A scenic view of a river with a forested bank and a church spire in the background. The sky is blue with white clouds. The text is overlaid on the image.

**Together, Stronger:
With NB Health Care, Fighting
Covid-19**

Dr. Sen Yan

Department of Pathology

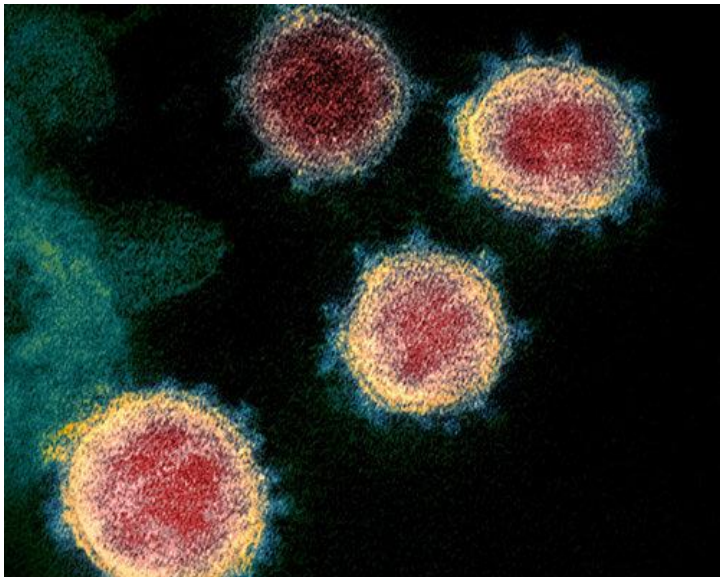
Dr. Chalmers Hospital

In 2020...

- A new virus Covid-19 sweeps the world
- No exception for Fredericton
- No exception for every one
- People question, worry, struggle
- Second wave of pandemic is coming
- Other health issues still there
- Our commission: **Stay Health**

What is Covid-19 virus

- An RNA virus:
 - In the family of SARS virus
 - Persistently carried by bats
 - Somehow infects human, causing “pneumonia” and other pathologies



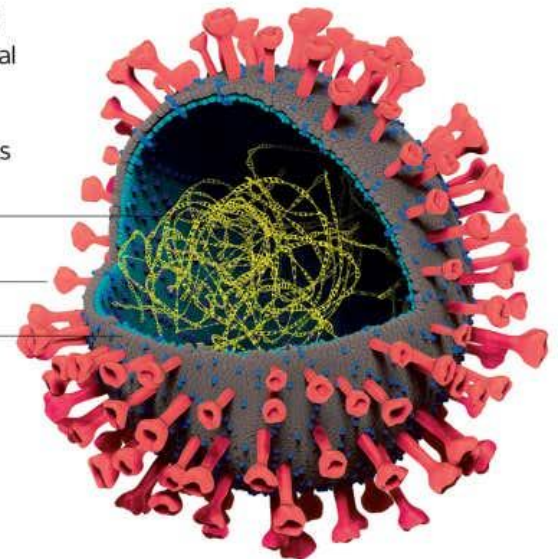
Anatomy of a virus

The covid-19 virus has several features we may be able to target with drugs to break it down and stop it entering cells

RNA enclosed
in protein

Spike protein

Lipid membranes



How does the virus spread

- Mainly from person to person, through respiratory droplets produced when an infected person coughs, sneezes, or talks.
- These droplets can land in the mouths or noses of people nearby or possibly be inhaled into the lungs
- Spread is more likely when people are in close contact with one another (within about 6 feet).

Other questions

Can one get infected by:

- Touching contaminated objects
- Receiving mails or packages
- Drinking water
- Food
- Mosquito bits
- Swimming in a pool or lake
- Feces or urinal
- Pets

Infecting humans (pathogenesis)

