Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and Coronavirus 2019 Disease (COVID-19)

Dr. Amanda Wilmer
IH Medical Microbiology & Infection Control
WHO declares the outbreak of the new coronavirus is a pandemic

This is the first pandemic since H1N1

By Nicole Weihsan | Mar 11, 2020, 12:33pm EDT
Coronaviruses

- Large, enveloped, single stranded RNA viruses
- Looks similar to a crown on electron microscopy
- Discovered in the 1960s causing common cold
- Zoonotic viruses, infecting wide variety of hosts:
  - humans, birds, pigs, cows, dogs, camels, bats, civets and mice and more

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5456285/
Coronaviruses

• 4 main genera:
  – alpha-, beta-, delta- and gammacoronaviruses

• Human Coronaviruses (HCoV) include:
  – Alpha:
    • HCoV-229E, HCoV-NL63
  – Beta:
    • HCoV-OC43, HCoV-HKU1, MERS-CoV, SARS-CoV, SARS-CoV-2

[Text and image from PubMed: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5456285/]
<table>
<thead>
<tr>
<th></th>
<th>2019-nCoV*</th>
<th>MERS-CoV</th>
<th>SARS-CoV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographic</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>December, 19</td>
<td>June, 2012</td>
<td>November, 2002</td>
</tr>
<tr>
<td>Location of first detection</td>
<td>Wuhan, China</td>
<td>Jeddah, Saudi Arabia</td>
<td>Guangdong, China</td>
</tr>
<tr>
<td>Age, years (range)</td>
<td>49 (21-76)</td>
<td>56 (14-94)</td>
<td>39.9 (1-91)</td>
</tr>
<tr>
<td>Male:female sex ratio</td>
<td>2.7:1</td>
<td>3.3:1</td>
<td>1:1.25</td>
</tr>
<tr>
<td>Confirmed cases</td>
<td><strong>126,136</strong></td>
<td>2494</td>
<td>8096</td>
</tr>
<tr>
<td>Mortality</td>
<td>2.3%</td>
<td>858 (37%)</td>
<td>744 (10%)</td>
</tr>
<tr>
<td>Health-care workers</td>
<td>3.8%</td>
<td>9.8%</td>
<td>23.1%</td>
</tr>
<tr>
<td><strong>Symptoms</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fever</td>
<td>Up to 89%</td>
<td>98%</td>
<td>99-100%</td>
</tr>
<tr>
<td>Dry cough</td>
<td>67.8%</td>
<td>47%</td>
<td>29-75%</td>
</tr>
<tr>
<td>Dyspnoea</td>
<td>18.7%</td>
<td>72%</td>
<td>40-42%</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>3.8%</td>
<td>26%</td>
<td>20-25%</td>
</tr>
<tr>
<td>Sore throat</td>
<td>13.9%</td>
<td>21%</td>
<td>13-25%</td>
</tr>
<tr>
<td>Ventilatory support</td>
<td>6.1%</td>
<td>80%</td>
<td>14-20%</td>
</tr>
</tbody>
</table>

Data are n, age (range), or n (%) unless otherwise stated. 2019-nCoV=2019 novel coronavirus. MERS-CoV=Middle East respiratory syndrome coronavirus. SARS-CoV=severe acute respiratory syndrome coronavirus. *Demographics and symptoms for 2019-nCoV infection are based on data from the first 41 patients reported by Chaolin Huang and colleagues (admitted before Jan 2, 2020). †Case numbers and mortalities are updated up to Jan 21, 2020) as disclosed by the Chinese Health Commission. ‡Data as of Jan 23, 2020. ††Data as of Jan 21, 2020.

Table: Characteristics of patients who have been infected with 2019-nCoV, MERS-CoV, and SARS-CoV

https://doi.org/10.1016/S0140-6736(20)30185-9
Cluster of pneumonia cases...

- Started early December 2019
  - no etiology identified
  - mostly in stallholders from Huanan Seafood Market
    - Wholesale animal & fish market
    - Chickens, cats, pheasants, bats, marmots, snakes, deep, rabbits and more sold at market
  - Market located in Wuhan, China
    - 7th largest city in China
    - Population: 11 million people
    - Major transportation hub for China
    - Many domestic & international direct flights
      » Bangkok, HK, Tokyo and Taipei most popular
Cluster of pneumonia cases...

- 31 December 2019:
  - 27 cases reported to WHO

- 1 January 2020:
  - Market closed for cleaning and disinfection
    - 2019-nCoV found in environmental samples

- 7 January 2020:
  - Novel Coronavirus isolated

- 9 January 2020:
  - Case count up to 41
New Coronavirus discovered

• 10 January 2020:
  – Whole genome sequence posted
  – Beta-coronavirus
    • 80% genetic similarity to SARS
    • 96% similar to bat coronavirus
• Initially called:
  – 2019 Novel Coronavirus (2019-nCoV)
• Now: SARS coronavirus 2 (SARS-CoV-2)
Novel Coronavirus (2019-nCoV)

• 11 January 2020:
  – No new cases since 5 January 2020
  – >700 contacts of 41 cases under observation
23 January 2020
Chinese province of Hubei put on quarantine

More than 30 million on lockdown amid coronavirus outbreak

China has expanded the lockdown to 12 cities in an effort to contain the flu-like virus.

By Joseph Guzman
POP-UP OPS China’s first coronavirus hospital opens as empty building is rapidly converted in just TWO days into 1,000-bed unit

Lottie Tiplady-Bishop
29 Jan 2020, 9:35 | Updated: 29 Jan 2020, 11:20
Control Measures used in China

• 2 dedicated hospitals built in just over a week
  – Healthcare workers from all over China sent to staff facilities

• Aggressive contact tracing performed
  – In Wuhan, >1800 teams of 5 or more people

• **Aggressive** social distancing
  – Canceled sporting events, theaters, etc
  – School breaks extended
  – WeChat and AliPay (used instead of cash) help enforce travel restrictions

• Chinese CDC Data
• Summary of:
  – 72314 cases up to Feb11
• Mild:
  – Non-pneumonia or mild pneumonia
• Severe:
  – Dyspnea, RR≥30, O2 sat≤93%, lung infiltrates >50% within 24-48 hrs
• Critical:
  – Resp failure, septic shock, multi-organ failure

COVID-19 Fatality Rate by AGE

- 10-19: 0.2%
- 20-29: 0.2%
- 30-39: 0.2%
- 40-49: 0.4%
- 50-59: 1.3%
- 60-69: 3.6%
- 70-79: 8.0%
- 80+: 14.8%
Clinical Characteristics of Coronavirus Disease 2019 in China

Published Feb 28, 2020

• Descriptive epidemiologic study hospitalized pts
• Chart review of lab confirmed COVID-19 cases
  – 1099 patients admitted to 552 hospitals in China
  – Cases admitted up to January 29, 2020
  – 14.2% (1099/7736) of admitted cases reviewed overall
• Primary composite end point:
  – ICU admission, mechanical ventilation, or death

DOI: 10.1056/NEJMoa2002032
Table 1. 2007 Infectious Diseases Society of America/American Thoracic Society Criteria for Defining Severe Community-acquired Pneumonia

Validated definition includes either one major criterion or three or more minor criteria

Minor criteria
- Respiratory rate ≥ 30 breaths/min
- \( \text{Pa}_o_2/\text{Fi}_o_2 \) ratio ≤ 250
- Multilobar infiltrates
- Confusion/disorientation
- Uremia (blood urea nitrogen level ≥ 20 mg/dl)
- Leukopenia* (white blood cell count < 4,000 cells/μl)
- Thrombocytopenia (platelet count < 100,000/μl)
- Hypothermia (core temperature < 36°C)
- Hypotension requiring aggressive fluid resuscitation

Major criteria
- Septic shock with need for vasopressors
- Respiratory failure requiring mechanical ventilation

*Due to infection alone (i.e., not chemotherapy induced).

