Critical Care Triage
Pandemic or Disaster

Critical Care Triage during Pandemic or Disaster- A Framework for Alberta

Alberta Health Services
Strategic Clinical Networks™

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The Critical Care Provincial Oversight Triage Committee has prepared the Critical Care Triage during Pandemic or Disaster- A Framework for Alberta in partnership with Critical Care Strategic Clinical Network ™.

Contact

For more information, please contact:

Dr. Curtis Johnston, Deputy Zone Medical Director, Edmonton Zone

Dr. Dan Zuege, Senior Medical Director Critical Care Strategic Clinical Network™

Nancy Fraser, Senior Provincial Director Critical Care Strategic Clinical Network™

Abbreviations

AB	Alberta
AH	Alberta Health
AHS	Alberta Health Service
CMPA	Canadian Medical Protective Association
CTAS	Canadian Triage and Acuity Scale
CEO	Chief Executive Officer
CC SCN	Critical Care Strategic Clinical Network
CCU	Critical Care Unit
ECC	Emergency Coordination Centre
ED	Emergency Department
EFAP	Employee & Family Assistance Program
ELT	Executive Leadership Team
ECLS	Extracorporeal Life Support
Fig.	Figure
GCD	Goals of Care Designation Order
IOC	Integrated Operations Centre
ICU	Intensive Care Unit (Adult or Pediatric)
IMV	Invasive Mechanical Ventilation
R1	Medical Care including ICU admission if required, with intubation & chest compressions
R2	Medical Care including ICU admission if required, with intubation but without chest compressions
R3	Medical Care including ICU admission if required, without intubation or chest compressions
MSOFA	Modified Sequential Organ Failure
MRHP	Most Responsible Health Practitioner
OR	Operating Room
PHN	Personal Health Number
PCTT	Point of Care Triage Team
PACU	Post Anesthetic Recovery Unit
PARR	Post-Anesthetic Recovery Room
PELOD-2	Pediatric Logistic Organ Dysfunction-2
pSOFA	Pediatric Sequential Organ Failure Assessment
PTL	Provincial Triage Lead
RAAPID	Referral, Access, Advice, Placement, Information & Destination
RN	Registered Nurse
SOFA	Sequential Organ Failure Assessment
TC	Triage Coordinator

Introduction

In the event of a pandemic or disaster, preparedness is crucial. It is essential to guide health care professionals in managing both the increase in patient volume and demands that may exceed available patient care resources. As such, Alberta Health Services has developed protocols to guide the allocation of critical care resources should the provincial health care system be overwhelmed and thus unable to meet the demand of the current COVID-19 pandemic, future pandemics, or any other predictable health crisis. The triage protocols create an objective process to guide health care professionals in making the difficult determination of how to allocate resources to critically ill adult and pediatric patients when there are not enough critical care resources for everyone. Triage is not about withholding care from patients, it is about providing the best care to the greatest number of people. These protocols ensure that such decisions are made in an ethical, fair, and structured way and not ad hoc. The protocols ensure that a fair and equitable process is applied to all people of Alberta.

Triage is not about withholding care from patients, it is about providing the best care to the greatest number of people.

Background

The Critical Care Triage protocol has been developed by the Provincial Critical Care Triage subgroups (adult and pediatric), as requested by the Provincial Critical Care Pandemic (COVID-19) Committee in March, 2020. The triage subgroups included provincial multidisciplinary representation including ICU intensivists, emergency physicians, registered nurses, operational leaders, and clinical ethicists. This work has been facilitated by the Critical Care Strategic Clinical Network™ and subsequently updated and operationalized by the Provincial Triage Oversight Committee.

The process of development included extensive consultation with AHS clinical ethics to embed ethical guiding principles, review of literature and existing protocols in other jurisdictions, and lastly consultation with patient and family advisory and medical specialist groups.

Ethical Guiding Principles

Critical care triage is guided by substantive ethical principles in determining who should receive critical care resources when they remain absolutely scarce despite attempts to increase their availability. The main principle anchoring the allocation and triage process is **Capacity to Benefit**. The best action when demand for absolutely scarce critical care resources exceeds supply is to save the greatest number of lives possible. This entails prioritizing admission of patients who have a substantially better chance of surviving after receiving critical care. Incremental survival differences are based on medical assessments of the patient only and not personal or group characteristics of the patient (i.e. age, sex, race, disability, national or ethnic origin, colour, religion).

Sometimes several patients may be assessed to have an equal likelihood to benefit from critical care. In these circumstances, **Formal Equality** will be used as a supplementary substantive principle. All individuals have equal moral worth. When they have approximately equal likelihood to benefit and to survive, they ought to have the same access to healthcare resources that they need. Therefore, if distinctions cannot be made between patients' capacity to benefit from critical care, they will be given an equal chance of receiving it. This will be determined by admitting them to intensive care on a first come, first-served basis: priority is given in the order that patients arrive to a hospital. If two or more patients with equal survival likelihood arrive at the same time, random selection will be used.

In addition to principles that affect the substantive outcome of who receives critical care in triage, this protocol follows principles to ensure the triage process is fair. These procedural principles include Publicity, Relevance, Revisability, and Enforcement. More information on these principles is available in Appendix A: Ethical Considerations.

