DCCM COVID-19 Town Hall

April 8th, 2020

Welcome/Ground Rules

- Welcome
- Webinar Format
  - Host and panelists
  - Audience participation/Chat

Agenda

- COVID-19 Dashboard
- Departmental Response
- “Just in Time” Emerging COVID literature
- Surge Planning
  - MD
  - Respiratory Therapy
  - Nursing
- Questions

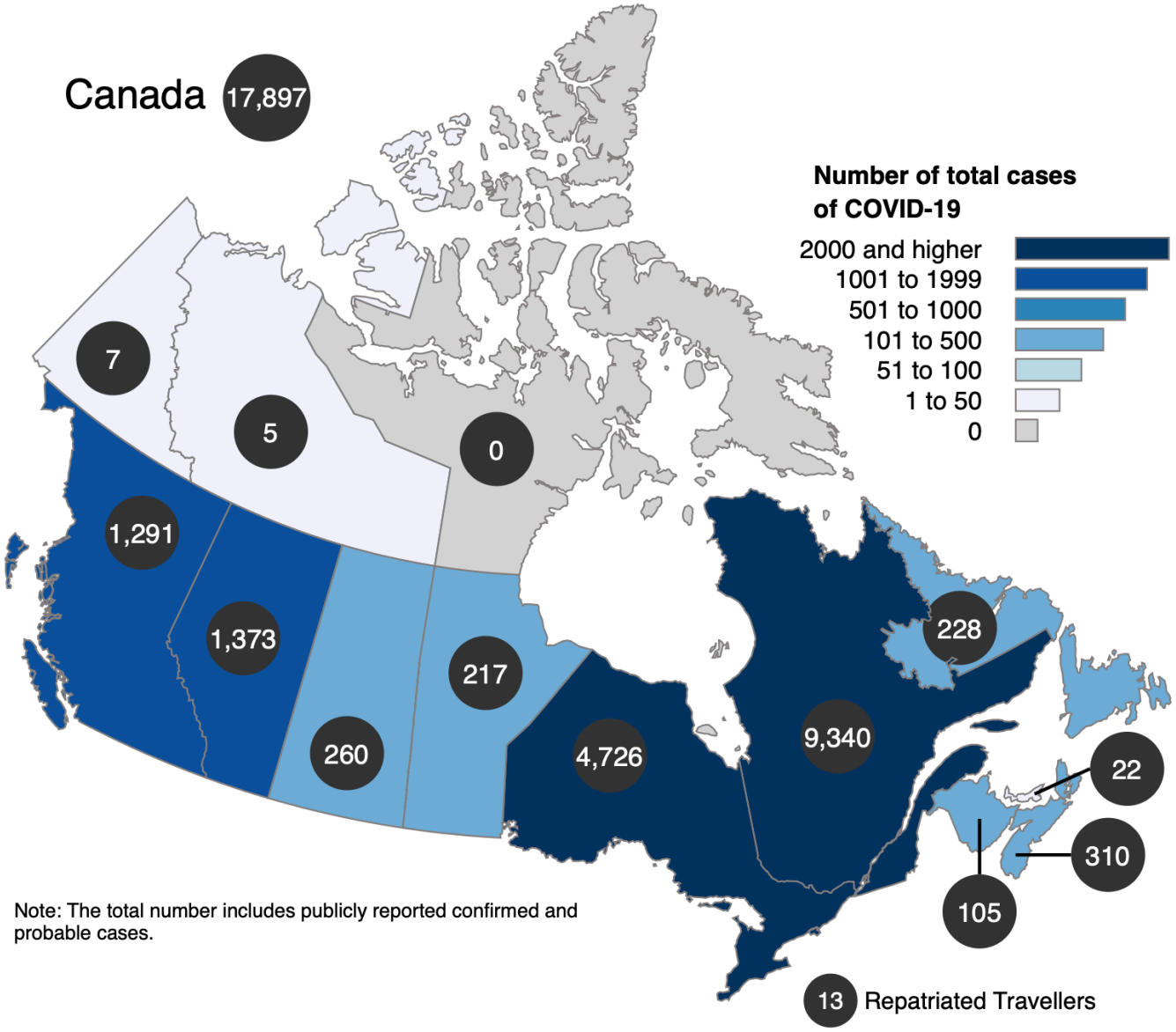
COVID-19 Dashboard

Dan Niven

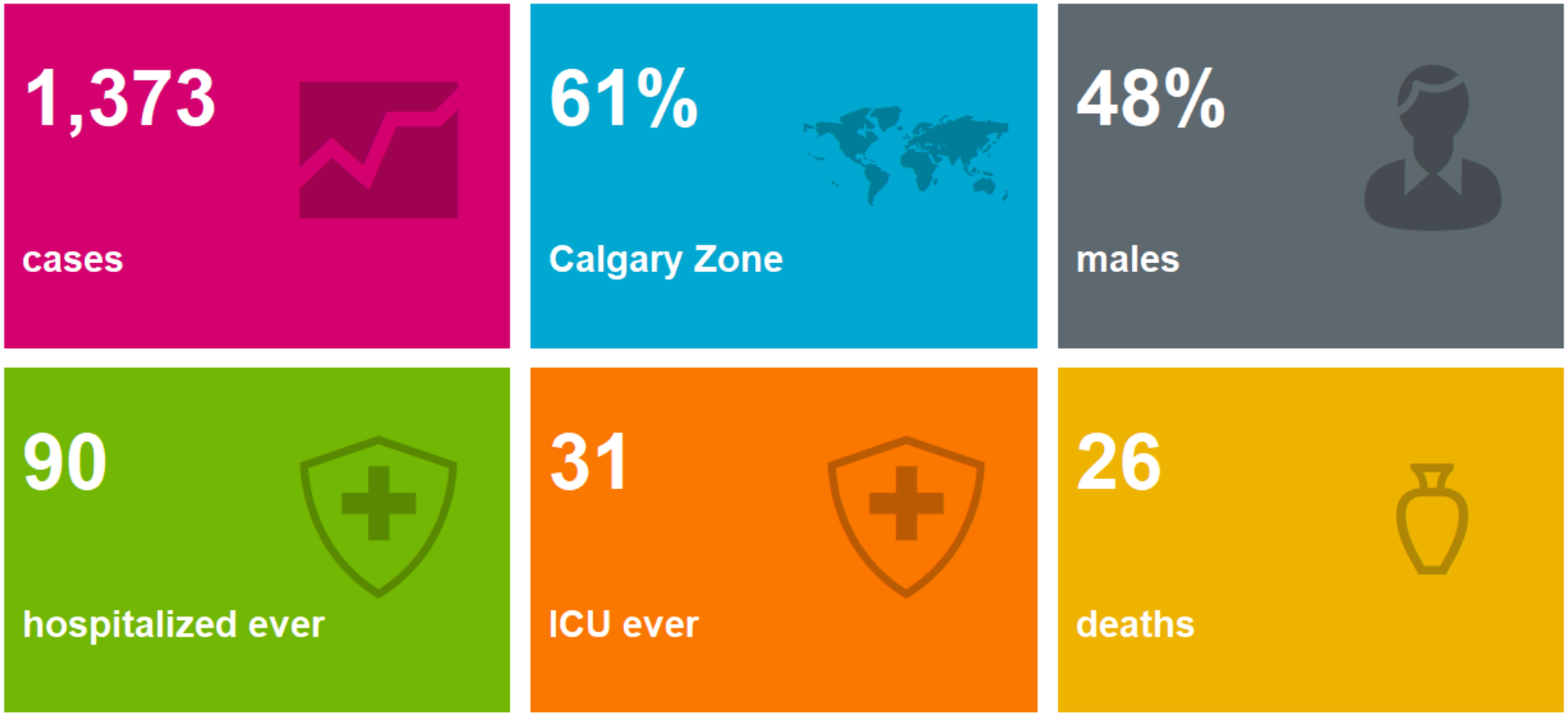
Sources of Information up to April 7:

https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection.html#a1

https://www.alberta.ca/covid-19-alberta-data.aspx

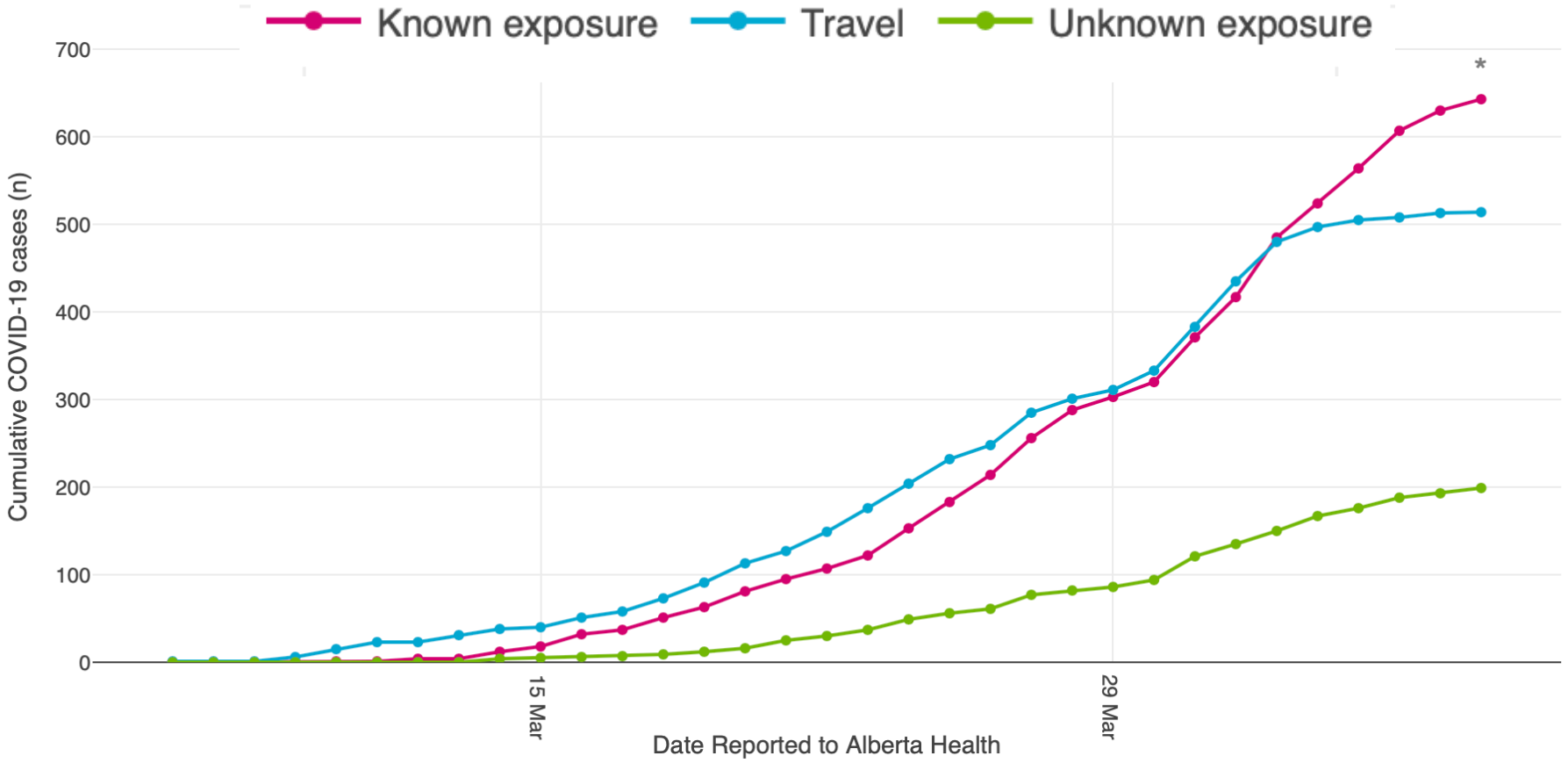

Canada 17,897
Number of total cases of COVID-19
2000 and higher
1001 to 1999
501 to 1000
101 to 500
51 to 100
1 to 50
0
7
5
0
1,291
1,373
260
217
4,726
9,340
228
22
310
105
Note: The total number includes publicly reported confirmed and probable cases.
13 Repatriated Travellers

