



# Disclosure of Commercial Support

Faculty: Sean Moore

Relationships with financial sponsors:

**I have no grants/ no speakers bureau, no consulting fees, no patents**

I am physician and chief at LWDH in Kenora,  
Transport Physician at Ornge  
Medical director with Ornge  
Associate Medical Director with CritiCall Ontario.

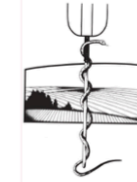
I own shares of 3M stock in my RRSP



# Outline



CAEP | ACMU



Society of Rural Physicians of Canada  
Société de la Médecine Rurale du Canada

The Canadian Association of Emergency Physicians &  
The Society of Rural Physicians of Canada

Press Release: Rural Emergency Departments & COVID19

**FOR IMMEDIATE RELEASE**

Ottawa, ON: March 21, 2020

Canada's rural population, which includes many Indigenous communities, requires equitable access and care close to their homes. Infrastructure, human resources, geography and weather impact rural medical outcomes. During the COVID-19 pandemic, it is crucial that urban and rural referral sites support each other and act as a unified system of emergency care. It is critical that Canada's rural Emergency Departments (EDs) remain open and staffed. It is of national interest to avoid unnecessary rural patient transfers to urban and tertiary care centres already at full capacity. Similarly, robust repatriation of patients back to their rural origin will optimize tertiary care capacity. Some rural regional hospitals have ICUs, in-situ ventilator capability, and a core generalist specialty service but require specific attention and support.

Rural Canadian resources are ill equipped for the pandemic. Rural EDs are much smaller and have limited human health resources making it difficult to mitigate staff illness, self-isolation/quarantine requirements and burn-out. The staffing models and service impacts are also different. Full scope rural family practice generalists cover multiple community roles simultaneously. In addition to ED coverage they provide office practice, inpatient and long-term care, maternity and obstetrics, OR assisting, chemotherapy, remote clinic oversight, Indigenous population outreach and transfer medicine to name a few.

Rural Canadian hospitals are now struggling with supply chains of basic medications (MDI, antibiotics, sedation agents), testing supplies and Personal Protective Equipment. Coupled with more prolonged testing turnaround times and fewer resources for managing and educating staff, there needs to be increased attention to rural access to care during the COVID19 pandemic.

#### Recommendations:

- 1. National licencing/credentialing:** establishment of emergency pan-Canadian licensure of health care workers. Create a standardized national system for rapid / dynamic intra-provincial and cross-provincial regulatory licensing. Improving provincial health authority credentialing and privileging for multiple jurisdictions (rural to urban, urban to rural).
- 2. Utilize new grads:** mandate that recently graduating MDs with provisional licenses (because of delayed formal certification exams) can do locums, be assigned billing numbers and sign employment contracts.
- 3. Increased Funding and coverage:** Federal and provincial funding mandated to respond immediately to increase number of temporary rural positions. The majority of rural EDs are staffed with single physician coverage.
- 4. Create Rapid Rural Relief Teams:** creation and deployment of centralized provincial teams that include MDs, core generalist specialties, RNs and Respiratory Therapists.

- Staffing Issues / Capacity
- Triage and Patient Flow
- Advocacy and Communication
- Transport Considerations
- Guidelines and Implementation

# Where to get Information?



CAEP | ACMU

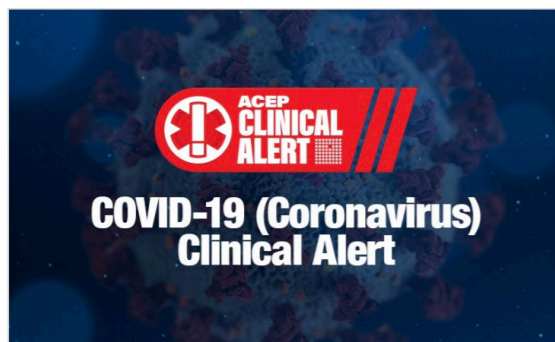
## RuralMed listserv

To subscribe to RuralMed, MedRurale or Student RuralMed you must be a member.

[LEARN MORE](#)

 American College of  
Emergency Physicians®

## COVID-19

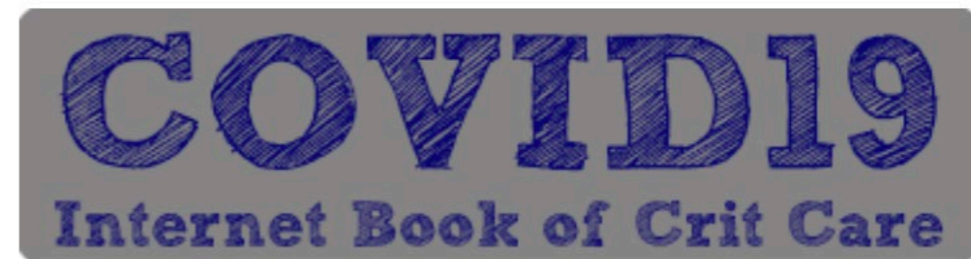


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# Staffing Issues & Capacity

- Rural and Community Emergency Medicine is going to be key in our success as a country
- Underserviced / Deteriorating Fast
- Cross Border Licensing Essential and pathways / Quarantine issues need to be resolved
- Rapid testing of health staff

BY KELVIN GAWLEY

Posted Mar 12, 2020 2:46 pm PDT Last Updated Mar 12, 2020 at 3:37 pm PDT



(Courtesy Pexels: Anna Shvets)

## SUMMARY

Royal College of Physicians and Surgeons of Canada should explore alternatives to in-person oral exams: petition



A delay in testing could keep doctors from responding to COVID-19 and getting on with their lives: doctor



Doctors 'desperately want this exam to go ahead as scheduled'

