash your hands thoroughly after using the toilet *and diapering a child*.
2. Wash hands thoroughly after handling respiratory discharges, stool and soiled articles of infected persons.
3. Discourage children from putting toys and other objects in their mouths.
4. Clean and disinfect toys and contaminated areas (e.g., diapering area, potty chairs, toilets) daily and when soiled.
5. Do not allow children to share drinking cups or eating utensils.
6. Teach children to sneeze and cough into a tissue, or into their elbow and away from other people.
7. Dispose of tissues and diapers properly; wash hands after sneezing, coughing, changing diapers and using the toilets.
8. Children may attend childcare if they feel well enough even if lesions are still present. In this situation, childcare staff should be especially careful to adhere to steps 1-7 above.
9. Grouping of symptomatic individuals, where practical, might be considered.

HAND, FOOT & MOUTH DISEASE (cont.)

Who should be excluded?

Exclusion from a childcare facility or school is not recommended. Special attention to hand washing after toileting is required.

Reportable?

No. Hand, foot and mouth disease are not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



HEPATITIS A

Hepatitis A is an infection of the liver caused by the hepatitis A virus.

Who gets this disease?

Anyone can. It can spread quickly in groups of small children who are not yet toilet-trained and who cannot wash their own hands well.

How is it spread?

Hepatitis A virus is passed out of the body in the stool and is spread by the fecal-oral route, just like infectious diarrhea. Contact with stool-contaminated food, drink or environment surfaces (e.g., toilet seat, changing table) can spread the infection.

What are the symptoms?

The symptoms vary greatly, ranging from none at all to severe illness. Early symptoms can include loss of appetite, nausea, aching, fever, and stomachache. Later signs can include dark colored urine, light colored stools and jaundice (i.e., yellowing of white of eyes, eyes or skin). (Note: jaundice occurs more often among adults than children). These symptoms usually last from one to two weeks, although some adults may be sick for several months.

How soon do symptoms appear?

After the hepatitis A virus is ingested, it is between 15-50 days before illness begins. Most commonly, it begins within 25-30 days.

Can a person have this disease without knowing it?

Yes. This is especially important in the childcare setting because most young children with hepatitis A do not become ill. Children with hepatitis A without symptoms who are in diapers could easily pass the virus to unsuspecting childcare facility staff and family members.

In addition, people with hepatitis A are most likely to spread the disease to others during a period extending from 14 days before developing symptoms to one week after symptoms develop. This means that a person may be infectious to others before even realizing he or she is ill.

What is the treatment?

There is no treatment that cures hepatitis A. However, there are two shots available to help prevent illness in people exposed to patients with hepatitis A. These protective shots – either hepatitis A vaccine or Hepatitis A immune globulin (IG) – must be given within two weeks of a person's exposure to hepatitis A in order for it to be helpful. A person's healthcare provider and the New Hampshire Division of Public Health Services, Bureau of Infectious Disease Control will assist in making recommendations about administering hepatitis A vaccine or IG to contacts.

How can the spread of this disease be prevented?

1. Hepatitis A vaccine is *recommended* for children 12-23 months. The Advisory Committee on Immunization Practices (ACIP), recommends immunizing children against Hepatitis A.
2. The two dose series should be given at 12 and 18 months of age. Children who are not vaccinated by age 2 years can be vaccinated at subsequent visits.
3. Wash hands thoroughly after using the toilet.
4. Wash hands thoroughly after diapering children.
5. Wash hands thoroughly before preparing food.

HEPATITIS A (cont.)

6. Clean toilet facilities thoroughly and wash hands afterward.
7. Discourage children from putting non-food items into their mouths since these items may be a source of the virus.

Who should be excluded?

Persons with hepatitis A (or suspected hepatitis A) should be excluded from daycare centers, food-handling occupations, and direct care of hospitalized and institutionalized patients for one week after the onset of symptoms (jaundice) or hepatitis A has been ruled out. A Public Health Professional will advise individuals regarding specific recommendations.

Reportable?

Yes, hepatitis A is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.

It is important that cases associated with a childcare center be reported as soon as possible. A Public Health Professional will give specific recommendations for immunization of the people exposed.



HEPATITIS B

Hepatitis B is a disease primarily of the liver caused by the hepatitis B virus.

Who gets this disease?

In the United States, hepatitis B is primarily a disease of young adults. Children can be infected during childbirth if the mother has the virus in her blood.

How is it spread?

Only blood, semen, vaginal fluids and saliva have been shown to be infectious. Most cases are transmitted by blood (i.e., getting blood from an infected person into the open skin or the eye, nose or mouth of another person), or through sexual contact. Note: salivary transmission has rarely occurred and generally through bites. The Hepatitis virus can live on the surface of objects for 7 days or more.

What are the signs and symptoms?

Hepatitis B signs and symptoms include loss of appetite, tiredness, abdominal pain, nausea, vomiting, and sometimes rash or joint pain. Jaundice (yellowing of eyes or skin), may be present in adults but it is often absent in children. Symptoms vary from none at all to severe illness.

Can a person have this disease without knowing it?

Yes. Some people may not have the illness serious enough to seek medical attention. People who contract hepatitis B may become chronic carriers of the virus and continue to be infectious for life especially if they are infected as young children.

What is the treatment?

No medical treatment is effective for acute hepatitis B. Most adults recover from hepatitis B without intervention.

How can the spread of this disease be prevented?

1. Hepatitis B vaccine is **required** for all children in childcare and school attendance for all children born after January 1, 1993. The Advisory Committee on Immunization Practices (ACIP), recommends immunizing children against hepatitis B. The three dose series should be completed at birth, 1-2 months of age, and 6-18 months of age. (Please see Immunization requirements page for adult immunization recommendations).
2. Standard precautions should be in effect at all times. Disposable gloves should be used when dealing with any bodily fluids (blood/body fluid-soiled items, surfaces or clothing), when administering first aid (nose bleeds, cuts, scrapes, etc).
3. Disinfect surfaces and objects that are contaminated with blood or other body fluids containing visible blood. One-part bleach to 10 parts of water can be used as a disinfectant for cleaning contaminated surfaces. The bleach mixture must be changed daily.
4. Wash hands immediately after contact with blood or other body fluids containing visible blood, even if gloves have been worn.

Who should be excluded?

Children and staff who have the hepatitis B virus in their blood may attend and/or work in childcare and schools. Hepatitis B carrier children with risk factors (e.g., biting, frequent scratching, generalized dermatitis) should be assessed for exclusion on an individual basis.

Reportable?

Yes. Hepatitis B is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



HIV/AIDS

The human immunodeficiency virus – or HIV for short – is the name of the virus that causes the condition known as AIDS (Acquired Immunodeficiency Syndrome). HIV attacks the body's immune system and makes it unable to fight-off certain infections and cancers.

How do children get HIV?

The primary method that children become infected with HIV is through maternal transmission (i.e., the transfer of HIV) from mother-to-child during pregnancy, childbirth or breastfeeding. If medical treatment is used in combination with obstetric care and an elective caesarian section, transmission is reduced to an only 2% chance of infant transmission.

Can HIV be spread in childcare settings?

No documented cases of HIV infection have been traced to kissing, biting, playing with an infected child, or sharing food, eating utensils, toys or bathroom facilities.

Sexual transmission of HIV

With individuals that are positive, HIV is found in blood, mother's milk, semen and vaginal secretions. HIV transmission as a result of anal, oral, or vaginal intercourse has been well documented. HIV infection can also occur as a result of sexual abuse in children.

How is HIV diagnosed?

For adults rapid HIV tests are available and are used in NH. To confirm a rapid test, people should still receive a blood test. A blood test involves testing for the HIV antibody. However, use of HIV-antibody testing in children less than 18 months old may be confounded by the presence of maternally acquired HIV antibodies. Other laboratory tests such as viral culture,

nucleic acid detection or antigen test are useful in determining HIV infection in these children.

What are the symptoms?

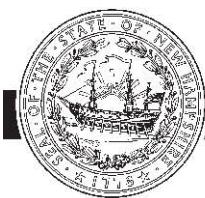
There are a wide range of signs and symptoms seen in HIV-infected children. Symptoms may include failure to thrive, weight loss, fever, mild or severe developmental delay, neurologic deterioration and severe, prolonged or recurrent infections. In general, the interval from HIV infection to the onset of symptoms is shorter in children than adults due to the developing and immature immune system. For this reason, HIV infected women should seek medical care and treatment early on in a pregnancy.

Should children with HIV be enrolled in childcare?

Yes. Studies continue to show **no evidence of transmission** of HIV within the childcare setting. HIV infected children should therefore be enrolled in daycare if their health, neurologic development, behavior and immune status are appropriate. The decision as to whether or not a child with known HIV infection may be enrolled in childcare should be made on a case-by-case basis. The decision is best made by the child's healthcare provider.

Reportable?

Yes, both HIV infection and AIDS are reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



IMPETIGO

Impetigo is a very common skin infection caused by *streptococcal* or *staphylococcal* bacteria. It may start at an injured spot on the skin, such as an insect bite, cut or burn. Bacteria can easily be spread by the person's hands to other areas of the body. In children, the face is often involved. The rash appears red, is elevated and may secrete fluid. The rash may have a flat honey-colored crust. The area may be itchy. The staph bacteria can cause blisters that break easily and leave raw red skin exposed. Impetigo caused by strep bacteria can be associated in very rare circumstances with the development of a kidney disease. Impetigo is most commonly seen in the warm summer months.

Who gets this disease?

Ordinarily the skin protects the body from bacteria. When the skin is broken (i.e., cut, scraped, bitten, scratched), bacteria can get under the surface, multiply and cause an infection.

Children – who typically touch everything and wash only under duress – are likely to have multiple cuts and scrapes on their bodies at all times, which make them more vulnerable to impetigo than adults. Most children have impetigo at least a few times during their growing up years; adults can get it as well.

How is it spread?

The bacteria are under, on and in the infected skin, and they are shed into the secretions and crusts. They can be spread to another person who directly touches the infected skin or a surface contaminated by the secretions or crusts. If the bacteria then gets under the top protective skin layer of the second person, they multiply and cause infection.

The incubation period for this disease is variable: Staph infections 4-10 days, Strep infections 1-3 days.

How is it diagnosed and treated?

Most of the time, impetigo can be diagnosed by the way it looks. Bacterial cultures are not usually needed. Strep and staph impetigo may look the same, although staph tends to cause blisters more often.

How can the spread of this disease be prevented?

1. If children hurt themselves and cause breaks in the skin, wash the area thoroughly with soap and water and dry carefully.
2. If you think a child may have impetigo:
 - a. Wash the rash with soap and water and cover it loosely with gauze, a bandage, or clothing.
 - b. Be sure anyone who touches the rash wears disposable gloves carefully.
 - c. Dispose of any soiled tissues, bandages and gloves carefully. Keep any dirty clothing in a plastic bag and give to the parent for laundering at home.
3. Ask the parents to have the child seen by his/her healthcare provider. Keep children's finger nails short as to prevent damage from scratching.

Who should be excluded?

It is recommended that untreated children and staff be excluded from the childcare facility until 24-hours after they have begun treatment.

Reportable?

No. Impetigo is not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



LYME DISEASE

Lyme disease is caused by a bacterium, *Borrelia burgdorferi*. In New England it is transmitted by a certain type of tick, commonly called the deer tick or black-legged tick (scientific name: *Ixodes scapularis*). Lyme disease may cause symptoms affecting the skin, nervous system, heart and/or joints of an individual. The NH Department of Health & Health Services made Lyme disease reportable in October 1990. During recent years, the incidence of Lyme disease has increased in New Hampshire.

Who gets this disease?

The bacterium that causes Lyme disease is transmitted within the natural cycle of the deer tick, which feed on animals such as mice, opossums, dogs and deer. Certain stages of the tick – especially the nymph and adult – can feed on a human; if the tick is infected with the bacteria it can cause infection in people. Cases of Lyme disease have also been reported in domestic animals. There is no evidence that Lyme disease is transmitted from person to person. For example, a person cannot get infected from touching, kissing, or having sex with a person who has Lyme disease. Lyme disease acquired during pregnancy may lead to infection of the placenta and possible stillbirth. However, no negative effects on the fetus have been found when the mother receives appropriate antibiotic treatment. There are no reports of Lyme disease transmission from breast milk.

People who spend time in wooded or grassy areas, including areas around the home, are at greater risk of Lyme disease. Although persons of all ages and gender are susceptible to Lyme disease, it is most common among children aged 5-9 and adults aged 55-59. Most cases of Lyme disease occur between April and October. Current data indicates that it is possible for someone to get Lyme disease more than once.

What are the symptoms?

The illness usually occurs during the summer months and generally starts as a large circular reddish expanding rash around or near the site of the tick bite. (NOTE: In some cases, a rash may not occur). Multiple rash sites may occur. During the rash stage, or occasionally prior to the rash, other symptoms such as fever, headache, fatigue, stiff neck and muscle and/or joint pain may be present. These may last for several weeks. If left untreated – within a few weeks to months after the rash onset – complications such as meningitis and heart abnormalities may occur and other body systems may be affected. Swelling and pain in the large joints may recur over many months or years.

How soon do symptoms appear?

Symptoms usually begin within a month of a tick bite, generally 3-32 days.

What is the treatment?

Current therapy includes the use of antibiotics. Early diagnosis improves the outcome of treatment.

How can the spread of this disease be prevented?

Special precautions to prevent exposure to ticks should be used. Apply insect repellent containing greater than 20% DEET, on clothes and exposed skin. Clothes (especially pants, socks, and shoes) may be treated with permethrin, which kills ticks on contact. Permethrin can also be used on tents and some camping gear. **Do not use permethrin directly on skin.** Always follow the manufacturer's instructions when applying any repellents. Long pants and long sleeves help keep ticks off skin. Pant legs may be tucked into socks or boots and shirt into pants to keep ticks on the outside of clothing. After being outdoors, wash and dry clothing at a high temperature to kill any

LYME DISEASE (cont.)

ticks that may remain on clothing. Perform tick checks after being outdoors. Early removal of ticks can reduce the risk of infection. If a tick is attached to the skin for less than 24 hours, the chance of getting Lyme disease is extremely small. Landscaping to reduce tick habitats and prevent deer and rodents around the home may be helpful.

How should a tick be removed?

To remove an attached tick, grasp it with one of the tick-removal tools found in stores or fine-tipped tweezers as close as possible to the attachment site (i.e., skin) and pull upward and out with a firm and steady pressure.

Do not handle the tick with bare hands, if using your fingers to remove a tick be sure to use a disposable towel when removing the tick. Be careful not to squeeze, crush, or puncture the body of the tick, which may contain infectious fluids. After removing the tick, thoroughly cleanse the area with an antiseptic. Seek medical attention if there is a concern about incomplete tick removal.

Do not attempt to remove ticks by using Vaseline, lit cigarettes, or other home remedies; doing so may actually increase the chances of contracting a tick-borne disease.

Who should be excluded?

Exclusion is not necessary since the disease is not spread from person-to-person.

Reportable?

Yes. Lyme disease is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



MEASLES

Measles (aka, rubeola, red measles or hard measles) is a very communicable viral illness that can be prevented by immunization. Usually it causes a rash, high fever, cough, runny nose and watery eyes. The disease lasts one to two weeks. Measles may be complicated by an ear infection or pneumonia. One out of every 1,000 children who gets measles develops an inflammation of the brain (i.e., encephalitis). Encephalitis can lead to convulsions, deafness or mental retardation. Approximately one child in every 10,000 who gets measles dies from it.

Who gets this disease?

Measles cases are generally limited to three groups: 1) children less than 15 months of age (who are too young to have been immunized), 2) those over 15 months of age but remain unvaccinated and 3) adolescents and young adults who may have received an earlier ineffective measles vaccine prior to 1968 OR graduated from school prior to the mandatory measles vaccination law OR who have received only one dose of live virus measles vaccine. Adults born prior to 1957 are generally considered to be immune against measles.

How is it spread?

Susceptible individuals spread measles by large infectious droplets or direct contact with the nasal or throat secretions of infected persons. Inhaling air that has tiny infectious droplets from sneezes and coughs also can spread it. **Measles is one of the most readily transmissible communicable diseases.** The communicable period is greatest prior to or just after rash onset.

What are the symptoms?

The first signs and symptoms of measles – which appear approximately 10-days after exposure – are similar to the common cold: cough, runny nose, fever greater than can reach as high as 103-105 degrees Fahrenheit, and red and watery eyes. After these cold-like symptoms a rash develops, typically beginning on the face and then spreading downward over the entire body. This rash lasts 4-10 days. Infected persons may also experience loss of appetite or diarrhea.

Infected persons are contagious from the appearance of the first cold symptom to four days after the appearance of the rash. A small percentage of immunized children may become infected if their bodies fail to respond adequately to the vaccine.

How can the spread of this disease be prevented?

The Advisory Committee on Immunization Practices (ACIP) recommends that children be immunized against measles between 12 to 15 months of age. Children who are immunized before 12 months of age need to be re-immunized.

Children 15 months and older are **required** to have one dose of measles vaccine for daycare and school admittance. A second dose of measles vaccine is **required** between 4-6 years of age.

Who should be excluded?

Children and staff with measles shall be excluded from the school or work for at least four days after the appearance of the rash. If children are unimmunized for medical, religious or other reasons they should be excluded for at least 2 weeks after the onset of the rash in the last case of measles reported in the child care setting.

MEASLES (cont.)

Reportable?

Yes. Measles is reportable immediately by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease and Control at (603) 271-4496.



MENINGOCOCCAL ILLNESS

Meningococcal Illnesses are caused by a bacterium called *Neisseria meningitidis* (*N. meningitidis*) and are serious, sometimes fatal illnesses. The most common illness is meningitis, an infection of the coverings of the brain. Meningitis caused by *N. meningitidis* must be treated immediately with hospitalization and IV (intravenous) antibiotics. The disease usually starts suddenly with fever, chills, and lethargy (i.e., a feeling of tiredness) and a rash with fine red "freckles" or purple splotches. With meningitis, older children and adults may complain of severe headache, neck pain and neck stiffness. In younger children, unusual irritability, poor appetite, excessive and high-pitched crying, vomiting and fever may be seen.

Who gets this disease?

Meningococcal illnesses affect children less than 5 years primarily affecting infants less than 24 months. It peaks again in adolescents 16-21 years of age. There is a high incidence *N. meningitidis* with people living in crowded living conditions such as barracks and institutions. Freshman college students living in dormitories have a higher incidence than other college students not living in dorms. This illness can affect any age group.

How is it spread?

The bacterium is passed from person to person when they are in very close contact. It is spread through infectious droplets of respiratory tract secretions (e.g., sneezing, coughing, nasal discharge, saliva). It can also be passed if people touch infected secretions then put their hands in their noses, eyes or mouths. However, the bacteria cannot live on environmental surfaces – they quickly shrivel and die.

People can carry the germs, without knowing it, in their noses, mouths or throats without ever getting sick themselves. This is called "carrying" the germ or being a "carrier". The germs can be spread from carriers to other people who may then develop a meningococcal illness. Obviously, sick people can also pass the germs on.

The time from exposure to illness can be from 2-10 days, but it is usually one to four days. After one infection has occurred in a facility, there will be more than the usual number of people carrying the germ, so the risk of spread and serious disease becomes greater.

How is it diagnosed and treated?

Meningococcal infections are diagnosed by signs and symptoms and by examining a sample of blood and/or spinal fluid for white blood cells and bacteria. Spinal fluid is obtained by a physician, who performs a lumbar puncture (i.e., spinal tap).

People with these infections almost always require hospitalization and are treated with antibiotics for 5-7 days.

How can the spread of this disease be prevented?

1. Meningitis Conjugate Vaccine is recommended for all children 11-12 years of age. It is also recommended for all children 13-18 years of age who have not been previously vaccinated. Unvaccinated college freshmen living in a dormitory should be vaccinated.
2. Meningitis Quadrivalent vaccine is available for children 2 years old and older.
3. If a person develops a meningococcal illness in a childcare center, all parents and staff must be notified immediately.

MENINGOCOCCAL ILLNESS (cont.)

4. If a person develops a meningococcal illness, close contacts of this patient (including family members and person having intimate contact such as sleeping together, hugging and kissing) are at increased risk of developing the illness. In this situation, a physician or public health professional may recommend: 1) watching for early symptoms of meningococcal illness, and/or 2) taking a preventive antibiotic to eliminate the bacteria from the body before disease begins.
5. Any child or adult who is a close contact and who develops symptoms such as fever or headache require prompt evaluation by a healthcare provider **regardless** of whether or not this person has taken the preventive antibiotic.
6. Monitor the situation closely for two to three weeks. Make sure all ill children are seen by their doctors and that you are notified if another person develops meningococcal disease.
7. Notify parents or guardians about the occurrence of this illness and urge them to contact their *healthcare provider* for specific medical advice.
8. Childcare centers should contact the NH Department of Health & Human Services, Bureau of Infectious Disease and Control for recommendations about preventing spread of this illness and for assistance in implementing them.

Who should be excluded?

Children with meningococcal disease are too ill to attend childcare.

Reportable?

Yes. Meningococcal illnesses are reportable by New Hampshire law to the NH Department of Health & Human Services, Bureau of Infectious Disease and Control at (603) 271-4496.



MRSA SKIN INFECTIONS

A frequent cause of skin infections is a bacteria called *Staphylococcus aureus* (Staph). Most of these skin infections are minor. However, staph bacteria can also cause more serious infections such as pneumonia and bloodstream infections. Some staph bacteria are resistant to certain antibiotics and are known as MRSA (methicillin-resistant *Staphylococcus aureus*).

What is a MRSA skin infection?

A MRSA skin infection can be a pimple, rash, boil, or an open wound. MRSA is often misdiagnosed as spider bites. MRSA bacteria are commonly found on the skin of healthy persons. MRSA infections often begin with an injury to the skin. Symptoms of MRSA infection include redness, warmth, swelling, tenderness of the skin, and boils or blisters. Sometimes it does not cause any problems; sometimes it causes minor infections, such as pimples or boils. If left untreated, it can cause serious infections.

How do MRSA skin infections spread?

MRSA lives on skin and survives on objects for 24 hours or more. MRSA can rub off on the skin of an infected person onto the skin of another person during rigorous skin-to-skin contact. Or, the MRSA bacteria can come off of the infected skin of a person onto a shared object, and get onto the skin of the next person who uses it. Examples of commonly shared objects include towels, soap, razors and athletic equipment.

How can I prevent myself or my family members from getting infected?

Wash your hands with soap and warm water. Keep cuts and scrapes clean with soap and water. Avoid skin contact and sharing personal items with anyone you suspect could have a MRSA skin infection. When using protective gloves to treat the infected area, remove and dispose of them

properly; wash your hands with soap and water. Do not share personal items with other persons.

What should I do if I think I have a skin infection?

Consult your healthcare provider as soon as possible if you think you have a skin infection. Early treatment can help you prevent the infection from getting worse. Be sure to follow directions from your doctor or healthcare provider closely, even when you start to feel better. Not taking all of your antibiotics leads to stronger, antibiotic-resistant bacteria.

If my healthcare provider told me that I have a MRSA skin infection, how do I keep others from getting infected?

- Keep the infected area covered with clean, dry bandages. Pus from infected wounds is very infectious.
- Wash your hands frequently with soap and warm water, especially after changing your bandages or touching the infected skin.
- Regularly clean your bathroom, kitchen, and all other rooms, as well as your personal items. Wash clothes and other items that become soiled with hot water or bleach, when possible.
- Drying clothes in a hot dryer, rather than air-drying them also helps to kill bacteria in clothes.
- Tell any healthcare provider that treats you during the infection that you have an MRSA skin infection.

Reportable?

No. MRSA is not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at 603-271-4496.

MRSA SKIN INFECTION (cont.)

For further information, refer to the Centers for Disease Control & Prevention website at www.cdc.gov or the NH Department of Health & Human Services website at www.dhhs.nh.gov .



MUMPS

Mumps is a viral illness that usually causes swelling and tenderness of the salivary glands, particularly the gland at the angle of the jaw. Headache, slight fever and earache are common. Possible complications include Meningitis (an inflammation of the coverings of the brain and spinal cord), Encephalitis (an inflammation of the brain), deafness and, particularly in adolescent or adult males, inflammation of the testicles. Mumps during pregnancy can result in loss of the fetus.

Who gets this disease?

Mumps may be seen in unimmunized children, or adolescents and young adults who graduated from school prior to laws requiring mumps immunization. Most adults born before 1957 have been infected by exposure to the disease and are probably immune.

How is it spread?

The mumps virus is found most often in saliva. It is transmitted by direct contact or by droplet spread of the virus in the air through sneezes and coughs. Mumps is most infectious 48 hours **prior** to the onset of symptoms.

What are the symptoms?

The most common symptoms are: 1) fever with headache and earache, loss of appetite and 2) swollen glands in front of and below the ear.

Symptoms appear 12-25 days after exposure. Infected persons are contagious from 1-2 days **before** to 5 days **after** swelling begins. A small percentage of immunized children may be infected with mumps if their bodies fail to respond adequately to the vaccine.

How can the spread of this disease be prevented?

The national Advisory Committee on Immunization Practices (ACIP) recommends that children be immunized against mumps. This is frequently combined with measles and rubella vaccine, which is **required** for childcare and school attendance. Children should receive this vaccine between 12-15 months of age and again between 4-6 years of age.

Who should be excluded?

A child or staff member with mumps should not return until five days after the onset of swelling. Any susceptible, unvaccinated child or staff member at a childcare center shall not return to the center until 26 days after onset of parotid gland inflammation in the last person with mumps in the center. Any person so excluded may return to the center immediately if he/she receives mumps vaccine.

Reportable?

Yes. Mumps is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



NOROVIRUS

What is Norovirus?

Noroviruses are a group of viruses that cause the “stomach flu”, or gastrointestinal (stomach or digestive) illness. Norovirus infection occurs occasionally in only one or a few people or it can be responsible for large outbreaks, such as in long-term care facilities.

Who gets Norovirus?

Norovirus infects people of all ages worldwide and anyone can become infected. There are many different strains of norovirus, which makes it difficult for a person’s body to develop long lasting immunity. Therefore, Norovirus illness can reoccur through a person’s lifetime. In addition, because of differences in genetic factors, some people are more likely to become infected and develop more severe illness than others.

How does someone get Norovirus?

Norovirus is spread from person to person via fecal-oral route, but can also be spread through the air during vomiting. Good hand washing is the most important way to prevent the transmission of Norovirus. Outbreaks have been linked to sick food handlers, ill healthcare workers, cases in facilities such as nursing homes spreading to other residents, contaminated shellfish, raw or unpasteurized milk, and water contaminated with sewage.

What are the symptoms of Norovirus?

The most common symptoms include nausea, vomiting, watery diarrhea, and stomach cramps. Fever is usually low grade or absent. Infected people generally recover in 24-60 hours and serious illness rarely occurs.

How soon after exposure do symptoms appear?

Symptoms of Norovirus illness usually begin about 24 –48 hours after ingestion of the virus.

How is Norovirus infection diagnosed?

Laboratory diagnosis can be performed in the New Hampshire Public Health Laboratories when there are multiple cases. Diagnosis is often based on the combination of symptoms and the short time of the illness.

What is the treatment for Norovirus infection?

No specific treatment is available. People who become dehydrated might need to be rehydrated by taking liquids by mouth. Occasionally, a patient may need to be hospitalized to receive intravenous fluids.

How can Norovirus be prevented?

While there is no vaccine for Norovirus, there are precautions people should take:

- ❖ Wash hands with soap and warm water after using the bathroom and changing diapers
- ❖ Wash hands with soap and warm water before preparing or eating any food
- ❖ Cook all shellfish thoroughly before eating
- ❖ Wash raw vegetables before eating
- ❖ Dispose of sewage in a sanitary manner

Who should be excluded?

Food handlers, healthcare workers and childcare workers should be excluded for 48 hours after resolution of symptoms. Children with non-specific diarrhea should be excluded until symptoms resolve.

NOROVIRUS (cont.)

Reportable?

No. Norovirus is not reportable by New Hampshire state law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.

For further information, refer to the Centers for Disease Control and Prevention website at:

<https://www.cdc.gov/>

Or the NH Department of Health & Human Services website at:

<https://www.dhhs.nh.gov/>



ORAL HERPES (aka, Cold Sores)

Oral herpes – which is also referred to as cold sores – is caused by a virus call *herpes simplex type 1*. This infection is commonly acquired for the first time in early childhood and may reappear throughout a person's lifetime.

Who gets this disease?

Anyone can get oral herpes.

How is it spread?

Oral herpes is spread through close person-to-person contact such as direct contact with saliva or the sores (e.g., kissing).

What are the symptoms?

There are initial infections and in some people recurrent sores (fluid-like blisters). In young children the initial infections may not cause any symptoms or can involve many sores within the mouth, on the cheeks, lips and/or gums. The sores will crust and heal within a few days. If the sores within the mouth are extensive, children can run a fever and refuse to drink or eat.

How soon do the symptoms appear?

In initial infections, it takes from 2 to 14 days from the time a person is exposed until the sores become apparent. Recurrent sores occur in individuals when the virus becomes active after being dormant.

What is the treatment?

Most cold sores heal in 3-4 days without treatment. There are ointments and medications available that may shorten the healing time but there is no cure for oral herpes. It is best to check with your physician to see if treatment is indicated.

How can the spread of this disease be prevented?

1. Frequent hand washing.
2. Caregivers should wear gloves when contact with sores is necessary (e.g., when applying medication).
3. Clean and disinfect mouthed toys daily or when soiled.
4. Do not kiss an infected person when lesions are present.

Who should be excluded?

No exclusion is necessary for mild oral herpes in children who are in control of their mouth secretions. Exclude children who do not have control of oral secretions when active sores are present inside the mouth.

Reportable?

No. Oral herpes is not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease and Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



PEDICULOSIS CAPITIS (Head Lice)

Head lice are tiny insects that live only on people's scalps and hair. The adults hatch from small eggs, called nits, which are attached to the individual hairs near the scalp. Nits may be found throughout the hair, but are most often located at the back of the scalp, behind the ears and the top of the head. The eggs hatch in 10-14 days, with new lice reaching adulthood in about 10 days. The female louse can live for 21-30 days, and lays about six to eight eggs a day. The lice live by biting and sucking blood from the scalp.

The major symptom of head lice is itching caused by the bite of the louse. Persistent scratching of the head and back of the neck should be viewed with suspicion. Often red bite marks and scratch marks can be seen on the scalp and neck and a secondary bacterial infection causes discharge and crusting. Swollen neck glands can also occur related to an infection from scratching.

Who gets this disease?

Contrary to popular belief, head lice are not a sign of unclean people or homes. They can occur at any age and to either sex. Anyone who has close contact with an infected person or shares personal items can become infested.

How is it spread?

Lice do not jump or fly. They cannot be caught from grass, trees, or animals. They are spread only by crawling from person-to-person directly or onto shared personal items, such as combs, brushes, head coverings, clothing, bedding and towels. Frequent bathing or shampooing will not prevent lice or eliminate them once they are established.

How is it diagnosed and treated?

Lice are less than 1/8-inch long and are usually light brown in color. They avoid light, which makes it difficult to see them. The diagnosis is

most often made by finding nits within a 1/4-inch of the scalp. Nits are tiny, plump, pearl gray colored; oval-shaped specks attached to the hair and cannot be easily moved up or down the hair (as could specks of dandruff). It helps to use a magnifying glass and natural light when searching for them. The best places to look are the hair on the back of the neck, behind the ears and the top of the head. Hatched eggs can be found further out on the hair shaft and are snow-white and conspicuous.

Treatment is directed at getting rid of the lice from both the infested person and his/her surrounding and personal items. All household members and persons with close physical contact with the infested person should be examined for lice and treated if infested (live lice are seen). Some healthcare providers may simultaneously treat all members of a household.

Treating the infested person.

Consult a physician before treating: (1) infants, (2) pregnant or nursing women, or (3) anyone with extensive cuts or scratches on the head or neck. For others, there are several medicines available to kill head lice. They are used like shampoo. Many head lice medications are available at your local drug store without prescription and some products are available by prescription. All of these products must be used carefully and according to direction.

There are several over-the-counter (OTC) name brand products which include A-2000 Pronto, R&C, Rid and Triple X that all contain the active ingredient Pyrethrins. Pyrethrins are natural extracts from the chrysanthemum flower. Though safe and effective, pyrethrins only kill crawling lice, not unhatched nits. A second treatment is recommended in 7-10 days to kill any newly hatched lice. Treatment failures are common.

PEDICULOSIS CAPITIS (Head Lice) cont.

Nix is another commonly available OTC medication that contains the active ingredient Permethrin. Permethrin is safe and effective and may continue to kill newly hatched lice for several days after treatment. A second treatment may be necessary in 7-10 days to kill any newly hatched lice that may have hatched after residual medication from the first treatment was no longer active. Treatment failures are common.

Prescription medications used to treat head lice include Lindane (Kwell) and Malathion (Ovide). Consult with your healthcare provider on the proper use of these prescription medications. For these medications, retreats in 7-10 days ONLY if crawling bugs are found.

Although these products will kill lice, none will kill 100% of the nits. Nit removal after shampooing may be time-consuming and difficult due to their firm attachment to the hair. A solution of vinegar and water may help make removal easier. Special, fine-tooth combs can be used to aid in nit removal. Most treatment requires retreatment in 7-10 days. A daily nit check for the next ten days is advisable. If there is evidence of new nits (less than $\frac{1}{4}$ -inch from the scalp) or newly hatched lice, it may be necessary to repeat treatment. (NOTE: Unless reinfection occurs, more than two treatments are unnecessary and can be dangerous).

Treating the surroundings/personal items in the childcare center.

Head lice can only survive 24-48 hours if they fall off a person and cannot feed. You don't need to spend a lot of time or money on cleaning activities. Follow these steps to help avoid reinfestation by lice that have recently fallen off the hair or crawled onto clothing or furniture.

1. Machine-wash in HOT water all washable items belonging to the daycare facility that may contain lice.

2. Non-washable (e.g., furry toys, pillows) can be put in a HOT dryer for 20-minutes or dry-cleaned.
3. Things that cannot be washed, dried, or dry-cleaned can be sealed in a plastic bag for two weeks, the duration of the life cycle of the louse.
4. Soak combs and brushes for 1 hour in rubbing alcohol, Lysol™, or wash with soap and hot (130 F) water.
5. Vacuum the floor and furniture. The risk of getting re-infested from a louse that has fallen onto the carpet or sofa is very small.
6. Insecticide sprays are not recommended and can be harmful to people and animals.

How can the spread of this disease be prevented?

1. General cleanliness at the center, as previously outlined, should be practiced.
2. Children should not share personal items such as clothing, brushes, combs, hats, etc.
3. Each child should have his/her own crib mat and should not switch.
4. Children's personal belongings should be stored separately.
5. Caregivers should learn to recognize nits and should help regularly check children's hair when there is a known case of head lice in the center.
6. If a case is identified, the center should follow cleaning procedures outlined above.

Who should be excluded?

Routine exclusion of school-aged children with head lice is not recommended. The child's parents or guardian should be notified when head lice is identified by a care provider or teacher. The child's parent or guardian should be telephoned/mailed or a note sent home with the child at the end of the school day stating that prompt, proper treatment of this condition is in the best interest of the child and his/her

PEDICULOSIS CAPITIS (Head Lice) cont.

classmates. A child **should** be allowed to return to school after proper treatment even if nits are still present. “No Nits Policies” are not effective and should be discouraged. Mass screenings are also not recommended but close contacts should be checked ideally.

Children in preschool or daycare settings who have visible live lice may need to be excluded only if direct head to head contact cannot be avoided.

Reportable?

