COVID CORNER

Ongoing COVID-19 updates brought to you by The Office of CME&PD and The Physician Learning Program

Moderators

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Professor and Associate Dean, Continuing Medical Education and Professional Development, Cumming School of Medicine, University of Calgary

Disclosure
Any direct financial payments, gifts, in-kind compensation or honoraria
- Employee, University of Calgary

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Disclosure
Membership on advisory boards or speakers’ bureau
- International Consortium for Health Outcomes Measurement (non-profit)
We would like to acknowledge the traditional territories of the people of the Treaty 7 region in Southern Alberta, which includes the Blackfoot Confederacy (comprising the Siksika, Piikani, and Kainai First Nations), as well as the Tsuut’ina First Nation, and the Stoney Nakoda (including the Chiniki, Bearspaw, and Wesley First Nations). The City of Calgary is also home to Métis Nation of Alberta, Region 3.

Disclosure of Financial Support

- The program was developed and planned to achieve scientific integrity, objectivity and balance
- This program has received educational grants from the College of Physicians Surgeons of Alberta, Alberta Health Services Calgary Health Trust and Rural Health Profession Action Plan (RhPAP)
Objectives

• Recognize factors identified with worse outcomes and use new prognostic scoring systems
• Summarize the current evidence for pharmacologic treatment of COVID-19, including when to use dexamethasone and remdesivir
• List important considerations if a hospitalized patient is deteriorating and when to consult specialists, including ICU
• Use the Specialist Link Discharge Pathway to link patients to ongoing care in the community

PART 1 – Speakers Presentation
PART 2 – Panel Discussion and Q&A

As of Nov 23, 2020

https://albertaplp.ca/our-tools/
Office of Continuing Medical Education and Professional Development. COVID Corner November 25 - Update on the Inpatient Management of Patients with COVID-19

As of Nov 23, 2020

https://en.wikipedia.org/wiki/List_of_municipalities_in_Alberta

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COVID CORNER Webinar:
Update on the Inpatient Management of Patients with COVID-19

Presenters:
Kristen Brown MD FRCPC
Oscar Larios MD FRCPC
Kerri Johannson MD FRCPC MPH
Alain Tremblay MDCM FRCP FCPC
Zahra Goodarzi MD FRCPC MSc
Selena Au MD FRCPC MSc
Tara Lohmann MD FRCPC
Kelly Burak MD MSc FRCPC

Panelist:
Jayna Holroyd-Leduc MD FRCPC
Leslie Skeith MD FRCPC

Infection Prevention and Control Considerations

Oscar Larios MD FRCPC
Interim Senior Medical Director, Infection Prevention and Control – Alberta Health Services
Infectious Diseases Consultant – Alberta Health Services
Medical Microbiologist- Alberta Precision Laboratories
Clinical Assistant Professor, University of Calgary

Disclosure
• Any direct financial payments, gifts, in-kind compensation or honoraria: GSK, Merck, Gilead
• Any funded grants or clinical trials: Finch Therapeutics, Merck, ImmuniMed, Vedanta Biosciences, MGB Biopharma, Seres Therapeutics, Rebiotix, Summit Limitedt.
Learning Objectives

- Review Alberta Health Case Definitions for COVID-19
- To be proficient in using the Respiratory Initial Screening Form and know how case definitions are used
- To be comfortable in discontinuation of Contact and Droplet Precautions for Suspected or Confirmed COVID-19
- To know where to find what procedures are AGMPs

Daily MD Assessment
Consider the following:
1. COVID Status
   - Confirmed
   - Probable
   - All COVID + patients are eligible for trials. Get verbal consent to be contacted.

2. Patient Isolation
   - Proper PPE protocols
   - To discontinue isolation, follow SCM order set

3. Mobility
   - Encourage daily

4. Labs
   - Review daily and order as indicated

5. Goals of Care
   - Reassess and update

6. Prognosis

7. Communication
   - Patient
   - Care partner
   - 4C Mortality Score
   - Additional Resources from DoM

Alberta Public Health Disease Management Guidelines
Coronavirus – COVID-19

Confirmed Case
A person with laboratory confirmation of infection with the virus (SARS-CoV-2) that causes COVID-19 which consists of:
- Detection of at least one specific gene target by nucleic acid amplification tests (NAAT) at a Provincial Public Health Laboratory where NAAT tests have been validated
- Confirmed positive result by National Microbiology Lab (NML) by NAAT.

Probable Case:
- A person with NO laboratory testing done with clinical illness who had close contact to a lab-confirmed COVID-19 case
- A person (with laboratory testing done) with clinical illness who meets the COVID-19 exposure criteria:
  - in whom laboratory diagnosis of COVID-19 is inconclusive

Suspect case:
- A person with clinical illness AND
  - who meets the exposure criteria:
  - OR
  - had close contact with a probable case of COVID-19.


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and Professional Development. COVID Corner November 25 - Update on the Inpatient Management of Patients with COVID-19
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### Part 2 - Expanded Symptoms

<table>
<thead>
<tr>
<th>COVID-19 Expanded Symptoms: New/worse AND unexplained: Headache, Muscle/Joint pain, Fatigue/Extreme exhaustion, Nausea/Sudden loss of appetite, Loss of change to sense of smell or taste, Conjunctivitis/Red eye/Conjunctival edema, Altered mental status, any additional COVID-19 symptoms at clinician’s discretion</th>
<th>Actions Required</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ Follow Routine Practices (including continuous masking)</td>
</tr>
<tr>
<td></td>
<td>□ Contact MRHP to order labs (COVID-19, Other as indicated)</td>
</tr>
</tbody>
</table>

[https://www.albertahealthservices.ca/frm-21615.pdf](https://www.albertahealthservices.ca/frm-21615.pdf)

### Part 3 - Risk Factors

<table>
<thead>
<tr>
<th>Close contact* with a confirmed or probable case of COVID-19 within 14 days before illness onset</th>
<th>Actions Required</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ Implement Contact &amp; Droplet Precautions</td>
</tr>
<tr>
<td></td>
<td>□ Notify IPC as per site process</td>
</tr>
</tbody>
</table>

- Provided care for the individual, including healthcare workers, family members or other caregivers, or who had other close physical contact with the person without consistent and appropriate use of personal protective equipment, OR
- Lived with or otherwise had close prolonged contact (within 2 metres) with the person while the person was infectious, OR
- Had direct contact with infectious bodily fluids of the person (e.g., was coughed or sneezed on) while not wearing recommended personal protective equipment.

[https://www.albertahealthservices.ca/frm-21615.pdf](https://www.albertahealthservices.ca/frm-21615.pdf)

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https://www.albertahealthservices.ca/frm-21624.pdf

https://www.albertahealthservices.ca/frm-21624.pdf

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Office of Continuing Medical Education and Professional Development. COVID Corner November 25 - Update on the Inpatient Management of Patients with COVID-19

4. Does patient have ANY COVID-19 Risk Factors below?

- Close contact** with a confirmed or probable case of COVID-19 within 14 days before illness onset
- Associated with any healthcare unit/hospital, congregate living or other (e.g., workplace or social gathering)
- COVID-19 outbreak/cluster
- Positive COVID-19 test within the last 14 days
- Close contact** with a person with acute respiratory illness who has travelled anywhere outside of Canada in the 14 days before their illness
- Travelled anywhere outside of Canada within the last 14 days
- Had laboratory exposure to biological material known to contain COVID-19 virus

**A close contact is someone who:
- Provided care for the individual, including healthcare workers, family members or other caregivers, or who had other similar close physical contact with the person without consistent and appropriate use of personal protective equipment, OR
- Lived with or otherwise had close prolonged contact (within 2 metres) with the person while the person was infectious, OR
- Had direct contact with infectious bodily fluids of the person (e.g., was coughed on or sneezed on) while not wearing recommended personal protective equipment.

