




**Rural Videoconference**

***Rural ER Patient Management and  
Disaster Planning***

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Sean Spence MD FRCPC


**Moderator: David Topps ChB MRCGP**

May 26, 2020



**Learning Objectives**

- Apply the principles of disaster planning to develop and implement a disaster plan for your rural emergency department or health center
- Apply different strategies managing adult and geriatric patients in rural ER during COVID 19 time

The Office of CME & PDCALGARY 



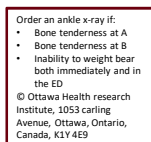
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3



## Disclosure of Financial Support

- The program was developed and planned to achieve scientific integrity, objectivity and balance
- This program has received funding support through Alberta Health Services.

## Presenter Disclosure of Financial Affiliations

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**Disclosure:**

Cochrane Urgent Care center, AHS

**Sean Spence MD FRCPC**

**Disclosure:**

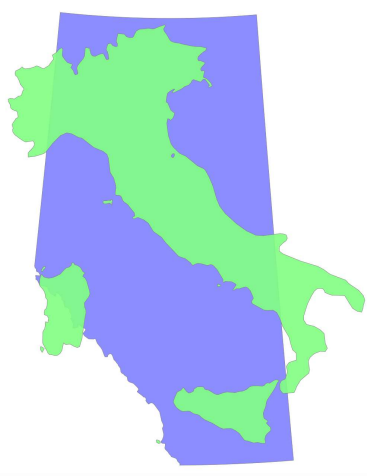
Staff intensivist and internist, Government of Alberta  
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4



## Geographic Context

- **Population of Alberta:**
  - 4,371,316 (AB Gov)
- **Population of Italy:**
  - 60,421,760 (Worldbank)
- **Surface Area:**
  - Alberta 2.2x larger



[http://www.comparea.org/ITA+CA\\_AB/](http://www.comparea.org/ITA+CA_AB/)



## Not Just an Urban Disease

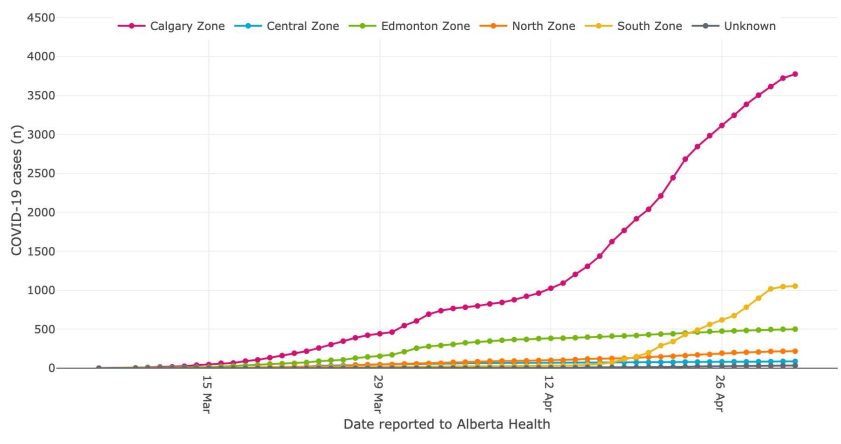
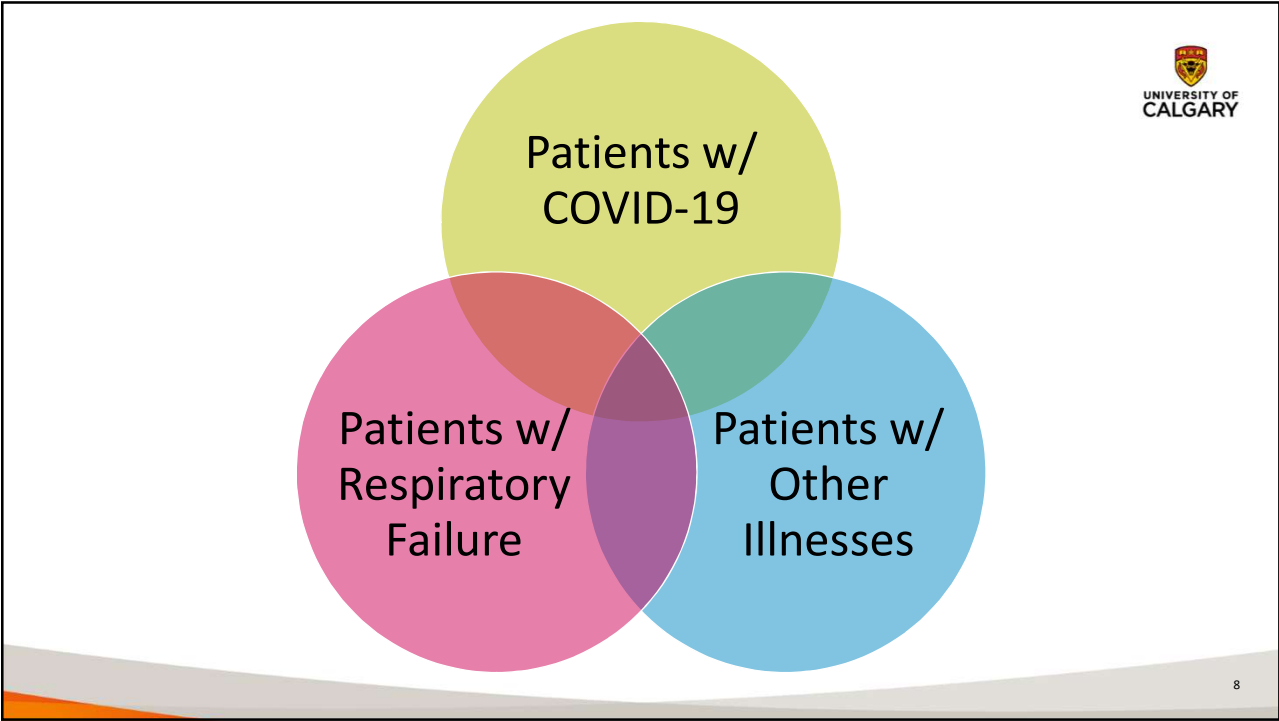
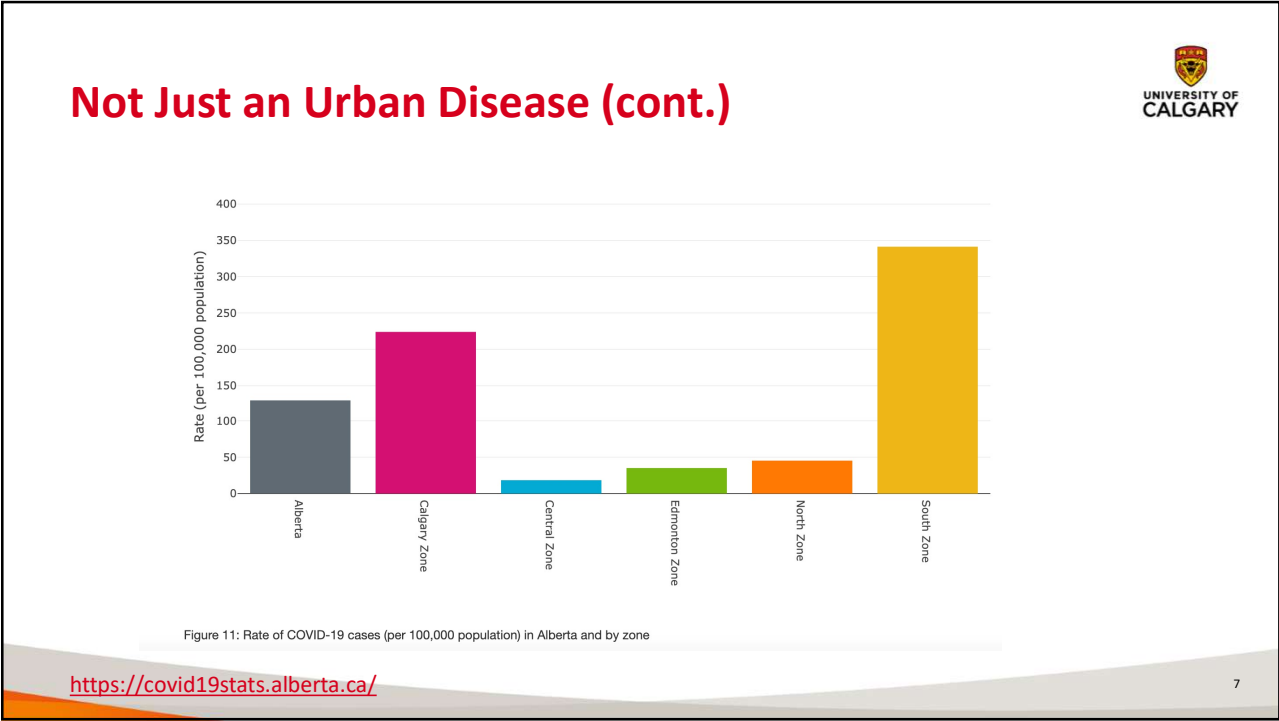


