SEDATION AND NEUROMUSCULAR BLOCKADE DURING THE COVID-19 EPIDEMIC

SEDATION PRINCIPLES

- Set and regularly review the goals of sedation. In COVID-19 patients a lower (more negative) RASS may not equate to a reduced work of breathing / respiratory drive / oxygen consumption. These respiratory related goals need to be actively managed with a combined and individualised sedation and ventilation strategy, which will need to be adapted over time.
- We have significant limitations on specific drug supply and limited infusion pumps hence resource stewardship AND adaptation from standard practice are a necessity
- STEP 1a (monotherapy) is for the first few hours until STEP 1b is adequate (maximum12 -24 hours).
- **ESCALATION PHASE OF THERAPY:** Add agents as suggested by the successive STEPs if 1b measures fail to achieve targets.
    - Depending upon the goals of sedation / problems - consider applying STEPs 2, 3 and 4 in different orders
    - If coughing / tube intolerance is problematic please consider a trial of nebulised 1% lidocaine 5-10mls 2-4hourly **INSTEAD OF** increasing sedation. [If using an Aerogen, use 5mls of 2%]
    - **ONLY** use infusions (STEPS 6 to 11) when combinations of STEPS 1b to 5 have failed to achieve the sedation goals.
- As we all become more familiar with bolus sedation **AND** when weaning these regimes, the following suggested approaches should be used.
    - Analogous to pure analgesic (and other disease) treatment ladders the starting point is PRN therapy only.
    - Regular PLUS PRN follows, with the aim of sufficient regular therapy to minimise but not remove the need for PRN therapy for "breakthrough"
    - In essence, the aim is to give not quite enough regular therapy and have a need for some PRN (rescue) therapy, which is kept close at hand.
    - Escalate then actively de-escalate therapy as tolerated.
- **DE-ESCALATION PHASE OF THERAPY:** the de-escalation ladder should be done in the following order [due to pharmacokinetics and dynamics]
    - **STOP** STEP 5 or STEP 1b benzodiazepines and **REDUCE** STEP 1b opiates to **MST** granules 20mg 12 hourly (or equivalent) + PRN
    - **THEN STOP** STEP 2; but consider using as first line rescue for agitation
    - **THEN TAPPER** STEP 3 drugs **-** reduce by 50% every 48-96 hours; use mane reductions before nocte.
    - **IF** agitation / hyperactive delirium is hampering weaning of sedation **AND / OR** ventilation ***THEN CONSIDER*** commencing a maximum 2 day-shift trial of a continuous sedative infusion - suggested order of agents to consider:
        - **Propofol**
        - **Clonidine**
        - **Dexmeditomidine**
        - **Ketamine (low dose) 0.5-2.0mg/kg/hour [NOTE this may make the situation worse not better]**
    - **Post extubation OR Tracheostomy AND the successful wean of all other drugs in this regime with the exception of opiates; *CONSIDER* weaning STEP 4 drugs**
        - **Sodium valproate** - reduce by 25% every 7 days; use mane reductions before nocte.
        - **Clonidine** - design daily tapper over 7 days ***BUT*** commence **Propranolol *OR* Metoprolol** to achieve resting HR 60-80bpm
        - **NOTE:** There is weak evidence of medium term benefits of **Bet-blocker** therapy for 6-12 months following severe / protracted critical illness especially if there is evidence of sympathetic "overactivity" during early convalescence.+
- When weaning / de-escalating / coming back down the ladder, some patients may develop physical and / or behavioural withdrawal syndromes, which are indistinguishable from delirium. These are challenging to diagnose. If suspected, the management strategy should be to go back up the ladder for" rescue", then de-escalate but more gradually. Additional substitutions / alternative drugs may be warranted, including a limited trial of STEP 1a (traditional ICU sedation). Please seek expert advice if you run into difficulties.
- Please assess and record a RASS every 2-4 hours and perform a CAM-ICU assessment at least once during the day shift.