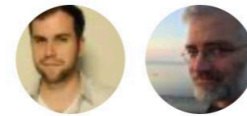


# Keep Workforce In Play

- If you have 1 or 2 that do obstetrics, support them by taking shifts until needed
- Be ready for the travel, quarantine and loss of normal locum help
- Need to get licensing worked out immediately
- **GET TESTING TO RURAL**

HEALTH

## Coronavirus: Ontario lags behind all other provinces in COVID-19 testing



BY [ANDREW RUSSELL](#) AND [PATRICK CAIN](#) · GLOBAL NEWS

Posted March 30, 2020 4:02 pm

Updated March 31, 2020 10:59 am



— WATCH: Trudeau says Canadians' actions today will determine where we are a month from now

# Triage and Patient Flow

- Right NOW
- Hospital Flow
- ER Flow
- Disposition / Decisions



# Hospital Flow Flow

PPE supplies in closet outside of PAR, in ER stores area, mobile PPE cart near maternity.

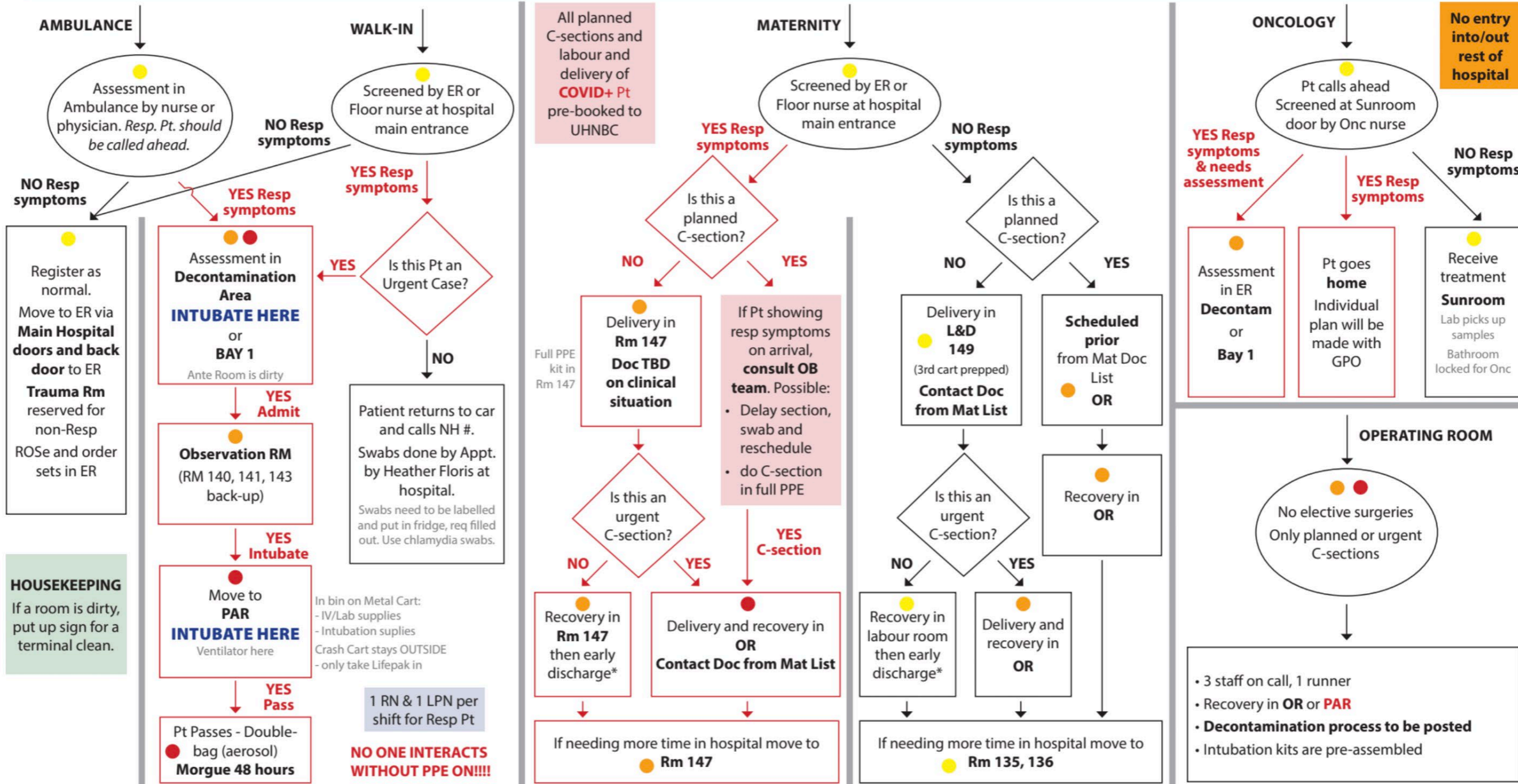
## Flow Chart for St. John Hospital : COVID-19 Response Plan

**Direct Patient Care:** surgical mask, gloves, goggles  
**COVID-19 Patient:** surgical mask, gown, gloves, goggles/face shield  
**Aerosol:** N95 mask, gown, gloves, goggles/face-shield, apron

**Patient arrives at SJH**  
 Doors open 8am-4pm

Staff/Doc entry ?  
 Procedure - under consideration.