- NO, go to #5
- YES

https://www.albertahealthservices.ca/frm-21624.pdf

5. Is patient immunosuppressed OR on Additional Precautions (Isolation) for any other indication? (e.g. MRSA, CDI, norovirus, etc.)

- NO
- YES

- Maintain Additional Precautions (Isolation)
- Consult IPC as per site process

https://www.albertahealthservices.ca/frm-21624.pdf

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AGMP

Aerosol-Generating Medical Procedure Guidance Tool

novel coronavirus (COVID-19)

This list of Aerosol-Generating Medical Procedures (AGMPs) is based on current evidence. This list is subject to an ongoing review process, and will be updated accordingly. Please continue to revisit this list, as guidance may evolve.

Use this tool to determine which procedures are considered to be aerosol-generating. Aerosol generating medical procedures (AGMP) require an N95 respirator if the patient has a suspected or confirmed acute viral respiratory infection. This includes viral respiratory pathogens such as influenza A or B or other common seasonal respiratory viruses including respiratory syncytial virus, rhinovirus, enteroviruses, adenovirus, human metapneumovirus, coronavirus, and parainfluenza virus; novel pathogens such as COVID-19, SAR-CoV, MERS-CoV, avian influenza; and for suspected or confirmed viral hemorrhagic fever. Guidance is linked within the tool.

This list of procedures was reviewed by an expert working group made up of infection prevention and control physicians, workplace health and safety physicians, infection prevention and control practitioners, epidemiologists and respiratory therapists.

Whenever possible post the AGMP in progress sign on the patient’s door for the duration of the procedure. This sign is only to be used for AGMP when the patient is also on Contact and Droplet precautions. If a patient is on a continuous AGMP this poster may be up for the duration of admission. In addition to an N95 respirator when performing an AGMP, gown, gloves and eye protection are also required. For more information about the PPE required, please see the AHS PPE guidance for Contact and Droplet Precautions.

https://www.albertahealthservices.ca/topics/Page17091.aspx

COVID-19 Diagnosis

Kristen Brown MD FRCPC
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Disclosure
• Nothing to disclose

@KBrownMD

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COVID-19 Specimen Collection

• Preferred specimen: a nasopharyngeal swab.

“The CDC recommends leaving the swab in place for several seconds to absorb secretions and then slowly removing the swab while rotating it. Your institution may also recommend rotating the swab in place several times before removing it.”


COVID-19 Specimen Collection

• Throat swab may be performed when NP swabs are unavailable

[Diagram of throat swab collection]

Interpreting COVID test results:

• Sensitivity not 100% - retest if high suspicion and first test negative
  • Clinical judgement and clinical signs and symptoms, medical imaging results, and known contact with lab confirmed cases should be considered when making decisions for patient care and staff protection
  • Another specimen type, preferably a lower respiratory tract specimen if the patient has signs/symptoms of LRTI, should be considered for repeat testing
• Dual infection possible - positive test for another pathogen does not rule out COVID-19


Other diagnostic tests

- Rapid antigen testing is less sensitive than PCR, not currently available in Alberta
- Serology for COVID-19 is not routinely available in Alberta and is not useful in the diagnosis of acute disease

Antimicrobials

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Bacterial Coinfection in COVID-19

Overall Bacterial Infection in hospitalized patients(%):

7.0 (5.6, 8.4)

By Severity

- 5.9 (4.4 to 7.4) All hospitalized patients (%)
- 16.0 (11.6 to 20.4) Critically ill patients only (%)

By Infection Category

- 4.9 (2.6 to 7.1) Co-infection (%)
- 16.0 (12.4 to 19.6) Secondary infection (%)


AHS recommendations re: Antimicrobials

- mild to moderate COVID-19: NO empiric antibiotics for CAP
- severe COVID-19 (defined by the IDSA as SpO2 <94% on room air): YES empiric antibiotics for CAP
  - Collect blood cultures for bacteria that cause pneumonia and sepsis, ideally before antimicrobial therapy.

**REASSESS at 48-72 hours**
• Treat severe illness per typical CAP:
  • Ceftriaxone 1 g (2 g if > 100 kg) IV daily x 3-5 days
    AND one of:
  • Azithromycin 500 mg IV/PO daily x 3 days
    OR
  • Doxycycline 200 mg PO then 100 mg PO BID x 3-5 days
  • If history/risk factors for MRSA add:
    • Vancomycin 25-30 mg/kg IV load (round to nearest 250mg; max 3 g) followed by 15 mg/kg
      (round to nearest 250mg; max 2 g) q 8-12h for target trough 15-20 mg/L x 3 days
    • Alternate if renal dysfunction or known prior MRSA pneumonia:
      Linezolid 600 mg IV/PO q 12h x 3 days
    • Discontinue vancomycin/linezolid if MRSA screening swab and bacterial respiratory cultures
      are negative for MRSA


• If symptoms clinically compatible with influenza (and still circulating)
  • Oseltamivir 75 mg PO bid (if normal renal function),
  • discontinue if influenza test negative

**REASSESS at 48-72 hours WITH VIRAL AND BACTERIAL LAB RESULTS**

VAP:
- Culture directed therapy is preferred; empiric therapy:
  - Piperacillin-tazobactam 4.5 g IV q6h x 3-5 days
  - OR
  - Meropenem 500 mg IV q6h x 3-5 days
  - PLUS
  - if not documented MRSA negative, vancomycin or linezolid
  (Calgary ICU prevalence MRSA ~16%, 2018 antibiogram)
    - Discontinue vancomycin or linezolid if MRSA screening swab and bacterial respiratory cultures
      are negative for MRSA.
- Worsening pneumonia may also be due to inflammation so prolonged
  antibiotic therapy beyond 3-5 days in the absence of positive cultures is not
  recommended.

Waterer GW, Cruz P, Knight SL, Brown J. Management of Adults With Hospital-acquired and Ventilator-associated Pneumonia: 2016 Clinical Practice Guidelines by the Infectious Diseases

Prognosis in Hospitalized Patient

Kerri Johannson MD FRCPC MPH
Clinical Associate Professor in the Departments of Medicine (section of Respiratory Medicine), and Community Health Sciences University of Calgary

Disclosure
Honoraria, other rewards: Boehringer-Ingelheim, Hoffman La Roche Ltd.
Speakers’ Bureaux, advisory boards: Boehringer-Ingelheim, Hoffman La Roche Ltd. Theravance, Blade Therapeutics
Grants, clinical trials: Chest Foundation, UCB Biopharma, University of Calgary CSM
Patents, royalties: None
Investments in health organizations: None
Other influential affiliations: Medical Advisor, Three Lakes Foundation

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Learning Objectives

- Know and be able to apply clinical prediction rules for hospitalized COVID19 patients
- Recognize patients at highest risk for severe COVID19

Risk Prediction Models

- Clinical tools
- Correctly predict outcomes
- Developed in specific populations
- Validated
- Applied

- Examples: CURB65, PESI, Wells
4C Mortality Score

- 35,346 adults hospitalized for COVID-19 in UK
- Data collected on admission
- Primary outcome = in-hospital mortality
- Overall 32.2% mortality
- 8 variables predictive
- Validated in prospective cohort of 22,361

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FACTS & FIGURES

Interpretation:

