Tips for this Session:

• Questions can be submitted to www.slido.com. Event code # T115
• Appropriate questions will be accepted by the moderator can then be up-voted.
• Please vote for questions for each of the speakers/topics.
• Student moderators will present the most favoured questions for each of the speakers.
• At the start of your question, please indicate to whom or what discipline your question is directed.
Objectives

1. Understand the clinical picture of COVID-19 presenting to the ED
2. Know how to protect yourself and your colleagues
3. Be able to describe and interpret common investigations used in the workup of a patient with suspected or confirmed COVID-19
4. Understand the rationale for admission or discharge in this setting
Clinical Presentation

- Fever
- Cough
- Shortness of breath
- Chest pain
- Malaise
- Rhinorrhea
- Fatigue
- Sore throat
- Nausea/vomiting/diarrhea

- Asymptomatic!
- Triage to ‘hot’ vs. ‘cold’ zones
- Links to known cases/outbreaks
Protect Yourself

- COVID-19 is generally spread in large droplets
- Aerosol Generating Medical Procedures
  - >15L/min O₂ by facemask
  - CPAP/BiPAP
  - Intubation/extubation
  - Nebulized medication delivery
  - Suctioning
  - **CPR**
- PPE recommendations vary by Health Authority and by province
DROPLET & CONTACT PRECAUTIONS

Bed #

Families and visitors:
STOP
Please report to staff before entering

Clean hands before entering and when leaving room

Clean hands with:
A) hand foamigel or B) soap and water

Staff:

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

Keep sign posted until room cleaned

Crisis Response Centre

Interior Health

Interior Health

Interior Health

Interior Health

Interior Health

Interior Health

Interior Health

Interior Health

Interior Health

Interior Health

Interior Health
ED Workup

- Nasopharyngeal swab
- O2 sat
- +/- CXR
- CBC/lytes/renal function/glucose
- VBG/ABG/lactate
- Blood C&S
- CRP
- LDH
- D-dimer
- Troponin
- Sputum C&S or ETT aspirate
Labs

- WBC (N)
- Lymphocytes ↓
- D dimer ↑
- CRP ↑
- LDH ↑
Disposition - Home

- $O_2$ sat
  - $>94\%$ on room air
  - At baseline
  - No significant change with activity
- Other VS WNL
- Safe social set up
- At baseline function
- No significant ↑ WOB
- Able to self-isolate
Disposition - Critical Care?

- Hypoxemic despite standard O2 therapy
- Requirement for HFNO or CPAP/BiPAP
- Rapidly progressive deterioration
- Co-existing MOF, ALOC, or hemodynamic instability
- Clinician judgement
Summary

- High index of **Suspicion**
- Personal **Protection**
- Adequate **Oxygenation**
- **Admission** vs. Home **Isolation**
Dr. Katie Wiskar
Outline

EMERGENCY ROOM: ADMISSION CONSIDERATIONS
WARD MANAGEMENT
DISCHARGE PLANNING
ED: Admission Considerations
Serial testing

• Our current test (PCR of NP swab) is IMPERFECT
  • 60-80% sensitivity in most reports

• Contributing factors
  • Imperfect swab technique
  • Virus not predominantly present in upper respiratory tract
  • Phase of illness: very early OR post-viral replication phase

• Pre-test probability is KEY
  • Low PTP: one swab ok to rule out
  • Moderate/high PTP: will need repeat testing and continued isolation
    • And consider adjunctive testing: sputum PCR, CT chest, POCUS, etc

• Have this discussion with your senior/fellow/staff BEFORE you admit the patient!
Inpatient ward management
**COVID-19 (Suspected or Confirmed) Admission Orders**

Date: ________  
Time: ________

Avoid unnecessary imaging, medications and frequent lab work. Minimize patient transportation.

**ADMISSION INSTRUCTIONS:** Admit under Dr.

**CODE STATUS:** Refer to completed Medical Orders for Scope of Treatment (MoST) form.

**PATIENT ISOLATION:** Dilute and Contact precautions, use appropriate eye protection. Use Airborne precautions with aerosol-generating medical procedures (refer to pac.vch.ca)

**DIET:** Regular or

**ACTIVITY:** Activity as tolerated

**CONSULTS:** Do not place Allied Health Consult order without confirmation from MRP.

**MONITORING:** Vital signs  
- Q4H and PRN  
- Q6H and PRN  
- Q8H and PRN

Pulse oximetry  
- Q1H and PRN  
- Q2H and PRN

**LABORATORY:** CBC and differential, serum creatinine, amn, electrolytes, glucose, CRP and ferritin levels daily x 3 days  
- INR, PTT, Fibre D Dimer, LDH and liver panel (bilirubin total, albumin, ALT and AST) daily x 3 days