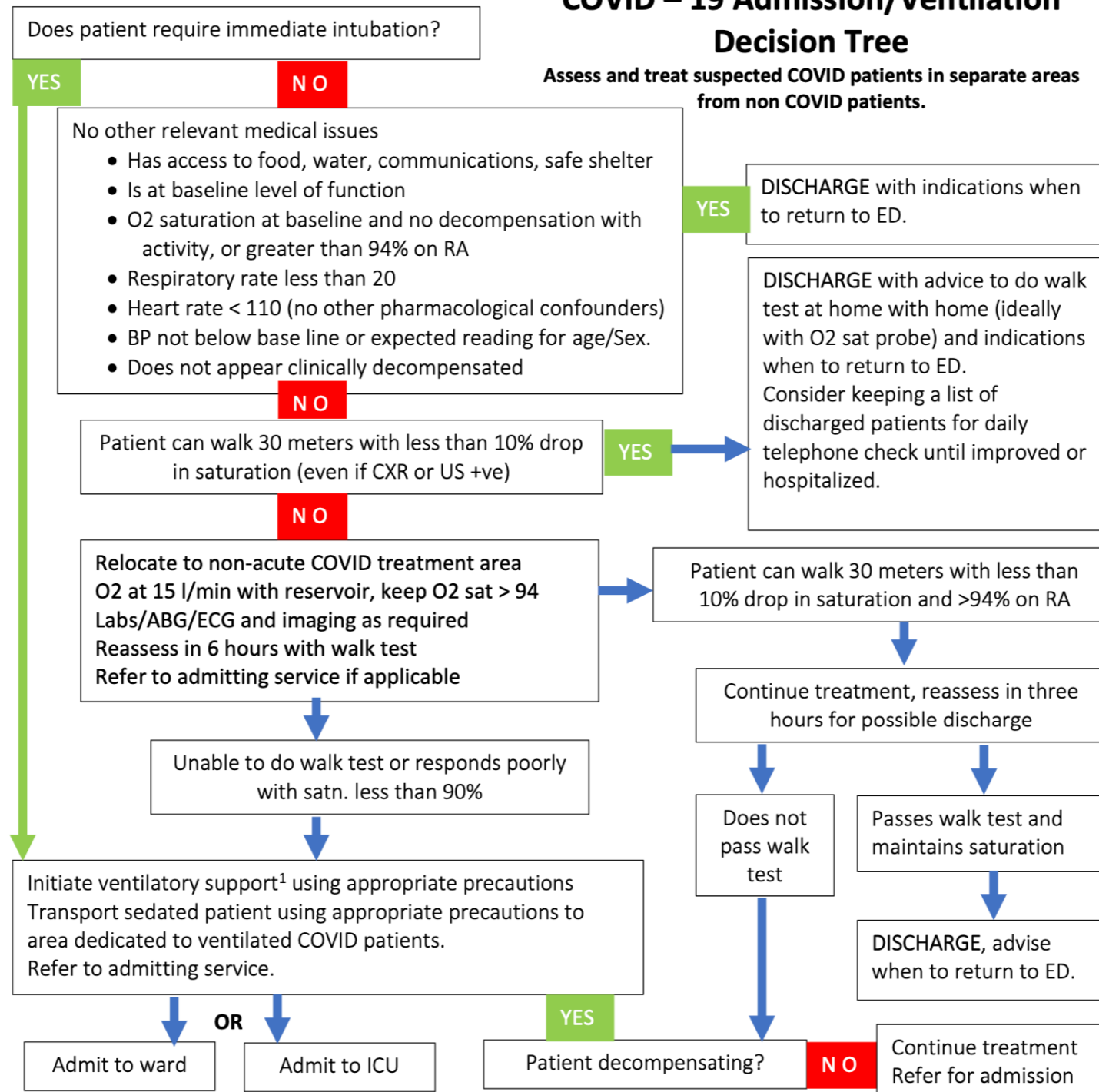
**MARCH 30, 2020**



# ER Flow

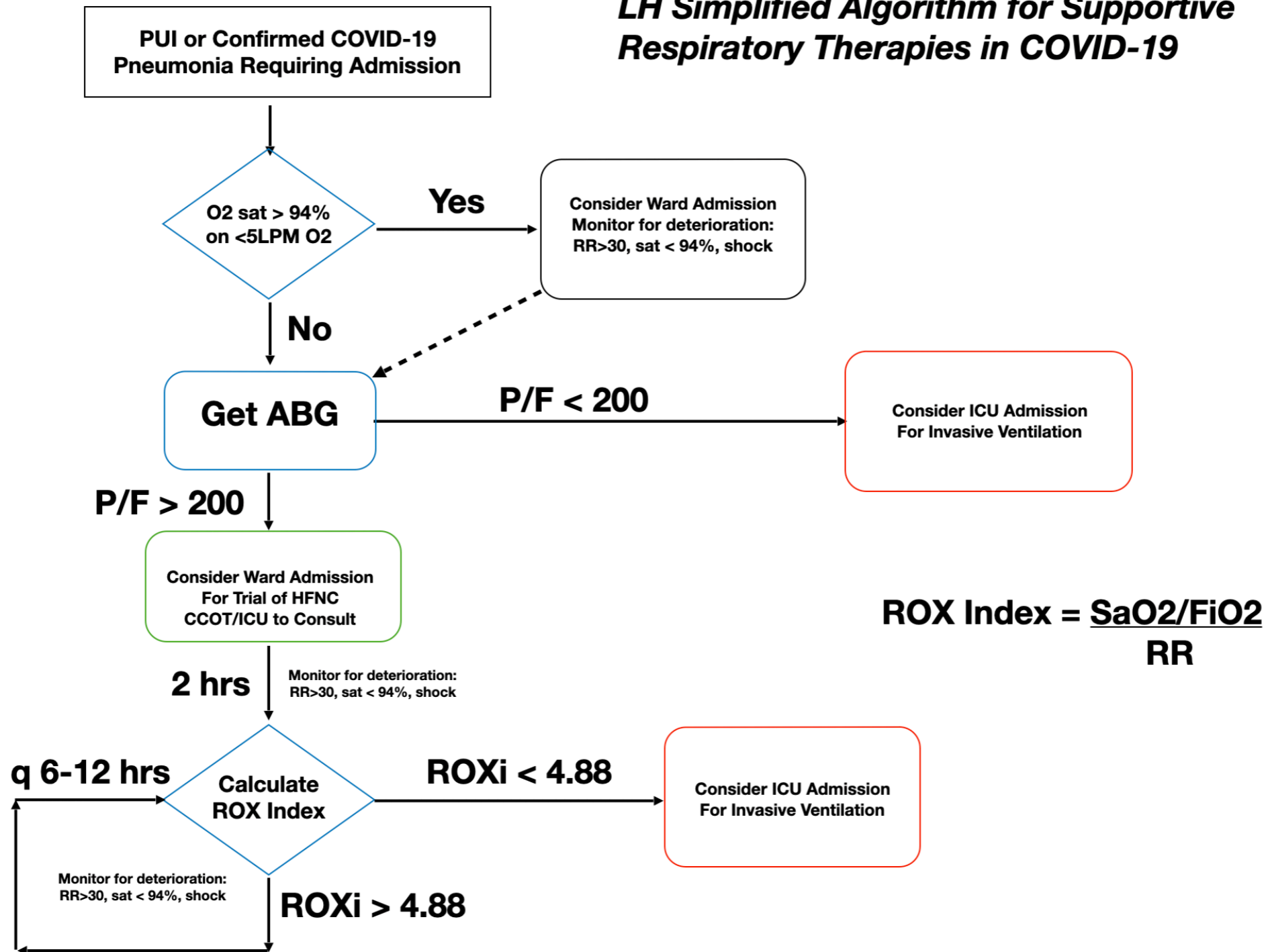
## COVID – 19 Admission/Ventilation Decision Tree