<table>
<thead>
<tr>
<th>Ac Mortality Score</th>
<th>Risk group</th>
<th>In-hospital mortality</th>
</tr>
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<tbody>
<tr>
<td>0-3</td>
<td>Low</td>
<td>1.2-1.7%</td>
</tr>
<tr>
<td>4-8</td>
<td>Intermediate</td>
<td>9.1-9.9%</td>
</tr>
<tr>
<td>9-24</td>
<td>High</td>
<td>31.4-34.9%</td>
</tr>
<tr>
<td>≥25</td>
<td>Very high</td>
<td>61.5-66.2%</td>
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https://www.mdcalc.com/4c-mortality-score-covid-19#evidence

Knight et al. BMJ 2020

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NEWS2 score

<table>
<thead>
<tr>
<th>Respiratory rate, breaths per minute</th>
<th>≤8</th>
<th>&gt;8</th>
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<tbody>
<tr>
<td>Score 0-2</td>
<td>≤1</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Score 3-11</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Score 12-20</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Score 21-24</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Score ≥25</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hypoxemic respiratory failure</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score 0-2</td>
<td>≤1</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Score 3-11</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Score 12-20</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Score 21-24</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Score ≥25</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Room air or supplemental O₂</th>
<th>Supplemental O₂</th>
<th>Room air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score 0-2</td>
<td>≤1</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Score 3-11</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Score 12-20</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Score 21-24</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Score ≥25</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature</th>
<th>≤37.5°C (99°F)</th>
<th>&gt;37.5°C (99.5°F)</th>
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</thead>
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<tr>
<td>Score 0-2</td>
<td>≤1</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Score 3-11</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Score 12-20</td>
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<td>1</td>
</tr>
<tr>
<td>Score 21-24</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Score ≥25</td>
<td>3</td>
<td>4</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Systolic BP, mm Hg</th>
<th>≤90</th>
<th>&gt;90</th>
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<tbody>
<tr>
<td>Score 0-2</td>
<td>≤1</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Score 3-11</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Score 12-20</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Score 21-24</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Score ≥25</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

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**Highest Risk Populations for severe COVID19**

**Patient factors**
- Older age
- Male > Female
- Smokers
- Obesity
- Comorbidities

**Comorbidities**
- Coronary Artery Disease
- Diabetes
- Active Cancer
- CKD/Dialysis
- Pulmonary Fibrosis


Immunosuppression

- Prednisone >10mg/day

Ongoing treatment of stable patients in the absence of infection or SARS-CoV-2 exposure:
- Hydroxychloroquine or chloroquine (HCQ/CQ), sulfasalazine (SSZ), methotrexate (MTX), leflunomide (LEF), immunosuppressants (e.g., tacrolimus, cyclosporine, mycophenolate mofetil, azathioprine), biologics, Janus kinase (JAK) inhibitors and non-steroidal anti-inflammatory drugs (NSAIDs) may be continued (this includes patients with giant cell arteritis with an indication, in whom IL-6 inhibitors should be continued, if available) (M/H).

Rheumatic disease treatment in the context of documented or presumptive COVID-19 infection:
- Regardless of COVID-19 severity, anti-malarial therapies (HCQ/CQ) may be continued, but SSZ, MTX, LEF, immunosuppressants, non-IL-6 biologics, and JAK inhibitors should be stopped or held (M/H).


COVID-19 Therapeutics
What works, what doesn’t and what might!

Alain Tremblay MDCM FRCPC FCCP
Professor of Medicine
Division of Respiratory Medicine, Cumming School of Medicine - University of Calgary

Disclosure
- Any direct financial payments, gifts, in-kind compensation or honoraria: Olympus Respiratory America
- Any funded grants or clinical trials: CATCO trial (local PI)
Learning Objectives

• Review evidence behind current COVID-19 treatments available in Canada
• Understand which drugs have been shown ineffective in treating COVID-19
• Understand the process and importance of clinical trials in management of patients with COVID-19

COVID-19 Therapeutics

• What works
  • Steroids
• What is approved in Canada (and might work!)
  • Remdesivir
  • bamlanivimab
• What doesn’t work
• Clinical trials
  • CATCO/WHO Solidarity
  • Convalescent plasma
Steroids – The Recovery trial (UK)

- Open label inpatient
  - 2104 dexamethasone
  - 4321 usual care
- 28 day mortality
  - age-adjusted rate ratio 0.83, (0.75-0.93, p<0.001)
- NNT for 1 death avoided
  - Ventilated = 8
  - Oxygen = 24
Steroids – JAMA “prospective” meta-analysis of RCTs

<table>
<thead>
<tr>
<th>Drug and trial</th>
<th>ClinicalTrials.gov identifier</th>
<th>Initial dose and administration</th>
<th>No. of deaths/total No. of patients</th>
<th>Odds ratio (95% CI)</th>
<th>Favors steroids</th>
<th>Favors no steroids</th>
<th>Weight, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEXA-COVID 19</td>
<td>NCT04325061</td>
<td>High: 20 mg/d intravenously</td>
<td>2/7 2/12</td>
<td>2.00 (1.21-3.36)</td>
<td>1.14 (0.60-2.17)</td>
<td>1.02 (0.50-2.14)</td>
<td>0.92</td>
</tr>
<tr>
<td>GoDEX</td>
<td>NCT04327401</td>
<td>High: 20 mg/d intravenously</td>
<td>69/128 76/128</td>
<td>0.80 (0.49-1.38)</td>
<td>1.14 (0.60-2.17)</td>
<td>1.02 (0.50-2.14)</td>
<td>18.69</td>
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<tr>
<td>RECOVERY</td>
<td>NCT04381936</td>
<td>Low: 6 mg/d orally or intravenously</td>
<td>95/324 283/683</td>
<td>0.59 (0.44-0.78)</td>
<td>1.14 (0.60-2.17)</td>
<td>1.02 (0.50-2.14)</td>
<td>57.00</td>
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<tr>
<td>Subgroup fixed effect</td>
<td></td>
<td>166/459 361/823</td>
<td>0.64 (0.39-1.05)</td>
<td>1.14 (0.60-2.17)</td>
<td>1.02 (0.50-2.14)</td>
<td>76.60</td>
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<tr>
<td>Hydrocortisone</td>
<td>CAPE COVID</td>
<td>Low: 200 mg/d intravenously</td>
<td>11/75 20/73</td>
<td>0.46 (0.20-1.04)</td>
<td>1.14 (0.60-2.17)</td>
<td>1.02 (0.50-2.14)</td>
<td>6.80</td>
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<tr>
<td>COVID STEROID</td>
<td>NCT04346305</td>
<td>Low: 200 mg/d intravenously</td>
<td>6/15 2/14</td>
<td>4.00 (0.63-24.66)</td>
<td>1.14 (0.60-2.17)</td>
<td>1.02 (0.50-2.14)</td>
<td>1.39</td>
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<td>REMAP-CAP</td>
<td>NCT02735707</td>
<td>Low: 50 mg every 6 h intravenously</td>
<td>26/115 20/92</td>
<td>0.71 (0.38-1.33)</td>
<td>1.14 (0.60-2.17)</td>
<td>1.02 (0.50-2.14)</td>
<td>11.75</td>
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<td>Subgroup fixed effect</td>
<td>43/185 51/179</td>
<td>0.69 (0.43-1.12)</td>
<td>1.14 (0.60-2.17)</td>
<td>1.02 (0.50-2.14)</td>
<td>19.94</td>
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<tr>
<td>Methylprednisolone</td>
<td>Steroids-SARI</td>
<td>High: 40 mg every 12 h intravenously</td>
<td>13/24 13/23</td>
<td>0.91 (0.29-2.87)</td>
<td>1.14 (0.60-2.17)</td>
<td>1.02 (0.50-2.14)</td>
<td>3.46</td>
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<tr>
<td></td>
<td>Overall (fixed effect)</td>
<td>222/878 425/1025</td>
<td>0.66 (0.53-0.82)</td>
<td>1.14 (0.60-2.17)</td>
<td>1.02 (0.50-2.14)</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overall (random effects)</td>
<td>222/678 425/1025</td>
<td>0.70 (0.48-1.01)</td>
<td>1.14 (0.60-2.17)</td>
<td>1.02 (0.50-2.14)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