- Cases categorized at admission
  - Severe vs. non-severe

Table 1 (re-analyzed)

- Median age studied was 47 yrs (IQR: 35-58)
  - ICU/Intubation/death: median 63 yrs
  - No ICU/intubation/death: median 46 yrs

<table>
<thead>
<tr>
<th>Age (yrs)</th>
<th>Total studied (n)</th>
<th>Severe cases (n)</th>
<th>%</th>
<th>Cases with intubation, ICU care or death (n)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14</td>
<td>9</td>
<td>1</td>
<td>11.1%</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>15-49</td>
<td>557</td>
<td>67</td>
<td>12.0%</td>
<td>12</td>
<td>2.2%</td>
</tr>
<tr>
<td>50-64</td>
<td>292</td>
<td>51</td>
<td>17.5%</td>
<td>21</td>
<td>7.2%</td>
</tr>
<tr>
<td>65+</td>
<td>153</td>
<td>44</td>
<td>28.8%</td>
<td>32</td>
<td>20.9%</td>
</tr>
</tbody>
</table>
Table 1 Summarized

• Symptoms:
  – Cough (67.8%)
  – Fever on admission (43.8%) (often low grade)
  – Fever during admission (88.7%)
  – Fatigue (38.1%)
  – Sputum production (33.7%)
  – Shortness of breath (18.7%)
  – Myalgia/arthritis (14.9%)
  – Sore throat (13.9%)
  – Headache (13.6%)
  – Chills (11.5%)
  – Nausea/vomiting/diarrhea (5%)
  – Nasal congestion (4%)
Overall, 23.7% of patients had co-morbidities. 58.2% of patients with ICU/intubation/death had some co-morbidity. – Diabetes, hypertension and COPD most common.
• CT abnormal in 86.2% vs. 59.1% for CXR
• Patients with ICU/intubation/death
  – Higher proportion had bilateral disease
CT findings non-severe case

- 50M with non-severe COVID-19
  - Multi-lobular and subpleural ground glass opacity & consolidation
  - Panel A: 8 days post-admission
  - Panel B: 15 days post-admission
CXR findings non-severe case

- 39M with non-severe COVID-19
  - Minor RLL infiltrates
CT findings severe case

- 60F with severe COVID-19
  - Panel C: day 1 post-admission
    - Multilobular ground-glass opacity and consolidation
  - Panel D: day 4 post admission
    - Rapid radiologic progression with multilobular subsegmental consolidation
CXR findings severe case

- 49M with severe COVID-19
  - Diffuse patchy shadowing and consolidation
Table 2 – Lab Findings

- WBC count:
  - <4 in 33.7%
  - >10 in 5.9%
- Lymphocyte count:
  - <1.5 in 83.2%
- Platelets:
  - <150,000 in 36.2%
- CRP >=10 in 60.7%
- Cr >=133 in 1.6%
### Table 3. Complications, Treatments, and Clinical Outcomes.

<table>
<thead>
<tr>
<th>Variable</th>
<th>All Patients (N=1099)</th>
<th>Disease Severity</th>
<th>Presence of Composite Primary End Point</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nonsevere (N=926)</td>
<td>Severe (N=173)</td>
<td>Yes (N=67)</td>
</tr>
<tr>
<td><strong>Complications</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Septic shock — no. (%)</td>
<td>12 (1.1)</td>
<td>1 (0.1)</td>
<td>11 (6.4)</td>
</tr>
<tr>
<td>Acute respiratory distress syndrome — no. (%)</td>
<td>37 (3.4)</td>
<td>10 (1.1)</td>
<td>27 (15.6)</td>
</tr>
<tr>
<td>Acute kidney injury — no. (%)</td>
<td>6 (0.5)</td>
<td>1 (0.1)</td>
<td>5 (2.9)</td>
</tr>
<tr>
<td>Disseminated intravascular coagulation — no. (%)</td>
<td>1 (0.1)</td>
<td>0</td>
<td>1 (0.6)</td>
</tr>
<tr>
<td>Rhabdomyolysis — no. (%)</td>
<td>2 (0.2)</td>
<td>2 (0.2)</td>
<td>0</td>
</tr>
<tr>
<td>Physician-diagnosed pneumonia — no./total no. (%)</td>
<td>972/1067 (91.1)</td>
<td>800/894 (89.5)</td>
<td>172/173 (99.4)</td>
</tr>
<tr>
<td><strong>Median time until development of pneumonia (IQR) — days</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After initial Covid-19 diagnosis</td>
<td>0.0 (0.0–1.0)</td>
<td>0.0 (0.0–1.0)</td>
<td>0.0 (0.0–2.0)</td>
</tr>
<tr>
<td>After onset of Covid-19 symptoms</td>
<td><strong>3.0 (1.0–6.0)</strong></td>
<td>3.0 (1.0–6.0)</td>
<td>5.0 (2.0–7.0)</td>
</tr>
<tr>
<td><strong>Treatments</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intravenous antibiotics — no. (%)</td>
<td>637 (58.0)</td>
<td>498 (53.8)</td>
<td>139 (80.3)</td>
</tr>
<tr>
<td>Oseltamivir — no. (%)</td>
<td>393 (35.8)</td>
<td>313 (33.8)</td>
<td>80 (46.2)</td>
</tr>
<tr>
<td>Antifungal medication — no. (%)</td>
<td>31 (2.8)</td>
<td>18 (1.9)</td>
<td>13 (7.5)</td>
</tr>
<tr>
<td>Systemic glucocorticoids — no. (%)</td>
<td>204 (18.6)</td>
<td>127 (13.7)</td>
<td>77 (44.5)</td>
</tr>
<tr>
<td>Oxygen therapy — no. (%)</td>
<td>454 (41.3)</td>
<td>331 (35.7)</td>
<td>123 (71.1)</td>
</tr>
<tr>
<td>Mechanical ventilation — no. (%)</td>
<td><strong>67 (6.1)</strong></td>
<td>0</td>
<td>67 (38.7)</td>
</tr>
<tr>
<td>Invasive</td>
<td>25 (2.3)</td>
<td>0</td>
<td>25 (14.5)</td>
</tr>
<tr>
<td>Noninvasive</td>
<td>56 (5.1)</td>
<td>0</td>
<td>56 (32.4)</td>
</tr>
<tr>
<td>Use of extracorporeal membrane oxygenation — no. (%)</td>
<td>5 (0.5)</td>
<td>0</td>
<td>5 (2.9)</td>
</tr>
<tr>
<td>Use of continuous renal-replacement therapy — no. (%)</td>
<td>9 (0.8)</td>
<td>0</td>
<td>9 (5.2)</td>
</tr>
<tr>
<td>Use of intravenous immune globulin — no.</td>
<td>144 (13.1)</td>
<td>86 (9.3)</td>
<td>58 (33.5)</td>
</tr>
<tr>
<td>Admission to intensive care unit — no.</td>
<td><strong>55 (5.0)</strong></td>
<td>22 (2.4)</td>
<td>33 (19.1)</td>
</tr>
<tr>
<td>Median length of hospital stay (IQR) — days†</td>
<td><strong>12.0 (10.0–14.0)</strong></td>
<td>11.0 (10.0–13.0)</td>
<td>13.0 (11.5–17.0)</td>
</tr>
</tbody>
</table>