Literature Review

The process of development of the triage protocols involved an extensive review of literature, existing protocols from other jurisdictions, and a multidisciplinary panel of review which focused specifically on the use of the Sequential Organ Failure Assessment (SOFA) score in past publications and use within published protocols in adult populations. As no Canadian protocol exists at this time for Pediatric Critical Care Triage, an Alberta specific tool has been developed

utilizing the best available literature and supports within the Adult and Pediatric environment; and with the input of Health Professionals, Ethicists and the Family Advisors for Pediatric Critical Care within the province. See Appendix B.

Ideally triage would begin by identifying critically ill patients with an anticipated 1 year mortality of >/= 90%. However, the literature informed that thresholds for triage will need to be established at mortality rates lower than 90% and that overall prognosis of recovery in the determination of eligibility to receive critical care should be included.

To more accurately predict mortality and outcomes that will assist in optimization of critical care resources a specific, rule-based process will be followed. Thus, determining eligibility for critical care in Alberta will involve a three-step process:

1. Identify and confirm the Goals of Care Designation Order (GCD) - Patient must have GCD of Resuscitative Care Designations R1 or R2.
2. Identify a clear need for critical care support – defined as:
    - Adult: Need for either invasive mechanical ventilation (IMV) and/or inotropes/vasopressors
    - Pediatric: Any organ dysfunction or condition that cannot be safely managed on an inpatient pediatric unit
3. Assess for exclusion criteria- corresponding to the current active phase of triage and appropriate age based criteria.

Consultations

Importantly, consultation with AHS Health Advisory Councils and the Patient and Family Advisory groups have been completed in collaboration with AHS Communications. These sessions included representatives of the Family Advisory Councils of the Alberta Children's and Stollery Children's Hospitals. Additional consultation regarding neuromuscular conditions was undertaken with the Neurosciences, Rehabilitation and Vision Taskforce and adult/ pediatric neurology leaders. Additionally representatives of Alberta disability and autism advocacy groups were engaged to further ensure that Albertans will not be discriminated against through this process. Both protocols have also been reviewed by AHS Clinical Ethics Services, AHS Health Law and the Canadian Medical Protective Association (CMPA). Feedback from all of these consultations has been incorporated.

Overview of Critical Care Triage

Activation of Critical Care Triage may be preceded by a rapid rise in patient cases coupled with a situation where Public Health measures are unable to contain a pandemic or similar health crisis. If capacity for managing a critical care surge has been maximized, load levelling and diversion options are exhausted, and there are still inadequate critical care resources in the system to meet the current and anticipated need, **Critical Care Triage may be activated on direction of the AHS CEO in consultation with the AHS Executive Leadership Team (ELT).**

When activated the triage protocol will be utilized in all health care facilities and critical care units in Alberta to prioritize patients who have the greatest likelihood of overall survival. Thus, criteria for limiting access to critical care resources are focused on ensuring access is maintained for the patients who are most likely to have a positive outcome with the least use of critical care resources, either by intensity or duration.

A team approach to triage provides support to health care practitioners and patients that will facilitate a more consistent process and resulting decisions.

Activation phases and scope of the Critical Care Triage protocol:

- Phases of triage activation and deactivation is expected to occur in a graduated fashion with two phases of triage. The decision to escalate or to deescalate from a phase of triage will be decided by AHS CEO, and ELT, and will be informed by system wide indicators and triggers.
    - Phase 1- Eligibility assessment for entry into Critical Care are based on 1 year expected mortality of approximately > 80 %.
    - Phase 2- Eligibility assessment for entry into Critical Care and a discontinuation assessment for current critical care patients. Assessments are based on 1 year expected mortality of approximately > 50%.

      Note: Pediatric Triage will be considered only in Phase 2

The protocol is provincial in scope and applies to:

- All health facilities and critical care units within Alberta.

- All patients regardless of the etiology of their illness (i.e. pandemic or non-pandemic patients):
    - Age 18 years or over, adult protocol applies.
    - Age less than 18 years, pediatric protocol applies.
- Physicians, nurses, caregivers and administrators who will follow the triage protocol despite situations where withholding or withdrawing care may not in the best interests of individual patients.

These triage protocols, when activated, should be calibrated to the degree of demand and availability of critical care resources across the province in order to limit the possibility that a patient will be denied critical care resources unnecessarily. Considering that the pediatric population may be distinct from the adult population, activation level triggers may occur at different times for each population. However, for consistency, the activation level architecture is the same for both pediatric and adult care.

Pandemic or disaster stage and corresponding Critical Care Triage phase:

- **Stage 1- Minor Surge-** Usual critically ill patient volumes are exceeded. Existing resources are insufficient requiring extended work hours, cancellation of vacations, and utilization of critical care trained staff from other critical care areas (other ICUs, CCU, OR, PARR). *May include surge into recovery rooms.*
- **Stage 2- Moderate Surge-** Usual critically ill patient volumes are exceeded. Moderate numbers of critically ill patients are presenting regularly, and significant targeted strategies must be implemented to meet demand. This requires utilization of additional staff resources, reintroduction of previously trained critical care staff, and utilization of staff from monitored care areas, utilization of non-critical care trained staff. *Surge into recovery rooms, subspecialty ICUs and delays in transfer of patients from ED.*
- **Stage 3- Major Surge-** Usual critically ill patient volumes are exceeded. A large number of critically ill patients are presenting regularly and all feasible strategies must be implemented to attempt to meet demand. Expanding staff utilization to include increased numbers of non-critically care trained nursing staff, and allied health staff within a modified team model of care. Provincial occupancy of all available critical care surge beds is 90% or greater. **Phase 1 Triage may be required.**

Phase 1- Eligibility based on 1 year expected mortality of approximately > 80%.