WHO Guideline BMJ 2020;370:m3379

Corticosteroids

**Suggested regimen**

- Dexamethasone: 6 mg, one or intravenously, daily for 7-10 days

**Acceptable alternative regimens**

- Hydrocortisone: 10 mg, intravenous, every 8 hours, for 7-10 days
- Methylprednisolone: 10 mg, intravenous, every 8 hours, for 7-10 days
- Prednisone: 10 mg, one daily for 7-10 days

**Recommendation 1**

- Usual supportive care
  - Strong
  - Or
  - Corticosteroids
  - Weak
  - Strong

**Patients with severe and critical covid-19**

We recommend corticosteroids
Remdesivir (Veklury)

- Inhibitor of viral RNA-dependent, RNA polymerase
- Previous use in SARS, MERS, Ebola
- In-vitro and in-vivo effect against COVID-19

ACTT-1 Trial – RCT Remdesivir vs. Placebo

- 1,062 inpatients randomized 1:1
  - 5.6% more high flow/ventilated/ECMO in placebo
- Time to recovery (median)
  - 10 days vs. 15 days
  - rate ratio for recovery 1.29 (1.12-1.49 P<0.001)
- D29 mortality
  - 11.4% vs 15.2%
  - HR 0.73; (0.52 to 1.03)
ACTT-1 Trial – RCT Remdesivir vs. Placebo

- D29 mortality
  - Subgroups
  - Post-hoc, no adjustment for multiple comparisons and low event #s

### Table 2. Outcomes Overall and According to Score on the Ordinal Scale in the Intention-to-Treat Population.

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>Mortality over entire study period</th>
<th>Hazard ratio (95% CI)</th>
<th>Kaplan-Meier estimate of mortality by day 29 (%) (95% CI)</th>
<th>Ordinal score at Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.30 (0.14-0.64)</td>
<td>0.30 (0.14-0.64)</td>
<td>0.30 (0.14-0.64)</td>
<td>0.30 (0.14-0.64)</td>
<td>0.30 (0.14-0.64)</td>
</tr>
</tbody>
</table>


5, hospitalized, requiring any supplemental oxygen (low flow)

Solidarity trial – Remdesivir data (pre-print)

- WHO collaborative trial (CATCO)
- Interim analysis including
  - 2743 Remdesivir and 2708 SOC
- Mortality as 1ry endpoint
- Remdesivir RR=0.95 (0.81-1.11, p=0.50; 301/2743 active vs 303/2708 control)
- Cannot exclude harm in ventilated patients
  - RR 1.2 (0.8-1.8)

medRxiv preprint doi: https://doi.org/10.1101/2020.10.15.20209817

This material is for individual use only and not to be used for further dissemination.
Deaths reported / Patients randomized in ITT analysis (28-day risk, K-4%) | Remdesivir | Control | Remdesivir deaths: Observed-Expected (O-E) | Var (O-E) | Ratio of death rates (RR) & 95% CI (or 95% CI, for total)

| Trial name, and initial respiratory support | | | | | |
| Solidity: no O2 | 11/461 (2.0) | 13/464 (2.1) | -0.6 | 6.0 | 0.90 [0.31-2.58] |
| Solidity: low-flow O2 | 192/1528 (12.2) | 219/1911 (11.8) | -16.9 | 101.8 | 0.85 [0.66-1.09] |
| Solidity ventilation | 98/254 (38.0) | 71/233 (37.8) | 7.6 | 40.8 | 1.29 [0.83-1.90] |
| ACTT: no O2 | 3/5 (4.1) | 3/63 (4.8) | -0.3 | 1.5 | 0.82 [0.10-6.61] |
| ACTT: low-flow O2 | 9/232 (4.0) | 25/203 (12.7) | -8.0 | 6.7 | 0.30 [0.11-0.81] |
| ACTT: hi-flow O2 or non-invasive ventilation | 19/95 (21.2) | 20/98 (20.4) | 0.2 | 9.6 | 1.02 [0.44-2.34] |
| ACTT: invasive ventilation | 28/131 (21.9) | 29/154 (19.3) | 1.7 | 14.3 | 1.13 [0.57-2.22] |
| Wuhan: low-flow O2 | 11/129 (8.5) | 7/68 (10.3) | -0.8 | 3.7 | 0.81 [0.21-3.07] |
| Wuhan: hi-flow O2 or ventilation | 11/129 (7.8) | 3/10 (30.0) | 0.6 | 1.8 | 1.40 [0.23-8.95] |
| SIMPLE: no O2 | 5/84 (1.3) | 4/200 (2.0) | -0.9 | 2.0 | 0.64 [0.10-3.94] |

Subtotals

Total 387/3818 (10.1) 408/3782 (10.8) -17.5 188.2

* Log-rank O-E for Solidity, O-E from 2x2 tables for Wuhan and SIMPLE, and w logHR for ACTT data (with weight w being the inverse of the variance of logHR, which is got from the HR's CI). RR is got by taking logRR to be (O-E) with normal variance 1/V. Subtotals of total of (O-E) and of (O-E) and O-E variance-weighted averages of the logRR values.

WHO Guideline BMJ 2020;370:m3379

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Remdesivir (Veklury)

- Health Canada approved “with conditions” – July 2020
  - Age ≥12, wt ≥40kg, not pregnant
  - severe COVID-19 with pneumonia / require oxygen
  - CCl >30, ALT <5x ULN
- CADTH review (pre-Solidarity) lukewarm
- Ongoing clinical trials (CATCO)
  - Upcoming analysis update
- AHS supply

Bamlanivimab (aka LY-CoV555 and LY3819253)

- Neutralizing monoclonal antibody targeting SARS-CoV-2 spike protein
  - AbCellera Biologics / Eli Lilly
- Recent FDA and Health Canada approval (with conditions)
- Nov 24th:

Eli Lilly Canada announced today that Lilly and the Government of Canada have signed an agreement for the supply of bamlanivimab to Canada. Lilly will supply Canada with an initial quantity of 26,000 doses of bamlanivimab over the three-month period between December 2020 and February 2021, for US$32.5 million.
SARS-CoV-2 Neutralizing Antibody LY-CoV555 in Outpatients with Covid-19

Peter Chen, M.D., Ajay Ninula, M.D., Ph.D., Barry Heller, M.D., Robert L. Gottlieb, M.D., Ph.D., Joseph Boscia, M.D., Jason Morris, M.D., Gregory Huhn, M.D., M.P.H.T.M., Jose Cordona, M.D., Bharat Mocherla, M.D., Valentina Stosor, M.D., Imad Shawa, M.D., Andrew C. Adams, Ph.D., et al., for the BLAZE-1 Investigators

- 467 outpatients randomized banlanivimab or placebo (single dose)
- 1ry outcome viral load D11

<table>
<thead>
<tr>
<th>Variable</th>
<th>LY-CoV555</th>
<th>Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>Incidence</td>
<td></td>
</tr>
<tr>
<td>Mean change from baseline in viral load at day 11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>700 mg, –3.67</td>
<td>9/143</td>
<td>6.3</td>
</tr>
<tr>
<td>2800 mg, –4.00</td>
<td>2800 mg, –3.38</td>
<td>700 mg, 1/101</td>
</tr>
<tr>
<td>Pooled doses, –3.70</td>
<td>1.6</td>
<td></td>
</tr>
</tbody>
</table>

