

Interim guidance on the organisation and running of critical care facilities during the peak demands of COVID19

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Review date: when ICU capacity not exceeded for > 72 hours

Expiry date: before September 2020

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Overall structure

We anticipate managing **90 patients** in the RDH requiring IPPV at the various stages of their illness. This guideline aims to provide appropriate care, manage capacity, and empower clinicians operating in good faith outside their area of expertise.

On a daily basis the command structure is:

Trust gold, silver and bronze. Direct daily communication bronze level with ICU 1.

ICU Consultants ICU 1 will largely take a global view and accept referrals and manage issues brought to them by ICU2 or Anaesthesia 1 or bronze level management. ICU 2 will be largely clinical. There may be further ICU consultants at times of need.

Anaesthesia 1 will similarly take a global view and liaise with ICU1. They may have limited clinical involvement.

The “team” will need rapidly assembled **every day** and with sickness and fatigue cannot be defined. It should comprise experienced and knowledgeable next in commands down to the staff directly caring for the patient. Communication back up ranks should follow these flexible structures so senior staff can concentrate on a global perspective not someone’s U+E results.

ICU 1 and Anaesthesia 1 should be relatively hands-off, only dealing with high end queries or difficult dilemmas such as withdrawal of therapy, failures of therapy or organisational issues.

Intelligent use of the team will be by skills and knowledge and not necessarily rank. Shrewd use of SAS doctors, colleagues with recent ICU experience and “younger” consultants with recent ICU experience will ensure patients get the best care.

The ICU ward round will become different. Each patient will be reviewed in 1 minute. There will be no routine clinical examination, teaching or pontification. Findings, results and interpretation need to be ready so the patients can be processed in the shortest time and the next patient reviewed.

Responsibilities

Patients with COVID19 requiring critical care support (essentially IPPV) regardless of location are the responsibility of the Trust Board of the RDH who recognise care may be delivered with staff operating outside of their comfort zone, on occasions their competencies, and for the greater good. Daily management will be guided by the ICU team recognising challenges

such as capacity and limited resources and that we are all acting for the greater good and in good faith.

Managing patients with COVID19

Most patients follow a trajectory and will be managed by the following timescale. The geographical locations of the patient will follow and this will require transfers on a regular basis but over a short distance on level 2 within RDH. These times are approximate but quite reliable considering the patients to date.

Each timescale will have a management bundle and tests which should be performed (Dr Chris Beet, ICU).

Retrieval and intubation

The ICU guideline on intubation remains active and under weekly review. If multiple admissions become common then the arrangements will evolve. It is already becoming the case that dedicated anaesthesia teams in HCID PPE are intubating and retrieving patients for ongoing care.

COVID Day 0-4 (early)

Typically, isolated respiratory failure and high FiO₂. They have a form of ARDS but are often very compliant. Most patients require NMBA and proning. See guidelines on intranet- you need to be familiar with these before you need to refer to them with a patient.

These patients, despite their pathology, are relatively “easy” to manage and static, within the scope of anaesthesia competencies.

COVID Day 5- Weaned/trache (mid)

These are perhaps the most challenging and we aim to move them into ICU where expertise and ICU ventilators can facilitate this process. We anticipate most withdrawal of therapy and complications to happen here and should be dealt with by staff with most experience in this area.

At an FiO₂ <0.4 we will consider 2 trials of extubation and if these fail the patient will get a surgical tracheostomy and be managed on the ICU immediately afterwards.

Once extubated or with a tracheostomy breathing spontaneously patients will be discharged to the rehab area.

COVID REHAB (late)

This area is yet to be defined in location but will need to be close to ICU and on level 2. Here the priorities will be physiotherapy, nutritional support, decannulation and mobilising so they are in as good a shape as possible for the ongoing ward care.

Ward care

Will be dictated by the ICU team in liaison with principally respiratory medicine. Flow will need to be maintained if eligible patients are to be admitted at the front end.