Alberta COVID Cases – April 7



31/90 = 34% ICU Admission Rate

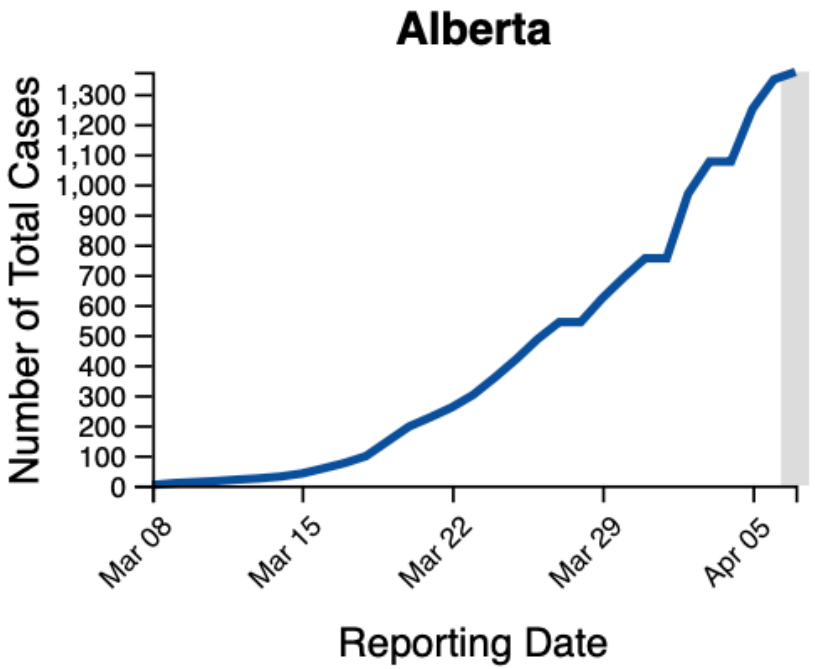
Alberta Cases: Route of Acquisition

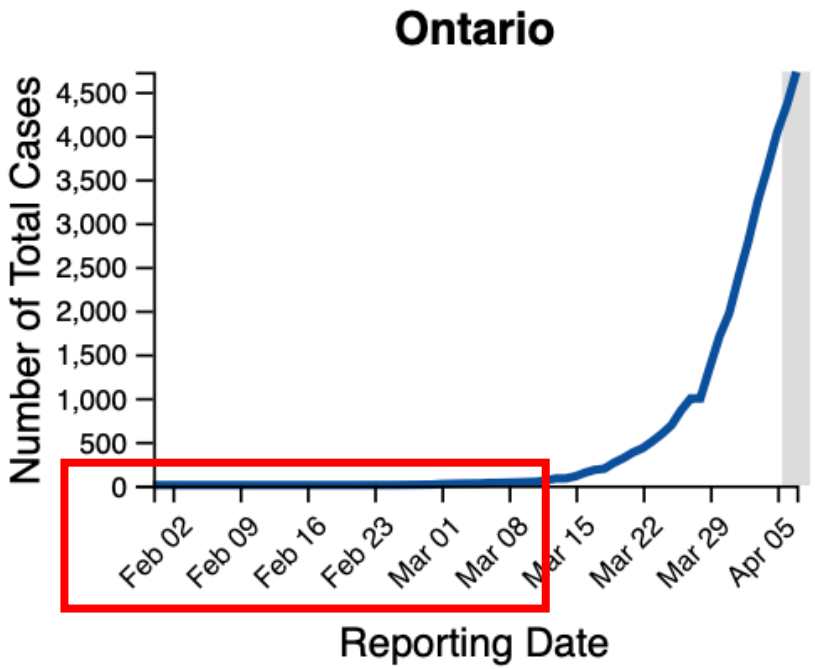


Alberta's Curve Compared to Ontario

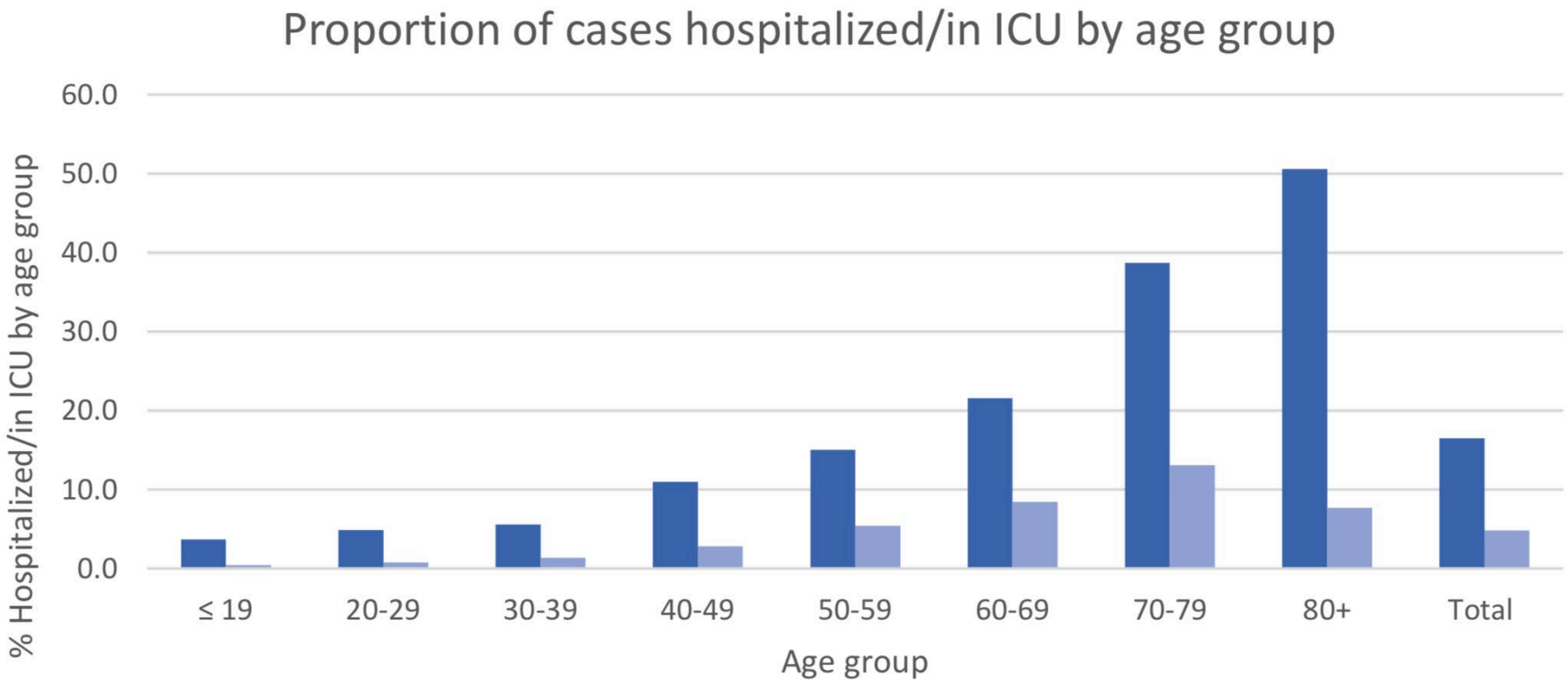
The number of COVID-19 total cases in **Alberta** was **1,373** as of April 7th, 2020.

The number of COVID-19 total cases in **Ontario** was **4,726** as of April 7th, 2020.





Severe COVID-19 in Canada
Age Matters



COVID-19 Departmental Response

Tom Stelfox

Care for all patients

We aim to provide all patients

with the care they need

Safety for all staff

We aim to protect all team members

from SARS-CoV-2

Acknowledgements

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- Chip Doig & Dan Niven
- John Kortbeek
- Paul Boiteau
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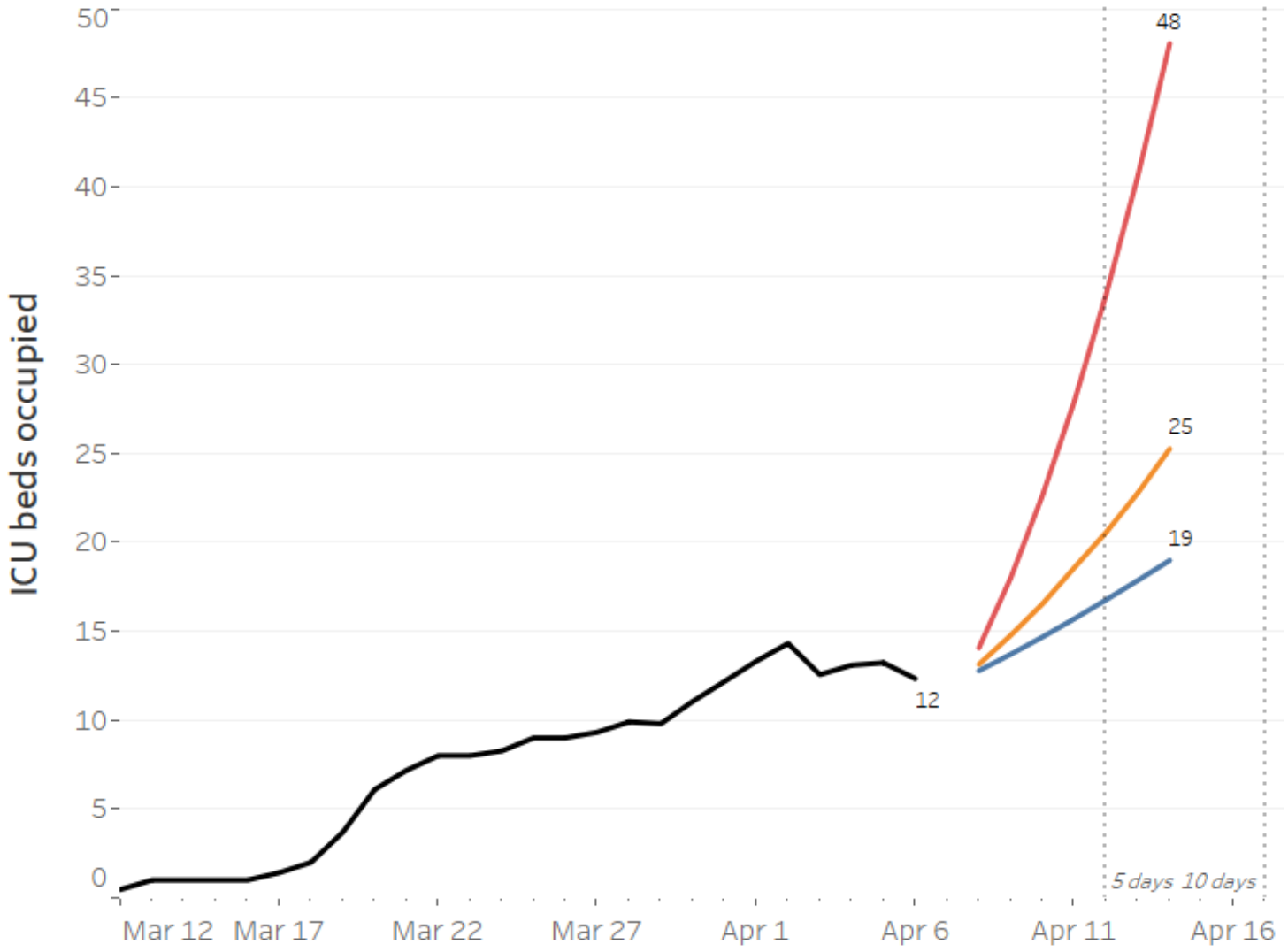
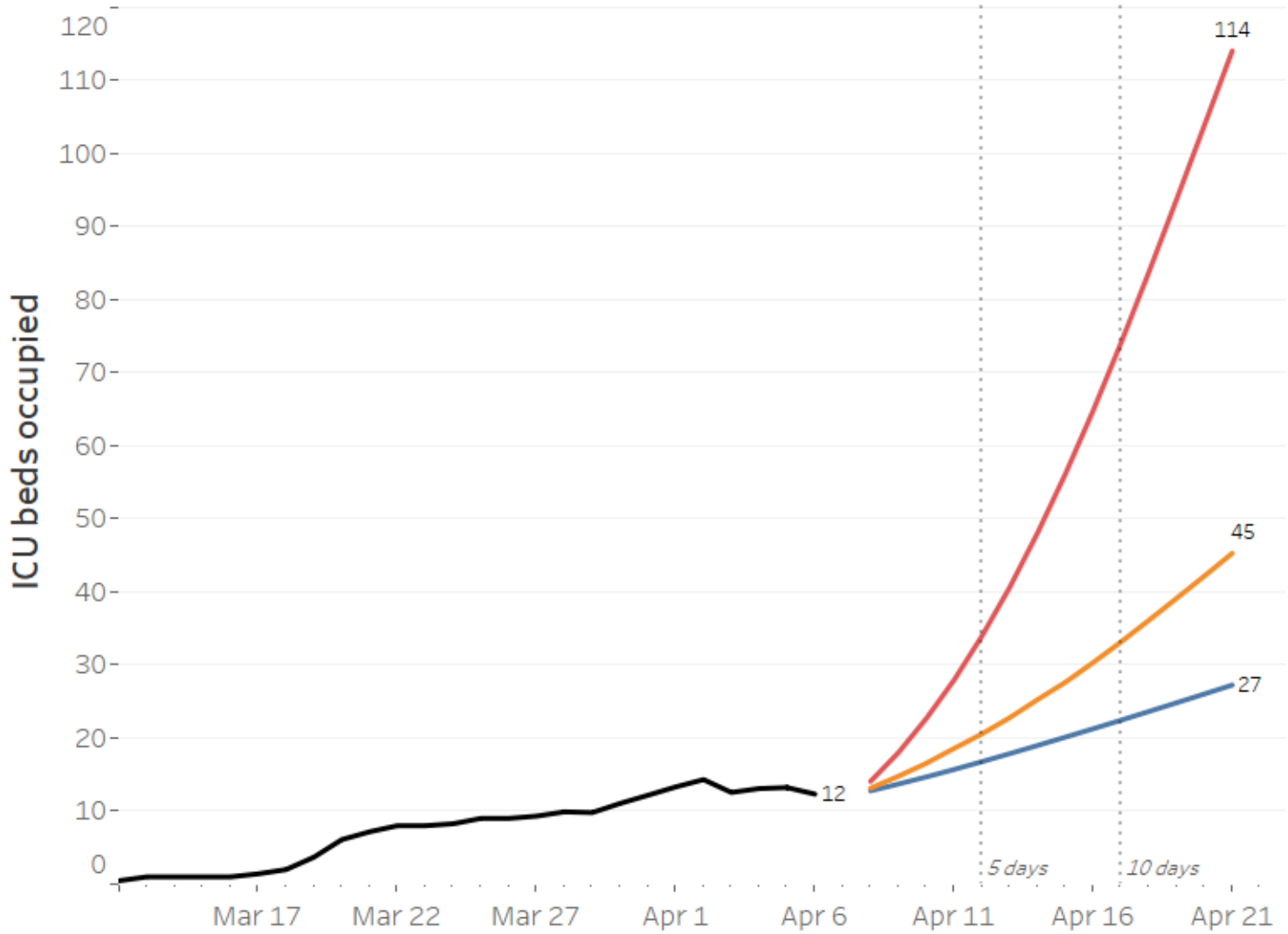
Seven Day Projections



