

COVID CLINICAL UPDATE ROUNDS

SEPT 18TH, 2020



COVID UPDATE ROUNDS

- Recurring
- Interactive
 - Slido/**#MedicalStaffCOVID**
- Choose your own adventure (send us requests for topics)
 - medstaffengagement@viha.ca, omar.ahmad@viha.ca
- Knowing local response is paramount

PREVIOUSLY ON RECURRING ROUNDS

- 1.3 cases/100,000 on VI
- Good medical management and individualized care
- HFNC – yes, but AGMP
- NIPPV – yes, if HFNC fails, but is an AGMP
- Prone positioning
- Dexamethasone – reduced mortality and ventilator free days
- Remdesivir – Coviflu (questionable)

OBJECTIVES, SEPT 18TH

- Be updated on epidemiology
- Review latest on PPE and testing
- Understand the approach to the critically ill patient
 - Approach to intubation, ventilation, VTE, ICU procedures, CRRT challenges
- Be aware of checklists

UPCOMING TOPICS

- Covid Clinical Trials at Island Health
- COVID COS and checklists
- Cohorting and transport
- Code blue protocols
- Ongoing updates in regard to PPE and testing
- Extubation criteria and approach

TODAY'S SPEAKERS AND SUPPORT STAFF

- Dr. Omar Ahmad
- Dr. Gordon Wood
- Dr. Shavaun MacDonald
- Dr. Adam Thomas
- Dr. Donovan MacDonald
- Dr. Pamela Kibsey
- Lisa Young
- Victoria Schmid
- Tara Holmes
- Kyja Levitt