- **Stage 4- Large Scale Surge-** ***Critically ill patient demand exceeds available capacity and human resources***. All feasible strategies to maximize staffing resources, staffing functions, supplies and equipment and access to invasive mechanical ventilation will have been used prior to initiation of this triage phase. Provincial occupancy of available critical care surge beds is 95% or greater. **Phase 2 Triage may be required.**

  Phase 2- Eligibility assessment for entry into Critical Care and discontinuation assessment for current patients. Assessments are based on 1 year expected mortality of approximately > 50%.

Pediatric Triage will be considered only in Phase 2

Guiding Principles and Assumptions

Critical Care Triage is based on the following guiding principles and assumptions:

- Critical Care Triage would be activated during a pandemic or health crisis only at a time when resource demand outstrips the health systems' ability to meet the need. Critical Care Triage should not be used to guide allocation decisions in other clinical contexts.
- Mitigation measures, such as load levelling, transferring patients, personnel, equipment and medications between sites within the same zone, and between zones across the province, will have been exhausted prior to triage activation. Therefore the application of the triage protocols in Alberta will be applied provincially.
- The resources available within AHS and Covenant Health facilities are assumed to comprise a unified provincial resource where sharing of resources will occur at any stage.
- Goals of Care Designation (GCD) discussions should take place prior to triaging patients when-ever possible and deemed reasonable and appropriate by patients, families and caregivers. The most responsible health practitioner (MRHP) is required to review the GCD, and if necessary, initiate Advance Care Planning conversations.
- A team approach is the foundation of Critical Care Triage, assisting in difficult decision-making and minimizing moral injury and burnout amongst healthcare professionals and leaders burdened with the responsibility of triage.
- Consent from patient/family subject to triage will not be required for decisions of withholding or withdrawing care in accordance with the triage protocol while the protocol is active.

Clinical considerations:

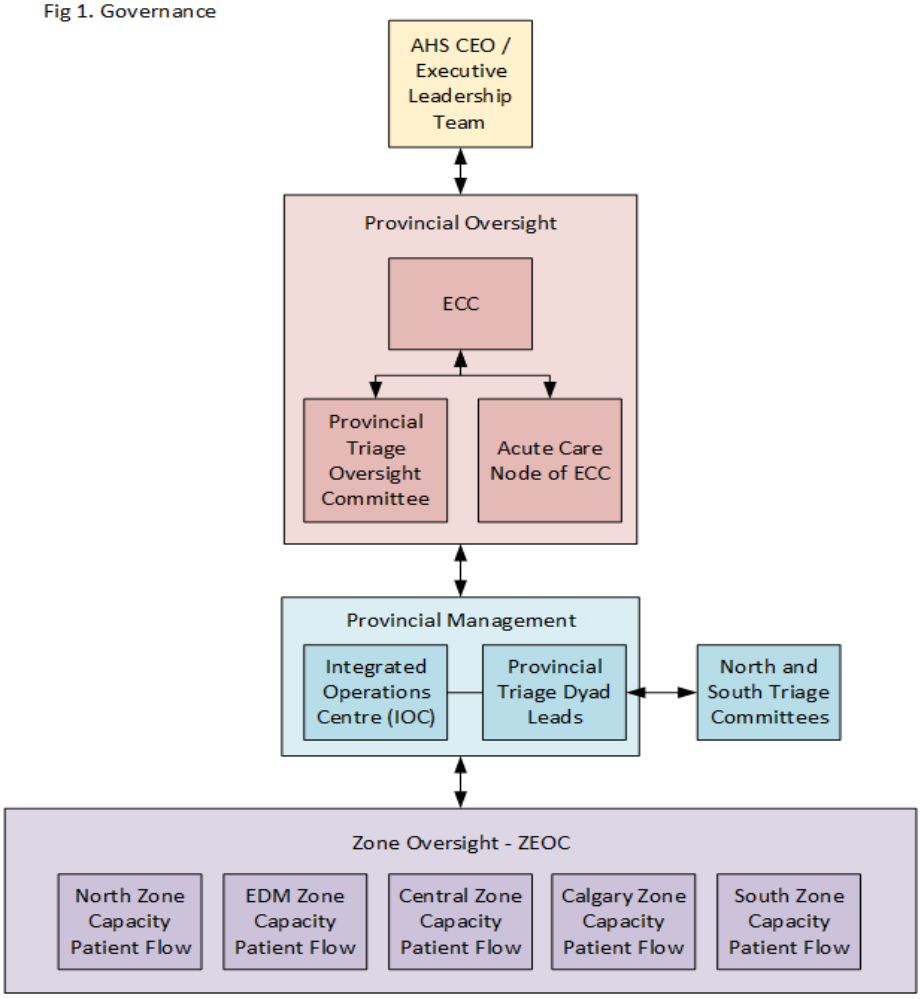
- Patients who require emergency/urgent surgery and have a certain or high likelihood of requiring critical care will be triaged before surgery. Triage will be performed as per the eligibility and exclusion criteria assessment in this protocol.
- Patients who require emergency/urgent surgery and have a moderate to low likelihood of requiring critical care will be triaged in the post anaesthetic recovery unit (PACU). Admission to ICU will be subject to the triage eligibility assessment and will not be guaranteed.
- During active triage, admission to ICU constitutes a trial of critical care only. Eligibility for continued critical care will be reassessed regularly as determined by the protocol.
- During active triage, the allocation of a critical care bed through the triage process infers acceptance of that patient into the designated critical care unit.
- In the absence of clear evidence that an exclusion criterion applies, assume that it does not apply.
- In all cases, an individualized review of each patient's clinical condition should be performed. If time does not permit for a complete assessment for eligibility and exclusion criteria due to the acuity of the patient's illness, clinicians should, whenever possible, continue to follow the standard of care that would exist in non-triage situations. A full eligibility assessment can be completed once the patient has become more stable.
- Clear and transparent communication to support patients/families regarding triage status, including the availability of resources and options to align care plans with the known wishes and values of patients will be provided. All patients, regardless of triage status or clinical presentation, deserve access to care, including appropriate medical treatments to maximize outcomes, and support for comfort and symptom management as required.
- The critical care triage protocol adds a non-standard assessment and eligibility determination for critically ill patients. Critical care triage does NOT replace or substitute the current standard of care assessments, discussions and disposition decisions that will continue to routinely occur.

