ICU COVID-19 Response - INTERIM DRAFT

Introduction

Guidelines

Adapted from Christian, Michael D., et al. “Development of a triage protocol for critical care during an influenza pandemic”, *Cmaj* 175.11 (2006): 1377-81.

This tool is for decision support around the management of capacity of ICU during the COVID-19 pandemic. The decision that ICU care is appropriate for a patient is clinical, often involving a team of clinicians. The purpose of these guidelines is to support consistent, equitable and clinically responsive prioritisation for ICU admission. It is intended to be utilised by the intensive care teams that have received the referral. However, some services may find it appropriate to use as part of the referral process.

- These criteria only apply to patients aged ≥ 18 years with COVID-19.
- Scoring should be based on the considered view of the clinician taking into account the patient’s history, examination, results of investigations and the clinician’s experience in treating like patients.
- It should be applied to all patients with COVID-19 who would consent to, and benefit from ICU care, and for whom it is the most appropriate treatment option.
- Patients should be scored impartially.

1. Does the patient require ICU care and/or ventilatory support?

Must satisfy at least one of these two criteria:

- Requires invasive ventilatory support
  - Refractory Hypoxemia (SpO_2 < 90% on non-rebreather mask/FiO_2 > 0.85)
  - Respiratory Acidosis with pH < 7.2
  - Clinical Evidence of impending respiratory failure
  - Inability to protect or maintain airway

OR

- Hypotension
  - SBP < 90 or relative hypotension with clinical evidence of shock (altered level of consciousness, decreased urine output, or other end organ failure) refractory to volume resuscitation, requiring vasopressor/inotrope support that cannot be managed elsewhere

2. Exclusion Criteria (unlikely to benefit from ICU)

- Age > 85 years
- Cardiac arrest

    - Unwitnessed cardiac arrest
    - Witnessed arrest non-responsive to electrical therapy
    - Recurrent cardiac arrest
- Severe cognitive impairment
- Advanced untreatable neuromuscular disease
- Metastatic malignancy, if unstable or current chemotherapy
- Advanced & irreversible immunocompromise
- Severe and irreversible neurologic event/condition
- End-stage organ failure:
    - Cardiac
        - NYHA class III or IV heart failure
    - Lung
        - COPD with FEV1 < 25% predicted, baseline PaO2 < 55mg, or secondary pulmonary hypertension
        - CF with postbronchodilator FEV1 < 30% predicted or baseline PaO2 < 55mg
        - Pulmonary fibrosis with VC or TLC < 60% predicted, baseline PaO2 < 55mmHg, or secondary pulmonary hypertension
        - Primary pulmonary hypertension with NYHA class III-IV heart failure, or right atrial pressure > 10mmHg, or mean pulmonary arterial pressure of > 50mmHg
    - Liver
        - Child Pugh Score ≥ 7
- Has other severe conditions such as severe trauma, severe burns
- Requires transfusion of > 6 units PRBC in 24 hour period
- Elective palliative surgery

3. Prioritise patient

Use this tool to deterimine a score (out of 100) for the patient – enter NHI and continue below.

4. Re-prioritisation during ICU admission

SOFA scores should be recalculated daily to provide guidance for prioritisation. It is expected that patients may show some initial deterioration before improving, so until further data describing the usual course of COVID-19 is available, the decision to withdraw treatment will be made on a case-by-case basis.

Prioritisation

ICU Prioritisation - DRAFT

Sequential Organ Failure Assessment (SOFA)

Explanation of variables

- PaO_2/FiO_2 indicates the level of oxygen in the patient's blood.
- Platelets are a critical component of blood clotting.
- Bilirubin is measured by a blood test and indicates liver function.

- Hypotension indicates low blood pressure; scores of 2, 3, and 4 indicate that blood pressure must be maintained by the use of powerful medications that require ICU monitoring, including dopamine, adrenaline, and noradrenaline. Noradrenaline doses in ug/kg/min administered for at least one hour.
- The Glasgow coma score is a standardized measure that indicates neurologic function; low score indicates poorer function.
- Creatinine is measured by a blood test and indicates kidney function.

Adapted from: Ferreira FI, Bota DP, Bross A, Melot C, Vincent JL. Serial evaluation of the SOFA score to predict outcome in critically ill patients. *JAMA* 2001; 286(14): 1754-1758.

PaO_2/FiO_2 mmHg

- > 400
- ≤ 400
- ≤ 300
- ≤ 200
- ≤ 100

Platelets, $\times 10^3/\mu L$

- > 150
- < 150
- < 100
- < 50
- < 20

Bilirubin, µmol/L

- < 20
- 20-32
- 33-100
- 101-203
- > 203

Hypotension

- None
- MABP < 70 mmHg
- Dopamine ≤ 5
- Dopamine > 5, Adrenaline ≤ 0.1, Noradrenaline ≤ 0.1
- Dopamine > 15, Adrenaline > 0.1, Noradrenaline > 0.1

Glasgow coma score

- 15
- 13-14
- 10-12
- 6-9
- < 6

Creatinine, µmol/L

- < 106
- 106-168
- 169-300
- 301-433
- > 433

Age

(a risk factor, independent of other criteria)

- > 75
- 60-75
- 40-59
- 19-39
- ≤ 18

Pre-existing respiratory conditions

- Significant (e.g. FEV1 30-40%, severe asthma)
- Moderate (e.g. FEV1 40-80%, moderate asthma, heavy smoker (> 20/day))
- Mild (e.g. FEV1 > 80%, mild asthma)
- None

Pre-existing cardiovascular conditions

- Significant (e.g. heart failure class II, severe hypertension > 180/120, severe valvular disease, ischaemic heart disease; angina Class II-III)
- Moderate (e.g. class 1 heart failure, atrial fibrillation, poorly controlled hypertension (> 160/110). Prior PCI.)
- None/mild (e.g. managed hypertension)

Other relevant medical conditions

Renal, endocrine, neuromuscular, malignancy

- Moderate/significant (e.g. neuromuscular disease, non-metastatic malignancy, stage 4-5 chronic kidney disease, diabetes with end-organ damage)
- None/mild (e.g. diabetes without end-organ damage, stage 2-3 chronic kidney disease)

Immunocompromised

- Moderate/significant (e.g. due to chemotherapy or post-transplant medications, long-term high dose prednisone, SLE/sarcoidosis)
- None/mild (e.g. pregnancy, inhaled steroids, low-dose steroids)

BMI

(independent of comorbid conditions and functional capacity but including resource requirements)

- > 50
- 40-50
- < 18
- 19-40

Functional capacity

- Poor: METs < 5 (unable to walk around 2 blocks or unable to climb 2 flights of stairs; or equivalent)
- Normal: METS > 5

Part 2: Social Considerations

Māori, Pacific and other special equity considerations

This dimension is still being developed and currenly has no impact on the resulting score, but may be taken into consideration.

- No
- Yes

Irreplaceable importance of role in COVID-19 response

This dimension is still being developed and currently has no impact on the resulting score, but may be taken into consideration.

- Low (i.e. replaceable in COVID-19 response)
- Medium (e.g. hospital staff or police)
- High (e.g. ICU staff, GPs)