DISCLOSURES/CONFLICTS OF INTEREST

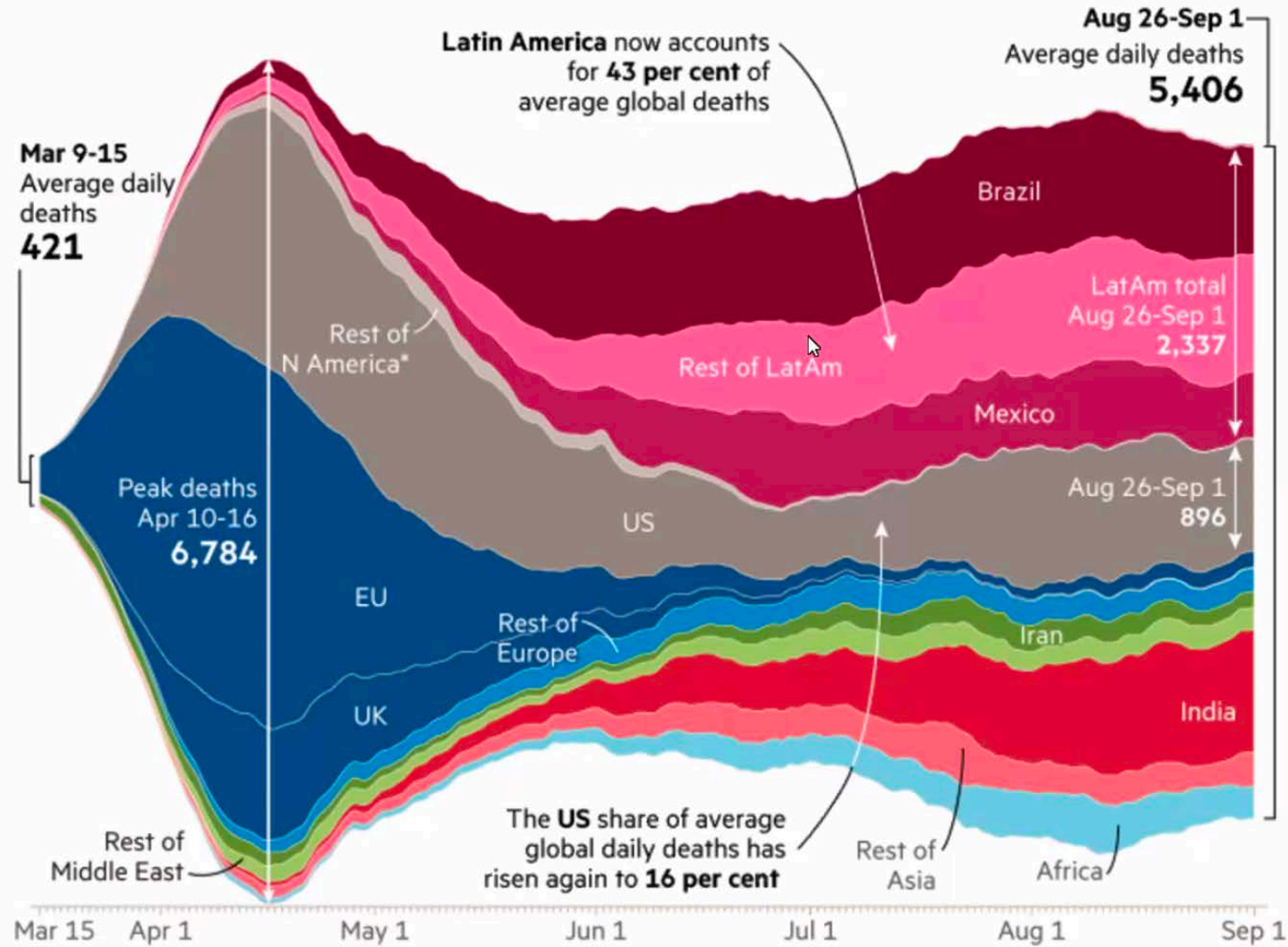
- None

COVID SEPT. 18



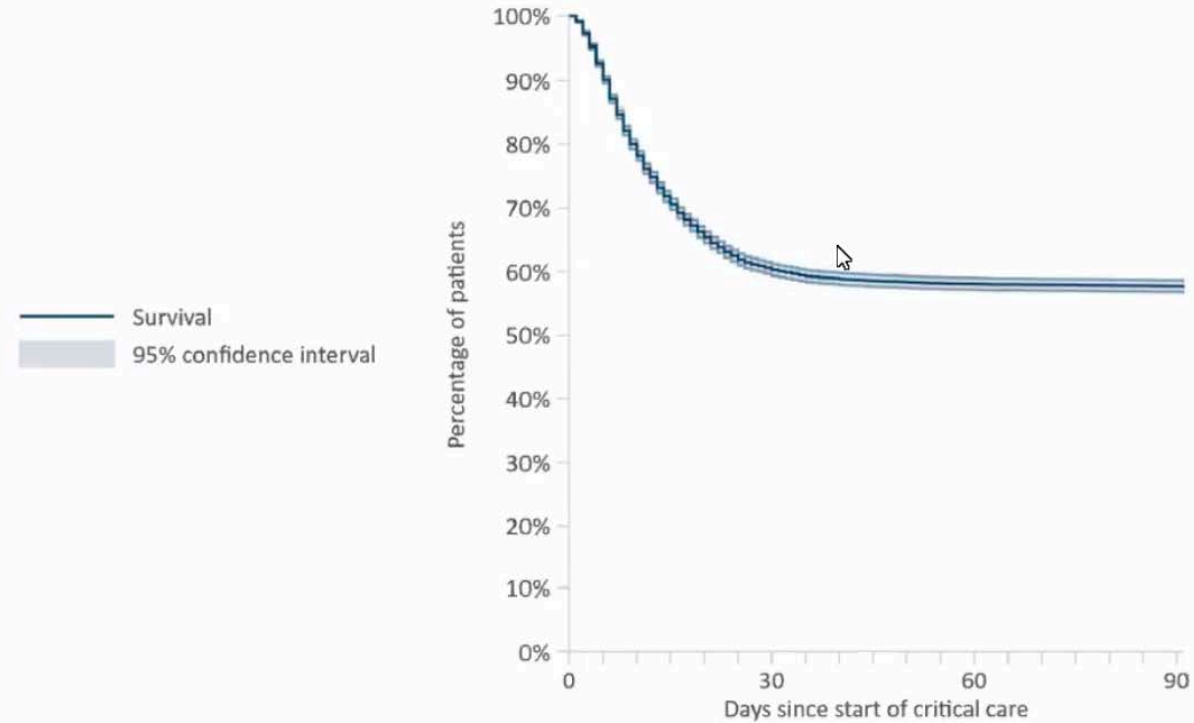
Resurgence in Covid-19 deaths approaching mid-April peak

Daily deaths of patients diagnosed with coronavirus (7-day rolling average)



* Canada, Bermuda, Greenland and St Pierre and Miquelon

ICU data - UK



© ICNARC 2020

At risk	10834	6463	6121	6003
Died (in hospital)	0	4246	4514	4552
Censored	0	125	199	279

Figure 14 In-hospital survival to 90 days following admission to critical care

ICU Data - Canada

(n=328)

Total ICU mortality – 26%

Mechanical ventilation mortality – 31%

Figure 4. Age and gender ³ distribution of COVID-19 cases in Canada as of September 16, 2020, 7 pm EDT (n=11,751 ¹)

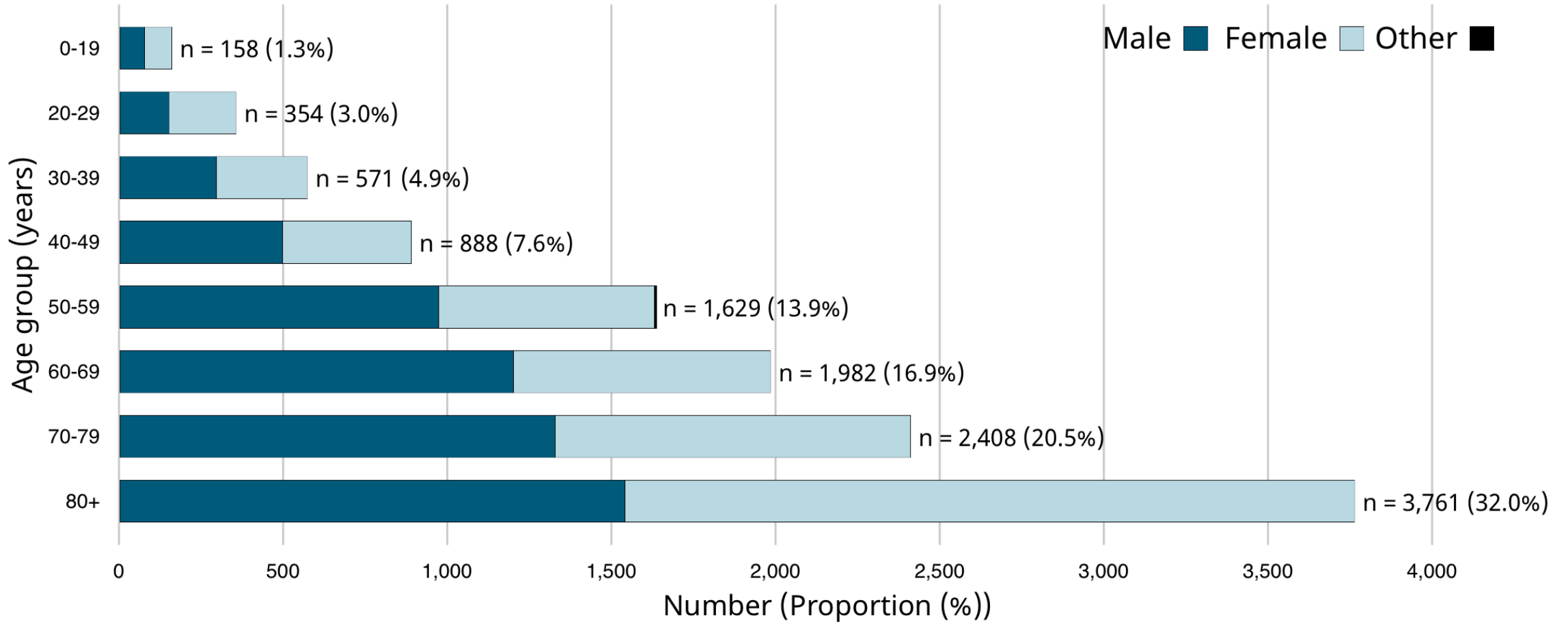


Figure 4. Age and gender ³ distribution of COVID-19 cases in Canada as of September 16, 2020, 7 pm EDT (n=2,393)