ESCALATION STRATEGY

	Drug & dose regime	*Notes*
STEP 1a ***PLEASE TRY TO AVOID***	**Propofol** 0 to 3mg/kg/hour (soft max 200mg/hour) ***AND*** **Fentanyl** 25 to 250mcg/hour (soft max) ***OR*** **Alfentanil** 0.5 to 4.0mg/hour (soft max)	**Very limited supply**
STEP 1b **START ON ADMISSION** **CONSIDER IMMEDIATE / EARLY IV LOADING / FIRST DOSE(S)**	**Diazepam** 10mg NG 8 hourly escalate dose up to 90mg/24 hours (soft max) ***IF ILEUS PRESENT*** give same dose IV; convert back to NG ASAP ***UNLESS*** - renal dysfunction (defined as eGFR<45ml/min) ***THEN*** **Lorazepam** 1mg NG 8 hourly escalate dose up to 9mg/24 hours (soft max) IF ileus present give same dose IV; convert back to NG ASAP Alternatives if supply issues emerge Chlordiazepoxide 25mg = Diazepam 10mg Temazepam 10mg = Diazepam 10mg ***AND*** **Morphine** (MST granules) 20-30mg NG 12 hourly PLUS PRN oral liquid morphine 10-20mg 2 hourly Escalate MST dose depending of response to and last 24 hours cumulative dose of oral liquid morphine ***IF ILEUS PRESENT*** give 10mg IV every 4 hours PLUS PRN; convert back to NG ASAP ***UNLESS*** - severe renal dysfunction (defined as eGFR<25ml/min) ***THEN*** **Oxycodone** (Oxynorm liquid) 5mg NG 6 hourly PLUS PRN 5mg NG 2 hourly ***IF ILEUS PRESENT*** give 5mg IV every 4 hours PLUS PRN; convert back to NG ASAP	**Diazepam**: Enteral bioavailability 100%; highly lipid soluble to accumulates in obese patients; has a biphasic half-life with an initial rapid distribution phase and a prolonged terminal elimination phase of 1 or 2 days; its action is further prolonged by the even longer half-life of 2 to 5 days of its principal active metabolite, desmethyldiazepam. Diazepam and desmethyldiazepam accumulate on repeated dosage and the relative proportion of desmethyldiazepam in the body increases with long-term use. No simple correlation has been found between plasma concentrations of diazepam or its metabolites and their therapeutic effect. Diazepam is extensively metabolised in the liver, notably via the cytochrome P450 isoenzymes CYP2C19 and CYP3A4; in addition to desmethyldiazepam, its active metabolites include oxazepam and temazepam. It is excreted in the urine, mainly in the form of free or conjugated metabolites. Diazepam is 98 to 99% bound to plasma proteins. The plasma elimination half-life of diazepam and/or its metabolites is prolonged in the elderly, and in patients with hepatic or renal impairment. **Lorazepam**: Enteral bioavailability 90%; about 85% bound to plasma proteins; is metabolised in the liver to the inactive glucuronide, and excreted in the urine. The elimination half-life has been reported to range from about 10 to 20 hours. For drug equivalence table see page 2 of this document For **Midazolam infusion** see below in **STEP 6** **Alternative strategies** in patients with ileus include a s/c syringe driver over 24 hours. Suggested starting regime Midazolam 60mg + Morphine 60mg + Haloperidol 5mg Supplies of IV **Oxycodone** MAY be very limited. Use bolus IV morphine if unavailable