No. Pediculosis is not reportable by New Hampshire law. However, the Bureau of Infectious Disease Control professionals are available for consultation at (603) 271-4496.



PERTUSSIS (Whooping Cough)

Pertussis is a very contagious bacterial infection of the respiratory tract. Usually it causes a persistent cough that follows a normal cold. The child has episodes of violent coughing that end with the typical high-pitched *Whoop*, and occasionally vomiting is seen. Between bursts of coughing the child appears well. Coughing attacks may continue to occur for 10-12 weeks. Pertussis is frequently complicated by pneumonia and ear infections, particularly in infants. Death from pertussis is rare.

Who gets this disease?

Pertussis occurs in all age groups. Untreated cases in older children and adults can spread pertussis to infants and young children at home. It is important that all infants and young children be up to date with pertussis vaccination. The most serious disease and complications are seen in infants and very young children.

How is it spread?

The bacterium is spread by direct contact with discharge from the nose or throat of an infected person, or by breathing in infected droplets in the air when an infected person coughs. The period of greatest risk of spread is during the early "cold" stage.

What are the symptoms?

The disease begins with the cold like symptoms such as runny nose and watery eyes, and cough. The cough becomes more persistent. Within 2 weeks the cough occurs as bouts of uncontrollable cough often with a "whoop" sound. Vomiting often follows the cough. The "whoop" sound may be absent in older children and adults.

What if a child is exposed to pertussis?

1. All close contacts younger than 7 years of age who have not completed the four-dose primary series should complete the series with the minimum intervals.
2. Close contacts who are 4-6 years of age and who have not yet received the second booster dose (usually the fifth dose of DTaP) should be vaccinated.
3. Any close contact 11 years old and older can receive a single dose of Tdap if it has been at least 2 years since the previous Td.
4. Your physician may recommend antibiotics for your child and all close contacts.

How can the spread of this disease be prevented?

A combination vaccine of Diphtheria, Tetanus and acellular Pertussis (DTaP) is **required** for both childcare and school attendance. The Advisory Committee on Immunization Practices (ACIP) recommends immunizing children against pertussis, along with diphtheria and tetanus, beginning as early as six weeks of age. The five dose series should be completed at 2 months, 4 months, 6 months, and 15-18 months, and 4-6 years of age. If the child has a contraindication to the pertussis vaccine, they would receive a vaccine called DT which does not contain the pertussis antigen.

A single booster dose of Diphtheria, Tetanus, and acellular Pertussis (Tdap) is recommended for adolescents 11-18 years of age who have completed the recommended childhood DTP/DTaP vaccination series and have not received Tetanus and diphtheria (Td) booster dose. Adults who are 18 and older should receive one dose of Tdap. If they have received the Td booster an interval of at least 2 years between Td and

PERTUSSIS (Whooping Cough) cont.

Tdap is encouraged to reduce the risk for local and systemic reactions after Tdap vaccination. The Td booster is recommended every 10 years thereafter to provide protection.

Reportable?

Yes. Pertussis is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



PINWORMS (*Enterobius Vermicularis*)

Pinworms are tiny worms that live in the lower intestine of people. Most often at night, female worms come out to the anus of an infected person and lay their microscopic eggs.

Who gets this disease?

Anyone can. It is particularly common in preschool and school-aged children and therefore in daycare centers.

How is it spread?

Pinworm eggs can be transferred orally from the infected individual to another person. The eggs can also be transferred indirectly through clothing, bedding, food and other contaminated articles.

What are the symptoms?

People may be without symptoms or they may have anal itching, feel irritable and/or have disturbed sleep.

How soon do the symptoms appear?

Symptoms usually appear between two-weeks and two-months. The life cycle requires two to six weeks to complete.

Can a person have this disease without knowing it?

Yes. Often, members of an infected child's household are also unknowingly infected and, if not treated, can reinfect a treated child and other people.

What is the treatment?

There are several medicines available to treat this infection. Often healthcare providers will treat the entire family if one member of the home is infected.

How can the spread of this disease be prevented?

1. Wash hands thoroughly after using the toilet and after diapering children.
2. Children should be bathed in the morning so that any eggs laid at night can be removed.
3. Wash hands thoroughly before preparing food.
4. If you suspect a child has pinworms, based on symptoms, this child should see a physician for the correct diagnosis and treatment.
5. Each child's dirty clothing should be stored separately in plastic bags and sent home for laundering.
6. All bedding and clothing should be washed in **HOT** water.
7. Every child should have his/her own crib or mat and should not switch sheets with other children. Mats should be kept clean.
8. Clean and vacuum play and sleeping areas daily for several days after diagnosis.

Who should be excluded?

Once the diagnosis of pinworms is made, the child should be appropriately treated. After the treatment the child does not need to be kept out of childcare.

Reportable?

No, pinworms are not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



POLIOMYELITIS (Polio)

Poliomyelitis is caused by a virus. Polio typically produces weakening of the muscles, sometimes to the point of requiring assistance to move about. The illness ranges widely in severity.

Who gets this disease?

Today, polio cases occur mainly among unimmunized young children or among members of groups that refuse immunization.

How is it spread?

The virus is spread by direct contact with infected stool and throat secretions. Infected persons are most contagious during 7-10 days before and after onset of symptoms.

What are the symptoms?

The illness ranges in severity from a mild, unnoticed febrile illness to meningitis (an inflammation of the covering of the brain and spinal cord), to paralysis and even death.

How can the spread of this disease be prevented?

Two types of polio vaccine have been available: trivalent oral polio vaccine (TOPV) and inactivated polio vaccine (IPV). The national Advisory Committee on Immunization Practices (ACIP) recommends four doses of polio vaccine. The four dose series should be completed at 2 months, 4 months, 6-18 months, and 4-6 years. The vaccine is **required** for both childcare and school attendance.

Who should be excluded?

Children and staff should be excluded during the acute phase of illness.

Reportable?

Yes. Poliomyelitis (polio) is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



RABIES

Rabies is a viral disease that attacks the central nervous system. It can be transmitted to people through contact with the saliva or brain and spinal cord tissue of a rabid animal as described below. It is a fatal disease for humans but may be effectively prevented. Rabies in certain animals, especially wildlife, is common throughout New Hampshire.

What are the signs of rabies in animals?

Animals may act friendly or become vicious. Animals that are usually active only at night may be found active during the day. Animal behavior may be unusually aggressive. Animals infected may seem withdrawn, hide in corners or refuse food. The most important thing to remember is that a rabid animal will usually be infectious to people or other animals for a varying period of time before a change in their appearance or behavior.

Who gets this disease?

People can get rabies through two types of exposure: bite exposure and non-bite exposure.

- **Bite exposure:** Any penetration of the skin by the teeth of an infected animal. All bites regardless of location, pose a potential risk for rabies.

- **Non-bite exposure:** Infectious saliva, brain or spinal cord tissue from a rabid animal comes into contact with the lining of a person's eye, nose or mouth or with a cut, abrasion or other pre-existing break in the person's skin.

What about bats and rabies?

Bats are responsible for the majority of domestically acquired human cases of rabies. People usually know when a bat has bitten or otherwise exposed them to rabies. However, because bats have small teeth that may not leave obvious marks, there are certain situations when a

person may be considered exposed to rabies even in the absence of an obvious bite, including:

- If a person awakens to find a bat in their room
- A bat is seen in the room of an unattended child, or
- A bat is seen in the room of a mentally impaired or intoxicated person.

People cannot get rabies from having contact with bat guano (feces), blood or urine. If an exposure is possible, and the bat is available, the local animal control authority should be contacted to aid in capturing the animal for testing.

What are the symptoms of rabies in humans?

Symptoms of rabies in people include apprehension, anxiety, headaches, fever, tiredness, paralysis, muscle spasm in the throat leading to fear of water, delirium/hallucinations, convulsions, and, in almost all cases, death. Symptoms are progressive and without medical intervention the usual duration is 2-6 days; death is often due to respiratory or cardiac failure.

What is the treatment?

If a person is bitten or has a non-bite exposure, immediately wash the wound thoroughly with soap and water for several minutes. (NOTE: flush an exposed eye, nose or mouth with water or saline). This is extremely important as it may prevent the rabies virus from entering the body tissue and prevent infection. Then, the person should be seen immediately by a physician or go to an emergency department for examination and any needed treatment.

If indicated, a series of shots should be given. One of the shots (Human Rabies Immune Globulin) is injected around the site of the

RABIES (cont.)

exposure to provide immediate protection while the rabies vaccine is given in the arm muscle. A total of 5 shots (4 shots of vaccine and one of Human Rabies Immune Globulin-may be more than one and is based on body weight) are given over one month. If an individual has had rabies vaccine in the past, this treatment will vary. To work best, these shots should be given as soon as possible after the exposure. If the animal has been caught and will be tested for rabies or quarantined for 10 days (dogs, cats, and ferrets only), treatment can usually be delayed until results are available or quarantine is over. Contact the local animal control authority to aid in capturing the animal for confinement and observation or testing.

Is there a cure?

There is no cure for rabies once the infected person becomes ill with the disease. Appropriate rabies immunizations given before the onset of illness are effective in preventing the disease. People whose work or hobbies bring them frequently into contact with potentially rabid animals should have a series of three rabies vaccine shots before they are exposed. They will then require only two vaccine shots after exposure.

How can the spread of this disease be prevented?

1. Do not handle wild animals. Teach children to avoid wildlife, strays and all other animals they don't know. Call the New Hampshire Fish and Game Department at (603) 271-3361 to report dead, sick or injured animals. Call the local animal control officer for domestic animal exposures.
2. If bitten by a wild or domestic animal, seek medical attention immediately and notify the local animal control officer.
3. All bites by wild animals or contact with their saliva or brain or spinal cord tissue

should be considered as possible exposure to rabies and must be evaluated medically.

4. Keep trash containers tightly closed. Garbage attracts animals like skunks and raccoons.
5. Vaccinate all dogs and cats against rabies and make sure their shots are kept up-to-date.
6. If another animal has injured a dog, cat or other pet, handle it only with thick rubber gloves and have it examined by a veterinarian right away. Saliva from an attacking rabid animal remains infectious on the attacked pet's fur until it has thoroughly dried.

Reportable?

Yes. Rabies in animals and humans is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



Ringworm (Tinea)

Tinea, more commonly called ringworm is a skin infection caused by a fungus that lives on the skin, surfaces of items, or household items – like bedding, clothing, or toys. Ringworm can affect any part of the body including the scalp.

Who get this disease?

Anyone can get the disease. It is transmitted through direct contact with the fungus including touching another person or surface containing the fungus. Ringworm can also be transmitted by contact with animals (e.g. cats and dogs).

What are the symptoms?

Ringworm affecting the skin causes a red, circular patch to form. The patch usually has a raised edge. Ringworm between the toes, or more commonly called athlete's foot, causes the skin between the toes to appear cracked and peeling. Ringworm of the scalp can cause redness of the scalp or loss of hair.

Symptoms typically appear between 4-14 days after contact with the fungus.

How is it diagnosed and treated?

A diagnosis of ringworm is made by a healthcare provider based on the clinical features of the skin. The healthcare provider may feel necessary to take a scraping of the skin for a culture.

Ringworm of the skin can be treated with an over-the-counter antifungal cream or lotion. Ringworm of the scalp can only be treated with a prescribed antifungal medication from the child's health care provider.

How can the spread of this disease be prevented?

1. Items frequently touched by children (i.e. toys and surfaces) should be washed or wiped down frequently. This can be done with a diluted bleach solution.
2. Children should not be allowed to walk barefoot
3. Do not allow children to share personal items like brushes or combs.
4. Children should wash their hands with soap and warm water after touching any animals
5. Socks should be changed daily or if they become wet for any reason.
6. While under treatment swimming pools should be avoided.

Who should be excluded?

The child's parent or guardian should be telephoned/mailed or a note sent home at the end of the school day stating that the child needs to be seen by his/her health care provider related to the potential for infection.

The child should be excluded until treatment is started.

Reportable?

No, ringworm is not reportable by New Hampshire law. However, the Bureau of Infectious Disease Control professionals are available for consultation at (603) 271-4496.



ROSEOLA (Exanthema Subitum)

Roseola is the most common viral rash illness that occurs in young children. It is sometimes referred to as Sixth Disease or, less commonly, "baby measles". Roseola is caused by a virus called human herpesvirus 6 (HHV-6) and, possibly, human herpesvirus 7 (HHV-7).

Who gets this disease?

Roseola usually occurs in children aged 6 months to 2 years of age. It is uncommon for the disease to occur in children under the age of 3 months or over the age of 4 years. There is no known risk to pregnant women. Cases are not seasonal and usually occur throughout the year.

How is Roseola spread?

Humans are the only known source for roseola. It is not known how the disease is spread or what the infectious period is. It is not considered to be very infectious.

How soon do symptoms appear?

Symptoms usually begin 4-10 days after exposure.

What are the symptoms?

Roseola usually begins with a high fever that lasts 3 to 5 days followed by a rash that lasts 1-2 days. When the fever disappears, a rash appears, usually on the face and body. Irritability, runny nose, eyelid swelling and tiredness are sometimes present during the time of the fever. Most children, however, are alert and playful during this time.

How is it diagnosed and treated?

While Roseola can be diagnosed through laboratory confirmation, a healthcare provider typically diagnoses the disease based on the symptoms. A rash occurring immediately after the fever breaks is characteristic of the disease.

The healthcare provider may recommend supportive treatment of symptoms but there is no treatment that is specific for roseola.

How can the spread of this disease be prevented?

There is no vaccine to prevent this disease, but good hand washing can help prevent the spread.

Who should be excluded?

Generally, a child with a rash and fever should be excluded from childcare until seen by a healthcare provider. A child with a rash and no fever may return to childcare. There are no recommendations for preventive therapy for other children attending the childcare or for childcare personnel.

Reportable?

No. Roseola is not reportable by New Hampshire state law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



Rotavirus

Rotavirus is a virus that causes diarrhea and vomiting. It is the most common cause of diarrhea in children under two years old.

What are the symptoms?

Rotavirus typically causes non-bloody diarrhea, nausea, and vomiting.

The symptoms usually last 3-8 days but the virus can be present before diarrhea begins and last up to three weeks after symptoms disappear.

How is the disease spread?

Rotavirus is spread by direct contact (fecal-oral route) with contaminated food or objects (i.e. toys or surfaces frequently touched by children).

How is it diagnosed and treated?

Your child's healthcare provider may make a diagnosis of rotavirus based on your child's symptoms. While not typically done, a stool sample may be collected and analyzed to confirm diagnosis.

There is no treatment for Rotavirus. The virus is self-limiting. Your child may need extra fluids in order to prevent dehydration. If you notice a decrease in your child's urine output or if your child cries with few or no tears, had a dry mouth, is unusually sleepy or fussy contact your child's healthcare provider.

How can the spread of the disease be prevented?

1. Good handwashing especially before preparing meals and after diapering a child.
2. Clean all meal preparation surfaces and surfaces children touch frequently.
3. Clean children's toys frequently – a diluted bleach mixture can be used to clean and sanitize items or surfaces.

The Advisory Committee on Immunization Practices (ACIP), recommends routine vaccination of children against Rotavirus. Two vaccines are available to prevent the spread of Rotavirus. Rotateq is a 3 dose series and is recommended to be given at 2 months, 4 months, and 6 months. Rotarix is a 2 dose series recommended to be given at 2 months and 4 months.

Who should be excluded?

Children should be excluded from childcare if they are experiencing more than 2 loose stools per day or diarrhea cannot be contained in diapers as it impedes the caregiver's ability to care for other children in a safe and sanitary manner.

Reportable?

No, rotavirus is not reportable by New Hampshire law. However, the Bureau of Infectious Disease Control professionals are available for consultation at (603) 271-4496.



RESPIRATORY SYNCYTIAL VIRUS INFECTION (RSV)

RSV is an infection of the small air passages of the lung causing bronchiolitis and pneumonia. RSV is most common in children under 1 year of age but it can affect anyone at any age. Most children have been infected with RSV by the time they turn 2 years of age, but only a few will develop serious illness. Re-infection can occur throughout life.

What are the symptoms of RSV?

Small infants may have irritability, decreased activity and breathing difficulties as early symptoms. Older children may have symptoms similar to any other respiratory infection, such as cough, sneezing, fever, runny nose, wheezing, and decrease in appetite.

How is RSV spread?

RSV is spread when the infected person sneezes or coughs the droplets into the air. The person who is at risk then inhales the virus from the air. The infection can be spread by direct contact with nasal or oral secretions from the infected person. Activities such as kissing the face of a child or coming into contact with surfaces that have been infected with secretions and then rubbing the eyes or nose can spread RSV. RSV is common in winter and early spring.

What is the incubation period for RSV?

The incubation period can range from 2 - 8 days but is usually 4 - 6 days.

How can RSV be prevented?

Steps can be taken to limit exposure and to help stop the spread of RSV infection:

- Cover coughs and sneezes,
- Wash hands frequently and correctly,

- Avoid sharing cups and eating utensils with others,
- Refrain from kissing others,
- Cleaning contaminated surfaces frequently (i.e., door knobs, toys, etc.)

Should the child with RSV be excluded?

Children with fever and respiratory symptoms should be excluded from childcare until they no longer have a fever. Children with respiratory symptoms should be kept separated from children with high-risk conditions.

Is RSV Reportable?

No. RSV is not reportable by New Hampshire state law to the Division of Public Health Services, Bureau of Infectious Disease Control; Public Health Professionals are available for consultation at (603) 271-4496.



RUBELLA (GERMAN MEASLES)

Rubella is a childhood viral disease, which causes a rash, low-grade fever and swollen glands in the area behind the ears. Some children may have a very mild illness with no rash at all. However, if a pregnant woman without protection against rubella is exposed to the disease, there could be harmful effects to her baby. **Pregnant women should consult their physician at once if they have been exposed to rubella!**

Who gets this disease?

Some young adults remain susceptible to rubella due to high school graduation prior to the school rubella vaccination laws. Rubella is most often seen in unimmunized children and in this susceptible adolescent and young adult group.

How is it spread?

The virus is spread by large droplets spread through the air from sneezing or coughing, or by direct contact with infected nasal or saliva secretions.

What are the symptoms?

1. A two to three day rash that begins on the face and quickly spreads downward over the entire body.
2. A low-grade fever of 101-degrees Fahrenheit or less.
3. Swollen glands behind the ears. (NOTE: this may appear before the rash). Joint and body pain is most commonly experienced in adults.
4. Symptoms appear 12-23 days after exposure; usually 16-18.

Infected persons are contagious from one week **before** to 5-7 days after the appearance of the rash. A small percentage of properly immunized children may be infected with rubella due to occasional vaccine failure.

How can the spread of this disease be prevented?

The national Advisory Committee on Immunization Practices (ACIP) recommends that children be immunized against rubella after 12-months of age. The two dose vaccine should be completed at 12-15 months of age and 4-6 years. This immunization is **required** for both childcare and school attendance. The vaccine is usually combined with measles and mumps vaccine.

Who should be excluded?

A child or staff member with rubella or suspect rubella should not return to daycare until seven days after the onset of the rash.

Reportable?

Yes. Rubella is reportable **immediately** by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



SALMONELLOSIS

Salmonella is an illness caused by the bacterium *Salmonella* of which there are numerous types. Salmonellosis most commonly causes intestinal illness but occasionally may infect the blood stream. The bacterium is passed in the stool of infected individuals.

Who gets this disease?

Any person can become infected with Salmonella. The disease is more likely to cause a severe infection in the very young, the very old and in people with underlying diseases, such as cancer.

How is it spread?

In the childcare setting, Salmonella is usually spread by the fecal-oral route. The bacterium can also be spread by contaminated food or drink. It is commonly found in uncooked or undercooked meat (especially beef), poultry and eggs, and unpasteurized milk. Salmonella can also be spread to children and adults from infected pets such as turtles, lizards, snakes, dogs, cats, ducklings, chickens and other birds. (NOTE: Because of this hazard, these types of animals should not be in childcare facilities.)

What are the symptoms?

The intestinal illness caused by Salmonella is characterized by diarrhea (mild or severe), fever, abdominal cramps and occasional vomiting.

How soon do symptoms appear?

The symptoms generally appear from 6-72 hours after exposure, usually appearing 12-36 hours. Sometimes symptoms take up to 7 days to appear.

Can a person have this disease and not know it?

Yes. Some people may not have symptoms serious enough to cause them to seek medical attention. In some cases of Salmonella infection, after the diarrhea illness is over the organism may be excreted in the stool for months to over a year. This is called the carrier state.

What is the treatment?

Although most people with Salmonellosis will recover on their own, in some cases healthcare providers may prescribe antibiotics. Some antibiotics may lengthen the amount of time the bacteria are found in the stool, however.

How can the spread of this disease be prevented?

1. Wash hands thoroughly after using the toilet *and diapering children*.
2. Wash hands thoroughly before preparing food.
3. Be certain all foods in the childcare center are thoroughly cooked – especially beef, poultry and eggs.
4. Any leftover food should be discarded.
5. Food preparation surfaces (e.g., tables, counters, cutting boards, kitchen utensils) should be carefully washed and disinfected after preparing food.
6. Unpasteurized milk (goat or cow) is frequently contaminated with Salmonella and other bacteria; it should **not** be used in a childcare setting.
7. Staff with active diarrhea or gastrointestinal (GI) illness should not work in a childcare facility until they are free of symptoms for 48 hours.
8. Keep children with diarrhea at home.
9. High-risk animals like turtles and lizards should not be in child care settings.

SALMONELLOSIS (cont.)

Who should be excluded?

Infected persons shall be excluded from foodhandling, working in a child care facility and from direct care of hospitalized and institutionalized patients until they are no longer infectious or symptomatic (48 hours after resolution of symptoms).

Reportable?

Yes. *Salmonella* is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



SCABIES

Scabies is a common skin infestation caused by microscopic parasites called a mite. The female mite burrows under the skin to lay her eggs, which subsequently hatch and start the infestation cycle again.

Symptoms of scabies do not appear until weeks after exposure. The skin reaction is probably due, in part, to a sensitization or “allergic” reaction to the mites. On re-exposure, symptoms can start within days. The infestation is in the form of an intensely itchy rash, which consists of red bumps and burrows (i.e., short, wavy, thread-like lines in the skin). Itching tends to increase at night.

Who gets this disease?

Anyone who has contact with the mite can become infested with scabies.

How is it spread?

The mite is spread by direct skin-to-skin contact, or by skin contact with clothes, bedding, etc. that the mites have crawled onto. The mites can survive only three days off the body and cannot jump or fly. They require direct contact with skin to spread. The incubation period for this disease is two to six weeks after exposure.

How is it diagnosed and treated?

It can be diagnosed by the typical appearance of the rash and accompanying symptoms and by examining skin scrapings under the microscope to see the mite or its' eggs.

Scabies is treated with one of several prescription mite-killing creams or lotions, which are applied once to the skin and then washed off after a specified period of time. Medicine to relieve the itching is often necessary. (Note: Even after effective therapy, itching can persist for up to 2 to 4 weeks). Treatment is recommended for all household members – even those without symptoms – due to the high likelihood of spread within a household. Prophylactic treatment is also recommended for people who have had direct skin-to-skin contact with an infected individual.

How can the spread of this disease be prevented?

1. Follow previously outlined principles of hand washing and cleanliness at the childcare facility.
2. Children should not share personal items, cribs, mats or clothing.
3. Each child's dirty clothing should be stored separately and sent home for laundering.
4. If a case of scabies occurs in the daycare facility:
 - a. Wash and dry on the hot cycle all washable items belonging to the center that came into contact with the child's skin during the 72 hours prior to treatment.
 - b. Difficult to wash items (e.g., stuffed toys, pillows) can be stored in tightly closed plastic bags for four days and then used again. (Note: The mite cannot live off the body for more than three days).
 - c. Thoroughly vacuum any carpet or upholstered furniture.

SCABIES CONT.

5. Pesticide sprays are not recommended and can be harmful to people and animals.
6. If a rash, which appears suspicious for scabies, is noticed on a child in the childcare center, tell the parents the child should be seen by a healthcare provider.

Who should be excluded?

Infected individuals should be excluded until treatment is completed. If two or more cases occur in the daycare center, call the Division of Public Health Services, Bureau of Infectious Disease Control for further recommendations.

Reportable?

No, scabies is not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for a consultation at (603) 271-4496.



SHIGELLOSIS

Shigellosis is an intestinal illness caused by *Shigella*, which is a family of bacteria that is comprised of 40 different types.

Who gets this disease?

Anyone can, but shigellosis is recognized more often in young children.

How is it spread?

Among small children in a childcare facility, the fecal-oral route usually spreads Shigella. It takes very few swallowed Shigella bacteria to cause infection (as opposed to Salmonella, which take many bacteria to cause infection); so it can easily become a problem in a childcare setting. Shigella can also be spread through stool-contaminated food, drink or water.

What are the symptoms?

Shigella can cause mild or severe diarrhea. In mild cases, a person may have only watery stools for several days. In severe cases, the diarrhea may have traces of blood or mucous and may lead to dehydration. Fever, severe cramps, vomiting, headache and even convulsions (in young children) can occur.

How soon do symptoms appear?

The symptoms usually occur 2-4 days after exposure, but it can be as long as seven days.

Can a person have this disease without knowing it?

Yes, Shigella can be in the stool of children or adult who are not sick and do not have diarrhea. These asymptomatic carriers may transmit infection; rarely the carrier state persists for months or longer.

What is the treatment?

Although most people with Shigellosis will recover on their own, antibiotics shorten both the length of the illness and the amount of time bacteria is passed in the stool, which is particularly important in daycare settings.

How can the spread of this disease be prevented?

1. Wash hands thoroughly after using the toilet or diapering a child.
2. Wash hands thoroughly before preparing food.
3. Keep children who have diarrhea at home.
4. Staff with positive stool cultures for Shigella should not prepare food or feed children.

Who should be excluded?

Infected persons shall be excluded from food handling, from childcare facilities and from direct care of hospitalized or institutionalized patients until stool cultures are free of Shigella on two consecutive specimens collected not less than 24 hours apart. If antibiotics have been taken, the initial cultures shall be obtained at least 48 hours after the last dose.

Reportable?

Yes. Shigellosis is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496,



STREP THROAT & SCARLET FEVER

Group-A *Streptococci* are bacteria that can cause a variety of illnesses, the most common of which are strep throat, scarlet fever and impetigo.

Strep Throat is a sore throat caused by this bacterium. Cold viruses, not strep bacteria, cause the vast majority of sore throats in both children and adults. Strep sore throats tend to be accompanied by fever, tender swollen neck glands, headache and stomach ache but can also occur with cough, runny nose, or other cold symptoms.

Scarlet Fever is a form of strep infection caused by bacteria that produce a substance, which causes a skin rash. The rash is usually red with fine bumps that feel like sand paper and is most noticeable on the neck, chest, groin, or on the inner surface of the knees, thighs and elbows. The rash does not usually involve the face, but cheeks are flushed and there is paleness around the mouth. The tongue may be reddish and look like the surface of a strawberry. The rash may only last a few hours. Scarlet fever is no more serious than strep throat.

Treatment of strep infections with antibiotics may not dramatically change the length or severity of the sore throat symptoms or rash. It is important to treat strep infections in children to prevent its spread to others and the possible development of rheumatic fever.

Note: Rheumatic Fever (i.e., abnormalities of the heart valves and inflammation of the joints) is very rare in the United States today, but can develop five to six weeks after any type of untreated strep infection. In rare instances, kidney disease can also occur following a strep infection.

Who can get this disease?

Anyone can get strep throat or scarlet fever, but it is uncommon in children under three years of age (as is rheumatic fever). It is most common in school-aged children, in winter months and in crowded situations (e.g., schools, childcare centers). Often if one person in a family gets it, other do also, especially brothers and sisters.

How is it spread?

During infections, strep is in nose and mouth secretions so it can be coughed, sneezed or smeared around on hands, dishes, food, toys and similar objects. The incubation period is two to five days. Unlike colds, children are probably not infectious during this incubation period. Children are most likely to pass strep to others when they have symptoms and until they have been on antibiotic treatment for 24 hours.

How soon do symptoms appear?

The symptoms generally appear within one to three days. Because of a possible association with Reye's Syndrome (i.e., vomiting, liver problems and coma), salicylate-containing products (i.e., aspirin) are not recommended for control of fever.

How are they diagnosed and treated?

The diagnosis of strep throat is made by a throat culture. It usually takes 24-48 hours to grow the bacteria. There are several recently developed rapid tests, which can diagnose a strep infection in less time. Strep infections are treated with an oral antibiotic for 10 days. Occasionally a healthcare provider may give a single long-lasting injection. Depending on the symptoms, the healthcare provider may give antibiotics immediately or wait for the throat culture results.

STREP THROAT & SCARLET FEVER

(cont.)

How can the spread of this disease be prevented?

1. Enforce handwashing and general cleanliness in the childcare facility. If a case of strep throat has been diagnosed, it is particularly important to remember that:
 - a. Staff and children should wash their hands after wiping/blowing noses and before eating or preparing food.
 - b. Toys and surfaces should be washed and disinfected daily.
 - c. Each child should have his/her own cup; preferably, disposable cups should be used.
 - d. Food should not be shared.
 - e. All eating utensils should be carefully washed in hot, soapy water, disinfected and air-dried. A dishwasher is best.
2. Keep children's noses clean and dry; wash hands immediately after wiping noses.
3. Teach children to cough/sneeze to one side toward the floor and into a tissue. They need to wash their hands afterward.
4. If there is a case of strep throat in the facility, children and staff who develop sore throat symptoms should be seen by their healthcare provider to be tested for strep. Generally, children and staff who do not have symptoms do not need to be cultured.

Who should be excluded?

Children and staff should be excluded until 24 hours after beginning antibiotic therapy and until there is no fever present.

Reportable?

No, this type of Streptococcal infection is not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, Public Health Professionals are available for consultation at (603) 271-4496.



SWIMMER'S ITCH (Cercarial Dermatitis)

Swimmer's itch (Cercarial Dermatitis) is caused by human contact with a parasite that normally is found in some species of birds or small animals. The adult stage of the parasite lives in the animals' intestines and is shed into the water with excreted feces. Snails feed off the waste and release the young parasite (called cercaria) into the water. When this parasite burrows into a person's skin it causes an allergic, itchy rash. The parasite is commonly found at the water's surface and near the shore.

Who gets this disease?

Anyone who swims in water where this parasite lives is susceptible. The parasite may live in both fresh and salt water.

How is it spread?

Most commonly, individuals get the infection by swimming or wading in infested water and then allowing water to evaporate off the skin rather than drying the skin with a towel. The parasite (cercaria) will burrow underneath the person's skin. Because these parasites cannot develop inside a human, they soon die. The infection is not spread from person-to-person.

What are the symptoms?

The symptoms include an initial prickling sensation after leaving the water shortly followed by an itchy rash, which reaches maximum intensity in 2 to 3 days and can persist for a week. Scratching the area may result in secondary bacterial infections. Repeated exposure increases a person's sensitivity to the parasite, possibly resulting in more severe symptoms.

What is the treatment?

It is best to check with a physician for treatment. Sometimes medication is given to ease the itching and allergic reaction. If secondary infection develops, antibiotic treatment may be indicated.

How can Swimmer's Itch be prevented?

1. Avoid swimming in known infested waters. Swim in deeper water. The parasite is usually found in shallow waters. Babies sitting along the shore are most vulnerable.
2. Vigorously towel your entire body immediately upon leaving the water. This will help brush off any cercaria that may be on the skin, also rinsing off with a quick shower as soon as you leave the water may be helpful.
3. Use a waterproof sunscreen. This forms a chemical barrier that may prevent the parasite from sticking to the body.

Who should be excluded?

There is no need to exclude someone from a facility since Swimmer's Itch is not spread from person-to-person.

Reportable?

No, Swimmer's Itch is not reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control. However, public health professionals are available for consultation at (603)-271-4496.

For questions in sampling public swimming areas, please contact the NH Department of Environmental Services, Public Beach Sampling Program at (603) 271-0698.



TETANUS

Tetanus is a bacterium that lives in the soil and can enter the body through a cut or wound. The bacteria produce a poisonous substance – exotoxin – that causes the clinical illness.

Who gets this disease?

Tetanus occurs almost exclusively in unimmunized or inadequately immunized persons. Previously having tetanus does not result in immunity to subsequent infections. Vaccination is required after initial recovery.

How is it spread?

Unlike other vaccine-preventable diseases, tetanus is not spread from person-to-person. It occurs when the bacterium in soil or dust is introduced into the body through a wound.

What are the symptoms?

The poisonous exotoxin produced by the *Clostridium tetani* bacteria causes muscles to go into spasms of the face/neck, abdomen, or area where the initial infection occurred. Paralysis and death can result. Sometimes tetanus is called “lockjaw”.

How can Tetanus be prevented?

The Advisory Committee on Immunization Practices (ACIP) recommends immunizing children against tetanus – along with diphtheria and pertussis – beginning as early as six weeks of age. The diphtheria-tetanus-acellular pertussis (DTaP) vaccine is **required** for both childcare and school attendance. The five dose series should be completed at 2 months, 4 months, 6 months, and 15-18 months, and 4-6 years of age

Tdap/Tetanus diphtheria and acellular pertussis should be given once between the ages of 11-18 years. Booster doses of tetanus-diphtheria toxoid (Td) vaccine every 10 years after finishing the childhood primary immunization series are necessary to maintain protection against tetanus. Tdap is available as a one time dose for adults who have not recently received a tetanus vaccine. Also, it is important to be sure that all cuts, scrapes and puncture wounds are cleaned well with soap and water. Consult your healthcare provider for need of tetanus vaccine after a wound.

Who should be excluded?

There is no need for the child or the childcare worker to be excluded as tetanus is not spread from person-to-person.

Reportable?

Yes, tetanus is reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



TUBERCULOSIS

Tuberculosis (TB) is a disease caused by a certain type of bacterium. A person *who is sick* with **active tuberculosis disease** may spread the germ when they cough or sneeze. If others inhale the bacteria from the air, they may become infected. But not everyone who is exposed will become infected. A person with Latent TB infection does not feel sick and cannot spread the germs to others.

Does infection mean you will be sick?

No. Many people were infected with TB many years ago when the disease was very common. Only 5-10% of people who are infected will ever get the disease unless they have an impaired immune system.

What is a TB test?

A skin test is a method of determining if a person has been infected with the TB germ. A positive TB skin test reaction, however, does NOT necessarily mean the person has TB disease.

Like the skin test there is a blood test that can test for tuberculosis infection. This test is often called an IGRA (Interferon gamma release assay). The IGRA does not diagnose active TB disease. The IGRA is currently not recommended for children under two.

How is the test given?

For the skin test—a small amount of PPD (purified protein derivative) is injected just under the surface of the skin on the forearm. In 48 to 72 hours, a healthcare provider or nurse will read the test by inspecting the skin.

The IGRA is a simple blood draw and there is no return visit for reading necessary and a doctor will help determine the results.

Who should have tuberculosis test?

Persons who have been exposed to an active case of TB, persons born in a foreign country (where TB is common), people infected with HIV (human immunodeficiency virus), healthcare workers and pre-school age childcare staff. It is a law that persons with a positive IGRA be reported to the Bureau of Infectious Disease Control.

Persons who have a documented positive reaction to a TB skin test do not need repeat skin tests. All persons with a positive skin test or a positive IGRA should be evaluated yearly for signs of active disease.

How can TB be prevented?

People who have a positive reaction to a TB skin test or a positive IGRA can prevent disease by taking medications.

Who should be excluded?