Fourteen Day Projections




EXIT

COVID-19 Critical Care Literature Update

Literature published up to April 3, 2020

Dan Niven and Chip Doig

COVID-19 and Diagnostic Test Principles

- **Sensitivity** = Proportion of those with a positive test of all who have disease
- **Specificity** = Proportion of those with a negative test who don't have disease
- **Positive predictive value** = Proportion that have disease of all that have a positive test
- **Negative predictive value** = proportion that don't have disease that have a negative test
- Specificity and sensitivity are fixed characteristics of the test
- PPV and NPV vary with (pre-test) probability of disease
- Let's see 3 examples

Quick primer on diagnostic tests

Sensitivity (a/(a+c)) = 99%*

Specificity (d/(b+d) = 95%*

Pre-test probability of disease = 90%

N= 1000

		Disease		
		Yes	**No**	
Test	**Positive**	**a**	**b**	
	Negative	**c**	**d**	

N=1000

*illustrative—RTPCR usually highly sensitive, but we are not sure specific sensitivity or specificity in COVID

Quick primer on diagnostic tests

Sensitivity = 99%; Specificity = 95%

Pre-test probability of disease = 90%

N= 1000

		Disease		
		Yes	**No**	
Test	**Positive**	**a**	**b**	
	Negative	**c**	**d**	
		900	**100**	

N=1000

Quick primer on diagnostic tests

Sensitivity = 99%; Specificity = 95%

Pre-test probability of disease = 90%

N= 1000

		Disease		
		Yes	**No**	
Test	**Positive**	**a**	**b**	
	Negative	**c**	**d**	
		900	**100**	

N=1000

a/(a+c)=99%
a/900=99%

d/(b+d)=95%
d/100=95%

Quick primer on diagnostic tests

Sensitivity = 99%; Specificity = 95%

Pre-test probability of disease = 90%

N= 1000

		Disease		
		Yes	**No**	
Test	**Positive**	**891**	**5**	
	Negative	**9**	**95**	
		900	**100**	

N=1000

a/(a+c)=99%
a/900=99%

d/(b+d)=95%
d/100=95%

Quick primer on diagnostic tests

Sensitivity = 99%; Specificity = 95%; Probability of disease = 90%

- Probability of disease given a positive test: a/(a+b)*
- Probability of no disease given a negative test: d/(c+d)*

		Disease		
		Yes	**No**	
Test	**Positive**	**891 (a)**	**5 (b)**	**?**
	Negative	**9 (c)**	**95 (d)**	**?**
		900	**100**	

a/(a+b)=?

d/(c+d)=?

N=1000

*also known as post-test probability

Quick primer on diagnostic tests

Sensitivity = 99%; Specificity = 95%; Probability of disease = 90%

- Probability of disease given a positive test: a/(a+b)*
- Probability of no disease given a negative test: d/(c+d)*

		Disease		
		Yes	No	
Test	Positive	891 (a)	5 (b)	99.4%
	Negative	9 (c)	95 (d)	91.3%
		900	100	

N=1000

*also known as post-test probability

Quick primer on diagnostic tests

Sensitivity = 99%; Specificity = 95%

Pre-test probability of disease = 10%

N= 1000

		Disease		
		Yes	**No**	
Test	**Positive**	**99**	**45**	
	Negative	**1**	**855**	
		100	**900**	

N=1000

a/(a+c)=99%
a/100=99%

d/(b+d)=95%
d/900=95%

Quick primer on diagnostic tests

Sensitivity = 99%; Specificity = 95%; Probability of disease = 10%

- Probability of disease given a positive test: a/(a+b)*
- Probability of no disease given a negative test: d/(c+d)*

		Disease		
		Yes	No	
Test	Positive	99 (a)	855 (b)	10.4%
	Negative	1 (c)	45 (d)	97.8%
		100	900	

N=1000

*also known as post-test probability

Quick primer on diagnostic tests

Sensitivity = 99%; Specificity = 95%; **Probability of disease = 50%**

- Probability of disease given a positive test: a/(a+b)*
- Probability of no disease given a negative test: d/(c+d)*

		Disease		
		Yes	**No**	
Test	**Positive**	**495 (a)**	**25 (b)**	**95.2%**
	Negative	**5 (c)**	**475 (d)**	**99.0%**
		500	**500**	

N=1000

*also known as post-test probability

Evaluating the accuracy of different respiratory specimens in the laboratory diagnosis and monitoring of viral shedding of 2019-nCoV Infections. Yang et al. (Pre-print, not peer-reviewed).
https://doi.org/10.1101/2020.02.11.20021493

Aim: dx accuracy of respiratory samples, and compare viral shedding severe:mild cases

Methods:

- Respiratory samples including nasal swabs (205), throat swabs (490), sputum (142) and BALF (29)
- Median 5d after illness onset
- 866 specimens from 213 confirmed NCP patients
- Viral RNA by quantitative RT-PCR
- 37 patients severe or critically ill; remainder mild

Evaluating the accuracy of different respiratory specimens in the laboratory diagnosis and monitoring of viral shedding of 2019-nCoV Infections. Yang et al. (Pre-print, not peer-reviewed).
https://doi.org/10.1101/2020.02.11.20021493

Results:

Dx accuracy [(a/(a+c)) where a+c=100]**:**

- **Sputum-88.9% (severe); 82.2% (mild)**
- **Nasal swab – 73.3% (S); 72.1% (m)**
- **Throat swab- 60.0% (S); 61.3% (m)**
- **BLAF – 100% (S only)**

- **Shedding:** (n=10 severe, 3 mild)
  - **S: + viral RNA at days 3, 21 in URT specimens, - in 3/10 cases**
  - **S: + viral RNA in all, and 9/10 at day 23 in BALF**

Let's plug these numbers for Sputum back into our Scenarios

Sensitivity = **85**%; Specificity = **90**%; **Probability of disease = 90%**

- Probability of disease given a positive test: a/(a+b)*
- Probability of no disease given a negative test: d/(c+d)*

		Disease		
		Yes	**No**	
Test	**Positive**	**765 (a)**	**10 (b)**	**98.9%**
	Negative	**135 (c)**	**90 (d)**	**60.0%**
		900	**100**	

a/(a+b)

d/(c+d)

N=1000

Let's plug these numbers for Sputum back into our Scenarios

Sensitivity = **85**%; Specificity = **90**%; **Probability of disease = 10%**

- Probability of disease given a positive test: a/(a+b)*
- Probability of no disease given a negative test: d/(c+d)*

		Disease		
		Yes	**No**	
Test	**Positive**	**85 (a)**	**100 (b)**	**45.9%**
	Negative	**15 (c)**	**900 (d)**	**98.4%**
		100	**900**	

a/(a+b)

d/(c+d)

N=1000

Let's plug these numbers for Sputum back into our Scenarios

Sensitivity = **85**%; Specificity = **90**%; **Probability of disease = 50%**

- Probability of disease given a positive test: a/(a+b)*
- Probability of no disease given a negative test: d/(c+d)*

		Disease		
		Yes	**No**	
Test	**Positive**	**425 (a)**	**50 (b)**	**89.5%**
	Negative	**75 (c)**	**450 (d)**	**85.6%**
		500	**500**	

a/(a+b)

d/(c+d)

N=1000

Evaluating the accuracy of different respiratory specimens in the laboratory diagnosis and monitoring of viral shedding of 2019-nCoV Infections. Yang et al. (Pre-print, not peer-reviewed).
https://doi.org/10.1101/2020.02.11.20021493

Implications:

1. In high pre-test probability, ventilated patients with (-) NP, but concerning imaging, need lower resp tract sample (sputum, BALF)
2. Viral shedding from severe cases may persist
3. Variability in testing—maybe lab, kit dependent (i.e. sensitivity in CZ may be different)→if high index suspicion, consider retesting, sputum or BALF if intubated (recognizing risks).