Triage Governance

In making the difficult determination of how to allocate resources to critically ill adult and pediatric patients in Alberta a province wide, collaborative approach across multiple sites/service, and zones will be required.

To ensure adherence to the principles of triage in Alberta, a governance structure linked with the Emergency Command Center will provide accountability and reinforce decision-making. The governance structure (Fig.1) upholds the core principles, and processes that will enable effective, timely and collaborative management of critical care provincial resources during triage activation and govern the application of the protocols.

Fig 1. Governance



Provincial Triage Oversight Committee

The Provincial Triage Oversight Committee has been established by AHS to provide leadership and support to the process of assigning priority for access to limited available resources and the decisions regarding which patients get access to that resource when the demand for critical care support is greater than the available resources – beds, ventilators, life-saving equipment, health care workers, and medicines.

Responsibilities

- Lead the establishment of the North and South Triage Committees and Triage Coordinators.
- Ensure the development and execution of appropriate processes and procedures for the critical care triage process in the province of Alberta as required.
- Identify and address any unwarranted variation in the application of the triage protocol and activity of the North and South Triage Committees to ensure a consistent provincial approach.
- Update the Triage criteria based on emerging best evidence within the Alberta experience and through ongoing literature assessment.
- Identify risks and issues with the implementation of the triage protocol and propose mitigation strategies and establish solutions as proactively as possible.
- Identify barriers to the execution of the Triage protocol and make recommendations to ECC, Clinical Operations and ELT to address these barriers as needed.

Provincial Triage Leads

The Provincial Triage Lead Dyad will provide oversight of critical care triage when activated. This senior leadership dyad's role is to ensure situational awareness of available critical care resources, the prioritized provincial bed queue and conflicts within Point of Care Triage Teams (PCTT). They will support effective, fair and timely decisions by the North/South Committees and report challenges/barriers and updates to the Triage Oversight Committee. They will collaborate with Provincial IOC to inform the management of the provincial bed queue.
This dyad will be appointed by AHS ELT and operate in 12 hours shifts 24/7 for the 72-hour window leading up to critical triage activation and for 72 hours after deactivation.

Background and Appointment

The dyad will consist of:

- One senior level administrator with relevant knowledge of critical care.
- One senior medical leader with relevant knowledge of critical care.
- These roles may be delegated to persons within the IOC.

Responsibilities

- Ensure situational awareness of available critical care resources within the province and work with ECC/ZEOC's to manage patient movement.
- Support effective, fair and timely decisions by the North/South Committees and report challenges/barriers and updates to the Provincial Triage Oversight Committee.
- Verify that "In ICU Triage" has been completed within a four-hour window after Phase 2 activation.
- The senior administrator lead will chair the North and South Committee meetings
- Perform randomization to determine bed prioritization when required.
- Collaborate and inform bed placement & transport of critical care patients with the Provincial IOC.

Provincial Integrated Operation Centre (IOC)

If activation of the Triage protocol appears imminent, a Provincial IOC will be stood up within the ECC structure to maximize health system efficiency provincially, enabling the primary goal of Triage activation; providing the best care to the greatest number of people.

Currently, an IOC exists within the Edmonton Zone. The structure of the Edmonton IOC will be reproduced provincially to provide situational awareness based on real time data and connection to zone capacity leads (see Fig.2 and Fig. 3)