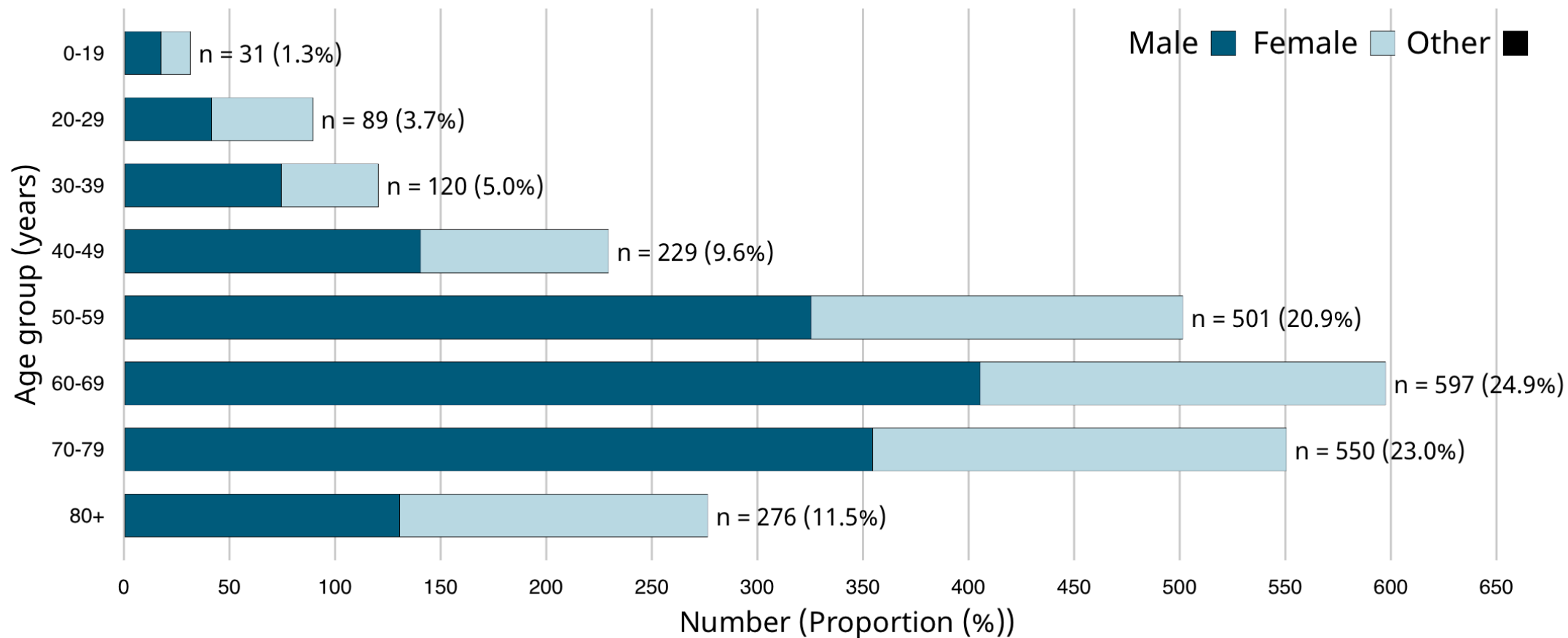
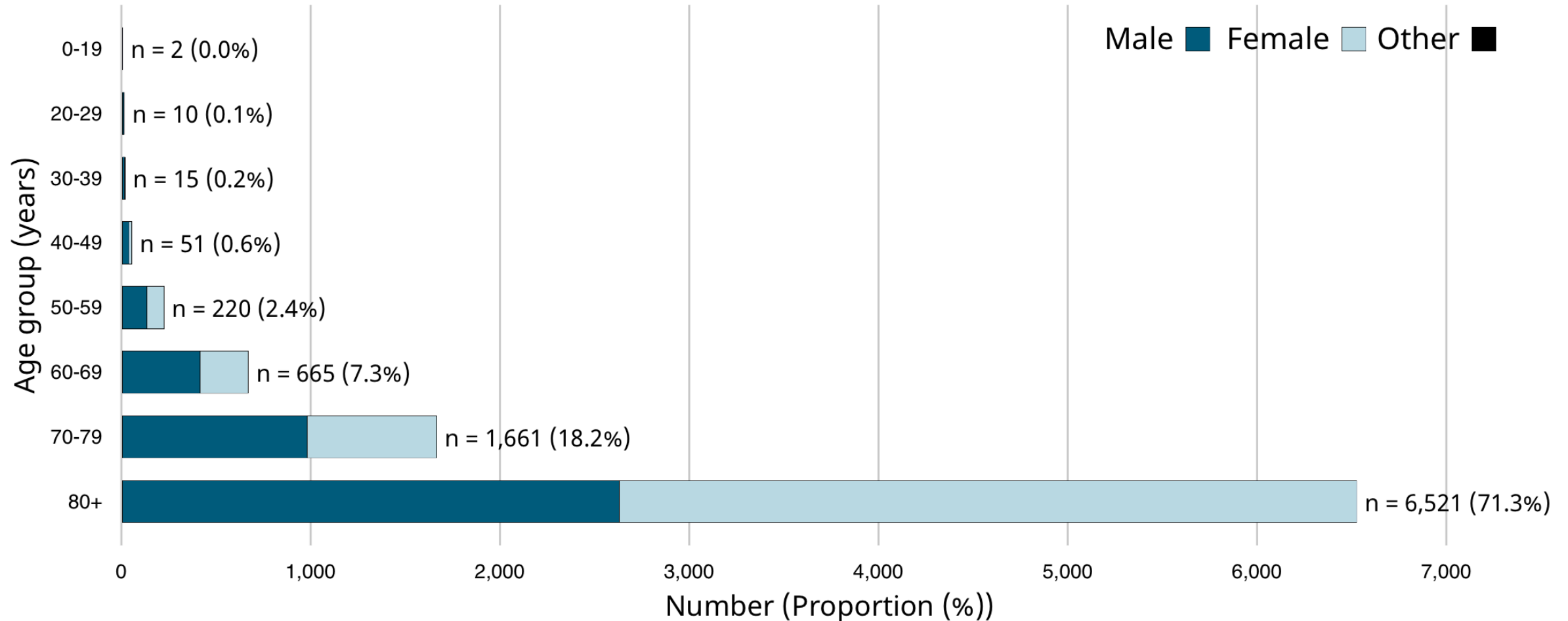