Figure 10: Cumulative COVID-19 cases in Alberta by zone and date reported to Alberta Health

<https://covid19stats.alberta.ca/>



## My COVID-19 Mantra

Patients can have diagnoses other than  
COVID-19  
AND  
Patients with COVID-19 can still have  
other diagnoses

9



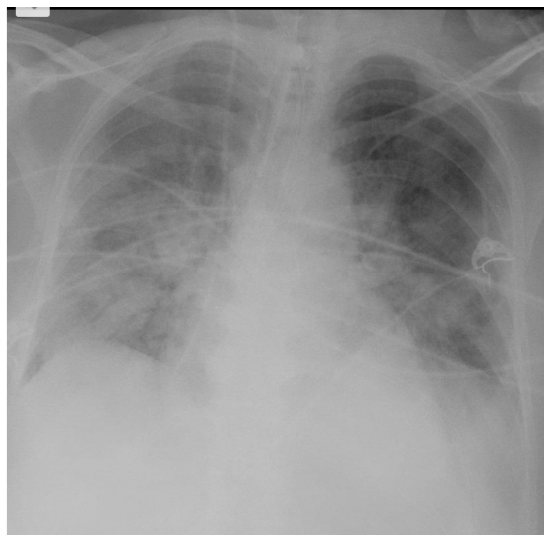
Concerned citizens cover themselves in plastic bags as they walk outside Shanghai railway station.

Image: REUTERS/AlySong

<https://www.weforum.org/agenda/2020/02/coronavirus-deaths-cases-leap-in-china-suggesting-much-bigger-crisis/>

10

Uh-oh?



<https://radiopaedia.org/cases/covid-19-rapidly-progressive-acute-respiratory-distress-syndrome-ards?lang=us>

11



**Table 1.** ARDS Berlin definition.

The Berlin definition of acute respiratory distress syndrome	
Timing	Within 1 week of a known clinical insult or new or worsening respiratory symptoms
Chest imaging <sup>a</sup>	Bilateral opacities — not fully explained by effusions, lobar/lung collapse, or nodules
Origin of edema	Respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g., echocardiography) to exclude hydrostatic edema if no risk factor present
Oxygenation <sup>b</sup>	
Mild	200 mmHg < PaO <sub>2</sub> /FIO <sub>2</sub> ≤ 300 mmHg with PEEP or CPAP ≥ 5 cmH <sub>2</sub> O <sup>c</sup>
Moderate	100 mmHg < PaO <sub>2</sub> /FIO <sub>2</sub> ≤ 200 mmHg with PEEP ≥ 5 cmH <sub>2</sub> O
Severe	PaO <sub>2</sub> /FIO <sub>2</sub> ≤ 100 mmHg with PEEP ≥ 5 cmH <sub>2</sub> O

Abbreviations: CPAP, continuous positive airway pressure; F<sub>I</sub>O<sub>2</sub>, fraction of inspired oxygen; PaO<sub>2</sub>, partial pressure of arterial oxygen; PEEP, positive end-expiratory pressure; <sup>a</sup>Chest radiograph or computed tomography scan; <sup>b</sup>If altitude is higher than 1,000 m, the correction factor should be calculated as follows: [PaO<sub>2</sub>/FIO<sub>2</sub>\_(barometric pressure/760)]; <sup>c</sup>This may be delivered noninvasively in the mild acute respiratory distress syndrome group.

Fanelli, V., Vlachou, A., Ghannadian, S., Simonetti, U., Slutsky, A. S., & Zhang, H. (2013). Acute respiratory distress syndrome: new definition, current and future therapeutic options. *Journal of Thoracic Disease*, 5(3), 326-334. Retrieved from <http://jtd.amegroups.com/article/view/1057>

12



## Hypotension

Jason Waechter Sept 2010

Knowing the receptors and characteristics of inotropes and pressors (Table 1) is important for optimizing your choice of pharmacologic support in a patient with hypotension. Using a logical approach for evaluating the characteristics of a patient with hypotension is also key.

Use a “mathematical” approach to low blood pressure:

$$\text{BP} = \text{Cardiac Output} \times \text{Systemic Vascular Resistance}$$

Memory note: the pressure inside a tube is dependent on how much it is filled (this is the cardiac output) and the degree to which the tube is compressing the contents (this is the SVR). Think of this equation in a way that you can logically understand.

<https://www.teachingmedicine.com/>

13



<https://www.albertahealthservices.ca/news/Page15252.aspx>



<https://www.edmontonsun.com>

14



## Before calling RAAPID

- Ensure patient stability permits phone call
- Ensure patient GOC congruent with proposed escalation in care
- Have patient demographics ready
- Have an accurate patient weight to provide transport team
- Generate a “capsule summary” of patient HPI, comorbidities, test results, and current interventions
- Determine the likely level of isolation precautions required during transport

15



## Intubating Safely

- Ensure the 1<sup>st</sup> attempt is the best attempt:
  - Most experienced operator available
  - Airway pause where time permits
  - Ensure adequate sedation (ideally paralysis)
  - Video Laryngoscopy for 1<sup>st</sup> attempt
- Use a hemodynamically stable induction strategy (esp. if suspect cardiac dysfunction)
- Diligent PPE (consider a buddy system/Dofficer)

16





### Adult Airway Management Pause Version 10.2

**Prerequisites**

- Are O<sub>2</sub> and ventilation stable enough to allow time for the pause?
- Are Goals of Care R1 or R2?
- Names, roles,  Primary Intubator  Manual ventilation/ELM  C-line ready for pause:  Back-up Intubator  Equipment RT  Meds RN
- Is everyone wearing PPE? N95 gloves, goggles