Fig.2 Provincial Bed Management

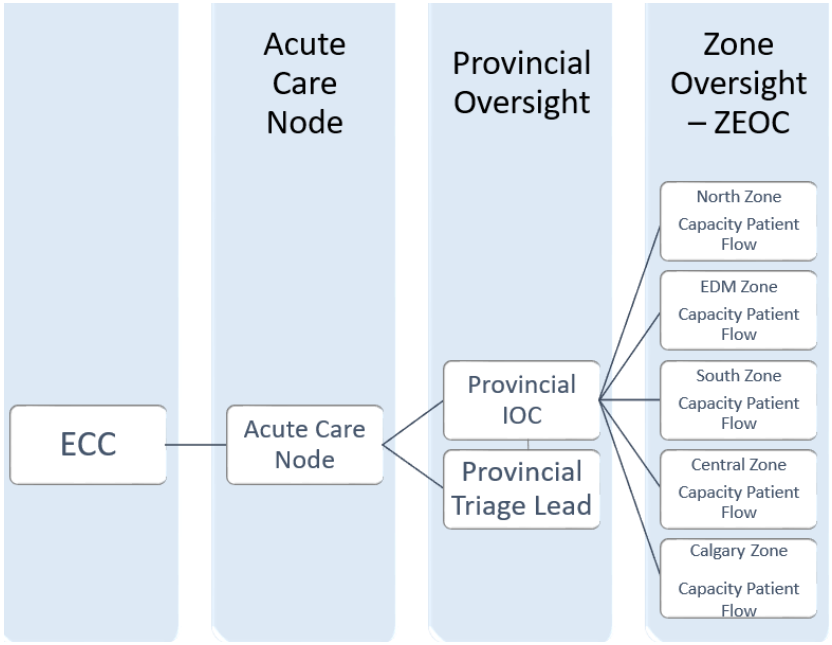
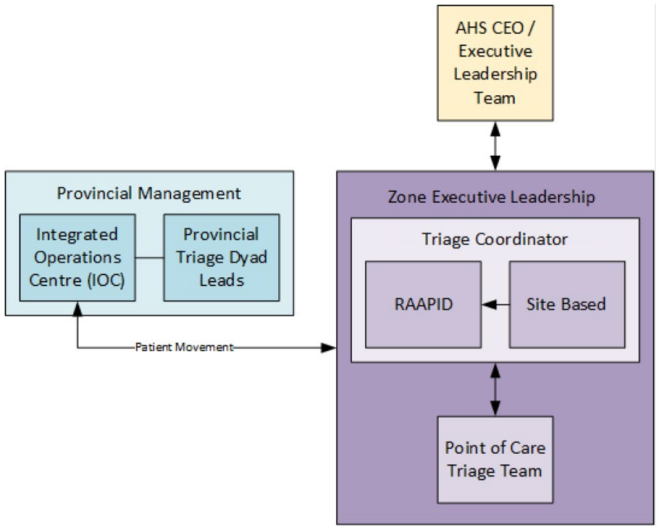


Fig. 3 Integrated Triage Process



The provincial IOC dyad (senior operations lead and physician lead) will work closely with the Provincial Triage dyad and the ECC Acute Care node to monitor and manage flow of patients eligible for critical care admission recognizing that the availability of critical care beds is contingent upon balancing the demands across the entire system.

Responsibilities of the IOC Dyad

- Support optimal flow across the health system through the effective and efficient use of resources.
- Foster the timely and efficient transfer of patients across the health system.
- Manage and lead a team accountable for organizational patient flow and enable effective coordination and communication between all team members to develop care transition plans and facilitate patient placement.
- Foster strong relationships and engage key stakeholders to deliver an efficient transfer process, ensuring ease in accessing key services.
- Oversight of clinical decision making related to flow. The role has a matrix reporting structure that will indirectly oversee several cross-functional areas.
- Work to maximize allocation of ICU beds for eligible patients waiting admission as informed by triage prioritization list, patient stability, and available resources.
- Apply and enforce mitigation strategies as required.

North and South Critical Care Triage Committee

Role Description:

The North and South Triage Committees will review cases when the PCTT have not reached unanimity regarding the application of the triage protocol and applicable exclusion criteria.

Background and Appointment

- If Triage is imminent during a pandemic or disaster in Alberta, members of the North and South Triage Committee will be appointed by the Provincial Triage Oversight Committee.
- The Provincial Triage Dyad will provide the administrative oversight for the North and South Triage Committees. Two committees will exist within the province to manage workload. They will be aligned geographically as follows:

  - North for patients north of Red Deer, Alberta and
  - South for patients in and south of Red Deer, Alberta.
- Each of these committees will include the following voting members:
  - Two senior clinical physician(s) with relevant knowledge of emergency, trauma and/or intensive care medicine who are not delivering clinical care during the time served on the panel.
  - A senior nursing or administrative leader (director, manager).
  - A public representative.
  - The medical Provincial Triage Oversight Lead.
  - The administrative Provincial Triage Oversight Lead.
  - If a pediatric patient review is required, appropriate expertise will be established if not present.
- Public members will be part of the North and South Committee composition. If it is determined that the North and South committees must be struck, AHS Engagement and Patient Experience will be responsible for the recruitment of these individuals.
- Committee's will be required to be available 24/7 (in 12 hour shifts) during triage activation and will be populated accordingly to facilitate this requirement. Meetings of the committee will be coordinated virtually through the IOC/RAAPID.
- The committee will not include any health care providers directly involved in the patient's care. In the event of any perceived conflict, the Provincial Lead may recommend that the opposite committee complete the review. This may occur most often with a pediatric patients reviews.

Referral, Access, Advice, Placement, Information & Destination (RAAPID)

RAAPID will provide multiple functions when critical care triage is activated. As the centralized call centre within AHS, RAAPID provides the single point of contact for physicians and health care providers to access appropriate and timely advice, referral, admission, repatriation and consultation for patients. During active triage, RAAPID will function in the role of triage coordinator for all rural and regional sites in addition to being the main conduit for coordinated patient flow in collaboration and consultation with the Provincial IOC.

Responsibilities

- Arrange transport for patients with final bed allocation directed by the IOC in collaboration with the Provincial Triage Lead Dyad.
- Assemble North and South Committees as required.
- Provide multiple functions such as being part of the PCTT as required/requested and the role of triage coordinator. This TC role will be fulfilled by RAAPID for all rural and regional sites.
- Provide clinical support for Triage Coordinators and PCTTs and arrange consults and referrals as required.
- Receive, gather, and document patient information from on-site PCTT and TC to validate triage decisions and ensure there is unanimity.
- Maintain the database for patients eligible for critical care along with the prioritization queue.
- Support 'In-ICU' discontinuation criteria application as required and validate daily completion.

