

# **Disease and Illness Prevention Workshop Teacher Guide Grades 9-12**

Infection Prevention for use during Covid-19

Thunder Bay District Health Unit

Healthy Schools Program

August 2020

**Overall Goal:** Demonstrate an understanding of factors that contribute to healthy development.

**The Ministry of Education – Ontario Physical Health and Education Curriculum 2019**

**Objectives:**

A2.2 demonstrate appropriate hand hygiene techniques and explain the importance of hand washing to prevent disease transmission;

A2.3 explain the importance of routine hygienic practices to prevent the transmission of disease (e.g., proper disposal of diapers or incontinence products, changing and handling of bed linens);

A2.4 explain the difference between active and passive immunity, and describe how these two types of immunity are acquired;

A2.5 explain the importance of immunization in preventing the occurrence or spread of disease;

A2.6 summarize, on the basis of research, the recommended vaccination protocol in Ontario (e.g., vaccination against measles, mumps, and rubella [MMR]; diphtheria, pertussis, and tetanus [DPT]; influenza; meningitis; pneumococcal infections; varicella) and explain the pros and cons of immunization programs from various perspectives (e.g., personal, societal, religious, cultural, legal).

## Workshop Power Point

*Please note: some videos have suggested grade levels, however, you may choose to show whichever video you feel is appropriate for your class.*

### Agenda

How diseases are transmitted

- Covid 19 – description, symptoms and management
- ABCs of prevention
- Prevention Strategies:
  - 1. Immunity, immunizations and Ontario's Vaccine schedule
  - 2. Hand hygiene
  - 3. Wearing a mask

### Prevention of disease transmission

How are diseases transmitted? (e.g. airborne, direct contact, indirect contact, vector, respiratory)

### Direct contact

- Diseases are often passed from person to person by direct contact.
- Close physical contact is required to transmit some diseases, as the germs can't survive for any time away from a host (the body).
- Direct contact occurs through skin-to-skin contact (ex. Handshake), kissing, sexual contact, contact with saliva, or contact with wounds
- Examples include influenza, the common cold, and chickenpox

## Indirect contact

- Some germs can live a shorter or longer time on a contaminated surface. When someone else comes along and touches these contaminated surfaces they may get the infection.
- Surfaces that are touched frequently by different people carry the greatest risk, such as door handles, tables, restroom surfaces, eating and drinking utensils, writing utensils, shared electronic devices, and so on.
- Sharing personal items also raises the risk that they may be contaminated, such as razors, utensils, and needles.
- Indirect contact transmission can be prevented by handwashing after using the restroom, before and after preparing food and eating, and after touching any shared surfaces, as well as not touching your face. Disinfecting these surfaces may also help.
- Surfaces that are touched frequently by different people carry the greatest risk and include:
  - Door knobs, door handles, handrails
  - Tables, beds, chairs
  - Washroom surfaces
  - Cups, dishes, cutlery, trays
  - Medical instruments
  - Computer keyboards, mice, electronic devices with buttons
  - Pens, pencils, phones, office supplies
  - Children's toys

Read more at: [http://www.ducksters.com/science/biology/infectious\\_disease.php](http://www.ducksters.com/science/biology/infectious_disease.php)

## Droplet transmission

- Droplets containing germs can be produced when someone who has an infection coughs, sneezes, or talks.
- Droplets might enter the eyes, nose, or mouth of those who are in close proximity. Generally, droplets are not in the air for a long time, but they can be breathed in; germs can also be transmitted when someone comes in contact with a surface droplets have landed on.

- Respiratory droplets can be spread as far as 6 feet away from their source. (therefore, the 6' rule for covid)
- E.g. colds and flus

## Respiratory/Airborne transmission

- In airborne transmission, a virus or bacteria is able to remain in the air for a long period of time, be distributed by airflow, and be inhaled.
- These germs must be capable of surviving for long periods of time outside the body and must be resistant to drying.
- Germs capable of airborne transmission can reach the lower respiratory tract when inhaled. It may not take many germs for an infection to occur.
- E.g. [chickenpox](#), [measles](#), and [tuberculosis](#).

