# Critical Care Triage during Major Surge in the COVID-19 Pandemic:

# Summary of Overall Recommendations

This document offers a proposed framework and recommendations for immediate next steps to inform an approach to critical care triage in Ontario in the event that there is a major surge in demand for critical care during the COVID-19 pandemic.

## Recommendations for Immediate Next Steps:

1. Issue clear communication that the earlier draft version (“*Clinical Triage Protocol for Major Surge in COVID Pandemic*”, dated March 28, 2020) should not be implemented or relied upon, and that a revised protocol for critical care triage during major surge is in development and will be issued to replace the earlier draft version.
2. Disseminate to health system stakeholders the document entitled *Critical Care Triage during Major Surge in the COVID-19 Pandemic: Proposed Framework for Ontario* (hereafter: *‘Proposed Framework’*) as a proposed general approach and structure to critical care triage in the event of a major surge in demand during the COVID-19 pandemic. If possible, recommendations 1 and 2 should occur simultaneously and as soon as possible in order to avoid leaving Ontario’s health system without a plan for critical care triage in the event of a major surge in demand.
3. Publicize the *Proposed Framework* widely, both in full and as an accessible and plain language version, and invite public input and feedback within a defined timeframe (e.g., 3 weeks or whatever timeframe is reasonable within the constraints of the pandemic).
4. Ensure liability protection for all those who would be involved in implementing the *Proposed Framework* (e.g., physicians, clinical teams, Triage Team members, Appeals Committee members, implementation planners, etc.), including an Emergency Order related to any aspect requiring a deviation from the Health Care Consent Act. It would also be advisable to seek independent legal review of the Proposed Framework as a solid legal basis for recommendations 5-7.
5. Convene a multidisciplinary consensus panel to further develop and refine the clinical factors and tools (Appendix C of the *Proposed Framework*, hereafter understood as *‘Clinical Assessment Guidelines’*) that clinicians should be expected to use for critical care triage based on best available evidence and within the guiding principles of the *Proposed Framework*. Such a panel should include and engage the input of experts in critical care, other clinical disciplines, ethics, human rights and law, and the perspectives of those whose voices are usually not heard but may be disproportionately affected by critical care triage.
6. ‘Protocolize’ the *Proposed Framework* following public input and the refinement of the *Clinical Assessment Guidelines* so that there is a consistent, health system-wide approach to be followed in the event that Ontario is faced with a major surge in demand for critical care during the COVID-19 pandemic. This protocol (hereafter: *‘the Protocol’*) should include both the *Proposed* *Framework* and the *Clinical Assessment Guidelines*.
7. Engage health system partners in developing guidance for the implementation of *the Protocol* in Ontario hospitals, including clinical operations, communications, patient supports, clinician supports, education/training, data collection, and monitoring.
8. Ensure that the perspectives and participation of those representing Indigenous people, Black and racialized communities, persons with disabilities, and others who may be disproportionately affected by critical care triage due to systemic discrimination, are proactively and meaningfully engaged particularly in relation to recommendations 5-7.
9. Clarify the governance and accountabilities for Ontario’s approach to critical care triage during a major surge, including but not limited to: i) initiation of triage for major surge, ii) data collection, and iii) monitoring. Within this governance structure, establish and/or identify a body to monitor, review, and revise Ontario’s approach to critical care triage to ensure it is achieving the aim for which it is intended and is not leading to unintended adverse consequences.
10. Sustain efforts to prevent and mitigate the risk of a major surge in demand for critical care, and in particular the disproportionate effect that a major surge may have on the least advantaged. This should include enhanced efforts to ensure that key public health prevention and mitigation strategies (e.g., face masks, testing, social distancing, contact tracing, etc.) are available, are community-based, and aim to address vulnerabilities among communities at greatest risk.

**Ontario COVID-19 Bioethics Table**

**September 11, 2020**

## Critical Care Triage during Major Surge in the COVID-19 Pandemic: Proposed Framework for Ontario

*Note: This Proposed Framework was developed by provincial experts in bioethics in consultation with clinical experts and informed by stakeholder feedback in Ontario. It reflects best knowledge and advice at the time of writing and is subject to revision based on changing conditions and evolving clinical evidence in the COVID pandemic.[[1]](#footnote-1) This is a green document, subject to further development (see recommended next steps in Section G), and replaces a previous draft version dated March 28, 2020. Any previous versions should not be relied upon or implemented as this Proposed Framework supersedes them.*

### Introduction

During the COVID-19 pandemic, a major surge in demand for critical care[[2]](#footnote-2) may arise if containment and mitigation measures are insufficient to stem the spread and impact of the virus. In Ontario, a major surge is defined as: “an unusually high increase in demand that overwhelms the health care resources of individual hospitals and regions for an extended period of time, where an organized response at the provincial or national level is required.”[[3]](#endnote-1),[[4]](#footnote-3) Major surges have occurred in other jurisdictions (e.g., Wuhan; Northern Italy),[[5]](#endnote-2) which underscores the need for our health system to prepare for this possibility. Although advanced health systems have experience with and are well-prepared to manage minor and moderate surges in demand for critical care,[[6]](#footnote-4) there is limited clinical and ethical guidance for how a major surge in demand for critical care should be managed in Ontario.

A major surge in demand for critical care by definition means that some who may have otherwise benefited from critical care will not receive it, and as a result, some will die. Given that the lives of all people in Ontario are of equal value, in the event of a major surge difficult decisions will need to be made about how to meet the needs of patients with critical illness. Given the unprecedented resource constraints that a major surge would present, it must be acknowledged that any approach to allocating critical care resources in this context will necessitate a deviation from usual health care practices and involve lamentable compromises to deeply held values and ethical commitments. This requires a careful examination of these values and commitments and how they might be promoted despite these circumstances. The *Proposed Framework* outlined in this document contemplates how to allocate potentially life-saving resources in this context.

#### Why Triage?

There are a number of ways that we might respond to a major surge in demand for critical care. One way would be to allocate critical care resources on a first-come, first-served basis. Another would be to randomly allocate critical care resources via a lottery. We do not favour either of these approaches as the foundation of a possible approach to the allocation of critical care resources. This is because adopting either approach would mean arbitrarily privileging the allocation of critical care resources to those who become critically ill or who present for critical care sooner, and because either approach would result in a greater number of deaths by virtue of ignoring patients’ capacity to benefit from critical care. Consequently, we favour an approach that would seek to use available critical care resources in a manner which would be expected to minimize the number of people who will die as a result of resource scarcity. Such an approach requires a systematic manner of prioritizing patients for access to critical care, which is referred to as triage.

Triage involves “the prioritization of patient care…based on illness/injury, severity, prognosis, and resource availability.”[[7]](#endnote-3) Triage should be a systematic and consistent process of determining priorities for treatment that respects human rights and is based on evidence and explicit clinical criteria. In the absence of explicit triage criteria and a systematic and consistent process of triage, inconsistencies in clinical practice may result in an ethically indefensible allocation of scarce resources, increased mortality and morbidity, and the perpetuation or exacerbation of social and health inequities. Critical care triage for major surge should be considered an option of last resort, to be invoked only when all existing local and regional critical care resources have been used, all reasonable attempts have been made to move patients to or resources from areas with greater critical care resource availability, and only for as long as the major surge lasts. In the current COVID-19 pandemic context, the decision to initiate critical care triage for major surge would fall under the authority of, and would be made by, the provincial Critical Care Command Centre with full situational awareness of existing critical care resources and demands (see Section D for further discussion of the initiation of critical care triage).

Whereas most of us are familiar with queuing based on urgency of need or on a first-come, first-served basis in non-urgent settings, triage in emergency settings (such as hospital emergency departments) gives priority based on explicit criteria to patients with immediately life-threatening conditions over other patients. Under non-pandemic circumstances, admission to intensive care units (ICUs) would be determined by the need for life-sustaining treatment or close monitoring; ICU admission would be offered to anyone who has a reasonable prospect of benefitting from it. In a pandemic context, it is generally recognized that decisions regarding admission to ICU should be made with the goal of saving the most lives possible.[[8]](#endnote-4),[[9]](#endnote-5) We propose that this is an important objective, but it is not sufficient. This is because the objective of saving the most lives is only one response to one challenge created by a scarcity of resources. Scarcity of resources also presents a challenge of protecting individual human rights, specifically given the prospect of restricting a right to life for some patients and the potential for such restrictions to disproportionately impact people with disabilities, people who are racialized, and people with pre-existing health conditions. The approach to addressing this challenge must be to ensure that any such restrictions are proportional to the demand for critical care, that these restrictions are only used to the extent that is strictly necessary so as to assure as minimal an impairment of rights possible, and are undergirded by mechanisms of due process. An additional challenge regards reparation in the face of pre-existing health and social inequities due to unjust discrimination and other forms of social disadvantage and marginalization. The approach to addressing this challenge must include minimizing the risk that such populations will become infected in the first place and providing protections against discriminatory practices in triage decision-making. A final challenge presented by a scarcity of resources could be characterized as a problem of public trust. This challenge can only be addressed by installing clear and fair mechanisms of accountability in a system of triage.

Under major surge conditions and against a backdrop of a health system and health care practices that are known to involve biases and discrimination, it is imperative to develop an approach to allocating critical care resources that involves the least infringement of human rights and which strives to not perpetuate or exacerbate health and social inequities. It is also imperative that whatever approach is taken does not result in more patient needs going unmet compared to what would be expected had no action been taken. Any approach to critical care triage should be guided by evidence, ethical principles, and human rights principles and standards. The purpose of this document is to propose such an approach—a framework for critical care triage. This document also aims to raise key ethical and clinical considerations for critical care triage in this context and offer recommendations for the further development and implementation of the critical care triage approach in the Ontario health system that are consistent with Ontario and Canada’s human rights protections.

### Guiding Ethical Principles

There are a number of published frameworks outlining ethical principles to guide triage systems.5,[[10]](#endnote-6),[[11]](#endnote-7),[[12]](#endnote-8) Recent studies of Canadian perspectives on priority setting of critical care resources in a pandemic indicate a preference for saving the most lives, followed by the application of a fair procedure for the prioritization of people with similar likelihood of benefit.6,[[13]](#endnote-9),[[14]](#endnote-10) In addition, there is published guidance on how triage systems can minimize the risk of discrimination based on factors unrelated to a patient’s clinical needs and mitigate discriminatory application of such frameworks in practice.[[15]](#endnote-11),[[16]](#endnote-12),[[17]](#endnote-13) Ethical principles are informed and supplemented by human rights standards,[[18]](#endnote-14),[[19]](#endnote-15),[[20]](#endnote-16) which are protected in provincial, federal, and international laws (of particular relevance in this context are the fundamental human rights to non-discrimination, life, and health).[[21]](#footnote-5) This body of work informs the ethical underpinnings of the proposed triage approach, which seeks to save the most lives as ethically as possible. The principles enumerated below should be considered as a starting point which should form the foundation of any decisions made about access to critical care in the context of a major surge in demand.

In the context of a major surge in demand for critical care in a pandemic, the overarching objective of triage should be to **save the most lives as ethically as possible**. This requires adhering to the following ethical principles and human rights standards to the highest degree possible.