**Clinical outcomes at data cutoff — no. (%)**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>All Patients (N=1099)</th>
<th>Disease Severity</th>
<th>Presence of Composite Primary End Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharge from hospital</td>
<td>55 (5.0)</td>
<td>50 (5.4)</td>
<td>5 (2.9)</td>
</tr>
<tr>
<td>Death</td>
<td>15 (1.4)</td>
<td>1 (0.1)</td>
<td>14 (8.1)</td>
</tr>
<tr>
<td>Recovery</td>
<td>9 (0.8)</td>
<td>7 (0.8)</td>
<td>2 (1.2)</td>
</tr>
</tbody>
</table>

**Note:** IQR = interquartile range; †Median length of hospital stay considers only those who completed treatment.
Summary

• ICU care/mechanical ventilation/death
  – more common in >65 yrs or if co-morbidities
• ICU admission was required in 5% patients
• Mechanical ventilation required in 2.3%
• Death rate was 1.4% in this study
  – Much lower than previous reports (>15%)
    • More consistent with China’s official statistics
      – These show ~3% mortality
  – Mortality Likely still overestimated
    • Mildly ill patients do not seek medical attention
Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records

- 9 pregnancy woman reviewed in this paper
  - Hospitalized in Wuhan in January 2020
  - All patients were in third trimester
  - 7/9 fever, 4/9 cough, 3/9 myalgia, 2/9 sore throat
  - Fetal distress in 2/9 cases
  - Pre-term labor in 4/9 cases
    - Not related to COVID-19 pneumonia
  - C-section in all cases
    - Indications were severe pre-eclampsia, hx of previous C-section, fetal distress
  - No complications
    - No severe pneumonia or death
    - 9 live births recorded
    - No neonatal asphyxia

https://doi.org/10.1016/S0140-6736(20)30360-3
Clinical management of severe acute respiratory infection when novel coronavirus (2019-nCoV) infection is suspected

Interim guidance
28 January 2020
WHO/nCoV/Clinical/2020.2

Introduction

This is the first edition of this document for novel coronavirus, an adaptation of WHO Clinical management of severe acute respiratory infection when MERS-CoV infection is suspected publication (2019).

This document is intended for clinicians taking care of hospitalised adult and paediatric patients with severe acute respiratory infection (SARI) when 2019-nCoV infection is suspected. It is not meant to replace clinical judgment or specialist consultation but rather to strengthen clinical management of these patients and provide to up-to-date guidance. Best practices for SARI including IPC and optimized supportive care for severely ill patients are essential.

This document is organized into the following sections:
1. Triage: recognize and sort patients with SARI
2. Immediate implementation of appropriate infection prevention and control (IPC) measures
3. Early supportive therapy and monitoring
4. Collection of specimens for laboratory diagnosis
5. Management of hypoxemic respiratory failure and acute respiratory distress syndrome (ARDS)
6. Management of septic shock
7. Prevention of complications
8. Specific anti-nCoV treatments
9. Special considerations for pregnant patients

Remdesivir

• Novel adenine nucleotide analog prodrug
  – Activated to nucleoside triphosphate metabolite that blocks viral RNA polymerases
• Not licensed
• Developed for treatment of Ebola virus disease
  – Efficacy poor compared to monoclonal antibody products
• Subsequently shown to have possible activity against:
  – RSV, MER-CoV, and potentially 2019-nCoV
• Given to first US case of 2019-nCoV
• Phase III, randomized, double blind placebo controlled multicentre study started in February and will be completed by April
  – RDV 200mg loading dose, then 100mg IV qd x 9 days vs placebo

Lopinavir/Ritonavir (Kaletra)

- Protease inhibitor used for HIV treatment
- Proposed as a possible 2019-nCoV treatment
- Inhibits the main protease ($M^{\text{pro}}$) in nCoV
- Clinical trial registered..

### Arms and Interventions

<table>
<thead>
<tr>
<th>Arm</th>
<th>Intervention/treatment</th>
</tr>
</thead>
</table>
| Active Comparator: Study group | Lopinavir/Ritonavir  
400mg/100mg twice daily for 14 days |
|                         | Drug: Ribavirin  
400mg twice daily for 14 days |
|                         | Drug: Interleukin Beta-1  
0.25mg subcutaneous injection alternate day for 3 days |
| Active Comparator: Control group | Lopinavir/Ritonavir  
400mg/100mg twice daily for 14 days |

[Clinical Trial Information](https://www.biorxiv.org/content/10.1101/2020.01.29.924100v1.full.pdf)
Diagnosis

• BCCDC developed PCR for E gene & RdRp gene
  – Live by mid-January
  – Typical TAT 2-5 days (delays due to transport)
• All specimens with Influenza PCR now also tested for COVID-19
• Specimens:
  – Outpatients/ED patients likely to be discharged:
    • Nasopharyngeal swab
  – Inpatients:
    • Nasopharyngeal swab **AND**
    • Lower airways specimen:
      – Throat swab **OR** sputum **OR** endotracheal aspirate (with precautions)
• Serology testing not available yet in Canada
    • IgM peaked 9 days after disease onset, and switched to IgG by week 2
    • Sera from infected patients was able to neutralize SARS-CoV-2 in vitro
      – Suggests protective response
      – Duration unknown
What do BCCDC results look like?