**Patient**

- Predicted difficulties / mitigation strategies? Anatomic and physiologic
- Cricothyroid membrane identified? Consider marking
- Position optimal? Patient and Intubator
- Oxygenation maximized? Nasal prongs
- Read out current vitals: Monitor alarms on
- Who will read out SpO<sub>2</sub>?  Threshold for action:
- Who will record the time?  Threshold for action:

**Drugs**

- Functional IV/IO? Fluids, pressors, bicarbonate
- Pretreatments required? Fluids, pressors, bicarbonate
- Estimated patient weight:
- Drugs and doses:  Contraindications? Sedation, analgesia
- Post-intubation drugs Sedation, analgesia

**Respiratory**

- Bagger, PEEP valve, oral airway and suction ready?
- What sizes laryngoscopy and ETT are prepared?
- Where is the DAMP cart?
- End tidal CO<sub>2</sub> ready?
- Critical ventilation considerations:

**Plan**

Pre-oc verbalize:

**Plan A**  **When to call back up?**  **Exit Plan**

**Plan B**  **Emergency Plan**

\*ELM = External laryngeal manipulation  
DAMP = Don't Ask Me, I'm Not Here  
DAM = Difficult Airway Management cart

Revised 08/2019 Contact: james.huffman@abc.ca or jana.heer@abc.ca or @janeheer@abc.ca

### ILU / COVID-19 Airway Management Best Practice Considerations

05 March 31, 2020

**Preparation**

1. PPE: Don full PPE including N95 respirator, goggles, face shield, gown and gloves. Proper application of PPE should be verified by an observer prior to patient contact
2. Early airway assessment for predictors of difficulty and consultation as necessary
3. Consider early, controlled intubation and avoid NIV, Hi-HFO and other AGMP as able
4. Minimize staff exposure:
  - a. Minimize personnel in the room as able
  - b. Negative pressure room with anteroom if available (or neutral pressure room with door closed)
  - c. Ensure HMEF is between the mask and BVM at all times
5. Intubation should be performed by most experienced practitioner to optimize first pass success
6. Prepare necessary equipment and drugs OUTSIDE of room

**Suggested Roles and Organization**

**Patient Room**

Monitor

Nurse

MD Intubator

Airway Equipment

Ventilator

RT 1

**Outside Room**

Recorder/PPE monitor

DAMP Cart

RT 2 / Runner

**Anteroom**

Backup Intubator / Runner

**Intubation Plan**

- ✓ Optimize patient and intubator positioning, consider need for Troop pillow
- ✓ Optimize pre-oxygenation using nasal prongs with 5L/min O<sub>2</sub> (up to 15L/min as necessary) AND tight seal EVM with 15L/min O<sub>2</sub> and PEEP valve = 5 cm H<sub>2</sub>O
- ✓ Reserve 2 person 2 handed BVM manual ventilation for situations when non-invasive O<sub>2</sub> delivery is failing
- ✓ Video laryngoscopy recommended as Plan A.
- ✓ Best pharmacotherapy determined by MRBP on case-by-case basis to minimize chance of cough and aerosol generation.
  - o Use higher mg/kg dose of muscle relaxants to ensure rapid onset of optimal intubating conditions (allow 1 minute for onset of adequate muscle relaxation):
    - Rocuronium 1.2-1.6 mg/kg (IBW)
    - Succinylcholine 1.5-2 mg/kg (TBW)
- ✓ If SpO<sub>2</sub> < 70% begin 2 person 2 handed BVM manual ventilation with an OPA
- ✓ Wait until cuff inflated post-intubation before ventilating

**Post-intubation**

- Confirm ETT position with EtCO<sub>2</sub> and CXR
- Closed suction system: avoid circuit disconnections and clamp ETT for planned disconnections
- Lung protective ventilation strategy (6-8 mL/kg Vt IBW, Pplat < 30 cm H<sub>2</sub>O, Optimal PEEP)
- Strategies for failing gas exchange: deep sedation and paralysis; permissive hypercapnia; prone positioning
- Maintain droplet and contact isolation and PPE as per IP&C

AGMP = aerosol generating medical procedure; BVM = bag valve mask; Hi-HFO = heated humidified high flow oxygen (HIVFO); Optflow = heat moisture exchanger filter; dP4 = dual body weight; HMEF = heat moisture exchanger product; NIV = non-invasive ventilation; OPA = oropharyngeal airway; RT = rapid sequence intubation; TBW = total body weight. This is a living document. Watch for new versions. The materials can be viewed at: [www.cmc.ca/evidence-support/controversies](http://www.cmc.ca/evidence-support/controversies)

## Ventilating Safely



- Identify patients who meet criteria for ARDS
- Measure patient height → use this to calculate ideal body weight (IBW)
- Initial ventilation with Vt @ 6cc/kg IBW (or less)
- High PEEP can help; ensure Pplat 30 cmH2O or less
- Conservative oxygen targets
- Deep sedation, paralysis



## Transport Tips

- If patient intubated: ensure ETT well-secured and good position confirmed on CXR
- Ensure robust vascular access (and backup) established: central lines and art lines are **not** a MUST
- If any suspicion of PTX ensure pleural space is decompressed or PTX has been definitively ruled out (esp. for air transport)
- Ensure patient well-sedated (if not paralyzed) to facilitate a smooth and safe transport
- Ensure family kept up to date re: patient transport and destination to avoid any confusion and minimize stress

19



Size	Type	1000ml infusion time
8.5 Fr	RIC Line	0:46 sec
7 Fr	RIC Line	1:00 min
8.5 Fr	Sheath introducer	1:05 min
14 Ga	Standard IV cannula	1:30 min
6 Fr	Sheath introducer	2:10 min
14 Ga	Angiocath (13.3cm) IV	2:10 min
16 Ga	Standard IV cannula	2:20 min
18 Ga	Standard IV cannula	4:23 min
14 Ga	4-Lumen CVC	5:20 min
20 Ga	Standard IV cannula	6:47 min

<https://etmcourse.com/large-bore-iv-access-showdown/>

20



## Therapies to Defer

- Advanced ventilatory modalities (IRV, APRV)
- Prone ventilation
- Anticoagulation in the absence of a clear indication
- Specialized coagulation testing
- Antiviral therapies
- Decisions around ECLS
- Inhaled medications (NO, Epoprostenol)

21

The NEW ENGLAND JOURNAL of MEDICINE



### CORRESPONDENCE

#### ST-Segment Elevation in Patients with Covid-19 — A Case Series

**TO THE EDITOR:** Myocardial injury with ST-segment elevation has been observed in patients with coronavirus disease 2019 (Covid-19). Here, we describe our experience in the initial month of the Covid-19 outbreak in New York City.

Patients with confirmed Covid-19 who had ST-segment elevation on electrocardiography were included in the study from six New York hospitals. Patients with Covid-19 who had nonobstructive

disease on coronary angiography or had normal wall motion on echocardiography in the absence of angiography were presumed to have noncoronary myocardial injury.