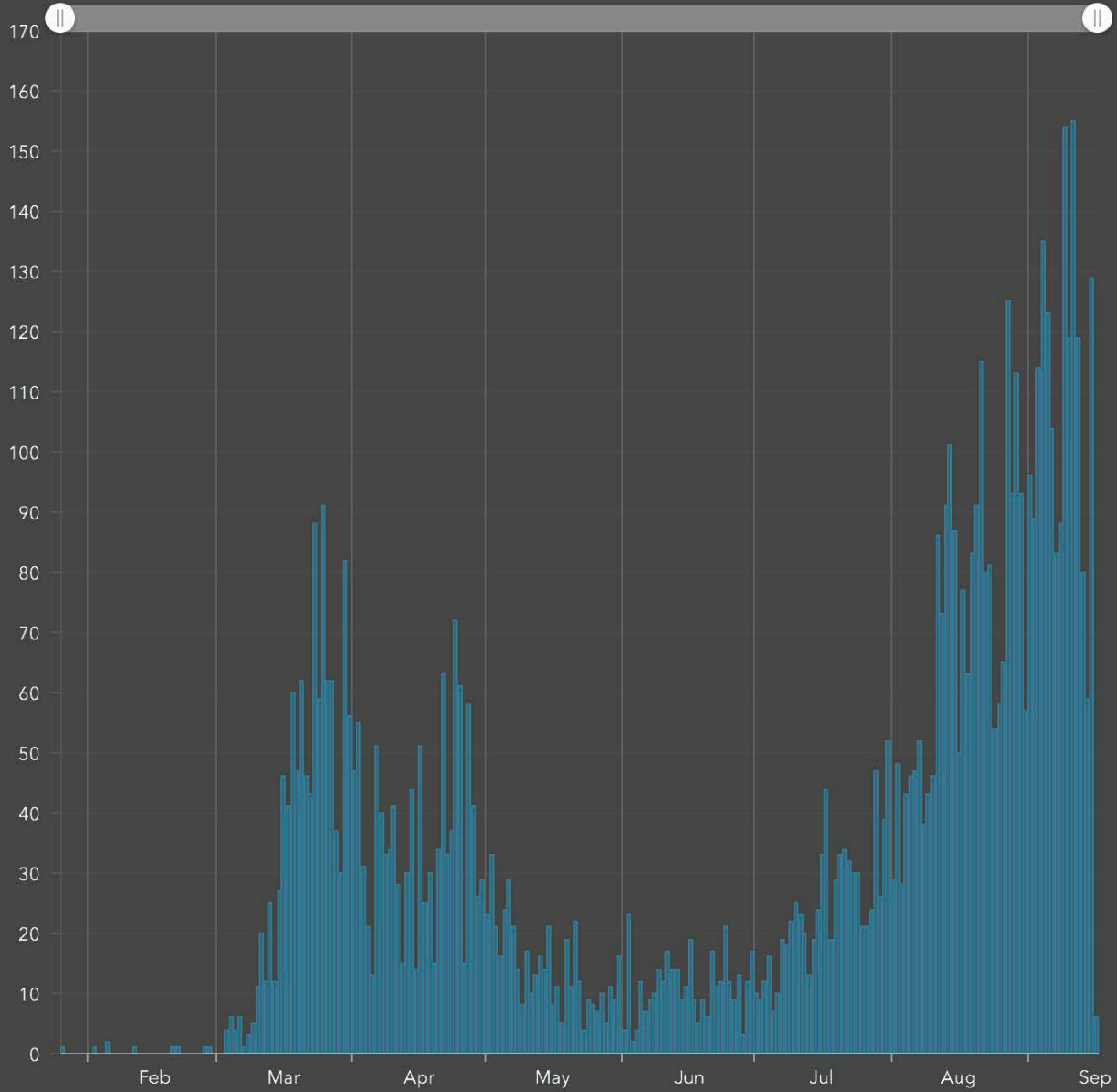
Figure 4. Age and gender ³ distribution of COVID-19 cases in Canada as of September 16, 2020, 7 pm EDT (n=9,145 ¹)