Assess and treat suspected COVID patients in separate areas from non COVID patients.



# Decisions for Larger Rural or Community

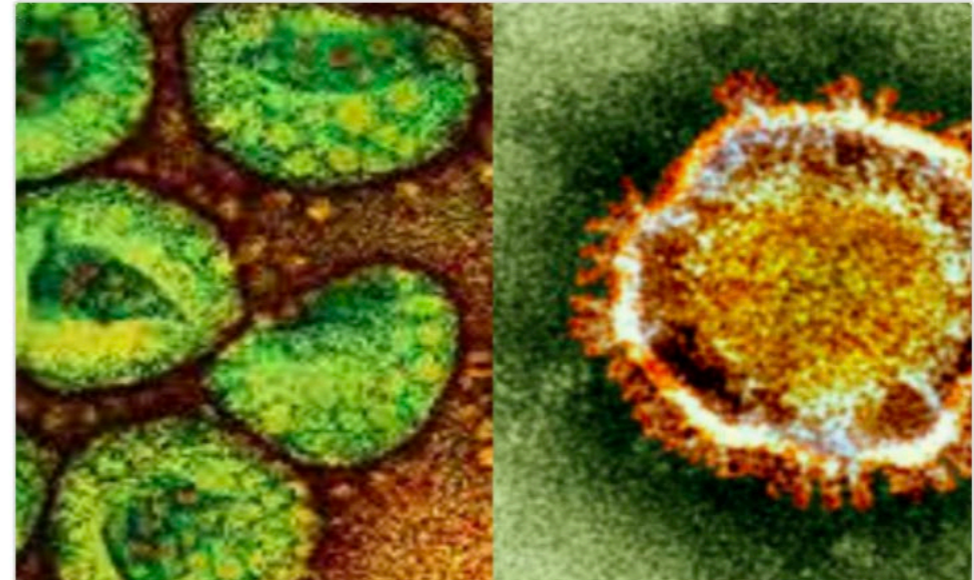
## *LH Simplified Algorithm for Supportive Respiratory Therapies in COVID-19*



# Small ER Question

Hi there Thank you for advocating for us . Re small rural ER .

Please comment on intubating a patient in overt respiratory failure with only direct laryngoscopy available & prolonged wait for transport to a bigger site .



February 4, 2020

**Protected Code Blue Principles in 2020**

**Source:** Laurie Mazurik, Critical Care Transport and Emergency Physician at Sunnybrook Health Science Centre

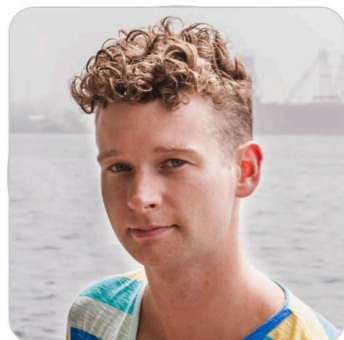
# Advocacy

- Drive safety / change locally
- Forget normal chain of command / usual pathways
- Contact MPP / MP
- They will want to hear from you as they want to help and trust and know ER is the front line
- Keep requests simple