We identified 18 patients with Covid-19 who had ST-segment elevation indicating potential acute myocardial infarction (Fig. S1 in the Supplementary Appendix, available with the full text of this letter at NEJM.org). The median age of the

22

ORIGINAL

### High risk of thrombosis in patients with severe SARS-CoV-2 infection: a multicenter prospective cohort study

Julie Helms<sup>1,2</sup>, Charles Tacquard<sup>3</sup>, François Severac<sup>4</sup>, Ian Leonard-Lorant<sup>5</sup>, Mickaël Ohana<sup>6</sup>, Xavier Delabranche<sup>7</sup>, Hamid Merdji<sup>1,6</sup>, Raphaël Clere-Jehl<sup>1,2</sup>, Malika Schenck<sup>8</sup>, Florence Fagot Gandet<sup>9</sup>, Samira Fafi-Kremer<sup>10</sup>, Vincent Castelain<sup>7</sup>, Francis Schneider<sup>7</sup>, Léila Grunebaum<sup>9</sup>, Eduardo Anglés-Cano<sup>10</sup>, Laurent Sattler<sup>8</sup>, Paul-Michel Mertes<sup>5</sup>, Ferhat Meziani<sup>11,12</sup> and CRICS TRIGGERSEP Group (Clinical Research in Intensive Care and Sepsis Trial Group for Global Evaluation and Research in Sepsis)

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**Results:** 150 COVID-19 patients were included (122 men, median age 63 [53; 71] years, SAPSII 49 [37; 64] points). Sixty-four clinically relevant thrombotic complications were diagnosed in 150 patients, mainly pulmonary embolisms (16.7%). 28/29 patients (96.6%) receiving continuous renal replacement therapy experienced circuit clotting. Three thrombotic occlusions (in 2 patients) of centrifugal pump occurred in 12 patients (8%) supported by ECMO. Most patients (> 95%) had elevated D-dimer and fibrinogen. No patient developed disseminated intravascular coagulation. Von Willebrand (vWF) activity, vWF antigen and FVIII were considerably increased, and 50/57 tested patients (87.7%) had positive lupus anticoagulant. Comparison with non-COVID-19 ARDS patients ( $n = 145$ ) confirmed that COVID-19 ARDS patients ( $n = 77$ ) developed significantly more thrombotic complications, mainly pulmonary embolisms (11.7 vs. 2.1%,  $p < 0.008$ ). Coagulation parameters significantly differed between the two groups.

**Conclusion:** Despite anticoagulation, a high number of patients with ARDS secondary to COVID-19 developed life-threatening thrombotic complications. Higher anticoagulation targets than in usual critically ill patients should therefore probably be suggested.

Helms, J., Tacquard, C., Severac, F., Leonard-Lorant, I., Ohana, M., Delabranche, X., Meziani, F. (2020). High risk of thrombosis in patients with severe SARS-CoV-2 infection: a multicenter prospective cohort study. *Intensive Care Medicine*. doi:10.1007/s00134-020-06062-x

23

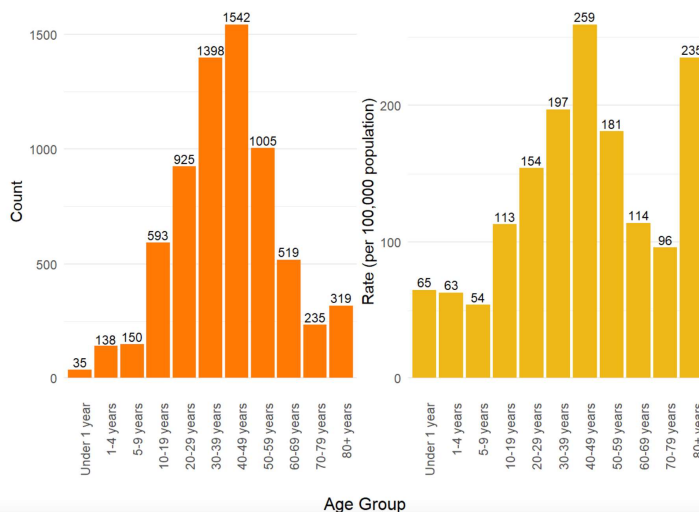
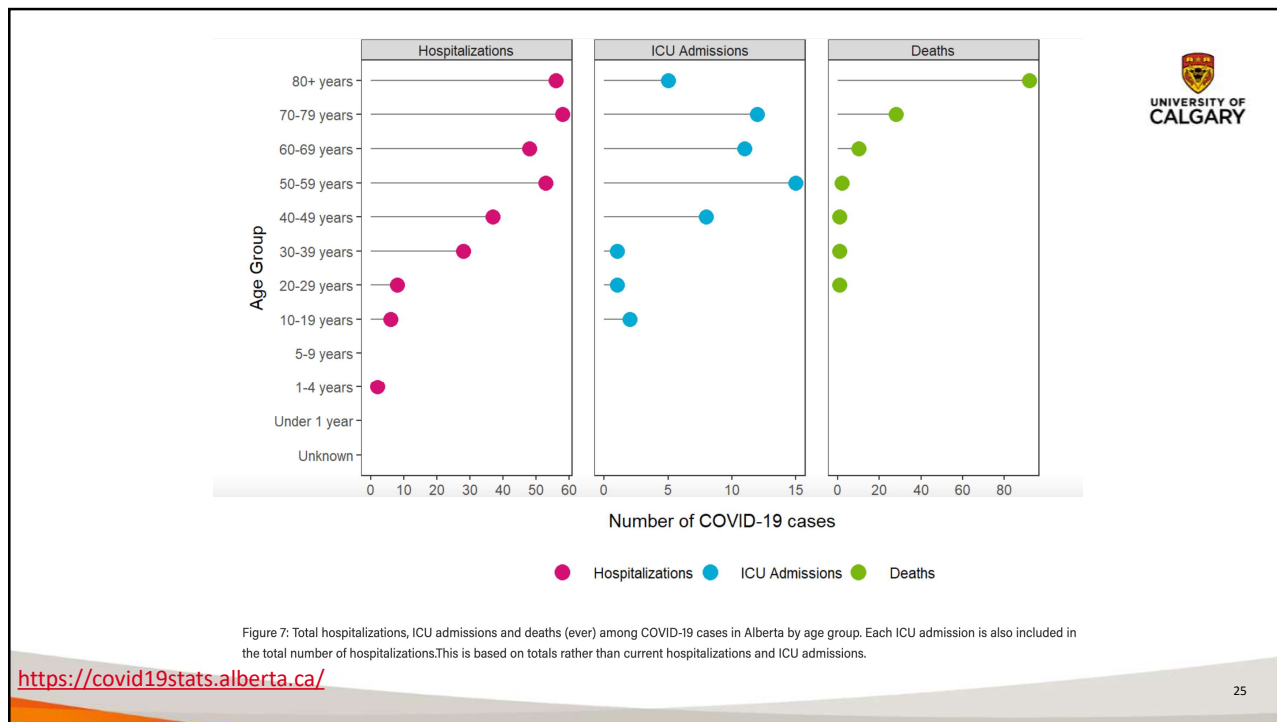


Figure 4: Number and rate of COVID-19 cases in Alberta by age group

<https://covid19stats.alberta.ca/>

24



25

## Implications of polypharmacy

- Anticoagulants: reverse if bleeding, interpret labs with caution, choose line site carefully
- QTc prolongation: choose Rx wisely, hold culprit meds
- Beta blockers: beware of masked septic physiology
- HTN Rx: likely to exacerbate low BP, Vasopressin for ACEi
- Psychoactive Rx: ALOC @ presentation, delirium risk, withdrawal risk

26



## Other Considerations in Geriatric Patients

- GOC discussion of utmost importance
- Assessment of QoL and baseline function is helpful
- Delirium risk is very high
- Presence of pre-existing organ dysfxn
- Need ensure dependent persons cared for
- EOL difficulties amidst a pandemic
- **Leave triage to triage committees**

27



## Bottom Lines

- The Alberta Critical Care Network has not been overrun
- Barring any major changes, rural centers are to act as waypoints for critically ill COVID patients
- It is always OK to ask for help or to say “I’m not sure”
- Call early, call often, call RAAPID
- You are not alone! We are in this as a province-wide team!

