

Critical Care Aspects of COVID-19

Lifesaving treatment and clinical operations

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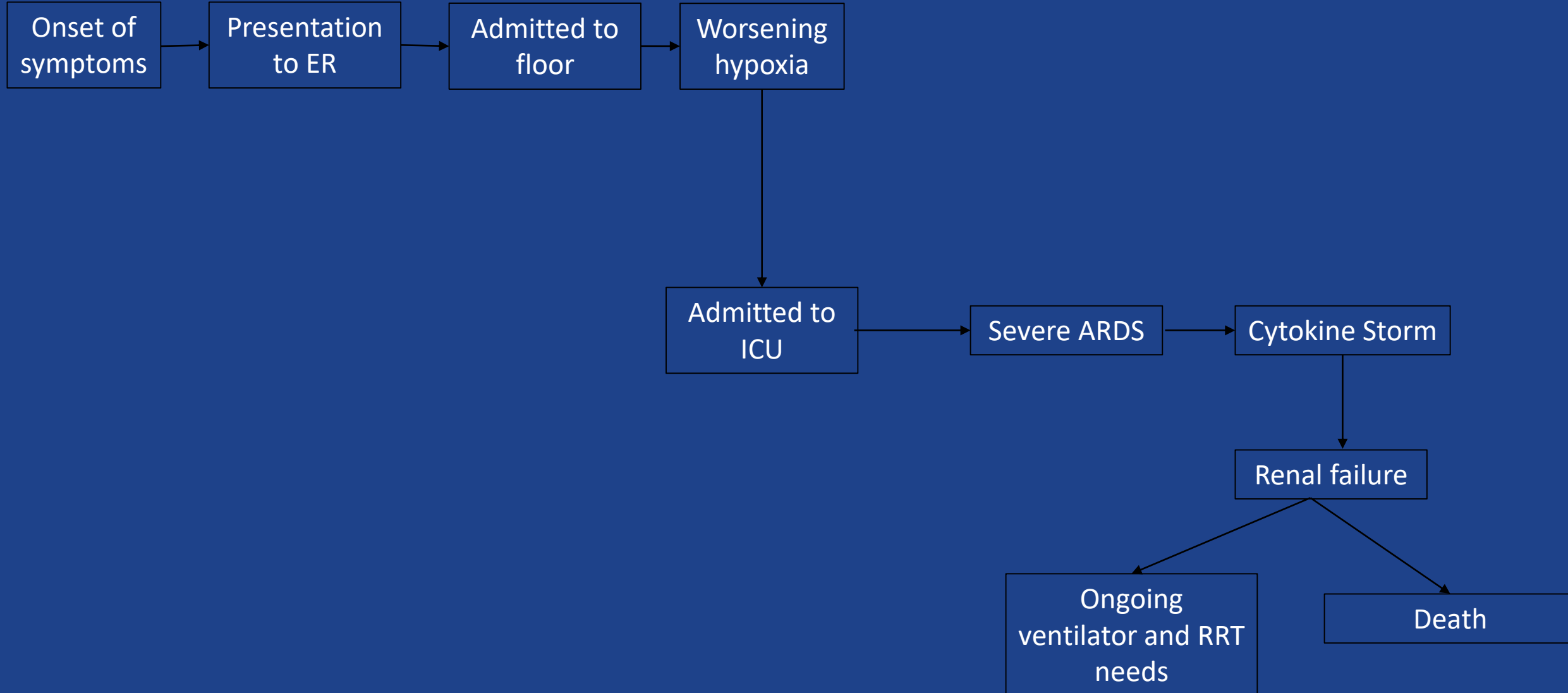
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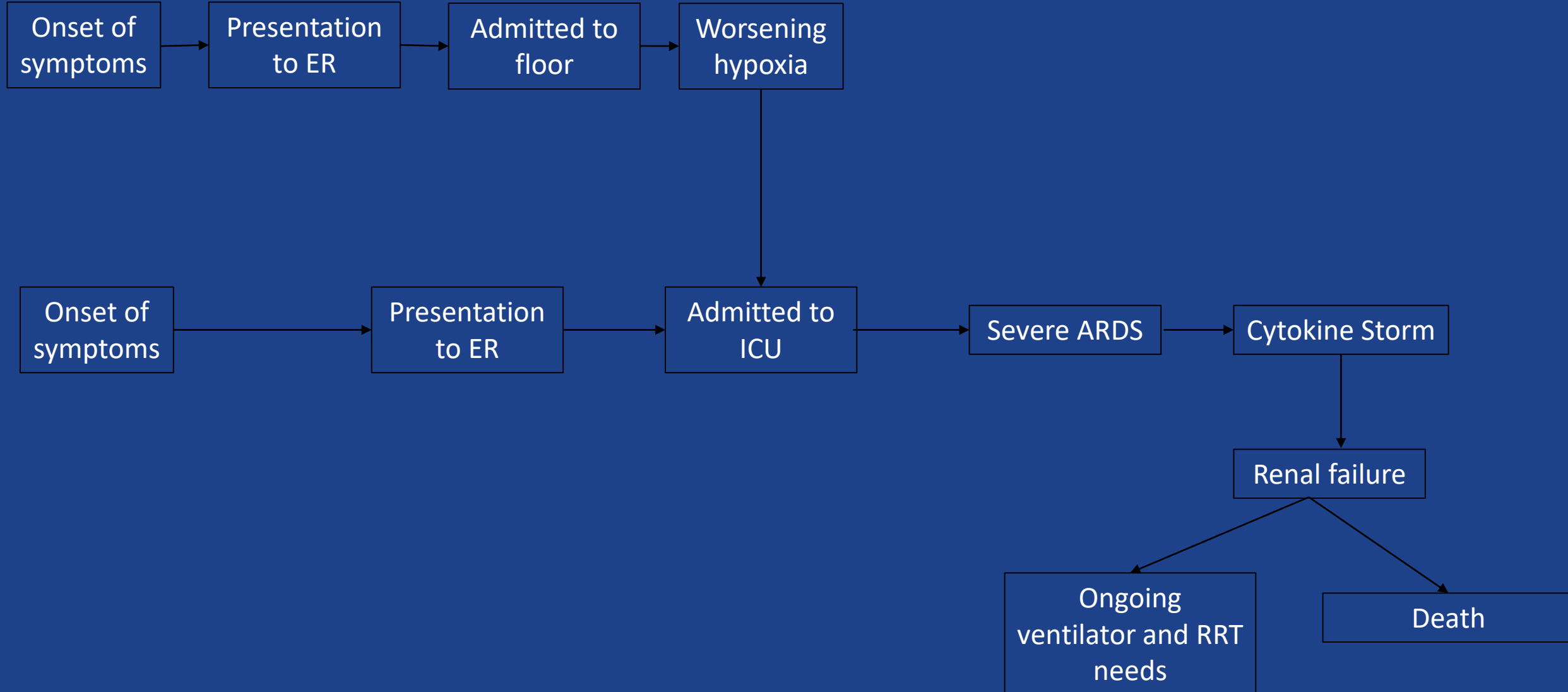