	Drug & dose regime	***Notes***
STEP 2 **ADD**	**Promethazine** 25mg NG 6 hourly escalate dose to 50mg 6 hourly ***IF ILEUS PRESENT*** give same dose IV; convert back to NG ASAP. ***NOTE*** IV dose significantly more potent as oral dose is subject to high degree of first-pass metabolism	A sedating antihistamine with antimuscarinic, significant sedative, and some serotonin-antagonist properties. No dose alteration in renal or liver failure. Can cause tachycardia and provoke AF / fast AF (in chronic patients with rate control)
STEP 3 **ADD**	**Olanzepine** 10mg NG 12 hourly ***Consider*** de-escalation to 5mg NG 12 hourly if hypersomnolent ***OR*** **Risperidone** 2mg NG 12 hourly Escalate dose depending of response up 4mg NG 12 hourly ***Consider*** de-escalation to 0.5mg NG 12 hourly if hypersomnolent ***IF ILEUS PRESENT*** give **Haloperidol** 2.5mg IV 6 hourly Titrate dose to effect; hard max. 20mg/24hours	
STEP 4 **ADD**	**Sodium Valproate** Consider loading dose of 30mg/kg IV (can be given NG) Maintenance dose 5mg/kg NG every 6 hours ***AND / OR (1 of the following)*** **Propranolol** 40mg NG 8 hourly Up / down titrate depending on response and heart rate Min 20mg NG 8 hourly / Max 80mg NG 6 hourly ***AND / OR*** **Clonidine** 200mcg NG 6 hourly Up / down titrate depending on response and heart rate Min 100mcg NG 8 hourly / Max 400mcg MG 6 hourly ***OR*** ***IF ILEUS PRESENT*** **Metoprolol** 5-15mg IV 6 hourly	https://www.ncbi.nlm.nih.gov/pubmed/28833346 ***ENSURE*** negative pregnancy test in all women 55 years old and younger ***DO NOT*** give if patient is receiving meropenem or ertapenem Hyperammonemia is a potential complication of therapy which would manifest as encephalopathy; it is benign and resolves with treatment cessation. Target heart rate 60-80bpm (sinus) Dose reduce / interval increase ***OR*** use enteral **Metoprolol** in renal failure. Enteral **Metoprolol** regime - start at 25mg NG 8 hourly; Max 100mg https://www.ncbi.nlm.nih.gov/pubmed/28833346 ***DO NOT STOP ABRUPTLY*** due to **Clonidine** withdrawal / discontinuation syndrome ***UNLESS*** switched to (or also receiving) beta-blockers Target heart rate 60-80bpm (sinus) **WARNING:** If the patient has any signs of "shock" [defined as a noradrenaline requirement of ≥0.20mcg/kg/min ***THEN*** seek senior review below starting ***AND / OR*** continuing **Propranolol / Clonidine / Metoprolol**.

	Drug & dose regime	*Notes*
STEP 5 **ADD**	**Phenobarbital** Consider loading dose of 10mg/kg IV (can be given NG) Maintenance dose 1mg/kg NG every 12 hours Escalate up to 2mg/kg NG every 8 hours ***IF ILEUS PRESENT*** give same dose IV Once sedation / ventilation goals achieved STOP benzodiazepeines from STEP 1b. When weaning sedation STOP **Phenobarbital**. A withdrawal syndrome is unlikely as levels fall very slowly. However, if psychological or autonomic symptoms / signs emerge then consider restarting at low dose with a prolonged tapering wean. See https://www.ncbi.nlm.nih.gov/pubmed/19900604 for further insights.	Has potentiating activity on GABA receptors and antagonizing activity on NMDA and AMPA receptors. This mechanism of action differs from that of benzodiazepines, which act solely to potentiate GABA without affecting the increased activity of glutamate on neuronal receptors. The long half-life of phenobarbital eases the burden of administration compared with benzodiazepines. Phenobarbital's long half-life also allows for a gradual transition off of therapy after the last dose is provided. https://dx.doi.org/10.4037/ajcc2018745 Excellent enteral bioavailability; partial hepatic metabolism (inactive) AND ~25% renal excretion (unchanged). Plasma half-life 75-120 hours. See also https://www.ncbi.nlm.nih.gov/pubmed/28833346
THE FOLLOWING STEPS EITHER REPLACE BOLUS AGENTS *OR* ARE ADDITIONAL TO STEPS 1b TO 5		
STEP 6 **ADD**	**Propofol** 0 to 3mg/kg/hour (soft max 200mg/hour)	**IF drug and infusion pump available**
STEP 7 **REPLACE**	**Midazolam infusion** 30 - 200mcg/kg/hr (0 - 14 mg/hr)	***STOP*** all other benzodiazepines (from STEP 1b) when commencing this infusion. Consider transitioning back onto STEP 1b benzodiazepines at tapering doses as part of a weaning (from sedation) regime

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Midazolam	Syringe pump required	**Load:** adminstered over 60s **Default** = 1mg **Max** = 3mg . **Infusion:** **Default** = 2 mg/hr **Max** = 14 mg/hr . **Programmed bolus** = 1mg (FAST)	Further dilute TEN x 10mg/2ml ampoules to 50ml with NS or D5W to give 100mg/50ml (2 mg/ml)	Only 10mg/2ml ampoules to be kept in the CD cupboard

	Drug & dose regime	*Notes*
STEP 8 **ADD**	**Ketamine infusion** 1 - 4mg/kg/hr	***CONSIDER*** a loading dose in the acutely agaitated patient Do not use doses over 2mg/kg/hr without consultant approval. Watch out for increased oral and bronchial secretions.