Detection of SARS-CoV-2 in different types of clinical specimens.Research Letter
Wang W. JAMA on-line 11 March 2020.

- 1070 specimens from respiratory tract, blood, stool, urine
- RT specimens collected ~1-3 days after hospital admission (not disease onset), other specimens variable through hospital stay
- Viral RNA by RT-PCR
- 1070 specimens, n=205 patients, 19% severe

Detection of SARS-CoV-2 in different types of clinical specimens. Research Letter Wang W. JAMA on-line 11 March 2020.

Table. Detection Results of Clinical Specimens by Real-Time Reverse Transcriptase–Polymerase Chain Reaction

Specimens and values	Bronchoalveolar lavage fluid (n = 15)	Fibrobronchoscope brush biopsy (n = 13)	Sputum (n = 104)	Nasal swabs (n = 8)	Pharyngeal swabs (n = 398)	Feces (n = 153)	Blood (n = 307)	Urine (n = 72)
Positive test result, No. (%)	14 (93)	6 (46)	75 (72)	5 (63)	126 (32)	44 (29)	3 (1)	0
Cycle threshold, mean (SD)	31.1 (3.0)	33.8 (3.9)	31.1 (5.2)	24.3 (8.6)	32.1 (4.2)	31.4 (5.1)	34.6 (0.7)	ND
Range	26.4-36.2	26.9-36.8	18.4-38.8	16.9-38.4	20.8-38.6	22.3-38.4	34.1-35.4	
95% CI	28.9-33.2	29.8-37.9	29.3-33.0	13.7-35.0	31.2-33.1	29.4-33.5	0.0-36.4	

Abbreviation: ND, no data.

Note: BALF vs Sputum vs Nasal vs Pharyngeal

Icnarc report on COVID-19 in critical care 4 April 2020.

Table 3 Outcome, length of stay and organ support* for patients admitted to critical care with confirmed COVID-19

Critical care unit outcome	Patients with confirmed COVID-19 and critical care outcome reported (N=690)	Patients with viral pneumonia (non-COVID-19), 2017-19 (N=4434)
Outcome at end of critical care, n (%)		
Alive	344 (49.9)	3441 (77.6)
Dead	346 (50.1)	993 (22.4)
Length of stay		
Length of stay in critical care (days), median (IQR)		
Survivors	4 (2, 8)	6 (3, 12)
Non-survivors	5 (3, 8)	6 (2, 13)

Note: Owing to the emerging nature of the epidemic, the sample of patients with COVID-19 represented in this table is biased towards patients with *shorter* durations of critical care (i.e. those who died or recovered quickly). This does not apply to the comparison patients with viral pneumonia (non-COVID-19), 2017-19. * See Definitions on page 15.

Icnarc report on COVID-19 in critical care 4 April 2020.

Table 3 Outcome, length of stay and organ support* for patients admitted to critical care with confirmed COVID-19

Critical care unit outcome	Patients with confirmed COVID-19 and critical care outcome reported (N=690)		Patients with viral pneumonia (non-COVID-19), 2017-19 (N=4434)	
Organ support (Critical Care Minimum Dataset)*				
Receipt of organ support, n (%)				
Advanced respiratory support	388	(67.2)	2054	(46.3)
Basic respiratory support	288	(49.9)	3602	(81.2)
Advanced cardiovascular support	143	(24.8)	944	(21.3)
Basic cardiovascular support	513	(88.9)	4103	(92.5)
Renal support	107	(18.5)	704	(15.9)
Liver support	0	(0.0)	35	(0.8)
Neurological support	26	(4.5)	241	(5.4)

Icnarc report on COVID-19 in critical care 4 April 2020.

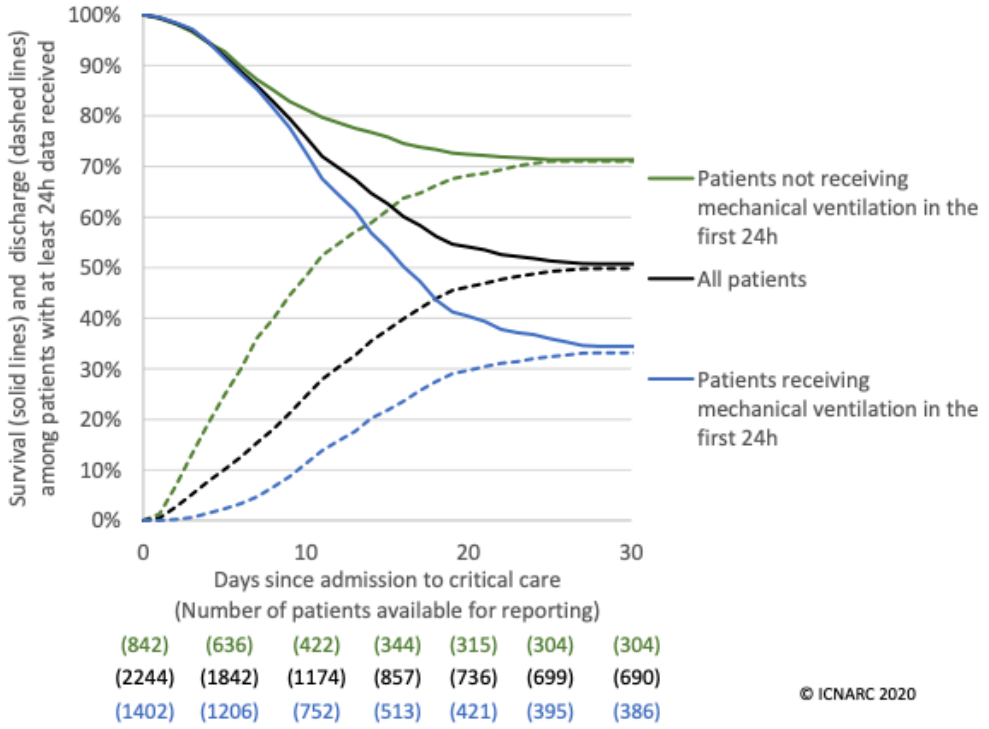


Figure 11 30-day survival, by receipt of mechanical ventilation during the first 24 hours in critical care

Note: Owing to lags in notification of patients' discharge or death, this figure is expected to be biased towards *longer* durations of critical care. Due to the relatively low proportion of patients that have completed their critical care, all outcomes should be interpreted with caution.

DCCM Surge Planning

Dan Cashen

Jason Lord

Emma Folz

Operational Components of Surge

- Spaces to house patients
- Equipment to monitor and treat patients
- Personnel to provide care to patients

Photo: Vanessa Doiron, FMC ICU CNE

Zonal Surge Plan

Resources	Basic Pre-Surge	Stage 1 Minor Surge	Stage 2 Moderate Surge	Stage 3 Major Surge	Stage 4 Large Scale Surge
Total Adult Beds	66	82	162	293	541
Adult Unit/Sites	**FMC 28** **RGH 10** **PLC 18** **SHC 10**	**FMC 36** 36 FMC ICU **RGH 12** 10 RGH ICU + 7 RGH CCU **PLC 22** 22 PLC ICU **SHC 12** 10 SHC ICU + 2 SHC CCU	**FMC 76** 58 FMC ICU (cohort) + 18 CICU **RGH 26** 10 RGH ICU + 7 RGH CCU + 9 PACU **PLC 32** 22 PLC ICU + 10 PLC CCU **SHC 20** 18 SHC ICU (cohort) + 2 SHC CCU **ACH 8** 8 ACH PICU (cohort)	**FMC 106** FMC ICU 66 (cohort) + 18 CICU + 4 1021 + 18 PACU **RGH 65** 10 RGH ICU + 7 RGH CCU + 9 PACU +7 OR + 32 PCU 46 **PLC 76** 44 PLC ICU (cohort) + 20 PLC CCU (cohort) + 12 PCU 59 **SHC 24** 20 SHC ICU (cohort) + 4 SHC CCU (cohort) **ACH 22** 22 ACH PICU (cohort)	**FMC 154** FMC 66 + 18 CICU + 29 PACU + 37 OR + 4 PCU1021 **RGH 113** 16 RGH ICU + 7 RGH CCU + 9 PACU + 8 OR + 41 PCU Old ED + 32 PCU 46 **PLC 133** 44 PLC ICU + 20 PLC CCU + 12 PCU 59 + 14 OR + 21 PACU + 22 PCU 24 **SHC 95** 24 SHC ICU + 32 PACU + 3 OR + 25 Day Surgery + 11 Short Stay **ACH 46** 24 ACH PICU (cohort) + 22 ACH PACU (cohort)
% Increase	0	24%	133%	344%	720%
Total RNs	ICU 56	ICU 64	ICU 64, Ward 29	ICU 72, Ward 61	ICU 117, Ward 118
Total RRTs	23	25	47	53	