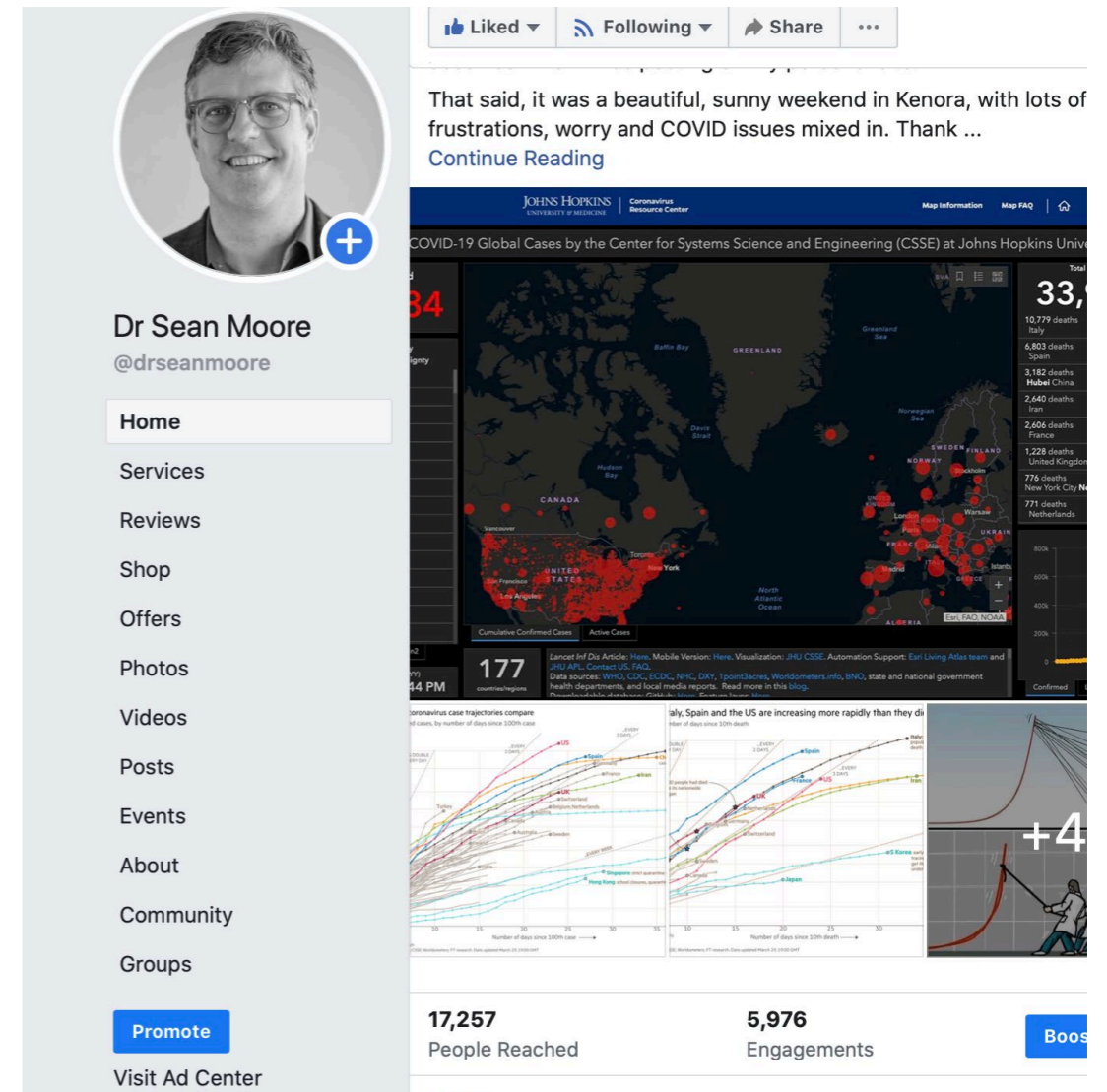
# Get Out There

- Often trusted and influential members of the community
- They want to hear your opinions
- Work with news and photographers



**Blair Bigham**

Blair Bigham is a resident emergency physician and freelance journalist who reports on the untold stories of patients, caregivers and the systems that help or fail them.



The screenshot shows a social media post by Dr Sean Moore (@drseanmoore). The post includes a profile picture of Dr. Moore, a text snippet, and a link to a COVID-19 resource. The resource is a webpage from Johns Hopkins University's Center for Systems Science and Engineering (CSSE), featuring a world map of COVID-19 cases and several line graphs showing case trajectories for various countries. The graphs compare cumulative confirmed cases and active cases over time for countries like the US, Spain, Italy, and others. The post also shows engagement metrics: 17,257 People Reached and 5,976 Engagements.