* *Prioritize those with the greatest likelihood of survival* – Aim to prioritize those patients who are most likely to survive their critical illness. For the purposes of this *Proposed Framework*, ‘surviving critical illness’ is interpreted as survival twelve months from the onset of critical illness (see further elaboration and justification in Section C). Patients who have a high likelihood of dying during or within twelve months from the onset of their episode of critical illness (based on an evaluation of their clinical presentation at the point of triage) would have a lower priority for critical care resources.
* *Non-discrimination –* Aim to ensure that restrictions which may affect people protected under prohibited grounds in the Ontario Human Rights Code (see Appendix B) are strictly limited to those that are reasonably necessary, minimally impairing, and proportional to the degree of surge.[[22]](#endnote-17),[[23]](#endnote-18) Non-discrimination is an overarching human right and social value, considered fundamental to the exercise and enjoyment of all human rights.[[24]](#endnote-19) Non-discrimination emphasizes every person’s right not to be denied services like health care because of their race, Indigeneity, disability, gender identity, or sexual orientation.[[25]](#footnote-6) Eliminating discriminationdoes not meansimply comparingthe similar treatment of people in similar situations, but “requires paying sufficient attention to groups of individuals who suffer historical or persistent prejudice.”[[26]](#endnote-20) This entails paying careful attention to restrictions of critical care resources that disproportionately impact people already experiencing historical or consistent prejudice[[27]](#endnote-21) who are protected under prohibited grounds of discrimination. Historical and systemic biases may make such restrictions both more probable and more harmful, with these harms compounded for people who identify with multiple protected grounds of discrimination.[[28]](#endnote-22) Wherever possible, accommodations in the allocation of critical care must be made to ensure that patients with disabilities can fully benefit from and be fully included in the health care services and products offered on a footing of equality, and to ensure that people protected by the Ontario Human Rights Code have equal opportunity to receive such care.17,20,[[29]](#endnote-23) Restrictions impacting people so protected should be subject to stricter safeguards and accountability given these risks and harms and the life-interests at stake. Taking non-discrimination seriously includes ensuring triage decisions: i) are based on *clinical criteria that predict short-term mortality risk* grounded in the best available evidence and are not reliant on particular demographic factors,e disease, or disability, and ii) involve an *individual* *assessment o*f a patient’s clinical condition in relation to triage criteria and not a judgment of the individual’s social value, quality of life, long-term survival, or need for accommodations. To emphasize: the existence of disability must not be used as a criterion on which to deny critical care. Additionally, to engage fully in the decision-making process, individual patients must be supported through accommodations to the extent possible in an infection control context (see Respect for Autonomy below, as well as Section E).
* *Protection of individual human rights* – Uphold individual human rights to the extent possible in a pandemic emergency,[[30]](#endnote-24) including ensuring that any restrictions of individual rights are strictly necessary and proportional so as to assure the most minimal impairment of rights possible.[[31]](#endnote-25)
* *Equity* – Where no relevant differences exist between patients being considered for access to critical care, triage decisions should treat those patients similarly, i.e., those with similar prognoses of short-term mortality risk should be treated similarly unless there are relevant differences that warrant differential treatment (see principle of non-discrimination above). In the event that there is uncertainty or insufficient clinical evidence to prioritize one patient over another on the basis of predicted short-term mortality, a fair process that gives patients equal chances of accessing critical care should be used for resource allocation.
* *Proportionality* – Ensure that the number of individuals who are negatively affected by the use of critical care triage criteria in a pandemic does not exceed what would be required to accommodate the surge in demand. Given that critical care capacity and demand can be dynamic, access to critical care should be restricted only to the extent necessary to achieve maximum benefit within resource constraints and should become less restrictive as resources become available or the surge abates.
* *Fairness* – Affirm and safeguard the equal value of all people in Ontario by implementing processes and measures to minimize the risk of perpetuating or exacerbating the effects of individual and systemic discrimination or marginalization on access to health care (see Section F for further elaboration on steps that ought to be taken to pursue this aim).[[32]](#endnote-26),[[33]](#endnote-27)
* *Beneficence* – Act in a way that promotes patients’ well-being to the greatest extent possible given resource constraints by proactively clarifying patient goals of care (i.e., patient wishes, beliefs, and values regarding their treatment) in relation to their critical care needs, providing a range of care options, ensuring continuity of care for all patients appropriate to their clinical circumstances, including those whose critical care needs cannot be met, and ensuring no patient is left without care (i.e., non-abandonment). Beneficence also requires health systems to provide accommodation for patients with disabilities to maximize their participation in care and decision-making. Although resource scarcity in a pandemic may limit the ability to meet all patient needs, maintaining a caring relationship with all patients is essential. Every effort to provide culturally safe and appropriate care should be made.
* *Respect for Autonomy* – Ensure all patients have a chance to make their goals and wishes known and to have treatment provided in alignment with these goals and wishes wherever possible. Patients (or their substitute decision-makers) may need support to make free and informed decisions about their care. To ensure effective communication and informed decision-making, individual patients may require accommodations (e.g., plain language, use of communication devices, interpretation services) and/or participation of an attendant care worker or other support person to the extent possible in an infection control context.
* *Accountability* – Remain answerable for decisions made in the context of triage. This means communicating triage decisions, including the criteria used to make those decisions and publicizing the grounds on which they will be made, in an open and honest manner to patients or their substitute decision-makers and to the broader community served. It entails implementing a rapid, user-friendly, and transparent appeals system for such restrictions. It also involves collecting data on the triage decision-making process and outcomes, and monitoring the implementation of the triage approach to ensure decisions are based on best clinical evidence and expertise supported by ethical reasoning. Triage decisions, triage criteria, and triage processes should be evaluated at regular intervals at local, regional, and provincial levels to assess the extent to which they are clinically and ethically justified.

*Applying the Ethical Principles*

In a pandemic context, there is an intrinsic tension between some of the ethical principles outlined above. On the one hand, a criteria-based triage approach that focuses on an individual clinical assessment of predicted short-term mortality risk and not on any other factors (demographics, quality of life, disability, social standing, etc.) offers a defensible way to reconcile some of the tensions between, for instance, the principle of prioritizing those with the greatest likelihood of survival and principles of fairness (e.g., non-discrimination, equity). On the other hand, for patients who might wish to receive but are not prioritized for critical care, the pandemic context creates a tension between, for instance, the principles of prioritizing those with the greatest likelihood of survival and respect for autonomy, and underscores the importance of the principle of beneficence to ensure all patients receive care even if critical care treatment is not available.

With that being said, the guiding ethical principles and human rights commitments enumerated above entail certain actions or prohibitions in the context of a triage approach:[[34]](#footnote-7)

* Critical care triage should only be enacted in the context of a major surge in demand for critical care (as defined above) and only once a decision to initiate triage has been made by the Ontario Health Critical Care Command Centre.
* Critical care triage should only be enacted in the context of allocating critical care resources, such as ICU beds and ventilators. Critical care triage should not be used to guide allocation decisions in other clinical contexts.
* A patient’s demographic characteristics (e.g., age, sex, socioeconomic status, Indigenous status, race, ethnicity, gender identity and expression, sexual orientation, creed, family status, marital status, geography, and home setting) should never be used as a factor in triage decisions.[[35]](#footnote-8)
* A patient’s disease or disability *independent of their predicted short-term mortality* *risk* (see definition of ‘predicted short-term mortality risk’ in Section C) should never be used as a factor in triage decisions.
* A patient’s quality of life must never be used as a factor in triage decisions, even though it may continue to inform an individual patient’s decision-making about their own care.
* Triage decisions should not consider the costs that a patient’s future care will pose should they survive their episode of critical illness.
* Patients who have their own, pre-existing ventilator used to treat a pre-existing chronic condition must be permitted to continue to use their personal ventilator. Their own, pre-existing ventilator must not be re-allocated to other patients.
* Whether an individual’s underlying disease, disability, or illness is associated with a shortened life expectancy compared to average lifespans *independent of their predicted short-term mortality* *risk* should not be used as a factor in triage decisions (e.g., a person with a mental health diagnosis on average lives 7 to 10 years less compared to the general population).[[36]](#endnote-28)
* A patient’s need for disability-related accommodations or assistance (e.g., a deaf patient who needs Sign Language interpreters to effectively communicate with hospital staff) should never be used as a factor in triage decisions.
* Emergency medical services (EMS), nursing staff, or other staff should promptly notify a patient's physician whenever a patient is in potential need of critical care. No assumptions should be made about whether a patient meets triage criteria; the patient’s physician is required to make this determination (see Section E for more on this process).
* If critical care triage is initiated, this should not preclude the transfer of residents from long-term care facilities or other settings to acute care hospitals for acute care, even if their predicted short-term mortality risk would preclude them from receiving critical care.
* Clinicians should not use prognostic tools for assessing predicted short-term mortality risk if they are not sufficiently trained and skilled with those tools.
* Clinicians should not be involved in triage decisions where they have a conflict of interest (e.g., where triage decisions involve family members).

### Clinical Triage Criteria for Critical Care in a Major Surge

Explicit, criteria-based triage decision-making has been recommended in other published guidance for critical care in a pandemic.[[37]](#endnote-29),[[38]](#endnote-30),[[39]](#endnote-31) Use of explicit criteria fosters consistency and is capable of advancing the aims of saving the most lives, protecting human rights, enhancing fairness, and supporting accountability. It may also alleviate clinician burden at a time of high stress.[[40]](#endnote-32) Eligibility and prioritization criteria as specified below are based on the best available evidence and expert opinion regarding predicted short-term mortality risk. A patient should meet one of the eligibility criteria in order to be considered eligible for critical care. Prioritization criteria should then be applied to determine a patient’s priority to receive critical care. Where there is insufficient evidence to support a reasonable clinical judgement regarding whether a patient meets prioritization criteria, a decision to de-prioritize the patient should never be made. In all cases, an individualized review of each patient’s clinical condition should be performed, not assuming any specific diagnosis or clinical finding is determinative of predicted short-term mortality risk without an analysis of current and best available evidence and the individual’s ability to respond to treatment. Triage decisions apply to all patients who are being considered for critical care, not just those diagnosed with COVID-19, since all patients must share a single pool of resources.

Please note: these criteria apply only to patients aged 18 years or older and should only be used in the context of a major surge in demand for critical care.

**Eligibility criteria** are used to identify those patients who may benefit from admission to critical care. The eligibility criteria outlined below were described by Christian et al.28 and were included in previous iterations of Ontario’s influenza pandemic plan:

| **Variable** | **Eligibility Criteria for Critical Care Admission** |
| --- | --- |
| Requirement for invasive ventilatory support | Refractory hypoxemia (SpO2 <90% on FiO2 0.85) ORRespiratory acidosis with pH <7.2 ORClinical evidence of respiratory failure ORInability to protect or maintain airway  |
| Hypotension | Low systolic BP (e.g., SBP <90 mm Hg for most adults) ORRelative hypotension with clinical evidence of shock (altered level of consciousness, decreased urine output, end-organ hypoperfusion), refractory to volume resuscitation requiring vasopressor/inotrope support that cannot be managed on a medical ward |

SpO2 = oxygen saturation as measured by pulse oximetry

All patients who are considered eligible for critical care should be considered for access to critical care resources if this aligns with their wishes and values.

**Prioritization criteria** are used to identify those patients who meet eligibility criteria, wish to receive critical care, and have the greatest likelihood of surviving their episode of critical illness (understood as likelihood of survival twelve months from the onset of critical illness based on an evaluation of their clinical presentation at the point of triage). Patients who meet eligibility criteria, wish to receive critical care, but have a high likelihood of dying during or within twelve months from the onset of critical illness based on an evaluation of their clinical presentation at the point of triage would have a lower priority for critical care resources.