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Ketamine	Syringe Pump required	**Load:** **Only give under Dr Supervision** 0.5 - 2 mg/kg over 1 min **Continue infusion:** 0.2 - 4 mg/kg/hour **Programmed bolus** 0.5 - 1 mg/kg (FAST)	Dilute to 10 mg/ml or 25 mg/ml with D5W or NS (unlicensed practice) Can use 50 mg/ml in fluid restricted patients only	

	Drug & dose regime	*Notes*
STEP 9 **REPLACE**	**Clonidine infusion** 1-10mcg/kg/hr	***STOP*** enteral clonidine and seek expert advice re any beta blocker therapy Limited supply - especially in used at “high dose” and for >24 hours.

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Clonidine Infusion	Syringe pump required	**Default:** 0.25mcg/kg/hr **Max:** 2mcg/kg/hr	Use **five** amps of 150mcg/ml and dilute to 50ml with NS or D5W to make a 15 mcg/ml syringe	
Clonidine High Dose	Syringe pump required	**Default:** 5mcg/kg/hr **Max:** 25mcg/kg/hr	Use **four** amps of 150mcg/ml and dilute to 30ml with NS or D5W to make a 20mcg/ml syringe	**High dose.** Use only on instruction of a Consultant

	Drug & dose regime	*Notes*
STEP 10 **REPLACE**	**Dexmedetomidine infusion** 0.2 - 1.4mcg/kg/hr	STOP enteral clonidine and seek expert advice re any beta blocker therapy

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Note: There is 1 Injectomat and 1 Volumat entry for Dexmedetomidine

Dexmedetomidine (Dexdor™)	Syringe Pump required	**Default:** 0.7mcg/kg/hr **Soft min:** 0.2 mcg/kg/hr **Max:** 1.4mcg/kg/hr	Dilute a 2ml (100mcg/ml) ampoule to 50mls NS or D5W or Hartmanns (4mcg/ml)	
Dexmedetomidine (Dexdor™)	Volumatic Pump required	**Default:** 0.7mcg/kg/hr **Soft min:** 0.2 mcg/kg/hr **Max:** 1.4mcg/kg/hr	Dilute with NS, D5W or Hartmanns: 4ml vial to 96ml (4mcg/ml) 10ml vial to 240ml (4mcg/ml) Each vial = 100mcg/ml	Remove: 4ml from a 100ml bag and add 4ml of drug 10mls from a 250ml bag and add 10ml of drug

	Drug & dose regime	*Notes*
STEP 11 **ADD**	**Lidocaine infusion** load 1.5mg/kg over 10mins then 1.5mg/kg/hr dose range 0.25-1.5mg/kg/hr	Potential sedative adjunct / opiate sparing agent in complex patients. Be aware of accumulation of active (hepatic) metabolites, effects of protein binding, possible negative inotropic (and chronotropic) effects, induction of seizures and potentiation of NMBs (and weak NMB effect) hence risk of CINM? MUST have daily cessation to avoid accumulation.

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Lidocaine Analgesia	Volumatic Pump required	**Load:** 1.5mg/kg administered over 10 mins **Infusion default rate:** 1.5 mg/kg/hr **Range:** 0.25 - 1.5mg/kg/hr	Use ready diluted preparations: 0.2% in 500mL D5W (2mg/mL)	Use uncommon pump Infusion **MUST** be STOPPED every 12 hours. For Consultant review if to re-start regime. Use **ACTUAL** body weight to a max of **100kg**

DE-ESCALATION STRATEGY

	Drug & dose regime	*Notes*
	FROM THE EARLIEST POSSIBLE TIME POINT FOLLOWING RESPIRATORY STABILISATION / IMPROVEMENT	
STEP A **STOP**	ANY / ALL continuous sedative infusion(s) ***AND*** ALL regular **benzodiazepines** ***OR*** **Pheonbarbital** ***CONSIDER*** leaving PRN benzodiazepines for second-line rescue if **Promethazine** ineffective ***AND*** ***REDUCE / MAINTAIN*** Morphine (MST granules) 20-30mg NG 12 hourly PLUS PRN oral liquid morphine 10-20mg 2 hourly ***UNLESS*** - severe renal dysfunction (defined as eGFR<25ml/min) ***THEN*** **Oxycodone** (Oxynorm liquid) 5mg NG 6 hourly PLUS PRN 5mg NG 2 hourly	
STEP B **STOP**	Regular **Promethazine** ***BUT*** leave PRN **Promethazine** as first line rescue	
STEP C **TAPPER**	**Olanzepine** / **Risperidone**	Reduce by 50% every 48-96 hours; use mane reductions before nocte.
IF agitation / hyperactive delirium is hampering weaning of sedation **AND / OR** ventilation ***THEN CONSIDER*** commencing a maximum 2 day-shift trial of a continuous sedative infusion - suggested order of agents to consider: **Propofol** **Clonidine** **Dexmeditomidine** **Ketamine** (low dose) 0.5-2.0mg/kg/hour [**NOTE** this may make the situation worse not better]		

