

COVID 19

CORE CONCEPTS

- Viral pneumonitis, associated with low grade DIC (hence prothrombotic) and cardiomyopathy (multifactorial – primary myocarditis +/- stress cardiomyopathy)
- Pneumonitis associated with alveolar flooding (=> hypoxaemia) and atelectasis (=> good lung compliance)
- Key aims – prevent ventilator associated lung injury, minimize fluid administration, monitor for deterioration
- Key causes of late deterioration – secondary nosocomial infection, and / or massive host response cytokine release => HLH like syndrome requiring immunosuppression

INITIAL MANAGEMENT

- Ensure ETT position and all connections secure, insert fine bore NG tube and CVC
- On nursing obs chart, ensure following clearly documented : Pts height and Target Tidal Volume (4-6ml/kg IBW) , Neutral / Negative Fluid balance
- Baseline bloods inc. PCT, Troponin taken, and ETT secretions sent for MC&S, Influenza virology
- On Drug chart, ensure CAP Antibiotics +/- Tamiflu, PRN Frusemide, Chloroquine 500mg BD
- If P/F < 20 kPa, prone for 18hrs or use APRV (Inverse ratio BiLevel), assess response using P/F, ΔP , C_L

DAILY CHECKLIST

- AIRWAY
 - ETT positions at teeth confirmed
 - All connections from ETT to Ventilator tightened
- VENTILATION
 - Low TV Ventilation 4-6ml/kg IBW (see chart)
 - Set PEEP according to PEEP Titration table (Low => Hi if hypoxaemic)
 - Permissive Hypercapnia – target pH > 7.15
- CVS + RENAL
 - Target even or negative fluid balance daily
 - Use diuretics if required to achieve this
 - Treat hypotension with low dose vasopressors as first line therapy
 - If evidence of organ hypoperfusion (rising lactate, falling UO) use CO monitoring to guide cautious fluid therapy
- CARE BUNDLES
 - Start low volume enteral feed early
 - Stop peptic ulcer prophylaxis once enteral feed established
 - Early DVT prophylaxis
- CNS
 - Monitor pupils, GCS and RASS score
- LABS
 - In particular, track daily CRP, Troponin, Transaminases, Coagulation profile

IN EVENT OF DETERIORATION

- DIAGNOSIS
 - Send PCT, Ferritin, LDH, Cultures, Consider CXR, ECG, Echo, Institute CO monitoring
 - If Hypoxaemia – re-prone, consider APRV, consider volume challenge, refer VV ECMO
 - If PCT elevated - ? Nosocomial sepsis, check sputum MC&S, B-D Glucan, Rx accordingly
 - If Ferritin, LDH elevated, check HLH criteria (exc bone marrow Bx), Rx Tocilizumab
 - If CVS instability – give IV HCO₃ if pH < 7.15, commence inotropic support, consider early referral for VA ECMO

DIAGNOSTIC CRITERIA

- Index of suspicion dependent on following factors :
 - Persistent cough, pyrexia, constitutional symptoms
 - Labs – Normal WCC, Lymphopaenia, Mild CRP / Transaminase / Troponin rise
 - CXR - Ground glass changes bilaterally, US – individual => confluent 'B' lines
 - PCR – 75% sensitive, ETT > NPA secretions, correlates with sample quality
 - Avoid CT / BAL to make diagnosis unless highly significant diagnostic uncertainty

DE-ESCALATION

- 2 x Negative swabs from high quality swabs, 24hrs apart, (one should be ETT secretions)
- If Hi index of suspicion still, then final decision to be made by senior clinician

TIDAL VOLUME TITRATION TABLE – TARGET 4-6 ml/kg PBW

NIH PREDICTED BODY WEIGHT (PBW) / TIDAL VOLUME CHART															
MALES							FEMALES								
HEIGHT		PBW	4	5	6	7	8	HEIGHT		PBW	4	5	6	7	8
Feet	Inches	Male	ml/kg	ml/kg	ml/kg	ml/kg	ml/kg	Feet	Inches	Female	ml/kg	ml/kg	ml/kg	ml/kg	ml/kg
4' 10"	58	45.4	180	230	270	320	360	4' 7"	55	34	140	170	200	240	270
4' 11"	59	47.7	190	240	290	330	380	4' 8"	56	36.3	150	180	220	250	290
5' 0"	60	50	200	250	300	350	400	4' 9"	57	38.6	150	190	230	270	310
5' 1"	61	52.3	210	260	310	370	420	4' 10"	58	40.9	160	200	250	290	330
5' 2"	62	54.6	220	270	330	380	440	4' 11"	59	43.2	170	220	260	300	350
5' 3"	63	56.9	230	280	340	400	460	5' 0"	60	45.5	180	230	270	320	360
5' 4"	64	59.2	240	300	360	410	470	5' 1"	61	47.8	190	240	290	330	380
5' 5"	65	61.5	250	310	370	430	490	5' 2"	62	50.1	200	250	300	350	400
5' 6"	66	63.8	260	320	380	450	510	5' 3"	63	52.4	210	260	310	370	420
5' 7"	67	66.1	260	330	400	460	530	5' 4"	64	54.7	220	270	330	380	440
5' 8"	68	68.4	270	340	410	480	550	5' 5"	65	57	230	290	340	400	460
5' 9"	69	70.7	280	350	420	490	570	5' 6"	66	59.3	240	300	360	420	470
5' 10"	70	73	290	370	440	510	580	5' 7"	67	61.6	250	310	370	430	490
5' 11"	71	75.3	300	380	450	530	600	5' 8"	68	63.9	260	320	380	450	510
6' 0"	72	77.6	310	390	470	540	620	5' 9"	69	66.2	260	330	400	460	530
6' 1"	73	79.9	320	400	480	560	640	5' 10"	70	68.5	270	340	410	480	550
6' 2"	74	82.2	330	410	490	580	660	5' 11"	71	70.8	280	350	420	500	570
6' 3"	75	84.5	340	420	510	590	680	6' 0"	72	73.1	290	370	440	510	580
6' 4"	76	86.8	350	430	520	610	690	6' 1"	73	75.4	300	380	450	530	600
6' 5"	77	89.1	360	450	530	620	710	6' 2"	74	77.7	310	390	470	540	620
6' 6"	78	91.4	370	460	550	640	730	6' 3"	75	80	320	400	480	560	640

PEEP TITRATION TABLE

FiO2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Lo PEEP	5	5-8	8-10	10	10-14	14	14-18	18-24
Hi PEEP	5-14	14-16	16-20	20	20	20-22	22	22-24