28



## **“When disaster strikes, the time to prepare has passed”**

Steven Cyros

29



### **Acknowledgements**

- Pandemic plans are well developed, discussion is not to ‘undo’ anything in place, you are the expert in your environment
- Every site is unique with it’s own challenges
- Planning must be a community wide and inter-agency effort, not just at the unit or site level
- Governance such as legislation, regulations, standards, code of ethics for disaster planning
- Often limited or no resources dedicated to planning, we do the best we can



## Presentation Points to Ponder

- Guiding Principles when developing a disaster plan
- Incorporating Key Components into a disaster plan
- Provide examples specific to rural pandemic disaster planning
- Making it manageable and site specific
- Finding the best fit for your specific site challenges



## Rural Challenges

- Wide variety of facilities – one size does not fit
- Smaller or nonexistent local public health departments
- Less capacity, only source of health care nearby
- Fewer resources
- Inferior communication technology
- Reliance on volunteers
- Poorly equipped ambulances and life-support devices
- Fewer health care professionals (particularly experts in mental health, infectious diseases, and burn treatment)
- Minimal surge capacity
- Greater distances from other needed resources

(Manley et al, 2006; Edwards et al, 2008)



## Guiding Principles of Planning



1. Keep the process as similar to normal as possible
2. Utilize checklists as much as possible
3. Develop an all hazards approach or Top-Hazard Approach
4. Work under an Incident Command System

## 1. Keep the process as similar to normal as possible



- “People do best what they do everyday”
- There is a limit to how much information people can process simultaneously and this impacts how information is stored.
- Too much information, or too difficult a task, presented in an unstructured way, can result in cognitive overload.
- Clinical researchers have found that cognitive overload heavily degrades task performance in both simulation and clinical practice, which they describe as “helmet fire” (Lee et al, 2020)



## 1. Keep the process as similar to normal as possible

### Examples

- Defining roles and responsibilities; i.e. do not assign a redeployed nurse to Triage role
- Involve those who work in the environment to help develop the plan
- Use the same documentation
- Use the same chart flow and process
- Decide if a change in process is sustainable and can be utilized in regular practice

35

## 2. Utilize Checklists



Ante-Room Nurse Checklist	Isolation Room MD Checklist																				
<ul style="list-style-type: none"> <li><input type="checkbox"/> Respond to overhead page (to isolation room 10) STAT, get report on patient status</li> <li><input type="checkbox"/> Bring crash cart to ante room, take plastic board off front (set aside)</li> <li><input type="checkbox"/> Collect <u>NSI Medication Kit</u> from Narcotic Cupboard and bring to ante room</li> <li><input type="checkbox"/> Assist MD to gather intubation supplies from crash cart</li> <li><input type="checkbox"/> Draw up required medication (as per MD) and label using supplies from crash cart. (<b>medication work sheet is on whiteboard for quick resource</b>)</li> <li><input type="checkbox"/> Give medications to Isolation room nurse</li> <li><input type="checkbox"/> Don in PPE with N95 mask</li> <li><input type="checkbox"/> Document on nursing note (triage should have started a note)</li> <li><input type="checkbox"/> Ensure second/back-up MD is present in ante-room with PPE on</li> <li><input type="checkbox"/> Locate red clipboard on crash cart for Intubation checklist</li> <li><input type="checkbox"/> Before intubation begins, have everyone stop tasks and go through <u>Intubation checklist</u> as a team (located on red clipboard)</li> <li><input type="checkbox"/> Close Isolation door for procedure and document</li> <li><input type="checkbox"/> Prepare sedation infusion (e.g. ketamine) on <u>baxter</u> pump, as required by MD</li> </ul> <p><b>Post Intubation</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Complete documentation (from white board in isolation room)</li> <li><input type="checkbox"/> Assist with EMS handover, as needed</li> <li><input type="checkbox"/> Assist isolation room nurse with moving equipment into ante room that has been 'wiped' down.</li> <li><input type="checkbox"/> Assist isolation room nurse and MD to doff safely using buddy system</li> <li><input type="checkbox"/> Restock the room (use daily checklist as needed). Extra intubation supplies and IV packages located in the clean supply room (behind triage).</li> </ul>	<p><b>Initial Steps and Assessment</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Get handover from isolation room doorway, considering: <ul style="list-style-type: none"> <li>o Entering isolation room for full assessment</li> <li>o Calling for back-up doctor (anytime, if predicted need to intubate)</li> <li>o Calling RAAPID (portable phone)</li> <li>o Arranging RED transfer</li> </ul> </li> </ul> <p><b>Pre-Intubation</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Don PPE and N95 mask</li> <li><input type="checkbox"/> Get supplies from <u>GlideScope Basket</u> (<i>nurse will bring to anteroom</i>) <ul style="list-style-type: none"> <li>o <u>GlideScope</u> (ensure battery working)</li> <li>o <u>Blade</u> (e.g. 53)</li> <li>o <u>Stylet</u></li> </ul> </li> <li><input type="checkbox"/> Get supplies from <u>crash cart</u> (<i>nurse will bring to anteroom</i>). Place supplies on mayo stand. Bring mayo stand into isolation room.</li> </ul> <table border="1" style="margin-left: 20px; border-collapse: collapse; text-align: center;"> <tr> <th colspan="4">2<sup>nd</sup> drawer of crash cart</th> </tr> <tr> <td colspan="4">10 mL syringe</td> </tr> <tr> <th colspan="4">3<sup>rd</sup> drawer of crash cart</th> </tr> <tr> <td>Laryngoscope handle and blade</td> <td>Stylet</td> <td>OPA</td> <td>Blue scissor clamp</td> </tr> <tr> <td>ETT – at least 2 sizes (e.g. 7.0, 7.5, 8.0)</td> <td>ETT holder (hard shell or twill)</td> <td>Lubricant</td> <td></td> </tr> </table> <ul style="list-style-type: none"> <li><input type="checkbox"/> Get supplies from <u>Advanced Airway Box</u> (<i>nurse will bring to isolation room</i>) <ul style="list-style-type: none"> <li>o <u>Bougies</u></li> <li>o <u>LMA</u></li> <li>o <u>PEEP Valve</u></li> </ul> </li> <li><input type="checkbox"/> <u>Adult Surgical Airway Kit</u> (<i>nurse will bring Sterile Tracheostomy Tray to room</i>)</li> <li><input type="checkbox"/> Participate in <u>Intubation Checklist</u> (<i>led by anteroom nurse</i>), say the plan for: <ul style="list-style-type: none"> <li>o Intubation meds (e.g. ketamine 100mg and rocuronium 100mg)</li> <li>o Intubation plan A/B/C (e.g. VL, VL with bougie, LMA, surgical airway)</li> <li>o Peri-intubation hypotension (e.g. phenylephrine)</li> <li>o Post-intubation analgesia/sedation (e.g. ketamine infusion)</li> </ul> </li> </ul> <p><b>Post-Intubation</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Ongoing airway management</li> <li><input type="checkbox"/> Give handover to EMS (handover checklist available) [Caution: avoid giving handover while bagging. Assign bagging to nurse or have nurse handover.]</li> <li><input type="checkbox"/> Use buddy system to doff safely</li> </ul>	2 <sup>nd</sup> drawer of crash cart				10 mL syringe				3 <sup>rd</sup> drawer of crash cart				Laryngoscope handle and blade	Stylet	OPA	Blue scissor clamp	ETT – at least 2 sizes (e.g. 7.0, 7.5, 8.0)	ETT holder (hard shell or twill)	Lubricant	
2 <sup>nd</sup> drawer of crash cart																					
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ETT – at least 2 sizes (e.g. 7.0, 7.5, 8.0)	ETT holder (hard shell or twill)	Lubricant																			