	Drug & dose regime	*Notes*
	POST EXTUBATION OR TRACHEOSTOMY AND THE SUCCESSFUL WEAN OF ALL OTHER DRUGS IN THIS REGIME WITH THE EXCEPTION OF OPIATES	
STEP D	**Sodium Valproate**	Reduce by 25% every 7 days; use mane reductions before nocte.
	Clonidine	Design daily tapper over 7 days ***BUT*** commence **Propranolol *OR* Metoprolol** to achieve resting HR >90bpm
	Propranolol / Metoprolol	There is weak evidence of medium term benefits of **Beta-blocker** therapy for 6-12 months following severe / protracted critical illness especially if there is evidence of sympathetic "overactivity" during early convalescence. If you wish to stop these drugs tapper the dose down by successive 50% decrements every 7 days.

NEUROMUSCULAR BLOCKER STRATEGIES

NEUROMUSCULAR BLOCKER PRINCIPLES

- We have significant limitations on specific drug supply and limited infusion pumps hence resource stewardship AND adaptation from standard practice are a necessity
- Consider using **Suxamethonium** 1 - 2 mg/kg for intubation [in order to preserve **Rocuronium** supplies, which may be needed as an alternative STEP 3 option.
- See https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3519794/ for more information

Indications for starting therapy are: a high work of breathing ***and / or*** ventilator desynchrony
AND an rapidly escalating FiO_2 requirement ***and / or*** a PaO_2:FiO_2 ratio ≤13.3kPa
DESPITE reasonable attempts at sedation optimisation defined as a RASS of -3 to -5

	Drug & dose regime	***Notes***
STEP 1	**a SINGLE "trial dose" Pancuronium bolus** 0.1mg/kg ***IF UNAVAILABLE*** give 1 or max 2 "trial" bolus doses of **Atracurium 50mg** OR **Rocuronium 50mg**	Vagolytic hence associated with tachycardia Predominantly renally excreted hence can rapidly accumulate Typical duration of action 90-180 minutes (increases with successive doses) Strong association with critical illness weakness (neuromyopathy)

SUCCESSFUL TRIAL = maintenance of target SpO_2 with a ≥20% (absolute) reduction in FiO_2 e.g. SpO_2 maintained at 92% but the FiO_2 reduced from 65 to 45%
Alternative definition = significant improvement in PaO_2:FiO_2 ratio [defined as an increase of ≥5kPa; [assuming PEEP optimisation pre and post trial]

IF trial successful ***AND THEN*** patient deteriorates as the Pancuronium wears off ***THEN*** STEP 2; [minimum duration 36 hours]

STEP 2 **UNLESS NO INFUSION PUMP AVAILABLE**	**Magnesium infusion** Load 16mmol (4g) over 15mins then 4mmol/hr (1g)	Avoid loading dose if patient has received standard ICU Mg replacement regime in the previous 12 hours. Potentiates neuromuscular blockade. Daily blood Mg level essential; aim to maintain blood levels ≤2.5mmol/l as risk of ECG changes / dysrhythmias and hypotension above this level. Daily ECG check of PR interval and QTc essential. EMERGENCY MANAGEMENT OF SUSPECTED TOXICITY - calcium gluconate or chloride - see https://www.toxbase.org/poisons-index-a-z/i-products/iv-magnesium/

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Magnesium Sulphate 10% (eclampsia)	Syringe pump required	4000mg load then 1000 mg/hr for 24 - 48 hours	Use 10% solution undiluted (100 mg/ml)	Use uncommon drugs pump Use loading dose setting on pump to administer 4000mg load over 20 mins (1200s) . Then administer infusion at 1000 mg/hr ECG monitoring mandatory