NOTE: BCCDC Magpix assay detected multiple common cold Coronaviruses, including HKU-1, NL63, OC43 and 229E. These targets DO NOT cross react with 2019-nCoV! Do not worry if you see these on reports!
IH Lab Testing

• KGH lab evaluating Seegene Allplex kit
• 191 patient specimens run so far
  – All COVID-19 negative (lots of FluA though)
  – Results being compared to BCCDC
• BCCDC supplying some known positives
• If results correlate, hoping to go live ASAP
• All IH specimens will be referred to KGH
  – Standard panel will be performed, including:
    • Influenza A/B, RSV, Rhinovirus, Metapneum, Paraflu, Adeno
    • COVID-19
These nine companies are working on coronavirus treatments or vaccines — here’s where things stand

Published: March 8, 2020 at 10:16 a.m. ET

By Jalmay Lee

The list includes Gilead Sciences Inc. and Moderna Inc. along with smaller biotechs
Transmission

• Thought to spread through respiratory droplets
  – produced when an infected person coughs or sneezes
  – land in the mouth, nose or eyes, or are inhaled into the lungs of those who are in close proximity

• May also spread through aerosols
  – created during aerosol generating medical procedures (AGMPs)

• Incubation period 1 to 14 days (typically 5 days)
Aerosol Generating Medical Procedures

- Medical procedures which generate small droplet nuclei at high concentrations
  - Risk for airborne transmission
- Examples of aerosol generating procedures:
  - Autopsy involving respiratory tissues
  - CPR with bag valve mask ventilation
  - Bronchoscopy/BAL
  - Continuous positive airway pressure (CPAP)
  - Bilevel positive airway pressure (BiPAP)
  - Intubation and extubation
  - Care of intubated patients
  - Nasopharyngeal aspirates, washes
  - **Nebulized medication therapy**
  - Open airway suctioning
  - Sputum induction
  - Upper endoscopy procedures (eg: ENT, GI)

High Flow Oxygen

• Optiflow and Airvo
  – These are undergoing provincial discussion
  – For now, consider aerosol generating in patients with risk factors for COVID-19
Environmental Contamination

- Coronaviruses can persist on inanimate surfaces up to 9 days (https://doi.org/10.1016/j.jhin.2020.01.022)
  - Eg: metal, glass, plastic
- Group in Singapore studied patient environment
  - 3 patients had air and environmental sampling
    - Symptomatic on isolation
    - Sampling done before cleaning in 1 patients, and after in 2
      » Before cleaning: extensive environmental contamination
        - Bed rail, chair, light switch, stethoscope, door handle, internal toilet bowl, etc
      » After cleaning: all testing NEGATIVE
    - Air samples were all negative

PHAC Infection Control Guidelines

- Additional Precautions
  - For routine care:
    - contact and droplet precautions
      - Gloves
      - Gown
      - Procedural mask with eye protection
  - For aerosol generating medical procedures
    - Airborne, contact and droplet precautions
      - Negative pressure room
      - Gloves
      - Gown
      - N95 mask
      - Eye protection (face shield)

DROPLET & CONTACT with ENHANCED PPE

Private Room

Families and visitors:

Clean hands before entering and when leaving room

Please report to staff before entering

Clean hands with:
A) hand foam/gel or B) soap and water

Bed #

Staff:

Required:
- Point of Care Risk Assessment
- Gown & Gloves
- Procedure mask with eye protection
  When within 2 metres of patient

An N95 mask and full face shield, gown, gloves and negative pressure room are required when performing an AGMP

See list of aerosol generating medical procedures (AGMPs) at the BC Centre for Disease Control webpage for Health Professionals
PHAC Infection Control Guidelines

• Patient placement:
  – Patient in single room with private bathroom
  – Only cohort lab confirmed cases of COVID-19

• Hand hygiene:
  – Use alcohol based hand rub frequently
  – If hands soiled, wash with soap and water

• Environmental cleaning:
  – Any hospital grade disinfectant kills this virus

• Patient care equipment
  – Use dedicated equipment
  – If not possible, disinfect before re-use

In hospitalized patients with confirmed 2019-nCoV infection, repeat URT and LRT samples should be collected to demonstrate viral clearance. The frequency of specimen collection will depend on local circumstances but should be at least every 2 to 4 days until there are two consecutive negative results (both URT and LRT samples if both are collected) in a clinically recovered patient at least 24 hours apart. If local infection control practice requires two negative results before removal of droplet precautions, specimens may be collected as often as daily.
Cases outside of Mainland China

- Cases have now been confirmed world wide:
  - Initially most cases had epi link to Wuhan
  - Now, many countries have local transmission
Worldwide COVID-19 activity

https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6
Washington State

- Feb29: Governor declared state of emergency
  - 2 patients in Seattle area died of COVID-19
    - No travel history or exposure to known patients
- Whole genome sequencing done on 2 cases
  - Initial case diagnosed Jan20
  - Another later case from same country with no epi link who was infected long after initial case would have been infected
  - Genetic findings suggest virus closely related
    - Had likely been circulating in community for 6 weeks
<table>
<thead>
<tr>
<th>County</th>
<th>Positive (confirmed) * †</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clark</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Grant</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Island</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Jefferson</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>King</td>
<td>234</td>
<td>26</td>
</tr>
<tr>
<td>Kitsap</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Kittitas</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Pierce</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>Skagit</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Snohomish</td>
<td>68</td>
<td>2</td>
</tr>
<tr>
<td>Thurston</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Whatcom</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Unassigned</td>
<td>36</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>366</td>
<td>29</td>
</tr>
</tbody>
</table>

https://www.doh.wa.gov/emergencies/coronavirus

- 366/3037 (12%) tests are positive
- 59% in patients 60 years or older

BC in contrast:
46/2008 (2.3%) patients tested as of Mar 6
## 1323 Cases in US

<table>
<thead>
<tr>
<th>State</th>
<th>Cases</th>
<th>Recovered</th>
<th>Deceased</th>
<th>Remaining</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington</td>
<td>373</td>
<td>1</td>
<td>30</td>
<td>342</td>
</tr>
<tr>
<td>New York</td>
<td>216</td>
<td>0</td>
<td>0</td>
<td>216</td>
</tr>
<tr>
<td>California</td>
<td>179</td>
<td>6</td>
<td>4</td>
<td>169</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>95</td>
<td>1</td>
<td>0</td>
<td>94</td>
</tr>
<tr>
<td>Colorado</td>
<td>34</td>
<td>0</td>
<td>0</td>
<td>34</td>
</tr>
<tr>
<td>Georgia</td>
<td>31</td>
<td>0</td>
<td>0</td>
<td>31</td>
</tr>
<tr>
<td>Florida</td>
<td>29</td>
<td>0</td>
<td>2</td>
<td>27</td>
</tr>
<tr>
<td>Illinois</td>
<td>25</td>
<td>2</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>New Jersey</td>
<td>23</td>
<td>0</td>
<td>1</td>
<td>22</td>
</tr>
<tr>
<td>Texas</td>
<td>22</td>
<td>0</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>Oregon</td>
<td>21</td>
<td>0</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Iowa</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>14</td>
</tr>
</tbody>
</table>

Cases in BC

• 46 cases to date
• Most related to travel or known contacts
• LTCF outbreak at Lynn Valley Care Centre N. Van
  – 2 patients and 2 staff members
  – Death in a patient
• Some sporadic community cases being identified
  – Lower mainland and Fraser Valley areas
• Interior Health: 1 travel related case

COVID-19 Affected Areas List

The number of countries now reporting cases of COVID-19 has expanded and continues to change on a daily basis. The World Health Organization (WHO) is maintaining lists of affected areas/countries in their daily Situation Report, which can be found on the WHO website.

There are two lists in the Situation Reports; one for China (Table 1. Confirmed and suspected cases of COVID-19 acute respiratory disease reported by provinces, regions and cities in China) and one for all other countries (Table 2. Countries, territories or areas outside China with reported laboratory-confirmed COVID-19 cases and deaths).