Patients who meet eligibility criteria and who wish to receive critical care should be assigned one of four colours that identifies their predicted short-term mortality risk:

| **Colour** | **Short-Term Mortality Risk** |
| --- | --- |
| Red | 80-99% predicted short-term mortality risk |
| Purple | 50-79% predicted short-term mortality risk |
| Yellow | 30-49% predicted short-term mortality risk |
| Green | 1-29% predicted short-term mortality risk |

The level of triage should be calibrated to the degree of demand and availability of critical care resources in order to limit the possibility that a patient will be denied critical care resources unnecessarily. Consequently, a three-level approach to triage is proposed (see Section D). As system pressures increase, the range of predicted short-term mortality risk used for prioritization becomes proportionately more stringent:

* In a level 1 triage scenario, patients who have a greater than 20% chance of surviving twelve months from the onset of critical illness (based on an evaluation of their clinical presentation at the point of triage) should be prioritized. This includes those with colour codes of green, yellow, and purple.
* In a level 2 triage scenario, patients who have a greater than 50% chance of surviving twelve months from the onset of critical illness (based on an evaluation of their clinical presentation at the point of triage) should be prioritized. This includes those with colour codes of green and yellow.
* In a level 3 triage scenario, patients who have a greater than 70% chance of surviving twelve months from the onset of critical illness (based on an evaluation of their clinical presentation at the point of triage) should be prioritized. Priority groups include those with the colour code of green.

*Clinical Assessment of Patients*

Physicians will be responsible for conducting an individualized assessment[[41]](#endnote-33),[[42]](#endnote-34),[[43]](#endnote-35),[[44]](#endnote-36) of each patient in order to determine whether the patient meets or does not meet eligibility and prioritization criteria. Physicians should consult with other clinical experts with relevant experience to inform clinical assessments as needed. Ideally, physicians should use clinical assessment guidelines or published evidence to identify clinical conditions or findings that are predictive of short-term mortality risk in order to enhance consistency, mitigate bias, or which are themselves capable of mitigating bias. Such clinical assessment guidelines should reflect the best available evidence or expert opinion as well as ethical and human rights considerations and be usable at the bedside in the setting of a major surge. To ensure that these parameters are met, we recommend that a multidisciplinary consensus panel be established for the purposes of developing and refining the clinical factors and tools that should be included in such clinical assessment guidelines. Such a panel should include and engage the input of experts in critical care, other clinical disciplines, ethics, human rights and law, and the perspectives of those whose voices are usually not heard but may be disproportionately affected by critical care triage. Based on our extensive consultation, we suggest that the clinical findings and tools identified in Appendix C could serve as a starting point. However, it should be noted that no tool has been designed and validated for ethical triage decision-making of this sort, and tools that are normally used may be problematic when applied for this purpose.

*Definition of Predicted Short-Term Mortality Risk*

For the purpose of this triage document, we have defined predicted short-term mortality risk as the predicted risk of death in the twelve months following the onset of critical illness, which is to be based on an evaluation of a patient’s clinical presentation at the point of triage. We have chosen this definition for several reasons:

* Critical care is often able to sustain vital organ function for even the most catastrophic illness for weeks or months, even if recovery is not realistically possible. In addition, critical illness is often a marker of terminal illness, so people often survive long enough to leave the ICU but die within days or weeks following discharge.[[45]](#endnote-37) We felt that prioritizing survival as understood in either of these scenarios would be inconsistent with the principle of prioritizing those with the greatest likelihood of survival, as explained in Section B above.
* When studying a cohort of people who develop critical illness, most of the mortality tends to take place in the initial weeks and months, with relatively little mortality occurring between six and twelve months after the onset of critical illness.[[46]](#endnote-38),[[47]](#endnote-39) We believe that a survival duration of six to twelve months achieves the best balance of saving the most lives without unjustifiably prioritizing younger individuals or those with longer life expectancies.
* The focus of the proposed triage framework is the categorization of individuals into one of four mortality risk strata based on twelve-month survival. As stated above, mortality does not increase significantly between six and twelve months post critical illness. Twelve-month survival is a more common prognostic duration used in clinical practice and reported in the published literature.[[48]](#endnote-40) It is not a judgment about the relative value of six or twelve months of life.

*Additional Considerations Following Level 3 Triage*

At Level 3 triage, only patients with the lowest risk of dying during or within twelve months from the onset of critical illness would be eligible for critical care. However, if demand for critical care continues to exceed available resources, there may come a point where there may be little clinical evidence to guide triage decisions on the basis of *predicted short-term mortality*.[[49]](#footnote-9) As a result, triage decisions must appeal to procedural fairness.

Fairness would suggest that those patients who are already receiving critical care and are stable or benefiting from it should continue to receive it. In other words, demand for critical care from new patients does not justify withdrawing life-sustaining measures from admitted patients who have a similar prospect of benefitting from them. Rather, decisions to withdraw life-sustaining measures from patients already admitted to critical care should be driven by eligibility and prioritization criteria. In practice, this would involve a frequent reassessment of admitted patients by the clinical team for any indication that the patient is no longer responding to treatment, or where the patient’s clinical trajectory suggests that their predicted short-term mortality has substantially worsened from when they were admitted such that they no longer meet prioritization criteria at the level of triage currently experienced. It is important to reiterate that a decision to withdraw critical care should be based solely on eligibility and prioritization criteria, integrating all relevant information, and not on any demographic factors, disease, disability, or other factors. As with all triage decisions, such patients should be referred for a second opinion to confirm the assessment (i.e., that the person’s chance of survival is poor) (see Section E for more on this process). Withdrawal of critical care resources from a non-consenting patient or their substitute decision-maker would require an emergency order or other legal mechanism prior to implementation of this aspect of the *Proposed Framework.*

Fairness would also suggest that, when an opportunity emerges to admit a new patient into critical care and a triage decision must be made between multiple patients who cannot be distinguished on the basis of predicted short-term mortality, a system of random selection among eligible and not-yet-admitted patients should be implemented.[[50]](#footnote-10) Random selection upholds the principle of fairness in situations where it is not possible to rely on short-term mortality prediction to make clinical decisions.29 It mitigates against the potential of explicit or unconscious bias in decision-making and demonstrates the value of humility when uncertainty is high. Random selection also has other advantages as a decision-making strategy in the context of an overwhelming surge of critically ill patients: it is already a well-established practice for making decisions in situations of uncertainty or equipoise in medicine (e.g., randomized controlled trials); it reduces the moral and psychological burden of deciding who receives life-saving treatment, which can lead to moral injury and burnout after repeated cases; it is efficient when decisions need to be made rapidly; and it allows for procedural transparency and accountability.

If and when patients are randomized for admission, safeguards should be in place to ensure the integrity and fairness of the randomization process. Randomization should be done through a valid tool to ensure that the results cannot be predicted or influenced, and it should occur independently of the clinicians who have assessed the patient. To the extent possible, the same process for randomization should be used across the province, and that process and the outcomes should be clearly documented by triage teams. Clinicians should also not be able to change the results of randomization after it has occurred, unless new information becomes available that reduces uncertainty with respect to predicted short-term mortality. Triage teams should be consulted prior to randomization, given that prognostic uncertainty may benefit from further input and adjudication (see more on Triage Teams in Section E). To be clear, randomization should not be used to withdraw critical care from a patient who is already admitted when other non-admitted patients have the same likelihood of benefit. The only circumstance where randomization should be used to withdraw critical care is when multiple admitted patients are excluded at a particular level of prioritization, and it is not reasonable to withdraw sequentially based on predicted mortality (see Section D).

### Critical Care Triage Approach

Critical care triage for major surge in a pandemic should be well-coordinated, consistent, predictable, and responsive to an evolving pandemic context.28 The proposed framework suggests a provincial approach to critical care triage implemented regionally and locally. The approach comprises three essential elements: i) defined levels of triage proportional to demand on critical care, ii) explicit clinical triage criteria based on predicted short-term mortality risk, and iii) key structures and processes.

*Prior to Major Surge and the Initiation of Critical Care Triage*

The prospect of a major surge in demand for critical care should prompt discussions with patients or their substitute decision-maker(s) to identify and document patient wishes and values and ensure current treatment plans are up to date. It is also necessary for physicians and other healthcare providers to engage in advance care planning conversations with patients or their substitute decision-makers both in hospital and in other health care settings (e.g., primary care) to explore patients’ wishes and values and to clarify the treatment goals and options available if the patient were to become acutely or critically ill. Regardless of triage decisions at any level, all efforts should be made to treat patients supportively and to ensure all patients receive the right care, in the right place, at the right time to the greatest extent possible during the COVID-19 pandemic. Because some groups of patients do not equally experience the receipt of the right care, methods to support inclusion and anti-oppressive, anti-racist frameworks should be applied (see more on this point in Section F).

*Initiating Critical Care Triage*

In the current COVID-19 pandemic context, the decision to initiate critical care triage for major surge would fall under the authority of, and would be made by, the provincial Critical Care Command Centre with full situational awareness of existing critical care resources and demands (see Appendix D for recommended roles and accountabilities). Each hospital should be aware of the precise number of critically ill and mechanically ventilated patients they can accommodate with their resources (including consumables), staff, and space. The timing and degree of the surge in demand is likely to be variable in different institutions and regions, so as one hospital or region approaches their maximum capacity, every effort (within the constraints of infection prevention and control) should be taken to transfer patients to, or resources from, hospitals with lower occupancy to ensure that all resources are maximally used prior to the initiation of critical care triage for major surge. This will also reduce the chances that some patients will be denied critical care resources that they would have otherwise received had they been in another hospital. When all hospitals in a region are near their capacity, or when transportation resources are no longer able to move patients to hospitals with lower occupancy, Provincial and Regional Critical Care Command Centres should clearly inform these hospitals that a major surge scenario or escalation of triage level is impending. Major surge in demand may be intermittent, requiring a regular review (e.g., every 12 hours) of occupancy to determine whether triage is still required or whether hospitals can decrease the level of triage.

*Additional Considerations When Capacity is Exceeded Institutionally Before a Subsequent Level of Triage is Initiated*

Where there is the possibility of transient surge issues at the institutional level, this should not trigger escalation of triage level. Rather, efforts to bridge gaps in capacity should be exhausted via regional collaboration. This should be done in coordination with the Regional and/or Provincial Critical Care Command Centre. If a regional solution is not immediately possible, institutions should follow a process of random selection (described in Section C).

*Withdrawal of Life-Sustaining Measures When Demand Exceeds Capacity*

If a major surge is imminent (but before Level 1 triage is initiated), all patients who are currently receiving critical care resources should be reviewed, and those with a greater than 80% predicted short-term mortality risk (i.e., patients colour-coded as red) under a Level 1 triage scenario should be identified in advance and they (or their substitute decision-makers) should be informed that Level 1 triage may be initiated and what the consequences to the patient would be. When Level 1 triage has been initiated, these patients should begin to have life-sustaining measures withdrawn and be transferred to non-critical care beds with appropriate treatment in accordance with the patient’s values, beliefs, and wishes, including palliative care if appropriate. In practice, it may not be possible for every ventilator in every hospital to be used at all times; the process of withdrawal includes an assessment, communication with the patient and family members, the opportunity for appeal, the withdrawal of life-sustaining measures, and the management of symptoms following withdrawal. This process could in many cases take many hours, and it would not be feasible to initiate this process only when an eligible patient is identified. A delay of many hours for a critically ill individual would almost certainly result in harm or death. With that said, all patients in critical care beds who are colour-coded as red should not have life-sustaining measures withdrawn at once. Withdrawal of life-sustaining measures should be in proportion to demand and operational capacities. Random selection among patients colour-coded as red should be used to determine which patients will have life-sustaining measures withdrawn first. Provincial and Regional Critical Care Command Centres should collect data from hospitals regarding the number of patients who would no longer receive critical care in a Level 1 scenario to their Regional Critical Care Command Centre to assist with planning and coordination provincially.