	Drug & dose regime	***Notes***
IF patient fails to improve within 1 hour [assuming RASS of -3 to -5 ***AND*** vent settings optimised ***AND*** CVS optimised] ***THEN*** STEP 3 [minimum duration 36 hours] ***PLEASE*** **DO NOT** stop during a night shift. ***PLEASE*** **DO** stop and re-assess during the morning of the following day [minimum duration 36 hours]		
STEP 3 **IF AVAILABLE**	**Atracurium infusion** Load with 500mcg/kg bolus then 300mcg/kg/hour ***IF*** inadequate response Escalate after 1 hour to 450mcg/kg/hr ***IF*** inadequate response Then 600mcg/kg/hr	**Limited supply** An "adequate" response = "good" patient-ventilator synchrony ***AND / OR*** a significant improvement in SpO_2 [≥5% improvement] ***OR*** a significant reduction in FiO_2 [≥20% i.e. 60-40%] for the same SpO_2

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Atracurium	Syringe pump required	**Loading dose:** **Default:** 500 mcg/kg **Max:** 600 mcg/kg **Soft min:** 300 mcg/kg **Infusion rate:** **Default:** 300 mcg/kg/hr **Max:** 600 mcg/kg/hr **Programmed Bolus:** **Default:** 500 mcg/kg **Max:** 600 mcg/kg	Use undiluted (10 mg/ml) syringes can be prepared by Aseptics Pharmacy on weekdays. 7 day expiry, store in the fridge. Please order from Pharmacy	**Loading dose:** over 1 min **Infusion:** 300 - 600 mcg/kg/hr **Programmed bolus:** fast (1200 ml/hr). For **OBESE** patients, use adjusted body weight to prevent toxicity i.e. Adjusted Weight = Ideal Body Weight + 40% (Total Weight - Ideal Body Weight)

STEP 4 **IF lack of Atracurium** *AND / OR* **infusion pump**	**Pancuronium boluses** 0.1mg/kg DO NOT REPEAT UNTIL EFFECTS HAVE WORN OFF If dose interval <4 hours increase to 0.2mg/kg	Vagolytic hence associated with tachycardia Predominantly renally excreted hence can rapidly accumulate Typical duration of action 90-180 minutes (increases with successive doses) Strong association with critical illness weakness (neuromyopathy)

	Drug & dose regime	*Notes*
STEP 5 **IF lack of Atracurium** *AND / OR* **infusion pump** **AND** **Lack of Pancuronium** **AND** **Good supply of Rocuronium** *AND / OR* **infusion pump**	**Rocuronium infusion** Load with 0.6mg/kg bolus then 0.3mg/kg/hour IF inadequate response Escalate after 1 hour to 0.45mg/kg/hr IF inadequate response Then 0.6mg/kg/hr	**Limited supply** An "adequate" response = "good" patient-ventilator synchrony ***AND / OR*** a significant improvement in SpO_2 [≥5% improvement] ***OR*** a significant reduction in FiO_2 [≥20% i.e. 60-40%] for the same SpO_2

NOT in COVID-19 Critical Care IV Prep Guide

Rocuronium	Syringe pump required	**Loading dose:** 0.6mg/kg **Infusion rate:** 0.3mg to 0.6mg/kg/hr	Use undiluted (10mg/mL).	Use a 30mL syringe during COVID-19 surge. MUST calculate dose. For OBESE patients, use adjusted body weight to prevent toxicity i.e. Adjusted Weight = Ideal Body Weight + 40% (Total Weight - Ideal Body Weight) **Use Drug X**

REMINDER / REFERENCE - THE RICHMOND SEDATION - AGITATION SCALE

Score	Term	Description	
+4	Combative	Overtly combative or violent; immediate danger to staff	OBSERVATION
+3	Very agitated	Pulls on or removes tube(s) or catheter(s) or has aggressive behaviour toward staff	
+2	Agitated	Frequent non-purposeful movement or patient-ventilator de-synchrony	
+1	Restless	Anxious or apprehensive but movements not aggressive or vigorous	
0	Alert and calm	Spontaneously pays attention to caregiver	
-1	Drowsy	Not fully alert, but has sustained (more than 10 seconds) awakening, with eye contact, to voice	VOICE
-2	Light sedation	Briefly (less than 10 seconds) awakens with eye contact to voice	
-3	Moderate sedation	Any movement (but no eye contact) to voice	
-4	Deep sedation	No response to voice, but any movement to physical stimulation	TOUCH
-5	Unrousable	No response to voice or physical stimulation	