### 3. Develop an All Hazards plan

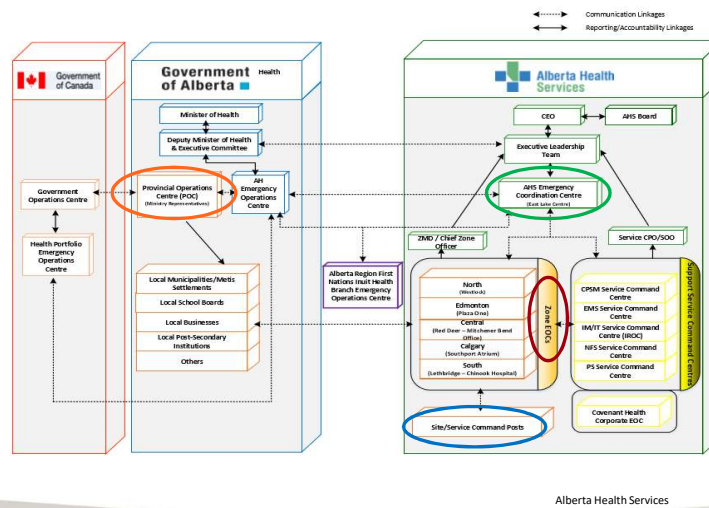
#### Considerations for Pandemic Planning:

1. Planning includes surge phases based on triggers that can be monitored with surveillance
2. Time to prepare for each phase
3. Timeline for each phase is unpredictable, may be extensive
4. Staff will be affected (up to 40% potentially)
5. Ethics (high risk staff, protect family, ventilator availability)

### 4. Work Under an Incident Command Center



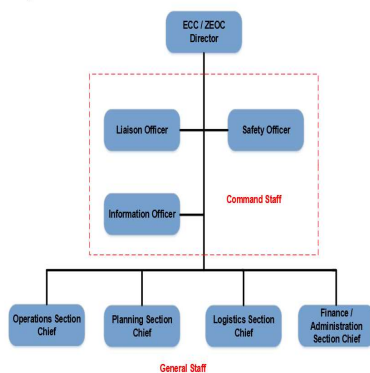
Figure 3: Coordinated Incident Management System





## 4. Work Under an Incident Command Center

Figure 4: AHS' Incident Command Structure



### Site Command

- Communicates information from ECC/ZEOC to site and individual departments
- Problem solves issues at the site and community level
- Communicates information from ZEOC to site
- Brings issues forward to ZEOC and requests support and resources as needed
- Assists with problem-solving at department levels
- Enables departments to focus on unit specific business process and operations.

Alberta Health Services

## Or “What would Deena Hinshaw say”?



(Government of Alberta, 2020)

## Key Components of Planning



1. Communication systems
2. Surge capacity
3. Resources
4. Preparedness education and practice

## 1. Communication Systems



An important challenge in emergency preparedness is communication and information flow among processes

- Weekly 'update' email
- Have staff become involved in the planning process
- Care Hub to support redeployed or support personnel, valuable when using a 'zone' process
- Regular leadership planning meetings; 'to do' list and prioritize items; work toward a common goal



## 1. Communication Systems

### Tools

- White board on wheels
- Call bell
- Portable phone
- Walkie Talkie
- Standard MD order form

## 2. Surge Capacity and Triggers

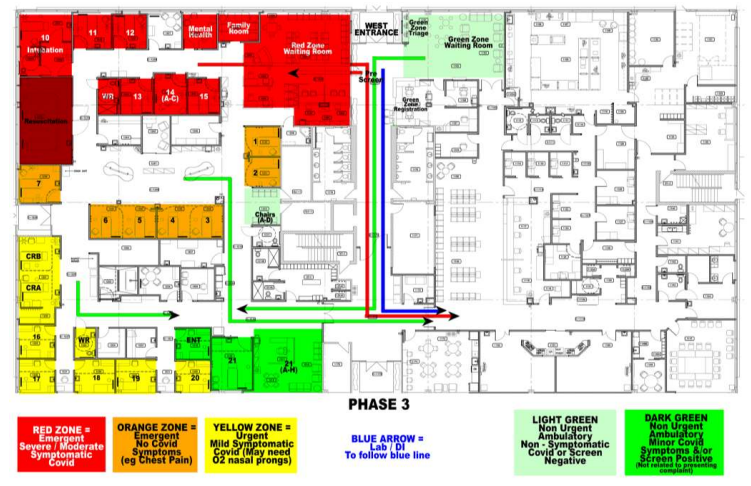
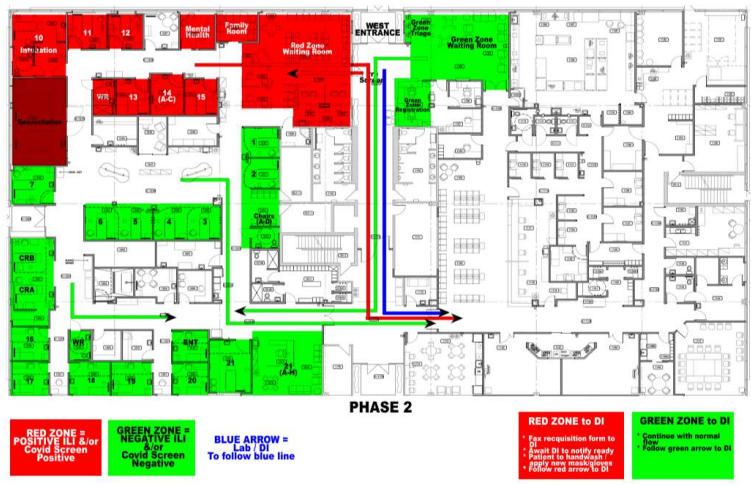


### Framework Overview:

Table 1 below provides an overview of the four phases of ED/UCC COVID-19 pandemic surge.

Table 1

Phase I	Phase II	Phase III	Phase IV
<b>Conventional Capacity</b>	<b>Contingency Capacity</b>	<b>Crisis Capacity</b>	<b>Pandemic Disaster</b>
"The ED/UCC is somewhat busier than usual but we can keep pace."	"The ED/UCC is far busier than usual."	"The ED/UCC is so busy we are overwhelmed."	"The ED/UCC can no longer provide usual standards of care."
No additional resources required in ED/UCC.	Some additional resources required in ED/UCC.	Significant additional resources required in the ED/UCC and elsewhere in the facility for emergency/urgent care.	All resources exhausted and demand still far exceeds supply in the health system for emergency/urgent care.