## Vector Transmission

- Insect bites - Insects such as fleas, mosquitoes, and ticks can carry pathogens that get passed on when they make contact with humans. Diseases from insects include malaria (mosquitoes), Lyme disease (ticks), and the bubonic plague (fleas).

## Video - How To See Germs Spread Experiment

<https://www.youtube.com/watch?v=l5-dl74zxPg>

- Stop at 7:20

## Covid 19 – So many Questions:

- What is it? - video to follow
- Can I be vaccinated? – not yet. Still working on a vaccine
- What are the symptoms? – next slide
- What do I do if I get any symptoms? Upcoming slide
- What is the test like? There are two tests – one that is like a qtip with a long stick that goes into the nose. It is uncomfortable for only a brief moment. The other test is a throat swab and is pretty easy to take.
- When can I go back to school – upcoming slide

## Video - COVID 19 – WHO Video

<https://www.youtube.com/watch?v=i0ZabxXmH4Y>

- Ensure that it is noted that the Canadian Guidelines recommend that we physically distance from each other for a minimum of 6' or 2 meters

## Covid Symptoms – What should I look for?

- Fever (over 37.8 Celsius)/Chills
- New or worsening cough
- Shortness of breath/difficulty breathing
- Sore throat/trouble swallowing
- Runny/congested nose
- Pink eye
- Headache, unusual/long lasting
- Muscle aches
- Loss of taste/smell/appetite
- Extreme tiredness/fatigue that is unusual
- Nausea, vomiting or diarrhea

\*\*New and unrelated to preexisting conditions (Ie. Allergies)

## I have one/more Covid Symptoms *What do I do?*

### **While at home:**

- Do the Covid screen every morning before school (TBD)
- Let your parent/guardian know you are not feeling well and call the school to let them know you are not coming in

### **While at school:**

- If you get sick while at school, let your teacher know immediately
- Maintain as much physical distance as possible
- Wear your mask, practice hand hygiene and respiratory etiquette while waiting for a ride to go home

- Seek medical advice, including the possibility of getting tested for COVID-19 as appropriate or as advised by your medical provider.

## When can I go back to school?

- If a person is suspected to have COVID-19 and while they are waiting for test results, they must be in isolation and cannot attend school in person. They can attend school virtually if they feel well enough to participate.
- A person who had a COVID-19 test because of symptoms, but who tested negative should not return to school until at least 24 hours after their symptoms have gone away
- Anyone who has traveled out of the country must isolate for 14 days (even if their covid test returns negative).
- Where a student or staff member has tested positive for COVID-19, the TBDHU public health nurse will be in contact with the person and the school to provide further direction on returning to school.
- Barriers to return to school, such as requirement of medical notes or proof of negative tests, should be avoided.
- For an ill individual who has a known alternative diagnosis provided by a health care provider (such as allergies), can return to school when symptoms are resolved for at least 24 hours.

## Prevention Strategies:

Knowing how diseases can be spread, with an elbow partner see how many ways you can come up with to prevent the spread of infectious diseases. Give them 2mins?

## ABCs of prevention

A- avoid others when unwell, abide by the public health recommendations, avoid touching eyes, nose, mouth

B- be properly dressed (vector)

C- cover coughs and sneezes, clean surfaces regularly

D- disinfect frequently touched surfaces, donning a mask, distancing by 6'

E- environmental inspections

F- food handling techniques

G- glove up, get tested for covid

H- hand hygiene

I- immunizations

## Video: Vaccines 101: How Vaccines Work

We're going to discuss a few of these prevention practices a little more in depth starting with immunizations. Vaccines (also called immunizations) create immunity in our bodies to help protect us from certain infectious diseases. I am going to show this short video which helps to explain immunity and vaccines a little bit more.

<https://www.youtube.com/watch?v=p8OOqnLJs2Q>

## Immunity

Immunity to a disease is achieved through the presence of **antibodies** to that disease in a person's system. Antibodies are proteins produced by the body to neutralize or destroy toxins or disease-carrying organisms. Antibodies are disease-specific. For example, measles antibody will protect a person who is exposed to measles disease, but will have no effect if they are exposed to mumps.