Hydroxychloroquine - inpatients

Solidarity: https://doi.org/10.1101/2020.10.15.20209817
Hydroxychloroquine - outpatients


Post exposure prophylaxis

Lopinavir / Ritonavir

Interferon B1a

Solidarity: https://doi.org/10.1101/2020.10.15.20209817

This material is for individual use only and not to be used for further dissemination.
Tocilizumab – anti IL6 therapy

243 patients COVID, 2 of fever, infiltrates, hypoxemia. 2:1 tocilizumab or placebo

Canadian Treatment of COVID-19 (CATCO) WHO Solidarity

- Adaptive open label randomized control trial
  - HCQ / Kaletra / Interferon: Dropped
  - Remdesivir active
  - SOC arm (can include dexamethasone)
  - Additional arms forthcoming (monoclonal Ab’s)
- In hospital mortality as primary endpoint
- CIHR funds, UofC, Calgary Health Trust
- Co-enrollment in other trials allowed / encouraged
- 14,200 patients randomized internationally

DOI: 10.1056/NEJMoa2028836
Canadian Treatment of COVID-19 (CATCO) WHO Solidarity

- Edmonton and Calgary sites
- Any inpatient with COVID illness
  - Current focus on hypoxemic / non-ventilated patient for Remdesivir data
- In Calgary, page 01815 day time 7 days / week
- Single contact for co-enrollment in all active therapeutic studies in Calgary
- Daily screen of new patients through AHS dashboard
- Need permission to contact and highlight importance of trials

TOTAL RECRUITMENT ACROSS CANADA
605 as of November 22

53
British Columbia

165
Alberta

249
Ontario

128
Quebec

10
Manitoba
CONCOR1 – Convalescent plasma

- 2:1 randomization to 1 unit
- Hypoxemic / non-ventilated
- Less 12 days of symptoms
- 450 patients randomized to date (1,200)
- Donations!
  

Other trials

- RAPID COVID COAG (YYC)
  - DVT prophylaxis vs. full dose anticoagulation
- Awake prone trials
  - CORONA
  - COVI-PRONE

This material is for individual use only and not to be used for further dissemination.
Importance of clinical trials in COVID-19

• High quality evidence required to understand which treatments work for our patients, and which do not
• Most of the trials pragmatic, meant to incorporate into clinical care, offers therapeutic options
• Early initiation of treatments likely of benefit
• **Ask your patient / surrogate if they agree to be contacted**
• Call trial team on admission / confirmation of COVID-19!
• In Calgary page 01815 daytime 7 days per week to facilitate entry into all therapeutic trials

Issues for Older Adults Admitted with COVID-19

**Zahra Goodarzi MD FRCPC MSc**
Assistant Professor, Division of Geriatric Medicine
Department of Medicine and Community Health Sciences
Cumming School of Medicine
University of Calgary, Hotchkiss Brain Institute, O’Brien Institute of Public Health

**Disclosure**
- Grants, clinical trials: CIHR, CFHI, MSI Foundation, O’Brien Institute, Department of Medicine (all independent and peer-reviewed)
Delirium in Older Patients With COVID-19 Presenting to the Emergency Department

Delirium symptoms present

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impaired consciousness</td>
<td>122 (54)</td>
</tr>
<tr>
<td>Disorientation</td>
<td>96 (43)</td>
</tr>
<tr>
<td>Inattention</td>
<td>71 (31)</td>
</tr>
<tr>
<td>Disorganized thinking</td>
<td>59 (26)</td>
</tr>
<tr>
<td>Hypoactive delirium</td>
<td>45 (20)</td>
</tr>
<tr>
<td>Agitation or hyperactive delirium</td>
<td>35 (16)</td>
</tr>
<tr>
<td>Memory loss</td>
<td>18 (8)</td>
</tr>
<tr>
<td>Hallucinations</td>
<td>7 (3)</td>
</tr>
</tbody>
</table>

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Specific Causes in COVID

<table>
<thead>
<tr>
<th>Category</th>
<th>Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drugs</td>
<td>Dexamethasone</td>
</tr>
<tr>
<td></td>
<td>Trial Medications – not clear</td>
</tr>
<tr>
<td>Infection</td>
<td>COVID, Pneumonia</td>
</tr>
<tr>
<td>Metabolic</td>
<td>Volume</td>
</tr>
<tr>
<td></td>
<td>Renal: AKI, Electrolyte Abnormalities</td>
</tr>
<tr>
<td></td>
<td>Hepatic Injury</td>
</tr>
<tr>
<td>Structural</td>
<td>CVS/RESP: MI, CHF, Arrhythmia, COPDE, VTE</td>
</tr>
<tr>
<td></td>
<td>CNS: CVA</td>
</tr>
<tr>
<td>Situational</td>
<td>Pain, Restraints, Catheters, Environment</td>
</tr>
</tbody>
</table>

- Neumann-Podczaska Aging and Disease 2020; Lithander British Geriatric Soc 2020

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# Common Causes

## What to look for?

### Drugs

- Prescription or OTC Medications
- Medication Withdrawal

Review medication reconciliation: What is new? What is missing?

### Infection

- ILI, Pneumonia, UTI*, Biliary, Skin, Joint, CNS, GI ...
- *Do not order UCx empirically

Review Vitals, Current Labs, New symptoms on ROS?

### Metabolic

- Volume
- Endocrine: Thyroid, Calcium, Glucose
- Renal: Electrolyte Issues, AKI, Urea
- Liver/Biliary/Pancreatic

Review Vitals, Current Labs, New symptoms on ROS?

Depending on exam, consider further labs

### Structural

- GI: Constipation
- GU: Retention
- CVS/RESP: MI, CHF, Arrythmia, COPD, VTE, ARDS
- CNS: CVA, Trauma, Seizure
- *Do not order a CT Head empirically

Review charting for Ins/Outs, Bowel Movements, Vitals, Labs.

Depending on exam and patient wishes, consider imaging.

### Situational

- Pain, Restraints, Catheters, Environment,

Always address pain, always reduce restraints

---

## From Dr. Helmle:

If BG > 10 mmol/L use basal bolus insulin therapy with 0.5 units/kg starting dose. Check for ketones if new hyperglycemia with BG > 14 mmol/L.
COVID 19: Preventing/Managing Delirium & Dementia Responsive Behaviors

APPROACH TO LEAST RESTRAINT USE when Isolation is Required

We can anticipate in this difficult time the increase in requests/considerations for restraint use in management of responsive behaviours with our cognitively impaired patients.

It is important to continue to use a non-pharmacological approach as first line to prevent and manage responsive behaviours.

As fewer resources are available (family, volunteers, personal items), attention to unmet care needs is essential to avoid the development/escalation of responsive behaviours.