If major surge escalates, all patients in critical care beds with a greater than 50% predicted short-term mortality risk (i.e., patients colour-coded as purple and red) under a Level 2 triage scenario should be identified and they (or their substitute decision-makers) should be informed that Level 2 triage is imminent. The Regional Critical Care Command Centre should continue to coordinate transportation of patients to optimize the utilization of all critical care resources before initiating a Level 2 triage. If Level 2 triage is initiated, hospitals should proceed in a similar manner to the steps described for Level 1 triage. Again, all patients colour-coded as purple or red need not have life-sustaining measures withdrawn at once. Withdrawal of life-sustaining measures should be in proportion to demand and operational capacities. Patients in critical care beds who are colour-coded as red whose clinical condition has deteriorated should have life-sustaining measures withdrawn first. Patients in critical care beds whose clinical condition is stable but who continue to be colour-coded as red (i.e., fail to meet prioritization criteria at Level 2 triage) should have life-sustaining measures withdrawn next. Subsequently, random selection should be used to determine which patients colour-coded as purple will have life-sustaining measures withdrawn. All new patients who develop critical illness after a Level 2 triage scenario should be assessed against the Level 2 criteria before receiving critical care resources. Hospitals should then prepare for a Level 3 triage scenario, similar to the previous steps. Based on the principle of proportionality, the number of patients not receiving access to or withdrawn from critical care should not be more than the incoming demand requires based on the current and expected surge of critically ill patients. This means that triage levels should go up or down in relation to demand and should continue only as long as the major surge persists to minimize mortality and morbidity.

*Levels of Triage vs. Ordinal Ranking of Patients*

The use of different levels allows for a proportional application of triage system, as explained above. It also addresses concerns about categorical exclusion criteria by making it clear that no medical diagnosis is inherently ineligible for critical care. Rather, the clinical guidelines focus on an individualized assessment of predicted short-term mortality risk using clinical factors captured in the tools provided. The use of levels also allows for a more feasible application of triage at the bedside when a person develops critical illness. Some have proposed an ordinal ranking system in which each patient who is critically ill is assigned an individual rank, and critical care resources would be allocated according to rank. We felt that this system would be difficult to implement because our prognostic tools do not have the degree of precision that an ordinal system would require. It would also be challenging to apply to a newly referred patient with critical illness; having to determine their ranking in relation to an existing (and possibly lengthy) list of other patients in a time-pressured situation before initiating critical care would likely lead to potential delays in treatment for those who might benefit, and maintaining the priority list could require frequent and time-consuming reassessments. And since patients and resources in Ontario are shared regionally and provincially, the priority list would perhaps have to span multiple facilities, which would not be feasible. Assessing a newly referred patient and comparing their predicted short-term mortality risk to the current level of triage, while withdrawing life-sustaining measures based on the process identified above, would be more feasible and achieve the same objective.

### Key Considerations for Implementing Critical Care Triage during a Major Surge in Hospital

The implementation of this *Proposed Framework* may require some flexibility depending on the resources available to the hospital and the region in question, which may fluctuate over the course of the pandemic. With this in mind, we offer the following key considerations for implementation:

1. *Process for Triage of Critical Care Resources in a Major Surge*

**Step 1: Clarify Patient Goals of Care *and* Inform Patient/Family of Potential Change in Allocation of Critical Care Resources Due to Major Surge**

A patient’s most responsible physician (MRP) should seek to understand the wishes, values, and beliefs of the patient by asking the patient or their substitute decision-maker (SDM). The MRP should inform the patient or SDM at the earliest opportunity that access to critical care resources is likely to be impacted by a major surge. The patient should receive formal rights advice at the earliest possible opportunity, and rights advise should be available throughout the process of triage and throughout their care. The patient should be reassured that all indicated treatment will be considered. Every patient should be asked about any accommodations they require at admission to hospital and this should be noted in their chart. Accommodations should be made to the greatest extent possible given current constraints due to the pandemic (see further information regarding patient communications below).

**Step 2: Assess Patient Against Critical Care Triage Criteria in a Major Surge in *Proposed Framework***

If the MRP has determined that the patient meets the eligibility criteria for critical care and wishes to receive critical care, the MRP should then assess the patient’s predicted short-term mortality risk (red, purple, yellow or green). A second physician, who would ideally be a critical care physician, rapid response team (RRT) member, or a designated triage physician, should independently assess whether the patient meets the eligibility and prioritization criteria. Ideally, disagreements about the assessment of eligibility and prioritization criteria should be resolved by consensus of the two physicians who assessed the patient (see section on Dispute Resolution below). As a rule, critical care should be offered to all critically ill patients who are eligible and wish to receive it, unless there are reasonable grounds (based on their clinical presentation, information from the medical records, or collateral sources) to believe that their predicted short-term mortality risk is higher than the current level of triage. Having two physicians review each case is a common practice for ensuring the medical standard of care is met. If one of the two physicians does not feel that there are sufficient grounds to believe that the predicted short-term mortality risk is too high for the current level of triage, the patient should receive critical care. The patient’s critical care triage assessment should be communicated to the patient or their SDM first and then documented in the health record. It should be understood that any clinical assessment includes a degree of judgment and is therefore subject to systemic and professional bias. A reflective approach that is receptive to critically evaluating these influences must be adopted.

**Step 3: Referral of Case to Critical Care Triage Team**

Critical care triage teams have been recommended in other published guidance to support consistent, evidence-based, and accountable decisions about the use of critical care resources in the context of a pandemic surge.28,31,[[51]](#endnote-41),[[52]](#endnote-42) Triage teams may be institution-based or regional. Suggestions for triage team roles and responsibilities developed by Hamilton Health Sciences can be found [here](https://macdrop.mcmaster.ca/s/PoGMyw848Wipz88).

The MRP should communicate their assessment to the hospital or regional triage team. The triage team should confirm whether the admission to critical care will or will not be provided based on current critical care capacity, or whether critical care will be withdrawn. To be clear, the MRP and second physician identified in Step 1 have the clinical responsibility for determining whether the patient meets eligibility and prioritization criteria based on the level of triage, and the triage team is responsible for making the decision to withhold or withdraw critical care services.

**Step 4: Communication with Patients and Family/Substitute Decision-Maker(s)**

The MRP will propose a treatment plan that is aligned with the critical care triage team decision (i.e., whether or not the patient will be admitted to or be transferred out of critical care) to the patient or substitute decision-maker. This should be aided by accessible documents, clear language descriptions, translations, and clear communications involving community advocates, family, or providers who are trusted by the patient. If the patient or SDM disagrees with the decision, then the process for an appeal should be shared with the patient or SDM and initiated (see section on Appeals below). The patient and SDM should be supported by other members of the interprofessional team (social work, spiritual care, etc.). The MRP will document whether the patient or SDM consented to the treatment plan in the patient’s medical record. The MRP should continue to offer all other indicated medical treatments, including palliative care if appropriate.

Additional suggestions for implementation at the institutional level, including policies, tools, descriptions of roles and responsibilities of triage teams, and communications suggestions, have been developed by Hamilton Health Sciences and can be accessed [here](https://macdrop.mcmaster.ca/s/PoGMyw848Wipz88) (see also the concluding recommendations in this *Proposed Framework* regarding recommended next steps to further guide implementation)

1. *Patient and Public Communication*

In the context of the COVID-19 pandemic, transparency is key to maintaining patient and public trust. This includes being transparent about why critical care triage may be needed during a major surge, how triage decisions will be made and by whom, when an institution or region has initiated critical care triage for major surge, and how patients will be supported during this difficult time. Patient and public-facing communication materials (e.g., signage, information sheets) will be essential. To ensure effective communication, some patients may require accommodated communication (e.g., plain language, use of communication devices) and access to interpretation services. Patients may wish to involve family care providers or other personal support persons who can play a role in informing individual treatment plans and advising on an individual patient’s clinical history, functional status, wishes, beliefs, and goals of care. This may require accommodation within institutional visitor policies to the extent possible to comply with infection control guidelines.

1. *Clinician Supports*

Critical care triage in a major surge will entail a significant cognitive, psychological, and moral burden on clinicians and underlines the need to support and prepare critical care clinicians for major surge. Clinical guidance, including explicit triage criteria, institutional supports, such as critical care triage teams, and assurance of legal protection will go some distance to support clinicians. Additional clinician supports identified in stakeholder feedback include: i) education and training about the critical care triage approach for critical care teams, ii) creation of decision support tools, e.g., translating the critical care triage criteria into an accessible format for ease of use in clinical practice, iii) guidelines for emergency department staff and EMS, and iv) general information for clinicians in other clinical areas and settings about the critical care triage approach to foster effective collaboration among clinical teams.

1. *Dispute Resolution and Appeals*

Disagreement amongst clinicians on the critical care triage team may arise regarding the eligibility and prioritization of a patient for critical care in a major surge using the *Proposed Framework*. Although consensus-based decision-making is ideal, a mechanism for resolving disagreement may be needed. Options for dispute resolution may include additional consultation with appropriate medical specialists.

Where a patient or their substitute decision-maker disagrees with the proposed treatment plan based on the critical care triage assessment the critical care triage team should reiterate and make clear to the patient or their substitute decision-maker that an appeals process exists, and should explain the process for making an appeal. All available supports and accommodations should be made available to the patient and/or their substitute decision-maker.

Due process and procedural fairness require that patients or their substitute decision-makers have an opportunity to appeal individual critical care triage decisions in a major surge. An appeals process should therefore be implemented to hear and adjudicate appeals made by patients or their substitute decision-makers with respect to triage decisions where patients are not prioritized for/admitted to critical care or where life-sustaining measures are proposed to be withdrawn because they are no longer benefitting from critical care resources or no longer meet prioritization criteria due to continued surge in demand. Because the former scenario is more time-sensitive, separate appeals processes may be required in order to facilitate rapid hearing of appeals in these cases.

Appeals have important legal implications, and processes of appeals must be developed such that they work within the multiple contexts of Ontario’s health system. Consequently, we recommend that health system stakeholders be engaged to further develop a plan for appeals. With that said, we believe that elements of this appeals process should include the following:[[53]](#footnote-11)

* The appeals process should be clear and easy for a lay person to trigger and conduct.
* Patient advocates, including a rights advisor or a member of the patient's circle of care, should be able to initiate an appeal on behalf of a patient with the patient or their substitute decision-maker’s consent.
* The critical care triage team should explain the grounds for the critical care triage assessment decision that was made. They should also consider reassessing the patient at regular intervals.
* Appeals should immediately be brought to a Critical Care Triage Appeals Committee that is independent of the critical care triage team and of the patient’s care.
* Critical Care Triage Appeals Committees should be established at a regional or provincial, rather than institutional, level. A regional model is capable of enhancing consistency across hospitals, bridges capacity gaps (e.g., small vs. large hospitals), and draws from a larger pool of relevant expertise and perspectives. All Critical Care Triage Appeals Committees should be made up of at least five individuals and include the perspectives of those with expertise in critical care, fair processes, and members of the community. The inclusion of perspectives from Black and other racialized populations, Indigenous populations, and persons with disabilities should exist across all members of Critical Care Triage Appeals Committees. Three Critical Care Triage Appeals Committee members should be required for a quorum to render a decision, using a simple majority vote. The process should proceed by telephone, virtually, or in person, and the outcome should be promptly communicated verbally and in writing to whomever brought the appeal.
* The appeals process must occur quickly enough that it does not create any delay in treatment or further harm the patient (in the case of initial triage decisions) or patients who are in the queue for scarce critical care resources currently being used by the patient who is the subject of the appeal (in the case of triage decisions involving the withdrawal of life-sustaining measures).
* Periodically, the Critical Care Triage Appeals Committee should retrospectively evaluate whether the review process is consistent with effective, fair, and timely application of the allocation framework.