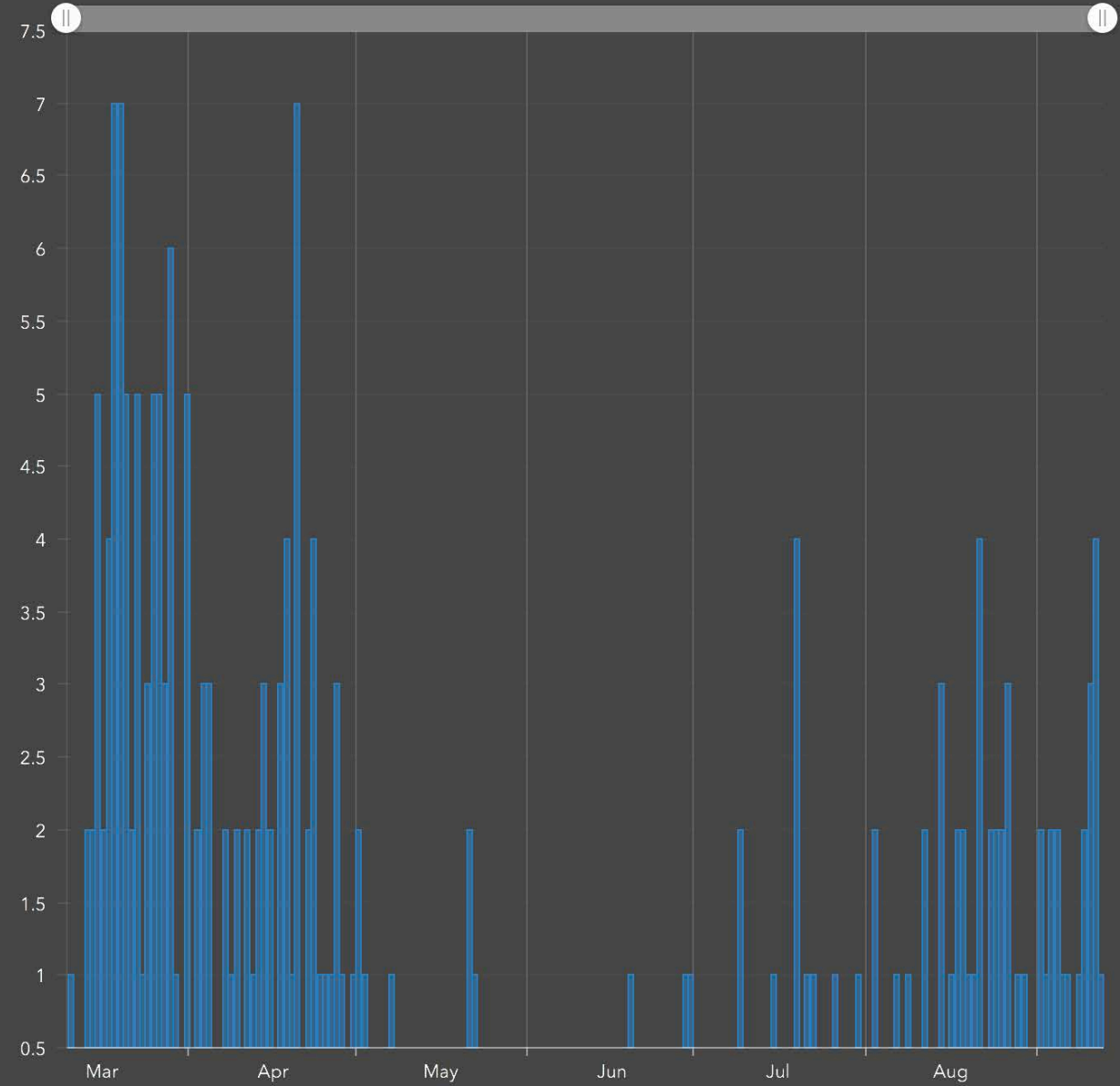
BRITISH COLUMBIA



B.C. Cases Reported to Public Health by Day



Health Authority Cases Reported to Public Health by Day



Total Cases

 **7,498**

Laboratory Diagnosed

7,385

Epi-Linked

113

Currently Hospitalized

 **60**

Total to Date: 679

Currently Admitted to ICU

 **23**

Confirmed Deaths

 **219**

Recovered

 **5,646**

Last Update

9/16/2020, 4:30 PM

BRITISH COLUMBIA

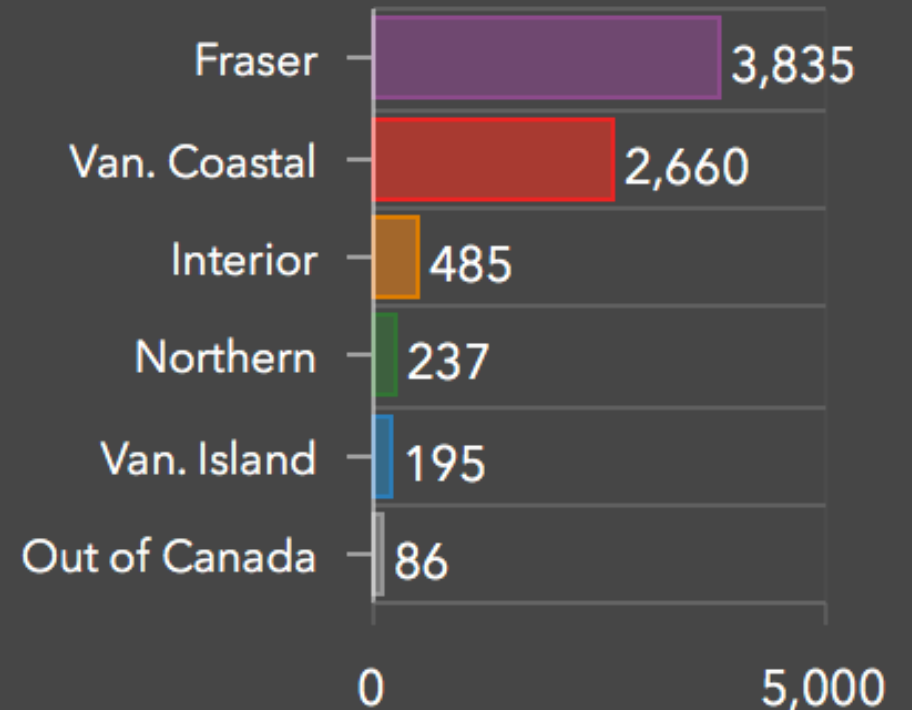
New Cases

 **122**

Active Cases

 **1,614**

Total Cases Reported by Health Authority



Total Cases



195

Laboratory Diagnosed

191

Epi-Linked

4

ISLAND HEALTH

Currently Hospitalized



0

Total to Date: 25

Currently Admitted to ICU



0

Confirmed Deaths



5

Recovered



179

Last Update

9/16/2020, 4:30 PM

New Cases



0

Active Cases



11

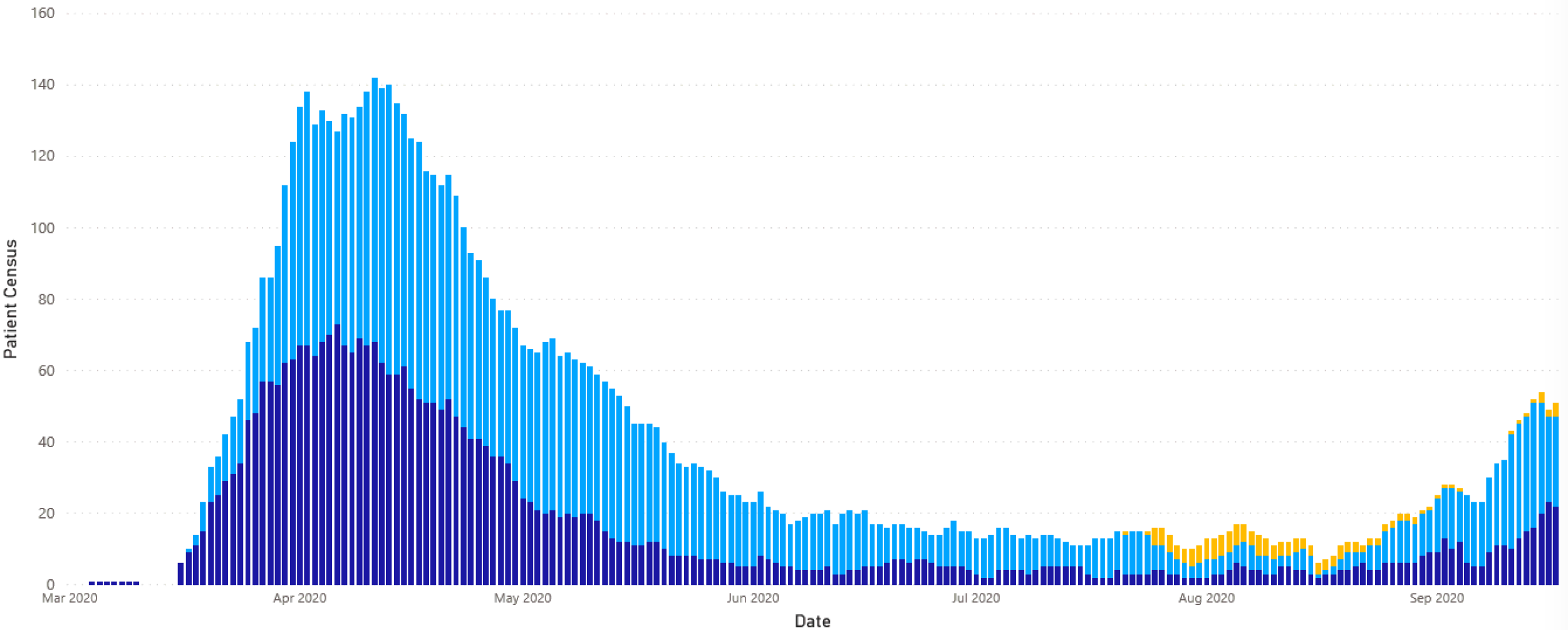
Health Authority

- FHA
- IHA
- NHA
- PHC
- PHSA
- VCH
- VIHA

Hospital Category

- COVID (Pri/Sec)
- Non-COVID

Care Level ● Critical Care ● Non-Critical Care ● Discontinued Isolation



Last Data Entry
9/17/2020 8:44:10 AM

The "Discontinued Isolation" identifies COVID-19 inpatients, who are still in hospital but have recovered according to the definitions put forward by BCCDC and Infection Control. We have started to capture this data from VCH from July 21st, PHC from July 24th and FHA from July 25th. We are working with health authorities to identify recovered patients prior to these dates.