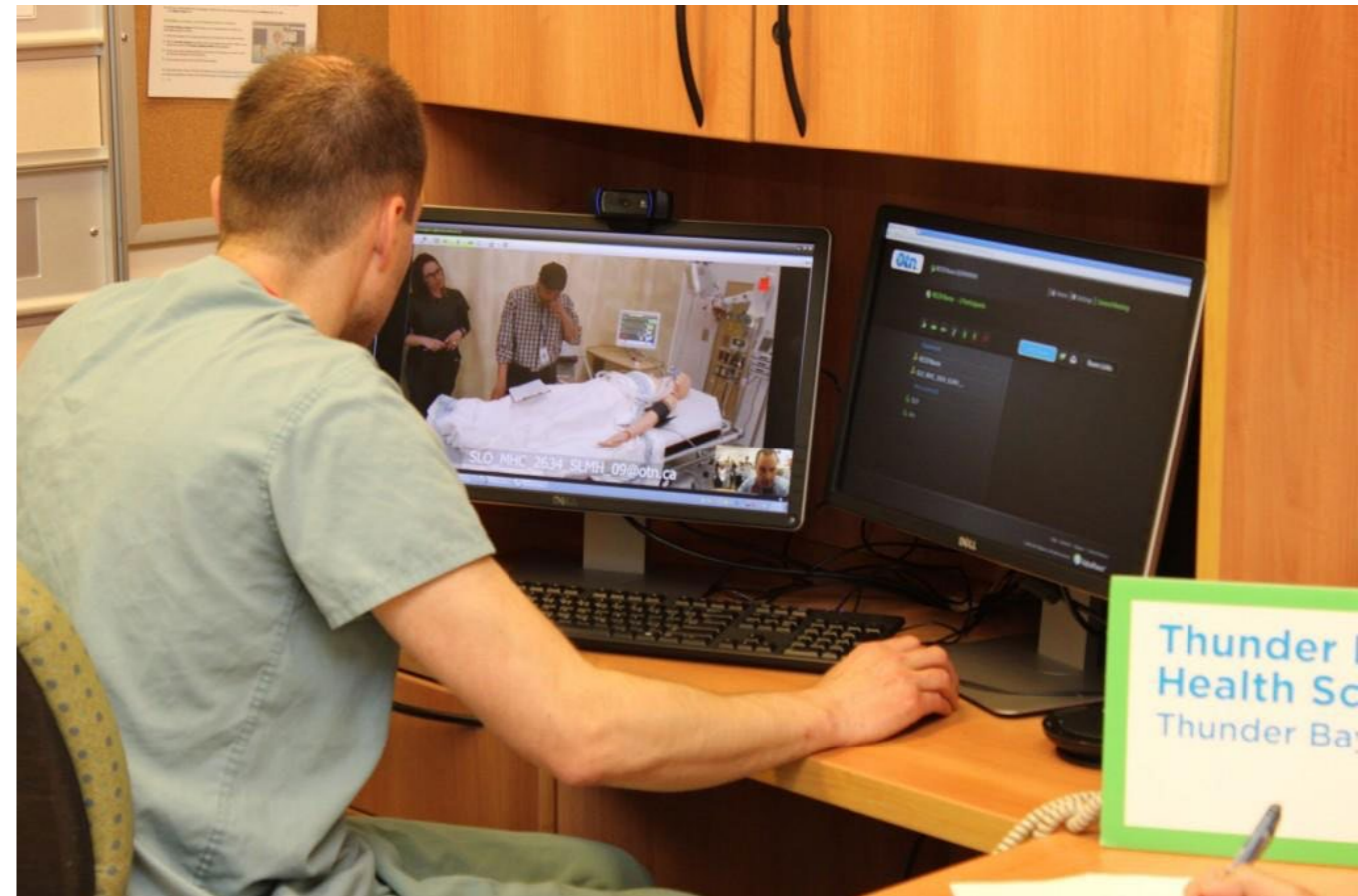
# Transport Considerations

- Need to have transport at the Provincial and Local Command Centre / Tables
- This needs to be worked out in advance and coordinated
- Make choices they can work with - intubation, etc



# Transport Considerations

- Plan A rural - get them out
- Plan B rural - care as long as you can, use telemedicine links to help guide
- Keep simple protocols
- Mortality will be significant



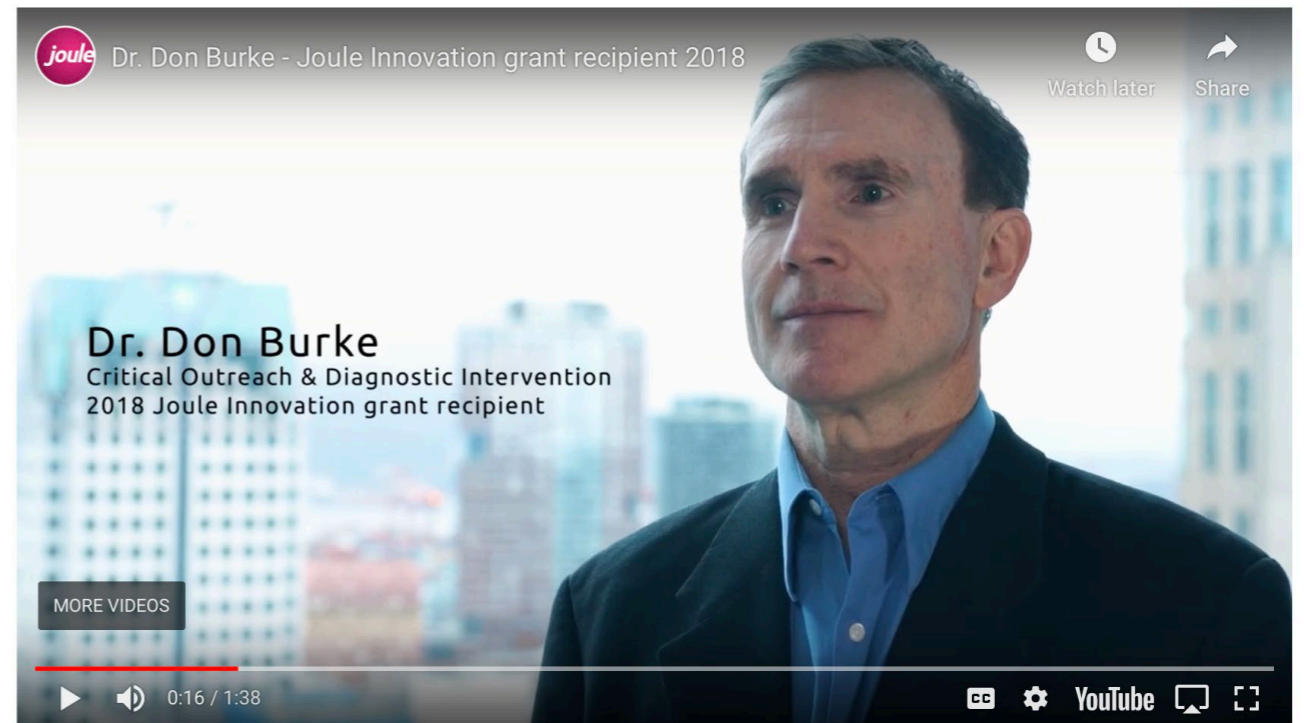
# Question

What Covid specific realtime support /resources will be available for an acutely ill patient?

Anywhere except Quebec at this time.