• The evidence for use of Chemical Restraints (medications) is limited and may actually cause/worsen delirium.
• Before considering Chemical Restraints, review current medication list for drugs that cause confusion (i.e. psychoactive drugs; anticholinergic burden)
• If significant aggression develops that puts the patient or others at risk of harm, consider reduced doses of antipsychotics:
  - Risperidone < 1mg PO
  - Olanzapine 2.5 -5mg PO
  - Quetiapine 12.5 -25mg PO
  - Olanzapine 2.5-5mg IM
  - Haloperidol 0.5 -2mg IM

Goals of Care

Visit the DOM hospital care website:
https://www.departmentofmedicine.com/meoc-hospital-care/

COVID conversations and Goals of Care
- Planning Ahead with Vulnerable Patients During COVID-19: A Conversation Tool for Clinicians
- Streamlined Goals of Care Designation Decision Making for COVID-19
- Information sheet to help patients prepare for GCDs
- Video: 2020 Serious Illness Conversation with COVID-19 Patients
- Conversations Matter Resources:
  - Guidebook
  - Healthcare provider education module and patient resources
- Virtual Completion of Goals of Care Designation (GCD)
- Basic Communication Board
- Patient Provider Communication Tools & Resources
- Tips for Compassionate Communication with Deteriorating Patients

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**Streamlined Goals of Care Designation decision-making for COVID-19**

**STEP 1 – Any health care professional**
1. Ask your patient if they already have a Personal Directive, Goals of Care Designation Order ("R, M, C") or Green Sleeve – They may have the answers you need

**PERSONAL DIRECTIVE**
- **AGENT (Alternate Decision Maker if patient loses capacity)**
- Do you have current contact info?

**GOALS OF CARE DESIGNATION ORDER**
- Does it align with COVID 19 treatments that are clinically appropriate and available, based on current resources?

**ACP GCD TRACKING RECORD**
- Tells you: What has already been discussed. It may have decision-making guidance you need

**YES – Read them**

**NO**

**STEP 2 – Any health care professional**
2. Discuss goals of care based on information you have
   - Document on the ACP GCD Tracking Record – This helps next care provider

**STEP 3 – MD or NP Only**
3. Determine/Confirm Goals of Care Designation Order
   - Confirm or write new GCD order that is most aligned with person’s values and what is clinically appropriate/available.
   - Put all documents in green sleeve.


Adapted March 21, 2020 for AHS from Vital Talk: Version March 20, 2020 which is also available in French, German, and Spanish.

**What’s inside?**
- **Screening** When someone is worried they might be infected
- **Preferencing** When someone may want to opt out of hospitalization
- **Triaging** When you’re deciding where a patient should go
- **Admitting** When your patient needs the hospital, or the ICU
- **Counseling** When coping needs a boost, or emotions are running high
- **Deciding** When things aren’t going well, goals of care, code status
- **Resourcing** When limitations force you to choose, and even ration
- **Notifying** When you are telling someone over the phone
- **Anticipating** When you’re worrying about what might happen
- **Grieving** When you’ve lost someone
The Deteriorating COVID Patient

Selena Au MD FRCPC MSc
Clinical Associate Professor Clinical Care Medicine Department University of Calgary; Intensivist Rockyview General, South Health Campus and Peter Lougheed Centre

Disclosure
- Nothing to disclose
Learning Objectives

1) Review detection of a deteriorating COVID patient and interplay between medical ward and ICU/Outreach services for consultation and admission.
2) Describe what oxygenation therapeutics are available prior to intubation.
3) Give a differential diagnosis in the setting of deterioration and list first investigative and treatment steps.

Alberta ICU Admissions and Outcomes

<table>
<thead>
<tr>
<th></th>
<th>March 18-Nov 16</th>
<th>March 18-Aug 15</th>
<th>Aug 15-Nov 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICU discharge</td>
<td>253</td>
<td>126</td>
<td>125</td>
</tr>
<tr>
<td>Age (median)</td>
<td>61</td>
<td>63.5</td>
<td>59</td>
</tr>
<tr>
<td>APACHE III (mean)</td>
<td>61</td>
<td>66</td>
<td>55</td>
</tr>
<tr>
<td>SOFA (median)</td>
<td>6</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Ventilation Invasion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-invasive</td>
<td>65%</td>
<td>71%</td>
<td>58%</td>
</tr>
<tr>
<td></td>
<td>7.1%</td>
<td>3.1%</td>
<td>11.2%</td>
</tr>
<tr>
<td>Mortality ICU Hospital</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19%</td>
<td>19%</td>
<td>18.4%</td>
</tr>
<tr>
<td></td>
<td>22.5%</td>
<td>20.6%</td>
<td>24.0%</td>
</tr>
<tr>
<td>ICU LOS (median) Survivors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.7 days 6.7</td>
<td>9.0 days 8.7</td>
<td>6.5 days 5.5</td>
</tr>
<tr>
<td></td>
<td>11.4</td>
<td>9.8</td>
<td>11.5</td>
</tr>
<tr>
<td>ICU LOS (median) Non-survivors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

My take away from this:
- Mortality experienced locally is lower than international reports
- We stopped intubating early
- Criteria for admission changes with strain

Data courtesy of Dr. Dan Zuege
When to Refer?

- The UK National Early Warning Score 2 (NEWS2) was developed as a track-and-trigger system to ensure a nationally uniform, evidence-based approach to early identification of the deteriorating patient.
- NEWS2 Score >= 7, any new score of 3
- Weakness is in O2 for triaging.
- Consider 2 different COVID patients:
  - Patient A is on 1L NP SpO2 92%, RR 20, HR 100 = 5
  - Patient B is 15L HFNP 94%, with RR of 20, HR of 100 beats per minute. = 4

When to Refer?... Vs When to Admit?

- ↑ O2 > 3LPM/3hrs or > 6LPM
- Other change in clinical status

>5L
>0.4
FiO2

>10L O2 doesn’t exclude ward proning but should have ICU involvement

* Why COVID-19 Silent Hypoxemia Is Baffling to Physicians

- Martin J. Tobin, Franco Lashi, and Amal Jubran

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What can I do in a regular room? (Non-Negative Pressure)

1. Dry oxygen at flow rates less than 15 L/min is not considered AGMP
2. Dry oxygen through a Venturi at >15 L/min is considered AGMP
3. Oxygen delivery using heated humidified high flow oxygen (HHHFO) devices (e.g., Optiflow, Airvo) is considered AGMP.
4. Dry oxygen delivered at flow rates greater than 15 L/min by using multiple oxygen delivery devices simultaneously (e.g., 15 L/min nasal prongs and 15 L/min non-rebreather mask) may be AGMP. This is currently being reviewed by the AGMP working group.

Any aerosol generating medical procedure requires a N95 mask/eye protection.

Based on Nov 23 2020 Memo

Dhont et al. Respiratory Research (2020) 21:198
DDx of Deterioration

**COVID disease progression**

**ARDS**

**Viral Sepsis = Cytokine storm**
- Life threatening organ dysfunction due to a dysregulated host response to infection
- Co-existing hyperinflammation and immunosuppression
- Inability to obtain viral clearance
- Endothelial damage and coagulopathy

Febrile and “septic looking” pt on dexamethasone

**Investigations:**
- CXR (portable)
- Labs
  - CBC, creat, urea, lyes, CRP, ferritin, LDH, ALT, AST, Tbili, INR, PTT, D-dimer, fibrinogen, type & screen, troponin T, BNP, cultures

**Plan**
- Continue steroids
- Gentle fluids?
  - Consider broadening antibiotics (Advancing from ceftriaxone/azithromycin to pip-tazo?)

DDx of Deterioration

**Complication of admission**
- Superinfection (e.g. HAP)
- Delirium / stroke
- Acute PE
- Acute MI/stress cardiomyopathy
- AKI (dry vs microthrombosis?)

**Comorbidity exacerbation**
- COPD or Asthma exacerbation
- Congestive heart failure

**Investigations**
- ABG, ECG, Echo, CTPE?
- *Hypercarbia is never good

**Plan**
- Heparin
  - Specialty Consult (if treatment considerations)
Goals of Care Conversations

Surge Capacity Plan
Critical Care Triage during Pandemic or Disaster in Alberta

Stage 3 – Usual volumes are exceeded
**All feasible strategies must** be implemented to attempt to meet demand = Any space where MV possible is used

The first step of any triage protocol requires an up-to-date GOC designation.