Clinical aspects: overall impressions so far

- Full spectrum of ages and ethnicities
 - Many more young patients than anticipated
- Gender M>F
- Common progression of disease
- 25% of hospital admissions admitted to ICU







Severe ARDS

- Conventional management:
 - Trial of HFNC
 - Lung Protective Strategy
 - High peep/fio2 ladder, though some patients improve on lower PEEPs
 - Account for insensible losses and undetected hypovolemia
 - Recruitment
 - Sustained hyperinflation method
 - Attention to fluid balance
 - Trial of antibiotics
 - Neuromuscular blockade and RASS-4 sedation
 - iNO for refractory hypoxia
 - Manual proning



Severe ARDS

- Other issues
 - CVL and A-line in most patients
 - Prefer left IJ CVL
 - Many have substantial sedation requirements
 - Many need neuromuscular blockade to achieve ventilator dysynchrony
 - Tracheostomy team with protocolized bedside PDT
 - Plaquenil/Azithromycin
 - Watch Qtc
 - Family updates



Cytokine Release Syndrome

- Common to see the following a few days into ICU course
 - Recurring marked fevers in the absence of obvious infectious source
 - Tachycardia, tachypnea, diaphoresis
 - Elevated CRP, ferritin, LDH, IL-6
 - Trend daily (except IL-6)
 - D-Dimer
 - Progression to renal failure
 - ~50% of our ICU patients are in acute renal failure requiring RRT
- Unclear on how to mitigate
 - Steroids
 - Risks
 - Anti- IL6
 - No clear data on efficacy



Role of Tocilizumab

∞ **Tocilizumab** (anit-IL6R) 400mg IV x1 for severe CRS

MUST have:

- Confirmed SARS-CoV-2
- Bilateral pulmonary infiltrates
- Need for supplemental O₂ to maintain sat >92% or PaO₂/FiO₂ <300mmHg

and at least 2 of following:

- CRP >100 or >50 but doubled in past 48hrs
- LDH >250
- Ferritin >500
- D-dimer >1000ng/mL
- Lymphocyte count <0.6x10⁹/L

Other considerations

- No evidence based treatment
 - Critical care support is the mainstay of therapy
- Altered standard of care
 - Role of POCUS
- Things move slowly
 - Has repercussions on management choices
 - Levels of sedation
 - Timing of invasive interventions