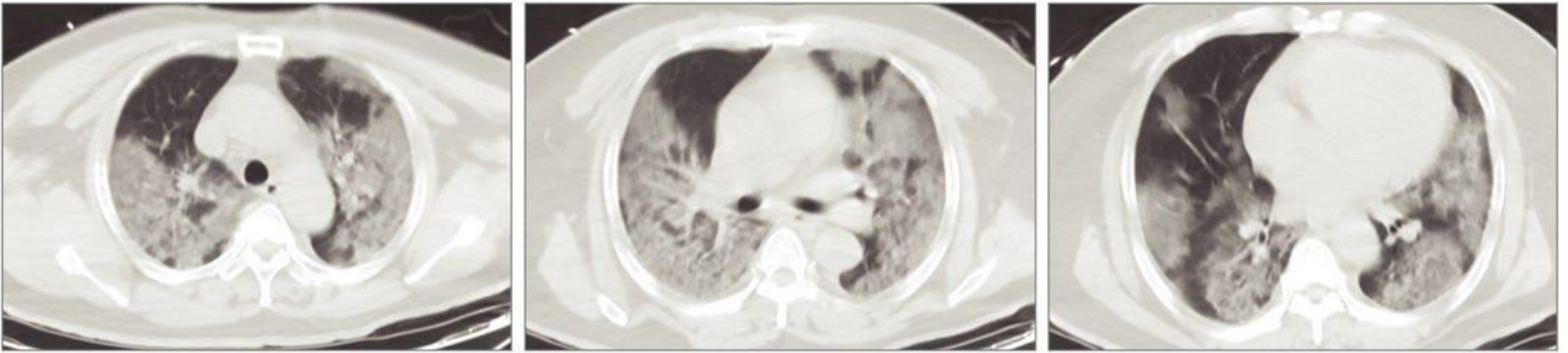
- Enter cells via binding with ACE-2 receptor (in lungs, kidneys, gastrointestinal tract)
- Hijack host cells to reproduce virus particles
- Cause damage to the host cells
- Trigger inflammatory and immune reactions
 - Cytokine storm
 - Further damage cells and vessels → fluid and inflammatory cells in lungs → pneumonia
 - Blood clot formation in vessels → more hypoxia

Common symptoms

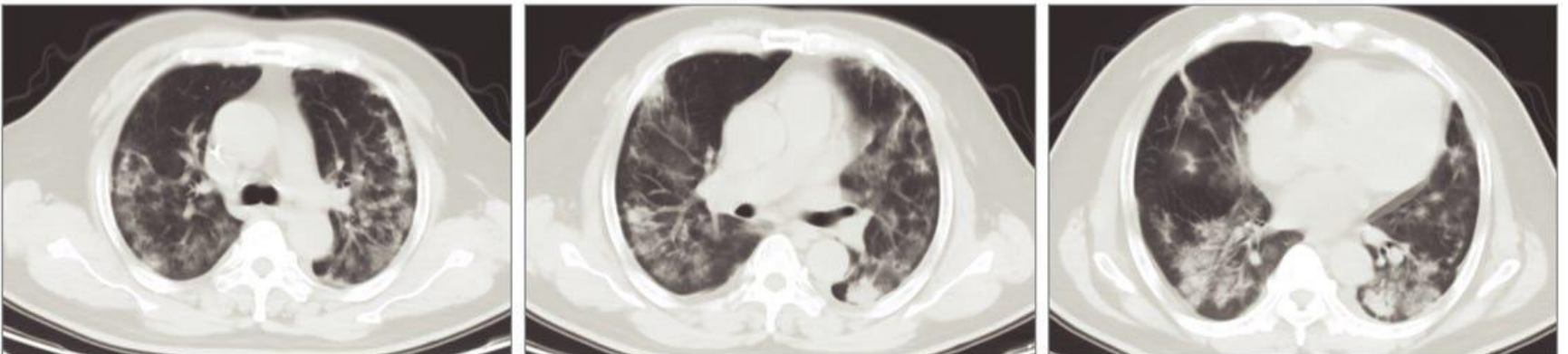
- Fever or chills
- Cough
- Shortness of breath or difficulty breathing
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

Infected lungs (white lungs)

A Computed tomography images on day 5 after symptom onset



B Computed tomography images after treatment on day 19 after symptom onset



How to treat Covid-19 infection

- For the virus:
 - Remdesivir or Favipivir +/- Chloroquine
- For the cytokine storm:
 - Steroid hormones
- For blood clots:
 - Aspirin or heparin
- For hypoxia:
 - Oxygen
- Role of Chinese medicine?