Triage Coordinator

Role Description

The Triage Coordinator (TC) plays a central coordination and facilitation role during Critical Care Triage. TCs will assist the PCTT with patient scoring and assessment (if required) when critical care is requested. They may also act as one of the members of the PCTT if required. Triage Coordinators provide a coordination function, within a site or zone, to assist and support the various triage requirements and processes either locally or remotely. Within all rural and regional sites, RAAPID will provide the role of triage coordinator. To manage the larger assessment needs within larger urban sites, site-specific Triage Coordinator(s) may be added in addition to RAAPID. The TCs are the conduits to the North and South Triage Committees in the event that a triage determination cannot be reached by the PCTT.

Background and Appointment

- A pool of triage coordinators will be required to fulfill this function provincially over a 24/7 period for the duration of Phase 1 and 2 triage activation and subsequent re-launch.
- Triage coordinators will need a minimum of 3- 5 years critical care or emergency experience. TCs practicing within a pediatric setting or assisting with triaging pediatric patients must have sufficient pediatric experience.
- Strong organizational and critical thinking skills are required.
- There will be a pool created to cover specific site(s) within a zone as volume dictates with an ability to flex TC coverage to RAAPID if needed. Site specific Triage Coordinators will be determined zonally by Executive Directors or their delegates.

TC Responsibilities:

- Operate 24/7 for the duration of the triage activation and subsequent re-launch.
- Receive and respond to all requests for critical care.
- Receive clinical information and documentation provided by the PCTT for every patient triaged as eligible for critical care.
- Assist the PCTT, when requested, or participate as a PCTT member to assist with initial triage and determination of both inclusion criteria and Phase 1 & Phase 2 exclusion criteria.

  - The Triage Coordinator will only be expected to assist within their individual scope of practice.
  - This may include, but is not limited to, providing access and assistance with scoring tools required for the triage determination, accessing Netcare for previous medical history, providing and seeking of additional information as required.
  - This may happen prior to, or in conjunction with, the ICU physician consultation.
  - Remotely assist with assessment and scoring of patients at a referral hospital where a triage coordinator is not present or the PCTT is unable to complete this task.
- Facilitate referrals to the North or South Triage Committee in consultation with the Provincial Triage Lead when there is disagreement between the PCTT members ensuring that all information shared has been blinded prior to sending.
- Present each referral case to the North or South Committee and assist in obtaining any additional information requested.

In ICU Triage Team

Role Description:

The In ICU Triage Team has a key role during Phase 2 of Critical Care Triage for both adult and pediatric populations. During active triage a patient's admission to ICU constitutes a trial of critical care only, and their eligibility for continued critical care will be reassessed daily. The In ICU team are responsible for application of the specific discontinuation criteria for patients receiving critical care. Critical Care Triage is in addition to current standards of practice whereby discussions may occur with families around withdrawal of life sustaining measures when clinically indicated. Triage decisions are team based. Decisions to discontinue critical care ***are not subject to consent or appeal***.

Background and Appointment:

Each In ICU Triage Team will include at least two critical care providers,

- One of which must be an ICU attending.

- A Registered Nurse (RN) or Nurse Practitioner with relevant knowledge of critical care can be utilized as a provider. This may be the patient's bedside nurse or a unit charge nurse.
- Sites may delegate other RNs or seek additional support through their site-specific Triage Coordinator or RAAPID.

Responsibilities:

- On the initial day of Phase 2 Critical Care Triage activation, the Medical Director (or delegate in the case they are the ICU attending that week) of each ICU will participate in the first round of "In ICU" triage.
- All patients admitted for critical care will be assessed daily before 10am by the In ICU Triage Team to determine if they are ***eligible for continuation of critical care***.
- In ICU triage will consist of daily assessments against discontinuation criteria and ongoing need for invasive mechanical ventilation and/or inotropes/vasopressors.

Point of Care Triage Team

Role Description

Point of Care Triage Teams (PCTT) function to apply the triage protocol and make eligibility for critical care determinations when triage has been activated. PCTT may exist within any clinical program but are most likely required in each of the AHS emergency departments and acute care facilities across the province.

At the point that a patient's condition warrants consideration of critical care admission, the PCTT will be responsible for applying the triage protocol and making a determination of eligibility for critical care.

Point of Care Triage Team Composition

Each PCTT should include:

- Two clinical physicians:
    - One who is the patient's most responsible physician and;

  - One with relevant knowledge of emergency, trauma and/or intensive care medicine and who is not currently involved in the patients care.
    The second clinical physician may be within the site or accessed remotely via RAAPID.

- One Registered Nurse:
  - A Registered Nurse (RN) with relevant knowledge of emergency or critical care, functioning within their own scope of practice. Those within a pediatric setting or assisting with triaging pediatric patients must have sufficient pediatric experience.
- As staffing requirements allow, clinical programs can either provide this team member or access the site-specific Triage Coordinator or the RAAPID Triage Coordinator to perform this function.
  - Clinical programs may assign PCTT team members for the duration of their shifts or as needed based on their involvement with the patient's care.
  - Further support for the PCTT's can be provided by designated Triage Coordinators (TC) who can assist with triage determination.
  - **Within regional and rural sites it is recognized that there staff with pediatric clinical experience may be limited. TCs may be utilized in these situations.**

<u>Point of Care Triage Team Responsibilities</u>

- Confirm that critical care triage has been activated, and which phase of critical care triage is active (Phase 1 (adult only) or Phase 2).
- Communicate to patient/family that critical care triage has been activated and may impact eligibility for critical care.
- Apply the triage protocol and determine if the patient is eligible or ineligible for critical care. For pediatric patients, the final determination for critical care eligibility will involve consultation with the PICU.
- Document all assessments, determinations and decisions resulting from application of the triage protocol including rationale for decisions.
- Each PCTT member is required to sign the triage decision document.
- If triage activation is imminent and/or during triage activation, busier services (e.g. medicine), may find it more efficient to complete the triage assessments at the point of admission.