A person with a positive TB skin test or positive IGRA should have a medical examination and a chest x-ray and discuss with a healthcare provider about taking preventive therapy. Persons diagnosed or suspected to have active TB disease should be reported immediately to the Bureau of Infectious Disease Control and should be excluded from attending or working in a childcare center until they are determined to be non-infectious by both a healthcare provider and the Bureau of Infectious Disease Control.

Reportable?

Yes. Suspect and cases of active tuberculosis and persons with a positive IGRA are reportable by New Hampshire law to the Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496.



WEST NILE VIRUS

What is West Nile virus?

West Nile virus (WNV) is an uncommon but serious mosquito-borne infection. The virus can be transmitted to horses, other animals, and, in rare cases, people.

How do people get West Nile virus?

WNV is spread by the bite of an infected mosquito. Mosquitoes become infected when they feed on infected birds. Infected mosquitoes can then spread WNV to humans and other animals when they bite. In a very small number of cases, WNV also has been spread through blood transfusions or organ transplants, breastfeeding and even during pregnancy from mother to baby. WNV is not spread through casual contact such as touching or kissing a person with the virus.

What are the symptoms of West Nile virus in humans?

Most WNV infections do not cause any symptoms. Mild WNV infections can cause fever, headache and body aches, often with a skin rash and swollen lymph glands. In a small percentage of people infected by the virus, the disease can be serious, even fatal. Most severe infections can cause headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, paralysis, and sometimes death.

How soon after exposure do symptoms appear?

Symptoms of WNV usually appear 2 to 14 days, but usually 2-6 days after the bite of an infected mosquito.

How is West Nile virus diagnosed?

Diagnosis is based on tests of blood or spinal fluid.

Who is at risk for West Nile virus?

Anyone can get WNV, but some people are at increased risk, such as people living in or visiting areas where the disease is common, or people who work outside or participate in outdoor recreational activities in areas where the disease is common. Persons older than 50 years of age are more likely to develop serious symptoms of WNV if they do get sick and should take special care to avoid mosquito bites. All donated blood is checked for WNV before being used. The risk of getting WNV through blood transfusions and organ transplants is very small, and should not prevent people who need surgery from having it. If you have concerns, talk to your health care professional.

What is the treatment for West Nile Virus?

There is no specific treatment for WNV. In more severe cases, intensive supportive therapy is indicated, i.e., hospitalization, intravenous (IV) fluids and nutrition, airway management, ventilator support (ventilator) if needed, and prevention of secondary infections (pneumonia, urinary tract, etc).

How common is West Nile virus?

WNV was first identified in NH in 2000. WNV has been found in horses, mosquitoes and several species of birds. Since 2010 three human cases of WNV were reported in the state.

How can West Nile virus be prevented?

A vaccine is available for horses, but not for humans. Prevention of the disease centers around controlling mosquitoes and on individual action to avoid mosquito bites. To avoid being bitten by the mosquitoes that transmit WNV:

West Nile Virus (cont.)

- If possible, stay inside between dusk and dawn, when mosquitoes are most active.
- When outside between dusk and dawn, wear long pants and long-sleeved shirts.
- Use an insect repellent with DEET or Picaridin according to manufacturer's directions when outside. Oil of lemon eucalyptus and IR3535 have been found to provide protection similar to repellents with low concentrations of DEET.
- Put screens on windows and make sure they do not have holes.
- Eliminate standing water and other mosquito breeding locations from your property. Do not alter natural water bodies. The management of ponds and wetlands is regulated by the Department of Environmental Services and any alterations require a permit before work may begin.

For specific concerns about West Nile virus, call the New Hampshire Division of Public Health Services, Bureau of Infectious Disease Control at (603) 271-4496. For further information, refer to the Centers for Disease Control and Prevention website at www.cdc.gov or the New Hampshire department of Health & Human Services website at www.dhhs.nh.gov.



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GLOSSARY

Antibody – A protein substance produced by the defense system in response to something foreign. Antibodies help protect against infections.

Asymptomatic – Without symptoms. For example, a child may have the hepatitis A virus in the stool and not have symptoms of illness, but will still be able to infect others.

Bacteria/Bacterium – One celled organism with a cell wall that can survive in and out of the body. They are much larger than viruses, and they can usually be treated effectively with antibiotics. Examples of bacteria include *Salmonella enteritidis* and *Bordetella pertussis*. Bacterium is singular, bacteria, plural.

Bloodborne – A disease that can be transmitted through the blood.

Carrier – A person who is infected with a specific organism, who has no symptoms of disease and who can spread the disease to others. For example, some children may be carriers of the organism *Haemophilus influenza* or *Giardia lamblia* and have no symptoms.

Chronic – An infection or illness that lasts a long time (i.e., months or years).

Communicable – When an infected person is capable of spreading infection to another person.

Contagious Period (Communicable Period) – The period of time when an infected person is capable of spreading infection to another person.

Contamination – The presence of infectious germs in or on the body, on environmental surfaces, on articles of clothing, or in food or water.

Diarrhea – Increased number of stools compared with a person's normal pattern, along with watery stools, and/or decreased stool form. Uncontrolled diarrhea is diarrhea that cannot be contained by the diaper or use of the toilet.

Direct Contact – Diseases that are spread by touching the infected area on another person's skin or occasionally by touching an object that is contaminated with infectious secretions or parasites.

Disinfection – Killing of germs outside of the body with chemical (e.g., bleach, alcohol), or physical (e.g., heat) agents. Surfaces should be cleaned first and then disinfected.

Enteric – Describing infections of the intestines (often with diarrhea).

Febrile – Having a fever.

Fever – An elevation of body temperature.

Hygiene – Protective measures taken by individuals to promote health and limit the spread of infectious diseases. These include: **a**) washing hands with soap and running water after using the toilet, after handling anything contaminated, and before eating or handling food; **b**) keeping hands, hair and unclean items away from the mouth, nose, eyes, ears, genitals and wounds; **c**) avoiding the use of common or unclean eating utensils, drinking glasses, towels, handkerchiefs, combs and hairbrushes; **d**) preventing exposure to droplets from the nose and mouth by covering the face when coughing or sneezing; **e**) washing hands thoroughly after caring for another person; and **f**) keeping the body clean by frequent (at least daily) baths or showers using soap and water.

GLOSSARY (cont.)

Immunity – The body's ability to fight a particular infection. For example, a child acquires immunity to diseases such as measles, mumps, rubella and pertussis after natural infection or by immunization. Newborns initially have the same immune status as their mothers. This type of immunity usually disappears within the first six months of life.

Immunizations – Vaccines that are given to children and adults to help them develop protection (antibodies) against specific infections. Vaccines may contain an inactivated or killed agent, or a weakened live organism. Childhood immunizations include protection against *diphtheria, pertussis, tetanus, polio, measles, mumps, rubella, Haemophilus influenza type b, hepatitis A, hepatitis B and varicella*. Adults need to be protected against measles, mumps, rubella, tetanus and diphtheria, and chicken pox.

Incubation Period – Time between exposure to an infectious agent and the beginning of symptoms.

Infection – When an infectious agent multiplies in the body.

Infectious – Capable of causing an infection.

Jaundice (icterus) – Yellowing of the eyes or skin.

Organisms – Living things. Often used as a general term for germs (e.g., bacteria, viruses, fungi, parasites) that can cause disease.

Parasite – An organism that lives on or in another living organism.

Pathogen – Disease causing organism.

Prophylaxis – Measures taken at the time of exposure of an infectious disease, or shortly thereafter, to try and prevent the disease. This may include medication or special immunization.

Purulent – Forming or containing pus.

Secretions – Wet material produced by cells or glands, which has a specific purpose in the body, such as saliva.

Systemic – Pertaining to a whole body rather than to one of its parts.

Transmission – The passing of an infectious organism or germ from a source of infection to a person. (Examples: person-to-person or animal to person).

Virus – A microscopic organism, smaller than bacteria, which may cause disease. Viruses can grow or reproduce only in living cells. Examples of viruses include hepatitis B, HIV and the common cold. .

Review

Risk Factors Of Stroke: Literature Review

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ARTICLE INFO

Article History

Submit : Dec 8, 2023

Revised : Dec 24, 2023

Accepted : Dec 27, 2023

Keywords:

Public Knowledge

Risk Factors

Stroke

ABSTRACT

Background: *Stroke is the most common cause of disease in the world and is the highest cause of death in Indonesia, so prevention is very important to minimise the incidence of stroke. The most appropriate effort to prevent stroke is to control stroke risk factors. The purpose of the literature review is to analyse the risk factors associated with stroke events in patients.*

Methods: *The method used is a literature review using a journal database from Pubmed, Science Direct, and Google Scholar. In the 2019-2023 range, with the keywords "stroke, factors causing stroke", and stroke, 220 articles were obtained*

Results: *Search for articles according to the criteria and obtain ten articles that are ready to be reviewed. These articles explain the risk factors for stroke. It is hoped that stroke patients will try to control stroke risk factors*

Conclusion: *This literature review shows that the risk factors for stroke are increasing due to a history of diseases such as hypertension, diabetes mellitus, age, gender, high cholesterol, obesity, lack of public knowledge about stroke and consumption of alcohol, smoking and drugs, including a lifestyle*

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 Cite this as

: Oliveira, A. B. de ., Muhith, A., & Zahro, C. (2023). Risk Factors Of Stroke: Literature Review. Journal of Applied Nursing and Health, 5(2), 347–354. <https://doi.org/10.55018/janh.v5i2.166>

Introduction

Stroke is the third leading cause of death in the world after cancer and heart disease and the leading cause of disability. Stroke can affect anyone, both young and old, male or female. All groups, both low and high socioeconomic groups and rural and urban communities suffer strokes ([Dhamoon et al.](#), 2021; [Jeong et al.](#), 2020; [Tang et al.](#), 2019). According to WHO (World Health Organization), 1 in 4 people are estimated to experience a stroke in their lifetime. Every year, as many as 15 million people in the world suffer a stroke, around 5 million people experience permanent

paralysis. The number of stroke cases in Southeast Asia is 4.4 million.

Indonesia ranks first in stroke sufferers in Asia. This causes the problem of stroke to become increasingly important and urgent. ([Riskeidas](#), 2018) data shows that the highest stroke incidence rate in Indonesia is in East Kalimantan Province (14.7%), while the lowest cases are in Papua Province (4.1%). The incidence of stroke increases with increasing age, where the age group 75 years and over has the highest cases (50.2%) and the lowest is 15-24 years old (0.6%). The prevalence of stroke between men and women is almost the same, namely 11% and 10.95%.



In 2013-2018, the prevalence of stroke in West Nusa Tenggara province increased by 4.5% to 8%. Based on data from the Praya City Health Office, there were 118 cases. Based on Praya Hospital Medical Records data in 2019, there were 209 stroke cases, and 22 people died (13.87%). In 2020, there were 221 stroke cases, and 53 people died (23.98%). In 2021, stroke cases increased significantly compared to the previous two years, namely 318 people, of which 168 were men (52.84%) and 150 women (47.16%), while 81 people died (26.79%).

Risk factors for stroke consist of factors that cannot be modified and can be modified. Risk factors that cannot be modified include age, race, gender and genetics, while risk factors that can be modified include hypertension, diabetes mellitus, atrial fibrillation, smoking and alcohol addiction. Hypertension is the main factor that causes stroke in around 95% of cases. Unhealthy lifestyle habits such as consuming fast food, preservatives, high salt, high sugar, lack of physical activity, fatigue, work stress and smoking also increase the risk of stroke ([Chishi et al., 2023](#); [Sykora et al., 2022](#); [Zhao et al., 2019](#)). Low knowledge regarding risk factors for stroke, both in terms of recognising stroke symptoms, stroke services that are not yet optimal, and low levels of individual compliance or compliance with stroke therapy programs to prevent recurrent strokes, is a weak point in stroke management in the world.

Based on data from Basic Health Research ([Riskeidas, 2018](#)) compared with Riskeidas 2013, it was found that there was a change in trend; there was a significant increase in patients with people suffering from stroke in old and productive age. Epidemiologists predict that currently and in the future, around 12 million people in Indonesia aged over 35 years will have the

potential to experience a stroke. Therefore, comprehensive efforts to control stroke risk factors are urgent in the health sector so that individuals in old age and productive age can avoid stroke attacks ([Grimaud et al., 2019](#); [Héja et al., 2021](#); [Kono et al., 2020](#); [Wilbers et al., 2020](#))

Methods

This method uses the method of *literature review*. Article searches were carried out in September 2023 using journal databases from Science Direct, Pubmed, and Google Scholar. Journal article searches were carried out systematically from the last four years, namely 2019-2023, with the search keywords "Stroke" and Risk Factors for Stroke. For relevant searches. The research will filter the articles as a whole from the selected references without the exception of the title and abstract so that more and more relevant articles are obtained.

Inclusion criteria on *systematic review* These are 1) Respondents are stroke patients, 2) the intervention focuses on risk factors for stroke, and 3) Article selection is not limited to methodology, population and results. Meanwhile, the exclusion criteria *systematic review* These are 1) research that is not related to risk factors for stroke, 2) research that is not conducted on stroke patients, 3) research that is not published such as final scientific papers (thesis, theses and dissertations), abstracts, conferences and case reports.

Articles that have been obtained from the database will be assessed using the PICO method in accordance with the inclusion and exclusion criteria, which contain 1) the title of the article, 2) the author and year of publication of the article, 3) the research methodology (population, sample, intervention and analysis). Research result.



Results

Searches for international research articles were obtained from Science Direct,

Google Scholar and PubMed. From the search results, further identification according to the inclusion and exclusion criteria resulted in 10 articles being obtained.

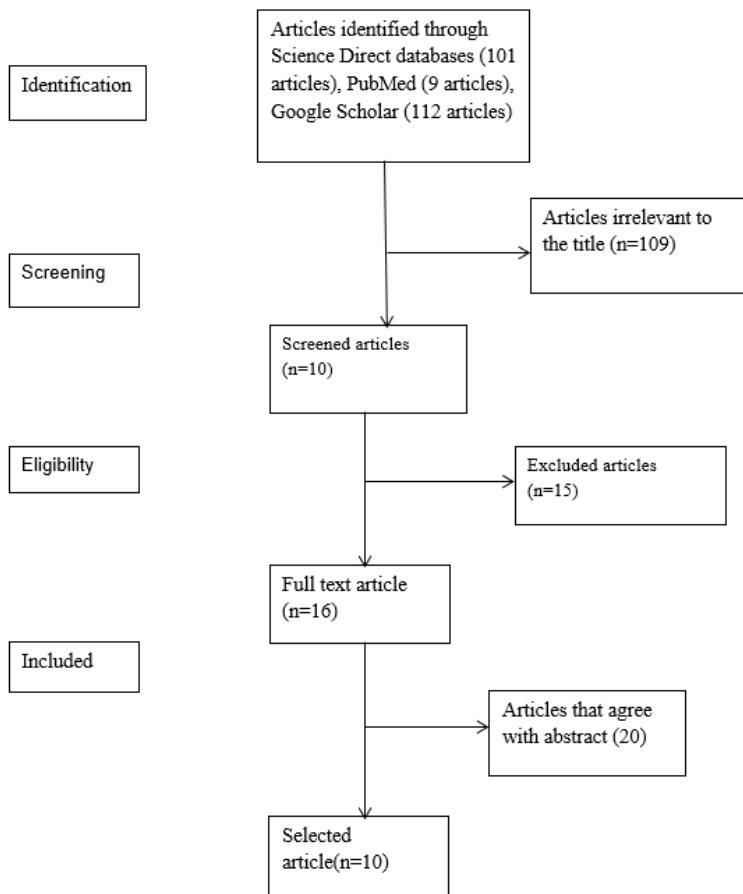


Figure 1. Literature Search Flow Diagram

Table 1. Data Distraction Method

No	Title, author, and year of publication	Research Methodology	Research result
1	Analysis of associated risk factors with the incidence of stroke: A Literature Review (NURHAYATI, 2021)	Design: descriptive non-experimental correlation, namely cross-sectional correlation method Subjects: 40 patients Variable: analysis of risk factors for stroke Instrument: Article search via Science Direct and Google Scholar	From the results of this research that was reviewed, it was obtained shows that the therapy given is a risk factor for stroke in stroke patients
2	Risk factors that influence stroke incidence (Utama & Nainggolan, 2022)	Design: Systematic literature review Subject: 10 articles Variable: risk factors that influence the incidence of stroke. Instrument: article search via Google Scholar, PubMed.	Of the ten articles that have been reviewed, the risk factors for stroke have increased, namely gender, genetics, age and lifestyle.
3	Analysis of risk factors for stroke (Kencana et al., 2022)	Design: case-control Subjects: The case group is stroke patients repeated for a total of 66 participants, the two control groups were examined for gender and history variables hypertension, DM, Dyslipidemias.	From the research results shows that ($p<0.05$ OR=2.941)
4	Analysis of risk factors for stroke in stroke patients (Manurung & Diani, 2015)	Design: observational Analytical with a case-control approach. Subjects: 84 patients (42 people for the case group and 42 people for control group) Variable: analysis of risk factors for stroke. Instrument: cleaner	The research results showed that based on statistical tests, the risk that could not be modified was obtained by historical factors, family illness with a p-value of 0,016; risk factors that can be modified are total cholesterol p-value of 0,000, hypertension with a p-value of 0,001, LDL with p value 0,002.
5	Risk factors for stroke (Lilipory et al., 2019)	Design: case-control using a retrospective approach. Subjects: 64 people with a	The results of this study are a risk factor for stroke, namely hypertension ($p= 0.00$ OR=8.52;

No	Title, author, and year of publication	Research Methodology	Research result
		ratio of 1:1 (32 cases and 32 controls)	95%. CI physic p=1.00, OR=0.80; 95% CI 0.21-2.95)
6	Factor analysis the occurrence of stroke and types of stroke	Design: retrospective Subject: 200 respondents Variable: analysis of risk factors for stroke	Results of this research showed that some respondents experienced ischemic stroke.
7	Risk factors for stroke	Design: observational analytical. Subjects: 47 respondents with a purposive sampling technique. Variable: risk factor the occurrence of a stroke Instrument: questionnaire with Spearman rank data analysis.	Results of this research indicates hypertension is associated with the risk of stroke (p=0.05 OR= 7.200), smoking is associated with the risk of stroke (p= 0.04; OR=8.144), obesity (p=0.000; OR=16.0000) hypertension and obesity are the most dominant factors.
8	Analysis of stroke risk factors (Anissa et al., 2020)	Design: Analytical observational with case-control Variable: analysis of risk factors for stroke. Subjects: 88 respondents with 44 cases and 44 controls.	Results of this research show that a history of hypertension and age are still risk factors for stroke
9	Risk factors for ischemic stroke and haemorrhage (Othadinar et al., 2019)	Design: descriptive Variable: Risk factor incidence of ischemic and hemorrhagic stroke Subjects: All ischemic and hemorrhagic stroke patients who stayed at the National Brain Center Hospital in 2018 2016-2017	The articles reviewed show that the factors are age, history of illness, hypertension, DM, and lifestyle, which influence the risk factors for stroke.
10	Risk factors for stroke in hypertensive patients (Dedi et al., 2023)	Design: observational with a population case approach from stroke research suffering as many as 150. Subjects: Researchers took a sample of 20%.	The research results showed that the respondents were healthy by 13(43%) and respondents who did not as many as 17 (56%)

Discussion

The research results of the ten journals reviewed proved that the risk factors for stroke were increasing due to a history of hypertension, DM, high cholesterol, age, gender and lifestyle. Stroke is the most common cause of death in the world after heart disease and the main cause of disability ([Akhtar et al.](#), 2022; [Sutherly et al.](#), 2021; [Tong et al.](#), 2022). Modern lifestyles have changed human attitudes and behaviour, including eating patterns, smoking, alcohol consumption and unhealthy lifestyles, so that people suffering from degenerative diseases (diseases caused by the function of body organs) are increasing and threatening lives. Some degenerative diseases that often occur in society are coronary heart disease, hypertension, DM, stroke and cancer.

Conclusion

This literature review shows that the risk factors for stroke are increasing due to a history of diseases such as hypertension, diabetes mellitus, age, gender, high cholesterol, obesity, lack of public knowledge about stroke and consumption of alcohol, smoking and drugs, including a lifestyle.

Authors Contributions

The author carries out tasks from data collection, data analysis, and discussions to making manuscripts.

Conflicts of Interest

There is no conflict of interest.

Acknowledgment

Thank you to the reviewer and to those who have helped in this research

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Preventing Stroke

If you're like most Americans, you plan your future. When you take a job, you examine its benefit plan. When you buy a home, you consider its location and condition so that your investment is safe. Today, more and more Americans are protecting their most important asset—their brain. Are you?

Stroke ranks as the fourth leading killer in the United States. A stroke can be devastating to individuals and their families, robbing them of their independence. It is the most common cause of adult disability. Each year more than 700,000 Americans have a stroke, with about 160,000 dying from stroke-related causes. Officials at the National Institute of Neurological Disorders and Stroke (NINDS) are committed to reducing that burden through biomedical research.

A stroke, or “brain attack,” occurs when blood circulation to the brain fails.

What is a Stroke?

A stroke, or “brain attack,” occurs when blood circulation to the brain fails. Brain cells can die from decreased blood flow and the resulting lack of oxygen. There are two broad categories of stroke: those caused by a blockage of blood flow and those caused by bleeding into the brain. A blockage of a blood vessel in the brain or neck, called an ischemic stroke, is the most frequent cause of stroke and is responsible for about 80 percent of strokes. These blockages stem from three conditions: the formation of a clot within a blood vessel of the brain or neck, called thrombosis; the movement of a clot from another part of the body such as the heart to the brain, called embolism; or a severe narrowing of an artery in or leading to the brain, called stenosis. Bleeding into the brain or the spaces surrounding the brain causes the second type of stroke, called hemorrhagic stroke.

Two key steps you can take will lower your risk of death or disability from stroke: control stroke's risk factors and know stroke's warning signs. Scientific research conducted by the NINDS has identified warning signs and a large number of risk factors.

What are Warning Signs of a Stroke?

Warning signs are clues your body sends that your brain is not receiving enough oxygen. If you observe one or more of these signs of a stroke or “brain attack,” don’t wait, call a doctor or 911 right away!

- Sudden numbness or weakness of face, arm, or leg, especially on one side of the body
- Sudden confusion, or trouble talking or understanding speech
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, or loss of balance or coordination
- Sudden severe headache with no known cause

Other danger signs that may occur include double vision, drowsiness, and nausea or vomiting. Sometimes the warning signs may last only a few moments and then disappear. These brief episodes, known as transient ischemic attacks or TIAs, are sometimes called “mini-strokes.” Although brief, they identify an underlying serious condition that isn’t going away without medical help. Unfortunately, since they clear up, many people ignore them. Don’t. Paying attention to them can save your life.

Sometimes the warning signs [of a stroke] may last only a few moments and then disappear.

What are Risk Factors for a Stroke?

A risk factor is a condition or behavior that occurs more frequently in those who have, or are at greater risk of getting, a disease than in those who don’t. Having a risk factor for stroke doesn’t mean you’ll have a stroke. On the other hand, not having a risk factor doesn’t mean you’ll avoid a stroke. But your risk of stroke grows as the number and severity of risk factors increases.

Some factors for stroke can’t be modified by medical treatment or lifestyle changes.

- *Age.* Stroke occurs in all age groups. Studies show the risk of stroke doubles for each decade between the ages of 55 and 85. But strokes also can occur in childhood or adolescence. Although stroke is often considered a disease of aging, the risk of stroke in childhood is actually highest during the perinatal period, which encompasses the last few months of fetal life and the first few weeks after birth.
- *Gender.* Men have a higher risk for stroke, but more women die from stroke. Men generally do not live as long as women, so men are usually younger when they have their strokes and therefore have a higher rate of survival.

- *Race.* People from certain ethnic groups have a higher risk of stroke. For African Americans, stroke is more common and more deadly—even in young and middle-aged adults—than for any ethnic or other racial group in the United States. Studies show that the age-adjusted incidence of stroke is about twice as high in African Americans and Hispanic Americans as in Caucasians. An important risk factor for African-Americans is sickle cell disease, which can cause a narrowing of arteries and disrupt blood flow. The incidence of the various stroke subtypes also varies considerably in different ethnic groups.
- *Family history of stroke.* Stroke seems to run in some families. Several factors may contribute to familial stroke. Members of a family might have a genetic tendency for stroke risk factors, such as an inherited predisposition for high blood pressure (hypertension) or diabetes. The influence of a common lifestyle among family members also could contribute to familial stroke.

Some of the most important treatable risk factors for stroke are:

- **High blood pressure, or hypertension.** Hypertension is by far the most potent risk factor for stroke. Hypertension causes a two-to four-fold increase in the risk of stroke before age 80. If your blood pressure is high, you and your doctor need to work out an individual strategy to bring it down to the normal range. Some ways that work: Maintain proper weight. Avoid drugs known to raise blood pressure. Eat right: cut down on salt and eat fruits and vegetables to increase potassium in your diet. Exercise more. Your doctor may prescribe medicines that help lower blood pressure. Controlling blood pressure will also help you avoid heart disease, diabetes, and kidney failure.
- **Cigarette smoking.** Cigarette smoking causes about a two-fold increase in the risk of ischemic stroke and up to a four-fold increase in the risk of hemorrhagic stroke. It has been linked to the buildup of fatty substances (atherosclerosis) in the carotid artery, the main neck artery supplying blood to the brain. Blockage of this artery is the leading cause of stroke in Americans. Also, nicotine raises blood pressure; carbon monoxide from smoking reduces the amount of oxygen your blood can carry to the brain; and cigarette smoke makes your blood thicker and more likely to clot. Smoking also promotes

High blood pressure is by far the most potent risk factor for stroke.

aneurysm formation. Your doctor can recommend programs and medications that may help you quit smoking. By quitting, at any age, you also reduce your risk of lung disease, heart disease, and a number of cancers including lung cancer.

- **Heart disease.** Common heart disorders such as coronary artery disease, valve defects, irregular heart beat (atrial fibrillation), and enlargement of one of the heart's chambers can result in blood clots that may break loose and block vessels in or leading to the brain. Atrial fibrillation—which is more prevalent in older people—is responsible for one in four strokes after age 80, and is associated with higher mortality and disability. The most common blood vessel disease is atherosclerosis. Hypertension promotes atherosclerosis and causes mechanical damage to the walls of blood vessels. Your doctor will treat your heart disease and may also prescribe medication, such as aspirin, to help prevent the formation of clots. Your doctor may recommend surgery to clean out a clogged neck artery if you match a particular risk profile. If you are over 50, NINDS scientists believe you and your doctor should make a decision about aspirin therapy. A doctor can evaluate your risk factors and help you decide if you will benefit from aspirin or other blood-thinning therapy.
- **Warning signs or history of TIA or stroke.** If you experience a TIA, get help at once. If you've previously had a TIA or stroke, your risk of having a stroke is many times greater than someone who has never had one. Many communities encourage those with stroke's warning signs to dial 911 for emergency medical assistance. If you have had a stroke in the past, it's important to reduce your risk of a second stroke. Your brain helps you recover from a stroke by asking the unaffected brain regions to do double duty. That means a second stroke can be twice as bad.
- **Diabetes.** In terms of stroke and cardiovascular disease, having diabetes is the equivalent of aging 15 years. You may think this disorder affects only the body's ability to use sugar, or glucose. But it also causes destructive changes in the blood vessels throughout the body, including the brain. Also, if blood glucose levels are high at the time of a stroke, then brain damage is

*Stroke strikes fast.
You should, too.
Call 911.*

usually more severe and extensive than when blood glucose is well-controlled. Hypertension is common among diabetics and accounts for much of their increased stroke risk. Treating diabetes can delay the onset of complications that increase the risk of stroke.

- **Cholesterol imbalance.** Low-density lipoprotein cholesterol (LDL) carries cholesterol (a fatty substance) through the blood and delivers it to cells. Excess LDL can cause cholesterol to build up in blood vessels, leading to atherosclerosis. Atherosclerosis is the major cause of blood vessel narrowing, leading to both heart attack and stroke.
- **Physical inactivity and obesity.** Obesity and inactivity are associated with hypertension, diabetes, and heart disease. Waist circumference to hip circumference ratio equal to or above the mid-value for the population increases the risk of ischemic stroke three-fold.

Do You Know Your Stroke Risk?

Some of the most important risk factors for stroke can be determined during a physical exam at your doctor's office. If you are over 55 years old, the worksheet in this pamphlet can help you estimate your risk of stroke and show the benefit of risk factor control.

The worksheet was developed from NINDS-supported work in the well-known Framingham Study. Working with your doctor, you can develop a strategy to lower your risk to average or even below average for your age.

Many risk factors for stroke can be managed, some very successfully. Although risk is never zero at any age, by starting early and controlling your risk factors you can lower your risk of death or disability from stroke. With good control, the risk of stroke in most age groups can be kept below that for accidental injury or death.

Americans have shown that stroke is preventable and treatable. In recent years, a better understanding of the causes of stroke has helped Americans make lifestyle changes that have cut the stroke death rate nearly in half.

Scientists at the NINDS predict that, with continued attention to reducing the risks of stroke and by using currently available therapies and developing new ones, Americans should be able to prevent 80 percent of all strokes.

*Americans
should be
able to
prevent
80 percent
of all strokes.*

Score your stroke risk for the next 10 years—MEN

Key: **SBP** = systolic blood pressure (score one line only, untreated or treated); **Diabetes** = history of diabetes; **Cigarettes** = smokes cigarettes; **CVD** (cardiovascular disease) = history of heart disease; **AF** = history of atrial fibrillation; **LVH** = diagnosis of left ventricular hypertrophy; **untrd** = untreated; **trtd** = treated with medication

Points	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Age	54-56	57-59	60-62	63-65	66-68	69-72	73-75	76-78	79-81	82-84	85
SBP-untrd or SBP-trtd	97-105 97-105	106-115 106-112	116-125 113-117	126-135 118-123	136-145 124-129	146-155 130-135	156-165 136-142	166-175 143-150	176-185 151-161	186-195 162-176	196-205 177-205
Diabetes	No		Yes								
Cigarettes	No			Yes							
CVD	No				Yes						
AF	No					Yes					
LVH	No						Yes				
Your Points	10-Year Probability		Your Points	10-Year Probability		Your Points	10-Year Probability				
1	3%		11	11%		21	42%				
2	3%		12	13%		22	47%				
3	4%		13	15%		23	52%				
4	4%		14	17%		24	57%				
5	5%		15	20%		25	63%				
6	5%		16	22%		26	68%				
7	6%		17	26%		27	74%				
8	7%		18	29%		28	79%				
9	8%		19	33%		29	84%				
10	10%		20	37%		30	88%				
Compare with Your Age Group	Average 10-Year Probability of Stroke										
55-59	5.9%										
60-64	7.8%										
65-69	11.0%										
70-74	13.7%										
75-79	18.0%										
80-84	22.3%										

Source: D'Agostino, R.B.; Wolf, P.A.; Belanger, A.J.; & Kannel, W.B. "Stroke Risk Profile: The Framingham Study." *Stroke*, Vol. 25, No. 1, pp. 40-43, January 1994.

Score your stroke risk for the next 10 years-WOMEN

Key: **SBP** = systolic blood pressure (score one line only, untreated or treated); **Diabetes** = history of diabetes; **Cigarettes** = smokes cigarettes; **CVD** (cardiovascular disease) = history of heart disease; **AF** = history of atrial fibrillation; **LVH** = diagnosis of left ventricular hypertrophy; **untrd** = untreated; **trtd** = treated with medication

Points	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10															
Age	54-56	57-59	60-62	63-64	65-67	68-70	71-73	74-76	77-78	79-81	82-84															
SBP-untrd	95-106	107-118	119-130	131-143	144-155	156-167	168-180	181-192	193-204	205-216																
or SBP-trtd	95-106	107-113	114-119	120-125	126-131	132-139	140-148	149-160	161-204	205-216																
Diabetes	No			Yes																						
Cigarettes	No			Yes																						
CVD	No		Yes																							
AF	No						Yes																			
LVH	No				Yes																					
Your Points	10-Year Probability		Your Points	10-Year Probability		Your Points	10-Year Probability																			
1	1%		11	8%		21	43%																			
2	1%		12	9%		22	50%																			
3	2%		13	11%		23	57%																			
4	2%		14	13%		24	64%																			
5	2%		15	16%		25	71%																			
6	3%		16	19%		26	78%																			
7	4%		17	23%		27	84%																			
8	4%		18	27%																						
9	5%		19	32%																						
10	6%		20	37%																						
Compare with Your Age Group	Average 10-Year Probability of Stroke	<p>This example helps you assess your risk of stroke. Tally your points to score your stroke risk over the next 10 years.</p> <p>Martha, age 65, wanted to determine her risk for having a stroke, so she took this stroke risk profile. This is how she arrived at her 10-year probability risk for having a stroke:</p> <table> <tbody> <tr> <td>Age 65</td> <td>4 points</td> </tr> <tr> <td>SBP – treated, 107-113</td> <td>2 points</td> </tr> <tr> <td>Diabetes - No</td> <td>0 points</td> </tr> <tr> <td>Cigarettes - Yes</td> <td>3 points</td> </tr> <tr> <td>CVD -No</td> <td>0 points</td> </tr> <tr> <td>AF - Yes</td> <td>6 points</td> </tr> <tr> <td>LVH -No</td> <td>0 points</td> </tr> <tr> <td>TOTAL</td> <td>15 points</td> </tr> </tbody> </table>									Age 65	4 points	SBP – treated, 107-113	2 points	Diabetes - No	0 points	Cigarettes - Yes	3 points	CVD -No	0 points	AF - Yes	6 points	LVH -No	0 points	TOTAL	15 points
Age 65	4 points																									
SBP – treated, 107-113	2 points																									
Diabetes - No	0 points																									
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LVH -No	0 points																									
TOTAL	15 points																									
55-59	3.0%																									
60-64	4.7%																									
65-69	7.2%																									
70-74	10.9%																									
75-79	15.5%																									
80-84	23.9%																									

Interpretation: 15 points carries a 16 percent, 10-year probability of having a stroke. If Martha quits smoking she can reduce her points to 12, which carries a 9 percent, 10-year probability of having a stroke.

Her current point total does not mean Martha will have a stroke, but serves as a wake-up call to ways she can lower her risk or even prevent a stroke. A lower percent score doesn't mean that Martha won't have a stroke, only that she is at a lower risk of having one.

No matter what your score is, it is important to work on reducing your risk factors as Martha did in this example by quitting smoking.

The National Institute of Neurological Disorders and Stroke (NINDS)

Since its creation by Congress in 1950, the NINDS—a component of the National Institutes of Health—has grown to become the leading supporter of neurological research in the United States. Most research funded by the NINDS is conducted by scientists in public and private institutions such as universities, medical schools, and hospitals. Government scientists also conduct a wide variety of neurological research in the laboratories and branches of the NINDS itself. This research ranges from studies on the structure and function of single brain cells to tests of new diagnostic tools and treatments for those with neurological disorders. For more information, write or call the Institute's Brain Resources and Information Network (BRAIN):

BRAIN

P.O. Box 5801

Bethesda, MD 20824

800-352-9424

www.ninds.nih.gov



let's talk about

Risk Factors for Stroke

Knowing your risk factors for stroke is the first step in preventing a stroke. You can change or treat some risk factors, but others you can't. By having regular medical checkups and knowing your risk, you can focus on what you can change and lower your risk of stroke.



What risk factors can I change or treat?