### Mitigating the Perpetuation or Exacerbation of Existing Health and Social Inequities

The approach to critical care triage outlined in this document makes several attempts to mitigate the risks of direct and indirect discrimination, conscious or unconscious bias, and inequitable treatment. Yet, we acknowledge that any approach to triage that relies upon prognosis, e.g., predicted short-term mortality risk, can perpetuate or exacerbate existing health and social inequities. This is because the risk of becoming critically ill, and the risk of having a chronic underlying illness that would result in a poorer prognosis, is more likely among those who are disproportionately negatively affected by the social determinants of ill health, e.g., social inequalities and systematic discrimination, racism, colonialism, workplace exposure, precarious work, proximity to health care, and so forth. Some patient populations, such as those from remote Indigenous communities, may experience vulnerabilities that intersect across these domains of disadvantage. While the approach described in this *Proposed Framework* explicitly rejects any consideration of a patient’s long-term survival or life expectancy, a history of marginalization, oppression, and discrimination can have profound effects on one’s health, which can render them disadvantaged in terms of their prospects for surviving a critical illness. In short, people do not start on an even playing field, and so even a triage system based solely on predicted short-term mortality risk can perpetuate or exacerbate the unjust inequalities experienced in our society.

There are a number of ways that an approach to critical care triage should respond to this challenge. One way would be to reject any approach to triage that relies upon prognosis when prioritizing access to critical care. Two prominent approaches that do so, i.e., first-come, first-served and random allocation, were already discussed and identified as not favoured as possible foundations for an approach to the allocation scarce critical care resources. In addition to the reasons already supplied for not favouring these approaches, we are convinced that either approach would do little, if anything, to address existing health and social inequities, and in fact may do more to perpetuate and exacerbate them. For instance, first-come, first-served would straightforwardly disadvantage those who become critically ill later, those who have sought health care later, and those who happen to be further from tertiary care hospitals. Random allocation implemented as the foundation of a system of triage would tend to have the same disadvantages as first-come, first-served, as it would only be those presenting for critical care who would be randomly allocated critical care resources. This approach would also result in more deaths than one that uses a predicted short-term mortality approach.

A second way to respond to this challenge would be to adopt the approach suggested in this *Proposed Framework* but introduce a mechanism that would act to give greater priority to patients belonging to populations who have been marginalized, oppressed, discriminated against, or otherwise systematically disadvantaged as a result of social injustice. However, we were unable to find a mechanism that could identify or adjudicate between competing forms of social disadvantage in a consistent and defensible manner.

A third way to respond to this challenge is to adopt the approach suggested in this *Proposed Framework* and introduce safeguards to mitigate the effect of existing health and social inequities that arise as a result of triage. Although still imperfect, it is this approach that we consider to be the only defensible and viable option available to us at this time. The following represents the steps that are, at a minimum, necessary for addressing this challenge:

* Take proactive measures ‘upstream’ in the community and across the health system to prevent populations who are marginalized or disadvantaged due to discrimination or other forms of oppression and systematic disadvantage from being disproportionately exposed to, and ultimately becoming critically ill from, COVID-19. Among other things, this should include ensuring that such populations have adequate supplies of personal protective equipment (e.g., face masks); a higher priority for any vaccine or COVID-19 specific treatment; adequate, accessible, and culturally safe testing and assessment; and facilitators for self-isolation and quarantine. It also requires effective and culturally appropriate public health education and communications.
* Identify and work to mitigate inherent prejudices in the health care system. If prejudices in primary care or other areas of the health care system prevent patients from accessing or receiving the most appropriate care at the most appropriate time, this can result in poorer health and, ultimately, poorer prospects of survival when critically ill.
* Implement data collection systems that are sensitive to bias related to race and cultural identity so that steps can be taken to identify and measure any differential treatment or outcomes among Black, Indigenous, and other racialized populations. Should aggregate evidence of differential treatment between population groups be identified as a result of the application of critical care triage, this should be considered a reason to review and revise these triage recommendations as appropriate. Ensure that those engaged in decision-making and monitoring includes the perspectives of the populations for which equity-based data is being collected and monitored, e.g., Black, Indigenous, and other racialized populations, in addition to persons with disabilities.
* Ensure that due process is afforded to all patients throughout their health care experience and the process of triage decision-making. In particular, accommodations to ensure that patients are not at a disadvantage from accessing, understanding, or receiving their care must be implemented.
* Identify and aim to reduce or eliminate bias in decision-making tools and among decision-makers (e.g., critical care physicians, triage teams, Appeals Committees, Regional and Provincial Critical Care Command Centres). This should include mandatory unconscious bias training, cultural safety training, and anti-racism training for those directly involved in any aspect of triage decision-making. The reduction or elimination of bias in decision-making should also be pursued by ensuring appropriate and inclusive representation among decision-makers.
* Ensure that adequate and timely transportation exists for patients living in rural and remote communities to access critical care.

### Concluding Recommendations for Next Steps Regarding Ontario’s Approach to Critical Care Triage in the Context of a Major Surge in Demand

The following steps should be immediately taken in order to further develop and implement an approach to critical care triage in the context of a major surge in demand in Ontario:

* Disseminate this document (hereafter referred to as ‘*Proposed Framework*’) to health system stakeholders as a proposed general approach and structure to critical care triage in the event of a major surge in demand during the COVID-19 pandemic.
* Publicize the *Proposed Framework* widely, both in full and as an accessible and plain language version, and invite public input and feedback within a defined timeframe.
* Ensure liability protection for all those who would be involved in implementing the *Proposed Framework* (e.g., physicians, clinical teams, Triage Team members, Appeals Committee members, implementation planners, etc.), including an Emergency Order related to any aspect requiring a deviation from the Health Care Consent Act. It would also be advisable to seek independent legal review of the *Proposed Framework* as a solid legal basis for the following three recommended next steps.
* Convene a multidisciplinary consensus panel to further develop and refine the clinical factors and tools (Appendix C of the *Proposed Framework*, hereafter understood as *‘Clinical Assessment Guidelines’*) that clinicians should be expected to use for critical care triage based on best available evidence and within the guiding principles of the *Proposed Framework*. Such a panel should include and engage the input of experts in critical care, other clinical disciplines, ethics, human rights and law, and the perspectives of those whose voices are usually not heard but may be disproportionately affected by critical care triage.
* ‘Protocolize’ the *Proposed Framework* following public input and the refinement of the *Clinical Assessment Guidelines* so that there is a consistent, health system-wide approach to be followed in the event that Ontario is faced with a major surge in demand for critical care during the COVID-19 pandemic. This protocol (hereafter: *‘the Protocol’*) should include both the *Proposed* *Framework* and the *Clinical Assessment Guidelines*.
* Engage health system partners in developing guidance for the implementation of *the Protocol* in Ontario hospitals, including clinical operations, communications, patient supports, clinician supports, education/training, data collection, and monitoring.
* Ensure that the perspectives and participation of those representing Indigenous people, Black and racialized communities, persons with disabilities, and others who may be disproportionately affected by critical care triage due to systemic discrimination, are proactively and meaningfully engaged particularly in relation to the preceding three recommended next steps.
* Clarify the governance and accountabilities for Ontario’s approach to critical care triage during a major surge, including but not limited to: i) initiation of triage for major surge, ii) data collection, and iii) monitoring. Within this governance structure, establish and/or identify a body to monitor, review, and revise Ontario’s approach to critical care triage to ensure it is achieving the aim for which it is intended and is not leading to unintended adverse consequences.
* Sustain efforts to prevent and mitigate the risk of a major surge in demand for critical care, and in particular the disproportionate effect that a major surge may have on the least advantaged. This should include enhanced efforts to ensure that key public health prevention and mitigation strategies (e.g., face masks, testing, social distancing, contact tracing, etc.) are available, are community-based, and aim to address vulnerabilities among communities at greatest risk.

**Ontario COVID-19 Bioethics Table**

September 11, 2020

## References

## Appendix A: Backgrounder: Development of the Recommendations

This document was developed by the [Ontario COVID-19 Bioethics Table](http://jcb.utoronto.ca/news/documents/Ontario-COVID-19-Health-System-Response-Bioethics-Table-Charter-and-Terms-of-Reference.pdf) based on a review of the academic literature and published policy statements on critical care triage in a pandemic, consultation with clinical, legal, and other experts, and feedback from health system stakeholders. It should be noted that previous drafts of the framework did not have consensus around the Bioethics Table, and some matters remain unresolved. Topics were significantly debated, and comments were welcomed from stakeholder communities. Feedback has been addressed to the greatest extent possible in this current version where appropriate.

Development of the *Proposed Framework* was undertaken in three phases over March-August 2020:

* In Phase 1, an initial draft framework was developed in March 2020 in response to an urgent need for the Ontario health system to prepare for the possibility of a major surge in demand for critical care as was being observed in Italy, Spain, and New York State. The initial draft was released to hospitals on March 28th to aid planning. A major surge in demand for critical care was averted in Ontario. This draft framework has not been implemented.
* In Phase 2, extensive feedback on the initial draft framework was received in April 2020 through written submissions from diverse organizations and groups. Feedback was sent directly to the Bioethics Table or via the Ministry of Health and Ontario Health. The Bioethics Table reviewed and considered all feedback and amended the document accordingly. Additional feedback was solicited from bioethics, health law, and clinical experts. An updated draft framework was developed in April/May 2020 based on new published findings in the literature, policy discussions in the public domain (e.g., policy statements), and written stakeholder feedback.
* In Phase 3, the Bioethics Table met with the Ontario Human Rights Commission and undertook an expanded stakeholder consultation process to elicit input from Black and Indigenous health leaders and disability rights experts in July-August 2020. The *Proposed Framework* is informed extensively by this stakeholder process, an updated review of the literature and policy statements from organizations (e.g., Canadian Association of Retired People), and additional input from health law and clinical experts.

This *Proposed Framework* document is a green document within the overall 2020 COVID-19 pandemic response in Ontario. The process for developing an approach to critical care triage in the context of a major surge in demand must be sensitive and responsive to changing conditions, emerging evidence, and evolving understanding of the ethical, social, and legal implications of critical care triage for major surge in a pandemic. As such, this document should be subject to regular review and updating as appropriate.