- If not already done in ED, obtain Troponin and lactate level

- Magnesium level

- Phosphate level

- Calcium level

- If not already done, nasopharyngeal swab for COVID-19 n-CoV, NAT, Influenza A/B and RSV

- Sputum for COVID-19 n-CoV, NAT

- Sputum for COVID-19 n-CoV, PCR

- Blood culture x 2

- Sputum CABS

**DIAGNOSTICS:** If not already done in ED, obtain electrocardiogram 12-lead

**TREATMENTS:** Titrating O2 to maintain oxygen saturation 92% or greater OR %

- Do not use supplemental O2 to achieve oxygen saturation above 96%.

- High flow O2 requires airway precautions.

- When patient requires 4 liters of O2 by nasal prongs to keep SpO2 above 93%, call MRP and CCOT.

- When patient requires 8 liters of O2 by nasal prongs to keep SpO2 above 93%, call MRP.

- MRP to consult ICU if patient is fail code.

**INTRAVENOUS:** Insert peripheral IV catheter

**MEDICATIONS:**

- Use fluids judiciously – allow relative hypotension in absence of worsening shock.

- NSAIDs, ACEis, ARBs and prednisone should be initiated with caution; however, if on prior to admission, these medications can be continued if indicated.

- Supply of bronchodilators is limited. Order selectively for appropriate indications (e.g. wheezing). Nebulized medications can be administered if patient is in single room with door closed, or dedicated COVID ward with personnel wearing appropriate Personal Protective Equipment (PPE).

- acetylsalicylic acid 95 mg PO QID PRN pain or fever

- Lorazepam 2 mg QID PRN pain or anxiety

- Addison 4 to 5 mg PO BID QID PRN nausea or vomiting

- Pharmacy to initiate Basile Protocol – MEDICINE (16) PRE-PRIOR ORDER

**VTE Prophylaxis:** Complete VTE Risk Assessment and Prophylaxis Pre-Priorized Order #781

**Signature**

**Print Name**

**VCH VA, PPC 112P APR 2020**
Management is largely supportive

• Treat hypoxemia: supplemental O₂
  • *Awake proning*: avoid prolonged supine position

• Treat symptoms
  • Analgesics, antipyretics, antiemetics

• Antivirals and targeted therapies: use in the context of clinical trials
  • Hydroxychloroquine/chloroquine
  • Remdesivir
  • Lopinavir/ritonavir +/- ribavirin and interferon
  • Other: tocilizumab, convalescent plasma, zinc, vitamin D...
  • Steroids: not *routinely* recommended; timing is important¹
    • Used more in: ARDS, sepsis, critical illness, hyperinflammation

• Treatment of complications

1. doi: 10.1111/jth.14768
2. doi: 10.1111/jth.14888
3. doi:10.1007/s00134-020-06062-x
Illness trajectory is key

https://covidviruswatch.wordpress.com/
Monitoring on the ward

• Illness trajectory is key
• Trying to catch those who are deteriorating and entering phase IIb or phase III
  • Immune hyperactivation/HLH-like phenomenon
• Pre or post-ICU?
• Regular labs useful
  • Inflammatory panel q2d (variable)
    • Ferritin, CRP
    • D-dimer, fibrinogen, INR
    • Liver enzymes
    • Troponin
Manage complications

• Hypercoagulability
• Immune hyperactivation/cytokine storm
• Cardiac injury
• Secondary bacterial infection
• AKI
• Delirium
• Deconditioning
Hypercoagulability

• **COVID-associated coagulopathy**
  • Primarily VTE (bleeding seems to be much less common)\(^1\)

• Frequency
  • 25-43% in critically ill patients\(^2\text{-}^4\)
  • Seems much lower in ward patients (4% in one study)\(^2\)

• Labs: D-dimer, INR, fibrinogen

• Monitoring: clinical
  • No role for screening US/CT scan

• Treatment
  • DVT prophylaxis for ALL (unless an extremely good reason)
    • Some hospitals using higher dose (eg Enox 30 BID)
  • Confirmed VTE: full dose AC (heparin/LMWH typically at first)
  • Involvement of Hematology

1. doi: 10.1111/jth.14768
2. doi: [10.1111/jth.14888](10.1111/jth.14888)
3. doi: [10.1007/s00134-020-06062-x](10.1007/s00134-020-06062-x)
Immune hyperactivation/cytokine storm