Health Authority

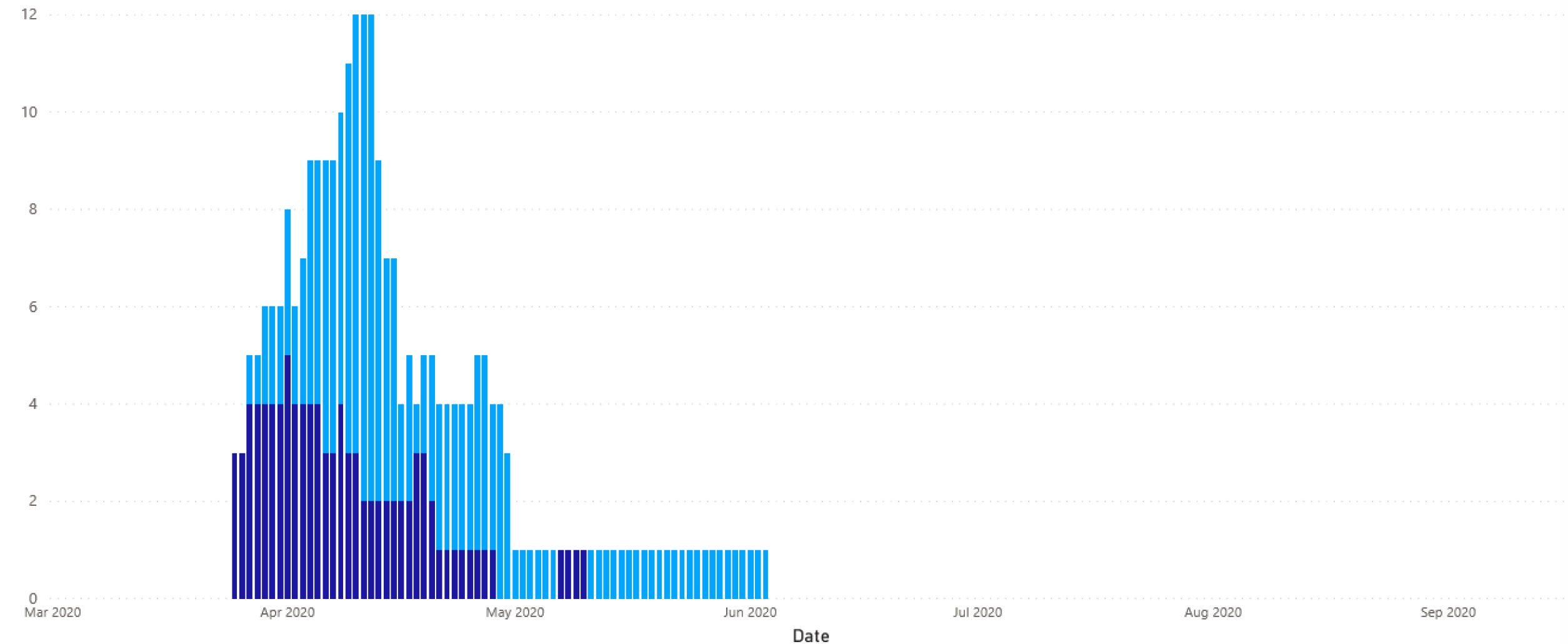
FHA IHA NHA PHC PHSA VCH VIHA



Hospital Category

COVID (Pri/Sec) Non-COVID

Care Level ● Critical Care ● Non-Critical Care



INTUBATION AND MECHANICAL VENTILATION



WHEN DO WE INTUBATE?



What is the work of breathing?

RECOMMENDATIONS FOR MECHANICALLY VENTILATED ADULT AND PEDIATRIC PATIENTS WITH ARDS

- Implement mechanical ventilation using lower tidal volumes (4 to 8 mL/kg PBW) and low inspiratory pressures (plateau pressure < 30)
 - In patients with severe ARDS, prone ventilation for 12-16 hours per day should be considered
 - Use a conservative fluid management strategy for ARDS patients without tissue hypoperfusion
 - Use in-line catheters for airway suctioning and clamp the endotracheal tube when disconnection is required (for example, transfer to a transport ventilator)
- In patients with moderate or severe ARDS, higher PEEP instead of lower PEEP is suggested
 - In patients with moderate-severe ARDS ($\text{PaO}_2/\text{FiO}_2 < 150$), neuromuscular blockade by continuous infusion should not be routinely used
- Avoid disconnecting the patient from the ventilator, which results in loss of PEEP and atelectasis