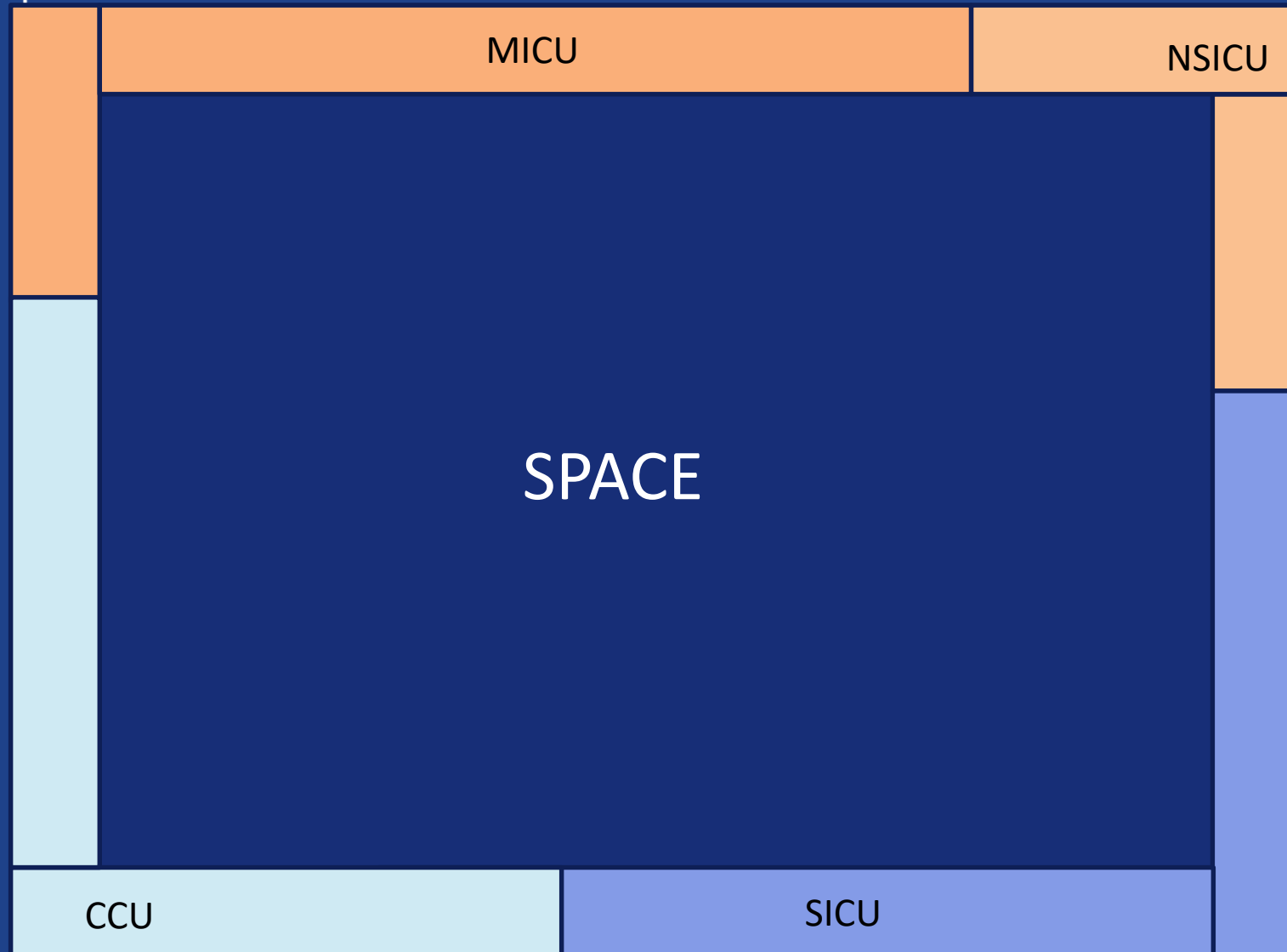


Clinical Operations

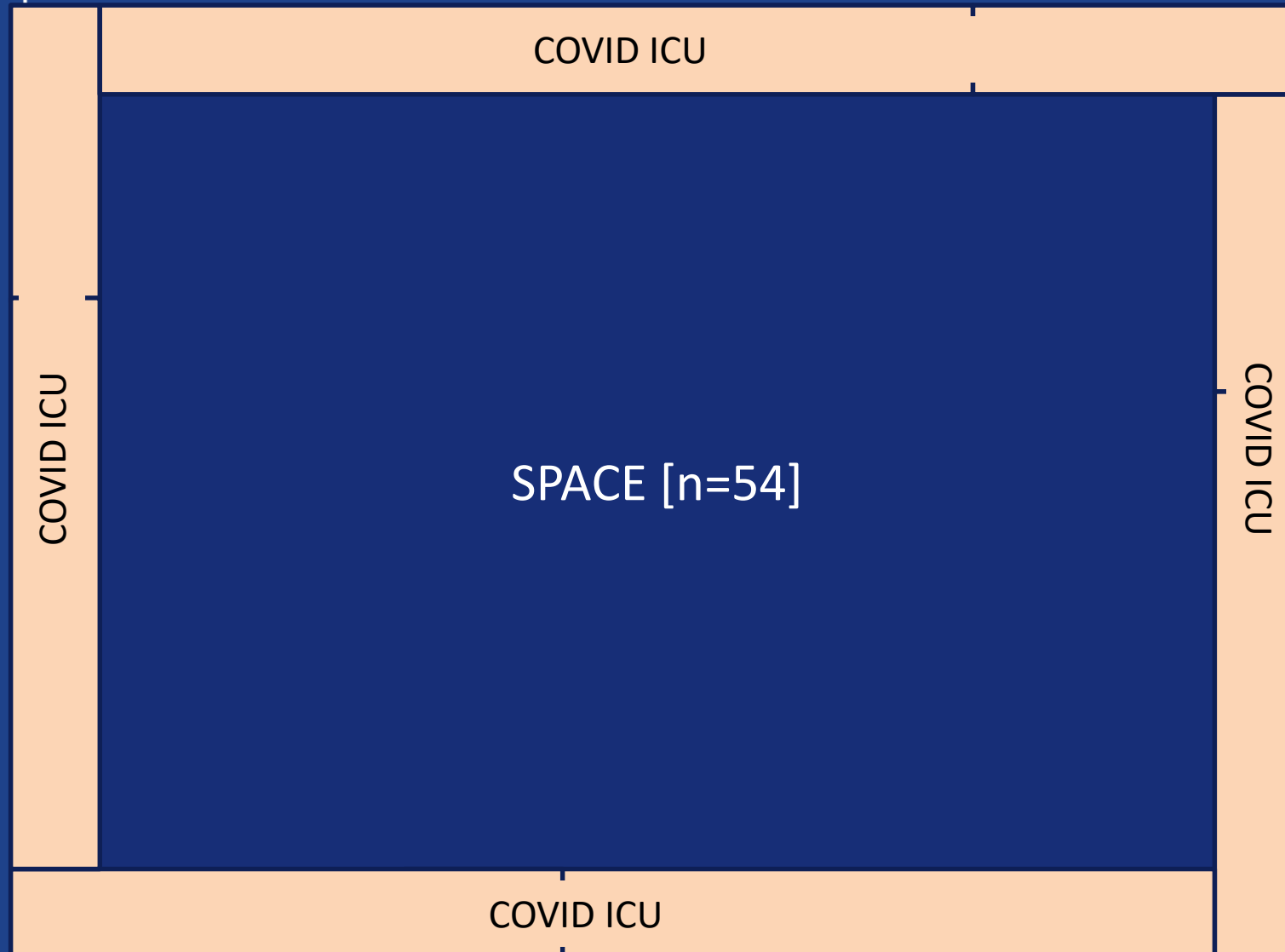
- Space
 - Ability to cohort
 - Need for negative pressure ICU capable beds
- Staff
 - Strain on physician and nurses capacity
- Stuff
 - PPE
 - Equipment