Health professionals in Canada who are involved in the assessment and management of possible COVID-19 cases and their close contacts are encouraged to consult these tables in the daily WHO Situation Report to help inform their decision making. The decision to proceed with laboratory testing should be based on direction provided by the provincial/territorial public health authority.

Note: Table 2 includes a column called “Transmission classification” which gives an indication of whether transmission is known to have occurred in the reporting country. This classification on its own is not sufficient for risk assessment purposes.

Table 2. Countries, territories or areas outside China with reported laboratory-confirmed COVID-19 cases and deaths. Data as of 10 March 2020.

<table>
<thead>
<tr>
<th>Reporting Country/ Territory/Area</th>
<th>Total confirmed cases</th>
<th>Total confirmed new cases</th>
<th>Total deaths</th>
<th>Total new deaths</th>
<th>Transmission classification</th>
<th>Days since last reported case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Pacific Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>7513</td>
<td>131</td>
<td>54</td>
<td>3</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Japan</td>
<td>514</td>
<td>26</td>
<td>9</td>
<td>2</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Singapore</td>
<td>160</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Malaysia</td>
<td>117</td>
<td>24</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Australia</td>
<td>92</td>
<td>15</td>
<td>3</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Philippines</td>
<td>33</td>
<td>23</td>
<td>1</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>31</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>New Zealand</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>3</td>
</tr>
<tr>
<td>Cambodia</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>2</td>
</tr>
<tr>
<td>Brunei Darussalam</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Imported cases only</td>
<td>0</td>
</tr>
<tr>
<td>Mongolia</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Imported cases only</td>
<td>0</td>
</tr>
<tr>
<td>European Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>9172</td>
<td>1797</td>
<td>463</td>
<td>97</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>France</td>
<td>1402</td>
<td>286</td>
<td>30</td>
<td>11</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Germany</td>
<td>1139</td>
<td>27</td>
<td>2</td>
<td>2</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Spain</td>
<td>1024</td>
<td>435</td>
<td>28</td>
<td>18</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Switzerland</td>
<td>332</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>Local transmission</td>
<td>1</td>
</tr>
<tr>
<td>The United Kingdom</td>
<td>323</td>
<td>46</td>
<td>3</td>
<td>1</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Netherlands</td>
<td>321</td>
<td>56</td>
<td>3</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Sweden</td>
<td>248</td>
<td>45</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Belgium</td>
<td>239</td>
<td>39</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Norway</td>
<td>192</td>
<td>23</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Austria</td>
<td>131</td>
<td>19</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Denmark</td>
<td>90</td>
<td>54</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Greece</td>
<td>73</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>1</td>
</tr>
<tr>
<td>Iceland</td>
<td>55</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>2</td>
</tr>
<tr>
<td>San Marino</td>
<td>49</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Finland</td>
<td>40</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Israel</td>
<td>39</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>1</td>
</tr>
<tr>
<td>Czechia</td>
<td>38</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Portugal</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>1</td>
</tr>
<tr>
<td>Ireland</td>
<td>24</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Slovenia</td>
<td>23</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Poland</td>
<td>16</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Georgia</td>
<td>15</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>Imported cases only</td>
<td>0</td>
</tr>
<tr>
<td>Romania</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>1</td>
</tr>
<tr>
<td>Croatia</td>
<td>12</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Estonia</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Imported cases only</td>
<td>3</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Imported cases only</td>
<td>3</td>
</tr>
<tr>
<td>Hungary</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>1</td>
</tr>
</tbody>
</table>

https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports
Next Steps....

• Risk still low in BC
• Social distancing measures should start now
• Any travel plans should be carefully evaluated
  – Avoid cruise ships and countries with travel advisories
• **CAREFUL** enhanced testing for COVID-19
  – **swab supplies are already stretched**
  – broader testing of patients with risk factors
    • Those hospitalized with suspected respiratory infection
    • Long term care facility outbreaks
    • High risk returned travelers or suspected community outbreaks
    • DON’T TEST: worried well or outpatients unlikely to have COVID-19

• Point of care risk assessment for each patient
  – Use precautions for all patients with respiratory symptoms
    • We are seeing tons of Influenza A right now!
Acute Respiratory Illness in IH Emergency Departments (Adult Patients)

Triage to assess for new or acutely worsening cough or shortness of breath (duration less than 2 weeks)
AND
Any one of the following:
- Fever/Chills
- Sneezing
- Sore Throat
- Muscle Aches
- Congestion
- Runny Nose

Patient to don surgical mask IMMEDIATELY

Assess Patient

Potential
Admission

Start Droplet/Contact Precautions

Healthcare worker to chart date/time droplet/contact precautions initiated

Physician to assess patient

Order NP swab for influenza and other tests as appropriate

Notify patient care coordinator regarding precautions

After influenza testing complete, refer to Acute Respiratory Illness Pathway

Potential
Discharge

Start Droplet/Contact Precautions IF POSSIBLE

Physician to assess patient

Order tests as appropriate

Healthcare worker to chart date/time droplet/contact precautions initiated

Physician to assess patient

Order NP swab for influenza test

Other tests ordered as appropriate

Influenza A, B or RSV PCR results

Positive

Continue for symptom duration for other possible untreated viruses

Yes

Chest x-ray shows pneumonia or bronchitis?

Yes

Sputum and/or blood culture results

Group A Streptococcus
- MRSA
- Neisseria meningitides

Other organism not listed

Continue Precautions as appropriate for each organism

Discontinue Precautions based on point of care risk assessment; Consult ICP if uncertain

No

Negative

Continue for symptom duration*

Yes

Ongoing viral signs/symptoms, including congestion, runny nose or sore throat?

No

Consult ICP if uncertain

No lab specimens collected

Discontinue Precautions based on point of care risk assessment; Consult ICP if uncertain

*https://www.interiorhealth.ca/AboutUs/QualityCare/IPCMANUAL/Ail%20Categories%20Areas%20-%20Transmission%20Tables.pdf

http://insidenet.interiorhealth.ca/QPS/IPC/Documents/RI_Algorithm_ED.pdf

http://insidenet.interiorhealth.ca/QPS/IPC/Documents/RI_Algorithm_Acute.pdf
Mild (Community-based) patients

• Patient with mild respiratory symptoms:
  – We need to keep these patients out of ED
  – Worried well with no risk factors should be reassured
    • Limited swab supply so don’t test
  – Those with risk factors should be referred to outpatient testing centres if possible

Interior Health
Every person matters

More sites to come...

March 6, 2020
To: Emergency Dept. Managers and Physicians at KGH, RIH, PRH, and VJH
From: Dr. Sue Pollock, Interim Chief Medical Health Officer & EOC Director
Karen Bloemink, Vice-President Clinical Operations - North

Re: COVID-19 Testing in Community Sites: Kamloops & Okanagan

As the COVID-19 situation both globally and provincially is rapidly evolving, Interior Health is preparing for expanded testing throughout our region.

As of March 7, 2020, community testing for COVID-19 will be available at specific hours at the Urgent and Primary Care Centres (UPPCs) in Kelowna, Kamloops, and Vernon. Penticton Health Unit will be available for testing as of March 9, 2020. Primary Care Providers are still encouraged to test in their offices.