- **High blood pressure.** This is the single most important risk factor for stroke because it's the leading cause of stroke. Know your blood pressure and have it checked every year. Normal blood pressure is below 120/80. If you have been told that you have high blood pressure, work with your healthcare provider to reduce it.
- **Smoking.** Smoking damages blood vessels. This can lead to blockages within those blood vessels, causing a stroke. Don't smoke and avoid second-hand smoke.
- **Diabetes.** Having diabetes more than doubles your risk of stroke. Work with your doctor to manage diabetes.
- **High cholesterol.** High cholesterol increases the risk of blocked arteries. If an artery leading to the brain becomes blocked, a stroke can result.
- **Physical inactivity and obesity.** Being inactive, obese, or both, can increase your risk of heart disease and stroke.
- **Carotid or other artery disease.** The carotid arteries in your neck supply most of the blood to your brain.

A carotid artery damaged by a fatty buildup of plaque inside the artery wall may become blocked by a blood clot. This causes a stroke.

- **Transient ischemic attacks (TIAs).** Recognizing and treating TIAs can reduce the risk of a major stroke. TIAs produce stroke-like symptoms but most have no lasting effects. Know the warning signs of a TIA and seek emergency medical treatment immediately.
- **Atrial fibrillation (AFib) or other heart disease.** In AFib the heart's upper chambers quiver (like a bowl of gelatin) rather than beating in an organized, rhythmic way. This can cause the blood to pool and clot, increasing the risk of stroke. AFib increases risk of stroke five times. People with other types of heart disease have a higher risk of stroke, too.
- **Certain blood disorders.** A high red blood cell count makes clots more likely, raising the risk of stroke. Sickle cell anemia increases stroke risk because the "sickled" cells stick to blood vessel walls and may block arteries.
- **Excessive alcohol intake.** Drinking an average of more than one drink per day for women or more than two drinks a day for men can raise blood pressure. Binge drinking can lead to stroke.

(continued)



- **Illegal drug use.** Drugs including cocaine, ecstasy, amphetamines, and heroin are associated with an increased risk of stroke.
- **Sleep apnea.** Sleep disordered breathing contributes to risk of stroke. Increasing sleep apnea severity is associated with increasing risk.

What are the risk factors I can't control?

- **Increasing age.** Stroke affects people of all ages. But the older you are, the greater your stroke risk.
- **Gender.** Women have a higher lifetime risk of stroke than men do. Use of birth control pills and pregnancy pose special stroke risks for women.
- **Heredity and race.** People whose close blood relations have had a stroke have a higher risk of stroke. African Americans have a higher risk of death and disability from stroke than whites. This is because they have high blood pressure more often. Hispanic Americans are also at higher risk of stroke.
- **Prior stroke.** Someone who has had a stroke is at higher risk of having another one.



Age, gender, heredity and race are among the stroke risk factors that you can't control.

HOW CAN I LEARN MORE?

- 1 Call 1-888-4-STROKE (1-888-478-7653) to learn more about stroke or find local support groups, or visit StrokeAssociation.org.
- 2 Sign up to get *Stroke Connection* magazine, a free magazine for stroke survivors and caregivers at strokeconnection.org.
- 3 Connect with others sharing similar journeys with stroke by joining our Support Network at strokeassociation.org/supportnetwork.

Do you have questions for the doctor or nurse?

Take a few minutes to write your questions for the next time you see your healthcare provider.

For example:

What are my risk factors for stroke?

What are the warning signs of TIAs and stroke?

My Questions:

We have many other fact sheets to help you make healthier choices to reduce your risk, manage disease or care for a loved one. Visit strokeassociation.org/letstalkaboutstroke to learn more.

Preventing and Managing Common Cold

Are you sneezing, or do you have a stuffy and runny nose? You might have a cold. Antibiotics do not work against viruses that cause colds and will not help you feel better.



What is Common Cold?

A common cold is a mild upper respiratory illness that resolves in a short period of time.

Symptoms

Symptoms of a cold usually peak within 2 to 3 days and can include:

- ◆ Sneezing
- ◆ Nasal congestion
- ◆ Sore throat
- ◆ Cough
- ◆ Fever (although most people with colds do not have fever)

When viruses that cause colds first infect the nose and sinuses, the nose makes clear mucus. This helps wash the viruses from the nose and sinuses. After 2 or 3 days, mucus may change to a white, yellow, or green color. This is normal and does not mean you need an antibiotic.

Some symptoms, especially runny or stuffy nose and cough, can last for up to 10 to 14 days. Those symptoms should improve over time.

Colds can have similar symptoms to flu. It can be difficult (or even impossible) to tell the difference between them based on symptoms alone.

Causes

More than 200 viruses can cause a cold, but rhinoviruses are the most common type. Viruses that cause colds can spread from person to person through the air and close personal contact.

When to Seek Medical Care

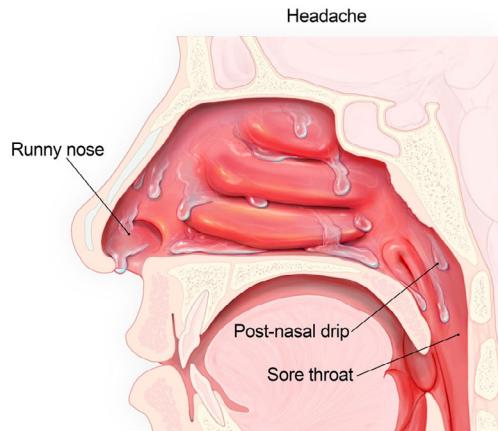
See a healthcare professional if you have:

- ◆ Trouble breathing or fast breathing
- ◆ Dehydration
- ◆ Fever that lasts longer than 4 days
- ◆ Symptoms that last more than 10 days without improvement
- ◆ Symptoms, such as fever or cough, that improve but then return or worsen
- ◆ Worsening of chronic medical conditions

This list is not all-inclusive. Please see a healthcare professional for any symptom that is severe or concerning.



Common Cold Symptoms



When you have a cold, mucus fills your nose and could cause post-nasal drip, headache, and a sore throat.

Talk to a healthcare professional right away if your child is under 3 months old with a fever of 100.4 °F (38 °C) or higher.



Treatment

There is no cure for a cold. It will get better on its own—without antibiotics. **Antibiotics won't help you get better if you have a cold.**

When antibiotics aren't needed, they won't help you, and their side effects could still cause harm. Side effects can range from mild reactions, like a rash, to more serious health problems. These problems can include severe allergic reactions, antimicrobial-resistant infections and *C. diff* infection. *C. diff* causes diarrhea that can lead to severe colon damage and death.

How to Feel Better

- ◆ Get plenty of rest.
- ◆ Drink plenty of fluids.
- ◆ Use a clean humidifier or cool mist vaporizer.
- ◆ Use saline nasal spray or drops.
 - » For young children, use a rubber suction bulb to clear mucus.
- ◆ Breathe in steam from a bowl of hot water or shower.
 - » For young children, sit with the child in a bathroom filled with steam from a running shower.
- ◆ Use throat lozenges or cough drops. Do not give lozenges to children younger than 4 years of age.
- ◆ Use honey to relieve cough for adults and children at least 1 year of age or older.

Ask your doctor or pharmacist about over-the-counter medicines that can help you feel better. Always use over-the-counter medicines as directed. Remember, over-the-counter medicines may provide temporary relief of symptoms, but they will not cure your illness.

Remember, always read over-the-counter medicine product labels before giving medicines to children. **Some over-the-counter medicines are not recommended for children of certain ages.**

- ◆ Pain relievers:
 - » Children younger than 6 months: only give acetaminophen.
 - » Children 6 months or older: it is OK to give acetaminophen or ibuprofen.
 - » Never give aspirin to children because it can cause Reye's syndrome. Reye's syndrome is a very serious, but rare illness that can harm the liver and brain.
- ◆ Cough and cold medicines:
 - » Over-the-counter cough/cold medicines are not recommended for children younger than 6 years old and can result in serious and sometimes life-threatening side effects; however, young children can have fever-reducing medicines. Contact your doctor or pharmacist about the correct dose and read and follow all directions.

Ask your doctor or pharmacist about the right dosage of over-the-counter medicines for your child's age and size. Also, tell your child's doctor and pharmacist about all prescription and over-the-counter medicines they are taking.

Prevention

CDC's Respiratory Virus Guidance provides practical recommendations and information to help people lower risk from a range of common respiratory viral illnesses. **CDC recommends that all people use core prevention strategies. These are important steps you can take to protect yourself and others:**

- ◆ Stay up to date with immunizations.
- ◆ Practice good hygiene (practices that improve cleanliness).
- ◆ Take steps for cleaner air.
- ◆ When you may have a respiratory virus:
 - » Use precautions to prevent spread.
 - » Seek health care promptly for testing and/or treatment if you have risk factors for severe illness; treatment may help lower your risk of severe illness.
- ◆ For more information, visit: www.cdc.gov/respiratory-viruses/guidance/respiratory-virus-guidance.

COMMON COLD FACT SHEET

What is the common cold?

The common cold is an infection that can be caused by many viruses, but rhinoviruses are most common. Most people get colds in the winter and spring, but it is possible to get a cold any time of the year.

Who can get the common cold?

Anyone. Adults have an average of two to three colds per year, and children have even more.

What are the symptoms of the common cold?

Symptoms of a cold usually include sore throat, runny nose, coughing, sneezing, watery eyes, headaches and body aches.

How soon do symptoms appear?

Symptoms usually begin in about two days for colds caused by rhinovirus, the most common virus that causes colds.

How is the common cold spread?

The common cold can spread through droplets in the air that are produced when an infected person coughs or sneezes. It can also spread when an infected person has close personal contact with an uninfected person. You can also get infected through contact with stool (poop) from an infected person. You can be exposed to droplets or stool when you shake hands with someone who has a cold, or touch an object or surface, such as a doorknob, that has viruses on it and then touch your eyes, mouth or nose.

Is there a vaccine for the common cold?

No.

How is the common cold treated?

There is no cure for the common cold. It is important to drink plenty of fluids and get lots of rest in order to get better. Non-prescription (over-the-counter) medicines may help reduce symptoms but will not make your cold go away any faster. Most people recover in approximately seven to 10 days. However, people with weakened immune systems, asthma or conditions that affect the lungs and breathing passages may develop serious illness, such as pneumonia.

How can people protect themselves against the common cold?

You can take the following steps to protect against a cold:

- Wash your hands often with soap and water, scrubbing your hands for at least 20 seconds
- Cover your nose and mouth with a tissue when you cough or sneeze
- Avoid touching your eyes, nose and mouth with unwashed hands
- Disinfect frequently touched surfaces, and objects such as toys and doorknobs
- Avoid personal contact, such as kissing or sharing cups or eating utensils, with people who are sick

Where can I get more information?

Information about the common cold and other related health topics can be found at www.cdc.gov. The DC Department of Health promotes the health and safety of the District residents. For additional information, please visit www.doh.dc.gov or call (202) 442-9371.



Review

Risk Factors Of Stroke: Literature Review

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ARTICLE INFO

Article History

Submit : Dec 8, 2023

Revised : Dec 24, 2023

Accepted : Dec 27, 2023

Keywords:

Public Knowledge

Risk Factors

Stroke

ABSTRACT

Background: *Stroke is the most common cause of disease in the world and is the highest cause of death in Indonesia, so prevention is very important to minimise the incidence of stroke. The most appropriate effort to prevent stroke is to control stroke risk factors. The purpose of the literature review is to analyse the risk factors associated with stroke events in patients.*

Methods: *The method used is a literature review using a journal database from Pubmed, Science Direct, and Google Scholar. In the 2019-2023 range, with the keywords "stroke, factors causing stroke", and stroke, 220 articles were obtained*

Results: *Search for articles according to the criteria and obtain ten articles that are ready to be reviewed. These articles explain the risk factors for stroke. It is hoped that stroke patients will try to control stroke risk factors*

Conclusion: *This literature review shows that the risk factors for stroke are increasing due to a history of diseases such as hypertension, diabetes mellitus, age, gender, high cholesterol, obesity, lack of public knowledge about stroke and consumption of alcohol, smoking and drugs, including a lifestyle*

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 Cite this as

: Oliveira, A. B. de ., Muhith, A., & Zahro, C. (2023). Risk Factors Of Stroke: Literature Review. Journal of Applied Nursing and Health, 5(2), 347–354. <https://doi.org/10.55018/janh.v5i2.166>

Introduction

Stroke is the third leading cause of death in the world after cancer and heart disease and the leading cause of disability. Stroke can affect anyone, both young and old, male or female. All groups, both low and high socioeconomic groups and rural and urban communities suffer strokes ([Dhamoon et al.](#), 2021; [Jeong et al.](#), 2020; [Tang et al.](#), 2019). According to WHO (World Health Organization), 1 in 4 people are estimated to experience a stroke in their lifetime. Every year, as many as 15 million people in the world suffer a stroke, around 5 million people experience permanent

paralysis. The number of stroke cases in Southeast Asia is 4.4 million.

Indonesia ranks first in stroke sufferers in Asia. This causes the problem of stroke to become increasingly important and urgent. ([Riskeidas](#), 2018) data shows that the highest stroke incidence rate in Indonesia is in East Kalimantan Province (14.7%), while the lowest cases are in Papua Province (4.1%). The incidence of stroke increases with increasing age, where the age group 75 years and over has the highest cases (50.2%) and the lowest is 15-24 years old (0.6%). The prevalence of stroke between men and women is almost the same, namely 11% and 10.95%.



In 2013-2018, the prevalence of stroke in West Nusa Tenggara province increased by 4.5% to 8%. Based on data from the Praya City Health Office, there were 118 cases. Based on Praya Hospital Medical Records data in 2019, there were 209 stroke cases, and 22 people died (13.87%). In 2020, there were 221 stroke cases, and 53 people died (23.98%). In 2021, stroke cases increased significantly compared to the previous two years, namely 318 people, of which 168 were men (52.84%) and 150 women (47.16%), while 81 people died (26.79%).

Risk factors for stroke consist of factors that cannot be modified and can be modified. Risk factors that cannot be modified include age, race, gender and genetics, while risk factors that can be modified include hypertension, diabetes mellitus, atrial fibrillation, smoking and alcohol addiction. Hypertension is the main factor that causes stroke in around 95% of cases. Unhealthy lifestyle habits such as consuming fast food, preservatives, high salt, high sugar, lack of physical activity, fatigue, work stress and smoking also increase the risk of stroke ([Chishi et al., 2023](#); [Sykora et al., 2022](#); [Zhao et al., 2019](#)). Low knowledge regarding risk factors for stroke, both in terms of recognising stroke symptoms, stroke services that are not yet optimal, and low levels of individual compliance or compliance with stroke therapy programs to prevent recurrent strokes, is a weak point in stroke management in the world.

Based on data from Basic Health Research ([Riskeidas, 2018](#)) compared with Riskeidas 2013, it was found that there was a change in trend; there was a significant increase in patients with people suffering from stroke in old and productive age. Epidemiologists predict that currently and in the future, around 12 million people in Indonesia aged over 35 years will have the

potential to experience a stroke. Therefore, comprehensive efforts to control stroke risk factors are urgent in the health sector so that individuals in old age and productive age can avoid stroke attacks ([Grimaud et al., 2019](#); [Héja et al., 2021](#); [Kono et al., 2020](#); [Wilbers et al., 2020](#))

Methods

This method uses the method of *literature review*. Article searches were carried out in September 2023 using journal databases from Science Direct, Pubmed, and Google Scholar. Journal article searches were carried out systematically from the last four years, namely 2019-2023, with the search keywords "Stroke" and Risk Factors for Stroke. For relevant searches. The research will filter the articles as a whole from the selected references without the exception of the title and abstract so that more and more relevant articles are obtained.

Inclusion criteria on *systematic review* These are 1) Respondents are stroke patients, 2) the intervention focuses on risk factors for stroke, and 3) Article selection is not limited to methodology, population and results. Meanwhile, the exclusion criteria *systematic review* These are 1) research that is not related to risk factors for stroke, 2) research that is not conducted on stroke patients, 3) research that is not published such as final scientific papers (thesis, theses and dissertations), abstracts, conferences and case reports.

Articles that have been obtained from the database will be assessed using the PICO method in accordance with the inclusion and exclusion criteria, which contain 1) the title of the article, 2) the author and year of publication of the article, 3) the research methodology (population, sample, intervention and analysis). Research result.



Results

Searches for international research articles were obtained from Science Direct,

Google Scholar and PubMed. From the search results, further identification according to the inclusion and exclusion criteria resulted in 10 articles being obtained.

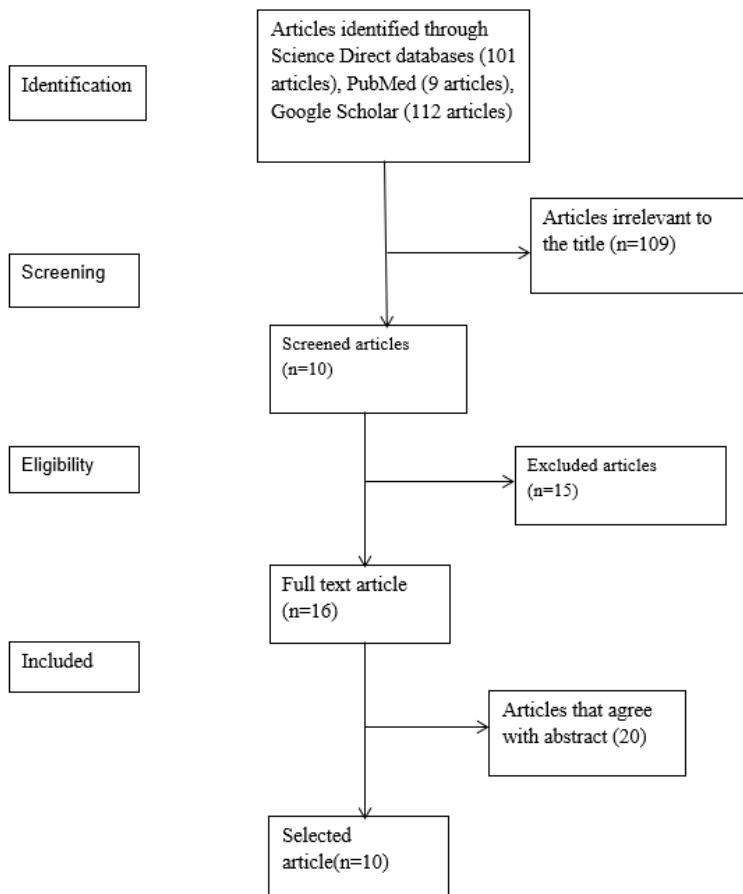


Figure 1. Literature Search Flow Diagram

Table 1. Data Distraction Method

No	Title, author, and year of publication	Research Methodology	Research result
1	Analysis of associated risk factors with the incidence of stroke: A Literature Review (NURHAYATI, 2021)	Design: descriptive non-experimental correlation, namely cross-sectional correlation method Subjects: 40 patients Variable: analysis of risk factors for stroke Instrument: Article search via Science Direct and Google Scholar	From the results of this research that was reviewed, it was obtained shows that the therapy given is a risk factor for stroke in stroke patients
2	Risk factors that influence stroke incidence (Utama & Nainggolan, 2022)	Design: Systematic literature review Subject: 10 articles Variable: risk factors that influence the incidence of stroke. Instrument: article search via Google Scholar, PubMed.	Of the ten articles that have been reviewed, the risk factors for stroke have increased, namely gender, genetics, age and lifestyle.
3	Analysis of risk factors for stroke (Kencana et al., 2022)	Design: case-control Subjects: The case group is stroke patients repeated for a total of 66 participants, the two control groups were examined for gender and history variables hypertension, DM, Dyslipidemias.	From the research results shows that ($p<0.05$ OR=2.941)
4	Analysis of risk factors for stroke in stroke patients (Manurung & Diani, 2015)	Design: observational Analytical with a case-control approach. Subjects: 84 patients (42 people for the case group and 42 people for control group) Variable: analysis of risk factors for stroke. Instrument: cleaner	The research results showed that based on statistical tests, the risk that could not be modified was obtained by historical factors, family illness with a p-value of 0,016; risk factors that can be modified are total cholesterol p-value of 0,000, hypertension with a p-value of 0,001, LDL with p value 0,002.
5	Risk factors for stroke (Lilipory et al., 2019)	Design: case-control using a retrospective approach. Subjects: 64 people with a	The results of this study are a risk factor for stroke, namely hypertension ($p= 0.00$ OR=8.52;

No	Title, author, and year of publication	Research Methodology	Research result
		ratio of 1:1 (32 cases and 32 controls)	95%. CI physic p=1.00, OR=0.80; 95% CI 0.21-2.95)
6	Factor analysis the occurrence of stroke and types of stroke	Design: retrospective Subject: 200 respondents Variable: analysis of risk factors for stroke	Results of this research showed that some respondents experienced ischemic stroke.
7	Risk factors for stroke	Design: observational analytical. Subjects: 47 respondents with a purposive sampling technique. Variable: risk factor the occurrence of a stroke Instrument: questionnaire with Spearman rank data analysis.	Results of this research indicates hypertension is associated with the risk of stroke (p=0.05 OR= 7.200), smoking is associated with the risk of stroke (p= 0.04; OR=8.144), obesity (p=0.000; OR=16.0000) hypertension and obesity are the most dominant factors.
8	Analysis of stroke risk factors (Anissa et al., 2020)	Design: Analytical observational with case-control Variable: analysis of risk factors for stroke. Subjects: 88 respondents with 44 cases and 44 controls.	Results of this research show that a history of hypertension and age are still risk factors for stroke
9	Risk factors for ischemic stroke and haemorrhage (Othadinar et al., 2019)	Design: descriptive Variable: Risk factor incidence of ischemic and hemorrhagic stroke Subjects: All ischemic and hemorrhagic stroke patients who stayed at the National Brain Center Hospital in 2018 2016-2017	The articles reviewed show that the factors are age, history of illness, hypertension, DM, and lifestyle, which influence the risk factors for stroke.
10	Risk factors for stroke in hypertensive patients (Dedi et al., 2023)	Design: observational with a population case approach from stroke research suffering as many as 150. Subjects: Researchers took a sample of 20%.	The research results showed that the respondents were healthy by 13(43%) and respondents who did not as many as 17 (56%)

Discussion

The research results of the ten journals reviewed proved that the risk factors for stroke were increasing due to a history of hypertension, DM, high cholesterol, age, gender and lifestyle. Stroke is the most common cause of death in the world after heart disease and the main cause of disability ([Akhtar et al.](#), 2022; [Sutherly et al.](#), 2021; [Tong et al.](#), 2022). Modern lifestyles have changed human attitudes and behaviour, including eating patterns, smoking, alcohol consumption and unhealthy lifestyles, so that people suffering from degenerative diseases (diseases caused by the function of body organs) are increasing and threatening lives. Some degenerative diseases that often occur in society are coronary heart disease, hypertension, DM, stroke and cancer.

Conclusion

This literature review shows that the risk factors for stroke are increasing due to a history of diseases such as hypertension, diabetes mellitus, age, gender, high cholesterol, obesity, lack of public knowledge about stroke and consumption of alcohol, smoking and drugs, including a lifestyle.

Authors Contributions

The author carries out tasks from data collection, data analysis, and discussions to making manuscripts.

Conflicts of Interest

There is no conflict of interest.

Acknowledgment

Thank you to the reviewer and to those who have helped in this research

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Preventing Stroke

If you're like most Americans, you plan your future. When you take a job, you examine its benefit plan. When you buy a home, you consider its location and condition so that your investment is safe. Today, more and more Americans are protecting their most important asset—their brain. Are you?

Stroke ranks as the fourth leading killer in the United States. A stroke can be devastating to individuals and their families, robbing them of their independence. It is the most common cause of adult disability. Each year more than 700,000 Americans have a stroke, with about 160,000 dying from stroke-related causes. Officials at the National Institute of Neurological Disorders and Stroke (NINDS) are committed to reducing that burden through biomedical research.

A stroke, or “brain attack,” occurs when blood circulation to the brain fails.

What is a Stroke?

A stroke, or “brain attack,” occurs when blood circulation to the brain fails. Brain cells can die from decreased blood flow and the resulting lack of oxygen. There are two broad categories of stroke: those caused by a blockage of blood flow and those caused by bleeding into the brain. A blockage of a blood vessel in the brain or neck, called an ischemic stroke, is the most frequent cause of stroke and is responsible for about 80 percent of strokes. These blockages stem from three conditions: the formation of a clot within a blood vessel of the brain or neck, called thrombosis; the movement of a clot from another part of the body such as the heart to the brain, called embolism; or a severe narrowing of an artery in or leading to the brain, called stenosis. Bleeding into the brain or the spaces surrounding the brain causes the second type of stroke, called hemorrhagic stroke.

Two key steps you can take will lower your risk of death or disability from stroke: control stroke's risk factors and know stroke's warning signs. Scientific research conducted by the NINDS has identified warning signs and a large number of risk factors.

What are Warning Signs of a Stroke?

Warning signs are clues your body sends that your brain is not receiving enough oxygen. If you observe one or more of these signs of a stroke or “brain attack,” don’t wait, call a doctor or 911 right away!

- Sudden numbness or weakness of face, arm, or leg, especially on one side of the body
- Sudden confusion, or trouble talking or understanding speech
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, or loss of balance or coordination
- Sudden severe headache with no known cause

Other danger signs that may occur include double vision, drowsiness, and nausea or vomiting. Sometimes the warning signs may last only a few moments and then disappear. These brief episodes, known as transient ischemic attacks or TIAs, are sometimes called “mini-strokes.” Although brief, they identify an underlying serious condition that isn’t going away without medical help. Unfortunately, since they clear up, many people ignore them. Don’t. Paying attention to them can save your life.

Sometimes the warning signs [of a stroke] may last only a few moments and then disappear.

What are Risk Factors for a Stroke?

A risk factor is a condition or behavior that occurs more frequently in those who have, or are at greater risk of getting, a disease than in those who don’t. Having a risk factor for stroke doesn’t mean you’ll have a stroke. On the other hand, not having a risk factor doesn’t mean you’ll avoid a stroke. But your risk of stroke grows as the number and severity of risk factors increases.

Some factors for stroke can’t be modified by medical treatment or lifestyle changes.

- *Age.* Stroke occurs in all age groups. Studies show the risk of stroke doubles for each decade between the ages of 55 and 85. But strokes also can occur in childhood or adolescence. Although stroke is often considered a disease of aging, the risk of stroke in childhood is actually highest during the perinatal period, which encompasses the last few months of fetal life and the first few weeks after birth.
- *Gender.* Men have a higher risk for stroke, but more women die from stroke. Men generally do not live as long as women, so men are usually younger when they have their strokes and therefore have a higher rate of survival.

- *Race.* People from certain ethnic groups have a higher risk of stroke. For African Americans, stroke is more common and more deadly—even in young and middle-aged adults—than for any ethnic or other racial group in the United States. Studies show that the age-adjusted incidence of stroke is about twice as high in African Americans and Hispanic Americans as in Caucasians. An important risk factor for African-Americans is sickle cell disease, which can cause a narrowing of arteries and disrupt blood flow. The incidence of the various stroke subtypes also varies considerably in different ethnic groups.
- *Family history of stroke.* Stroke seems to run in some families. Several factors may contribute to familial stroke. Members of a family might have a genetic tendency for stroke risk factors, such as an inherited predisposition for high blood pressure (hypertension) or diabetes. The influence of a common lifestyle among family members also could contribute to familial stroke.

Some of the most important treatable risk factors for stroke are:

- **High blood pressure, or hypertension.** Hypertension is by far the most potent risk factor for stroke. Hypertension causes a two-to four-fold increase in the risk of stroke before age 80. If your blood pressure is high, you and your doctor need to work out an individual strategy to bring it down to the normal range. Some ways that work: Maintain proper weight. Avoid drugs known to raise blood pressure. Eat right: cut down on salt and eat fruits and vegetables to increase potassium in your diet. Exercise more. Your doctor may prescribe medicines that help lower blood pressure. Controlling blood pressure will also help you avoid heart disease, diabetes, and kidney failure.
- **Cigarette smoking.** Cigarette smoking causes about a two-fold increase in the risk of ischemic stroke and up to a four-fold increase in the risk of hemorrhagic stroke. It has been linked to the buildup of fatty substances (atherosclerosis) in the carotid artery, the main neck artery supplying blood to the brain. Blockage of this artery is the leading cause of stroke in Americans. Also, nicotine raises blood pressure; carbon monoxide from smoking reduces the amount of oxygen your blood can carry to the brain; and cigarette smoke makes your blood thicker and more likely to clot. Smoking also promotes

High blood pressure is by far the most potent risk factor for stroke.

aneurysm formation. Your doctor can recommend programs and medications that may help you quit smoking. By quitting, at any age, you also reduce your risk of lung disease, heart disease, and a number of cancers including lung cancer.

- **Heart disease.** Common heart disorders such as coronary artery disease, valve defects, irregular heart beat (atrial fibrillation), and enlargement of one of the heart's chambers can result in blood clots that may break loose and block vessels in or leading to the brain. Atrial fibrillation—which is more prevalent in older people—is responsible for one in four strokes after age 80, and is associated with higher mortality and disability. The most common blood vessel disease is atherosclerosis. Hypertension promotes atherosclerosis and causes mechanical damage to the walls of blood vessels. Your doctor will treat your heart disease and may also prescribe medication, such as aspirin, to help prevent the formation of clots. Your doctor may recommend surgery to clean out a clogged neck artery if you match a particular risk profile. If you are over 50, NINDS scientists believe you and your doctor should make a decision about aspirin therapy. A doctor can evaluate your risk factors and help you decide if you will benefit from aspirin or other blood-thinning therapy.
- **Warning signs or history of TIA or stroke.** If you experience a TIA, get help at once. If you've previously had a TIA or stroke, your risk of having a stroke is many times greater than someone who has never had one. Many communities encourage those with stroke's warning signs to dial 911 for emergency medical assistance. If you have had a stroke in the past, it's important to reduce your risk of a second stroke. Your brain helps you recover from a stroke by asking the unaffected brain regions to do double duty. That means a second stroke can be twice as bad.
- **Diabetes.** In terms of stroke and cardiovascular disease, having diabetes is the equivalent of aging 15 years. You may think this disorder affects only the body's ability to use sugar, or glucose. But it also causes destructive changes in the blood vessels throughout the body, including the brain. Also, if blood glucose levels are high at the time of a stroke, then brain damage is

*Stroke strikes fast.
You should, too.
Call 911.*

usually more severe and extensive than when blood glucose is well-controlled. Hypertension is common among diabetics and accounts for much of their increased stroke risk. Treating diabetes can delay the onset of complications that increase the risk of stroke.

- **Cholesterol imbalance.** Low-density lipoprotein cholesterol (LDL) carries cholesterol (a fatty substance) through the blood and delivers it to cells. Excess LDL can cause cholesterol to build up in blood vessels, leading to atherosclerosis. Atherosclerosis is the major cause of blood vessel narrowing, leading to both heart attack and stroke.
- **Physical inactivity and obesity.** Obesity and inactivity are associated with hypertension, diabetes, and heart disease. Waist circumference to hip circumference ratio equal to or above the mid-value for the population increases the risk of ischemic stroke three-fold.

Do You Know Your Stroke Risk?

Some of the most important risk factors for stroke can be determined during a physical exam at your doctor's office. If you are over 55 years old, the worksheet in this pamphlet can help you estimate your risk of stroke and show the benefit of risk factor control.

The worksheet was developed from NINDS-supported work in the well-known Framingham Study. Working with your doctor, you can develop a strategy to lower your risk to average or even below average for your age.

Many risk factors for stroke can be managed, some very successfully. Although risk is never zero at any age, by starting early and controlling your risk factors you can lower your risk of death or disability from stroke. With good control, the risk of stroke in most age groups can be kept below that for accidental injury or death.

Americans have shown that stroke is preventable and treatable. In recent years, a better understanding of the causes of stroke has helped Americans make lifestyle changes that have cut the stroke death rate nearly in half.

Scientists at the NINDS predict that, with continued attention to reducing the risks of stroke and by using currently available therapies and developing new ones, Americans should be able to prevent 80 percent of all strokes.

*Americans
should be
able to
prevent
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of all strokes.*

Score your stroke risk for the next 10 years—MEN

Key: **SBP** = systolic blood pressure (score one line only, untreated or treated); **Diabetes** = history of diabetes; **Cigarettes** = smokes cigarettes; **CVD** (cardiovascular disease) = history of heart disease; **AF** = history of atrial fibrillation; **LVH** = diagnosis of left ventricular hypertrophy; **untrd** = untreated; **trtd** = treated with medication

Points	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Age	54-56	57-59	60-62	63-65	66-68	69-72	73-75	76-78	79-81	82-84	85
SBP-untrd or SBP-trtd	97-105 97-105	106-115 106-112	116-125 113-117	126-135 118-123	136-145 124-129	146-155 130-135	156-165 136-142	166-175 143-150	176-185 151-161	186-195 162-176	196-205 177-205
Diabetes	No		Yes								
Cigarettes	No			Yes							
CVD	No				Yes						
AF	No					Yes					
LVH	No						Yes				
Your Points	10-Year Probability		Your Points	10-Year Probability		Your Points	10-Year Probability				
1	3%		11	11%		21	42%				
2	3%		12	13%		22	47%				
3	4%		13	15%		23	52%				
4	4%		14	17%		24	57%				
5	5%		15	20%		25	63%				
6	5%		16	22%		26	68%				
7	6%		17	26%		27	74%				
8	7%		18	29%		28	79%				
9	8%		19	33%		29	84%				
10	10%		20	37%		30	88%				
Compare with Your Age Group	Average 10-Year Probability of Stroke										
55-59	5.9%										
60-64	7.8%										
65-69	11.0%										
70-74	13.7%										
75-79	18.0%										
80-84	22.3%										

Source: D'Agostino, R.B.; Wolf, P.A.; Belanger, A.J.; & Kannel, W.B. "Stroke Risk Profile: The Framingham Study." *Stroke*, Vol. 25, No. 1, pp. 40-43, January 1994.

Score your stroke risk for the next 10 years-WOMEN

Key: **SBP** = systolic blood pressure (score one line only, untreated or treated); **Diabetes** = history of diabetes; **Cigarettes** = smokes cigarettes; **CVD** (cardiovascular disease) = history of heart disease; **AF** = history of atrial fibrillation; **LVH** = diagnosis of left ventricular hypertrophy; **untrd** = untreated; **trtd** = treated with medication

Points	0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10															
Age	54-56	57-59	60-62	63-64	65-67	68-70	71-73	74-76	77-78	79-81	82-84															
SBP-untrd	95-106	107-118	119-130	131-143	144-155	156-167	168-180	181-192	193-204	205-216																
or SBP-trtd	95-106	107-113	114-119	120-125	126-131	132-139	140-148	149-160	161-204	205-216																
Diabetes	No			Yes																						
Cigarettes	No			Yes																						
CVD	No		Yes																							
AF	No						Yes																			
LVH	No				Yes																					
Your Points	10-Year Probability		Your Points	10-Year Probability		Your Points	10-Year Probability																			
1	1%		11	8%		21	43%																			
2	1%		12	9%		22	50%																			
3	2%		13	11%		23	57%																			
4	2%		14	13%		24	64%																			
5	2%		15	16%		25	71%																			
6	3%		16	19%		26	78%																			
7	4%		17	23%		27	84%																			
8	4%		18	27%																						
9	5%		19	32%																						
10	6%		20	37%																						
Compare with Your Age Group	Average 10-Year Probability of Stroke	<p>This example helps you assess your risk of stroke. Tally your points to score your stroke risk over the next 10 years.</p> <p>Martha, age 65, wanted to determine her risk for having a stroke, so she took this stroke risk profile. This is how she arrived at her 10-year probability risk for having a stroke:</p> <table> <tbody> <tr> <td>Age 65</td> <td>4 points</td> </tr> <tr> <td>SBP – treated, 107-113</td> <td>2 points</td> </tr> <tr> <td>Diabetes - No</td> <td>0 points</td> </tr> <tr> <td>Cigarettes - Yes</td> <td>3 points</td> </tr> <tr> <td>CVD -No</td> <td>0 points</td> </tr> <tr> <td>AF - Yes</td> <td>6 points</td> </tr> <tr> <td>LVH -No</td> <td>0 points</td> </tr> <tr> <td>TOTAL</td> <td>15 points</td> </tr> </tbody> </table>									Age 65	4 points	SBP – treated, 107-113	2 points	Diabetes - No	0 points	Cigarettes - Yes	3 points	CVD -No	0 points	AF - Yes	6 points	LVH -No	0 points	TOTAL	15 points
Age 65	4 points																									
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55-59	3.0%																									
60-64	4.7%																									
65-69	7.2%																									
70-74	10.9%																									
75-79	15.5%																									
80-84	23.9%																									

Interpretation: 15 points carries a 16 percent, 10-year probability of having a stroke. If Martha quits smoking she can reduce her points to 12, which carries a 9 percent, 10-year probability of having a stroke.