Download app 1-888-6



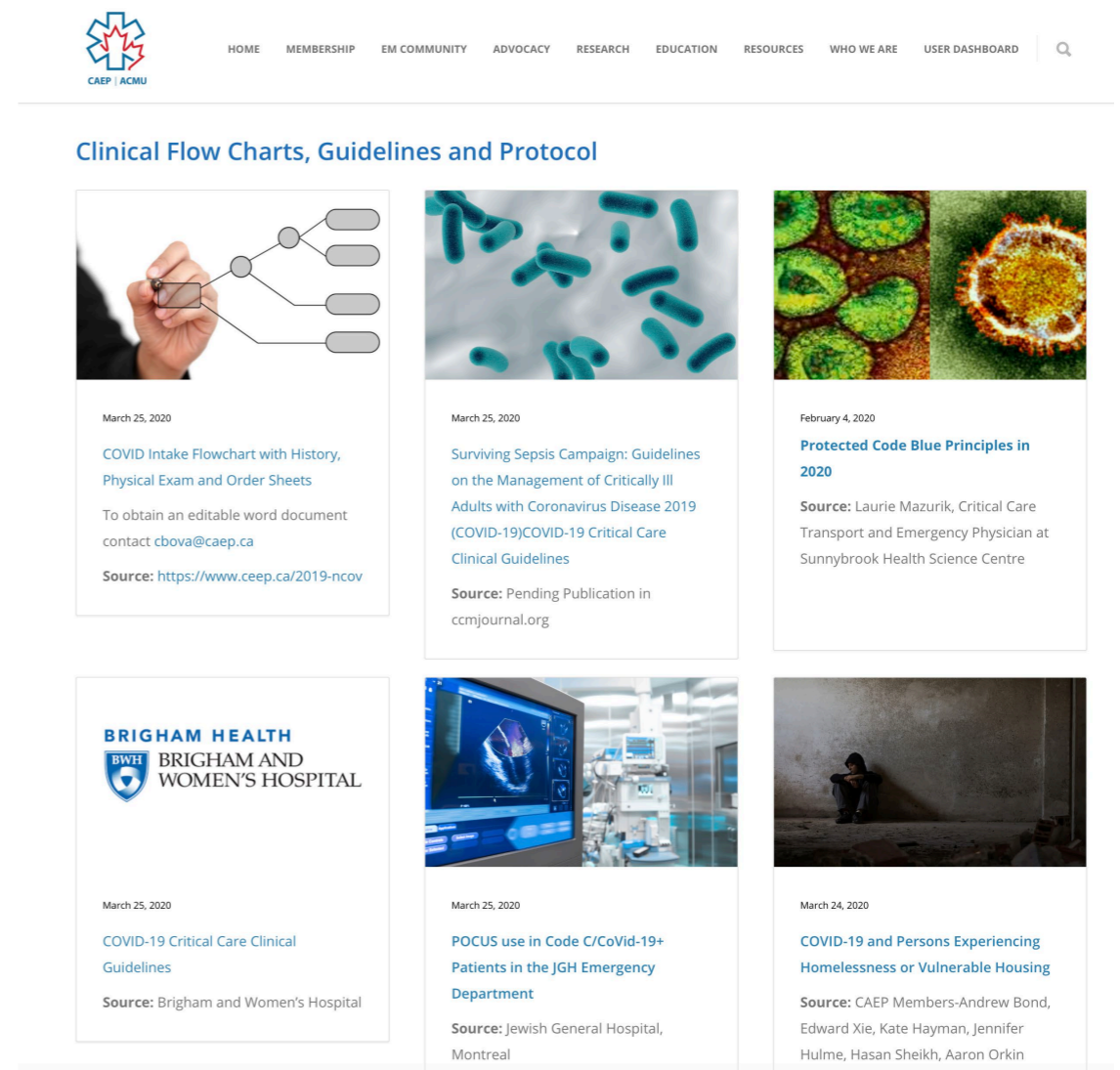
## Meet physician innovator Dr. Don Burke

MARCH 25, 2019

In 2018, Dr. Don Burke received a \$25,000 Joule Innovation grant for his initiative, [Critical Outreach & Diagnostic Intervention \(CODI\)](#). CODI is an on-demand, immediate support service connecting rural physicians and intensivists in British Columbia. CODI provides an on-demand, virtual 24/7, immediate point of care service that connects rural physicians and intensivist in British Columbia. The CODI app aims to provide better patient outcomes, fewer unnecessary hospital transfers and reduced health care costs.

# Guidelines and Implementation

- Reliable Information fast
- CAEP, ACEP, EMCrit
- [RURALMED@LISTS.MCGILL.CA](mailto:RURALMED@LISTS.MCGILL.CA) through SRPC
- COVID information for Canadian physicians on Facebook



The screenshot displays the CAEP/ACMU website's navigation menu and a grid of clinical resources. The navigation menu includes: HOME, MEMBERSHIP, EM COMMUNITY, ADVOCACY, RESEARCH, EDUCATION, RESOURCES, WHO WE ARE, USER DASHBOARD, and a search icon. The main content area is titled "Clinical Flow Charts, Guidelines and Protocol" and features six resource cards:

- Card 1:** "COVID Intake Flowchart with History, Physical Exam and Order Sheets" (March 25, 2020). Source: <https://www.ceep.ca/2019-ncov>. Contact: [cbova@caep.ca](mailto:cbova@caep.ca).
- Card 2:** "Surviving Sepsis Campaign: Guidelines on the Management of Critically Ill Adults with Coronavirus Disease 2019 (COVID-19) COVID-19 Critical Care Clinical Guidelines" (March 25, 2020). Source: Pending Publication in [ccmjournal.org](http://ccmjournal.org).
- Card 3:** "Protected Code Blue Principles in 2020" (February 4, 2020). Source: Laurie Mazurik, Critical Care Transport and Emergency Physician at Sunnybrook Health Science Centre.
- Card 4:** "COVID-19 Critical Care Clinical Guidelines" (March 25, 2020). Source: Brigham and Women's Hospital.
- Card 5:** "POCUS use in Code C/CoVid-19+ Patients in the JGH Emergency Department" (March 25, 2020). Source: Jewish General Hospital, Montreal.
- Card 6:** "COVID-19 and Persons Experiencing Homelessness or Vulnerable Housing" (March 24, 2020). Source: CAEP Members-Andrew Bond, Edward Xie, Kate Hayman, Jennifer Hulme, Hasan Sheikh, Aaron Orkin.