You may refer patients by directly contacting the Penticton Health Unit or UPPC in your region. Contact information and hours of testing for each location are as follows:

<table>
<thead>
<tr>
<th>Location</th>
<th>Hours of Testing</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penticton Health Unit</td>
<td>16:30 – 20:30 hours</td>
<td>250-770-3434</td>
</tr>
<tr>
<td>Kelowna UPPC</td>
<td>16:30 – 20:30 hours</td>
<td>250-469-6985</td>
</tr>
<tr>
<td>Vernon UPPC</td>
<td>16:30 – 20:30 hours</td>
<td>250-541-1097</td>
</tr>
<tr>
<td>Kamloops UPPC</td>
<td>16:00 – 20:00 hours</td>
<td>250-314-2667 (private line)</td>
</tr>
</tbody>
</table>

Ideally, for patients who call ahead to physician’s offices or the ED, you may make the referral and direct them to the community testing locations above.
Medical Health Officers Alert – February 28, 2020

Update: COVID-19 (Novel Coronavirus) Assessment and Testing Guidance

Please note that the situation continues to evolve rapidly and the criteria for screening and testing may change.

Any physician may now order COVID-19 testing in Interior Health without consulting the local Medical Health Officer (MHO).

COVID-19 testing is recommended for:

- Clients with compatible symptoms (fever, cough or difficulty breathing) AND
- Travel to an Affected Area (China, Hong Kong, Iran, Italy, Japan, Singapore and South Korea) in the 14 days before onset of illness, OR
- Close contact with a confirmed or probable case of COVID-19 within 14 days before their illness onset

For all patients tested:

- Offer them a surgical mask and place them in a separate room.
- Use contact and droplet precautions during sample collection. This includes gloves, gowns, surgical mask and eye protection. An N95 respirator is NOT necessary.
- Obtain a Nasopharyngeal (red top) for AND a throat (blue top) swab
- Send samples to the BCCDC Provincial Laboratory and ensure that the requisition indicates testing for “Novel Coronavirus PCR”

If you decide to test for COVID-19, please advise the patient to self-isolate until they receive a negative test result (See patient handout on page 2). Patients may access their test results by calling the BC Centre for Disease Control COVID results hotline at 1-833-707-2792 (Monday to Friday, 8:30am to 4:30pm).

Next Steps:

- If the patient is well enough to return home, discharge the patient with surgical mask and advise the patient to isolate at home until they receive a test result. Please give the patient the information on self-isolation provided on this page.
- If results are positive, IHA Public Health will be notified immediately and will follow up directly with the patient and any contacts.

If you have any questions or concerns, please call the Communicable Disease Unit (CDU) or On-call Medical Health Officer (MHO)

- Communicable Disease Unit (CDU) 1-866-778-7736 (M-F 8:30 to 16:30) OR
- On-call Medical Health Officer (MHO) 1-866-457-5648 (after hours and weekends)

The CDU or On call MHO can assist with the risk assessment for COVID-19 for your patient if needed

For the most up to date COVID-19 information please go to:
https://www.interiorhealth.ca/YourEnvironment/CommunicableDiseaseControl/Pages/Breaking-News-and-Info.aspx
More severe (hospital-based patients)

• Get prepared
• Ensure you understand PPE required
• Emergency departments:
  – Plan seeing patients under investigation for COVID-19
    • Develop a process for seeing walking well patients
      – Diversion if possible; if not, create efficient process
    • Develop a process for seeing sicker patients
      – may require intubation
• ICU:
  – Plan for possibility of having cases admitted on vents
• Other departments:
  – Plan for possibility of increased admissions
"We are not alone": Life under coronavirus lockdown in Italy
By Angela Dewan, CNN
Updated 9:37 PM ET, Tue March 10, 2020

(CNN) — The whole of Italy has been put on lockdown, as the government desperately tries to gain control of the coronavirus spread.

On Tuesday, thriving cities like Rome, Milan and Venice became ghost towns. Italians are facing a new reality of life with a curfew, travel restrictions and enforced space between people in public
March 6, 2020

To: All Medical Staff
From: Dr. Mike Ertel, VP Medicine & Quality

Re: Information on COVID-19 & Required Use of IH Email

Interior Health (IH) continues to be involved in the rapidly evolving response to COVID-19 (novel coronavirus). As the situation is highly dynamic, please refer to the BC Centre for Disease Control (BCCDC) website and World Health Organization 2019-nCoV Situation Reports for updates and confirmed case counts.

At this time IH has responded to one confirmed case in our region remains at low risk for COVID-19.

Please Monitor Your IH E-mail

It is important that you know our teams are committed to doing their best to keep our physicians up to date with the latest data, clinical issues and recommendations. As such, it is essential all physicians monitor your IH e-mail as major changes will be communicated using our IH email distribution group for physicians.

The majority of these emails will come from IH Communications, but others may come from IH Emergency Operations Centre (EOC) section leads or directors. To ensure they are easily identifiable in your mailboxes, they will have consistent subject lines – COVID-19 IH Information Update and COVID-19 IH Weekly Digest – with the date sent.

For many reasons we will not maintain or share physicians personal e-mail addresses for mass distributions. IH e-mail also meets the BC Freedom of Information and Privacy Act which is the law to follow with private and confidential information in BC.
Where to find Updated Information

Novel Coronavirus (COVID-19)

Latest news and updates for staff and physicians.

Top News - March 10, 2020

Two minutes could save you a lot of time.

The new two-minute Overview of Library Services video provides a quick way to learn about services and resources that could save you a lot of time.

- Like when you are working on that next project and you remember Library Services can get you the full text of all those articles you found [Article Request – email the Library] or even search the latest evidence for ... (read more).
Two minutes could save you a lot of time

The new two-minute Overview of Library Services video provides a quick way to learn about services and resources that could save you a lot of time.

- Like when you are working on that next project and you remember Library Services can get you the full text of all those articles you found (Article Request – email the Library) or even search the latest evidence for ... (read more).

We want to know...

Why do you think it was awarded the 2020 Top 100 Employers in B.C.?  
- Benefits and compensation  
- Work atmosphere and social  
- Training and skills development  
- Employee communications  
- Employee experience  
- All of the above
Communicable Disease

All cases of reportable communicable disease within the health region are reported to and managed by the CDU Unit and the STOP HIV Health Outreach team.

Clinical Decision Support Tools
Clinical resources including forms, policies, and procedures.

Education: Staff
Educational resources for staff.

Infectious Diseases Emergency Response Steering Committee (formerly EPPPC)
View the current resources and information for EPPPC.

HIV & Health Outreach
HIV resources including forms, contact information.

Facility Outbreak Management
For all resources see the Facility Outbreak Resources page.