Block the virus entering the cells

- ACE-2 antagonists
 - Used to treat hypertension, especially in patients with diabetes or renal failure
 - These drugs usually ended with “-sartan”:
 - Azilsartan (Edarbi)
 - Candesartan (Atacand)
 - Eprosartan
 - Irbesartan (Avapro)
 - Losartan (Cozaar)
 - Olmesartan (Benicar)
 - Telmisartan (Micardis)
 - Valsartan (Diovan)

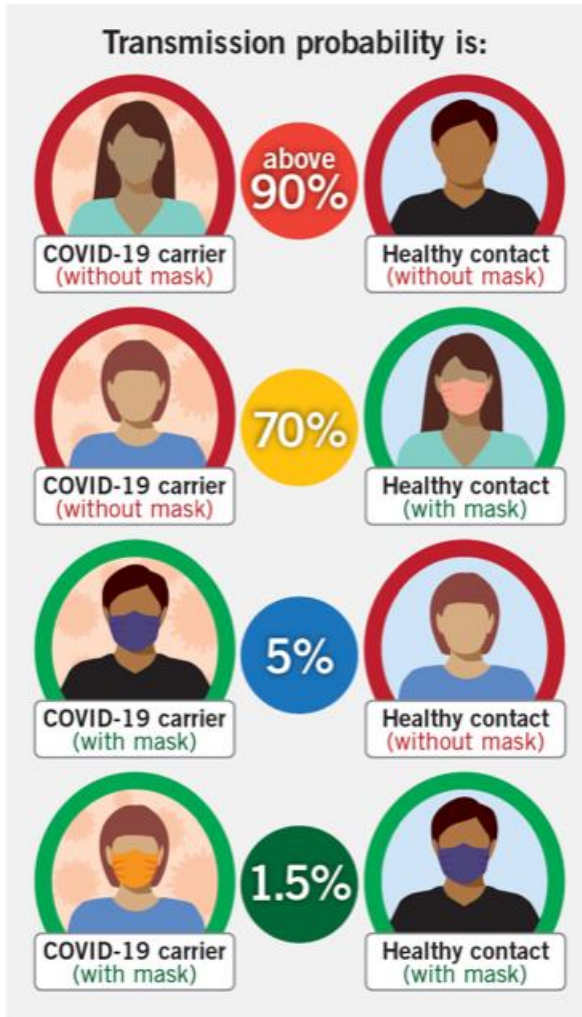
Vaccine is the key to prevent infection

- **No vaccine publically available at this time**
- 3 major categories of vaccine:
 - Inactivated vaccine (国药集团, 科兴中维)
 - Use previously isolated virus
 - Not cover mutated virus
 - Adenovirus based vaccine (Oxford, 军科院)
 - Insert target protein sequence into Ad5 of adenovirus
 - Interfered by pre-existing anti-adenovirus antibodies
 - mRNA based vaccine (Moderna and Pfizer)
 - Induced neutralizing antibody only
 - Low stability

The **W**ays to protect yourself and others

- **3Ws**:
 - **W**ear masks
 - **W**ash your hands
 - a **W**ay from others (Keep distance)

Cover your mouth and nose with a mask when around others



Comparing different masks

N95 respirators

- Filters at least 95% of airborne particles if fitted and worn properly
- Medical grade masks are preferred
- Non-medical grade N95 masks OK during outbreak if medical alternatives unavailable



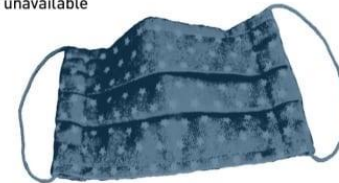
Surgical masks

- Normally worn in operating room to protect patients and medical staff against large droplets
- Looser fit, less protection than N95
- Doesn't protect against small airborne particles



Homemade masks

- Health Canada says they may not be effective in blocking virus particles
- Toronto's Michael Garron Hospital is calling for visitors and discharged patients to use homemade fabric masks when physical distance not possible and manufactured masks unavailable
- Two-ply, pleated design (dark-coloured polyester outside, light-coloured 100% cotton inside, an elastic recommended)
- More info: Canada.ca/covid-19



Wash your hands often

- Wash your hands often with **soap and water for at least 20 seconds** especially after you have been in a public place, or after blowing your nose, coughing, or sneezing.
- It's especially important to wash:
 - Before eating or preparing food
 - Before touching your face
 - After using the restroom
 - After leaving a public place
 - After blowing your nose, coughing, or sneezing
 - After handling your mask
 - After changing a diaper
 - After caring for someone sick
 - After touching animals or pets
- If soap and water are not readily available, **use a hand sanitizer that contains at least 60% alcohol**. Cover all surfaces of your hands and rub them together until they feel dry.
- **Avoid touching your eyes, nose, and mouth** with unwashed hands.