There are two types of immunity: active and passive.

### Active Immunity

**Active immunity** results when exposure to a disease organism triggers the immune system to produce antibodies to that disease. Exposure to the disease organism can occur through infection with the actual disease (resulting in **natural immunity**), or introduction of a killed or weakened form of the disease organism through vaccination (**vaccine-induced immunity**). Either way, if an immune person comes into contact with that disease in the future, their immune system will recognize it and immediately produce the antibodies needed to fight it.

Active immunity is long-lasting, and sometimes life-long.

### Passive Immunity

**Passive immunity** is provided when a person is *given* antibodies to a disease rather than producing them through his or her own immune system.

A newborn baby acquires passive immunity from its mother through the placenta. A person can also get passive immunity through antibody-containing blood products such as **immune globulin**, which may be given when immediate protection from a specific disease is needed. This is the major advantage to passive immunity; protection is immediate, whereas active immunity takes time (usually several weeks) to develop.

However, passive immunity lasts only for a few weeks or months. Only active immunity is long-lasting. (<https://www.cdc.gov/vaccines/vac-gen/immunity-types.htm> )

## Benefits of Immunization

- Immunization has saved more lives in Canada than any other health initiative in the last 50 years.
- Publicly funded immunization programs have been incredibly effective at preventing diseases that would otherwise cause illness and death in our communities.
- Many diseases that were once common and devastating in Canada have now been eliminated or drastically reduced.
- In fact, each person's decision to be immunized helps us make progress in reducing disease in our communities and improving the health of all people in Ontario. How? When you decide to immunize, you protect yourself from serious diseases such as measles, meningitis and polio. Your immunization also benefits everyone around you by reducing the risk of disease in your family and community. "Herd immunity" develops when enough people in your community are immunized against a disease to prevent its spread.  
[http://www.health.gov.on.ca/en/common/ministry/publications/reports/immunization\\_2020/immunization\\_2020\\_report.pdf](http://www.health.gov.on.ca/en/common/ministry/publications/reports/immunization_2020/immunization_2020_report.pdf)

## Ontario's Recommended Vaccine Program:

- Administration of vaccines in accordance with the immunization schedule will provide optimal protection from vaccine preventable diseases for most individuals
- Age recommendations for receipt of vaccines are based on the age at which the risk of disease is highest and for which vaccine safety and efficacy have been demonstrated.
- it is important to know the minimum interval between doses in which an adequate immune response will be achieved  
<https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-1-key-immunization-information/page-10-timing-vaccine-administration.html>

## Prevention Strategy #2 - Hand Hygiene

What is hand hygiene?

- Hand hygiene is defined as removing or killing micro-organisms, or germs, on the hands. Hand hygiene can include hand washing with using soap and running water, or using alcohol-based hand rubs or sanitizers.

## Is hand washing important?

- Simply put, yes. Hand washing is the single most effective way to prevent the spread of infections. You can spread certain "germs" (a general term for microbes like viruses and bacteria) casually by touching another person.
- You can also catch germs when you touch contaminated objects or surfaces and then you touch your face (mouth, eyes, and nose).

Why is hand hygiene important?

- All humans carry organisms on their skin, some are good and some are bad. The bad organisms are picked up through direct contact with other people who are sick or with contaminated items (e.g. door knobs, keyboards).
- Effective hand hygiene kills or removes the bad organisms. Thorough hand washing with adequate quantities of water and soap removes more than 90% of the transient, i.e. superficial, flora including all or most contaminants ([http://www.who.int/water\\_sanitation\\_health/medicalwaste/148to158.pdf](http://www.who.int/water_sanitation_health/medicalwaste/148to158.pdf)).

## Video – How Soap Kills the Coronavirus

<https://youtu.be/-LKVUarhtvE>

- Soap doesn't actually kill the bad organisms. It's the combination of soap, rubbing, rinsing and drying that does the job. Regular soap and water create a slippery surface and the organisms slide off and are rinsed down the drain under running water. This is why it is so important to "scrub" the hands when washing; the mechanical action breaks down the tiny bits of grease and dirt on the hands that bad organisms cling to. (<http://www.tbdhu.com/sites/default/files/files/resource/2016-02/Hand%20Hygiene%20101.pdf>)
- The use of gloves is not a substitute for hand washing.