OPTIMIZING VENTILATORY SUPPORT IN COVID-19

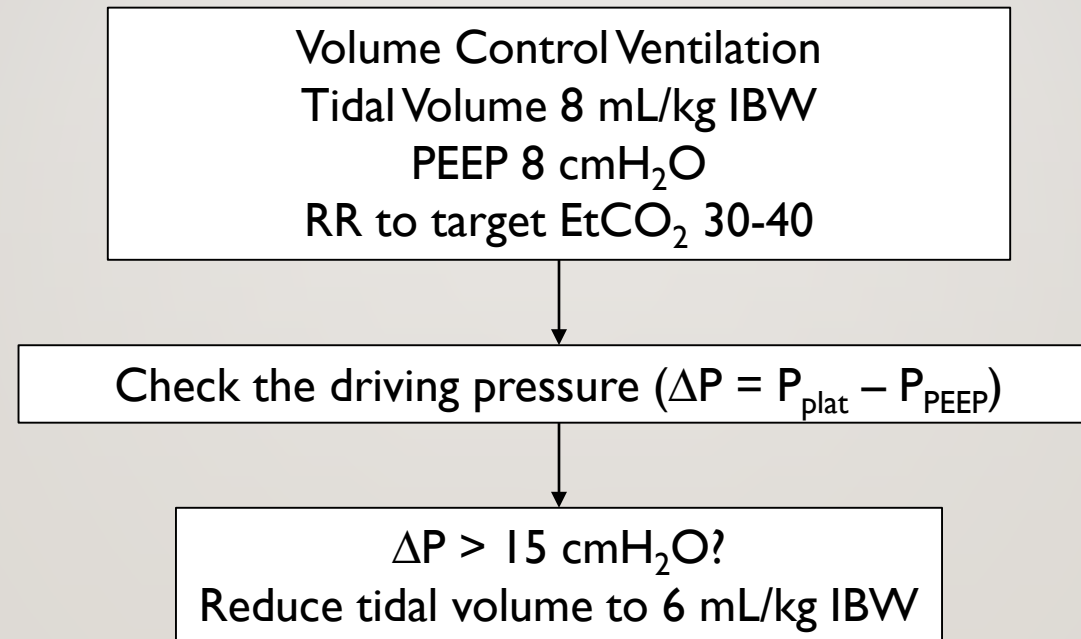
COVID-19 PHENOTYPE:

L-TYPE PNEUMONIA

- **L**ow elastance
 - **L**ow V/Q
 - **L**ow recruitability
 - **L**imited PEEP response
- **H**igh elastance
 - **H**igher recruitability
 - **H**igh R -> shunt
 - **H**igher PEEP response



CHARACTERIZING COVID-19 PNEUMONIA USING THE VENTILATOR



https://esicm-tv.org/webinar_l_live_20-how-to-ventilate-in-covid-19.html

Möhlenkamp S, Thiele H. Ventilation of COVID-19 patients in intensive care units. Beatmung von COVID-19-Patienten auf Intensivstationen. *Herz*. 2020;45(4):329-331. doi:10.1007/s00059-020-04923-1

CHARACTERIZING COVID-19 PNEUMONIA ON THE VENTILATOR

Increase PEEP up to 15 cmH₂O targeting:

- PaO₂ > 60
- SpO₂ 90 – 94%
- PCO₂ < 45 or pH > 7.30
- Pplat ≤ 30 cmH₂O
- ΔP ≤ 15 cmH₂O

Measure the compliance (C_{RS})

< 40 mL/cmH₂O

H-type Phenotype

≥ 40 mL/cmH₂O

L-type Phenotype

OPTIMIZING SUPPORT BY COVID-19 PHENOTYPE

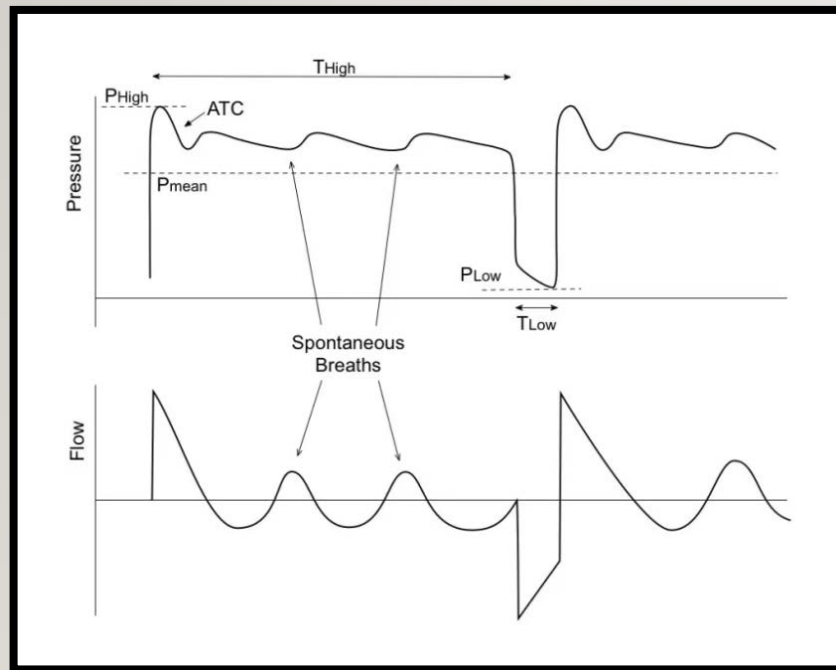
L PHENOTYPE

- Prone positioning (improve V/Q matching)
- Tidal volume up to 8 ml/kg IBW
- Inhaled pulmonary vasodilators
- Airway pressure release ventilation
- Prone positioning (recruitment)
- Tidal volume of 6 mL/kg IBW (or less)
- Continue to titrate PEEP upwards
 - Recruitment manoeuvres
- Airway pressure release ventilation

APRV FOR PATIENTS WITH COVID-19 PNEUMONIA

Characteristics of APRV

- Variable tidal volumes
- Tidal volumes typically higher than targets by ARDSnet protocols
- Alveoli more consistently exposed to higher airway pressures
- Spontaneous breathing throughout