FMC ICU Surge Plan

Resources	Basic Pre-Surge	Stage 1 Minor Surge	Stage 2 Moderate Surge	Stage 3 Major Surge	Stage 4 Large Scale Surge
Total Adult CC Beds available for Surge	28	36	76	106	154
Units	MSICU 28	MSICU 36	MSICU 58 103A 18	MSICU 66 103A 18 1021 4 PACU 18	MSICU 66 103A 18 1021 4 PACU 29 OR 37
% Increase From Baseline	0%	29%	171%	279%	450%
Total RNs	ICU 23	ICU 29	ICU 24, Ward 20	ICU 31, Ward 27	ICU 43, Ward 39
Total RRTs	9	10	25	25	30

PLC Surge Plan

Resources	Basic Pre-Surge	Stage 1 Minor Surge	Stage 2 Moderate Surge	Stage 3 Major Surge	Stage 4 Large Scale Surge
Total Adult CC Beds available for Surge	18	22	32	76	**133**
Units	ICU 18	ICU 22	22 Main Bedsides in PLC ICU (COVID Patients remain in main unit) 10 Patients in PLC CCU (CCU Patients moved to unit 49)	22 Main Bedsides in PLC ICU 22 Patients in Cohort in PLC ICU 20 Patients in PLC CCU 12 Patients PCU 59	44 PLC ICU 20 PLC CCU 12 PCU 59 21 PACU 14 OR 22 PCU 24
% Increase From Baseline	0	22%	78%	322%	639%
Total RNs	ICU 14	ICU 16	ICU 16, Ward 9	ICU 19, Ward 32	ICU 32, Ward 43
Total RRTs	5	6	10	12	

RGH Surge Plan

Resources	Basic Pre-Surge	Stage 1 Minor Surge	Stage 2 Moderate Surge	Stage 3 Major Surge	Stage 4 Large Scale Surge
Total Adult Beds	10	17	26	65	113
Adult Unit/Sites	10 ICU	10 ICU 7 CCU	10 ICU 7 CCU 9 PACU	10 ICU 7 CCU 9 PACU 8 OR 32 PCU 46	23 ICU/CCU 9 PACU 8 OR 41 Old ED 32 PCU 46
% Increase From Baseline	0	70%	160%	500%	1030%
Total RNs	ICU 7	ICU 12	ICU 14, PACU 3	ICU 17, PACU 15, OR 8	ICU 17, PACU 15, OR 8, Ward
Estimate total RRTs (12H D/N Shift Counts)	2	3	6	9	

SHC Surge Plan

Resources	Basic Pre-Surge	Stage 1 Minor Surge	Stage 2 Moderate Surge	Stage 3 Major Surge	Stage 4 Large Scale Surge Capacity
Total Adult CC Beds available for Surge	10	12	20	24	**95**
Total Adult Beds	10 ICU	12 ICU/CCU beds	20 ICU/CCU	24 ICU/CCU	**24 ICU/CCU 32 PACU 3 OR 25 Day Surgery 11 Short Stay**
Primary RN Staffing: Optimal Critical Care Staff (12H D/N Shift Counts)	ICU 10	ICU 10	ICU 10, Ward 4	ICU 10, Ward 6	ICU 28, Ward 28
Primary RN Staffing: Stretched Critical Care Staff (12H D/N Shift Counts)		Staff with what we have available with provision of essential care	Follow Ontario plan (2008) 2 ICU RNs + 3 non ICU nurses + RRT support + NA support for 8-10 patients	Follow Ontario plan (2008) 2 ICU RNs + 3 non ICU nurses + RRT support + NA support for 8-10 patients	Follow Ontario plan (2008) 2 ICU RNs + 3 non ICU nurses + RRT support + NA support for 8-10 patients
Optimal RRTs (12H D/N Shift Counts) 1:4-5 ratio	2	2	4	6	19

ACH Surge Plan

Resources	Stage 2 Moderate Surge	Stage 3 Major Surge	Stage 4 Large Scale Surge
Total Adult CC Beds available for Surge	8	22	46
Total Adult Beds	**Stage 2A** 4 Adult Patients **Stage 2B** 8 Adult Patients	**Stage 3A** 18 Adult Patients **Stage 3B** 22 Adult Patients	**Stage 4A** 35 Adult Patients **Stage 4B** 46 Adult Patients
Staffing	**TBD**	**TBD**	**TBD**
Response Level	Zone	Provincial	Provincial/National/ International
Command Center	ZOEC / ECC	ECC	ECC

Equipment Planning

Zone Needs	STAGE 1	Stage 1 - Minor Surge		
		What we have	Surge Requirements	Anticipated needs for surge
Physical Beds		87	87	0
Monitors		87	87	0
pressure cables		160	174	14
$EtCO_2$		65	87	22
Ventilators		87	87	0
suction regulators		210	210	0
flow meter		87	87	0
IV Pumps		574	696	122
Nutrition Pumps		83	87	4

Staffing Plans

PLC Unit 28 (ICU) Surge Plan (incl. Staffing Model)

Revision 2020.04.01

	Baseline	Minor Surge
No. Patients	18	22
No. ICU RNs	14	16
No. Non-ICU RNs	0	0
No. HCAs	2 (days) & 1 (nights)	
RRT	6D & 5N	

	ICU - 1	ICU - 2	CCU - 1	CCU - 2
No. Patients	11	11	5	5
No. ICU RNs	5	6	3	2
No. Non-ICU RNs	2	2	1	1
No. HCAs	1	1	1	
RRT	3	4	3	

NOTES:
ICU to keep COVID-19 patients and to transfer NON-COVID-19 patients to CCU

ICU will strive to keep 1 bed open for urgent admit & intubate in care area.

ICU will also strive to keep the most acute patients.

	ICU - 1	ICU - 2	ICU - 3	ICU - 4	CCU - 1	CCU - 2
No. Patients	11	11	11	11	10	10
No. ICU RNs	4	4	4	4	4	3
No. Non-ICU RNs	3	3	3	3	3	3
No. HCAs	1	1	1	1	1	1
RRT	2	2	2	2	2	2

	ICU - 1	ICU - 2	ICU - 3	ICU - 4	CCU - 1	CCU - 2	U59 - 1	U59 - 2
No. Patients	11	11	11	11	10	10	6	6
No. ICU RNs	4	4	4	4	4	3	2	1
No. Non-ICU RNs	3	3	3	3	3	3	2	1
No. HCAs	1	1	1	1	1	1	1	
RRT	2	1	2	1	2	2	2	

NOTES:

Strive to transfer the least critical patients from ICU & CCU to Unit 59.

If STABLE and NON-COVID, patients may be directly admitted to either CCU or Unit 59.

	ICU - 1	ICU - 2	ICU - 3	ICU - 4	CCU - 1	CCU - 2	U59 - 1	U59 - 2	OR - 1	OR - 2	PACU - 1	PACU - 2	PACU - 3
No. Patients	11	11	11	11	10	10	6	6	7	7	7	7	7
No. ICU RNs	4	4	4	4	4	3	2	1	2	2	2	2	2
No. Non-ICU RNs	3	3	3	3	3	3	2	1	1	1	3	2	2
No. HCAs	1	1	1	1	1	1	1		1		1		
RRT	2	1	2	1	2	2	2		2		3		

NOTES:

PACU to admit NON-COVID patients to begin with as they will still need to recover patients.

OR can admit COVID patients

IF PACU needs to accommodate COVID patients, surgery patients will need to recover in their respective OR theatre.