*Acknowledgments:*

The Bioethics Table would like to acknowledge the substantive feedback, input, and advice of the following organizations either through written submissions or stakeholder consultations (listed alphabetically):

* ARCH Disability Law Centre
* AODA Alliance
* Black Health Committee, Alliance for Health Communities
* Canadian Frailty Network
* Canadian Medical Protective Association
* Citizens with Disabilities – Ontario
* College of Nurses of Ontario (via Ministry of Health)
* College of Physicians and Surgeons of Ontario
* Indigenous Bioethics Reference Group, Indigenous Primary Health Care Council
* Muscular Dystrophy Canada
* Ontario Health – provincial Critical Care Command Centre, Provincial Critical Care Table
* Ontario Hospital Association/HIROC
* Ontario Human Rights Commission
* Ontario Medical Association

The Bioethics Table has also benefited from the substantive feedback, input, and advice of scholars and practitioners with expertise in the following areas:

* Bioethics – Clinical, Organization, and Research Ethics (CORE) Network and the provincial COVID-19 Bioethics Community of Practice[[54]](#footnote-12)
* Clinical Medicine – >20 individual experts in cancer, cardiac care, complex continuing care, critical care, emergency medicine, geriatric medicine, neurology, stroke, thoracic medicine, *plus* expert feedback from the Canadian Geriatric Society and the Canadian Thoracic Society
* Health Equity
* Health and Human Rights Law

\*\*Please note that these acknowledgments do not signify endorsement of the Proposed Framework by these organizations or individuals.\*\*

## Appendix B: The Ontario Human Rights Code Prohibited Grounds of Discrimination and Other Relevant Domestic Human Rights Law and International Human Rights Treaties

The [Ontario Human Rights Code](https://www.ontario.ca/laws/statute/90h19) recognizes that discrimination occurs most often because of a person's membership in a particular group in society. None of the grounds below should influence the allocation of critical care or medical resources.

The Code prohibits actions that discriminate against people based on a protected ground in a protected social area. Protected grounds relevant to the health care context include:

* Age
* Ancestry, colour, race
* Citizenship
* Ethnic origin
* Place of origin
* Creed
* Disability
* Family status
* Marital status (including single status)
* Gender identity, gender expression
* Sex
* Sexual orientation

For exclusions or restrictions of services like health care to people identified in these grounds to be considered reasonable and bona fide, service providers must have been unable to accommodate equal access to health care services for such groups without undue hardship.

**The Canadian Charter of Rights and Freedoms recognizes:**

In section 7 that everyone has the right to life, liberty and security of the person andthe right not to be deprived thereof except in accordance with the principles of fundamental justice.

**In section 15**(1) that every individual is equal before and under the law and has the right to the equal protection and equal benefit of the law without discrimination and, in particular, without discrimination based on race, national or ethnic origin, colour, religion, sex, age or mental or physical disability.

**International human rights treaties**

Canada has ratified (signed and agreed to be bound by) several human rights treaties with relevant rights, including the International Covenant on Economic, Social and Cultural Rights, the International Covenant on Civil and Political Rights, the Convention on the Elimination of Racial Discrimination, the Convention on the Rights of Women, and the Convention on the Rights of People with Disabilities. These treaties all protect everyone’s right to non-discrimination, and all specify the rights of everyone to access health care without discrimination.

## Appendix C: Key Considerations for the Development of Clinical Assessment Guidelines for the Prediction of Short-Term Mortality Risk

The *Proposed Framework* underlines the importance of the individualized clinical assessment of patients and the use of explicit triage criteria to prioritize patients based on predicted short-term mortality risk. Under conditions of a major surge, critical care triage will be stressful for both patients and the clinicians who care for them.

Clinical assessment guidelines for critical care triage in a major surge would help to promote consistency in clinical practice, foster transparency and accountability about triage decisions, and ensure clinicians are supported in making clinical decisions, which are likely to be among the most difficult of their professional careers. However, at the present time, there are no standardized clinical tools to aid clinicians in their assessment of individual patients’ predicted short-term mortality risk for the purposes of critical care triage for a major surge in the COVID-19 pandemic. This is a significant gap, which puts both patients and clinicians at risk.

Table 1 (below) summarizes early work led by Dr. James Downar to identify clinical factors and tools that may have value in aiding clinicians in assessing their individual patient’s predicted short-term mortality risk. The clinical factors and tools were identified based on published evidence and/or clinical experience-based prognostic indicators (short-term mortality risk) for specific conditions that were pre-existing or have caused or contributed to critical illness. Table 1 was informed by consultation with diverse clinical experts in March-June 2020 and is evolving as new evidence emerges and as clinical experience caring for critically ill patients in the COVID-19 pandemic grows. It was met with significant criticism from some members of the Bioethics Table and from stakeholder communities.33,34,35 This work may offer a *starting point* for the multidisciplinary consensus panel in developing clinical practice guidelines to inform individualized clinical assessment of patients’ predicted short-term mortality risk; however, the Bioethics Table does not have sufficient clinical expertise to recommend that these clinical factors and tools be used.

Table 1 refers to clinical tools that were not developed to predict short-term mortality risk or to inform resource allocation decisions. To our knowledge, no clinical tool has been validated for the specific purpose of critical care resource allocation in either pandemic or normal times. Consequently, unless and until valid tools are developed, clinicians choosing to rely on existing tools must adapt the clinical tools available to them to the context of critical care triage for major surge in the COVID-19 pandemic. Otherwise, they must rely on clinical judgment alone or a non-clinical standard (e.g., first-come, first-served; random allocation). As noted in Section D above, there are good reasons for not relying on clinical judgment alone, notably because it increases the subjectivity of clinical assessment, introduces clinician bias and inconsistency, places greater cognitive and moral burden on clinicians making decisions in a crisis, and presents greater risk of violating human rights and exacerbating health and social inequities. However, even clinical tools for which there is strong evidence supporting their accuracy (i.e., their ability to predict short-term mortality risk), reliability (i.e., multiple people using the tool on the same patient would obtain the same result), and feasibility (i.e., people are able to use the tool in the context of a pandemic) may still be concerning if they are unjustifiably discriminatory towards a specific group on prohibited human rights grounds.

Clinical tools must be able to distinguish between patients on the basis of predicted short-term morality risk, but even validated tools may have a disproportionate impact on some groups because short-term mortality risk is not randomly distributed among the population. Thus, any clinical tool used in the pandemic context of a major surge should be superior to any available alternative in relation to: i) its evidence-based value in predicting short-term mortality, and ii) the degree to which it engages concerns about human rights. This important insight was underscored in the Bioethics Table’s deliberation and consultation with stakeholders on the use of the Clinical Frailty Scale (CFS) as a prognostic tool in progressive illness, and can be used as a case example of how any of the tools which follow should be critically considered in the context of triage.

The CFS is currently in widespread use throughout the healthcare system, including in assessment of patients with critical illness in a non-pandemic context.43,44,45 Recent observational studies in the COVID-19 pandemic show a strong association between CFS and predicted mortality.44,46,47,48,49,50 This finding is consistent with other studies indicating that assessment of clinical frailty is helpful in developing treatment plans and in predicting patient outcomes, including mortality risk.51,52,53 However, the CFS has not been validated as a clinical tool for use in critical care triage, nor has it been validated for all patient populations. Most studies using the CFS have included those who are over 65 years of age and have a progressive illness.45 The CFS relies on an assessment of functional status, measured in terms of basic and instrumental activities of daily living, and is used to inform the assessment of a patient’s general deterioration over time and is generally preferred over age as a better predictor of a patient’s health outcomes. However, the Bioethics Table learned through its consultation with disability rights experts that the use of CFS in the context of critical care triage raises significant concerns that persons with disabilities, many of whom may need assistance with activities of daily living, would score higher on the CFS than an able-bodied person and that this could lead to the over-triaging of persons with disabilities.34,35 The CFS would seem to conflate disability with frailty and hence would contribute to over-triaging of persons with disabilities. In this sense, while CFS may be discriminating between patients on the basis of frailty, it may have the effect of being unjustifiably discriminatory to, and disadvantaging of, persons with disabilities on grounds unrelated to an individual patient’s actual predicted short-term mortality risk. This is no trivial matter given the systemic discrimination which persons with disabilities face already in health care and other contexts. For these reasons, the disability rights experts that we consulted recommended that the CFS not be used for the purpose of critical care triage.33,34

The evolving nature of clinical evidence and experience in the COVID-19 context underscores the importance of developing clinical tools that are fit for purpose. However, the case of CFS illustrates how clinical evidence and experience are not sufficient alone to establish the justifiable use of a clinical tool and calls attention to the embedding of social norms within clinical tools and in their application in practice. While we have received explicit feedback regarding the use of the CFS, further review is necessary for other commonly used clinical tools which may be applied in the absence of a pandemic-validated tool with similar potential for disproportionate harm to members of the disability community and/or members of other populations. For these reasons, the Bioethics Table has recommended that a multidisciplinary consensus panel of experts in critical care and other relevant clinical disciplines be convened for the purpose of developing clinical assessment guidelines based on best available evidence and within the guiding ethical principles of the *Proposed Framework* andusing a similar lens as described above. Such a panel should seek input from experts in ethics, human rights, law, and related disciplines, and engage the perspectives of those representing marginalized populations and others who may be disproportionately affected by critical care triage. The process by which such clinical assessment guidelines are generated and finalized, including the process by which experts and other stakeholders are engaged, should be made transparent. Explicit justifications grounded in the principles and considerations outlined in this appendix and in the *Proposed Framework* should be provided for the inclusion or exclusion of clinical factors or tools. We suggest that human rights tools and health equity impact assessment tools be applied to any tools considered for inclusion in such guideline, as well as to the guideline itself.[[55]](#footnote-13)

In addition to the tools listed in Table 1, the following resources may be consulted to assist in assessing patient vulnerabilities:

* The Centre for Effective Practice has some guidance for managing poverty and other social vulnerabilities, and the following tool is designed for COVID-19 care specifically: [Social Care Guidance in the COVID-19 Context](https://tools.cep.health/tool/covid-19-social-care-guidance/)
* Pinto AD, Bloch G. (2017). Framework for building primary care capacity to address the social determinants of health. *Canadian Family Physician*, 63(11): e476-e482. Available on the [Canadian Family Physician website.](https://www.cfp.ca/content/cfp/63/11/e476.full.pdf)
* MedEd Portal’s [Anti-Racism in Medicine Collection](https://www.mededportal.org/anti-racism)
* Flanagan BE, Gregory EW, Hallisey EJ et al. (2011). A social vulnerability index for disaster management. *Journal of homeland security and emergency management*, 8(1). Available as a [Researchgate.org shared document.](https://www.researchgate.net/profile/Barry_Flanagan/publication/274439003_A_Social_Vulnerability_Index_for_Disaster_Management/links/569e582d08ae192a92a4a2fd.pdf)

**Table 1:** Clinical factors and tools that published evidence and/or clinical experience suggest have value in predicting short-term mortality risk (Note: it is not the Bioethics Table’s recommendation that these clinical factors and tools be used at the present time for the purposes of critical care triage. While they reflect best available evidence and/or clinical experience, they have not necessarily met the ethical or human rights concerns or standards noted above.)