Process and Application of Critical Care Triage

The following processes are designed for application during the COVID-19 pandemic.
The critical care triage protocol adds a non-standard assessment and eligibility determination for critically ill patients. Critical care triage does NOT replace or substitute the current standard of care assessments, discussions and disposition decisions that will continue to routinely occur.
Once confirmation of activated Critical Care Triage is received from AHS CEO and ELT and the corresponding Phase of triage has been verified, the following steps will occur:

Triage for patients before admission to Critical Care:

Step 1: Identify and confirm the Goals of Care Designation Order (GCD) for the patient, as per usual practice.

Step 2: Identify a clear need for critical care support – defined as:

- Adult - need for either invasive mechanical ventilation (IMV) and/or inotropes/vasopressors
- Pediatric - any organ dysfunction or condition that cannot be safely managed on an inpatient pediatric unit

If the patient ***meets eligibility criteria*** - proceed to Step 3

Step 3: Assess for Phase 1 (adult only) or Phase 2 exclusion criteria for the current active phase of triage and document findings.

Step 4: Assign a triage outcome (eligible OR ineligible for critical care) based on the above assessment of eligibility and exclusion criteria

- In the event that unanimity cannot be reached on the eligibility/exclusion criteria assessment, the on-site Triage Coordinator (TC) or RAAPID TC will elevate the case to the North or South Triage Committee via the Provincial Dyad leads for final decision.

Phase 2 Triage

Step 5: Apply and determine provincial prioritization for eligible patients for further entry into Critical Care. A provincial queue may commence.

Step 6: Allocate Critical Care beds for eligible patients waiting admission.

- The triage prioritization list, patient stability, and available resources will inform this.
- Patients will first be prioritized for admission to critical care within the zone they reside. If critical care beds are not available within that zone, the patient may be sent to any available critical care bed in Alberta. Movement of a patient within the province does not require consent of the family.

Additional parameters for prioritization:

- If unable to differentiate patients needing critical care based on prognosis and there are two or more patients who meet eligibility, and the available resources cannot support this, the first come, first served principle will be applied. The time stamp (date/time) of the first presentation to a health care facility for the current acute illness will be used to assign priority in the queue. This also applies to inpatients that deteriorate in hospital and are consulted for critical care admission/support and for patients transferred between facilities i.e. the date/time of initial presentation will also be used to determine all patient placement in the queue.
- For patients presenting at a hospital other than the one the patient is currently present at, the date/time from the first hospital the patient presented to will be used to assign priority.
- When intra-provincial transfer is contemplated, the time stamp criteria will be applicable only when the time required for transfer is not materially important for survivability for the one patient compared to the other patient.
- If discrimination by time stamp of triage for critical care cannot be determined or is equivalent, then random selection will be applied. Random selection will only be used if clear prioritization cannot be determined.

Patients currently receiving Critical Care:

During Phase 2 of Critical Care Triage, a patient's admission to ICU constitutes a trial of critical care only, and their eligibility for continued critical care will be reassessed daily. Critical Care Triage is an addition to current standards of practice whereby discussions may occur with families around withdrawal of life sustaining measures when clinically indicated. Triage decisions are team based. Discontinuation of critical care ***is not subject to consent or appeal***.

- In-ICU Triage Team will include:

  - At least two critical care providers, one of which must be an ICU physician.
  - A Registered Nurse (RN) or Nurse Practitioner with relevant knowledge of critical care can be utilized as a provider.

- On the initial day of Phase 2 Critical Care Triage activation, the Medical Director (or delegate in the case they are the ICU attending that week) of each ICU will participate in the first round of "In-ICU" triage. The Provincial Triage Lead will be responsible to confirm the application of daily "In-ICU" Critical Care Triage.
- All **ADULT** patients currently receiving critical care when Phase 2 Triage is activated, will be assessed daily for discontinuation criteria and the ongoing requirement for invasive mechanical ventilation and/or inotropes/vasopressors. ProVent 14 score will only be assessed should their current day of mechanical ventilation be 14 or greater (See Table 1 for more detail).
- All **PEDIATRIC** patients currently receiving critical care when Phase 2 Triage is activated, will be assessed daily for discontinuation criteria, PELOD-2 scoring, and the ongoing requirement for critical care support. Starting day 14 of ICU stay (admission day = day 0), patient will be INELIGIBLE for continuation of critical care if:
  - PELOD-2 score is worsening and is >= 14
    - Two scores (24 hours apart) whereby the second score is worse than the prior score. This is confirmation of a worsening trend.
  - A PELOD-2 score of >= 18
    (See Table 2 for more detail)
- When patients are ***ineligible for continuation of critical care***, timely de-escalation (within 24hrs) of critical care followed by transition out of critical care shall occur. Medical or palliative care will be provided outside of critical care as appropriate.