Her current point total does not mean Martha will have a stroke, but serves as a wake-up call to ways she can lower her risk or even prevent a stroke. A lower percent score doesn't mean that Martha won't have a stroke, only that she is at a lower risk of having one.

No matter what your score is, it is important to work on reducing your risk factors as Martha did in this example by quitting smoking.

The National Institute of Neurological Disorders and Stroke (NINDS)

Since its creation by Congress in 1950, the NINDS—a component of the National Institutes of Health—has grown to become the leading supporter of neurological research in the United States. Most research funded by the NINDS is conducted by scientists in public and private institutions such as universities, medical schools, and hospitals. Government scientists also conduct a wide variety of neurological research in the laboratories and branches of the NINDS itself. This research ranges from studies on the structure and function of single brain cells to tests of new diagnostic tools and treatments for those with neurological disorders. For more information, write or call the Institute's Brain Resources and Information Network (BRAIN):

BRAIN

P.O. Box 5801

Bethesda, MD 20824

800-352-9424

www.ninds.nih.gov



let's talk about

Risk Factors for Stroke

Knowing your risk factors for stroke is the first step in preventing a stroke. You can change or treat some risk factors, but others you can't. By having regular medical checkups and knowing your risk, you can focus on what you can change and lower your risk of stroke.



What risk factors can I change or treat?

- **High blood pressure.** This is the single most important risk factor for stroke because it's the leading cause of stroke. Know your blood pressure and have it checked every year. Normal blood pressure is below 120/80. If you have been told that you have high blood pressure, work with your healthcare provider to reduce it.
- **Smoking.** Smoking damages blood vessels. This can lead to blockages within those blood vessels, causing a stroke. Don't smoke and avoid second-hand smoke.
- **Diabetes.** Having diabetes more than doubles your risk of stroke. Work with your doctor to manage diabetes.
- **High cholesterol.** High cholesterol increases the risk of blocked arteries. If an artery leading to the brain becomes blocked, a stroke can result.
- **Physical inactivity and obesity.** Being inactive, obese, or both, can increase your risk of heart disease and stroke.
- **Carotid or other artery disease.** The carotid arteries in your neck supply most of the blood to your brain.

A carotid artery damaged by a fatty buildup of plaque inside the artery wall may become blocked by a blood clot. This causes a stroke.

- **Transient ischemic attacks (TIAs).** Recognizing and treating TIAs can reduce the risk of a major stroke. TIAs produce stroke-like symptoms but most have no lasting effects. Know the warning signs of a TIA and seek emergency medical treatment immediately.
- **Atrial fibrillation (AFib) or other heart disease.** In AFib the heart's upper chambers quiver (like a bowl of gelatin) rather than beating in an organized, rhythmic way. This can cause the blood to pool and clot, increasing the risk of stroke. AFib increases risk of stroke five times. People with other types of heart disease have a higher risk of stroke, too.
- **Certain blood disorders.** A high red blood cell count makes clots more likely, raising the risk of stroke. Sickle cell anemia increases stroke risk because the "sickled" cells stick to blood vessel walls and may block arteries.
- **Excessive alcohol intake.** Drinking an average of more than one drink per day for women or more than two drinks a day for men can raise blood pressure. Binge drinking can lead to stroke.

(continued)



- **Illegal drug use.** Drugs including cocaine, ecstasy, amphetamines, and heroin are associated with an increased risk of stroke.
- **Sleep apnea.** Sleep disordered breathing contributes to risk of stroke. Increasing sleep apnea severity is associated with increasing risk.

What are the risk factors I can't control?

- **Increasing age.** Stroke affects people of all ages. But the older you are, the greater your stroke risk.
- **Gender.** Women have a higher lifetime risk of stroke than men do. Use of birth control pills and pregnancy pose special stroke risks for women.
- **Heredity and race.** People whose close blood relations have had a stroke have a higher risk of stroke. African Americans have a higher risk of death and disability from stroke than whites. This is because they have high blood pressure more often. Hispanic Americans are also at higher risk of stroke.
- **Prior stroke.** Someone who has had a stroke is at higher risk of having another one.



Age, gender, heredity and race are among the stroke risk factors that you can't control.

HOW CAN I LEARN MORE?

- 1 Call 1-888-4-STROKE (1-888-478-7653) to learn more about stroke or find local support groups, or visit StrokeAssociation.org.
- 2 Sign up to get *Stroke Connection* magazine, a free magazine for stroke survivors and caregivers at strokeconnection.org.
- 3 Connect with others sharing similar journeys with stroke by joining our Support Network at strokeassociation.org/supportnetwork.

Do you have questions for the doctor or nurse?

Take a few minutes to write your questions for the next time you see your healthcare provider.

For example:

What are my risk factors for stroke?

What are the warning signs of TIAs and stroke?

My Questions:

We have many other fact sheets to help you make healthier choices to reduce your risk, manage disease or care for a loved one. Visit strokeassociation.org/letstalkaboutstroke to learn more.

Preventing and Managing Common Cold

Are you sneezing, or do you have a stuffy and runny nose? You might have a cold. Antibiotics do not work against viruses that cause colds and will not help you feel better.



What is Common Cold?

A common cold is a mild upper respiratory illness that resolves in a short period of time.

Symptoms

Symptoms of a cold usually peak within 2 to 3 days and can include:

- ◆ Sneezing
- ◆ Nasal congestion
- ◆ Sore throat
- ◆ Cough
- ◆ Fever (although most people with colds do not have fever)

When viruses that cause colds first infect the nose and sinuses, the nose makes clear mucus. This helps wash the viruses from the nose and sinuses. After 2 or 3 days, mucus may change to a white, yellow, or green color. This is normal and does not mean you need an antibiotic.

Some symptoms, especially runny or stuffy nose and cough, can last for up to 10 to 14 days. Those symptoms should improve over time.

Colds can have similar symptoms to flu. It can be difficult (or even impossible) to tell the difference between them based on symptoms alone.

Causes

More than 200 viruses can cause a cold, but rhinoviruses are the most common type. Viruses that cause colds can spread from person to person through the air and close personal contact.

When to Seek Medical Care

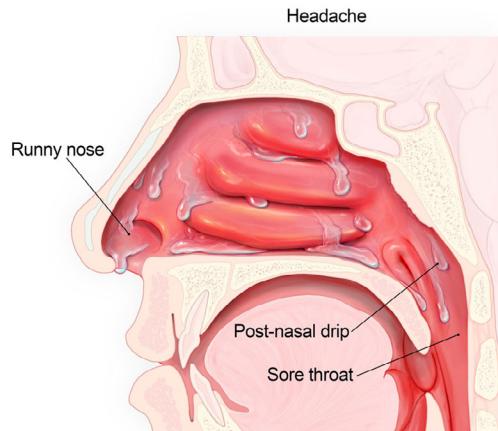
See a healthcare professional if you have:

- ◆ Trouble breathing or fast breathing
- ◆ Dehydration
- ◆ Fever that lasts longer than 4 days
- ◆ Symptoms that last more than 10 days without improvement
- ◆ Symptoms, such as fever or cough, that improve but then return or worsen
- ◆ Worsening of chronic medical conditions

This list is not all-inclusive. Please see a healthcare professional for any symptom that is severe or concerning.



Common Cold Symptoms



When you have a cold, mucus fills your nose and could cause post-nasal drip, headache, and a sore throat.

Talk to a healthcare professional right away if your child is under 3 months old with a fever of 100.4 °F (38 °C) or higher.



Treatment

There is no cure for a cold. It will get better on its own—without antibiotics. **Antibiotics won't help you get better if you have a cold.**

When antibiotics aren't needed, they won't help you, and their side effects could still cause harm. Side effects can range from mild reactions, like a rash, to more serious health problems. These problems can include severe allergic reactions, antimicrobial-resistant infections and *C. diff* infection. *C. diff* causes diarrhea that can lead to severe colon damage and death.

How to Feel Better

- ◆ Get plenty of rest.
- ◆ Drink plenty of fluids.
- ◆ Use a clean humidifier or cool mist vaporizer.
- ◆ Use saline nasal spray or drops.
 - » For young children, use a rubber suction bulb to clear mucus.
- ◆ Breathe in steam from a bowl of hot water or shower.
 - » For young children, sit with the child in a bathroom filled with steam from a running shower.
- ◆ Use throat lozenges or cough drops. Do not give lozenges to children younger than 4 years of age.
- ◆ Use honey to relieve cough for adults and children at least 1 year of age or older.

Ask your doctor or pharmacist about over-the-counter medicines that can help you feel better. Always use over-the-counter medicines as directed. Remember, over-the-counter medicines may provide temporary relief of symptoms, but they will not cure your illness.

Remember, always read over-the-counter medicine product labels before giving medicines to children. **Some over-the-counter medicines are not recommended for children of certain ages.**

- ◆ Pain relievers:
 - » Children younger than 6 months: only give acetaminophen.
 - » Children 6 months or older: it is OK to give acetaminophen or ibuprofen.
 - » Never give aspirin to children because it can cause Reye's syndrome. Reye's syndrome is a very serious, but rare illness that can harm the liver and brain.
- ◆ Cough and cold medicines:
 - » Over-the-counter cough/cold medicines are not recommended for children younger than 6 years old and can result in serious and sometimes life-threatening side effects; however, young children can have fever-reducing medicines. Contact your doctor or pharmacist about the correct dose and read and follow all directions.

Ask your doctor or pharmacist about the right dosage of over-the-counter medicines for your child's age and size. Also, tell your child's doctor and pharmacist about all prescription and over-the-counter medicines they are taking.

Prevention

CDC's Respiratory Virus Guidance provides practical recommendations and information to help people lower risk from a range of common respiratory viral illnesses. **CDC recommends that all people use core prevention strategies. These are important steps you can take to protect yourself and others:**

- ◆ Stay up to date with immunizations.
- ◆ Practice good hygiene (practices that improve cleanliness).
- ◆ Take steps for cleaner air.
- ◆ When you may have a respiratory virus:
 - » Use precautions to prevent spread.
 - » Seek health care promptly for testing and/or treatment if you have risk factors for severe illness; treatment may help lower your risk of severe illness.
- ◆ For more information, visit: www.cdc.gov/respiratory-viruses/guidance/respiratory-virus-guidance.

COMMON COLD FACT SHEET

What is the common cold?

The common cold is an infection that can be caused by many viruses, but rhinoviruses are most common. Most people get colds in the winter and spring, but it is possible to get a cold any time of the year.

Who can get the common cold?

Anyone. Adults have an average of two to three colds per year, and children have even more.

What are the symptoms of the common cold?

Symptoms of a cold usually include sore throat, runny nose, coughing, sneezing, watery eyes, headaches and body aches.

How soon do symptoms appear?

Symptoms usually begin in about two days for colds caused by rhinovirus, the most common virus that causes colds.

How is the common cold spread?

The common cold can spread through droplets in the air that are produced when an infected person coughs or sneezes. It can also spread when an infected person has close personal contact with an uninfected person. You can also get infected through contact with stool (poop) from an infected person. You can be exposed to droplets or stool when you shake hands with someone who has a cold, or touch an object or surface, such as a doorknob, that has viruses on it and then touch your eyes, mouth or nose.

Is there a vaccine for the common cold?

No.

How is the common cold treated?

There is no cure for the common cold. It is important to drink plenty of fluids and get lots of rest in order to get better. Non-prescription (over-the-counter) medicines may help reduce symptoms but will not make your cold go away any faster. Most people recover in approximately seven to 10 days. However, people with weakened immune systems, asthma or conditions that affect the lungs and breathing passages may develop serious illness, such as pneumonia.

How can people protect themselves against the common cold?

You can take the following steps to protect against a cold:

- Wash your hands often with soap and water, scrubbing your hands for at least 20 seconds
- Cover your nose and mouth with a tissue when you cough or sneeze
- Avoid touching your eyes, nose and mouth with unwashed hands
- Disinfect frequently touched surfaces, and objects such as toys and doorknobs
- Avoid personal contact, such as kissing or sharing cups or eating utensils, with people who are sick

Where can I get more information?

Information about the common cold and other related health topics can be found at www.cdc.gov. The DC Department of Health promotes the health and safety of the District residents. For additional information, please visit www.doh.dc.gov or call (202) 442-9371.



PREVENTION AND TREATMENT OF VIRAL UPPER RESPIRATORY INFECTIONS

Non-influenza viral upper respiratory infections (URIs), or common colds, are the most common infections experienced by human beings. They account for more than 25 million doctor visits and 40 million lost days of school and work annually in the United States.^[1] These numbers dramatically increase when influenza infections are included. While there is no cure for these viral infections, there are many things that patients can do to decrease their likelihood of contracting such an illness and, if they do get it, to minimize the length and severity of symptoms. The following focuses on a number of approaches that might be woven into a Personal Health Plan (PHP).

MOVING THE BODY

Growing evidence indicates that moderate amounts of regular exercise improve immune function and decrease the risk of developing a URI.^[2] However, there is a transient depression of immune function with associated *increased* risk of URI after periods of intense, prolonged exercise such as training for and/or running in a marathon.^[3] For general health, including prevention of upper respiratory infections, consider recommending 30-40 minutes of aerobic exercise most days of the week at an intensity that allows talking but not singing.

SURROUNDINGS

A number of simple hygiene and environmental tactics can be used to prevent spreading or contracting viral URIs.^[4]

- Sneezing and coughing into tissues keeps the viruses from spreading, especially when the tissues are immediately discarded and hands are then washed.
- If no tissue is available, one should sneeze or cough into the bend of the elbow.
- Avoid, as much as is practical, prolonged contact with anyone who has a cold.
- The importance of hand-washing cannot be underestimated.
- Keep the hands out of contact with the eyes, nose and mouth.
- Keeping the kitchen and bathroom countertops clean is important, especially when someone in the family has a common cold. Children's toys should be washed before and after play when someone in the house has a cold.
- Focus on temperature and humidity. Keeping an affected individual's room warm but not overheated is important. If the air is dry, a cool-mist humidifier or vaporizer can moisten the air and help ease congestion and coughing. A clean humidifier may help to prevent the growth of bacteria and molds.

The common cold is also influenced by social factors, and both acute and chronic stress can increase the risk of infection. A series of studies showed that certain psychosocial variables predicted whether volunteers would become infected when they were exposed to one of

the most common viruses implicated in URIs. Variables that predicted infection and increased symptom severity and duration include childhood socioeconomic status, number and quality of social relationships, acute and chronic stress, and negative emotion.[1]

FOOD AND DRINK

GENERAL

Nutrition may be the single most important factor in optimizing immune function because it can have a positive or negative impact depending on dietary patterns. Antioxidant micronutrients (vitamins and minerals which are only required in small amounts) such as selenium, zinc, fatty acids, and vitamins E, A, and D help regulate the function of the immune system.[5] Nutritional and supplemental intake of flavonoid polyphenols seems to decrease URI incidence. Flavonoids are rich in foods such as dark-colored berries, green tea, onions, apples, citrus fruits, and soybeans.[6] Studies have shown that a diet insufficient in macronutrients (protein, carbohydrate, and fat) leads to more frequent bouts of chronic infections.[7] Although evidence is lacking, staying well-hydrated with a variety of fluids including water, broth, tea, etc., is frequently recommended. For more information, refer to the "[Food and Drink](#)" Whole Health Overview.

DIETARY SUPPLEMENTS

Note: Please refer to the [Passport to Whole Health](#), Chapter 15 on Dietary Supplements for more information about how to determine whether or not a specific supplement is appropriate for a given individual. Supplements are not regulated with the same degree of oversight as medications, and it is important that clinicians keep this in mind. Products vary greatly in terms of accuracy of labeling, presence of adulterants, and the legitimacy of claims made by the manufacturer.

Vitamin C

Some evidence supports use of vitamin C at doses ranging from 200-500 mg daily for prevention or early intervention at first onset of symptoms of a URI.[1] In a subset of studies in people living in extreme circumstances, including soldiers in subarctic exercises, skiers, and marathon runners, vitamin C has led to significant reductions in the risk of developing colds by approximately 50%. [8] When taken preventive, vitamin C may have a mild impact on common cold duration and severity, but this is of questionable clinical significance. Vitamin C consumption of 200 mg per day seems to be the threshold for this impact, and this can easily be obtained through nutrition, rather than supplementation. However, there may be benefit of using higher-dose vitamin C within the first 24 hours of an upper respiratory tract infection, up to 8g daily (in divided doses) for 5 days.[9,10]

While supplements can certainly be used, regular intake of vitamin C-rich fruits and vegetables such as citrus fruits (e.g., oranges and grapefruit) and their juices, red and green peppers, kiwifruit, broccoli, strawberries, cantaloupe, baked potatoes, and tomatoes are

likely to have additional health benefits (and be more pleasurable to consume) than swallowing a pill.

Zinc

Studies that have looked at concentrated dosing of zinc with URIs have had very mixed results. Overall, zinc-containing products seem to be beneficial for reducing the duration of symptoms of the common cold in adults by about 1.6 days, but adverse effects such as bad taste and nausea may limit their usefulness. Zinc from supplements taken prophylactically does not seem to prevent the common cold.[11] Zinc lozenges (dosed greater than or equal to 75 mg/day given within 25 hours of symptom onset) can decrease duration of URI symptoms, including cough.[12] Recommended doses range from 9-24 mg every 2 hours while awake and still symptomatic, starting within 48 hours of symptom onset. Regular use of higher doses can interfere with copper absorption. Nasal preparations have been associated with loss of smell.[1] As with vitamin C, including foods rich in zinc as part of a healthful diet can also be reasonably supported. Foods to consider include oysters, red meat, poultry, seafood such as crab and lobsters, and fortified cereals. Other foods containing lower levels of zinc include beans, nuts, whole grains, and dairy products.

Garlic (*Allium sativum*)

While there are dozens of reported health benefits of garlic, data is limited in its usefulness in upper respiratory infections. The data that does exist, however, supports that garlic has a role in decreasing frequency of URIs and shortening duration if a cold is experienced. Many garlic products are available, but they are of varying quality. It is preferred to eat raw or lightly cooked crushed garlic.[1] One palatable use of garlic is to pack a jar with garlic cloves and cover with honey. Let this sit in a lightly covered jar for two weeks. At first onset of URI symptoms, combine 1-2 tbs of the honey with 1-2 tbsp of lemon juice and one-half cup of warm water. Gargle and/or drink. The garlic cloves can be eaten, chopped in the tea, or used for cooking.

Honey

Honey has been studied as an antitussive in children and found to be better than both no treatment and diphenhydramine, but not better than dextromethorphan.[13] Honey can also add to the expectorant properties of other herbs when used in teas.[14]

RECHARGE

Sleep and immune function seem to influence each other. Both sleep deprivation and acute illness (such as a viral infection) increase inflammatory markers that have been found to make us more tired. Studies have shown that sleep deprivation leads to decreased immune function, leading to increased frequency of infections and decreased response to immunizations such as the influenza vaccine. In contrast, sleep strengthens the immune response; most immune cells' response to challenges (e.g., viral infections) peak at night.[15] Adequate sleep appears to be 7-8 hours per night. Too much sleep (greater than 10 hours), however, has been associated with increased risk of cardiovascular disease.[16]

FAMILY, FRIENDS, & CO-WORKERS

Interpersonal relationships are an extremely important aspect of our overall well-being. Indeed, their quality can impact how well our immune systems can protect us from disease. Studies have found that more negative or hostile behaviors during discussions focused on conflict, marital disruption, or the chronic stress of caring for a relative with Alzheimer's disease can suppress immune function. There is some evidence to suggest that *quality* interpersonal relationships can be protective against these types of immune changes.[17,18] Even in clinician- and provider-patient interactions, patients seem to recover more quickly from URIs when they feel cared for by their health care practitioner.[19] While encouraging patients to foster healthy relationships and treating them with sincere compassion may not "cure" a cold, it can significantly influence how often and how long patients are impacted by symptoms.

SPIRIT & SOUL

Individuals with higher levels of spiritual well-being, including participation in formal religion, seem to have better cardiovascular, neuroendocrine, and immune function.[20,21] Taking an appropriate spiritual history is a part of supporting overall health in all individuals, including optimizing immune function. For more information, refer to the "[Spirit and Soul](#)" Whole Health overview.

POWER OF THE MIND

MINDFULNESS MEDITATION

Mindfulness meditation has been studied in relation to immune function. This type of meditation is a practice that fosters an ability to take a step back and notice our reactions to external stimuli, giving people a chance to pause and choose how they will respond. Some studies have shown regular mindfulness practices to lead to more robust antibody responses to the influenza vaccine.[22] Others have failed to show this relationship, but they did correlate optimism, less anxiety, and lower perceived stress with high antibody levels following immunization.[23] Mindfulness meditation has also been associated with decreased symptom severity in the common cold.[24]

Resources and an introduction to a variety of centering practices including meditation and centering prayer can be found in the [Meditation for Health and Happiness](#) handout.

GUIDED IMAGERY

Guided Imagery is a technique used by trained professionals to help patients relax and focus on images associated with personal issues they are confronting. It may include interactive, objective guidance to encourage patients to find solutions to problems by exploring their existing inner resources. There has been some preliminary evidence that Guided Imagery in children that addresses stress and encourages relaxation may reduce the duration of symptoms due to upper respiratory tract URIs, including colds.[25]

DIETARY SUPPLEMENTS

ANDROGRAPHIS AND SIBERIAN GINSENG

Andrographis (*Andrographis paniculata*) is native to Asia with a long history of use in Indian medicine. Individual studies and systematic reviews support its role in treatment of URIs. A specific product called Kan Jang®, which combines andrographis with Siberian ginseng (*Eleutherococcus senticosus*), also seems to be superior to placebo, especially when started within 72 hours of symptom onset. There is preliminary evidence that andrographis, when taken prophylactically, can reduce the risk of developing a URI by 50% after two months of continuous treatment. This herb is generally well tolerated. It can, however, cause gastrointestinal distress, urticaria, fatigue, and headache. In high doses, it may cause transient elevation of liver enzymes.[1,26]

Dosing:

- For treating the common cold: A combination of a specific andrographis extract, standardized to contain 4-5.6 mg andrographolide, plus Siberian ginseng (Kan Jang, Swedish Herbal Institute) 400 mg, 3 times daily
- For preventing the common cold: 200 mg daily, 5 days per week
- For relieving fever and sore throat in pharyngotonsillitis: 3-6 gm daily
- For influenza: A combination of a specific andrographis extract 178-266 mg, standardized to contain 4-5.6 mg andrographolide, plus Siberian ginseng 20-30 mg (the product studied was Kan Jang, from the Swedish Herbal Institute), 3 times daily for 3-5 days[26]

ASTRAGALUS (*ASTRAGALUS MEMBRANACEUS*)

Astragalus is an important medicinal plant in Chinese medicine that seems to have antiviral and immune boosting properties.[1] Although data is limited, there is some preliminary evidence that supports its efficacy in reducing the risk of catching the common cold.[27]

Dosing:

- Tea: 3-6 tbsp of dried, chopped root, simmered in 2-4 cups of water for 10-15 minutes
- Capsule: 1-3 gm of dried, powdered root daily
- Tincture: 2-4 mL, 3 times daily

While astragalus is generally safe, it should not be used in an acute infection. Those with autoimmune diseases should consult with a clinician before use due to its immune-boosting effects.[14]

ECHINACEA (*ECHINACEA ANGUSTIFOLIA, ECHINACEA PALLIDA, ECHINACEA PURPUREA*)

There have been a plethora of studies and literature reviews around the efficacy of echinacea for the prevention and treatment of URIs. Overall, the data seems to support its role in decreasing the duration and symptom severity.[1,28] The best evidence appears to be for preparations containing *Echinacea purpurea* species and three specific commercial formulations. These are Echinaforce, made by Bioforce AG; EchinaGuard by Nature's Way; and Echinacin, by Madaus. A relatively large 2016 study (involving nearly 700 people) of Echinaforce showed a significant decrease in URI episodes when it was used for prevention, as well as decreased duration of URI and use of additional medications when it was used for URI treatment.[29]

The herb also seems to be most potent when taken as early as possible in the course of the illness and taken for 7-10 days.[30]

Dosing:

- Tea: Steep 1-2 tsp of Echinacea leaf/flower in 1 cup boiling water, or boil 1 tsp of root in 1-2 cups of water for 10 minutes.
- Tincture: When coming down with a cold, take either a tincture of Echinacea root or the expressed juice from fresh *E. purpurea* above-ground parts stabilized in alcohol. Every 2 hours, take 1-2 mL directly or diluted in water.
- Capsule: Dose varies on product.

Taken early in the onset of illness, echinacea shortens the duration of the illness by 1-2 days. Use with caution if a person is taking medications such as itraconazole, lovastatin, fexofenadine, or birth control pills due to potential inhibition of certain liver enzymes. Also use with caution in those with allergies to members of the Asteraceae (daisy) family.[14]

ELDERBERRY (*SAMBUCUS NIGRA*)

Clinical research shows that some elderberry extracts might reduce flu-like symptoms. Sambucol by Nature's Way at a dose of 15 mL (1 tbsp) four times daily seems to reduce the symptoms and duration of influenza infection when given within 48 hours of symptoms. On average, this elderberry extract seems to reduce the duration of symptoms by 56%. Another study of elderberry lozenges (ViraBLOC by HerbalScience) taken at 175 mg four times daily for 2 days, started within 24 hours of initial symptoms, significantly improved flu-like symptoms compared to placebo.[31] Avoid use of unripe berries and other plant parts as they contain compounds that can cause nausea, vomiting, diarrhea, dizziness, and confusion.[14]

AMERICAN GINSENG (*PANAX QUINQUEFOLIUS*)

Ginseng is considered an adaptogenic herb—one that brings balance, homeostasis, and healing. Several trials have shown decrease in episodes of cold and flu and decreased duration and severity and symptoms with regular use of this herb. The specific product was an American ginseng extract called CVT-E002 (Cold-FX made by Afexa Life Sciences, Canada), taken at 200 mg twice daily over a three- to four-month period during influenza season.[32] For treatment of acute infection, ginseng at 100 mg twice daily for 9 days has been used. Ginseng is generally well tolerated. The most common side effect is insomnia. It can also infrequently cause tachycardia, palpitations, and hypertension.[1]

PROBIOTICS

Probiotics are live bacteria that are thought to support healthy gastrointestinal function. A 2015 Cochrane review and meta-analysis of 12 studies involving 3,720 participants found that, while quality of evidence was low, regular intake of probiotics decreased the number and duration of URIs, antibiotic use, and URI-related absences from school.[33] Strains that appeared to be beneficial include *Lactobacillus rhamnosus* and *Lactobacillus GG* (in one study) and *Lactobacillus acidophilus* and *Bifidobacterium animalis*. The dose is 5-10 billion colony-forming units (CFUs) twice daily.[1]

BEE PROPOLIS

Propolis is a resinous material from poplar and conifer buds used by bees for maintaining their hives. Many propolis preparations are contaminated with beehive by-products. There is some evidence that propolis might decrease the duration of cold symptoms by 2.5 times compared with placebo in patients with rhinovirus infection. The typical dose is typically 500 mg daily.[34]

OSCILLOCOCCINUM

Homeopathy is a very safe modality for treatment of URIs, but studies vary in quality and size. Available data suggests some homeopathic remedies may be comparable to conventional treatment with fewer side effects.[35] Oscilloccoccinum is a homeopathic dilution of duck liver and heart extracts frequently used to prevent and treat infection with the influenza virus. While reviews of the studies show no evidence that it has a role in prevention of the flu, there is some preliminary evidence that it might reduce the duration of symptoms by a minimal amount (approximately 0.28 days).[36]

PELARGONIUM (*PELARGONIUM SIDOIDES*)/UMCKALOABO

Pelargonium is a genus of flowering plants mostly native to southern Africa that have long been used medicinally in that part of the world. Studies have shown efficacy of a product called Umckaloabo for URI symptoms of cough, fatigue, phlegm production, and hoarseness. The product is available in alcohol-containing and alcohol-free formulations. Dosing can be followed according to the packaging. Allergic reactions have been reported,

but the product generally seems to be safe.[1,14] EPs 7630 is a specific herbal extract from the roots of *Pelargonium sidoides* that has been shown to improve URI symptoms and lead to more rapid remission of symptoms.[37]

SINUPRET®

Sinupret® is an herbal combination product that has been found to have antiviral activity against several viruses known to cause the common cold.[38] It contains gentian root (*Gentiana lutea*), primrose flower (*Primula veris*), sorrel herb (*Rumex acetosa*), European elder flower (*Sambucus nigra*), and European vervain (*Verbena officinalis*). The dose is one tablet 3 times daily for 7-14 days. It is to be avoided in pregnant and lactating women and children.[39]

LICORICE (*GLYCYYRRHIZA GLABRA*)

The tissue-coating properties of licorice root give it utility in the symptomatic treatment of sore throats and coughs. Licorice also has antiviral activity again influenza viruses that seems to be related to increased interferon-gamma production by T cells and changes resulting in reduced virus uptake by cells.[28]

Dosage:

- Lozenge: 1 lozenge every few hours for several days to soothe inflamed tonsils and throats
- Tea: For nagging cough, especially when associated with URI causing nasal drip, boil 1-2 tsp of chopped licorice root in 2 cups water for 10 minutes. Strain, cool, and take a half cup 3-4 times daily for up to seven days.

The doses above are typically safe. However, the higher doses and long term use typically needed to treat gastritis or heartburn can cause hypertension and electrolyte imbalances if the deglycyrrhizinated (DGL) form of licorice is not used.[14]

SAGE

Sage mouthwashes and gargles have been approved for use against sore throat in Germany by the German Commission E.[40]

Dosage:

- Gargle: For a sore throat, steep 1 tsp chopped sage in 1 cup water for 10 minutes. Strain and drink or use as a gargle (+/- salt).[14]

THYME

The culinary herb thyme has antispasmodic and expectorant activities which allow it to calm coughs and help clear bronchial mucus.

Dosage:

- Tea: 1-2 tsp dried leaves and flowers can be steeped in 1 cup hot water and taken 3 times daily. Adding honey can increase the expectorant and antitussive properties. Covering the tea while steeping can help prevent important volatile oils from evaporating.[14]

THYME COUGH SYRUP

- 2 tbsp dried thyme (or 4 tbsp fresh)
- 1 tsp lemon juice
- 1 cup water
- 1/2 cup organic honey

Pour 1 cup of near-boiling water over thyme and steep 10 minutes, covered. Strain and add honey and lemon juice. Refrigerate for up to one week. For children 18 months and older, give 1 tbsp as needed. Those who don't like the flavor of thyme can substitute fennel seed and prepare it the same way. Simmer the seeds gently on low heat for 15 minutes, then strain.

EUCALYPTUS (*EUCALYPTUS GLOBULUS*)

Eucalyptus as an essential oil has a menthol-like effect that can relieve chest and sinus congestion. Consider recommending the following:

- Bring large saucepan of water to a boil and pour into heat-proof bowl.
- Add 2 drops eucalyptus oil, 2 drops lavender oil, and 2 drops tea tree oil.
- While keeping eyes closed, cover head and bowl with a towel and inhale vapors for three minutes.[14]
- All three oils can also be used in a bath. Add 6-7 drops in a full tub or 1 drop massaged under the collar bones while in the shower.

OTHER INTERVENTIONS

NASAL IRRIGATION

Nasal irrigation with saline solutions is one of the most effective treatments for chronic rhinosinusitis, and it empowers patients in that they are able to treat themselves without the need for physician input.[1] Here is an instructional handout on [Medicine Nasal Irrigation](#), including a comment on water quality.[41] While saline is frequently quite sufficient, at times the addition of 1 drop of eucalyptus oil or use of Alkalol (a product found at most major drug store chains) in the saline solution offers a menthol-like intensity

that can increase its decongestant effect. These both can be quite intense and patients should be warned about that if its use is suggested.

RESOURCE LINKS

- “[Food and Drink](https://www.va.gov/WOLEHEALTHLIBRARY/self-care/food-and-drink.asp)”: <https://www.va.gov/WOLEHEALTHLIBRARY/self-care/food-and-drink.asp>
- [Medicine Nasal Irrigation](https://www.fammed.wisc.edu/files/webfm-uploads/documents/research/nasalirrigationinstructions.pdf): <https://www.fammed.wisc.edu/files/webfm-uploads/documents/research/nasalirrigationinstructions.pdf>
- [Meditation for Health and Happiness](http://www.fammed.wisc.edu/sites/default/files/webfm-uploads/documents/outreach/im/module_meditation_patient.pdf):
http://www.fammed.wisc.edu/sites/default/files/webfm-uploads/documents/outreach/im/module_meditation_patient.pdf
- [Passport to Whole Health](https://www.va.gov/WOLEHEALTHLIBRARY/docs/Passport_to_WholeHealth_FY2020_508.pdf):
https://www.va.gov/WOLEHEALTHLIBRARY/docs/Passport_to_WholeHealth_FY2020_508.pdf
- “[Spirit and Soul](https://www.va.gov/WOLEHEALTHLIBRARY/self-care/spirit-soul.asp)”: <https://www.va.gov/WOLEHEALTHLIBRARY/self-care/spirit-soul.asp>

AUTHOR(S)

“Prevention and Treatment of Viral Upper Respiratory Infection” was written by [Greta Kuphal](#), MD (2014, updated 2020).

This Whole Health tool was made possible through a collaborative effort between the University of Wisconsin Integrative Health Program, VA Office of Patient Centered Care and Cultural Transformation, and Pacific Institute for Research and Evaluation.

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Prevention and Treatment of Viral Upper Respiratory Infection

TABLE OF COMMUNICABLE DISEASES

Disease	Signs & symptoms	Incubation	Communicability	Prevention
Chicken pox – varicella zoster virus; viral disease	Esp seen winter & spring. Resp symptoms, malaise (not feeling well), low-grade fever followed by rash starting on face & trunk spreading to rest of body. Fluid filled vesicles rupture & scab over within 1 week.	10-21 days	Thru inhalation of airborne droplets & direct contact of weeping lesions & contaminated linens.	Mask patient. Provider should avoid contact if they've never had chicken pox. Vaccination now available (1995) and part of childhood immunizations. Pt isolated until all lesions crusted over and dry.
Common cold (viral rhinitis)	>200 strains of viruses cause the common cold. Course mild, often without fever and without muscle aching.	12 hours – 5 days (average 48 hours)	Direct contact, airborne droplet, contaminated hands and linens.	Handwashing
Conjunctivitis (pink eye)	The clinical syndrome begins with tearing, irritation & redness of eye(s) followed by edema of lids, photophobia (light sensitivity) & pus drainage. Course lasts from 2 days up to 2-3 weeks.	24-72 hours	Contact with discharge or upper respiratory tract of infected persons (fingers, clothing, eye make-up). Communicable during course of active infection.	Good personnel hygiene. Daily laundering of bed linens including pillowcase and towels. Use wash cloth on unaffected eye first and then launder after use. No school during acute stage. Tx with antibiotic eye medications.
Hepatitis – inflammation of the liver due to multiple causes (virus most common)	Signs & symptoms generally same for all forms: Headache; fever; weakness; joint pain; anorexia; nausea; vomiting; RUQ pain; jaundice; dark urine; clay-colored stools			Most important is avoidance of contact with blood and body fluids of all persons.
Hepatitis A – infectious or viral	May have no symptoms. Adults may have abdominal pain, loss of appetite, nausea, diarrhea, light colored stools, dark urine, fatigue, fever & jaundice.	15-50 days; average 30 days. Disease follows mild course &	Fecal-oral route. Virus lasts on hands about 4 hours. More	Vaccines in active areas (active immunity). Good handwashing.