---

Palliative care for the patient with covid-19

**Tara Lohmann MD FRCPC**
Clinical Assistant Professor, Division of Respirology Department of Medicine, University of Calgary

**Disclosure**
- Nothing to disclose
Objectives

- Be aware of the common palliative care considerations for patients admitted with covid-19
- Know how to prescribe opioids for dyspnea in patients with covid-19
- Identify resources for palliative and end-of-life care
Symptom Management for Adult Patients with COVID-19
Receiving End-of-Life Supportive Care Outside of ICU

Before making these recommendations, please consult the World Health Organization’s (WHO) clinical management guidelines for COVID-19, which can be found [here](https://www.who.int/publications/i/item/2020.11.24). These guidelines are updated regularly, so it is important to review them before making clinical decisions.

**OPG2S (for opioid-naive)**

- **Patient NOT already taking opioids (‘opioid-naive’)**
  - Begin at low end of range for frail elderly
  - Start with PRN but low threshold to advance to q4h (or q8h for eGFR <30) scheduled dosing

**Patient already taking opioids**

- Continue with previous opioid
- Consider increasing by 25% OR
- Morphine (avoid in renal failure)
  - 2.5 or 5mg PO OR 1.25 or 2.5mg subcut/IV q1h pm OR
  - Hydromorphone
    - 0.5 or 1mg PO OR 0.25 or 0.5mg subcut/IV q1h pm
  - Titrate up as needed:
    - If >4 pm doses in 24h, consider scheduled dosing at q4h (or q8h for frail elderly or eGFR <30)

**Severe Dyspnea** *(In addition to opioids above)*

- Midazolam 2 up to 5mg subcut/IV q30min pm
- AND consider palliative sedation (see Palliative Sedation Quick Tips)

*Consider palliative care consultation

While palliative sedation may be considered for refractory dyspnea, pall med consultation is highly recommended.

Dyspnea management

This material is for individual use only and not to be used for further dissemination.
Palliative care in covid-19: Take home points

- Deteriorations/Death can occur suddenly in patients with covid-19
- Timely conversations are crucial
- Consider pre-emptive prescribing for symptom control
  - Dyspnea, cough, fatigue, agitation, delirium\(^1\)
- Do not hesitate to contact your local palliative care team for advice/support


Resources

- [https://www.albertahealthservices.ca/assets/info/peolc/if-peolc-before-home-death-checklist.pdf](https://www.albertahealthservices.ca/assets/info/peolc/if-peolc-before-home-death-checklist.pdf)
- [https://www.albertahealthservices.ca/info/Page14559.aspx](https://www.albertahealthservices.ca/info/Page14559.aspx)
Putting It All Together

Kelly Burak MD MSc FRCPC
Professor and Associate Dean, Continuing Medical Education and Professional Development, Cumming School of Medicine, University of Calgary

Disclosure
• Any direct financial payments, gifts, in-kind compensation or honoraria: Employee, University of Calgary

Putting it All Together
DoM / PLP Infographic

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Associate Dean, Continuing Medical Education & Professional Development
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Cumming School of Medicine
University of Calgary
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Daily MD Assessment

Consider the following:

1. COVID Status
   - Confirmed
   - Probable
   - Suspect
   - All COVID+ patients are eligible for trial. Get verbal consent to be contacted.

   PAGER: 01815

2. Patient Isolation
   - Proper PPE protocols
   - To discontinued isolation, follow SCM order set

3. Mobility
   - Encourage daily

4. Labs
   - Review daily and order as indicated

5. Goals of Care
   - Reassess and update

6. Prognosis

7. Communication
   - Patient
   - Care partner

Additional Resources from DoM

Is my patient eligible for a clinical trial?

YES!

https://cumming.ucalgary.ca/cme/courses/PPE

Photo credit: Plusby.com

https://commons.wikimedia.org/wiki/File:Motorola_Pager_LX2_plus.jpg
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Department of Medicine

https://www.departmentofmedicine.com/meoc-hospital-care/

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https://choosingwiselycanada.org/perspective/choosing-wisely-canada-launched/

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   4C Mortality Score

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   - Patient
   - Care partner

   Additional Resources from DoM

https://www.albertahealthservices.ca/topics/Page16947.aspx?type=advance%20care%20planning#resources

Department of Medicine

Additional Resources from DoM


Respiratory rate, breaths/min
<20 +0 20-29 +1 ≥30 +2

Peripheral oxygen saturation on room air
≥92% +0 <92% +2

Glasgow Coma Scale
15 +0 ≥15 +2

Urea
≥7 mmol/L (≥2 mg/dL) +0
>7 to ≤14 mmol/L (≥2 to ≤4 mg/dL) +1
>14 mmol/L (≥4 mg/dL) +2

C-reactive protein
<50 mg/dL (≤500 mg/L) +0
50-99 mg/dL (500-990 mg/L) +1
≥100 mg/dL (≥1000 mg/L) +2


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6. Prognosis
   - 4C Mortality Score

7. Communication
   - Patient
   - Core partner

Additional Resources from DoM

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4C Mortality Score

3 points

Low risk

1.2 - 1.7 %

In-hospital mortality

Next Steps

---

FACTS & FIGURES

Interpretation:

<table>
<thead>
<tr>
<th>4C Mortality Score</th>
<th>Risk group</th>
<th>In-hospital mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>Low</td>
<td>1.2 - 1.7 %</td>
</tr>
<tr>
<td>4-8</td>
<td>Intermediate</td>
<td>9.1 - 9.9 %</td>
</tr>
<tr>
<td>9-14</td>
<td>High</td>
<td>31.4 - 34.9 %</td>
</tr>
<tr>
<td>≥15</td>
<td>Very high</td>
<td>61.5 - 66.2 %</td>
</tr>
</tbody>
</table>

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LITERATURE

ORIGINAL/PRIMARY REFERENCE


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“I was in the hospital before for a non-COVID medical issue for more than 2 weeks. This time I was there for 2 weeks again but it was different situation because of COVID. There were a lot of psychological differences.

During this stay you see very few people and when you see the hospital staff they are always in full gear and it gives you a bit of anxiety. It’s one of the differences. Plus you’re isolated.”

Quote courtesy of Dr. Katie Wiltshire

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   Patient
   Care partner

   Additional Resources from DoM

Daily Vital Signs: Requiring Oxygen?

No

Other Barriers to Discharge?

No

Consider Discharge

Daily MD Assessment
Consider the following:
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Daily Vital Signs: Requiring Oxygen?

No

Other Barriers to Discharge?