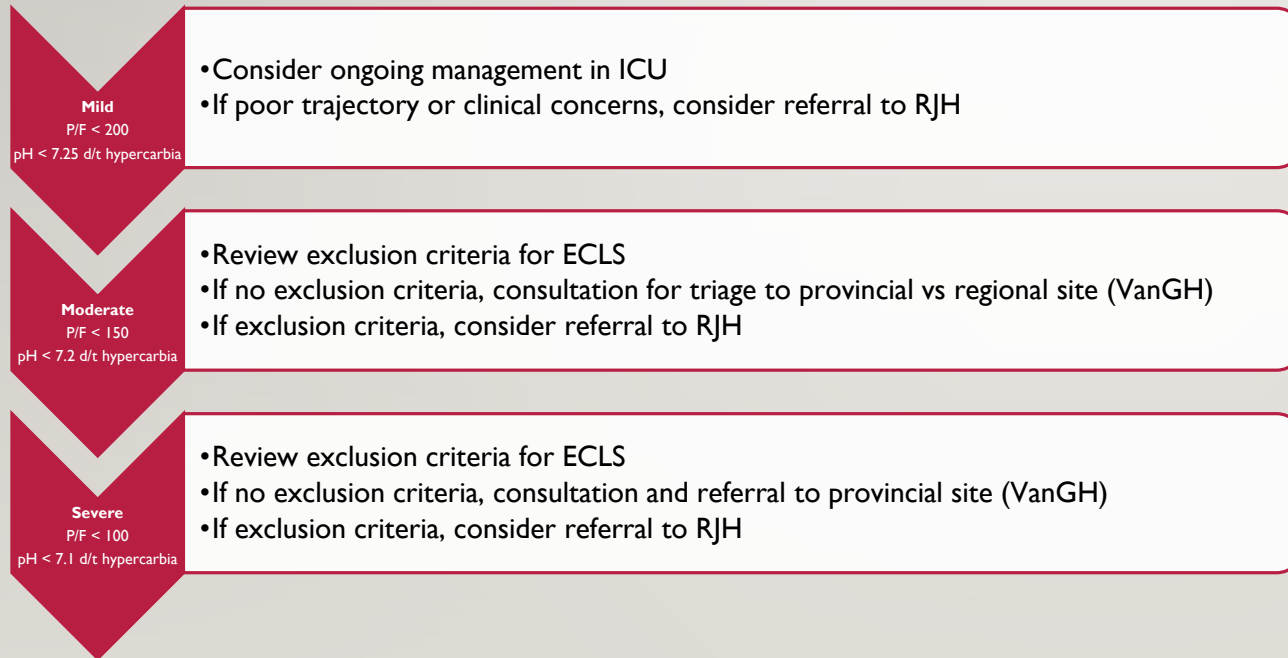


WEANING THE VENTILATOR



- Monitor inflammatory markers
- Wean FiO_2 before PEEP
- Wean from APRV to CPAP

VV ECLS IN ACUTE RESPIRATORY FAILURE



Relative Exclusion Criteria

1. Absolute contraindication to anticoagulation
2. Poor neurological prognosis
3. Advanced immunocompromised state
4. Age > 65
5. Established multisystem organ failure (MODS Score > 10)
6. Life expectancy < 5 years
7. DNR status

COMPLICATIONS: VENOUS THROMBOEMBOLISM



RECOMMENDATIONS TO REDUCE THE INCIDENCE OF VTE IN PATIENTS WITH COVID-19

Gov't of Canada

“Use pharmacological prophylaxis (low molecular-weight heparin [preferred] or heparin subcutaneously twice daily) in children, adolescents and adults without contraindications, and based on an assessment of individual risk factors for both thrombosis and bleeding. For those with contraindications, use mechanical prophylaxis (intermittent pneumatic compression devices).”

BC CDC

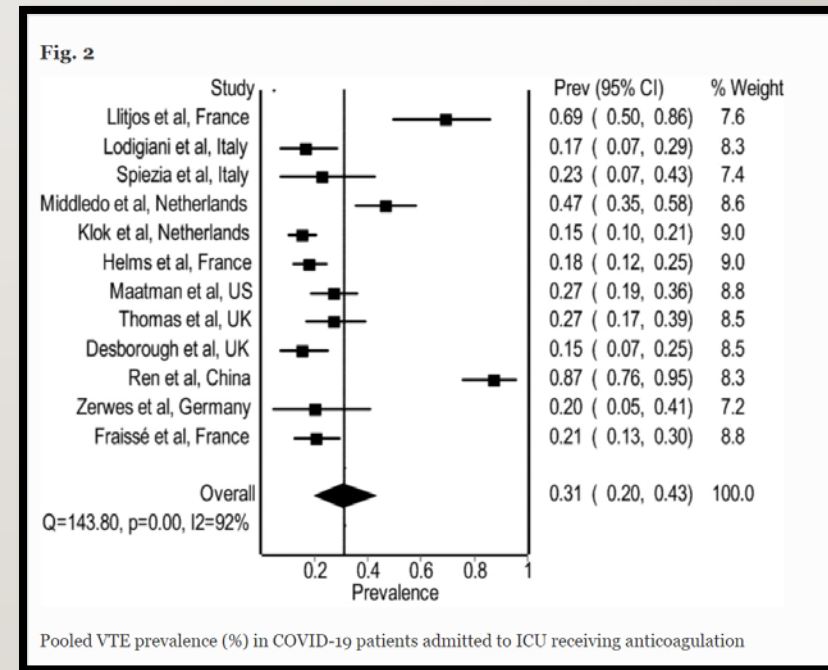
- Enoxaparin 30 mg SC BID in critically ill patients; consider in hospitalized patients with COVID-19
- Consider higher doses in patients with elevated BMI

Island Health VTE Prophylaxis in COVID-19 SBAR

- Intermediate dose prophylaxis in critically ill patients; standard dose prophylaxis in other patients

VENOUS THROMBOEMBOLISM PREVENTION IN PATIENTS WITH COVID-19: SHOULD WE CHANGE OUR PRACTICE?

- Should we be checking for heparin resistance?
- Can we risk stratify COVID-19 patients for VTE?



CAN WE RISK STRATIFY FOR VTE IN COVID-19 PATIENTS?

Pre-existing Status	Risk Level
BMI < 30 kg/m ²	High Risk
BMI ≥ 30 kg/m ² w/o High Risk Clinical Features	
BMI ≥ 30 kg/m ² w/ High Risk Clinical Features	Very High Risk
Long-term systemic anticoagulation	

High Risk Clinical Features
CVL/PICC
Renal filter thrombosis
Severe SIRS (fibrinogen > 8 g/L)
Hypercoagulability (D-dimer > 3 µg/L)
Use of ECLS

USING RISK LEVEL AND ANTI-XA LEVELS TO GUIDE VTE PROPHYLAXIS AND TREATMENT

Risk Level	Target Anti-Xa Level	
	LMWH Prophylaxis	UFH Therapy
High	0.2 – 0.5 IU/mL	0.3 – 0.5 IU/mL
Very High	0.2 – 0.5 IU/mL	0.5 – 0.7 IU/mL

Dutt T, Simcox D, Downey C, et al. Thromboprophylaxis in COVID-19: Anti-FXa-the Missing Factor?. *Am J Respir Crit Care Med.* 2020;202(3):455-457. <https://doi:10.1164/rccm.202005-1654LE>

Susen, S., Tacquard, C.A., Godon, A. et al. Prevention of thrombotic risk in hospitalized patients with COVID-19 and hemostasis monitoring. *Crit Care* 24, 364 (2020). <https://doi.org/10.1186/s13054-020-03000-7>

Wei MY, Ward SM. The Anti-Factor Xa Range For Low Molecular Weight Heparin Thromboprophylaxis. *Hematol Rep.* 2015;7(4):5844. Published 2015 Nov 23. <https://doi:10.4081/hr.2015.5844>



THE BOTTOM LINE

- ICU best practices are the best practices when caring for someone with COVID-19
- Consider using compliance to fine tune ventilator settings
- Have a high index of suspicion of VTE in patients with COVID-19