Communicable Disease Reports
- None

- Report Type: Annual (4)
- Report Type: Infectious Disease (8)
- Report Type: Monthly (2)
- Report Type: Other (7)
- Report Type: Pertussis (5)

Outbreak List (7)

Related Info
- Influenza Health and Safety
- Medical Health Officer Physician Updates

Web Resources
- BC Centre for Disease Control
- HHS Laboratory Instructions Forms and Regulations
- HealthLinkBC
Infectious Diseases Emergency Response Steering Committee (formerly EPPPC)

The Infectious Diseases Emergency Response Steering Committee (IDERSC) is the decision-making body for all aspects of emergency response preparedness and planning related to infectious diseases, pandemic influenza and emerging pathogens in BC. Final responsibility for the response to a pandemic is held jointly by BC's Chief Executive Officer and Chief Medical Health Officer. The committee is chaired by the Corporate Director of Population Health Services and the Executive Director of Hospital and Community Integrated Services with representation from both operations and programs from the relevant portfolio. The Executive Sponsor is the Vice President, Population Health and Chief Medical Health Officer.

IDERSC Documents

- IDERSC Org Chart
- IDERSC Terms of Reference

Pandemic Influenza Preparedness Plans

- Region/Department: Acute Site Pandemic Influenza Preparedness Plans (23)
- Region/Department: IH Acute Site Pandemic Plans
- Region/Department: Interior Health Pandemic Plan

Coronavirus (COVID-19) Resources

- Area: Areas 91. Communications (17)
  - MPMO Hgs and Medical Staff - Updated Algorithms and Documents for Managing Patients with Suspected COVID-19_2020042020
  - BHH-INOC-016 MPMO ALL HH: Novel Coronavirus Planning and Response in 2020
  - BHH-COVID-008 MPMO: Compensation and Coding for Staff due to COVID-19_09Mar2020
  - BHH-COVID-005 MPMO: Updated COVID-19 Testing in Community Settings_20200619
  - BHH-COVID-004 MPMO: COVID-19 Testing for Staff_20200619
  - BHH-COVID-003 MPMO: Update to Approach for Suspect COVID-19 Cases_20200619
  - BHH-COVID-002 MPMO: COVID-19 Information for Long-Term and Community Care_20200619
  - BHH-COVID-001 MPMO: Hgs and Physicians - COVID-19 Algorithm Updates_20200619

IDERSC Contacts

- Communicable Disease Unit
- Infection Control Practitioner
- Locate an on-call Medical Microbiologist
- Medical Health Officer (MHO)
- Workplace Health & Safety

Learn More

- BC Centre for Disease Control – overview, physician, health-care, and professional resources
- Provincial Health Office’s Ebola Update for BC’s Health-care Providers
- Public Health Agency of Canada – Influenza, Canadian Radion Response Jobs (arrangements)
- Organization – news, fact sheets, FAQs

What’s New

- ETO Exposure Control Plan
- IGSO IVS QFing Area Shuffle Pit Preparation and Disposal Protocol
- IGSO High Risk Option 2 HCR Checklist
- Enhanced Droplet Contact Precautions Sign

http://insidenet.interiorhealth.ca/Clinical/CDunit/Pages/EPPPC.aspx
Approach to Suspect COVID-19 (Novel coronavirus) Cases Presenting to IH Emergency Departments

Triage to provide a surgical mask immediately to any patient with respiratory symptoms

Triage Nurse to assess patient for symptoms and risk factors* to identify:

A. Does the patient have any of the following symptoms?
   - Fever (temp > 37.5 degrees Celsius) OR cough (new onset or exacerbation of chronic cough) OR shortness of breath

AND

B. Does the patient have relevant history*?
   - Travel outside of Canada to a country known to have local transmission (based on Table 2 of the daily World Health Organization Situation Report) of COVID-19 in the 14 days before onset of illness OR
   - Close contact** with a confirmed or probable case of COVID-19 within 14 days before onset of illness OR
   - Severe respiratory infection of unknown etiology, likely requiring ICU care

Note: For most up to date information on areas with local transmission, please refer to Table 2 in the World Health Organization Daily Situation Reports https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports

Place patient in private room and close door immediately

Put up droplet and contact with enhanced PPE precautions signs

Triage nurse to alert ED Physician immediately

All healthcare workers (HCW) and physicians must don:
   - Gown
   - Gloves
   - Procedure mask
   - Eye protection

ED physician to assess patient for clinical signs of infection and relevant history
   - If patient meets criteria, testing should be performed

Patient requires admission

Patient will be discharged home
**ASSESS**

- ED physician to assess patient for clinical signs of infection and relevant history
- If patient meets criteria, testing should be performed

**TEST**

- Patient requires admission
  - Collect specimens for Influenza and Novel Coronavirus (COVID-19) PCR:
    - 1 Nasopharyngeal (red top) swab **AND**
    - 1 Throat (blue top) swab **OR** sputum **OR** endotracheal aspirate***

- Patient will be discharged home
  - Collect specimen for Influenza and Novel Coronavirus (COVID-19) PCR:
    - 1 Nasopharyngeal (red top) swab

**COMMUNICATE**

- ED physician to **immediately** phone on call Medical Microbiologist through hospital switchboard to alert them of admission

**FOLLOW UP**

- Discharge patient with surgical mask and advise them to self-isolate until they receive a test result
- Provide patient with Information sheet ****
- Inform patient their results will be available within 7 days and can be accessed by phoning 1-833-707-2792 (Monday to Friday, 8:30am to 4:30pm)
- Inform patient the Communicable Disease Unit will follow up with them if their results are positive

- Continue to use droplet and contact precautions with enhanced PPE for aerosol generating medical procedures***
- Refer to the Approach to admitted Suspected COVID-19 (Novel Coronavirus) Cases algorithm for more information on patient placement and additional precautions required for patient care.

---

*If you have any questions or concerns, please call the Communicable Disease Unit (CDU) or On-call Medical Health Officer (MHO)*

Communicable Disease Unit (CDU) 1-866-778-7736 (M-F 8:30 to 16:30) OR
On-call Medical Health Officer (MHO) 1-866-457-5648 (after hours and weekends)

*Risk factors will be updated as the situation evolves. Please check online at the ED Clinical Decision Support Tools Website under Respiratory documents (http://insidenet.interiorhealth.ca/Clinical/emergservices/Pages/Policies.aspx)*

**Close contact defined as someone who:**

- provided care for the patient, including healthcare workers, family members or other caregivers, or who had other similar close physical contact, OR
- who lived with or otherwise had close prolonged contact with a probable or confirmed case while the case was ill.