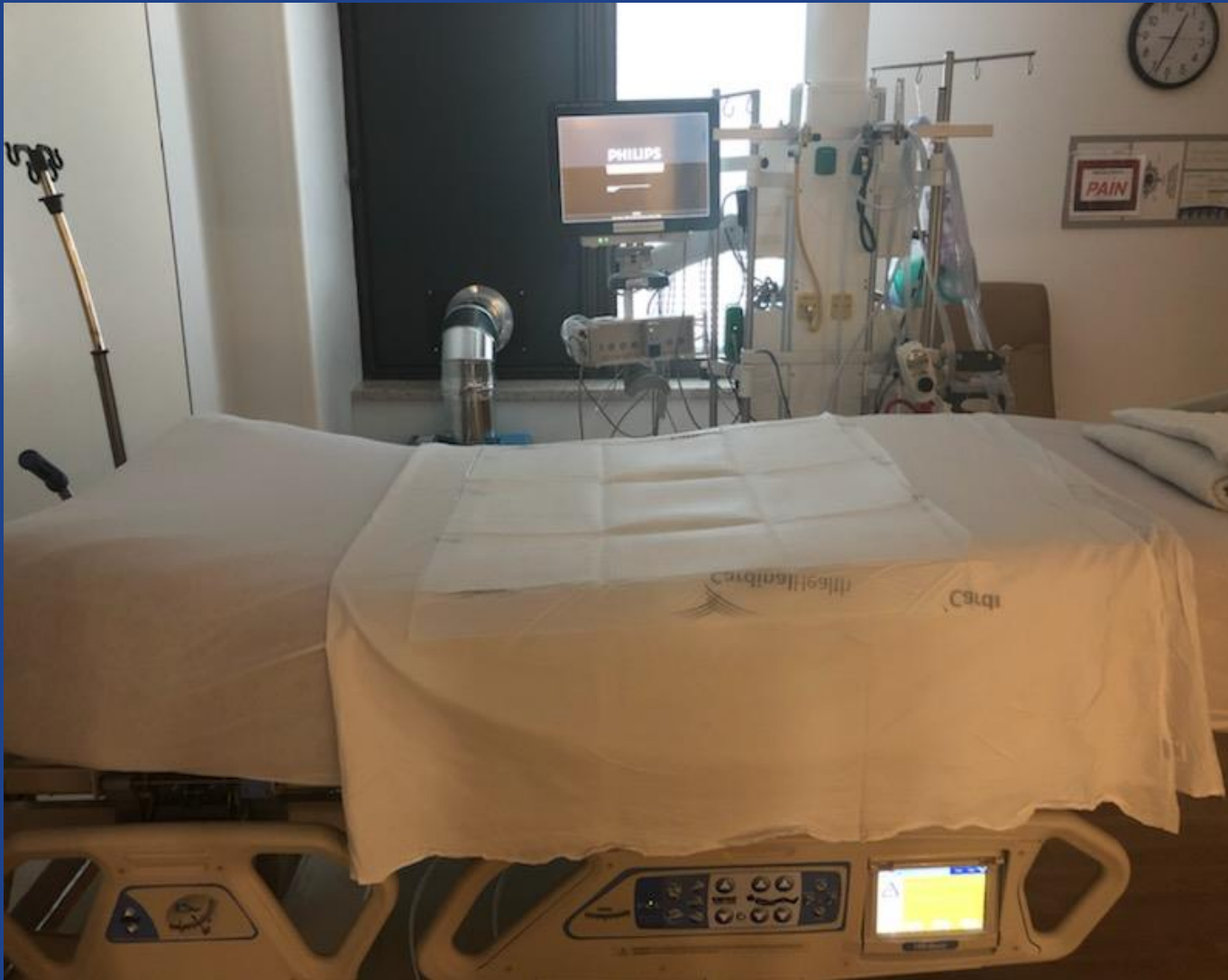


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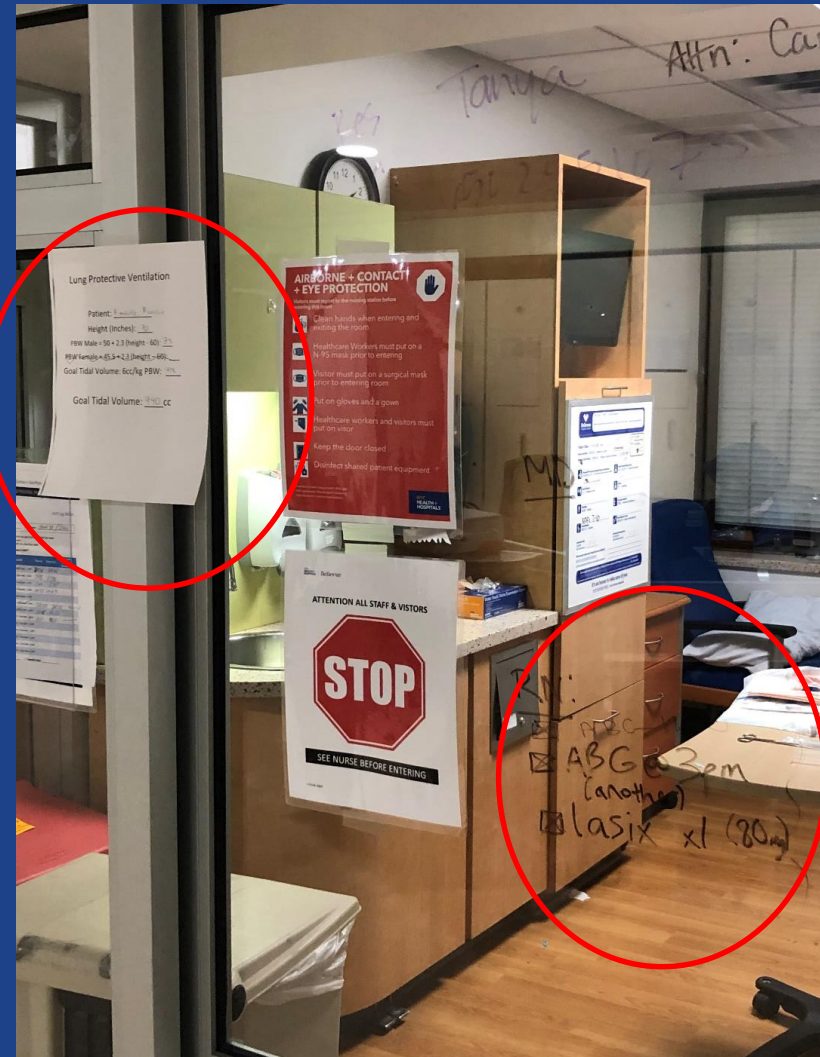
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INTUBATION KITS