Disease	Signs & symptoms	Incubation	Communicability	Prevention
Hepatitis A		lasts 2-6 weeks	comm. latter half of incubation & most during 1 st week of symptoms	There is no long term chronic infection.
Hepatitis B – serum hepatitis	It can take 1-9 months before symptoms develop. Some have mild flu-like symptoms. Dark urine, light colored stools, fatigue, fever & jaundice. Can develop acute hepatitis, cirrhosis, liver cancer.	4-25 weeks; average 8-12 weeks	Direct contact (blood, semen, vaginal fluid, saliva). Can become asymptomatic chronic carrier capable of transmitting disease to others.	Vaccination 90% effective. Virus stable on surfaces with dried blood for 7 days.
Hepatitis C Leading cause of cirrhosis & liver cancer.	Chronic condition in 85% of infected people. Liver fibrosis into cirrhosis in 20% of infected people.	2-25 weeks; avge 7-9 weeks. Disease may be dormant 10-20 years before symptoms.	Contact with infected blood primarily with IV drug use & sexual contact.	Since 1989 screen blood for HCV. No vaccine due to high mutation rate.
HIV – a virus that attacks the immune system & causes AIDS (a collection of signs & symptoms)	Mono-like syndrome, fatigue, fever, sore throat, lymphadenopathy, splenomegaly, rash, diarrhea. Skin lesions (Kaposi's sarcoma); opportunistic infections (Pneumocystic carinii pneumonia, Tb)	Variable. May develop detectable antibodies 1-3 months. Variable time from HIV infection to diagnosis of AIDS.	Bloodborne through blood & body fluids	Universal standard precautions Death is usually from the opportunistic diseases that take advantage of the patient's weakened systems.
Influenza (flu) Viral disease	Epidemics usually in winter. Sudden onset fever for 3-5 days, chills, tiredness, malaise (not feeling well), musculoskeletal aches, nasal discharge, dry cough, mild sore throat. Children can also experience GI symptoms of nausea, vomiting & diarrhea although this is uncommon in	1-4 days Peak flu season is late December through March.	Direct contact especially in crowded areas via airborne. The virus can persist on surfaces for hours but indirect contact is less	Vaccination available annually; most effective if received from September to mid-November. Treatment is symptomatic (rest, fluids, OTC med for fever &

Disease	Signs & symptoms	Incubation	Communicability	Prevention
Influenza	adults. "Stomach flu" with GI symptoms is caused by other viruses.		common. Contagious 1 day prior to being sick up to 3-7 days after 1 st symptom.	aches).
Measles (rubeola, hard measles)	Initially symptoms of severe cold with fever, conjunctivitis, swollen eyelids, photophobia, malaise, cough, nasopharyngeal congestion, red bumpy rash lasting about 6 days	7-14 days; average 10 days	Inhalation of infective droplets & direct contact. Highly communicable virus mostly before prodrome starts (early or impending disease time), to about 4 days after rash appears.	Handwashing critical. MMR vaccination part of childhood program.
Meningitis – inflammation of meninges caused by bacteria & viruses	Viral meningitis – most common type of meningitis; self-limited disease lasting 7-10 days. Bacterial – very serious infection; fever, chills, headache, nuchal rigidity (stiff neck) with flexion, arthralgia (aching joints), lethargy, malaise (ill feeling), altered mental status, vomiting, seizures.	2-4 days up to 10 days	Resp droplets; contact with oral secretions, crowding, close contact, smoking, lower socioeconomic status. Viral meningitis can also be spread via contact with feces of infected person.	Practice good handwashing. Mask for pt and self. Universal precautions. Post exposure antibiotics started within 24 hours. Vaccination now part of childhood series (Haemophilus influenza type B).
Monkeypox	Rare viral disease. 12 days after exposure get fever, headache, muscle aches, backache, swollen lymph nodes, tired. Rash 1-3 days after	12 days	From an animal with monkeypox if bitten or touch the animal's	No specific treatment. Possibly the smallpox vaccine to prevent against getting.

Disease	Signs & symptoms	Incubation	Communicability	Prevention
Monkeypox	fever; often starts on face as fluid filled bumps & the spreads.		blood, body fluids, or its rash. Person-to-person from large respiratory droplets during long periods of face-to-face contact or touching body fluids or contaminated objects of infected persons.	
MRSA – methicillin resistant staphylococcus aureus	Usually found in ill patients who are multidrug resistant. Often in open wounds, post-op wounds, around G-tube sites.		Usually spread from infected patients via hands of HCW & inanimate objects (B/P cuff, stethoscope).	Handwashing after any patient contact. Wear gloves when doing pt contact. Protective gowns when in contact with infected linens. Avoid sharing of equipment. HCW can be colonized with MRSA (not common) but often are not ill & are not at risk to other healthy persons (peers, family).
Mumps (Acute viral disease)	Painful enlargement of salivary glands. Feverish cold followed by swelling & stiffening of parotid salivary gland in front of ear. Often bilateral. Earache, difficulty chewing & swallowing. Glands tender to palpation.	12-25 days	Resp droplets & direct contact with saliva of infected pt. Communicable 3 days before to about 4 days after symptoms start. Risk of contracting	Standard BSI. MMR vaccination is standard for childhood immunizations. Adults born after 1956 should get at least 1 dose of MMR.

Disease	Signs & symptoms	Incubation	Communicability	Prevention
mumps			disease is minimal.	
Pertussis – whooping cough	1 st phase – common cold symptoms lasts 1-2 weeks. 2 nd phase lasts month or longer. No fever. Mild cough that can become severe & violent, productive. 3 rd phase – frequency and severity of coughing decreases.	6-20 days	Transmitted via respiratory secretions or in an aerosolized form. Highly contagious except in 3 rd phase. Communicability greatest before 2 nd phase.	Mask pt. DPT vaccination in childhood series (not sure how long immunity lasts).
Pneumonia	Chills, high fever, dyspnea, pleuritic chest pain worsened by deep inspiration, cough, crackles & wheezes heard on breath sounds		Highest risk are the non-healthy populations	Masks. Vaccination available esp for children <2 years old and adults >65 and for those post-splenectomy.
Rubella – German measles; virus	Generally milder than measles. Sore throat, low grade fever. Fine pink rash on face, trunk & extremities lasting about 3 days.	12-19 days	Inhalation of infective droplets	Mask pt. MMR vaccination part of childhood program.
SARS (severe acute respiratory syndrome)	Viral disease. Fever >100.4°F, chills, headache, body achiness, respiratory complaints (cough, SOB, dyspnea, pneumonia), pulse ox <94% room air, travel within 10 days of symptoms to Ontario, Canada, People's Republic of China, Vietnam, Taiwan, &/or Singapore OR close contact with symptomatic person within 10 days of symptoms.	Typically 2-7 days up to 10 days	Respiratory droplets when coughing or sneezing droplets into air. Can touch infectious material on environmental surfaces and bring to your eyes, nose,	Fit tested N-95 respirators for caregivers within 6 feet of patient. Patient to also wear N-95 mask. Caregivers to wear gloves, gowns, goggles, and face shields. Proper handwashing extremely important. Wear protective gear when

Disease	Signs & symptoms	Incubation	Communicability	Prevention
SARS			mouth by unwashed hands.	cleaning equipment and rig. Avoid aerosolizing infectious material.
Scabies	A parasitic disease of skin caused by a mite. Penetration is visible as papules, vesicles, or tiny linear burrows containing mites & their eggs. Lesions prominent around finger webs, anterior surfaces of wrists & elbows, anterior axillary folds, belt line, thighs, external genitalia in men, nipples & abd & lower portion of buttocks in women. Itching intense esp at night. Complications limited to lesions that get infected from scratching.	2-6 weeks before onset of itching. Reexposure – symptoms develop in 1-4 days.	Transmitted skin to skin contact. Transfer from underwear & bedclothes only if immediate contact. Communicable until eggs & mites are destroyed by tx, ordinarily 1 or occasionally 2 courses of tx 1 week apart.	Educate on mode of transmission & need for early diagnosis & tx. No work or school until day after tx started. Contact isolation. Disinfection for clothes & bed sheets used 48 hours prior to start of tx. Tx is a topical solution.
Shingles (varicella- zoster virus) Second outbreak of the chicken pox virus.	Localized manifestation of vesicle with red base on skin areas. They follow a nerve tract most often on the chest wall & are usually unilateral & linear. Severe pain & paresthesia (tingling, prickling sensation) are common. Rash or blisters present 1-14 days.		Shingles itself is not contagious but contact with someone with shingles could lead to chicken pox in someone who never had it	After chickenpox, the virus is dormant in nerve tissue; as we age, the virus may reappear as shingles when the dormant virus becomes active. Most common in persons >50.
Smallpox – serious, contagious & sometimes fatal disease (30% mortality rate). Last case in USA in 1949 (in the world was 1977 in Somalia). Caused by variola virus. Humans only	1st symptoms last 2-4 days: high fever, malaise (not feeling well), head & body aches, sometimes vomiting. Best to isolate the patient at time of fever & not to wait for development of rash. Next 4 days (most contagious): rash emerges 1 st as small red spots on tongue & in mouth. Spots turn into sores that break open & spread virus into mouth & throat. Then rash develops spreading on whole body	12-14 days but can range 7-17 days. Not contagious until the rash emerges.	Stable in aerosol form. Spread directly from person to person primarily by droplet or aerosol. Could also be spread via contaminated clothing or bed linens. Those most at risk are	No treatment currently. Vaccinations stopped in 1972 in the USA. Autoclave clothing & linens. Contaminated surfaces should be washed with hypochlorite (bleach) & quaternary ammonia. Treatment is supportive in nature. Vaccination within 3 days will prevent

Disease	Signs & symptoms	Incubation	Communicability	Prevention
known natural hosts of variola. One confirmed case qualifies as a public health emergency. (smallpox)	within 24 hours. Rash becomes raised bumps that become liquid filled. Next 5 days (still contagious): bumps become pustules (sharply raised, round & firm bumps). Next 5 days (still contagious): pustules begin to form a crust & then scab. Next 6 days (still contagious): scabs begin to fall off leaving marks on skin that eventually turn into pitted scars. Contagious until all scabs fall off: (about 3 weeks after rash appears). Scabs must be properly disposed of as they fall off		those with close contact (live in the same home or have spent at least 3 hours in the same room with someone who has smallpox).	or significantly modify smallpox for most. Vaccination 4-7 days post exposure may offer some protection or modify severity of disease. For those vaccinated, the site needs to be kept covered & dry. The bandage should be changed every 1-2 days keeping the site covered with clothing. Avoid spread of vaccinia virus to other parts of body with good handwashing especially after touching the bandage or vaccination site.
Tuberculosis (Tb) – bacterial disease	Primarily affects resp system. May spread to other organ systems. Development of disease about 6-12 months after infection. Chills, fever, fatigue, productive or non-productive chronic cough, weight loss, night sweats, hemoptysis. <u>TB infection</u> – person has the bacteria but are not sick & not capable of spreading the disease. May become ill if health status changes. May be treated prophylactically for now. <u>TB disease</u> – person ill, is capable of spreading the disease. Needs meds.	4-12-weeks Persons most susceptible: HIV, close contact with TB pt, immunocompromised, foreign borne in country with high TB rate, Some HCW & prison guards, malnourished, ETOH & drug users.	Most commonly through airborne resp droplets. Repeated exposure is generally necessary to become infected so prolonged exposure increases risk.	Universal precautions. Mask pt and self. The TB organism dies when exposed to light & air. Skin test annually. If the TB skin test is positive, will still need to be evaluated to determine if the TB is active. Incidence of TB rose in 1985, started to decline in 1992 to date probably due to improved control programs. TB can be cured with meds.
VRE – vancomycin-	Most susceptible are those with weak immune systems or those treated with		Highly communicable	Hardy germ; can survive on hard surfaces 5-7

Disease	Signs & symptoms	Incubation	Communicability	Prevention
resistant enterococcus. (VRE)	many antibiotics. Most often found in stool. Also in urine, blood, infected wounds, other body fluids (or wherever it can be carried by the bloodstream)		with direct & indirect contact	days & on hands for hours. Easy to kill with good handwashing. Protective gowns and gloves to be worn.

Disease	Signs & symptoms	Incubation	Communicability	Prevention
West Niles Virus (West Nile fever – mild disease with flu-like symptoms that last few days, no long term health effects). (West Nile Encephalitis or Meningitis– Less than 1% of those infected. The most severe form of infection. Encephalitis is inflammation of the brain and meningitis is inflammation of the membranes of the brain.	Most victims asymptomatic. <u>Mild infection</u> (20% of those infected): fever, headache, body aches, occ rash on trunk, swollen lymph glands. Symptoms generally last 3-6 days. <u>Severe infection</u> (less than 1%): headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis. Encephalitis reported more commonly than meningitis.	Usually 3-14 days Infection is suspected based on clinical symptoms and history and confirmed with a laboratory test measuring the antibodies that are produced early.	The disease is spread by a bite of an infected mosquito or blood transfusion of contaminated blood. The virus is in the blood a very short time; people develop an antibody for further protection. The disease is <u>not</u> transmitted from person to person.	Avoid activities that expose you to mosquito bites; use insect repellent sparingly and one that contains DEET. Use netting over infant carriers. Try to avoid the outdoors at dawn, dusk & early evening. There is no specific treatment, but supportive care for symptoms. Infections do not last very long.
Avian or Bird Flu A contagious disease of animals caused by viruses that normally affect only birds and occasionally pigs. Wild birds carry the disease but rarely get sick. Domesticated birds get sick &	Typical influenza-like symptoms: Fever, cough, sore throat, muscle aches, eye infections (conjunctivitis), acute respiratory distress, viral pneumonia.	Be cautious of patients with recent travel within last 10 days to countries with the bird flu activity: 9 Asian countries Russia Kazakhstan Mongolia Turkey Romania	Direct contact with infected poultry, contaminated surfaces and objects contaminated with animal feces. Human exposure is most likely during slaughter, defeathering, butchering and	Good handwashing before and after food preparation. Practice good hygiene during food preparation. Avoid contact with juices from raw poultry mixing with other items to be eaten. Properly and fully cook poultry. Fully cook eggs – no runny yolks. Normal cooking temperatures kill the virus. Thorough cleaning and disinfecting

Disease	Signs & symptoms	Incubation	Communicability	Prevention
Avian/bird flu die. Concern is mutation to humans		Now considered free of disease: Japan, the Republic of Korea, and Malaysia	preparation for cooking. The bird flu is <u>not</u> transmitted through fully and properly cooked food.	of surfaces in contact with raw poultry (soap and water is adequate). Patient treatment: treat patients with severe febrile respiratory illness with standard precautions (good handwashing) including gloves, gowns, eye protection if within 3 feet of patient, and airborne precautions (N95 mask). Continue precautions for 14 days after onset of symptoms. Recommended that healthcare workers get vaccinated with the current "flu" vaccine.

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12/03

Revised 2/06

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Numerical Listing of DSM-5 Diagnoses and Codes (ICD-9-CM)
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DSM-5 Advisors and Other Contributors

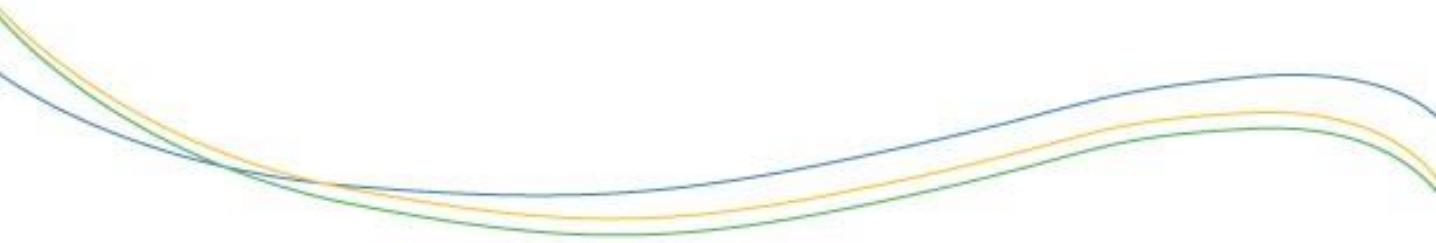
DSM is the manual used by clinicians and researchers to diagnose and classify mental disorders. The American Psychiatric Association (APA) will publish DSM-5 in 2013, culminating a 14-year revision process. For more information, go to www.DSM5.org.

APA is a national medical specialty society whose more than 36,000 physician members specialize in the diagnosis, treatment, prevention and research of mental illnesses, including substance use disorders. Visit the APA at www.psychiatry.org. For more information, please contact Eve Herold at 703-907-8640 or press@psych.org.

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Quick Guide to Common Childhood Diseases



October 2021

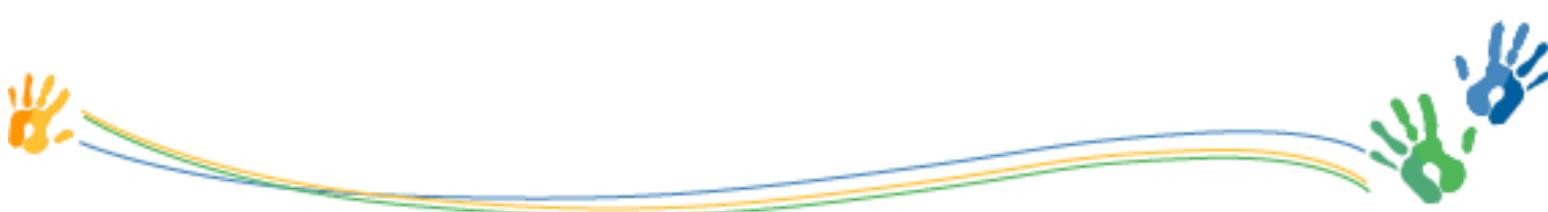


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Introduction

The purpose of *A Quick Guide to Common Childhood Diseases* is to provide general information about communicable diseases commonly experienced by young children. It is a quick reference intended to assist care providers with identifying common childhood diseases so that actions can be taken to decrease the spread of the illness or infestation to others.

Parents and caregivers who would like more information regarding the illnesses and infestations described in this guide or information on how to care for their sick child can refer to the [Resources](#) section guide.

This guide is for people who care for young children. This includes people who work in child care centres, early learning centres, preschools, schools, summer camps and anywhere else that groups of young children spend time together. When children work and play together in groups, there is an opportunity for the spread of a number of common childhood diseases that can be passed from one child to another. Early recognition of an illness or infestation and prompt action and treatment can significantly reduce the spread within a group setting.

The diseases and infestations described in this guide do not only affect children. Adults can also be affected and may develop symptoms and/or unknowingly spread an illness to a child.

Each infectious disease and infestation in this guide is described according to:

- **What is it?**
 - Basic facts about the infectious disease or infestation
- **What are the signs and symptoms?**
 - A list of some of the signs and symptoms (not every child will have every symptom of the illness)
- **How is it spread?**
 - A description of how the illness or infestation is spread
- **Incubation Period**
 - The length of time from when a child is first exposed to the illness or infestation to when the first symptoms appear
- **When is the person contagious?**
 - The time period during which an infected child is able to spread the illness or infestation to others
- **How to prevent the spread of the illness or infestation to other children**
 - Information regarding whether or not the child needs to be excluded from the school or child care centre
 - Strategies to decrease the spread of the illness or infestation within the group setting.



How Are Infections Spread?

Respiratory Infections: Many of the infections in this guide are spread by the respiratory system (nose, throat and lungs). They are spread through direct and indirect contact with the nose and throat secretions of an infected person. This can happen when:

- An infected person coughs or sneezes without a tissue to cover their nose and mouth. Tiny droplets containing the virus or bacteria travel through the air and can infect a person who is close by (less than a meter away).
- An infected person may have the virus or bacteria on their hands after coughing or sneezing. If they touch another person's hand or an object, the virus or bacteria may be left behind. The virus or bacteria can infect the next person when that person touches their eyes, nose or mouth. Some viruses and bacteria can live on objects like doorknobs, faucets, telephones and toys for many hours.
- People working with children assist them with using or disposing of tissues. When the tissue is contaminated with the nose and throat secretions of an infected child, the virus or bacteria can spread to the hands of the staff member when they touch the tissue.

Gastrointestinal Infections: Several of the infections in this guide affect the gastrointestinal system (stomach and intestines). The bacteria or virus is often found in contaminated food or water but can be spread from one person to another, especially in a child care centre where children are in diapers. These viruses and bacteria are primarily spread when:

- Contaminated food is not cooked or cleaned properly.
- Contaminated water is not treated properly.
- There is direct contact with the stool (feces) of an infected person. This might happen when a caregiver changes a child's diaper or assists a child with toileting. Even a tiny amount of stool on a caregiver's hand may contain virus or bacteria that can infect them if they touch their mouth or prepare food before washing their hands.
- There is indirect contact with infected stool. This might happen when a person with the virus or bacteria on their hands touches an object (e.g., faucet, light switch, doorknob or toy). The virus or bacteria can live on the object for long periods of time and be spread to anyone who touches the object.



How Are Infestations Spread?

Head lice are an infestation, not an infection. Head lice do not cause illness.

Ringworm, scabies and pinworms are also infestations.

Head lice, ringworm, scabies and pinworms are spread by direct or indirect contact with a person who has them when:

- People are very close together and skin or hair is touching.
- A person touches the affected area and then touches the hands or skin of another person.
- People share personal items including combs, hairbrushes, hats, helmets, headphones, towels, washcloths and clothing.

Stop the Spread of Infections and Infestations

To stop the spread of infections and infestations personal items such as hairbrushes, hats, toothbrushes, washcloths, towels, sippy cups or bottles should not be shared.

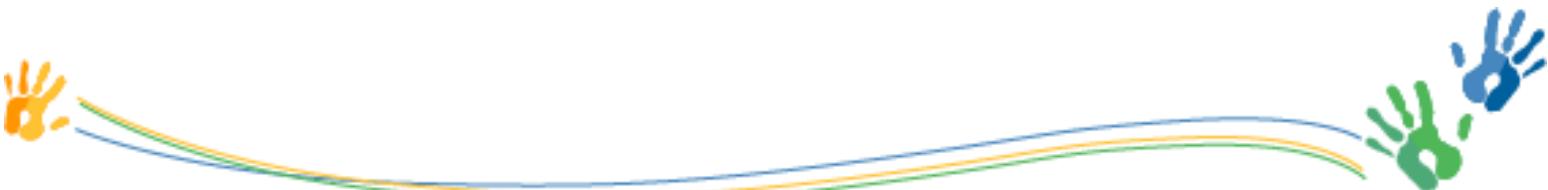
Wear disposable gloves anytime your hands may come into contact with blood or body fluids. This is especially important if you have a cut or open sore on your hands. For added protection, wash your hands after removing and disposing of the gloves.

Use household rubber gloves when cleaning or sanitizing.

Dispose of articles soiled with discharge from the nose and/or mouth, vomit or feces into a garbage bin, ideally with a pop-up lid. The bin should be lined with a disposable plastic bag to be tied and thrown out with the household/child care centre garbage.

Disinfect surfaces using a solution of household bleach (containing 5.25% sodium hypochlorite) diluted with water. A dilution of 1:100 or 1:50 is recommended for routine disinfection of surfaces and objects. Bleach solutions lose potency when stored so they should be prepared fresh daily.

- 1:100 is 1 part bleach to 99 parts water (5 mL of bleach to 495 mL of water)
- 1:50 is 1 part bleach to 49 parts water (10 mL of bleach to 490 mL of water)



A 1:10 dilution of bleach is recommended for cleaning up spills of blood or body fluids.

- Mix 1 part bleach with 9 parts water (5 mL of bleach to 45 mL of water).

Organic material such as blood or stool inactivates bleach. A surface visibly contaminated with blood or stool must be cleaned with water and detergent before being disinfected.

Clean and disinfect countertops, toys and diaper changing areas more frequently when a child with diarrhea is present.

For more information see:

[HealthLink BC File #97 – Contact with Blood or Body Fluids: Protecting Against Infection](#)

Coughing and Sneezing Etiquette

Cover your mouth and nose with a tissue when you cough or sneeze. If you don't have a tissue, cough or sneeze into your shirt sleeve, instead of your hands. By not coughing or sneezing into your hands you decrease the spread of disease through contaminated hands. Discard used tissues into a lined garbage bin and immediately wash your hands.

Teach children to cough or sneeze into a tissue or into their shirt sleeve instead of sneezing or coughing into their hands. Teach children to discard used tissues into a garbage bin and to wash their hands after coughing or sneezing.

Food Safety

To help prevent foodborne illness:

- Wash hands before food preparation
- Cook meat, poultry and seafood well
- Avoid drinking or serving unpasteurized milk and juice
- Wash all fruits and vegetables thoroughly before eating or serving
- Keep uncooked meat, poultry and seafood away from fruits and vegetables and other ready-to-eat foods
- Cover foods and store at recommended temperatures for recommended times.

Detailed information on proper food handling and food safety can be found in the HealthLink BC files listed below.

For more information see:

[HealthLink BC File #59a – Food Safety: Easy Ways to Make Food Safer](#)

[HealthLink BC File #59b – Food Safety for Fresh Fruits and Vegetables](#)

[HealthLink BC File #59d – Food Safety in Child Care Facilities](#)

[HealthLink BC File #72 – Unpasteurized Fruit/Vegetable Juices and Ciders: A Potential Health Risk](#)

[HealthLink BC File #03 – Pasteurized and Raw Milk](#)



Hand Washing

Hand washing is the best way to stop the spread of infections. Frequent hand washing has been shown to significantly decrease the incidence of colds, influenza and other infections. Young children should be supervised when washing their hands.

Use plain soap to wash hands. The addition of antibacterial products to soap does not improve your health and it can negatively affect you and the environment over time. The antibacterial products in soap can lead to an increase in antibiotic resistant organisms (for more information see page 9 "[Antibiotic Resistance](#)").

When to Wash Your Hands:

- Before preparing food
- Before and after eating or helping a child eat
- After using the washroom or helping a child use the washroom
- Before and after changing diapers
- After sneezing or coughing
- After blowing your nose or wiping a child's nose
- Before performing first aid or giving a child medicine
- After handling animals or animal waste
- After cleaning or handling garbage
- Before and after playing at the water table
- After playing outside or in the sandbox
- After playing with toys shared with other children

How to Wash your Hands:

- Wet your hands
- Apply soap
- Wash all parts of hands for at least 20 seconds
- Rinse your hands
- Dry your hands with a paper towel
- Turn off the tap with a paper towel

Although soap and water are the preferred method of hand hygiene, alcohol based hand rubs can be used if soap and water are not available. Alcohol based hand rubs should be at least 60% alcohol and do not need the addition of antimicrobial agents such as triclosan. When cleaning hands with an alcohol based hand rub, use enough hand rub to keep the hands wet for 15-30 seconds. Spread the hand rub to all areas of the hands, fingers and wrists until your hands are dry. Follow the directions on the bottle for additional information. If hands are visibly dirty, hand rubs are not an appropriate hand cleaner; soap and water are necessary to properly clean hands. Ensure that alcohol based hand rubs are kept away from heat sources and out of reach of children as they are flammable and poisonous if ingested.

For more information see:

Do Bugs Need Drugs? <http://www.dobugsneeddrugs.org/>

HealthLink BC File #85 – Hand Washing: Help Stop the Spread of Germs



HOW TO WASH YOUR HANDS



1 WET YOUR HANDS



2 APPLY SOAP



3 RUB HANDS TOGETHER



4 RINSE YOUR HANDS



5 DRY YOUR HANDS



6 TURN OFF TAP WITH PAPER TOWEL

LEAVE THE WASHROOM NEAT AND TIDY



Antibiotics

What are antibiotics?

Antibiotics are medicines used to kill bacteria. They are not useful for viral infections or allergies and they do not help with illnesses such as the common cold or influenza.

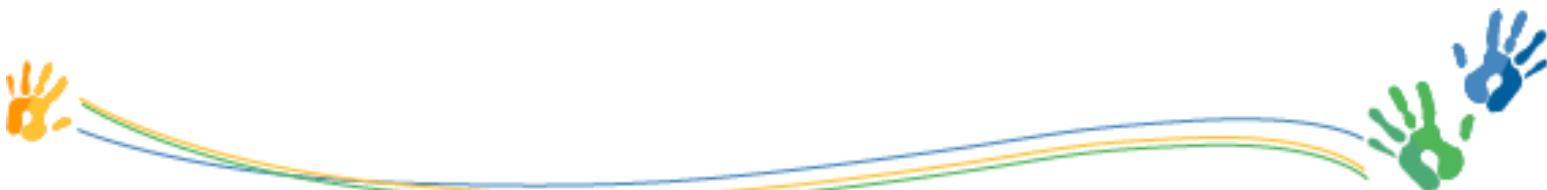
Cautions about antibiotics

Side effects: All medicines can cause side effects. Some people get diarrhea, nausea or a yeast infection when they take antibiotics. If you are having a problem with side effects, talk to your doctor, nurse practitioner or pharmacist.

Allergic reactions: All medicines can cause a reaction. This can sometimes be an emergency. Talk to your doctor, nurse practitioner or pharmacist about any allergies or past allergic reactions.

Antibiotic resistance

Frequent or inappropriate use of antibiotics can cause antibiotic resistance. Antibiotic resistance is when bacteria change over time to adapt and survive exposure to a medication that is used to kill or control its growth. When there is antibiotic resistance, a medication may no longer be effective at treating the infection. It is important to only take antibiotics for bacterial infections as directed by a doctor or nurse practitioner to avoid the effects of antibiotic resistance for your health and the health of communities.



Campylobacteriosis

What is it?	<p><i>Campylobacter</i> are bacteria that infect the intestinal tract. They are a common cause of diarrhea. When a person infected with the bacteria gets ill they have campylobacteriosis. The illness usually lasts less than 1 week. <i>Campylobacter</i> infection is diagnosed by testing a stool sample.</p> <p><i>Campylobacter</i> bacteria are found in the intestines of many animals including chickens, cows, pigs and sheep. When animals are slaughtered for food the bacteria from their intestines may contaminate the meat.</p>
What are the signs and symptoms?	<p>Signs and symptoms of campylobacteriosis may include:</p> <ul style="list-style-type: none">➤ Stomach pain➤ Mild to severe diarrhea which may be bloody➤ Nausea and vomiting➤ Fever
How is it spread?	<p>Campylobacteriosis is caused when a person ingests <i>Campylobacter</i> bacteria. This can occur by:</p> <ul style="list-style-type: none">➤ Eating undercooked poultry, meat or other foods that have been contaminated by these during food preparation➤ Drinking water or unpasteurized milk or juice contaminated with the bacteria➤ Touching the feces of infected people, pets (especially cats and dogs that may have fecal matter on their fur), birds and farm animals <p><i>Campylobacter</i> bacteria are not usually spread from one person to another unless a person is producing large amounts of diarrhea.</p>
Incubation period	Usually 2–5 days (range is 1–10 days)
When is the person contagious?	During the course of infection. A person may continue to pass the bacteria in their stool for several weeks after the illness.
How to prevent the spread of the illness to other children	<p>A child with campylobacteriosis should be excluded from school or a child care centre until 48 hours after their last episode of diarrhea or vomiting, or as advised by the local Health Authority. Anyone with symptoms should be excluded from food handling and child care.</p> <p>Ensure children wash their hands carefully after handling pets.</p>

For more information see:

[HealthLink BC File #58 – Campylobacter Infection](#)



Chickenpox (Varicella)

What is it?	<p>Chickenpox is caused by the varicella zoster virus. It is usually a mild illness in children but can be more serious in infants, teenagers, adults, pregnant women and those with weakened immune systems.</p> <p>For some people the virus can become active again later in life and cause shingles (for more information see Shingles).</p> <p>Chicken pox can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of chickenpox may include:</p> <ul style="list-style-type: none"> ➤ Fever ➤ Tiredness ➤ Headache ➤ Loss of appetite ➤ A rash that develops a few days after the first symptoms. It usually first appears on the face and scalp and spreads down the body to the arms and legs. The rash begins as small, red, flat spots that develop into itchy fluid-filled blisters. After the blisters break, open sores will crust over to form dry brown scabs. <p>Chickenpox usually lasts for about 10 days.</p>
How is it spread?	<p>Chickenpox is spread by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus when an infected person has coughed or sneezed ➤ Contact with an infected person's saliva through the sharing of foods or drinks or kissing ➤ Contact with fluid from chickenpox or shingles blisters <p>A pregnant woman with chickenpox can pass it to her baby during pregnancy</p>
Incubation period	Usually 10–21 days following contact with an infected person.
When is the person contagious?	From 1–2 days before the rash appears and until all of the blisters have crusted over (which is usually 5 days after the first blisters appear).
How to prevent the spread of the illness to other children	<p>Inform the school/child care centre administrator and parents when a case of chickenpox occurs in a school or child care centre. Public health can be contacted to support the development of protocols for notification of parents/guardians when such cases arise.</p> <p>Inform staff members who are pregnant or have a weakened immune system.</p>

For more information see:

[HealthLink BC File #44a – Facts About Chickenpox](#)

[HealthLink BC File #44b – Chickenpox \(Varicella\) Vaccine](#)

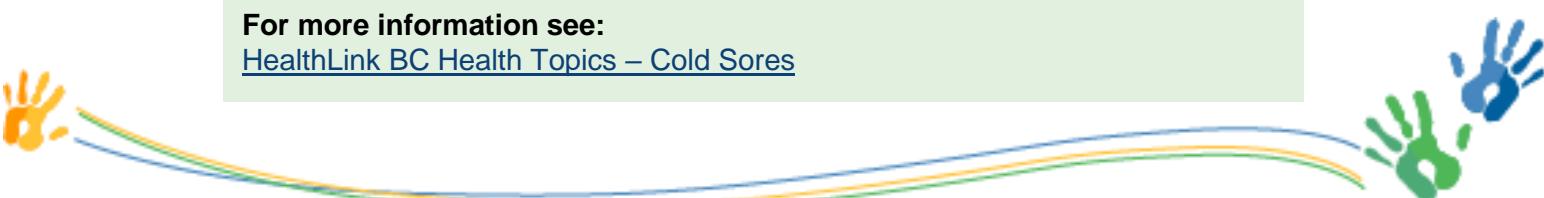
[HealthLink BC File #14e – Measles, Mumps, Rubella and Varicella \(MMRV\) Vaccine](#)



Cold Sores (Herpes simplex)

What is it?	<p>Cold sores (small blisters) on the mouth are usually caused by herpes simplex virus type 1. During the first outbreak of cold sores, the sores may spread to any part of the mouth.</p> <p>After a person is infected, the virus stays in their body and may cause cold sores to return throughout their lifetime. Recurrent infection on the lips is usually less serious than the first infection.</p>
What are the signs and symptoms?	<p>Signs and symptoms of cold sores may include:</p> <ul style="list-style-type: none"> ➤ Itching, burning or tingling around the mouth and lips ➤ Superficial clear blisters with a red base around the mouth and lips. The blisters crust over and heal within a few days. ➤ A sore mouth that makes eating, drinking and sleeping uncomfortable. ➤ Fever ➤ Sore throat ➤ Swollen lymph glands in the neck ➤ Drooling in small children
How is it spread?	<p>Cold sores are spread by contact with secretions from the throat and mouth of an infected person through:</p> <ul style="list-style-type: none"> ➤ Kissing ➤ Sharing eating utensils, drinking cups and toys that are put in the mouth ➤ Touching the cold sore directly <p>A person infected with the herpes simplex virus can spread it to others even if there are no blisters present.</p>
Incubation period	Usually 2–12 days following contact with an infected person.
When is the person contagious?	When the cold sore is open
How to prevent the spread of the illness to other children	<p>A child with cold sores should be excluded from school or a child care centre if it is their first attack with a cold sore and it causes drooling from the mouth or they have a weeping or open cold sore. They can return to school or a day care centre when the cold sore is crusted over.</p> <p>Teach children not to touch the sores and to wash their hands frequently. Ensure that a child with cold sores does not share toys that they have put in their mouth with other children.</p> <p>Ensure children do not kiss each other when they have cold sores or uncontrollable drooling. Avoid kissing a child or adult with cold sores.</p> <p>Keep children with cold sores away from newborn babies, children with eczema or severe burns and people with weakened immune systems.</p>

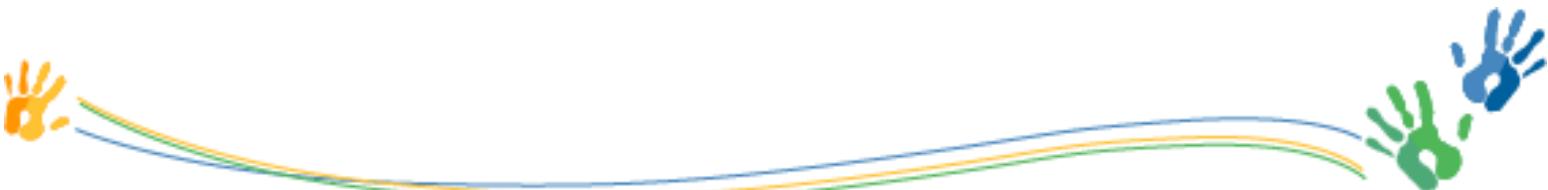
For more information see:
[HealthLink BC Health Topics – Cold Sores](#)



Croup

What is it?	<p>Croup is an infection of the upper airway with a virus. The infection causes the lining of the throat and larynx (voice box) to become red and swollen. Croup usually occurs in children under 5 years of age. When older children are infected the illness is called laryngitis.</p> <p>Croup often occurs a few days after the start of a cold and is caused by the same viruses that cause the common cold.</p> <p>If a child with croup is having difficulty breathing, try:</p> <ul style="list-style-type: none"> ➤ Warm mist – run a warm shower in a bathroom with the door closed. Sit in the bathroom with the child while the child breathes in the mist. ➤ If it is cold outside, bundle the child up and take him or her outside. The cold air may help the child's breathing and cough. ➤ Try to keep the child calm (crying will make the symptoms worse). ➤ Suggest that the parents take the child home or for medical treatment.
What are the signs and symptoms?	<p>Signs and symptoms of croup may include:</p> <ul style="list-style-type: none"> ➤ Cold-like symptoms that develop into a cough and fever ➤ Red swollen lining of the throat and larynx ➤ Raspy, hoarse voice ➤ Loud, barking cough ➤ High pitched noise when breathing in ➤ Tiredness <p>Symptoms of croup are often worse at night. Any activity that makes a child with croup breathe faster (e.g., crying) could make them sound worse.</p>
How is it spread?	<p>Croup is spread by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus after an infected child has coughed or sneezed ➤ Touching the hands or nose and throat secretions of an infected child ➤ Touching an object that has been contaminated with the virus
Incubation period	Usually 1–10 days, but depends on the virus causing the infection.
When is the person contagious?	From shortly before symptoms start until the end of active disease.
How to prevent the spread of the illness to other children	For cases of mild croup, a child may go to school or a child care centre if they feel well enough to attend.