- Dysregulated immune response with similar labs/pathology to HLH\(^1,2\)
- Elevated inflamm. markers, clinical deterioration: shock, ARDS, MOF
- Often hand-in-hand with hypercoagulability

Treatment
- Call your friendly local Hematologist/HLH expert!
- Steroids: higher doses seem to be needed
- Tocilizumab? Maybe helpful in the right subset of patients\(^3-4\)

Predictor of mortality

1. doi: 10.1016/S0140-6736(20)30628-0
2. doi: 10.1016/S0140-6736(20)30183-5
4. doi: 10.1101/2020.04.20.20061861
Cardiac injury

• Fairly common: 12.5% to 38% depending on population studied\textsuperscript{1-4}
• Presents with
  • Elevated troponin/BNP\textsuperscript{5}
  • EKG: most commonly non-specific ECG changes\textsuperscript{6}
  • Echo: several abnormalities may occur (myocarditis/CMO picture)\textsuperscript{6}
• Treatment?
  • Troponitis: treat as type 2 ischemia
    • Generally no specific therapies indicated
  • Myocarditis/cardiomyopathy: supportive Tx; consider treating hyperinflammation
• Outcomes
  • \textit{Strong predictor of mortality}
  • One group reported HR of 4.3\textsuperscript{7}

1. doi: 10.1161/CIRCULATIONAHA.120.047349
2. doi: 10.1038/s41569-020-0360-5
4. doi: 10.1161/CIRCRESAHA.120.317055
5. doi: 10.1001/jamacardio.2020.1017
6. doi: 10.1016/j.jicard.2020.03.087
Manage comorbidities

• Admitted patients are often *complex and heavily co-morbid*
• Don’t forget about their other problems!!
Goals of Care

• Always important to discuss with all hospitalized patients
  • ESPECIALLY important to discuss with possible/confirmed COVID patients
• Mortality in elderly pts (>80 yrs) is very high (>20%)\textsuperscript{1,2}
• Mortality in critically ill patients is very very high
  • Upwards of 50% in several series\textsuperscript{3,4}
• Poor prognostic factors (see next slide)
• Excellent serious illness discussion tools: https://palliativecare.med.ubc.ca/coronavirus/

2. doi:10.1001/jama.2020.4683
3. https://doi.org/10.1016/S2213-2600(20)30079-5
Signs of deterioration

- *Point in illness trajectory*
- Vitals: increasing O2 needs, *tachypnea*
- Clinical signs: increased WOB (look carefully!)
- Labs: rising inflammatory labs
  - D-dimer > 1000: *20x increase in mortality* in one study\(^1\)
- Imaging: progressive infiltrates
- Overall picture: physiologic reserve, comorbidities, GOC
  - Age, male sex, chronic lung disease, cardiac disease, HTN, obesity, immunosuppression
- Bottom line
  - Use your clinical judgement
  - When in doubt: call for help early!!

1. doi: 10.1016/S0140-6736(20)30566-3
Call for help early!!

• Always a good idea in medicine
• ESPECIALLY now
  • ICU should be happy to come see and be involved in discussions
• Refer to your hospital/health authority policy
• VCH
  • CCOT called at 4L NP
  • ICU called at 6L NP
    • **does NOT always mean the patient goes to ICU  →  depends on GOC
Timing of intubation

• Strategies re: timing of intubation are evolving
  • Early pandemic: push to intubate very early (needs beyond 6L NP)

• Thinking has now *changed*
  • Scarce resources
  • Harms of invasive mechanical ventilation: ventilator-induced lung injury

• Generally accepted now that HFNC and NIMV (esp CPAP) are very useful to prevent intubation* 
  • *with appropriate precautions → see hospital guidance 
  • HFNC appears *safe*¹ 
  • Positive airway pressure (CPAP) especially useful

¹. https://emcrit.org/ibcc/covid19/#high_flow_nasal_cannula
Approach to mechanical ventilation

• Another highly controversial area
• Some interesting theories with minimal data
  • L vs H phenotype¹
• ARDSnet ventilation: stick to critical care fundamentals²
  • Lung-protective ventilation, adequate PEEP
• Proning: esp if meet PROSEVA criteria³
• Overall: treat each patient individually based on their physiology

• Fortunately you will likely have a lot of smart, more senior people making these decisions 😊

¹. doi: 10.1007/s00134-020-06033-2
². doi: 10.1056/NEJM200005043421801
³. doi: 10.1056/NEJMoa1214103
Discharge planning
Timing of discharge

• Standard criteria apply
  • Off supplemental oxygen
  • Back to pre-morbid level of functioning
  • Lab tests (inflammatory markers) trending in the right direction
  • Able to cope at home