|  |  |  |  |
| --- | --- | --- | --- |
| **Clinical Factor** | **Level 1 Triage Scenario (Aiming to identify patients with >80% short-term mortality risk)** | **Level 2 Triage Scenario (Aiming to identify patients with >50% short-term mortality risk)** | **Level 3 Triage Scenario (Aiming to identify people with >30% short-term mortality risk)** |
| A | Severe Trauma with predicted mortality >80% based on TRISS score | Severe Trauma with predicted mortality >50% based on TRISS score | Trauma with predicted mortality >30% based on TRISS score |
| B | Severe burns with any 2 of: Age >60, >40% total body surface area affected, inhalation injury | Same as Level 1 | Same as Level 1 |
| C | Cardiac arrest* Unwitnessed cardiac arrest or
* Witnessed cardiac arrest with non-shockable rhythm or
* Recurrent cardiac arrest
 | Same as Level 1 | Cardiac arrest |
| D | Metastatic malignant disease with any of the following:* ECOG grade>=2 at baseline (2-4 weeks before admission)
* Disease progressing or stable on treatment
* Active treatment plan with >80% predicted mortality during or soon after critical illness
* Unproven (experimental) treatment plan
* Treatment plan that would only be started if the patient recovers from critical illness
 | Metastatic malignant disease with any of the following:* ECOG grade>=2 at baseline (2-4 weeks before admission)
* Disease progressing or stable on treatment
* Active treatment plan with >50% predicted mortality during or soon after critical illness
* Unproven (experimental) treatment plan
* Treatment plan that would only be started if the patient recovers from critical illness
 | Metastatic malignant disease  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Clinical Factor** | **Level 1 Triage Scenario (Aiming to identify patients with >80% short-term mortality risk)** | **Level 2 Triage Scenario (Aiming to identify patients with >50% short-term mortality risk)** | **Level 3 Triage Scenario (Aiming to identify people with >30% short-term mortality risk)** |
| E | Severe and irreversible neurologic event with >80% risk of death based on:* For Intracerebral Hemorrhage a modified ICH score of **4-7**
* For Subarachnoid Hemorrhage, a WFNS grade 5 (GCS 3-6)
* For Traumatic Brain Injury, the IMPACT score
* Acute ischemic stroke alone would not be excluded at this level
 | Severe and irreversible neurologic event with >50% risk of death based on:* For Intracerebral Hemorrhage a modified ICH score of **3-7**
* For Subarachnoid Hemorrhage, a WFNS grade 3-5 (GCS 3-12 OR GCS 13-14 AND focal neurological deficits)
* For Traumatic Brain Injury, the IMPACT score
* For acute ischemic stroke, an NIHSS of **22-42.**
 | Irreversible neurologic event/condition with >30% risk of death on:* For Intracerebral Hemorrhage a modified ICH score of **2-7**
* For Subarachnoid Hemorrhage, a WFNS grade 2-5 (GCS <15)
* For Traumatic Brain Injury, the IMPACT score
* For acute ischemic stroke, an NIHSS of **14-42.**
 |
| F | End-stage organ failure meeting the following criteria:*Heart** Chronic End-stage Heart Failure with NYHA Class 4 symptoms, ineligible for advanced therapies (mechanical support, transplant)

*Lung** COPD - Use Clinical Frailty Score criterion (G)
* Cystic Fibrosis with FEV1 <20% predicted when measured at time of clinical stability
* Pulmonary fibrosis with any of:
	+ VC <60% or DLCO <40% predicted
	+ Chronic supplemental O2 >12h per day
* Secondary pulmonary hypertension (RVSP >50 mmHg)
* Rapid progression (>10% decline in FVC over 6m, or acute exacerbation in previous 12m)
* For pulmonary hypertension, anyone with ESC/ERS high risk criteria or a REVEAL 2.0 score >=9 while on optimal therapy (see below)

*Liver** Chronic Liver Disease with failure of 2 or more organ systems (ACLF Grades 2-3)
* MELD score >=25

Note that patients who meet these criteria may be eligible for ICU admission if they are currently on an organ donation waiting list and would be given highest priority if admitted to ICU (e.g., status 4/4F for liver transplantation). This does not include people who have been referred to a transplant service but have not yet been listed for a transplantation. This also would not apply if organ donation processes are halted due to triage conditions precluding organ procurement.  | End-stage organ failure meeting the following criteria:*Heart** Chronic End-stage Heart Failure with NYHA Class 3 or 4 symptoms, ineligible for advanced therapies (mechanical support, transplant) PLUS any of:
	+ High/increasing BNP
	+ Cardiorenal syndrome
	+ Recent discharge (<30d) or multiple admissions for CHF in past 6 months

*Lung** COPD - Use Clinical Frailty Score criterion (G)
* Cystic Fibrosis with FEV1 <20% predicted when measured at time of clinical stability
* Pulmonary fibrosis with any of:
	+ VC <60% or DLCO <40% predicted
	+ Chronic supplemental O2 >12h per day
* Secondary pulmonary hypertension (RVSP >50 mmHg)
* Rapid progression (>10% decline in FVC over 6m, or acute exacerbation in previous 12m)
* For pulmonary hypertension, all of:
	+ ESC/ERS intermediate risk criteria or a REVEAL 2.0 score >=7 while on optimal therapy (see below)
	+ Age >=75
	+ Hospitalization for pulmonary hypertension in past 3 months OR a significant comorbidity (e.g. renal failure

*Liver** Chronic Liver Disease with failure of 1 or more organ systems (ACLF Grades 1-3)
* MELD score >=15

Note that patients who meet these criteria may be eligible for ICU admission if they are currently on an organ donation waiting list and would be given highest priority if admitted to ICU (e.g., status 4/4F for liver transplantation). This does not include people who have been referred to a transplant service but have not yet been listed for a transplantation. This also would not apply if organ donation processes are halted due to triage conditions precluding organ procurement. | End-stage organ failure as suggested by an unscheduled admission for an exacerbation or complication of their chronic illness in the past 12 months or previous organ transplant with evidence of chronic rejection or chronic organ dysfunction in the transplanted organ. Note that some admissions (e.g., catheter or access infections) may not suggest an elevated risk of mortality, and for some less common conditions unscheduled admissions may not suggest an elevated risk of mortality and specialist input should be sought. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Clinical Factor** | **Level 1 Triage Scenario (Aiming to identify patients with >80% short-term mortality risk)** | **Level 2 Triage Scenario (Aiming to identify patients with >50% short-term mortality risk)** | **Level 3 Triage Scenario (Aiming to identify people with >30% short-term mortality risk)** |
| G\*See discussion preceding table. | Clinical Frailty Score of >=7 (on the 9-point tool) at baseline (2-4 weeks before admission) due to a **progressive** illness or generalized deterioration of health status.This factor does not include all people with clinical frailty. This factor is **not** relevant for non-progressive conditions, such as developmental disability, spinal cord injury, or traumatic brain injury, because these are not necessarily associated with a higher risk of death during or soon after an episode of critical illness.  | Clinical Frailty Score of >=5 (on the 9-point tool) at baseline (2-4 weeks before admission) due to a **progressive** illness or generalized deterioration of health status.This factor does not include all people with clinical frailty. This factor is **not** relevant for non-progressive conditions, such as developmental disability, spinal cord injury, or traumatic brain injury, because these are not necessarily associated with a higher risk of death during or soon after an episode of critical illness.  | Same as level 2. |
| H | Elective palliative surgery | Same as Level 1 | Elective or emergency palliative surgery |
| I | Mechanical ventilation for >=14 days with a ProVent-14 score of 3-6. | Mechanical ventilation for >=14 days with a ProVent-14 score of 2-6. | Mechanical ventilation for >=14 days with a ProVent-14 score of 1-6. |

*The following provides further information on the tools described in the above table:*

**TRISS Score Calculator**

Access the tool on [MDApp](https://www.mdapp.co/trauma-injury-severity-score-triss-calculator-277/).

**ECOG**

[Eastern Cooperative Oncology Group Performance Status](https://ecog-acrin.org/resources/ecog-performance-status%29)

| **GRADE** | **ECOG PERFORMANCE STATUS** |
| --- | --- |
| 0 | Fully active, able to carry on all pre-disease performance without restriction |
| 1 | Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature, e.g., light house work, office work |
| 2 | Ambulatory and capable of all selfcare but unable to carry out any work activities; up and about more than 50% of waking hours |
| 3 | Capable of only limited selfcare; confined to bed or chair more than 50% of waking hours |
| 4 | Completely disabled; cannot carry on any selfcare; totally confined to bed or chair |

**Modified ICH Score15**:

One point each for age >80, infratentorial origin, volume >30mL, intraventricular extension, use of oral anticoagulants, and Glasgow Coma Score of 5-12. Two points for a GCS of 3-4. Scores of 4-7 suggest a 30-day mortality rate of >80%. Scores of 3-7 suggest a mortality rate of >60%.

**The World Federation of Neurological Surgeons grading system:**

A combination of Glasgow Coma Score (GCS) and the presence or absence of focal neurological deficits24. A WFNS grade 5 (GCS 3-6) is associated with a >90% probability of a poor outcome. Grades 3-4 (GCS 7-12 or GCS 13-14 AND focal neurological deficits) are associated with a >50% probability of a poor outcome. Grade 2 (GCS 14 with no neurological deficits) is associated with a ~30% probability of a poor outcome.

**The IMPACT Score17** predicts outcome at 6-months based on multiple demographic, clinical and radiographical factors using the calculator found at http://www.tbi-impact.org/?p=impact/calc

**National Institute of Health Stroke Scale (NIHSS):** score 0-7 is associated with a 30-day mortality of 4.2%; 8-13 with a 30d mortality of 13.9%; 14-21 with a 30d mortality of 31.6%; and 22-42 with a 30d mortality of 53.5%16:

**ECS/ERS High Risk Criteria** for pulmonary hypertension14:

* WHO Class 4 symptoms
* 6MWT <165m
* NT pro-BNP >1400 ng/L
* RA area >26 cm2
* RAP >14 mmHg
* CI <2.0 L/min/m2
* SvO2 <60%

## Registry to Evaluate Early and Long-Term Pulmonary Arterial Hypertension Disease Management (REVEAL) 2.0 Score

## The REVEAL Registry Risk Score Calculator (Benza et al. CHEST 2019; 156(2):323-337) can be found [here](https://journal.chestnet.org/article/S0012-3692%2812%2960072-5/abstract).



**ACLF grading system** is based on the number of organ systems failing at the time of admission in a patient with chronic liver disease. Patients with more than 2 organ systems failing on presentation (ACLF Grades 2 and 3) have an >=80% risk of mortality at 6 months25. Those with ACLF Grade 1 have an approximately 50% mortality at 6 months25; ACLF grade 1 is defined as having chronic liver failure plus ONE of the following three findings:

* Creatinine >177 umol/L (2.0 mg/dL)
* Creatinine >132 umol/L (1.5 mg/dL) AND Hepatic encephalopathy grade 3-4
* Creatinine >132 umol/L (1.5 mg/dL) OR Hepatic encephalopathy grade 1-2 AND ONE OF:
	+ Bilirbin >200umol/L (12mg/dL)
	+ INR >2.5
	+ pressor support required
	+ PaO2/FiO2 <200

**Clinical Frailty Scale (Rockwood et al)**

See:

* [Dalhousie University’s discussion of the Clinical Frailty Scale tool](https://www.dal.ca/sites/gmr/our-tools/clinical-frailty-scale.html)
* [Dalhousie University’s guidance and training related to the Clinical Frailty Scale](file:///C%3A%5CUsers%5Cslau%5CAppData%5CLocal%5CMicrosoft%5CWindows%5CINetCache%5CContent.Outlook%5C9AVYBCXO%5C%E2%80%A2%09https%3A%5Cwww.dal.ca%5Csites%5Cgmr%5Cour-tools%5Cclinical-frailty-scale%5Ccfs-guidance.html)
* Hubbard RE, Maier AB, Hilmer SN et al. (2020). Frailty in the Face of COVID-19. Age and Ageing, 49(4): 499–500.
* Rockwood K, Song X, MacKnight C et al. (2020). A global clinical measure of fitness and frailty in elderly people. Canadian Medical Association Journal, 173(5)489-495.
* Rockwood R, Theou O. (2020). Using the Clinical Frailty Scale in Allocating Scarce Health Care Resources. Canadian Geriatrics Journal, 23(3): 210-215.