For more information see:
[HealthLink BC Health Topics – Croup](#)

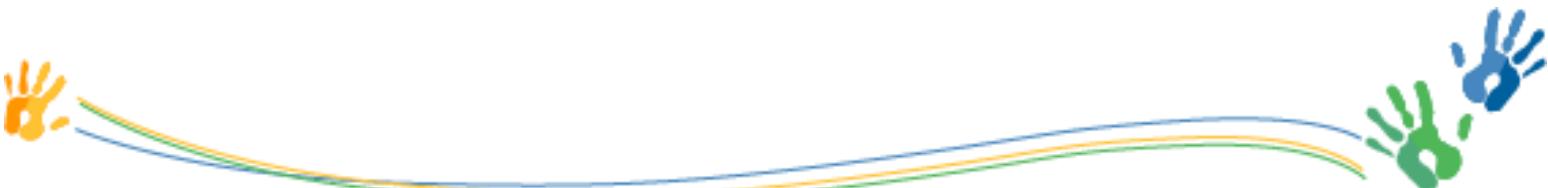


Cryptosporidiosis

What is it?	<p><i>Cryptosporidium</i> is a parasite that lives in the intestines of infected humans and animals. It is passed in the stool of an infected person or animal. <i>Cryptosporidium</i> parasites can survive for long periods of time (2–6 months) outside the body and are resistant to chlorine disinfection. A person infected with <i>Cryptosporidium</i> has cryptosporidiosis.</p>
What are the signs and symptoms?	<p>Signs and symptoms of cryptosporidiosis may include:</p> <ul style="list-style-type: none">➤ Frequent watery diarrhea➤ Stomach cramps➤ Nausea and vomiting and lack of appetite in children➤ Mild fever➤ Dehydration <p>Symptoms can come and go for up to 30 days but usually last 1–2 weeks. A person infected with <i>Cryptosporidium</i> may have no symptoms.</p>
How is it spread?	<p>Cryptosporidiosis is caused when a person ingests the parasite. This can occur by:</p> <ul style="list-style-type: none">➤ Swallowing contaminated water in lakes, rivers, ponds or swimming pools➤ Eating raw or undercooked food that is contaminated➤ Touching objects or surfaces (e.g., toys, bathroom fixtures such as taps and light switches, changing tables or diaper pails) contaminated with stool from an infected person➤ Touching the feces of pets or farm animals <p>The spread of <i>Cryptosporidium</i> is highest among children who are not yet toilet trained and their caregivers.</p>
Incubation period	Usually 2–10 days (average is 7 days)
When is the person contagious?	The parasites are shed in the stool as soon as symptoms begin. They continue to be found in stool for several weeks after recovery from the illness.
How to prevent the spread of the illness to other children	<p>A child with cryptosporidiosis should be excluded from school or a child care centre until 48 hours after their last episode of diarrhea or vomiting or as advised by the local Health Authority. Anyone with symptoms should be excluded from food handling and child care.</p> <p>Wash toys and surfaces with a 5% ammonia solution. A bleach solution is not effective against <i>Cryptosporidium</i>.</p> <p>Ensure children wash their hands after petting an animal.</p>

For more information see:

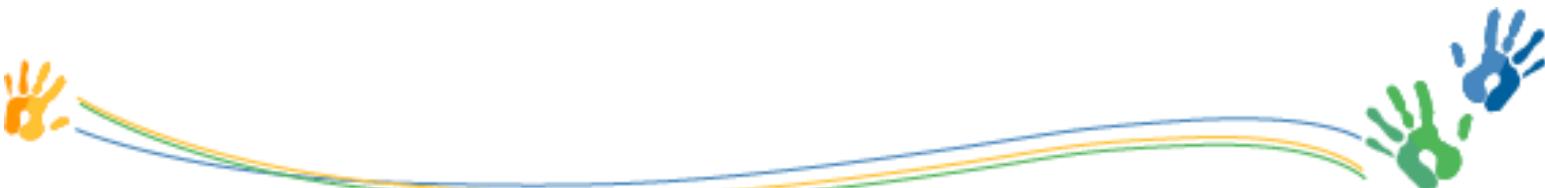
[HealthLink BC File #48 – Cryptosporidium Infection](#)



Escherichia coli (E. coli)

What is it?	<p>There are many strains of <i>E. coli</i> bacteria and most of them are harmless. Others cause diarrhea when a toxin is produced by the bacteria. Most people with <i>E. coli</i> infections recover completely within 5-10 days. Very young children and the elderly are more likely to develop severe illness and hemolytic uremic syndrome (HUS).</p> <p>HUS is an acute disease characterized by anemia, kidney failure and a low platelet count. Recovery is usually spontaneous but a child may need to be hospitalized and require dialysis during acute illness. About 5% of people who develop HUS will die. Children less than 5 years of age are most likely to develop HUS.</p>
What are the signs and symptoms?	<p>Signs and symptoms of <i>E. coli</i> infection may include:</p> <ul style="list-style-type: none"> ➤ Loose, watery diarrhea that may become bloody ➤ Abdominal cramps ➤ Vomiting ➤ Mild fever (usually less than 38.5°C) <p>Symptoms of HUS may include:</p> <ul style="list-style-type: none"> ➤ Decreased urine output ➤ Fatigue ➤ Pale skin
How is it spread?	<p><i>E. coli</i> are spread when a person ingests human or animal feces. This can occur by:</p> <ul style="list-style-type: none"> ➤ Eating raw or undercooked meat, especially ground meat such as hamburger ➤ Eating raw fruits and vegetables that are contaminated with the bacteria ➤ Drinking unpasteurized milk, juice or cider ➤ Touching objects or surfaces (e.g., toys, bathroom fixtures such as taps and light switches, changing tables or diapers pails) contaminated with stool from an infected person
Incubation period	Usually 3–4 days (range is 2–10 days)
When is the person contagious?	Usually for the duration of diarrhea (1 week or less for adults). Young children may continue to shed the bacteria in their stool for up to 3 weeks.
How to prevent the spread of the illness to other children	A child with an <i>E. coli</i> infection should be excluded from school or a child care centre until 48 hours after their last episode of diarrhea or vomiting or as advised by the local Health Authority. Anyone with symptoms should be excluded from food handling and child care.

For more information see:
[HealthLink BC File #02 – *E. coli* Infection](#)



Fifth Disease

What is it?	Fifth disease is an infection of the airways and lungs caused by a virus called human parvovirus B19. Fifth disease is sometimes called “slapped cheek” disease because of the appearance of a red rash on the face.
What are the signs and symptoms?	<p>Signs and symptoms of fifth disease may include:</p> <ul style="list-style-type: none"> ➤ Flu-like symptoms (e.g., fever, rash, cough or runny nose) may be present about 7 days before the onset of a rash ➤ A raised, red rash that first appears on a child's cheeks ➤ A red, spotty lace-like rash may appear on the arms, chest, back and thighs ➤ After the rash fades, it may continue to reappear for 1-3 weeks when a child is exposed to sunlight or heat (e.g., bathing) <p>More than 50% of adults have had fifth disease as a child and therefore they can't get it again. Adults, especially women, with fifth disease may experience joint pain. About 25% of people with fifth disease have no symptoms.</p>
How is it spread?	<p>Fifth disease is spread by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus after an infected person has coughed or sneezed ➤ Touching the hands of someone who is infected with the virus and in the contagious period ➤ Touching objects or surfaces contaminated with the virus <p>Fifth disease can be passed from a pregnant woman to her unborn baby. This could result in the baby having severe anemia or in a miscarriage or stillbirth, although this is rare.</p>
Incubation period	Usually 4–20 days following contact with an infected person.
When is the person contagious?	<p>Usually for 7–10 days before onset of the rash.</p> <p>Once the rash appears, the child can no longer spread fifth disease to others.</p>
How to prevent the spread of the illness to other children	<p>A child with fifth disease may go to school or a child care centre if they feel well enough to attend.</p> <p>Pregnant women who are contacts of an infected child should be encouraged to contact their health care provider to determine whether or not they are immune to fifth disease.</p>

For more information see:

[HealthLink BC File #54 – Fifth Disease Parvovirus Infection](#)



Giardiasis (Beaver Fever)

What is it?	<p><i>Giardia</i> is a parasite that infects the intestines of humans and animals. Once a person or animal is infected with <i>Giardia</i>, the parasite lives in the intestine and is passed in the stool. The parasite can live for long periods of time outside the body.</p> <p>A person infected with <i>Giardia</i> has giardiasis (sometimes referred to as Beaver Fever).</p>
What are the signs and symptoms?	<p>Signs and symptoms of giardiasis may include:</p> <ul style="list-style-type: none">➤ Diarrhea➤ Frequent loose and pale greasy stools➤ Stomach cramps➤ Bloating and gas➤ Nausea➤ Weight loss➤ Fatigue <p>Sometimes a person with giardiasis has no symptoms.</p>
How is it spread?	<p>Giardiasis is caused when a person ingests the parasite. This can occur by:</p> <ul style="list-style-type: none">➤ Drinking contaminated water➤ Eating raw or undercooked food that is contaminated with <i>Giardia</i>➤ Swallowing contaminated water in lakes, rivers, ponds or swimming pools➤ Contact with infected stool (e.g., when changing a diaper or assisting a child with toileting)➤ Touching objects or surfaces (e.g., toys, bathroom fixtures such as taps and light switches, changing tables or diaper pails) contaminated with stool from an infected person <p>A person who is not treated with medication may release <i>Giardia</i> parasites in their stool for several months after they recover from the illness.</p>
Incubation period	Usually 7–10 days (range is 3–25 days).
When is the person contagious?	For the entire period of infection which can often be months.
How to prevent the spread of the illness to other children	A child with giardiasis should be excluded from school or a child care centre until 48 hours after their last episode of diarrhea or vomiting or as advised by the local Health Authority. Anyone with symptoms should be excluded from food handling and child care.

For more information see:
[HealthLink BC File #10 – Giardia Infection](#)



***Haemophilus influenzae* type b (Hib)**

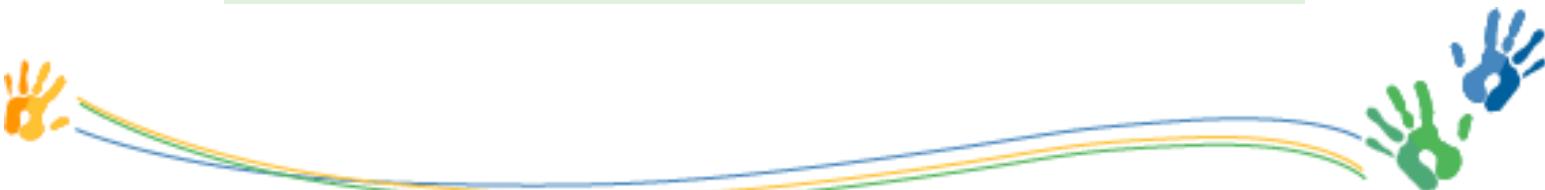
What is it?	<p><i>Haemophilus influenzae</i> type b (Hib) was the most common cause of bacterial meningitis (an infection of the lining that covers the brain and spinal cord) in children younger than 5 years of age before the introduction of Hib vaccines. Since then the incidence of Hib disease has decreased significantly. The majority of cases in children now occur in unimmunized children or in children too young to have completed their primary series of vaccines at 2, 4 and 6 months of age.</p> <p>Hib bacteria can also cause infections of the epiglottis, bloodstream, joints, skin and lungs. Other types of <i>H. influenzae</i> can cause ear infections, sinusitis, bronchitis and other respiratory illnesses.</p>
What are the signs and symptoms?	<p>Signs and symptoms of Hib meningitis usually occur suddenly and may include:</p> <ul style="list-style-type: none"> ➤ Fever ➤ Headache ➤ Vomiting ➤ Tiredness ➤ Bulging fontanelle (soft spot of the skull) in infants ➤ Stiff neck and back in older children
How is it spread?	<p>Hib is spread by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the bacteria after an infected person has coughed or sneezed ➤ Close face-to-face contact ➤ Kissing or sharing food, utensils, drinks, soothers, bottles or toys used by other children
Incubation period	The length of the incubation period is not known but is thought to be short (2–4 days).
When is the person contagious?	<p>As long as the bacteria are present, which may be a long period if the individual is not treated with antibiotics.</p> <p>A child infected with Hib is no longer contagious after receiving antibiotics for 24–48 hours.</p>
How to prevent the spread of the illness to other children	<p>Contact local public health. A child with Hib should be excluded from school or a child care centre until 24–48 hours after starting antibiotics.</p> <p>Antibiotics may be recommended for contacts of an infected child.</p>

For more information see:

[HealthLink BC File #105 –Diphtheria, Tetanus, Pertussis, Hepatitis B, Polio, and *Haemophilus influenzae* type b \(DTaP-HB-IPV-Hib\) Vaccine](#)

[HealthLink BC File #15b –Diphtheria, Tetanus, Pertussis, Polio, *Haemophilus influenzae* type b \(DTaP-IPV-Hib\) Vaccine](#)

[HealthLink BC File #16 – *Haemophilus influenzae* type b \(Hib\) Vaccine](#)



Hand, Foot and Mouth Disease

What is it?	Hand, foot and mouth disease is caused by a virus. It most commonly affects children under 10 years of age and occurs mainly in the summer and early fall.
What are the signs and symptoms?	<p>Signs and symptoms of hand, foot and mouth disease usually start suddenly and may include:</p> <ul style="list-style-type: none"> ➤ Fever ➤ Sore throat ➤ Headache ➤ Small painful blisters inside the mouth on the tongue and gums (which may last 4–6 days) ➤ Blisters that may appear on the palms of a child's hand, on their fingers and on the soles of their feet <p>Some people with hand, foot and mouth disease may not have any symptoms.</p>
How is it spread?	<p>Hand, foot and mouth disease is spread by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus after an infected person has coughed or sneezed ➤ Touching the nose and throat secretions of an infected person and then touching your own eyes, nose or mouth ➤ Touching an infected child's stool (e.g., when changing a diaper or assisting a child with toileting) ➤ Touching objects contaminated with the virus. <p>Hand, foot and mouth disease spreads very easily in child care centres and places where children are close together.</p>
Incubation period	Usually 3–6 days following contact with an infected person.
When is the person contagious?	Usually for the first week of the illness. However, the virus can remain in the body for weeks after the start of the illness.
How to prevent the spread of the illness to other children	<p>A child with hand, foot and mouth disease may go to school or a child care centre if they feel well enough to attend.</p> <p>Carefully dispose of (or clean, if applicable) articles soiled by discharge from an infected child's nose, throat or stool.</p>

For more information see:
[HealthLink BC File #64 – Hand, Foot and Mouth Disease](#)



Head Lice

What is it?	<p>Head lice are tiny insects that live on the scalp. Lice have 3 stages in their life cycle:</p> <ul style="list-style-type: none"> ➤ Nits (eggs) are whitish gray, tan or yellow ovals about the size of a grain of sand. They are found stuck to the hair, often behind the ears or at the back of the neck. Nits hatch in 9–10 days. ➤ Nymphs are young lice. They look like adult lice but are smaller. ➤ Adult lice are about the size of a sesame seed. They can live up to 30 days on a person's head. Adult lice move around on the scalp and are much more difficult to see than nits. <p>Nymphs and adult lice can live for up to 2 days away from the scalp. Eggs can live for 7–10 days away from the scalp but need the higher temperature near the scalp to hatch.</p> <p>Detection of a live louse is the best way to confirm head lice. The most effective method of detecting live lice is by using a fine tooth lice comb on dry or wet hair.</p>
What are the signs and symptoms?	<p>Signs and symptoms of head lice may include:</p> <ul style="list-style-type: none"> ➤ Itchy scalp (may be worse at night) ➤ Scratching marks or small red lesions like a rash <p>A child with head lice may not have any symptoms.</p>
How is it spread?	<p>Head lice are spread by:</p> <ul style="list-style-type: none"> ➤ Direct hair-to-hair contact (most common) ➤ Sharing hats, combs, hairbrushes, hair accessories, helmets or headphones <p>Head lice cannot fly or hop, but they can crawl very quickly. Head lice that live on people cannot live on pets such as cats and dogs.</p>
Incubation period	The period from the laying of eggs to emerging adult lice is 14–23 days.
How long can head lice be spread?	As long as live lice and nits are present.
How to prevent the spread of the infestation to other children	<p>A child with head lice does not need to be excluded from school or a child care centre. Provide parents with information regarding checking for head lice and treatment options.</p> <p>Discourage direct head-to-head contact between children. Children should be encouraged not to share things like hats, combs, hairbrushes, helmets or headphones. Items that may have been in prolonged or close contact with the child's head at the school or child care centre should be washed in hot water if possible. Items that can't be washed should be stored in a sealed air-tight plastic bag for 2 weeks or in the freezer for 48 hours.</p>

For more information see:
[HealthLink BC File #06 – Head Lice](#)



Hepatitis A

What is it?	Hepatitis A is an infection of the liver caused by the hepatitis A virus. It is usually a mild illness and rarely causes permanent liver damage. Hepatitis A is usually more serious in adults than children. Hepatitis A can be prevented by immunization.
What are the signs and symptoms?	Signs and symptoms of hepatitis A may include: <ul style="list-style-type: none"> ➤ Fatigue ➤ Fever ➤ Nausea and vomiting ➤ Loss of appetite ➤ Abdominal pain ➤ Jaundice (yellowing of the skin and eyes) ➤ Dark urine <p>Most infants and young children infected with hepatitis A do not have any symptoms.</p>
How is it spread?	The hepatitis A virus is found in the stool of an infected person. The virus is spread by: <ul style="list-style-type: none"> ➤ Contact with the stool or hands of an infected person ➤ Touching objects contaminated with the virus ➤ Eating food prepared by an infected person who has not washed their hands properly ➤ Drinking contaminated water
Incubation period	Usually 15–50 days (average of 28 days).
When is the person contagious?	From about 2 weeks before symptoms begin until 1 week after jaundice begins.
How to prevent the spread of the illness to other children	Contact local public health. Exclusion of a child or adult with hepatitis A from a child care centre is at the discretion of the Medical Health Officer. A person with hepatitis A should be excluded for 14 days from the onset of symptoms or 7 days from the onset of jaundice, whichever is longer. The hepatitis A vaccine or immune globulin may be recommended for people who were in contact with someone with hepatitis A.

For more information see:

[HealthLink BC Health Topics – Hepatitis A](#)
[HealthLink BC File #33 – Hepatitis A Vaccine](#)



Impetigo

What is it?	Impetigo is a common skin infection caused by group A <i>Streptococcus</i> (strep) or <i>Staphylococcus aureus</i> (staph) bacteria. Infections usually start when bacteria enter the body through breaks in the skin, such as scrapes, cold sores, insect bites or patches of eczema. It is most common in the summer.
What are the signs and symptoms?	Signs and symptoms of impetigo may include: <ul style="list-style-type: none"> ➤ A rash that looks like clusters of red bumps or blisters surrounded by an area of redness. There may be fluid oozing from the blisters and they may develop a yellow (honey colored) or gray crust. ➤ Sores around the mouth and nose and on skin not covered by clothing
How is it spread?	Impetigo is spread by contact with: <ul style="list-style-type: none"> ➤ The rash or discharge from the rash of an infected person ➤ Secretions from the nose and throat of an infected person ➤ Objects such as towels, bed sheets and clothing that have been in contact with the sores of an infected person
Incubation period	Staph bacteria: 4–10 days following contact with an infected person. Strep bacteria: 1–3 days following contact with an infected person.
When is the person contagious?	As long as the rash continues to drain. After 24 hours of antibiotic treatment, a child with impetigo is no longer contagious.
How to prevent the spread of the illness to other children	A child with impetigo should be excluded from school or a child care centre until 24 hours after starting antibiotic treatment. Suggest that parents of a child suspected to have impetigo take their child to their health care provider for confirmation and treatment. Carefully dispose of (or clean, if applicable) articles soiled by discharge from the rash or nose and throat secretions of an infected child. Ensure children do not share clothing, towels, washcloths or bedding with other children. Wash linens in hot water and dry in a hot dryer.

For more information see:
[HealthLink BC File #81 – Impetigo](#)



Influenza

What is it?	<p>Influenza (the flu) is an infection of the upper airway caused by an influenza virus. Those at high risk of influenza-related complications include (but are not limited to) children under 5 years of age, adults over 65 years of age, people with chronic health conditions, and pregnant women. Influenza season in Canada is usually November through April.</p> <p>Influenza can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of influenza may include:</p> <ul style="list-style-type: none"> ➤ Fever ➤ Cough, sneezing, runny nose ➤ Headache ➤ Sore throat ➤ Body aches ➤ Fatigue and weakness ➤ Nausea, vomiting and diarrhea (more common in children than adults)
How is it spread?	<p>Influenza is spread by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus when an infected person has coughed or sneezed ➤ Contact with the hands of an infected person (e.g., shaking hands, holding hands) ➤ Touching an object contaminated with the influenza virus (the virus can live up to 2 days on hard surfaces) <p>Child care providers may get the virus on their hands by assisting a child to use a tissue and then spread it to other children by touching them.</p>
Incubation period	Usually 1–4 days following contact with an infected person
When is the person contagious?	Usually from 1 day before to 5 days after symptoms develop (young children may be able to spread the virus longer)
How to prevent the spread of the illness to other children	<p>A child with influenza may go to school or a child care centre if they feel well enough to attend.</p> <p>Carefully dispose of (or clean if applicable) articles contaminated with the nose and throat secretions of an infected child.</p>

For more information see:

[HealthLink BC File #12b – Facts about Influenza \(the Flu\)](#)

[HealthLink BC File #12d – Inactivated Influenza \(Flu\) Vaccine](#)

[HealthLink BC File #12e – Live Attenuated Influenza \(Flu\) Vaccine](#)



Measles

What is it?	<p>Measles is caused by the measles virus. It is one of the most contagious communicable diseases and a leading cause of deaths in children worldwide.</p> <p>Measles can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of measles may include:</p> <ul style="list-style-type: none"> ➤ Fever, cough, runny nose and red inflamed eyes ➤ Dusky red, blotchy rash that begins on the face and spreads all over the body beginning 3–7 days after symptoms start (rash lasts 4–7 days) ➤ Small red spots with white or bluish white centers in the mouth <p>A doctor or nurse practitioner may be able to diagnose measles based on a child's symptoms but a blood test is needed to confirm the diagnosis.</p>
How is it spread?	<p>Measles is spread by:</p> <ul style="list-style-type: none"> ➤ An infected person coughing, sneezing or breathing ➤ A person can become infected when they breathe in the air or touch an object contaminated with the measles virus. The virus can survive in small droplets in the air for several hours and infect people. ➤ Contact with the nose and throat secretions of an infected person
Incubation period	Usually 8–12 days (range of 7–18 days)
When is the person contagious?	From about 4 days before to 4 days after the rash appears.
How to prevent the spread of the illness to other children	<p>Contact local public health. A child with measles should be excluded from the school or child care centre until at least 4 days after the rash appears if there are susceptible individuals in the setting.</p> <p>The measles, mumps and rubella vaccine (MMR) may be recommended for individuals who are contacts of a case of measles.</p> <p>Immune globulin may be provided to prevent measles in exposed individuals who are unable to receive the MMR vaccine for any reason.</p> <p>Susceptible contacts of a case of measles who cannot receive the MMR vaccine or immune globulin may be excluded from the school or child care centre at the discretion of the Medical Health Officer.</p>

For more information see:

[HealthLink BC File #14b – Measles](#)

[HealthLink BC File #14a – Measles, Mumps, Rubella \(MMR\) Vaccine](#)

[HealthLink BC File #14e – Measles, Mumps, Rubella and Varicella \(MMRV\) Vaccine](#)



Meningitis

What is it?	<p>Meningitis is an inflammation of the lining that surrounds the brain and spinal cord. Meningitis can be caused by bacteria or viruses. A diagnosis of meningitis is made by a primary health care provider.</p> <p>Bacteria that cause meningitis include:</p> <ul style="list-style-type: none"> ➢ <i>Haemophilus influenzae</i> type b (Hib) (see Hib) ➢ <i>Neisseria meningitidis</i> (see Meningococcal Meningitis) ➢ <i>Streptococcus pneumoniae</i> ➢ Group B streptococcus <p>About 90% of cases of viral meningitis are caused by members of a group of viruses known as enteroviruses, including coxsackieviruses, echoviruses and polioviruses. Mumps virus and herpes simplex virus can also cause meningitis.</p>
What are the signs and symptoms?	<p>Signs and symptoms of meningitis may include:</p> <ul style="list-style-type: none"> ➢ High fever, headache, and stiff neck (common in anyone over the age of 2 years) ➢ Irritability, sleepiness, inactivity, vomiting and poor feeding in children less than 2 years of age ➢ Nausea, vomiting, discomfort when looking into bright lights, confusion and sleepiness ➢ Seizures may occur as the illness progresses
How is it spread?	<p>Viral meningitis is spread through contact with the nose and throat secretions of an infected person by:</p> <ul style="list-style-type: none"> ➢ Breathing air contaminated with the virus when an infected person has coughed or sneezed ➢ Kissing or sharing anything that is put in the mouth (e.g., food, drinks, baby bottles, soothers, sippy cups, lipstick, water bottles, mouth guards used for sports or mouthpieces of musical instruments) ➢ Touching the hands of an infected person (e.g., shaking hands or holding hands) or an object contaminated with the virus <p>The viruses that cause viral meningitis may also be found in the stool of an infected person. The viruses may be spread through contact with infected stool or an object contaminated with virus from the stool.</p>
Incubation period	For enteroviruses: about 3–7 days
When is the person contagious?	For enteroviruses: from about 3 days after infection to 10 days after developing symptoms.
How to prevent the spread of the illness to other children	Contact local public health. A child with viral meningitis can go to school or a child care centre if they feel well enough to attend.

For more information see:
[HealthLink BC Health Topics – Meningitis](#)



Meningococcal Meningitis

What is it?	<p>Meningococcal meningitis is an infection of the lining of the brain and spinal cord caused by <i>Neisseria meningitidis</i> bacteria. It can cause serious illness and death. The case fatality rate is 8–15%. The bacteria that cause meningitis can be found in the nose and throat of 5–10% of people at any time but less than 1% of these people will develop invasive meningococcal disease. Meningococcal bacteria also cause septicemia (an infection of the blood) and pneumonia (an infection of the lungs).</p> <p>Meningococcal disease can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of meningococcal meningitis occur suddenly and may include:</p> <ul style="list-style-type: none"> ➤ Fever ➤ Stiff neck ➤ Severe headache ➤ Nausea and vomiting ➤ Bulging fontanelle (soft spot of the skull) in infants ➤ Pinpoint rash <p>A diagnosis of meningococcal meningitis needs to be confirmed by a lab test.</p>
How is it spread?	<p>Meningococcal meningitis is spread through contact with the nose and throat secretions of an infected person by:</p> <ul style="list-style-type: none"> ➤ Breathing air contaminated with the bacteria when an infected person has coughed or sneezed ➤ Kissing or sharing anything that is put in the mouth (e.g., food, drinks, baby bottles, soothers, sippy cups, lipstick, water bottles, mouth guards used for sports or mouthpieces of musical instruments)
Incubation period	Usually less than 4 days (range is 1–10 days)
When is the person contagious?	From 7 days prior to the onset of symptoms until 24 hours after antibiotics are started.
How to prevent the spread of the illness to other children	<p>Contact local public health. A child with meningococcal meningitis should be excluded from school or a child care centre until 24 hours after antibiotics are started.</p> <p>A child diagnosed with meningococcal meningitis will be hospitalized and treated with antibiotics. Household and other close contacts (including children and staff in child care and preschool centres) will be offered antibiotics. For some types of meningococcal meningitis, close contacts will also be offered a vaccine. Antibiotics are not usually recommended for casual contacts (e.g., school or classroom contacts or transportation or workplace contacts).</p>

For more information see:

[HealthLink BC File #23a – Meningococcal C Conjugate \(Men-C\) Vaccine](#)

[HealthLink BC File #23b – Meningococcal Quadrivalent Vaccines](#)

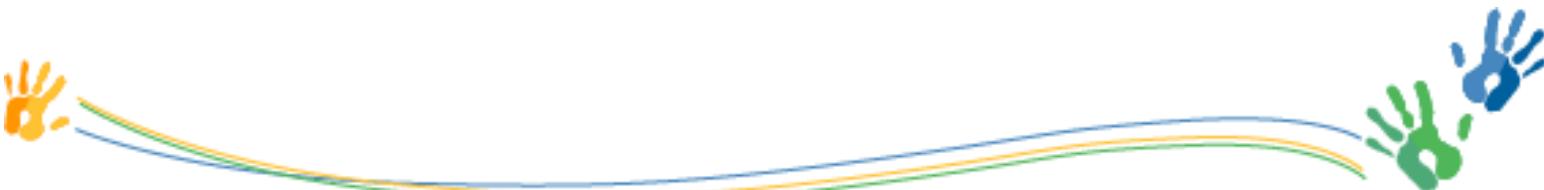


Methicillin-Resistant *Staphylococcus aureus* (MRSA)

What is it?	<p>Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) are types of <i>Staphylococcus aureus</i> (staph) bacteria that have become resistant to certain antibiotics, including methicillin, that are used to treat a staph infection.</p> <p>Staph infections are relatively common and usually harmless. They have often been treated with antibiotics from the penicillin family. The frequent use of these antibiotics has resulted in some staph bacteria changing so that they can survive when these antibiotics are present. These types of staph bacteria are referred to as methicillin-resistant <i>Staphylococcus aureus</i> (MRSA).</p> <p>There are other types of antibiotics that can be used to treat MRSA infections. Most staph infections heal quickly when treated with antibiotics. More severe infections can lead to infections of the blood, bones, brain, heart or lungs.</p>
What are the signs and symptoms?	<p>Signs and symptoms of a staph infection or MRSA may include:</p> <ul style="list-style-type: none"> ➤ Red, painful bumps under the skin (i.e., boils or abscesses) ➤ Sores that contain pus or are covered with a honey colored crust ➤ A wound that looks like a spider bite ➤ Fever and chills
How is it spread?	<p>MRSA is spread by:</p> <ul style="list-style-type: none"> ➤ Direct skin-to-skin contact ➤ Touching surfaces or objects (e.g., doorknob, faucet, towels, bedding) contaminated with MRSA bacteria
Incubation period	Variable
When is the person contagious?	As long as the sores continue to drain.
How to prevent the spread of the illness to other children	<p>A child with MRSA can go to school or a child care centre if the sores are not draining or they can be covered with a dry dressing. The child should avoid activities such as sports that involve skin-to-skin contact until the infection is healed.</p> <p>Ensure children do not share washcloths, towels or bedding. Wash all linens in hot water and dry in a hot dryer.</p> <p>Carefully dispose of (or clean, if applicable) articles that are soiled with discharge from the child's sores.</p>

For more information see:

[HealthLink BC File #73 – Methicillin-Resistant Staphylococcus Aureus \(MRSA\)](#)



Molluscum Contagiosum

What is it?	Molluscum contagiosum is a viral infection of the skin caused by a poxvirus. The virus causes small bumps on the skin's surface. Molluscum contagiosum can be spread easily to others but is not harmful. Without treatment, the infection can last for 6 months to 2 years.
What are the signs and symptoms?	Signs and symptoms of molluscum contagiosum may include: <ul style="list-style-type: none"> ➤ Tiny painless bumps that appear on the skin anywhere on the body. The bumps become small, waxy, pinkish-white, raised lesions which may have a small crater in the center of them. ➤ The bumps may become swollen and red In children, the bumps most often appear on the face, body, legs and arms. In adults, they can appear anywhere on the body.
How is it spread?	Molluscum contagiosum is spread through direct skin-to-skin contact by touching: <ul style="list-style-type: none"> ➤ The lesions or the hands of an infected person ➤ A contaminated object (i.e., an object that has been touched by an infected person after they scratched the lesions) The lesions can be spread to another part of the body by scratching.
Incubation period	Range is 2 weeks to 6 months
When is the person contagious?	Unknown, probably for as long as the lesions exist
How to prevent the spread of the illness to other children	A child with molluscum contagiosum may go to school or a child care centre if they feel well enough to attend.