	Unit 24 - 1	Unit 24 - 2
No. Patients	8	14
No. ICU RNs	1	2
No. Non-ICU RNs	1	1
No. HCAs	1	
RRT	3	

MD Surge Plan

- General Principles
- Staff Recruitment Process & Roles
  - Residents
  - Anesthesiology
  - Non-ICU MDs
  - BSPs/NPs/Outreach MDs
- Operational Process

DCCM Physician Surge Activation Committee

- Jason Lord
- Jonathan Gaudet
- Ken Parhar
- Jason Waechter
- Selena Au
- Richard Novick
- Terry Hulme
- Graeme Bishop (Anesthesiology)

Background

- Pandemic surge plan comprised of successive ‘stages’ representing increased patient volume
- Responsive, site-specific and tiered plan
- Team based model to provide adequate physician coverage
  - Team Lead & 2 Team members
- Team size varies 10-20 patients (avg = 16)
  - Geographical location & team role

Geographical Sites

- Pre-surge – business as usual
  - Maximize capacity with inter-site transfers
- Stage 1: occupy non-funded ICU beds
- Stages 2-4:
  - Doubling up ICU patients
  - CCU, PACU, ward units, OR beds, old ER beds, ACH ICU
    - Variability across sites (locations and number of patients)

Calgary ICU Surge Capacity

	PRE-SURGE	STAGE 1	STAGE 2	STAGE 3	STAGE 4A	STAGE 4B	STAGE 4C	STAGE 4D
Total Beds	66	87	162	261	327	374	460	541
Total coverage/24 hours								
ICU MD Team Leads	10	13	18	18	23	21	26	27
NON ICU MD Team Leads	0	0	0	4	6	9	14	18
Residents	16	14	18	20	24	27	29	33
Anesthesia	0	2	9	11	19	16	20	20
Volunteer MDs	0	0	2	8	12	18	26	32
ICU Fellows	4	4	4	1	1	0	0	0
Nurse Practitioners	2	2	4	4	4	4	4	4
BSPs	1	1	1	1	2	2	3	3
# ICU MDs Required - Current Call Model	7	9	12	14	17	19	19	20
# ICU MDs Required - Shift (4/3 or 3/3/day)	-	17	22	25	29	31	35	37
Total # Residents Required	16	32	32	32	39	42	45	52

Team MD Leads (1 per team)

- Tiered response
  - Current DCCM Intensivists
  - ICU Fellows
  - ICU trained MDs (retired ICU MDs, ICU-trained MDs)
  - Others (Outreach MDs, Non-ICU MDs)
  - N=46

Team MD Members (2 per team)

- Balanced recruitment
  - Resident learners
  - Anesthesiologists
  - Recruited MDs
  - NPs, BSPs, Outreach MDs

Team Members – Residents

- 4 rotating residents on days, 1 on nights, 7 days a week at PLC and RGH
- 8 rotating residents on days, 2 on nights, 7 days a week at FMC, to be divided into 3 teams
- To accomplish 7 days-a-week coverage, building in time off, we needed:
  - 8 residents for PLC and RGH, 16 residents for FMC
- N= 32

Team Members - Anesthesia

- Paired teams supervised by an ICU MD Team Lead
- 24/7 coverage at all sites
- Responsibilities
  - Round as part of their team
  - Participate in resuscitations
    - Intubations & procedures
  - Assist with procedures for other teams in unit
- Allows increased flexibility to staff other teams

Team Members – Recruited MDs

- Recruited MDs from various pools
  - FMC Cardiology
  - FMC Cardiac Surgery
  - Dept of Surgery
  - Various others
- Assigned as pairs based on availability
- Daytime work (up to 7 consecutive days)
- N=approx. 50

Team Members – BSP, NP, Outreach

- Continue with existing roles
- BSP – night coverage
- NPs – daytime coverage at SHC
- Outreach MDs – night coverage at all sites

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PLC Surge Staffing Model

		Pre-Surge	Stage 1	Stage 2	Stage 3	Stage 4A	Stage 4B	Stage 4C	Stage 4D
Total Beds		18	22	32	54	64	72	93	133
		2 Teams	2 Teams	3 Teams	4 Teams	5 Teams	6 Teams	7 Teams	8 Teams
Day coverage	ICU MD Team Leads	2	2	3	3	4	4	4	4
	Non ICU MD Team Leads	0	0	0	1	1	2	3	4
	Residents	4	4	4	4	6	6	6	8
	Anesthesia	0	0	2	2	2	2	2	2
	Volunteer MDs	0	0	0	2	2	4	6	6
	ICU Fellows	1	2	2	-	-	-	-	-
Night Coverage	ICU MD	1	1	1	1	1	1	2	2
	Residents	1	1	1	1	2	2	2	2
	Anesthesia	0	0	1	2	2	2	2	2
	Outreach MDs	1	1	1	1	1	1	1	1
Total coverage/24 hours	Daytime ICU MD Team Leads	2	2	3	3	4	4	4	4
	Night ICU MD Team Leads	1	1	1	1	1	1	2	2
	Daytime NON-ICU MD Team Leads	0	0	0	1	1	2	3	4
	Residents	5	5	5	5	8	8	8	10
	Anesthesia	0	0	3	4	4	4	4	4
	Volunteer MDs	0	0	0	2	2	4	6	6
	ICU Fellows	1	2	2	-	-	-	-	-
	Outreach MDs	1	1	1	1	1	1	1	1
Locations	ICU	18	22	22					
	ICU (fully doubled)				44	44	44	44	44
	CCU			10	10	20	20	20	20
	PCU 59 (max 8)						8	8	8
	PACU (Max 21)							21	21
	OR (max 14)								14
	ICU Offices								16

Team 1	Team 1								
	ICU MD Team Lead	1	1	1	1	1	1	1	1
	Residents	4	2	2	2	2	2	2	2
	Patient Load	12	12	12	16	16	16	16	16
	Location	ICU	ICU	ICU	ICU	ICU	ICU	ICU	ICU
Team 2	**Team 2 (Response Team)**								
	ICU MD Team Lead	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
	Residents	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**
	Anesthesia	**0**	**0**	**2**	**2**	**2**	**2**	**2**	**2**
	Patient Load	**6**	**10**	**10**	**12**	**12**	**12**	**12**	**12**
		ICU	**ICU**	**ICU**	**ICU**	**ICU**	**ICU**	**ICU**	**ICU**
Surge Team	Team 3								
	ICU MD Team Lead			1	1	1	1	1	1
	Volunteer MDs			2	2	2	2	2	2
	Patient Load			10	10	10	10	10	10
	Location			CCU	CCU	CCU	CCU	CCU	CCU
Surge Team	Team 4								
	ICU MD Team Lead				1	1	1	1	1
	Residents				2	2	2	2	2
	Patient Load				16	16	16	16	16
	Location				ICU	ICU	ICU	ICU	ICU
Surge Team	Team 5								
	NON-ICU MD Team Lead					1	1	1	1
	Residents					2	2	2	2
	Patient Load					12	16	16	16
	Location					U59(8) & PACU (4)	U59 (8) & PACU (8)	U59 (8) & PACU (8)	U59 (8) & PACU (8)