Locations within the structure

Critically ill patients will be managed on RDH level 2 with flexibility of location as the situation evolves.

ICU: Will act as the main “weaning” area and days 5- trache/ weaned stages as these are in many ways the hardest to manage, highest risk of staff COVID exposure and issues such as withdrawal of therapy and communication with next of kin are within our expertise.

Patients requiring renal dialysis will be moved here.

Theatres and EPU (202) Will form the main early care areas where patients with a high FiO₂ and “ARDS” will be managed largely by anaesthesia. While care here seems intimidating these patients are often the easiest and require protective ARDS ventilation, neuromuscular blockade and sedation and proning.

Rehab area: Geographically yet to be defined but there will be a rapid influx of weak, frail post-ICU patients, many with tracheostomy, who will need aggressive rehabilitation and moving towards a ward.

PACU and non-COVID critical care: For now this is recovery and this will be kept under review. Care here will be delegated by Anaesthesia 1.

It is essential all patients move along the system to demonstrate that critical care has been appropriate and to make capacity for patients needing to be ventilated. To this end patients will generally “move” through areas physically as their condition progresses.

The principle is to provide the highest standards of care at a time of possibly unimaginable demand.

Care at each stage

Simple “bundles” of key interventions are being prepared by Dr Beet and will be made available as laminated prompts. The broad principles are

COVID Day 0-4 (early) Protective ventilation with tidal volume 6ml/kg, moderate PEEP (<10) and avoiding fluid accumulation. Sedation and neuromuscular blockade seem routine and early proning with FiO₂ >50% should be considered. Mucolytics start (NG carbocysteine) on admission.

Patients often stay in this “holding pattern” for a few days. Where deterioration is rapid or multiple organ failure ensues the ICU team will generally deal with informing the next of kin who often are in self isolation and cannot visit. This is a traumatic time for staff and all concerned and we need to help each other if we reach this point. Where feasible we will try and protect non-ICU staff from this experience.

THESE PATIENTS ARE AMONG THE HIGHEST INFECTIVITY AND STAFF EXPOSED TO HIGH VIRAL LOADS EARLY IN DISEASE MAY HAVE POOR OUTCOMES. FULL HCID PPE AND USE AN HMEF!

COVID Day 5- wean/ trache (mid)

These patients will generally be moved back to ICU. Here weaning and sedation holds, diuresis and review for VAP will be addressed. Patients will often declare themselves at this point and worrisome sputum retention seems to be common. The need for withdrawal of therapy will typically be apparent and salvageable patients will be moved to extubate or tracheostomy to wean. It seems most patients ventilated for 10 days with COVID 19 are very weak with copious secretions and extubation to spontaneous ventilation is difficult.

There is a process established with ENT surgeons and ICU for tracheostomy in COVID19, for now this is in theatre 9.

FOR PRACTICAL PURPOSES THE TRUST IS NOT RE-TESTING AND INFECTIVITY REGARDED CEASED AT DAY 14. PATIENTS DYING WITH COVID EXCRETE TO THEIR DEATH AND UP TO 21 DAYS IS TYPICAL. WE SUGGEST FULL HCID PPE UNTIL PATIENTS ARE DE-CANNULATED OR BREATHING SPONTANEOUSLY AND NOT COUGHING.

The management timescale above will be accompanied by tests needed at set time scales. These will address the broad issues of

Microbiology: screening for COVID19 and alternative organisms or causes eg seasonal influenza or bacterial CAP. In the day 6 onwards cohort secondary infection and VAP is a concern. If these terms don't mean anything then catch up!

Housekeeping: electrolytes and basic bloods. To avoid missing anything we will probably over-investigate to a degree.

Prognostic: Certain samples eg D-dimer, CRP seem to predict outcome and will be important to determine failure of therapy

HPS samples: Haemophagocytic syndrome may emerge as a key complication. Not sure yet. Read about it but it's essentially a macrophage melt down induced by the virus.