For more information see:

[HealthLink BC File #08i – Molluscum Contagiosum](#)



Mononucleosis (Mono)

What is it?	Mononucleosis (mono) is a disease caused by the Epstein-Barr virus (EBV). It is most common in adolescents and young adults. About half of the people infected with EBV develop symptoms.
What are the signs and symptoms?	Signs and symptoms of mono may include: <ul style="list-style-type: none"> ➤ Fatigue ➤ Fever ➤ Sore throat ➤ Swollen lymph glands ➤ Fatigue ➤ Enlarged liver and spleen ➤ Jaundice (yellowing of the skin and eyes) occurs occasionally
How is it spread?	Mono is spread through contact with the saliva of an infected person by: <ul style="list-style-type: none"> ➤ Kissing ➤ Sharing food, drinks or anything that children put in their mouths (e.g., toys, sippy cups, soothers) ➤ Touching objects contaminated with the virus from an infected person's saliva
Incubation period	Usually 4–6 weeks following contact with an infected person
When is the person contagious?	Uncertain, but prolonged. A child with mono is most contagious when symptoms are at their peak but may remain contagious for up to a year after the illness.
How to prevent the spread of the illness to other children	A child with mono may go to school or a child care centre when they feel well enough to attend. This may take 1–4 weeks or longer after symptoms appear. Carefully dispose of (or clean, if applicable) articles soiled with the nose and throat secretions of an infected child.

For more information see:

[HealthLink BC Health Topics – Mononucleosis \(Mono\)](#)



Mumps

What is it?	<p>Mumps is caused by the mumps virus. Many children may have mild or no symptoms but they can still spread the disease to others. Adults with mumps are more likely to experience complications than children.</p> <p>Complications of mumps include:</p> <ul style="list-style-type: none"> ➤ Meningitis (swelling of the lining of the brain and spinal cord) and encephalitis (swelling of the brain) ➤ Painful swelling of the testes or ovaries ➤ Temporary deafness <p>Mumps can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of mumps may include:</p> <ul style="list-style-type: none"> ➤ Fever ➤ Headache ➤ Swollen and painful salivary glands (found in front of and below the ear or under the jaw)
How is it spread?	<p>Mumps is spread through contact with the nose and throat secretions of an infected person by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus when an infected person has coughed or sneezed ➤ Touching the nose and throat secretions of an infected person ➤ Kissing, or sharing food, drinks or anything that is put in the mouth (e.g., cups, toys)
Incubation period	<p>Usually 16–18 days following contact with an infected person but can range from 12–25 days</p>
When is the person contagious?	<p>A child with mumps is most contagious 2 days before to 5 days after the onset of illness. However, mumps virus has been isolated from 7 days before to 9 days after the onset of salivary gland swelling.</p>
How to prevent the spread of the illness to other children	<p>Contact local public health. A child with mumps should be excluded from school or a child care centre for at least 5 days and up to 9 days after the onset of salivary gland swelling.</p> <p>Carefully dispose of (or clean, if applicable) articles soiled with the nose and throat secretions of an infected child.</p>

For more information see:

[HealthLink BC File #14c – Mumps](#)

[HealthLink BC File #14a – Measles, Mumps, Rubella \(MMR\) Vaccine](#)

[HealthLink BC File #14e – Measles, Mumps, Rubella and Varicella \(MMRV\) Vaccine](#)



Norovirus

What is it?	Norovirus is a very contagious virus that infects the digestive tract (stomach and intestine). A norovirus infection causes vomiting and diarrhea. Complications and severe illness from norovirus are rare. However, young children and the elderly may become dehydrated if they are unable to replace fluids lost due to vomiting and diarrhea.
What are the signs and symptoms?	<p>Signs and symptoms of norovirus infection usually develop suddenly and may include:</p> <ul style="list-style-type: none"> ➤ Nausea and vomiting ➤ Diarrhea ➤ Abdominal cramping ➤ Fever ➤ Chills <p>Symptoms usually last for 1–3 days.</p>
How is it spread?	<p>Norovirus is present in the stool and vomit of a person infected with the virus. The virus is spread by:</p> <ul style="list-style-type: none"> ➤ Direct contact with an infected child's stool or vomit ➤ Touching a surface or object contaminated with the virus. Norovirus can live for a long time on surfaces such as sinks, taps, counters and toys. ➤ Touching the hand of an infected person or a person who recently changed an infected child's diaper or assisted the child with toileting. ➤ Consuming food or drink prepared by an infected person or a person who recently changed an infected child's diaper or assisted the child with toileting ➤ Breathing in air contaminated with norovirus after an infected person has vomited
Incubation period	Usually 1–2 days
When is the person contagious?	People are most contagious when they are ill and in the first 3 days after they recover. Some people may be contagious for up to 2 weeks after becoming ill.
How to prevent the spread of the illness to other children	<p>A child with norovirus should be excluded from school or a child care centre until 48 hours after their last episode of diarrhea or vomiting or as advised by the local Health Authority. Anyone with symptoms should be excluded from food handling and child care.</p> <p>Carefully dispose of (or clean, if applicable) articles soiled with the vomit or stool from an infected child.</p>

For more information see:
[HealthLink BC File #87 – Norovirus](#)



Pertussis (Whooping Cough)

What is it?	<p>Pertussis is a very contagious respiratory illness caused by <i>Bordetella pertussis</i> bacteria. It can cause serious illness in children and adults. Infants under one year of age are at highest risk. Each year 1–3 deaths occur in Canada as a result of pertussis, mostly in young infants. If a pregnant woman has pertussis 2–3 weeks before giving birth, the newborn is at high risk of getting pertussis.</p> <p>Pertussis can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of pertussis may include:</p> <ul style="list-style-type: none"> ➤ Sneezing, runny nose, mild fever and a mild cough <p>After 1–2 weeks, the cough worsens. Coughing becomes severe with repeated forceful coughing spells that often end with a whooping sound before the next breath. A child will sometimes vomit after coughing. The cough can last for several weeks.</p> <p>Adults and adolescents who are infected with pertussis bacteria may not have any of the above symptoms or only have a mild illness.</p>
How is it spread?	<p>Pertussis is spread through contact with the nose and throat secretions of an infected person by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with pertussis bacteria when an infected person has coughed or sneezed ➤ Kissing or sharing food, drinks or anything that is put in the mouth (e.g., cups, toys) ➤ Touching the nose and throat secretions of an infected person or objects contaminated with the bacteria <p>Infected adults or adolescents with a mild illness or no symptoms can infect infants.</p>
Incubation period	Usually 7–10 days (range is 5–21 days)
When is the person contagious?	Usually from the time when the first symptoms develop (1–2 weeks before severe coughing starts) until about 3 weeks after the cough starts. A child who is started on antibiotics is not contagious after 5 days of antibiotic treatment.
How to prevent the spread of the illness to other children	<p>Contact local public health. Exclusion of a child with pertussis from school or a child care centre is at the discretion of the Medical Health Officer.</p> <p>Antibiotics may be recommended for high risk, close contacts of a child with pertussis (i.e., an infant under 1 year of age, a pregnant woman in her third trimester) or when there is a high risk person in the household, child care centre or school.</p>

For more information see:

[HealthLink BC File #15c – Pertussis \(Whooping Cough\)](#)

[HealthLink BC File #105 – Diphtheria, Tetanus, Pertussis, Hepatitis B, Polio and *Haemophilus influenzae* type b \(DTaP-HB-IPV-Hib\) Vaccine](#)

[HealthLink BC File #15b– Diphtheria, Tetanus, Pertussis, Polio, *Haemophilus influenzae* type b \(DTaP-IPV-Hib\) Vaccine](#)

[HealthLink BC File # – Tetanus, Diphtheria, Pertussis, Polio \(Tdap-IPV\) Vaccine](#)

[HealthLink BC File #18c – Tetanus, Diphtheria, Pertussis \(Tdap\) Vaccine](#)



Pink Eye (Conjunctivitis)

What is it?	Pink eye is an inflammation of the covering of the eyeball and the inside of the eyelid. It can be caused by bacteria, viruses, allergies or irritants (chemical or physical).
What are the signs and symptoms?	Signs and symptoms of pink eye may include: <ul style="list-style-type: none"> ➤ Teary, red, itchy eye(s) ➤ Swollen eyelids ➤ Pus or a thick discharge (yellow or yellowish-green color) that can make eyelids sticky, especially during sleep
How is it spread?	Pink eye caused by bacteria and viruses spreads easily through contact with the discharge from an infected child's eye by: <ul style="list-style-type: none"> ➤ Touching the discharge ➤ A child with pink eye touching the discharge from their eye and then touching another child ➤ Touching an object (e.g., tissue, facecloth, eye dropper, makeup applicator) contaminated with the discharge from the eye of an infected child Pink eye caused by bacteria or viruses can also be spread by breathing in air contaminated with the bacteria or viruses when an infected person has coughed or sneezed.
Incubation period	Usually 1–3 days following contact with an infected person
When is the person contagious?	If pink eye is caused by bacteria, a child who has started treatment with antibiotics will not be contagious after 24 hours. A child with pink eye caused by a virus can be contagious from before symptoms start until they end.
How to prevent the spread of the illness to other children	If a child is started on antibiotics for pink eye caused by bacteria they should be excluded from school or a child care centre until at least 24 hours after starting treatment. If pink eye is caused by a virus or other irritant, the child may return to school or a child care centre after seeing their health care provider. Ensure children do not share washcloths, towels or bedding. Carefully dispose of articles (or clean, if applicable) contaminated with secretions from a child's eye immediately after use.

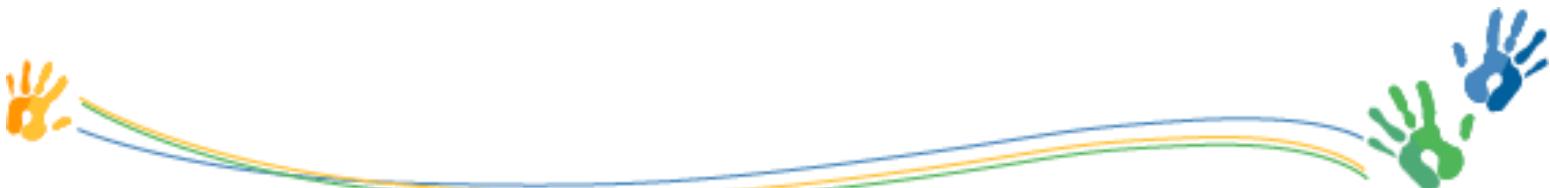
For more information see:
[HealthLink BC File #82 – Pinkeye \(Conjunctivitis\)](#)



Pinworms

What is it?	Pinworms are tiny, white worms that live in the intestines. The female worms crawl out of the anus at night and lay their eggs on nearby skin. The eggs can live for up to 2 weeks outside of the body. Pinworms can be unpleasant and uncomfortable but they do not cause disease. Pinworm infections are common, especially among school aged and preschool aged children, and children attending a child care centre.
What are the signs and symptoms?	<p>Signs and symptoms of pinworm infection may include:</p> <ul style="list-style-type: none"> ➤ Intense itchiness around the anus and vagina, especially at night ➤ Sleeplessness ➤ Irritability <p>Children with pinworms often have no symptoms.</p>
How is it spread?	<p>Pinworms are spread by accidentally swallowing pinworm eggs. This can occur by:</p> <ul style="list-style-type: none"> ➤ Touching the hands of a child who has scratched the itchy area of the body where the eggs are present ➤ Touching objects (e.g., toys, toilet seats, baths, clothes or bedding) contaminated with pinworm eggs ➤ Ingesting eggs that have become airborne (e.g., by shaking a bedsheet) when breathing
Incubation period	1–2 months or longer from the time pinworm eggs are ingested.
When is the person contagious?	As long as female worms are still present and producing eggs.
How to prevent the spread of the infection to other children	<p>A child with pinworms can go to school or a child care centre after receiving appropriate treatment (usually one dose of a prescribed oral medication).</p> <p>Vacuum living areas.</p>

For more information see:
[HealthLink BC Health Topics – Pinworms](#)

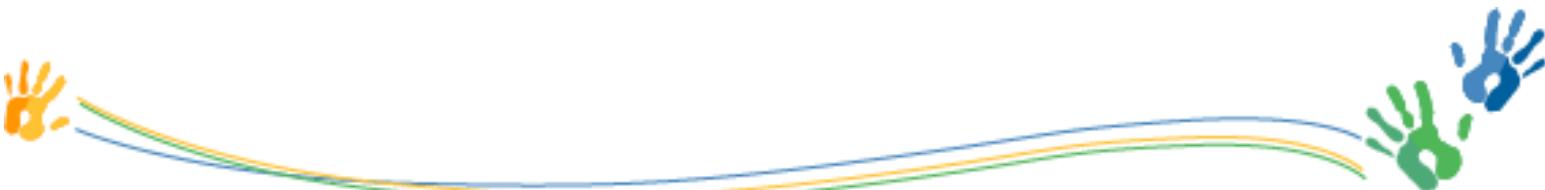


Respiratory Syncytial Virus (RSV)

What is it?	<p>Respiratory syncytial virus (RSV) is a virus that causes upper and lower respiratory tract infections. It can cause bronchiolitis and pneumonia in young children and infants. Most children have been infected with RSV by 2 years of age.</p> <p>RSV is usually a mild illness that can be managed at home. Children who are at risk for more serious illness and hospitalization include:</p> <ul style="list-style-type: none"> ➤ Infants less than 6 months of age ➤ Premature infants ➤ Children with chronic lung or heart disease ➤ Children with weakened immune systems
What are the signs and symptoms?	<p>Signs and symptoms of RSV often resemble the common cold and may include:</p> <ul style="list-style-type: none"> ➤ Stuffy or runny nose ➤ Low grade fever or chills ➤ Cough ➤ Earache ➤ Rapid breathing or wheezing ➤ Listlessness, inactivity ➤ Decreased appetite <p>The symptoms of RSV may resemble other illnesses. A diagnosis of RSV is made by a doctor or nurse practitioner.</p>
How is it spread?	<p>RSV is spread through contact with the secretions from the eyes, nose and mouth of an infected child by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus when an infected person has coughed or sneezed ➤ Touching the secretions from an infected child's eyes, nose or mouth ➤ Touching surfaces that have been contaminated with the virus. RSV can live on hard surfaces (e.g., toys, doorknobs) for many hours and on the hands for 30 minutes or more.
Incubation period	Usually 4–6 days (range is 2–8 days)
When is the person contagious?	Usually for 3–8 days, starting right before the onset of symptoms
How to prevent the spread of the illness to other children	<p>A child with RSV can go to school or a child care centre if they feel well enough to attend.</p> <p>Carefully dispose of (or clean, if applicable) articles soiled by discharge from an infected child's eyes, nose or mouth.</p>

For more information see:

[HealthLink BC Health Topics – Respiratory Syncytial Virus \(RSV\) Infection](#)



Ringworm

What is it?	Ringworm is a skin infection caused by a fungus. It can be found on the scalp, body, groin or feet. Scalp ringworm is very contagious, especially among children. It mainly affects children between 3 and 9 years of age. Foot ringworm (athlete's foot) affects males more than females and is more common after puberty.
What are the signs and symptoms?	<p>Signs and symptoms of a ringworm infection may include:</p> <ul style="list-style-type: none"> ➤ A ring shaped rash that is reddish and may be itchy. The rash may be dry and scaly or wet and crusty. ➤ Patches of hair loss or hair thinning if the ringworm infection is on the scalp <p>Symptoms of foot ringworm may include foot itching, rash or blisters on the foot and scaling of the foot.</p>
How is it spread?	<p>Ringworm is spread by contact with:</p> <ul style="list-style-type: none"> ➤ An area of ringworm infection ➤ An object or surface (e.g., hairbrushes, combs, unwashed clothes or towels, pillows and pool or shower surfaces) contaminated with the fungus. The fungus can live for long periods of time on objects and surfaces. ➤ Infected animals such as dogs, cats and farm animals
Incubation period	Usually from 4–14 days
When is the person contagious?	As long as the rash is present
How to prevent the spread of the infection to other children	<p>A child with ringworm should be excluded from school or a child care centre until the child has seen their health care provider and has taken the first dose of prescribed medication.</p> <p>Ensure children do not share hairbrushes, combs, washcloths, towels or pillows.</p> <p>Advise children to avoid petting animals with bald spots.</p>

For more information see:
[HealthLink BC Health Topics – Ringworm of the Skin](#)



Roseola

What is it?	Roseola is a common illness caused by a virus. It mainly affects children between 6 months and 2 years of age. It rarely affects children after 4 years of age.
What are the signs and symptoms?	<p>Signs and symptoms of roseola may include:</p> <ul style="list-style-type: none"> ➤ A fever (sometimes > 39.5°C) that appears suddenly and lasts 3–5 days. The rapid rise in temperature may cause a febrile seizure. ➤ Swelling of the eyelids may occur ➤ A rosy, pink rash that usually develops as the fever is resolving. It first appears on the neck and chest, and then spreads to the rest of the body. The spots from the rash turn white when pressed gently and they may have a lighter color ring around them. The rash may last from a few hours to 2 days. ➤ Irritability ➤ Diarrhea and vomiting ➤ Swollen glands in the neck
How is it spread?	<p>Roseola is spread through contact with the nose and throat secretions of an infected person by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the virus when an infected person has talked, laughed, coughed or sneezed <p>Older siblings, caregivers and parents may spread the disease to children that have not had it.</p>
Incubation period	Usually 10 days following contact with an infected person (range is 5–15 days)
When is the person contagious?	<p>An infected child is probably most contagious during the period of high fever, before the rash develops.</p> <p>The exact duration of infectiousness is unknown. Many adults have the virus present in their saliva (even if they were infected as children) and may spread the disease to infants.</p>
How to prevent the spread of the illness to other children	A child with roseola can return to school or a child care centre when the fever and rash are gone and they feel well enough to attend.

For more information see:
[HealthLink BC File #83 – Roseola](#)



Rotavirus

What is it?	<p>Rotavirus is the most common cause of diarrhea and hospitalization due to diarrhea in children under 5 years of age. It usually affects children between 6 months and 2 years of age. The illness usually lasts 4–8 days.</p> <p>Children with rotavirus infection usually recover completely without treatment. Some children may need to be hospitalized for rehydration (replacement of lost fluids) due to diarrhea.</p> <p>In Canada, most rotavirus infections occur in later winter and early spring.</p> <p>Rotavirus can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of rotavirus may include:</p> <ul style="list-style-type: none"> ➤ Fever ➤ Vomiting ➤ Diarrhea ➤ Abdominal pain
How is it spread?	<p>Rotavirus is spread through contact with an infected child's stool by:</p> <ul style="list-style-type: none"> ➤ Changing an infected child's diaper or assisting a child with toileting ➤ Touching an object (e.g., toy, faucet, doorknob) contaminated with stool containing rotavirus. The virus is able to survive for long periods on hard surfaces, on hands and in water. <p>Children with rotavirus have large numbers of the virus in their stool. The virus spreads easily in a child care facility or family home.</p>
Incubation period	Usually 1–3 days
When is the person contagious?	During the acute stage of the illness and until the diarrhea has stopped.
How to prevent the spread of the illness to other children	A child with rotavirus should be excluded from a child care centre until 48 hours after the last episode of diarrhea or vomiting.

For more information see:

[HealthLink BC File #104a – Rotavirus Vaccine \(Rotarix®\)](#)



Rubella (German Measles)

What is it?	<p>Rubella, also known as German measles, is a very contagious illness caused by the rubella virus. It is usually a mild illness but can be very serious in pregnant women. Rubella can be confused with other rashes and needs to be confirmed by a lab test.</p> <p>Rubella infection during pregnancy can cause severe birth defects, miscarriage or stillbirth. Up to 85% of fetuses infected with rubella in the first 12 weeks of pregnancy will develop Congenital Rubella Syndrome (CRS). CRS can result in severe birth defects including deafness, eye problems, heart defects and damage to the liver, spleen and brain.</p> <p>Rubella can be prevented by immunization.</p>
What are the signs and symptoms?	<p>Signs and symptoms of rubella may include:</p> <ul style="list-style-type: none"> ➤ A rash (which may be itchy) that starts on the face and spreads downwards and lasts about 3–5 days ➤ Fever ➤ Swelling and soreness of the lymph nodes behind the ears and at the back of the neck ➤ Discomfort ➤ Headache ➤ Runny nose ➤ Irritated eyes ➤ Joint soreness in adult women but this is rare in men and children <p>About 50% of people infected with rubella have no symptoms.</p>
How is it spread?	<p>Rubella is spread through contact with the nose and throat secretions of an infected person by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the rubella virus when an infected person has coughed or sneezed ➤ Touching objects contaminated with the virus ➤ Kissing or sharing food, drinks or anything that is put in the mouth
Incubation period	Usually 14–17 days (range 14–21 days)
When is the person contagious?	From 7 days before until 7 days after the onset of the rash. A child with rubella is most contagious when the rash first appears. An infant with CRS can shed the rubella virus in their nose and throat secretions and urine for up to one year.
How to prevent the spread of the illness to other children	<p>Contact local public health. A child with rubella should be excluded from school or a child care centre for 7 days after the appearance of the rash if susceptible individuals are present.</p> <p>Pregnant women working at the school or child care centre who are contacts of a child with rubella should contact their health care provider to determine whether or not they are immune to rubella.</p>

For more information see:

[HealthLink BC File #14d – Rubella](#)

[HealthLink BC File #14a – Measles, Mumps, Rubella \(MMR\) Vaccine](#)

[HealthLink BC File #14e – Measles, Mumps, Rubella and Varicella \(MMRV\) Vaccine](#)



Salmonellosis

What is it?	Salmonellosis is a food borne infection caused by <i>Salmonella</i> bacteria. The bacteria live in the intestines of people and animals and cause a diarrhea illness. Very young children, the elderly and those with weakened immune systems may have severe diarrhea which can lead to dehydration (loss of fluids) that requires treatment in a hospital.
What are the signs and symptoms?	<p>Signs and symptoms of salmonellosis occur suddenly and may include:</p> <ul style="list-style-type: none"> ➤ Stomach pain ➤ Diarrhea ➤ Fever ➤ Nausea and vomiting <p>Symptoms usually last 4–7 days and resolve without treatment.</p>
How is it spread?	<p><i>Salmonella</i> are present in the stool of infected people and animals. The bacteria are spread by:</p> <ul style="list-style-type: none"> ➤ Eating raw or undercooked poultry, meat or eggs contaminated with the bacteria ➤ Eating fruit and vegetables that have been contaminated ➤ Eating food prepared by an infected person who has not washed their hands ➤ Drinking or eating unpasteurized dairy products such as milk ➤ Handling animals and pets such as chicks, ducklings, hamsters, gerbils, turtles, lizards and snakes which can be infected with <i>Salmonella</i> bacteria
Incubation period	Usually 12–36 hours (range is 6–72 hours)
When is the person contagious?	Throughout the course of the infection. Some people, especially infants, may be contagious for months after the illness.
How to prevent the spread of the illness to other children	A child with salmonellosis should be excluded from school or a child care centre until 48 hours after their last episode of diarrhea or vomiting or as advised by the local Health Authority. Anyone with symptoms should be excluded from food handling and child care.

For more information see:
[HealthLink BC File #17 – Salmonellosis](#)



Scabies

What is it?	<p>Scabies is caused by tiny (microscopic) insect-like parasites called mites. The mites burrow under the upper layer of the skin to live and lay eggs. Symptoms of scabies occur due to an allergic reaction to the mites and their eggs.</p> <p>Scabies is not due to poor hygiene.</p>
What are the signs and symptoms?	<p>Signs and symptoms of scabies may include:</p> <ul style="list-style-type: none"> ➤ Intense itching, especially at night ➤ A pimple-like rash ➤ The presence of tiny burrows that look like grayish wavy, thread-like raised lines on the skin <p>The itching and rash may occur all over the body but the most common sites are the webbing between the fingers, the inside of the wrists and elbows, the breasts, the male genitals, the waist, back and buttocks</p> <p>In infants and young children, the rash can appear on the face, head, neck, palms and soles of the feet.</p>
How is it spread?	<p>Scabies is spread by:</p> <ul style="list-style-type: none"> ➤ Direct skin-to-skin contact with a person with scabies ➤ Sharing clothes, towels or bedding (less common) <p>Scabies mites can survive for up to 3 days when they are not in contact with human skin.</p>
Incubation period	<p>Usually 2–6 weeks in someone who has not had scabies. In someone who has had scabies, symptoms develop 1–4 days after re-exposure.</p>
When is the person contagious?	<p>Until mites and eggs have been destroyed by treatment with lotions, creams or pills prescribed by a health care provider.</p> <p>A person with a scabies infestation can spread scabies even if they do not have any symptoms.</p>
How to prevent the spread of the infestation to other children	<p>A child with scabies should be excluded from school or a child care centre until the child has completed one treatment.</p> <p>Inform parents of children in direct contact with a child with scabies so that all family members and close contacts of the child can be treated at the same time.</p> <p>Bedding, towels and clothing worn next to the skin in the 3 days before treatment should be washed with detergent in hot water and dried in a hot dryer. Any items that cannot be washed should be dry-cleaned or stored in a sealed air-tight plastic bag for 7 days.</p> <p>Vacuum carpets and soft or upholstered furniture.</p>

For more information see:
[HealthLink BC File #09 – Scabies](#)



Shigellosis

What is it?	Shigellosis is an infection of the intestines caused by <i>Shigella</i> bacteria. The bacteria are found in the stool of infected people and are very contagious.
What are the signs and symptoms?	<p>Signs and symptoms of shigellosis may include:</p> <ul style="list-style-type: none"> ➤ Diarrhea (often bloody) ➤ Fever ➤ Stomach cramps ➤ Nausea and vomiting <p>Shigellosis usually lasts 4–7 days. A severe illness with fever and seizures may occur in children who are less than 2 years old.</p>
How is it spread?	<p>Shigellosis is spread by contact with the stool from an infected person by:</p> <ul style="list-style-type: none"> ➤ Touching infected stool (e.g., changing a diaper or assisting a child with toileting) ➤ Touching an object that has been contaminated with the bacteria (e.g., toys, faucets, water in a children's water table or wading pool) ➤ Eating contaminated food or drinking contaminated water <p>Shigellosis can spread easily in child care centres, especially where there are children between 2 and 4 years of age.</p>
Incubation period	Usually 1–3 days
When is the person contagious?	<p>During acute illness and for up to 4 weeks after diarrhea stops.</p> <p>Treatment with antibiotics shortens the length of time a person is contagious.</p>
How to prevent the spread of the illness to other children	A child with shigellosis should be excluded from a school or child care centre until 48 hours after their last episode of diarrhea or vomiting or as advised by the local Health Authority. Anyone with symptoms should be excluded from food handling and child care.

For more information see:
[HealthLink BC File #80 – Shigellosis](#)



Shingles (Herpes Zoster)

What is it?	<p>Shingles, also called herpes zoster or zoster, is a painful skin rash caused by the varicella zoster virus. This is the same virus that causes chickenpox.</p> <p>After a person recovers from chickenpox, the virus stays in their body and lies inactive along certain nerves. In some people, the virus can become active years later and cause shingles which usually appears as a rash with blisters on one side of the face or body. About 1 in 5 people who get shingles may have severe pain that lasts for months or years after the rash has cleared.</p> <p>Shingles is more common in people over 50 years of age and those with weakened immune systems. Shingles can be prevented by immunization of those 50 years of age and older.</p>
What are the signs and symptoms?	<p>Signs and symptoms of shingles may include:</p> <ul style="list-style-type: none"> ➤ Pain, itching or tingling of the skin ➤ Fever ➤ Headache ➤ Nausea ➤ Chills ➤ A blister-type rash that develops in the same areas as the pain and tingling. Blisters usually crust over in about 7-10 days and disappear after 2–4 weeks.
How is it spread?	<p>Shingles cannot be spread from one person to another. However, the virus that causes shingles can be spread to another person and cause chickenpox. This is uncommon and requires contact with fluid from the shingles blisters. The virus is not spread through the nose and throat secretions of someone with shingles.</p>
Incubation period	<p>It would take about 10–21 days for a person who has come in contact with fluid from the shingles blisters to develop chickenpox.</p>
When is the person contagious?	<p>For about 7–10 days after the rash appears. Once the rash crusts over, the person is no longer contagious.</p>
How to prevent the spread of the illness to other children	<p>A child with shingles can go to school or a child care centre if the rash is covered and the child feels well enough to attend.</p>

For more information see:

[HealthLink BC File # 111 – Shingles Vaccines](#)

[HealthLink BC Health Topics – Shingles](#)



Streptococcal Infections: Scarlet Fever and Strep Throat

What is it?	Scarlet fever and strep throat are both caused by streptococcal bacteria. Rheumatic fever may occur as a result of untreated streptococcal infection.
What are the signs and symptoms?	<p>Signs and symptoms of scarlet fever and strep throat may include:</p> <ul style="list-style-type: none"> ➤ A very sore throat ➤ Pain when swallowing ➤ Fever ➤ Headache ➤ Swollen tonsils and lymph glands in the neck ➤ Abdominal pain ➤ Nausea and vomiting <p>Additional symptoms of scarlet fever include:</p> <ul style="list-style-type: none"> ➤ A red rash that looks like sunburn and feels like rough sandpaper. It most often begins on the chest and stomach and then spreads to the rest of the body. The rash usually lasts 2–7 days. ➤ Peeling of the skin once the rash fades ➤ Red, swollen lips, strawberry-like tongue ➤ Flushed cheeks and pale area around the mouth
How is it spread?	<p>Streptococcal bacteria are spread by:</p> <ul style="list-style-type: none"> ➤ Breathing in air contaminated with the bacteria when an infected person has coughed or sneezed ➤ Touching the nose and throat secretions of an infected person ➤ Touching objects contaminated with the nose and throat secretions of an infected person ➤ Kissing or sharing food, drinks or anything that is put in the mouth <p>Contaminated food and milk products can be sources of streptococcal outbreaks.</p>
Incubation period	Usually 1–3 days following contact with an infected person.
When is the person contagious?	<p>In untreated cases, 10–21 days. Untreated cases of strep throat may carry the bacteria for weeks or months.</p> <p>A child with a streptococcal infection is no longer contagious after 24 hours of antibiotic treatment.</p>
How to prevent the spread of the illness to other children	<p>A child with strep throat or scarlet fever should be excluded from school or a child care centre until 24 hours after starting antibiotics and they no longer have a fever.</p> <p>Carefully dispose of (or clean, if applicable) articles soiled by the nose and throat secretions of infected children.</p>

For more information see:

[HealthLink BC File #106 – Group A Streptococcal Infections](#)

[HealthLink BC Health Topics – Scarlet Fever](#)

[HealthLink BC Health Topics – Strep Throat](#)



Swimmer's Itch

What is it?	<p>Swimmer's itch is an itchy skin rash caused by an allergic reaction to larvae from a parasite. The larvae of the parasite are released from snails living in the water. When the larvae are released into the water, they swim around looking for a suitable host (e.g., ducks, geese, muskrats, beavers). If a person is swimming or wading in the water, the larvae may burrow into their skin and cause an allergic reaction and rash. The larvae cannot develop in humans, so they soon die.</p> <p>Children are most likely to be affected by swimmer's itch because:</p> <ul style="list-style-type: none"> ➤ They swim or wade in shallow water where the parasites are found ➤ They are not as likely to towel dry completely each time they come out of the water ➤ Their skin is more sensitive than adults
What are the signs and symptoms?	<p>Signs and symptoms of swimmer's itch may include:</p> <ul style="list-style-type: none"> ➤ Tingling, burning or itching of the skin (itching can be severe) ➤ Small reddish pimples or blisters <p>Itching may last up to a week or more but will gradually go away. Scratching can lead to secondary infections.</p>
How is it spread?	<p>Swimmer's itch is not spread from person-to-person. It is only spread by swimming or wading in water contaminated with the larvae of certain parasites.</p>
Incubation period	<p>Itching usually begins almost immediately but it can take 12 or more hours for the rash to appear</p>
When is the person contagious?	<p>A person with swimmer's itch is not contagious.</p>
How to prevent the spread of the illness to other children	<p>A child with swimmer's itch may go to school or a child care centre if they feel well enough to attend.</p>

For more information see:

[HealthLink BC File #52 – Swimmer's Itch](#)



Resources

British Columbia Centre for Disease Control

- Information about communicable diseases and health conditions for the public and health care professionals.
- Available at <http://www.bccdc.ca/health-info/diseases-conditions>

HealthLink BC

- Detailed information about the illnesses and infestations described in this guide and other health conditions and infectious diseases
- Available at: <https://www.healthlinkbc.ca>
- Links to:
 - HealthLinkBC Files: <https://www.healthlinkbc.ca/services-and-resources/healthlinkbc-files>
 - Health Topics: <https://www.healthlinkbc.ca/explore-health-topics>

Contact HealthLink BC:

- Anywhere in BC: Phone 8-1-1
- TTY (Deaf and hearing-impaired): phone 7-1-1

Preventing Illness in Child Care Settings

- Written specifically to assist child care facility operators with designing and implementing health and illness policies to guide decision-making about children who are ill
- Available at: <http://www.health.gov.bc.ca/library/publications/year/2003/com018.pdf>

ImmunizeBC

- Information about vaccines, vaccine-preventable diseases and immunization schedules
- Available at <https://immunizebc.ca>
- To locate a health unit you can use the health unit finder at <https://immunizebc.ca/finder>

Caring for Kids

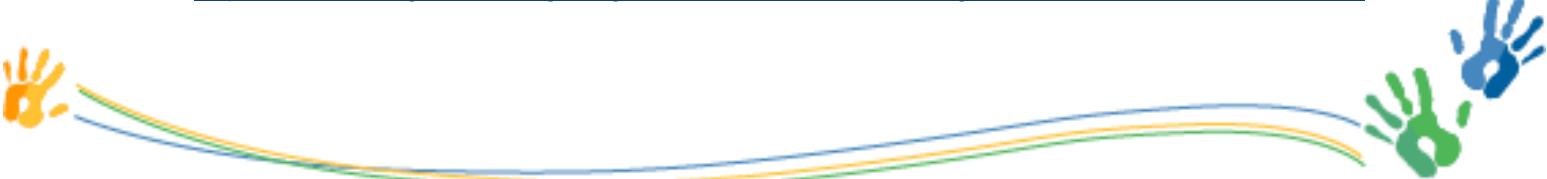
- Information for parents and caregivers about common childhood illnesses from the Canadian Paediatric Society
- Available at: <https://www.caringforkids.cps.ca>

Children's Hospital of Philadelphia, Conditions and Diseases

- Information for parents and caregivers about common childhood illnesses from the Children's Hospital of Philadelphia
- Available at: <https://www.chop.edu/conditions-diseases>

Do Bugs Need Drugs?

- A community education program promoting the wise use of antibiotics. The program includes information about how hand washing can stop the spread of infection and reduce the need for antibiotics. Available at <http://www.dobugsneeddrugs.org/>
- Information for early child care educators is available at: <http://www.dobugsneeddrugs.org/educational-resources/daycare-early-childhood-education/>
- Information for teachers of elementary school students is available at: <http://www.dobugsneeddrugs.org/educational-resources/k-gr3-british-columbia-curriculum/>



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