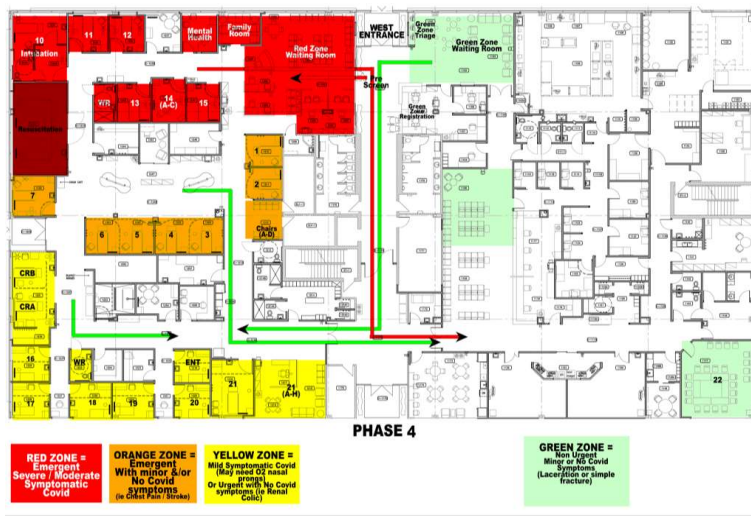


## 2. Surge Capacity and Triggers

### Surge Plan

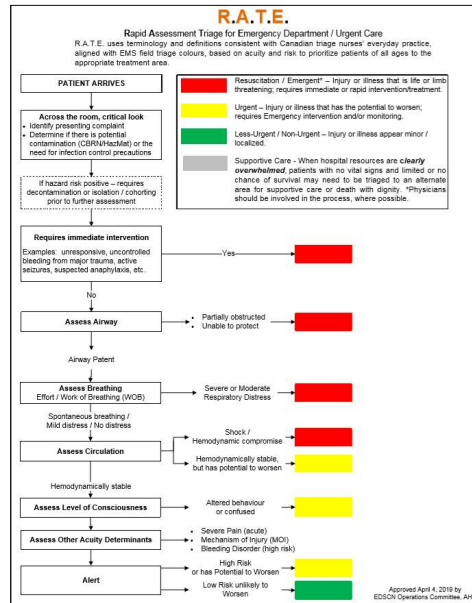
Space	Description
	<ul style="list-style-type: none"> <li>Available ED/UCC patient care spaces are not adequate to ensure delivery of usual standards of emergency/urgent care.</li> <li>Additional care spaces in other areas of the facility are opened for emergency/urgent care patients.</li> </ul>
	See PHASE III Department Map
	<b>Potential Action(s)</b> <ul style="list-style-type: none"> <li>Expansion to available overflow clinic space and waiting room</li> <li>Utilize second Triage RN and separate <b>Green Waiting Room</b> by main building registration desk</li> <li>Possible re-riage of CTAS 4 and 5 patients to follow up with PCN, or other instructions See attached COVID-19 Triage Diversion Directive and <b>Quick Triage Diversion Process</b></li> <li>Notify PCN of diversion</li> <li>Use door with rooms for severe/moderate symptomatic patients, contact &amp; droplet isolation precautions 10, 11, 12, 13, 14A-C (chairs), 15</li> <li>Use Negative Pressure room 10 for AGM or potential intubation</li> <li>Expand urgent patients and mild symptomatic COVID patients into rooms with doors in Park Track area 116, 17, 18, 19, 20 and less-urgent with mild symptoms or screen positive in room 21, and 21A-H (chairs).</li> <li>Less urgent non-symptomatic &amp; screen negative will use chairs (A-D) in main department.</li> <li>EMS patients will arrive through WEST doors</li> </ul>

Supplies	Description
	<ul style="list-style-type: none"> <li>Significant supply and equipment shortages, including PPE.</li> </ul>
	<b>Potential Action(s)</b> <ul style="list-style-type: none"> <li>Limit nursing assessment for CTAS 5 and 4 patients in Contact &amp; Droplet isolation (preserve PPE)</li> <li>Alter patient assignment to limit PPE use – i.e. assigned nurse(s) to care for ILU/COVID zone</li> <li>Practice responsible stewardship, monitor supply usage patterns and adequacy of stock of critical supplies. Maintain communication with CPISM.</li> <li>May require strategies such as: conservation, substitution, and adaptations. Reuse and reallocation strategies may also need to be considered.</li> <li>Arrange for supplemental oxygen to meet significant patient demands. This may include oxygen delivery in non-standard patient care spaces.</li> <li>Notify stores personnel to monitor Oxygen consumption daily</li> <li>Consider using <b>one-mode-disaster-charts</b> for patient registration</li> <li>Notify Registration</li> <li>Consider using <b>Disaster Incident Response Physician Order</b> form for DI/Lab requisition and other patient orders</li> </ul>
	<b>Room 21</b> <ul style="list-style-type: none"> <li>Movable white board for patient tracking</li> <li>Cast supply cart</li> <li>Dressing/suture cart</li> <li>Splint/sling supply cart</li> <li>Cast saw</li> <li>Cast silver cart</li> <li>Orthopedic tools cart</li> <li>Air boot/glypex cart</li> <li>Order box</li> </ul>
	<b>Yellow Zone</b> <ul style="list-style-type: none"> <li>Isolation supply cart</li> <li>Clipboard (16-21)</li> <li>Movable white board for patient tracking</li> <li>1 <b>dupanap</b> to yellow zone</li> <li>1 portable O2 sat to yellow zone</li> <li>Oxygen tanks (2) for rooms 16-18</li> <li>Wire laundry carts (each room, if available)</li> <li>Order box</li> </ul>





### 3. Resources



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Disaster Incident Response Physician Order (Emergency Department/Urgent Care)

Patient Name: \_\_\_\_\_  
Date of Birth: \_\_\_\_\_  
Site: \_\_\_\_\_  
Date: (yyyy-Mon-dd) \_\_\_\_\_  
Sex:  Female  Male Age: \_\_\_\_\_  
PEX or FBX: \_\_\_\_\_

Triage Area:  Red (Major)  Yellow (Urgent)  Green (Minor)  Black (Dead or Expectant)

<b>Laboratory</b> <input type="checkbox"/> Type/Screen (Transfusion Identification Form) <input type="checkbox"/> Crossmatch for _____ units <input type="checkbox"/> CBC <input type="checkbox"/> CBC - no differential <input type="checkbox"/> Electrolytes/Creat./Glucose <input type="checkbox"/> UA <input checked="" type="checkbox"/> D-Dimer <input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____ <input type="checkbox"/> Collection Time _____ <input type="checkbox"/> POCT - UA +/- BHCG	<b>Diagnostic Imaging</b> <input type="checkbox"/> AP Chest (portable) <input type="checkbox"/> PA/Lateral Chest <input type="checkbox"/> Pelvis A.P. <input type="checkbox"/> C. Spine <input checked="" type="checkbox"/> T Spine <input type="checkbox"/> L Spine <input type="checkbox"/> CT Head (Non-contrast) <input type="checkbox"/> CT Skull base to T4 <input type="checkbox"/> CT Abdomen/Pelvis <input type="checkbox"/> CT Chest	<b>Extremity</b> <input type="checkbox"/> 1. _____ <input type="checkbox"/> 2. _____ <input type="checkbox"/> 3. _____ <input type="checkbox"/> 4. _____ <input type="checkbox"/> 5. _____ <input type="checkbox"/> Ultrasound Abdomen <input type="checkbox"/> Other _____ <input type="checkbox"/> See Physician Order Sheet	<b>Cardio-Respiratory</b> <input type="checkbox"/> ECG <input type="checkbox"/> ABG <input type="checkbox"/> VBG <input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____ <input type="checkbox"/> See Physician Order Sheet Collection Time _____
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<b>Procedures</b> <input type="checkbox"/> IV Bolus <input type="checkbox"/> #1 I.V. NS Rate _____ mL/hr <input type="checkbox"/> #2 I.V. NS Rate _____ mL/hr <input type="checkbox"/> I.V. <input type="checkbox"/> Intraosseous Device (EZ-IO) <input type="checkbox"/> Prepare for: <input type="checkbox"/> Chest Tube L _____ R _____ <input type="checkbox"/> Procedural Sedation	<input type="checkbox"/> Foley Catheter <input type="checkbox"/> Nasogastric Tube <input type="checkbox"/> Orogastric Tube <input type="checkbox"/> Spinal Precautions	<b>Procedures / Task</b> 1. Splint / Slab _____ 2. Cast / Air Cast _____ 3. Tensor _____ 4. Sling _____ 5. Irrigation _____ 6. Dressing _____ 7. Other _____	<b>Limbs:</b> _____ _____ _____ _____ _____
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**Medications**