A CXR after lines, NG tube and intubation will be performed. Routine CXR are discouraged and ultrasound of lungs rather than CT scan is the preferred imaging. Pneumothorax does not seem to be prominent and lungs are often surprisingly compliant. PLEASE DO NOT BOOK CTPAs FOR HIGH OXYGEN AND COMPLIANT LUNGS- they won't have a PE and if they do they will probably die on transfer.

RESUSCITATION STATUS

Clinicians caring for such patients should consider CPR routinely clinically not indicated and complete the DNACPR section and **inform** the next of kin. Without being confrontational or insensitive CPR is a medical decision, and you are not compelled to provide it, simply communicate the decision you have made. Most decisions like this are strengthened by a second opinion and very much strengthened by involving in the discussion ODAs, HCAs, theatre nurses and other "non-medics" if the nature of the disease and limitations of ICU are explained to them.

Patients with COVID19 who suffer a cardiac arrest are a poor prognosis category and at very high risk of inoculating staff. It is unlikely benefit will be gained from CPR. The trust "RESPECT" form mandates a detailed discussion with the patient and their next of kin and to be lawful a DNACPR discussion must involve the patient or their representatives.

Clearly once a patient is intubated and receiving maximal critical care support there is little benefit to CPR if cardiorespiratory arrest occurs.

It will become very difficult to contact all NOK with these decisions and decisions made in good faith, supported by a colleague second opinion, will generally be appropriate and in the patient's best interests.

ECMO

There is a highly restricted range of ECMO criteria and most patients will not meet criteria. Please do NOT independently or routinely refer for ECMO and discuss with RDH ICU team as a transfer will often be fatal.

Pearls and tips

- There are lots of ways to manage this crisis, this is only one. However, the only successful way to manage this crisis is us all doing the same thing. Please don't deviate unless there is a good clinical reason
- Don't take glee in finding inconsistent or variable advice. This is inevitable. Feedback and we will try and ensure consistency
- 90 patients taking 2 minutes to review will be a 6 hour ward round! It needs to be 1 minute or less! You must have the facts ready to present and a good grasp of your patient for the ICU review
- We have all become highly specialised in times of unrestricted resources and high patient expectations. Remember the first principles of offering therapy which can only do good, avoiding harmful therapy and that critical care is not a pre-requisite to a good death
- There will be no training package. You will need to talk to colleagues and share information quickly! SAS doctors and trainees from ICU will be about, anyone with recent ICU experience can help. ICU consultants will not be keen to discuss what bottles blood samples go in
- No one is trying to be rude or undermine your expertise as colleagues; for a few months it is how it is. When it settles you can remind me of all the amazing and superb things you do that ICU can't do!
- There is no way this guideline is intended to cover every eventuality. Good communication, respect for colleagues and humility will be key.
- Defensive practice will bring the RDH to a halt. Engage your brain, be flexible in your thinking, solve problems and find solutions. This document offers broad medicolegal support for clinicians "trying their best" as do the specialist societies eg AAGBI and the RCoA
- In almost all cases two consultants providing a consensus view on a difficult area of care is a very good standard. 3 is better and a multi-disciplinary consideration of risk-benefit is better again and possible in a theatre ventilation setting. Make *concise* notes showing you have reflected, weighed up risk-benefit and considered the patient's best interests while they typically lack capacity. ICU will support you.
- Colleagues will become unwell as this evolves over several months. Seniority will be far more dependent upon experience and knowledge- your "senior" colleague may not be a consultant. Get over it.
- This is a genuine and heart felt "thank you" for stepping up. You will typically never get to speak to your patient and may never meet their next of kin. This is tough. Support each other, talk lots and get through it. No one trained for this.
- I suspect we will all apologise quite a bit for shortcomings when things go back to normal again. Please accept mine now!