Avoid close contact

- **Inside your home:** Avoid close contact with people who are sick.
 - If possible, maintain **6 feet** between the person who is sick and other household members.
- **Outside your home:** Put **6 feet of distance** between yourself and people who don't live in your household.
 - Remember that some people without symptoms may be able to spread virus.
 - Stay at least 6 feet (about 2 arms' length) from other people.
 - Keeping distance from others is especially important for people who are at higher risk of getting very sick.

Cover coughs and sneezes

- **Always cover your mouth and nose** with a tissue when you cough or sneeze or use the inside of your elbow and do not spit.
- **Throw used tissues** in the trash.
- Immediately **wash your hands** with soap and water for at least 20 seconds. If soap and water are not readily available, clean your hands with a hand sanitizer that contains at least 60% alcohol.

Clean and disinfect

- **Clean AND disinfect frequently touched surfaces daily.** This includes tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, and sinks.
- **If surfaces are dirty, clean them.** Use detergent or soap and water prior to disinfection.
- **Then, use a household disinfectant.** Most common EPA-registered household disinfectants external icon will work.

In summary...

- Avoid toughing **men**:
 - M: mouth
 - E: eyes
 - N: nose
- Instead, follow **women**:
 - W: wash your hands
 - O: obey social distancing
 - M: mask up
 - E: exercise and eat well
 - N: no unnecessary crowding

What to do if you or your family member having symptoms

- Stay home, except to get medical care.
- Use a separate room and bathroom.
- Wash your hands often, especially after blowing your nose, coughing, or sneezing; going to the bathroom; and before eating or preparing food.
- Alternatively use an alcohol-based hand sanitizer with at least 60% alcohol.
- Provide your sick household member with clean disposable facemasks to wear at home.
- Clean the sick room and bathroom.

What to do after contact with patient

- **Self isolation 14 days**
- Be alert for symptoms. Watch for fever, cough, shortness of breath, or other symptoms of COVID-19
- Take your temperature and follow public health guidance if you have symptoms
- Call **811**

How to protect children: EDUCATION

- Avoid close contact with people who are sick.
- Stay home when you are sick, except to get medical care.
- Cover your coughs and sneezes with a tissue and throw the tissue in the trash.
- Wash your hands often with soap and water for at least 20 seconds.
- If soap and water are not readily available, use an alcohol-based hand sanitizer with at least 60% alcohol.
- Clean and disinfect frequently touched surfaces and objects, like tables, countertops, light switches, doorknobs, and cabinet handles).

What should I do in school

- Keep distance with others
- Avoid close contact with anyone
- Wear a mask whenever possible
- Use alcohol-wet tissue paper to disinfect the desk before sitting
- Leave classroom as soon as class over
- Remove your mask, throw it into trash and sanitize your hands

What should one do after travel

- **After travel, all travelers should take these actions to protect others from getting sick:**
 - Stay at least 6 feet from anyone who is not from your household. It's important to do this **everywhere** — both indoors and outdoors.
 - Wear a mask to keep your nose and mouth when you are outside of your home.
 - Wash your hands often or use hand sanitizer.
 - Watch your health: Look for symptoms of COVID-19, and take your temperature if you feel sick.
 - Self isolation for 14 days.

How to get health care in Fredericton

- To apply for an NB Health Card
 - Get the application form from NB Service or download from NB government website
 - Fill out the form and sent it back to the address provided
- To find your family doctor
 - Do it for yourself in NB government website under “**patient connect**” section
 - Call **811**

How to get care for Covid-19 infection in Fredericton

- Call **811**, or
- Call family doctor
- Emergency Department, if have:
 - Trouble breathing
 - Persistent pain or pressure in the chest
 - New confusion
 - Inability to wake or stay awake
 - Bluish lips or face

Need an ambulance? A fee may apply!