***Aerosol generating procedures require airborne, droplet and contact precautions, and include (but are not limited to):

- Manual ventilation before intubation, endotracheal intubation, high frequency oscillatory ventilation, open airway suctioning, non-invasive ventilation, high flow oxygen (eg: CPAP, BiPAP), humidified oxygen, nebulized medication administration, tracheostomy care, cardiopulmonary resuscitation, and bronchoscopy


IH-PH-COV-006 11Mar2020
Table 2. Countries, territories or areas outside China with reported laboratory-confirmed COVID-19 cases and deaths. Data as of 10 March 2020

<table>
<thead>
<tr>
<th>Reporting Country/Territory/Area</th>
<th>Total confirmed cases</th>
<th>Total confirmed new cases</th>
<th>Total deaths</th>
<th>Total new deaths</th>
<th>Transmission classification</th>
<th>Days since last reported case</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Western Pacific Region</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>7513</td>
<td>131</td>
<td>54</td>
<td>3</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Japan</td>
<td>514</td>
<td>26</td>
<td>9</td>
<td>2</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Singapore</td>
<td>160</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Malaysia</td>
<td>117</td>
<td>24</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Australia</td>
<td>92</td>
<td>15</td>
<td>3</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Philippines</td>
<td>33</td>
<td>23</td>
<td>1</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>31</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>New Zealand</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Cambodia</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>2</td>
</tr>
<tr>
<td>Brunei Darussalam</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Imported cases only</td>
<td>0</td>
</tr>
<tr>
<td>Mongolia</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Imported cases only</td>
<td>0</td>
</tr>
<tr>
<td><strong>European Region</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>9172</td>
<td>1797</td>
<td>463</td>
<td>97</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>France</td>
<td>1402</td>
<td>286</td>
<td>30</td>
<td>11</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Germany</td>
<td>1139</td>
<td>27</td>
<td>2</td>
<td>2</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Spain</td>
<td>1024</td>
<td>435</td>
<td>28</td>
<td>18</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Switzerland</td>
<td>332</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>Local transmission</td>
<td>1</td>
</tr>
<tr>
<td>The United Kingdom</td>
<td>323</td>
<td>46</td>
<td>3</td>
<td>1</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Netherlands</td>
<td>321</td>
<td>56</td>
<td>3</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Sweden</td>
<td>248</td>
<td>45</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Belgium</td>
<td>239</td>
<td>39</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Norway</td>
<td>192</td>
<td>23</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Austria</td>
<td>131</td>
<td>19</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Denmark</td>
<td>90</td>
<td>54</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Greece</td>
<td>73</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>1</td>
</tr>
<tr>
<td>Iceland</td>
<td>55</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>2</td>
</tr>
<tr>
<td>San Marino</td>
<td>49</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Finland</td>
<td>40</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Israel</td>
<td>39</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>1</td>
</tr>
<tr>
<td>Czechia</td>
<td>38</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Portugal</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>1</td>
</tr>
<tr>
<td>Ireland</td>
<td>24</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Slovenia</td>
<td>23</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Poland</td>
<td>16</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Georgia</td>
<td>15</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>Imported cases only</td>
<td>0</td>
</tr>
<tr>
<td>Romania</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>1</td>
</tr>
<tr>
<td>Croatia</td>
<td>12</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>0</td>
</tr>
<tr>
<td>Estonia</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Imported cases only</td>
<td>3</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Imported cases only</td>
<td>3</td>
</tr>
<tr>
<td>Hungary</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Local transmission</td>
<td>1</td>
</tr>
</tbody>
</table>

https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports

Look for “local transmission”
Information about the Novel Coronavirus (COVID-19) for patients being tested and/or cared for in the community

Your doctor has determined that you can safely be cared for at home. To prevent the spread of contagious respiratory illnesses including novel coronavirus, we advise that you **self-isolate at home until your test results are complete.**

**Your test results will be available within 7 days.** You may call the BC Centre for Disease Control Results Hotline for your test results at 1-833-707-2792 (Monday to Friday, 8:30am to 4:30pm)

**Instructions for Self-Isolation**

1. **Stay home except to get urgent medical care** – Do not go to work, school, or public areas (e.g. places of worship, stores, shopping malls, and restaurants). Cancel non-urgent appointments. Do not use public transportation including buses, taxis, or ride sharing. Your doctor may provide you with a note excusing you from work or school.

2. **Wear a face mask** – Wear a face mask when you are in the same room with other people and when you visit a health care facility. If your mask gets wet or dirty, change it.

Approach to admitted Suspect COVID-19 (Novel coronavirus) Cases

Does the patient have any of the following?
- Fever (temp > 37.5 degrees Celsius) OR cough (new onset or exacerbation of chronic cough) OR shortness of breath

**NO**
- Illness not compatible with COVID-19. COVID-19 testing NOT indicated. Use point of care risk assessment for further patient care

**YES**
- Patient must don procedure mask immediately, unless already on droplet and contact precautions

Does the patient have relevant history**?
- Travel outside of Canada to a country known to have local transmission (based on Table 2 in the daily World Health Organization Situation Report) of COVID-19 in the 14 days before onset of illness OR
- Close contact*** with a confirmed or probable case of COVID-19 within 14 days before onset of illness OR
- Severe respiratory infection of unknown etiology, requiring ICU care

**NO**
- COVID-19 infection is unlikely. Collect Nasopharyngeal (red top) swab for Influenza PCR testing
- Use droplet and contact precautions. Private room NOT required
- Refer to Acute Respiratory Illness Pathway

**YES**
- Physician to phone and alert Medical Microbiologist on call about patient ASAP
- Is patient intubated or requiring non-invasive ventilation (eg: CPAP, BiPAP, high flow oxygen), or likely to require these interventions?
  **NO**
  - Place patient in private room with door closed
  - Put up droplet and contact with enhanced PPE precautions signs
  - Determine type of care to be provided to patient
  - Routine care

  **YES**
  - Place patient in negative pressure room with door closed

All healthcare workers (HCW) and physicians must don:
- Gown
- Gloves
- Procedure mask
- Eye protection

All healthcare workers (HCW) and physicians must don:
- Gown
- Gloves
- N95 mask
- Face shield

Ensure appropriate specimens have been collected for Influenza and Novel Coronavirus (COVID-19) PCR:
- 1 Nasopharyngeal (red top) swab **AND**
- 1 Throat (blue top) swab **OR** sputum **OR** endotracheal aspirate**

**Results available**

**Testing**

- **Positive**
  - Keep patient on droplet/contact precautions
  - Once patient symptoms resolve, recollect the following specimens daily until both specimens daily until 2 specimens collected at least 24 hours apart are NEGATIVE:
    - Nasopharyngeal (red top) swab **AND**
    - Throat (blue top) swab **OR** sputum **OR** endotracheal aspirate**
  - When specimens are negative, consult Infection Control Practitioner (Monday to Friday, 8am to 4pm) or Medical Microbiologist (after hours and weekends) to determine if patient can be taken off isolation

- **Indeterminate**
  - Keep patient on droplet/contact precautions.
  - Contact Medical Microbiologist on call regarding need to recollect specimen ASAP

- **Negative**
  - Refer to Acute Respiratory Illness Pathway
    - Discharge patient with surgical mask and advise them to self-isolate until they receive a test result
    - Provide patient with information sheet ****
    - Inform patient their results will be available within 7 days and can be accessed by phoning 1-833-707-2792 (Monday to Friday, 8:30am to 4:30pm)
    - Inform patient the Communicable Disease Unit will follow up with them if their results are positive

---

*Risk factors will be updated as the situation evolves. Please check online at the IDERSC Website for latest version (http://insidenet.interiorhealth.ca/Clinical/CDunit/CDdocuments/IH-PH-COVID-19%20Approach%20to%20Suspect%20COVID-19%20Admitted%20to%20IH%20Hospitals.pdf)*

**Close contact defined as someone who:**
- provided care for the patient, including healthcare workers, family members or other caregivers, or who had other similar close physical contact, **OR**
- who lived with or otherwise had close prolonged contact with a probable or confirmed case while the case was ill.

***Aerosol generating procedures require airborne, droplet and contact precautions, and include (but are not limited to):***
Questions