• VCH: do NOT have to have negative PCR to be discharged home
  • *exception: LTC facilities
Timing of discharge

• Discharge instructions: self-isolate for another 10d
  • Probably overly conservative

• Discharge with pending swabs
  • Public health will follow up if positive
  • Instruct to self-isolate
Post-discharge follow up

• Wards/hospitals may have protocols for this
• At minimum: f/u with Family Physician within 1 week
  • Virtually ok
• VCH: post-COVID follow-up pathway
  • Phone call from GIM within 2d of d/c
  • f/u appointment in GIM/Resp clinic
  • f/u testing incl PFTs, imaging, etc arranged
Resources

• EmCrit/IBCC: https://emcrit.org/ibcc/covid19/
  • Podcast: http://ibccpodcast.libsyn.com/
• Viruswatch: https://covidviruswatch.wordpress.com/
  • Podcast: https://viruswatch.libsyn.com/
• COVID Evidence Alerts: https://plus.mcmaster.ca/COVID-19/
Thanks!
Dr. Naisan Garraway
Surgery in the COVID-19 Pandemic

Dr Naisan Garraway
<table>
<thead>
<tr>
<th><strong>KNOWN COVID-19 POSITIVE</strong></th>
<th><strong>UNKNOWN COVID-19 STATUS</strong></th>
</tr>
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<tbody>
<tr>
<td><strong>Decision</strong></td>
<td></td>
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<tr>
<td>- Surgery to proceed at discretion of anesthesiologist and surgeon.</td>
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<tr>
<td>- Negative pressure OR if available.</td>
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<tr>
<td><strong>Testing</strong></td>
<td></td>
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<tr>
<td>- Not indicated</td>
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<tr>
<td><strong>Intubation and extubation</strong></td>
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<tr>
<td>- Limit personnel in the OR to anesthesiologist, RN +/- AA</td>
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<tr>
<td>- All staff in the OR/designated procedure room don:</td>
<td></td>
</tr>
<tr>
<td>- Fit-tested N95 Respirator</td>
<td></td>
</tr>
<tr>
<td>- Face shield or goggles</td>
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<tr>
<td>- Gown &amp; gloves</td>
<td></td>
</tr>
<tr>
<td><strong>Surgical Procedure</strong></td>
<td></td>
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<tr>
<td>- All staff in the OR don:</td>
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<tr>
<td>- Fit-tested N95 Respirator</td>
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<tr>
<td>- Face shield or goggles</td>
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<tr>
<td>- Gown &amp; gloves</td>
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<tr>
<td><strong>Phase 1 Recovery</strong></td>
<td></td>
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<tr>
<td>- Recover in the OR suite until ready to move to designated unit</td>
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<tr>
<td>- Next patient can be taken to OR suite 30 minutes after preceding extubation</td>
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</tr>
<tr>
<td><strong>Note:</strong> time may differ based on rate of air exchange in the OR</td>
<td></td>
</tr>
<tr>
<td><strong>Cleaning and Disinfection</strong></td>
<td></td>
</tr>
<tr>
<td>- Cleaning staff to clean and disinfect OR suite:</td>
<td></td>
</tr>
<tr>
<td>- Fit-tested N95 Respirator</td>
<td></td>
</tr>
<tr>
<td>- Face shield or goggles</td>
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<tr>
<td>- Gown &amp; gloves</td>
<td></td>
</tr>
<tr>
<td><strong>Disposition</strong></td>
<td></td>
</tr>
</tbody>
</table>
| - Return to isolation room on inpatient unit |}

**ASYMPTOMATIC**

- Surgery to proceed at discretion of anesthesiologist and surgeon.

**SYMPTOMATIC (or if symptoms cannot be assessed)**

- Surgery to proceed at discretion of anesthesiologist and surgeon.
- Test for COVID-19 per institutional protocol but proceed with surgery.
- Limit personnel in the OR to anesthesiologist, RN +/- AA |
- All staff in the OR/designated procedure room don: |
| - Fit-tested N95 Respirator |
| - Face shield or goggles |
| - Gown & gloves |
- All staff in the OR don:
| - Fit-tested N95 Respirator |
| - Face shield or goggles |
| - Gown & gloves |
- All staff in the OR don:
| - Fit-tested N95 Respirator |
| - Face shield or goggles |
| - Gown & gloves |
- Recover in the PAR using Droplet/Contact Precautions
- Next patient can be taken to OR suite 30 minutes after preceding extubation
- Note: time may differ based on rate of air exchange in the OR
- Cleaning staff to clean and disinfect OR suite:
| - Fit-tested N95 Respirator |
| - Face shield or goggles |
| - Gown & gloves |
- Return to isolation room on inpatient unit

**INPATIENT UNIT**

- Patient to return to appropriate inpatient unit
- Return to isolation room on inpatient unit
Drs. Gillian Fyles and Ross Taylor
What We’ll Cover – mostly links to key resources!