Emergency Health Services / Services de santé d'urgence

1. Fees

- a) Fees for transportation by ambulance shall be billed according to the following table:

\$130.60	Entitled Resident of New Brunswick
\$130.60	Entitled Resident of New Brunswick – Motor vehicle collision
\$0	Inter-facility Transfer for an Entitled Resident of New Brunswick
\$650.00	Un-entitled Resident
\$650.00	Out of Province Resident

- b) Fees for air ambulance shall be billed according to the following table:

\$0	Entitled Resident of New Brunswick
\$0	Inter-facility Transfer for an Entitled Resident of New Brunswick
\$6,500.00	Out of Province Resident

1. Frais

- a) Les frais de transport par ambulance seront facturés conformément au tableau suivant :

130,60 \$	Résident du Nouveau-Brunswick admissible
130,60 \$	Résident du Nouveau-Brunswick admissible — collision de véhicule à moteur
0 \$	Transfert interhospitalier d'un résident du Nouveau-Brunswick admissible
650,00 \$	Résident non admissible
650,00 \$	Résident de l'extérieur de la province

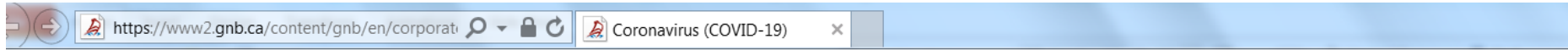
- b) Les frais de transport par ambulance aérienne seront facturés conformément au tableau suivant :

0 \$	Résident du Nouveau-Brunswick admissible
0 \$	Transfert interhospitalier d'un résident du Nouveau-Brunswick admissible
6 500,00 \$	Résident de l'extérieur de la province

Self Service for Covid-19 Test


- **Eligible workers without symptoms:**
 - register for a test online by clicking Get tested on the *GNB Coronavirus website*
 - call **1-833-475-0724** to get an appointment.
- **General public, with symptoms:**
 - register for a test online by clicking Get tested on the *GNB Coronavirus website*
 - call Tele-Care **811** to get an appointment.

The website: <https://www2.gnb.ca/content/gnb/en/corporate/promo/covid-19.html>



Coronavirus disease (COVID-19)

Stay informed and learn how we can work together to keep New Brunswickers safe and prevent the spread of COVID-19.

 [Get tested](#)

 [COVID Alert App](#)

On this page

- [If you have symptoms](#)
- [Stay safe and stay informed](#)
- [Cases in New Brunswick](#)
- [News and updates](#)
- [Support and guidance](#)
- [COVID-19 questions answered](#)
- [Awareness resources](#)

If you think you have symptoms:

1. Take a [self-assessment](#) to find out if you should be tested for COVID-19.
2. If you need to be tested, request to get tested for COVID-19 in your community but submitting an online referral (must complete self-assessment first)
3. If you're experiencing mild to moderate [symptoms of COVID-19](#) and do not need to talk to a nurse, complete the self assessment and get tested.

If you are having difficulty breathing or experience severe symptoms, call 911 immediately.

What should I do when seeing a doctor (including dentist)

- Call your doctor to inform your arriving
- Wait outside
- Using hand sanitizer when entering the door
- Keep wearing mask whenever possible
- Avoid to touch anything whenever possible
- Keep distance with any people
- Remove your mask, throw it into the trash when getting outside and sanitize your hands
- Take a shower and change cloth when getting home

What should I do if I get sick when travel within Canada

- Go to any emergency department or walk-in clinic
- Show your NB Health Card
- Free in most provinces
- May need to pay in Quebec. Just keep the receipts. You can apply for reimbursement from NB Medicare

What should I do if I get sick when travel outside Canada

- You need to pay first. Keep the original receipt. You can apply for reimbursement through NB Medicare
 - \$50 a day for outpatient service
 - \$100 a day for inpatient service.
- But not include:
 - Services related to a pre-existing condition which requires ongoing monitoring
 - Follow-up visits resulting from an out-of-country emergency

What is the Covid-19 situation now

	Total Cases	Total Death	Total Recover
Global	32,260,585	984,426	23,800,030
US	7,159,042	207,050	4,413,984
Canada	148,746 (↑993)	9,245 (↑2)	128,331 (↑543)
Fredericton	199(↑2)	2	191

The winning road is still very long.

We fight together and we will be stronger!

Thank you and stay health!