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INTUBATION KITS



MECHANICAL CPR



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INTUBATION KITS



MECHANICAL CPR



Butterfly



Stuff: unanticipated shortages

- IV pumps
- Cooling blankets
- CVVH machines
- Medications
 - Fentanyl, cisatracurium



COVID-19 Daily Dashboard

Sunday, March 29, 2020

AES and Inpatient Status			Confirmed			Total
Daily Census at Midnight	509		ICU	39	2	41
Medicine Occupancy	90%		Med/Surg	74	52	126
NEDOC Score at 0730 Hours	43		ED	0	6	6
Patients Waiting in AES	5		Total Tested	677		
LWT in AES (hours)	15		Total Positive	291		
Patients Requiring Isolation	54		Total Negative	293		
Number of Transfers Pending	1		Total Pending	93		
Number of AES Visits (Day Prior)	180		Labcorp pending			
Number of Admissions (Day Prior)	65		DOH pending			
			Bioreference pending			
COVID 19 Deaths:			Personal Protective Equipment (PPE)			
	8		Inventory (individual items)			
Isolation Rooms			Viral Media Sets	7,500		
Total Adult Iso Rooms	52		N-95 Duckbill Respirator (Small)	420		
Total in Use	52		N-95 Duckbill Respirator (Regular)	1,890		
Blocked Rooms	0		N-95 3M Respirator (Small)	760		
Remaining Available	0		N-95 3M Respirator (Regular)	300		
Available Portable HEPA Units			Procedure Masks	41,100		
Total Peds Iso Rooms	3		Surgical Masks	39,300		
Peds Rooms in Use	2		Surgical Masks with Face Shield	550		
Peds Rooms Blocked	0		Face Shields - Full length	-		
Remaining Available	1		Face Shields - Half length	550	5 cs expected today	
			CAPR Helmet	13		
Staffing Levels and Status			CAPR Disposable Lens Cuff SM/MED	80		
Employees positive, total			CAPR Disposable Lens Cuff MED/LG	80		
Employees positive, last 24 hrs.			Isolation Gowns	1,700		
Staff quarantine/isolation <24 hrs.			Gloves	See PPE Details Page		
Number of Staff Telecommuting			Disinfectant Wipes - Bleach	168		
H+H Staff out due to school closure			Disinfectant Wipes - Alcohol	5,640		
H+H Staff Sick Leave			Goggles	-	10 cs expected today	
Laboratory and Testing			Lobby Hand Sanitizer	-		
Bio fire (Test Kits Available)*			Hand Sanitizer Manual	-		
Turn-Around Time for COVID-19 Testing (Hrs.)			Hand Sanitizer Automatic	-		
Lab Staffing			Purell Desktop Pump Sanitizer	-		

Society of
Critical Care Medicine
The Intensive Care Professionals

Tiered Staffing Strategy for Pandemic Requiring Significant Mechanical Ventilation

Intensive Care Trained MD

Non-ICU MD

RT, APP, MD Anes., CRNA
Mechanical Ventilation

ICU Nurse

Non-ICU Nurse
or APP

24

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Modified from the Ontario Health Plan for an Influenza Pandemic: Workgroup, Critical Care During a Pandemic.
http://www.ontario.ca/assets/default/HealthPlan/HealthPlan/11/11_1_care.pdf, Accessed October, 2012

DON'T SAY NO TO ANYONE!

- Orthopedic surgeons= Proning teams
- Outpatient Nurse Practitioners= CVVH support
- Anesthesia= procedure team (Airway, CVL, A-line, HD line, OG tube)
- ENT/Intervention Pulm= Tracheostomy Team
- Psych/Palliative Care= Family contact team
- Students= “Write up papers” team



Staffing

- Account for:
 - Staff falling sick
 - Low morale
 - Sick call
- Stress on:
 - Team building
 - Lead by example
 - Perform non-physician tasks
 - Emergency credentialing



Questions