**ProVent Score- calculated at 14 days**:

One point for each of Age >50, platelet count <150, requiring hemodialysis, and requiring vasopressors. An additional point is given for age >=65, for a maximum score of 5. Scores of 4-5 at 14 days suggest a mortality rate of ~90% at 1 year. Scores of 2-3 at 14 days suggest a mortality rate of 56-80% at 1 year22.

## Suggested order set for symptom management for COVID-19 patients (adapted with permission from Champlain Palliative Symptom Management Medication Order Form - Long Term Care)

| **Symptom** | **Medications** | **Recommended starting dose** |
| --- | --- | --- |
| Pain/Dyspnea | Hydromorphone 2mg/ml | 0.5-1.0 mg SC q30min PRN\* |
| Nausea/Delirium | Haloperidol 5mg/ml | 1 mg subcut q2hourly PRN \*\*  |
| Sedation | Midazolam 5 mg/ml | 1-2 mg subcut q15 minutes PRN \*\*\* |
| Secretions | Scopolamine 0.4 mg/ml | 0.4 mg subcut q4hourly PRN |
| Fever | Acetaminophen 650 mg suppositories | Administer q6hourly PR PRN |
| Urinary retention | Foley catheter 16 Fr | Insert catheter PRN |
| Dry mouth | Mouth swabs | Mouth care QID and PRN |

Please call MD if patient receives more than 2 PRN of hydromorphone in 4 hours.

\* may start at 0.25mg in a patient who is opioid naive, frail, or elderly

\*\* relative contraindication in Parkinson’s disease

\*\*\* can use higher doses for refractory dyspnea

## Appendix D: Suggested Roles and Accountabilities

| **Stakeholder** | **Accountabilities** |
| --- | --- |
| Ministry of Health | * Formally endorse and approve triage framework
* Communicate triage protocol to public, health care organizations, health care workers, and regulatory bodies
* Ensure mechanism is in place to receive ongoing feedback from public
* Develop education materials for health care organizations and public
* Ensure legislative protections are in place for health care organizations and health care workers through appropriate emergency orders
 |
| Provincial Critical Care Command Centre | * Alert the Command Table when major surge is imminent, when major surge triage is implemented (including any transitions between levels), and when major surge has ended
* Activate triage protocol based on major surge
* Communicate initiation of triage protocol to Regional Critical Care Command Centres
* Collect data from Regional Critical Care Command Centres
 |
| Regional Critical Care Command Centre | * Implement triage under direction from Provincial Critical Care Command Centre
* Determine appropriate level of triage in consultation with Provincial Critical Care Command Centre
* Coordinate flow of patients between institutions
* Monitor bed and ventilator capacity
* Communicate regularly with Acute Care Facilities
* Collect data from Acute Care Facilities
 |
| Acute Care Facilities *Note: This approach could be regional in nature (i.e., a collaborative approach from multiple acute care facilities)* | * Implement triage under direction of Regional Critical Care Incident Command Table
* Organize triage teams
* Ensure daily monitoring of implementation, including data collection
* Ensure process is in place for management of concerns (e.g., quality review, patient relations)
* Provide education to staff and physicians
* Provide wellness supports to staff and physicians
 |
| Triage Teams *Note: This approach could be regional in nature (i.e., a collaborative approach from multiple acute care facilities)* | * Review cases and make decisions re: eligibility/prioritization for admission to, or withdrawal from, critical care, in relation to current level of triage
* Clearly document decisions
 |
| Physician (MRP) | * Clarify patient goals of care
* Assess patient against triage criteria
* Ensure a second independent physician opinion is obtained
* Clearly document decision in the patient’s health record
* Refer case to triage team for final determination
* Communicate outcomes to patient, family and/or SDM
* Ensure patient has access to alternative care, including palliative care
 |
| Physicians (second opinion) | * Provide second opinion after assessment by MRP
* Assess patient against triage criteria
* If there is disagreement, attempt to resolve by consensus
* If disagreement persists, refer to triage team
 |
| Appeals Committee | * Establish clear process, membership and criteria for reviewing appeals from patients or SDMs
* Clearly document decisions
* Communicate outcome of appeal to patient/SDM
 |

 **Prioritization criteria** are used to identify those patients who meet eligibility criteria, wish to receive critical care, and have the greatest likelihood of surviving their episode of critical illness (understood as likelihood of survival twelve months from the onset of critical illness based on an evaluation of their clinical presentation at the point of triage). Patients who meet eligibility criteria, wish to receive critical care, but have a high likelihood of dying during or within twelve months from the onset of critical illness based on an evaluation of their clinical presentation at the point of triage would have a lower priority for critical care resources.

Patients who meet eligibility criteria and who wish to receive critical care should be assigned one of four colours that identifies their predicted short-term mortality risk:

1. Further details regarding the process by which this *Proposed Framework* was developed can be found in Appendix A. [↑](#footnote-ref-1)
2. Critical Care Services Ontario [defines](https://www.criticalcareontario.ca/EN/AboutUs/Pages/What-is-Critical-Care.aspx) critical care services as follows: “Critical care services meet the needs of patients facing an immediate life-threatening health condition—specifically, that in which vital system organs are at risk of failing. Using advanced therapeutic, monitoring and diagnostic technology, the objective of critical care is to maintain organ system functioning and improve the patient’s condition such that his or her underlying injury or illness can then be treated.” [↑](#footnote-ref-2)
3. . Critical Care Services Ontario. (2019). Ontario’s Critical Care Surge Capacity Management Plan: Moderate Surge Response Guide Version 2.3*.* Government of Ontario, September 2019, p. 6. Available on the [Critical Care Ontario website](https://www.criticalcareontario.ca/EN/Documents/Ontarios%20Critical%20Care%20Moderate%20Surge%20Response%20Guide%20September%202019.pdf). [↑](#endnote-ref-1)
4. We note that “an extended period of time” is not well-defined in this definition. We interpret this as any period of time where existing surge planning cannot accommodate the real or expected demand for resources. [↑](#footnote-ref-3)
5. . Rosenbaum L. (2020). Facing Covid-19 in Italy - Ethics, Logistics, and Therapeutics on the Epidemic's Front Line. *New England Journal of Medicine*, 382(20): 1873-1875. [↑](#endnote-ref-2)
6. See Critical Care Services Ontario’s website on [Surge Capacity Management](https://www.criticalcareontario.ca/EN/Library/Surge%20Capacity%20Management/Pages/default.aspx). [↑](#footnote-ref-4)
7. . Sharon E, Mace MD, Thom A et al. (2020). Triage. In *Pediatric Emergency Medicine*, 2008. [↑](#endnote-ref-3)
8. . Arya A, Buchman S, Gagnon B, Downar J. (2020). Pandemic palliative care: beyond ventilators and saving lives. Canadian Medical Association Journal, 192(15): E400-E404. [↑](#endnote-ref-4)
9. . Maves RC, Downar J, Dichter JR et al., on behalf of the ACCP Task Force for Mass Critical Care. (2020). Triage of Scarce Critical Care Resources in COVID-19 An Implementation Guide for Regional Allocation an Expert Panel Report of the Task Force for Mass Critical Care and the American College of Chest Physicians. *CHEST*, 158(1): P212-225. [↑](#endnote-ref-5)
10. . Winsor S, Bensimon CM, Sibbald R, et al. (2014). Identifying prioritization criteria to supplement critical care triage protocols for the allocation of ventilators during a pandemic influenza. Healthcare Quarterly, 17(2): 44-51. [↑](#endnote-ref-6)
11. . Frolic A, Kata A, Kraus P. (2009). Development of a critical care triage protocol for pandemic influenza: integrating ethics, evidence and effectiveness. *Healthcare Quarterly*, 12(4): 54-62. [↑](#endnote-ref-7)
12. . University of Toronto Joint Centre for Bioethics. (2005). Stand on guard for thee: ethical considerations in preparedness planning for pandemic influenza. Available on [the University of Toronto Joint Centre for Bioethics website](http://www.utoronto.ca/jcb/home/documents/pandemic.pdf). [↑](#endnote-ref-8)
13. . Ritvo P, Perez DF, Wilson K, et al. (2013). Canadian national surveys on pandemic influenza preparations: pre-pandemic and peri-pandemic findings. *BMC Public Health*, 13: 271. [↑](#endnote-ref-9)
14. . Silva DS, Gibson JL, Robertson A, et al. (2012). Priority setting of ICU resources in an influenza pandemic: a qualitative study of the Canadian public's perspectives. *BMC Public Health*, 12: 241. [↑](#endnote-ref-10)
15. . Disability Rights Education & Defense Fund. (2020). Applying HHS’s Guidance for States and Health Care Providers on Avoiding Disability-Based Discrimination in Treatment Rationing. Available on the [Disability Rights Education & Defense Fund website](https://dredf.org/avoiding-disability-based-discrimination-in-treatment-rationing/). [↑](#endnote-ref-11)
16. . The Arc, Judge David L. Bazelon Center for Mental Health Law, Center for Public Representation, Autistic Self Advocacy Network. (2020). Evaluation Framework for Crisis Standard of Care Plans. Available on the [Bazelon Center for Mental Health Law website](http://www.bazelon.org/wp-content/uploads/2020/04/4-9-20-Evaluation-framework-for-crisis-standards-of-care-plans_final.pdf). [↑](#endnote-ref-12)
17. . Kirby J. (2010). Enhancing the fairness of pandemic critical care triage. *Journal of Medical Ethics*, 36(12): 758-761. [↑](#endnote-ref-13)
18. . UNESCO. (2006). Universal declaration on bioethics and human rights. Paris. June 2006. Available on the [UNESDOC Digital Library](http://unesdoc.unesco.org/images/0014/001461/146180E.pdf). [↑](#endnote-ref-14)
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25. Section one of the Ontario Human Rights Code recognizes that “every person has a right to equal treatment with respect to services, goods and facilities, without discrimination because of race, ancestry, place of origin, colour, ethnic origin, citizenship, creed, sex, sexual orientation, gender identity, gender expression, age, marital status, family status or disability.” [↑](#footnote-ref-6)
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35. It is well established that clinicians implicitly make judgements about patients based on aspects of their social identity (e.g., Indigeneity, race), even when they believe that they do not. One evidence-based strategy to mitigate this potential harm is cultural safety training, which is now available in all provinces (e.g., see [www.sanyas.com](file:///C%3A%5CUsers%5Cmaxwe%5CDesktop%5CFootnote%20Endnote%20experiment%5Cwww.sanyas.com)). There are also particular workforces where cultural safety training is mandatory, including all clinicians in British Columbia, and all employees in the Ontario Public Service. For cultural safety training in Ontario, see the [Ontario Cultural Safety Program](https://soahac.on.ca/ics-training/). See also: Churchill M, Parent-Bergeron M, Smylie J, Ward C, Smylie D, Firestone M. (2017). Evidence Brief: Wise Practices for Indigenous-specific Cultural Safety Training Programs. Well Living House Action Research Centre for Indigenous Infant, Child and Family Health and Wellbeing, Centre for Research on Inner City Health, St. Michael’s Hospital. [↑](#footnote-ref-8)
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55. Ontario’s Ministry of Health has developed a health equity impact assessment “to support improved health equity, including the reduction of avoidable health disparities between population groups.” It can be accessed on the [Ontario Ministry of Health website](http://www.health.gov.on.ca/en/pro/programs/heia/). [↑](#footnote-ref-13)