## When should hands be washed?

Different situations where people can pick up infections include:

- When hands are visibly soiled
- After using the washroom (includes changing diapers)
- After blowing your nose or after sneezing in your hands
- Before and after donning or removing your face mask
- Before and after eating, handling food, drinking or smoking
- After touching raw meat, poultry, or fish
- After handling garbage
- Before and after visiting or caring for sick people
- After handling pets, animals or animal waste
- After handling money

[http://www.ccohs.ca/oshanswers/diseases/washing\\_hands.html](http://www.ccohs.ca/oshanswers/diseases/washing_hands.html)

## Hand Hygiene is Affected by:

- Condition of the Hands: Presence of dermatitis, cracks, cuts or abrasions can trap bacteria and compromise hand hygiene. Intact skin is body's first line of defense against bacteria therefore careful attention to hand care is essential.
- Nails (Artificial or Real): Long nails are difficult to clean and hide more microorganisms than short nails. Studies have shown that acrylic nails harbour more microorganisms and are more difficult to clean than natural nails and have also been implicated in the transfer of microorganisms such as Pseudomonas and are also associated with poor hand hygiene practices and result in more tears to gloves.
- Nail Polish: Chipped nail polish or polish worn longer than 4 days can hide microorganisms. Apparently freshly applied nail polish does not result in increased numbers of bacteria around the nails.
- Rings, other hand jewelry and bracelets: can also hide microorganisms

## Hand washing:

- Remove hand and arm jewelry
- Wet hands with warm (not hot) running water
- Apply liquid or foam soap and lather creating friction for a minimum of 20 seconds
- Pay attention to finger tips, between fingers, backs of hands and base of thumbs
- Rinse hands thoroughly under warm running water
- Pat hands dry with paper towel (do not rub as this can damage skin)
- Use same paper towel to turn off taps

NOTE: Do NOT use hand sanitizer immediately after hand washing as this increases risk to skin irritation.

## Video - WHO on proper handwashing

<https://www.youtube.com/watch?v=3PmVJQUCm4E>

## Video - TBDHU - Hand washing

<https://www.youtube.com/watch?v=rau40rRX1vU>

## Alcohol Based Hand Rub

- Ensure hands are not visibly soiled
- Remove hand and arm jewellery
- Apply to hands (one or two pump fulls, approximately 35mm sized amount)
- Spread product over all surfaces of hands, concentrating on finger tips, between fingers, backs of hands and base of thumbs.
- Rub into hands until product is dry. This will take a minimum 20 seconds if sufficient product is used.

NOTE: Alcohol concentration must be at least 60% for proper effectiveness.

## Prevention Strategy #3 – Wearing a Mask

Video – TBDHU – Mask Wearing

<https://www.youtube.com/watch?v=3jIARoesXZY>

## Video – How to wear a non medical mask or face covering properly

<https://www.youtube.com/watch?v=gvLA--hGU70>

## Cleaning and Disposing of Non medical face masks and coverings:

- Cloth masks or face coverings should be changed and cleaned if they become damp or soiled. You can wash your cloth mask by:
  - putting it directly into the washing machine, using a hot cycle, and then dry thoroughly
  - washing it thoroughly by hand if a washing machine is not available, using soap and warm/hot water
  - allow it to dry completely before wearing it again
- Non-medical masks that cannot be washed should be disposed of properly in a lined garbage bin, and replaced as soon as they get damp, soiled or crumpled.
- Do not leave discarded masks in shopping carts or on the ground where other people may come into contact with them.

## Using non medical face masks and coverings:

- It is important to remember the following when using non-medical masks and face coverings:
  - masks with an exhalation valve do not protect others
  - never share your non-medical mask or face covering with someone else
  - do not handle a non-medical mask or face covering belonging to someone else
  - do not allow other people to handle or touch your non-medical mask or face covering

## How well do masks work?

<https://www.youtube.com/watch?v=0Tp0zB904Mc>

## Questions?