No

Consider Discharge

Critically Appraised Topic (CAT)
Which pharmacologic therapy improves 1-month mortality in medical in-patients requiring supplemental oxygen but not mechanical ventilation?
- Dexamethasone
- Remdesivir

@kwburak November 26, 2020

https://twitter.com/kwburak/status/1330245177374613504
Daily MD Assessment

Consider the following:
1. **COVID Status**
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   - Suspect
   
   *All COVID+ patients are eligible for trial. Get verbal consent to be contacted.*
   
   PAGER: 91915

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   - Proper PPE protocols
   
   To discontinue isolation, follow SCM order set

3. **Mobility**
   - Encourage daily

4. **Labs**
   - Review daily and order as indicated

5. **Goals of Care**
   - Reassess and update

6. **Prognosis**
   - Mortality Score

7. **Communication**
   - **Patient**
   - **Care partner**

**Additional Resources from DoM**

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**Pulmonary Considerations**

- MD does-notes for asthma / COPD
- CAUTION: Aerosol Generating Medical Procedures (AGMPs)
- Dexamethasone 6mg po or IV, up to 10 days

**Goals of Care**

- Diabetes (daily glucose)
- Hypertension
- Infections
- Delirium

**Antimicrobials**

- Is the blood culture positive or high suspicion for bacterial infection?
  - Yes: Order antibiotics for appropriate duration
  - No: Continue Oseltamivir

**VTE & Prophylaxis**

- LMWH prophylaxis for all patients unless active bleeding or platelets <50
  - In patients on DOAC or warfarin, consider switch to LMWH

**Symptom Management**

- Fever
- Cough
- Dyspnea
- Headache
- Myalgia
- Nausea
- Vomiting

**Non-COVID Comorbidities**

- Complete Med Reconciliation
- Manage within scope of practice
- Involve consult services and other health care providers as needed (phone advice if possible)

**Additional Resources from DoM**

https://www.departmentofmedicine.com/meoc-hospital-care/
Consider the following:

**Daily MD Assessment**

1. **COVID Status**
   - Confirmed
   - Probable
   - Suspect

2. **Patient Isolation**
   - Proper PPE protocols
   - To-decontaminate isolation, follow SCCM order set

3. **Mobility**
   - Encourage daily

4. **Labs**
   - Review daily and order as indicated

5. **Goals of Care**
   - Reassess and update

6. **Prognosis**
   - Get verbal consent
   - Redetermine eligibility for trials.

**Daily Vital Signs/Requiring Oxygen?**

- No
- Other Barriers to Discharge?

- No
- Consider Discharge

**Pulmonary Considerations**

- **COVID-19**
  - Daily MD Assessment
  - As indicated

- **Non-COVID Comorbidities**
  - Complete Med Reconciliation
  - Manage within scope of practice
  - Involve consult services and other health care providers as needed (phone advice if possible)

- **Deterioration**
  - NEWS2 Score ≥ 7 points or any new 3-point item
  - Order antibiotics for appropriate duration

- **Continuous Monitoring**
  - NEWS2 Score ≤ 4
  - Reconsider ventilatory support

- **Symptom Management**
  - Dexamethasone 6mg po or IV, up to 10 days

- **DVT suspected**
  - Doppler U/S

**Non-COVID Comorbidities**

- Complete Med Reconciliation
- Manage within scope of practice
- Involve consult services and other health care providers as needed (phone advice if possible)

**COVID-19 Symptom Management**

- Ct PE suspected: CT PE

**End of life care**

- DEC: Discontinue life support

**Palliative Care**

- Consult ICU

**DDx of Deterioration**

- COVID disease progression
- Respiratory failure
- Sepsis
- Nonspecific toxicity/exacerbation

**COVID-19**

- **High**
  - End of life care
  - Continue best supportive care

**End of life care**

- **Low**
  - Continue best supportive care

**Continuing Education**


**Additional Resources**


**Department of Medicine**

Daily MD Assessment

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**Daily Vital Signs**

**Respiratory Considerations**
- ARDS: pulse ox, end-tidal CO2, PEFR, expiratory pause
- Oxygen therapy
- High Flow Nasal Cannula
- Non-invasive
- Invasive
- Mechanical ventilation

**Pulmonary Considerations**
- Medical history
- Diabetic
- Hypertensive
- Renal
- Respiratory

**Dexamethasone 4mg po or iv, up to 10 days**
- For patients requiring mechanical ventilation

**Antimicrobials**
- In the absence of culture or high suspicion for bacterial infection
- If an DOAC or warfarin on admission, consider switch to LMWH
- If on DOAC, consider LMWH for VTE prophylaxis

**LWMH prophylaxis for all patients unless active bleeding or platelets <30**

**DVT suspected**
- Doppler U/S

**PE suspected**
- CT PE

**Pulmonary Embolism**
- Ordinarily may be high due to COVID19
- Consider VTE if unexplained:
  - Dyspnea
  - Increased O2 / RR
  - Hypotension

**Abnormal NEWS2 Score**
- ≥7 points or any new 3-point item
- ↑ O2 > 3LPM/3hrs or > 6LPM

**NEWS2 Score**
- ID 1 point or any new 3-point item
- C = > 3LMH/s or > 6LPM
- Other change in clinical status

**Deterioration**
- Order antibiotics for appropriate duration
- Stop Tamiflu

**Antivirals**
- (during flu season)
- Indication for oseltamivir (Tamiflu)?

**Specialty Consult**
- Order as indicated

**Discharge Planning**
- Complete Med Reconciliation
- Manage within scope of practice
- Involve consult services and other health care providers as needed (phone advice if possible)

**Function & Pain**
- Vital signs 
- Fever
- Confusion
- Anxiety
- Headache
- Dyspnea
- Secretions/cough
- Pain / myalgia
- Nausea / vomiting

**Non-COVID Comorbidities**
- Antivirals
- (during flu season)
- Indication for oseltamivir (Tamiflu)?

**Additional Resources**
- From DoM

**Risk stratification for discharge**
- High-risk
  - 45 years old
  - Prolonged hospital stay (>5 days)
  - Assisted/supported pre-morbid function
  - ICU admission (>48 hours)
  - Requires home support
  - Dichotomous conditions requiring monitoring (CHF, COPD, Asthma, Diabetes)
  - Palliative home care

- Average-risk
  - 45 years old
  - Hospitalization (<5 days)
  - Independent pre-morbid function
  - No ICU admission or <48 hours
  - No home support
  - Functionally safe for home

**End of life care**
- Continue best supportive care

**Palliative Care**
- Consider
- Palliative care consult for severe or refractory symptoms

**DISCHARGE PATHWAY**

**Additional Resources**
- From DoM

**Specialist Link**
- Discharge Pathway

**Physician to Physician Call for High Risk Patients**

**COVID Positive Discharge Pathway: Calgary Zone**

**SCAN ME!**

**COVID-19 Positive Discharge Pathway**

**Pathway options**
- Contact patient or family
- Provide resources
- Notify patient or family
- Contact patient care team

**Additional Resources**
- From DoM

**End of life care**
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**DISCHARGE PATHWAY**

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**DISCHARGE PATHWAY**

**Additional Resources**
- From DoM

**Specialist Link**
- Discharge Pathway

**Physician to Physician Call for High Risk Patients**
'be kind, be calm and be safe'
Dr. Bonnie Hendry

Panelists

Jayna Holroyd-Leduc MD FRCP
Professor and Head, Department of Medicine, Cumming School of Medicine; Clinical Department Head, AHS Calgary zone; Brenda Strafford Foundation Chair in Geriatric Medicine, University of Calgary.
Disclosure
• Nothing to disclose

Leslie Skeith MD FRCP
Clinical Assistant Professor in the Division of Hematology & Hematological Malignancies University of Calgary
Disclosure
• Any direct financial payments, gifts, in-kind compensation or honoraria: LEO Pharma
• Grants or clinical trials: CSL Behring.
Office of Continuing Medical Education and Professional Development. COVID Corner November 25 - Update on the Inpatient Management of Patients with COVID-19

Q&A

Oscar Larios  Kristen Brown  Kerri Johannson  Alain Tremblay  Zahra Goodarzi
Selena Au  Tara Lohmann  Kelly Burak  Leslie Skeith  Jayna Holroyd-Leduc

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Lesson Learned and Moving Forward

Hindsight 2020

REGISTER NOW!

Dec 2nd 7-9pm

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COVID CORNER

Dec 2\textsuperscript{nd} 7-9pm

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COVID CORNER

In the Corner with...

Dr. Lynora Saxinger
Co-Chair
Scientific Advisory Group
Alberta Health Services

HCW Quarantine
Rapid COVID19 tests

Dec 2\textsuperscript{nd} 7-9pm

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