- Definition of a palliative approach to care
- Identification of High-Risk Populations
- Communication – ACP and Serious Illness Conversations
- Symptom management of COVID-19 +ve patients
- Further educational opportunities
What is a palliative approach to care?

- Palliative care aims to reduce suffering and improve QOL by addressing the physical, psychosocial and spiritual needs of persons and their family caregivers living with a life-threatening illness.

- Palliative care is not the opposite of critical care.
Populations at Higher Risk for Severe Illness with COVID-19 (BC-CPC DRAFT April 2020)

- Older than 65 years of age
- Adults of any age with serious underlying medical conditions ie high blood pressure, diabetes, heart disease, chronic lung disease or moderate to severe asthma, history of strokes, chronic kidney disease, liver disease
- Immunocompromised people ie cancer, poorly controlled HIV/AIDS, transplant recipients, immune deficiencies ie prolonged use of corticosteroids and other immune-weakening medications
- Severe obesity - BMI 40 or higher
- Living in a nursing home or long-term care facility
- Govt of Canada states that vulnerable populations are more at risk for contracting COVID-19 and developing severe complications due to their health, social and economic circumstances and, in addition to the above identify the following as vulnerable populations →

(Refs, Dr. A. Tan, Fraser Health, CDC, Govt Canada, BC CDC)
Vulnerability described as:

Anyone who has:

- difficulty reading, speaking, understanding or communicating
- difficulty accessing medical care or health advice
- difficulty doing preventive activities, like frequent hand washing, covering coughs and sneezes
- ongoing specialized medical care or needs specific medical supplies
- ongoing supervision needs or support for maintaining independence
- difficulty accessing transportation
- economic barriers
- unstable employment or inflexible working conditions
- social or geographic isolation, like in remote and isolated communities
- insecure, inadequate, or nonexistent housing conditions
Communication priorities – ACP and Serious Illness Conversations

1. Pt/Family Facing ACP Tools

   • Public tools on UBC Dept of Palliative Care and BC-CPC websites:

     https://palliativecare.med.ubc.ca/coronavirus/

     https://bc-cpc.ca/cpc/covid19/beprepared
2. Health Care Professional Tools

• Shared resources available through UBC Dept of Palliative Care and BC-CPC websites

  https://palliativecare.med.ubc.ca/coronavirus/

  https://bc-cpc.ca/cpc/all-resources/covid-19-resources/#1586313525063-2d4eb83e-58c3

• Ariadne Labs COVID-19 Toolkit

  https://www.ariadnelabs.org/coronavirus/clinical-resources/covid-conversations/

• BC-CPC Just in Time Education

  • 75 minute videoconferenced COVID specific SIC webinar including role play.
  • Contact gfyles@bc-cpc.ca if interested
Symptom Management for COVID-19 Patients

- Know your patient
- Know your resources and who to call for help ie local pall medicine specialists, local algorithms, 1-877 711-5757 line
- Invitation to a conversation about potential course and symptom management
- Consider highlighting that symptom management won’t shorten life
Common Symptoms Seen

- **Shortness of Breath and Pain** – opioids are the mainstay

- **Agitation and Confusion** – haloperidol, methotrimeprazine, lorazepam/midazolam

- **Terminal agitation** – consider multiple agents

- **Retained Respiratory Secretions** - reassurance +/- glycopyrrolate or scopolamine

- Followup and check in
Other Educational Opportunities

Pallium Canada

Palliative Care for COVID-19 Illness
Module A: Background Information, Essential Conversations, and Ethics

Dr. José Pereira
Professor and Director, Division of Palliative Care, Department of Internal Medicine, University of Manitoba, Scientific Officer, Pallium Canada

Dr. Anil Arya
Assistant Clinical Professor, Division of Palliative Care, Department of Family Medicine and Public Health, University of Manitoba

Dr. James Dovmara
Head, Division of Palliative Care, Department of Medicine, University of Manitoba

Pallium Canada

Palliative Care for COVID-19 Illness
Module B: Special Considerations and Symptom Management

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Dr. Anil Arya
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Dr. James Dovmara
Head, Division of Palliative Care, Department of Medicine, University of Manitoba

Pallium.ca
Questions?

Join at slido.com #T115

This presentation and recording will be posted on Entrada for the medical students and on UBC PGME website under ‘Covid Resources’