# Guidelines and Implementation

- Protected Code Blue
- ER Flow / Hospital Flow
- Sepsis Management / Covid order sets
- Watch EM RAP / CAEP etc



## INITIAL EXPERIENCE WITH COVID-19 IN ITALY

freely based on GIVITI live video-conference with intensivists from Lodi, Pavia, Lecco & Monza, March 10 2020  
graphics by M Vella Antonini @FOAMEcmo

**COVID-19** it is like a tsunami. you can't understand if you are not in. Continuously increasing demand, as beds available these are saturated: re-define whole hospital organization to cope with negative patients, positive patients without the need of O<sub>2</sub>, requiring just O<sub>2</sub>, or NIV/IMV; need for increase (COVID dedicated) intensive care areas to admit ICU patients, involving sub-intensive care unit, day surgery wards, recovery rooms (severely reduced conventional surgical activity, just emergencies)...





**KEEP PACE WITH SARS-CoV-2**  
you need to be prepared! (before patients flood):  
know hospital/logistics: define in advance area where to admit patients (but be ready to find alternative solutions day by day as situation evolves). Selective triage for COVID pts  
know/define in advance clean & dirty pathways, clean & dirty areas.  
Take care of your human resources: be able to figure out your PPE need & practice donning and doffing procedures; keep providers & area safe: protect personnel/put in quarantine personnel eventually exposed. If you get sick who is going to look after patients?  
Be properly organized in a network: support of surrounding hospitals may be crucial to drain huge amount of critical patients, transferring them to other ICU, guided by main coordination center. Also non-COVID pts need to be managed, and eventually diverged to other area/hospitals.

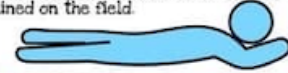
**(EARLY) DIAGNOSIS**  
Patients similar to one another easy to diagnose: CXR interstitialopathy, bilateral infiltrates common (rarely asymmetrical), with gravitational distribution. ABG/blood tests: initially moderate hypoxemia, mild acidosis with normal lactates, severe base deficit, high anion gap, elevated LDH, very high CRP, elevated CK, negative procalcitonin.  
Early diagnosis mandatory to properly manage patients & respect pre-defined pathways: in area involved by outbreak, interstitial pneumonia/respiratory failure &/or flu like syndrome - treat as COVID positive unless proven otherwise... using swab to exclude more than to confirm? be careful, do not blindly trust negative swab if symptoms/pneumonia with suggestive CXR, CT scan, LIS: go for bronchoalveolar lavage/deep bronchial aspirate/bronchoaspirate (prefer closed suction systems!).

**FLUIDS**  
Keep negative fluid balance, with minimal volemia requested to avoid hypoperfusion (inotropes/vasopressors generally better vs fluid replacement, if no indicators of hypovolemia).  
Due to high right pressures MV induced, often IVC fixed/dilated. Heart involved frequently with hypo/dyskinesia. Strictly control temperature: consider eventual severe glycaemic/metabolic derangement (antivirals? inflammation?), and eventual hypoalbuminemia (both reported).


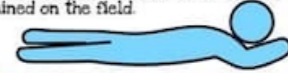
**MV & WEANING**  
Respiratory failure take time to improve, usually need a phase of controlled MV with high PEEP (15-20 cmH<sub>2</sub>O) before assisted breathing: check whole clinical conditions, not only P/F. Often patients are easy to ventilate, with high compliance and acceptable driving P, but be prepared to accept low pH to avoid excessive MV pressures; be cautious with VT to avoid overdistension. Consider (early & prolonged) NMBAs. Be careful with early spontaneous ventilation due to the risk of derecruitment, particularly in posterior lung fields. Very long time needed to wean: due to delayed weaning, (early) think to tracheostomy: MV/sedation management easier/prone positioning still feasible.

**PRONING**  
To improve prone positioning effectiveness keep patient prone for 18 if no instability/complications; then 6h supine if feasible, otherwise early re-proning. Consider longer PP (up to 20-22h) if severe hypoxemia persists, until stable P/F/FiO<sub>2</sub>. Due to lung injury, repeated PP usually required, not easy for staff due to PPE, particularly if inexperienced nurses enrolled from not ICU areas, trained on the field.



**LUNG ULTRASOUND**  
Couple of LIS pattern reported:  
\* Sonographic sign of pulmonary interstitial syndrome with diffuse, multiple B-lines involving both anterior & posterior lung fields, maybe coalescent, with bilateral distribution - probably PEEP responders: titrate PEEP (check if pattern disappears as increasing PEEP);  
\* normal anterior lung fields (- risk of overdistension if high PEEP) - tissue like pattern in posterior lung fields, probably not recruitable with PEEP alone - maybe need prone positioning to be recruited.  
Consider daily LIS (as feasible due to high number of patients), to guide MV settings/management (ie PEEP titration, prone positioning) & monitor evolution: loss of aeration/re-aeration, early defect complications ie consolidation suggesting superinfections, barotrauma due to high MV settings/recruitment maneuver (ie PTX/subcutaneous emphysema).

**ECMO ??**  
Patients are hypoxemic but really compliant to MV, and prone positioning responders. So, to date, most do not need reScue W-ECMO vs H1N1 pneumonia (and this is good as patients admission massive...). Consider eventual need for veno-arterial support due to myocarditis/hypoxic cardiac arrest, or veno-arterial-venous ECMO if hemodynamic impairment - no responders to MV.

# Ideas and Comments