Td (Tetanus and Diphtheria) 0.5cc I.M.  
 Meclizine \_\_\_\_\_ mg PO every \_\_\_\_\_ minutes pm (to max of \_\_\_\_\_ mg)  
 Fentanyl \_\_\_\_\_ mcg I.V. every \_\_\_\_\_ minutes pm (to max of \_\_\_\_\_ mcg)  
 Other \_\_\_\_\_  
 Maxeran \_\_\_\_\_ mg I.V. once pm  
 Ondansetron \_\_\_\_\_ mg I.V. once pm  
 Other \_\_\_\_\_

**Consultation**

Trauma  Orthopaedics  Plastics  Hospitalist  Intensive Care  
 General Surgery  Neurosurgery  Internal Medicine  Paediatrics  Other \_\_\_\_\_

**Patient Disposition**

Admit: Service \_\_\_\_\_  
 Deceased: \_\_\_\_\_  
 Date: (yyyy-Mon-dd) \_\_\_\_\_ Time: (hh:mm) \_\_\_\_\_

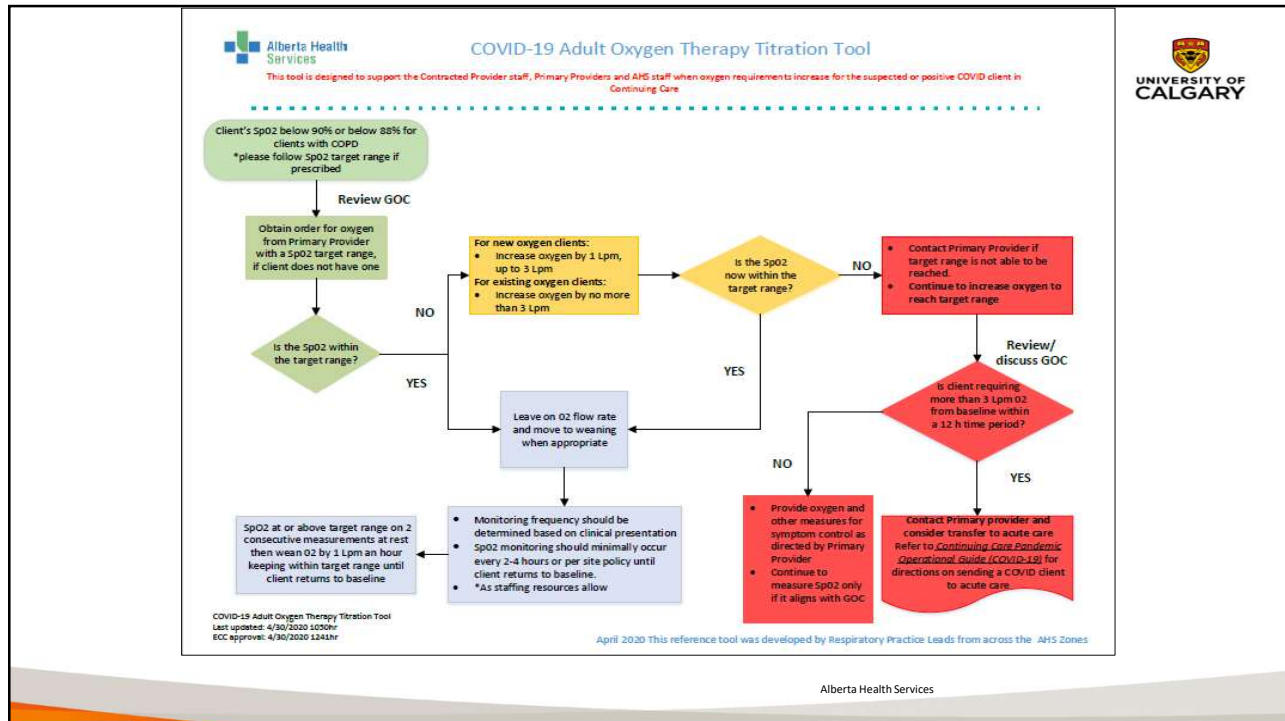
Transfer to:  
 Red Treatment Area  
 Yellow Treatment Area  
 Green Treatment Area  
 Social Work

Discharge Home  
 Follow-up with G.P. in \_\_\_\_\_ days  
 Home Care  
 Cast Clinic  
 Other \_\_\_\_\_

Physician Name: \_\_\_\_\_ Physician Signature: \_\_\_\_\_ Date: (yyyy-Mon-dd) \_\_\_\_\_



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## Resources



**Oxygen E Size Tank Duration Chart**

\*Use caution when sending patients with less than a 50 minute supply of oxygen

	Tank Pressure (psi)										
	Full tank (2200)		¾ tank (1500-1700)		½ tank (900-1100)			¼ tank (600)			
	2200	2000	1800	1600	1400	1200	1000	800	600	500	
Flow (LPM)	0.5	17h 45m	15h 40m	13h 35m	11h 30m	9h 25m	7h 15m	5h 10m	3h 5m	1h	0*
	1	8h 50m	7h 50m	6h 45m	5h 45m	4h 40m	3h 40m	2h 35m	1h 30m	30m*	0*
	1.5	5h 55m	5h 10m	4h 30m	3h 50m	3h 5m	2h 25m	1h 45m	1h	20m*	0*
	2	4h 25m	3h 55m	3h 20m	2h 50m	2h 20m	1h 50m	1h 15m	45m*	15m*	0*
	3	2h 55m	2h 35m	2h 15m	1h 55m	1h 30m	1h 10m	50m	30m*	10m*	0*
	4	2h 10m	1h 55m	1h 40m	1h 25m	1h 10m	55m	35m*	20m*	5m*	0*
	6	1 h 25m	1h 15m	1h 5m	55m	45m*	35m*	25m*	15m*	5m*	0*
	8	1h 5m	55m	50m	40m*	35m*	25m*	20m*	10m*	0*	0*
15	35m*	30m*	25m*	20m*	15m*	15m*	10m*	5m*	0*	0*	

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## 4. Preparedness Education and Practice



- May be overwhelming
- Keep it simple
- Focus on systems, document ideas and learning
- Keep process as similar to usual
- Make system sustainable
- \*Do the basics well

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## Attendance, Registration and Evaluation Survey

### Attendance form

In order to receive the CME certificate, you need to register in Rural Videoconference and complete the brief attendance and evaluation form

### Registration Link

<https://conted.ucalgary.ca/portal/events/reg/participantTypeSelection.do?method=load&entityId=50748581>

\*you do not need to select a session, simply choose your profession and "Continue"

### Evaluation and Attendance link

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\*After the session, you will receive an email with the link\*