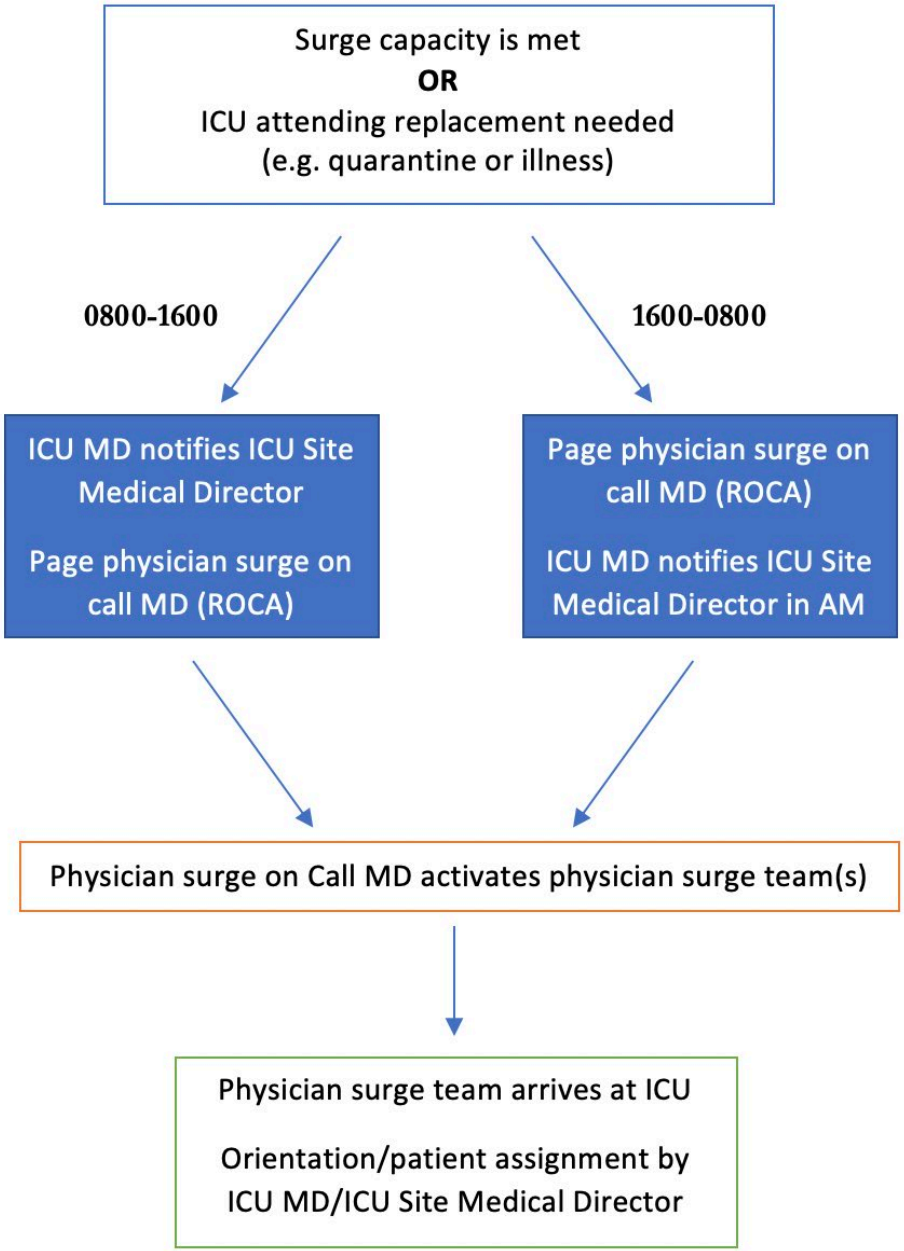
Operational Process
On Call MD

- Physician Surge Activation Committee
- 2 MDs on call 24/7 in ROCA
- Available to help with Surge team activation OR ICU MD replacement (isolation/illness)

Operational Process
Site Communication

- Collaboration with ICU MD Site Leads
  - How teams are organized
  - Who is assigned to the teams
  - How anesthesia is utilized
  - Paging and communications
    - ROCA vs internal schedule with unit clerks

Figure 1 - DCCM Physician Surge Activation Pathway



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		FMC ICU				CVICU		PLC ICU			RGH ICU		SHC ICU		
		TEAM 1	TEAM 2	TEAM 3	TEAM 4[1]	TEAM 1	TEAM 2	TEAM 1	TEAM 2	TEAM 3[1]	TEAM 1	TEAM 2[2]	TEAM 1	TEAM 2[2]	ICU MD On-Call for Surge[3]
	Mar 20-26	BM	SV	PM		KP	JW	JL	JP		CL		JK		
APRIL	Mar 27- Apr 2	PC	TG	PJEB		PB	CL	LB	JG		ARO	JCW	SA	GA/JP	MD BY AF DZ JK
	Apr 3-9	TS	CC	JAK		RN	KP	GA	DN		FW	BY	JP	PM	CCT AP JW BM PJEB
Good Friday 10	Apr 10-16	CD	BM	AKR		AF	RN	JL	JG		JCW	ARO	BY	JK	AP PJEB PC JW SA TG CCT CD DN
	Apr 17-23	PB	ARO	MD		FW	LB	CCT	SV		CC	CL	JK	JP	AP AK CD DN JAK PJEB JW GA SA
	Apr 24-30	RN	AKR	PC		JCW	FW	DZ	JL		JG	BY	CL	BM	AK AP CD PM DN PJEB JW SA KP

Updated: April 7, 2020

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Calgary Zone

Report Safety Incidents

Reporting & Learning System (RLS)
- Submit a Report
- Report Reviewer Login
- Training & Resources
- Patient Safety

Search DCCM

COVID-19 Information

- AHS Updates
  - Insite Alert sign up on this page
- Critical Care Strategic Clinical Network
- DCCM COVID-19 Information
- Surge Deployment Schedule

FMC CVICU >

FMC ICU >

PLC ICU >

RGH ICU >

SHC ICU >

U of C >

Metavision Help
1-855-565-4ICU (4428)

Bed Occupancy

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COVID-19 EWS: **ICU Bed Forecast**

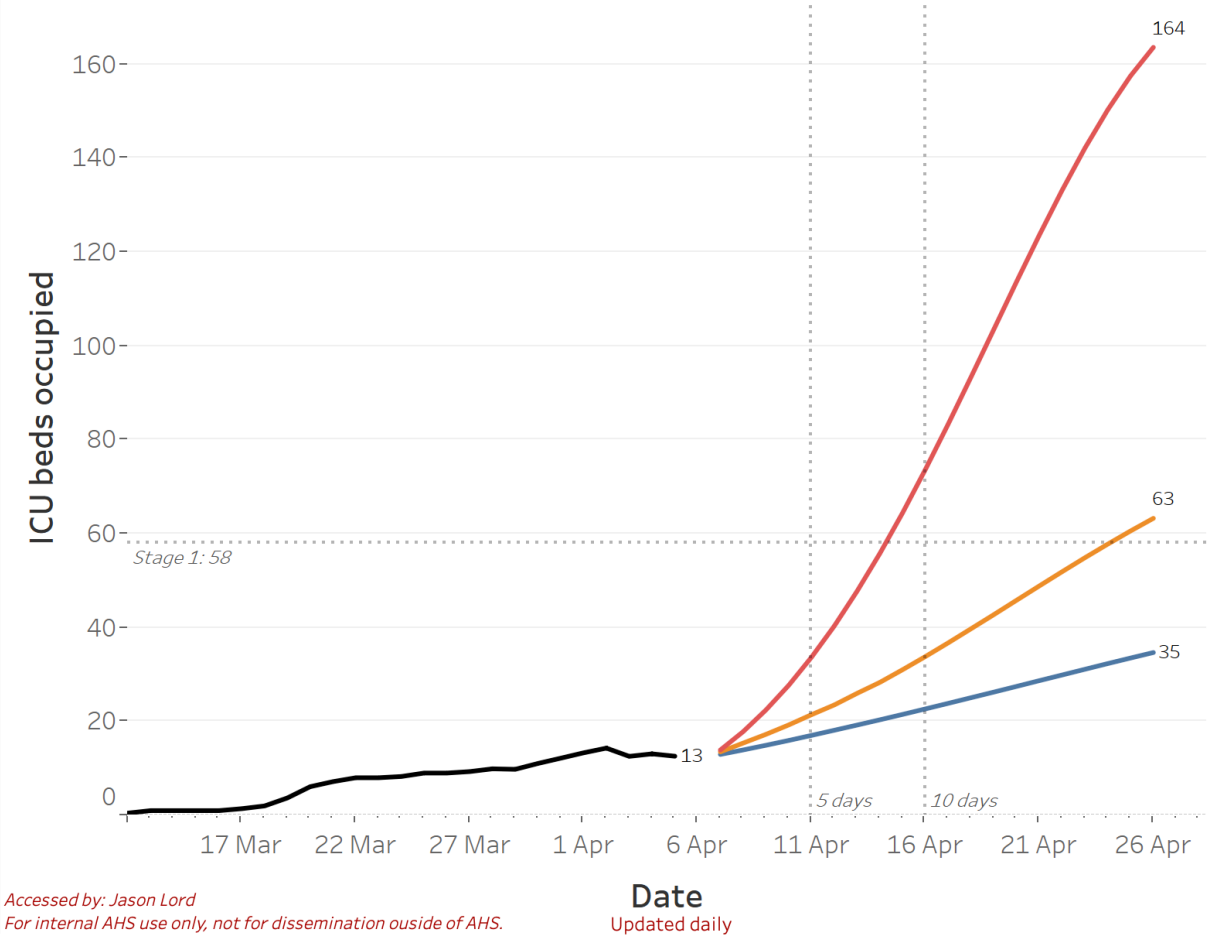
The **black** line below represents the **actual** number of ICU beds occupied. The red/orange/blue lines represent projections.

Zone
- (All)
- North
- Edmonton
- Central
- Calgary
- South

Facility
(All)

Show ICU Stages up to
(prevents large y-axis)
- No Stages
- Stage 1
- Stage 2
- Stage 3
- Stage 4

Days into the future to show
Please refer to the Background page to understand the limitations of these projections.
20



	Low	Mid	High
Apr 07	13	14	14
Apr 08	14	15	18
Apr 09	15	17	22
Apr 10	16	19	28
Apr 11	17	21	34
Apr 12	18	24	40
Apr 13	19	26	48
Apr 14	20	28	56
Apr 15	21	31	64
Apr 16	23	34	74
Apr 17	24	37	83
Apr 18	25	40	93
Apr 19	26	43	103
Apr 20	27	46	114
Apr 21	29	49	124

Thank you…

Upcoming Town Halls…

- What do you want to learn next?
- What are the emerging issues we need to address as a Department?
- Send ideas and thoughts to:
  - Jon Gaudet
  - Chip Doig
  - Dan Niven
  - Tom Stelfox

Care for all patients

We aim to provide all patients

with the care they need

Safety for all staff

We aim to protect all team members

from SARS-CoV-2