Table 1a

PHASE 1 TRIAGE- ADULT		
GCD not R1 or R2. **AND/OR** Does not require invasive mechanical ventilation and/or inotropes/vasopressors **AND/OR** Patient presents with/has one or more Phase 1 triage exclusion criteria.		**INELIGIBLE FOR CRITICAL CARE** Medical or palliative management on inpatient unit.
GCD R1 or R2 **AND** Requires invasive mechanical ventilation and/or inotropes/vasopressors **AND** Patient does not present with/have any Phase 1 exclusion criteria.		**ELIGIBLE FOR CRITICAL CARE** Prepare for transfer to ICU. Physiologic stability for transfers out of a facility may need to be evaluated.

Table 1b

PHASE 2 TRIAGE- ADULT		
GCD not R1 or R2. **AND/OR** Does not require invasive mechanical ventilation and/or inotropes/vasopressors **AND/OR** Patient presents with/has one or more Phase 2 triage exclusion criteria. **AND/OR** Age >= 60, AND SOFA >= 16 Age < 60, AND SOFA >= 18 **In- ICU:** Patient meets/has one or more discontinuation criteria for critical care support. **AND/OR** No longer requires invasive mechanical ventilation and/or inotropes/vasopressors **AND/OR** ProVent 14 score >/= 4 (if >=14 days of mechanical ventilation)		**INELIGIBLE FOR CRITICAL CARE** Medical or palliative management on inpatient unit. **INELIGIBLE for CONTINUATION of CRITICAL CARE** Medical or palliative management on inpatient unit.
GCD R1 or R2 **AND** Requires invasive mechanical ventilation and/or inotropes/vasopressors **AND** Patient does not present with/have any Phase 2 exclusion criteria. **In- ICU:** Patient does meet any discontinuation criteria **AND** Continues to require invasive mechanical ventilation and/or inotropes/vasopressors **AND** ProVent 14 score <4 (If mechanical ventilation >=14 days)		**ELIGIBLE FOR CRITICAL CARE.** Prepare for transfer to critical care. Patient will be placed in prioritized provincial critical care admission queue. Physiologic stability for transfers out of a facility may need to be evaluated. Assessment for continued eligibility will be done prior to transporting a patient to a critical care bed. **ELIGIBLE for CONTINUATION of CRITICAL CARE**

Additional information on the triage criteria can be found in Appendix B.

Table 2

PHASE 1 TRIAGE- PEDIATRIC		
No Pediatric Triage		
PHASE 2 TRIAGE- PEDIATRIC		
GCD not R1 or R2 **AND/OR** Have any organ dysfunction or condition **that *CAN* be safely managed on an inpatient unit;** final determination for eligibility is via PICU consultation. **<u>In- ICU:</u>** Patient meets/has one or more discontinuation criteria for critical care support. **AND/OR** Have any organ dysfunction or condition **that *CAN* be safely managed on an inpatient unit; final** determination for eligibility is via PICU consultation **AND/OR** PELOD-2 score is worsening and is >= 14 • Two scores (24 hours apart) whereby the second score is worse than the prior score. This is confirmation of a worsening trend. A PELOD-2 score of >= 18		**INELIGIBLE FOR CRITICAL CARE** Medical or palliative management on inpatient unit. **INELIGIBLE for CONTINUATION of CRITICAL CARE** Medical or palliative management on inpatient unit.
GCD R1 or R2 **AND** Have any organ dysfunction or condition **that *CANNOT* be safely managed on an inpatient unit;** final determination for eligibility is via PICU consultation. **<u>In- ICU:</u>** Patient does not meet any discontinuation criteria. **AND/OR** Have any organ dysfunction or condition **that *CANNOT* be safely managed on an inpatient unit;** final determination for eligibility is via PICU consultation **AND/OR** PELOD-2 < 14		**ELIGIBLE FOR CRITICAL CARE** Prepare for transfer to critical care. Patient will be placed in prioritized provincial critical care admission queue. Physiologic stability for transfers out of a facility may need to be evaluated. Assessment for continued eligibility will be done prior to transporting a patient to a critical care bed. **ELIGIBLE for CONTINUATION of CRITICAL CARE**

Additional information on the triage criteria can be found in Appendix B.

Education Guidelines

Prior to Critical Care Triage activation, education and training of staff will be conducted to assure organizational preparedness. To fulfill the various roles involved in Critical Care Triage, it is important for providers to understand the core foundations of triage, the ethical principles underlying triage decisions, and the implications and impacts to patients/families and all members of the health care team. Education and awareness will be organized to reflect tiered 'levels' of understanding—knowledge, competency, and proficiency matched to roles within the activation process. Tiered for levels of understanding include:

- **Knowledgeable**: General awareness of Critical Care Triage, the foundational ethical principles and how it impacts the health care system.
- **Competent**: Detailed awareness Critical Care Triage, the foundational ethical principles, and how it impacts the health care system. Additionally, a clear understanding of their role, how their role supports and contributes to the triage process, and an awareness of the other supporting roles involved in triage application.
- **Proficient:** In-depth awareness of Critical Care Triage, the foundational ethical principles and how it impacts the health care system. Additionally, a proficient, skilled, and practiced understanding of their role, how it supports and how it contributes to triage application. . Advanced ability to implement Critical Care Triage.
- All members of the health care team should have a "knowledgeable" level of understanding of critical care triage to facilitate and support patients and families. While not all staff members need to be proficient in the triage protocol and processes, frontline decision-makers (PCTT, TC) will need to know how to conduct triage eligibility assessments and understand how triage processes will integrate into their respective clinical programs. Within the tiered approach for education, various learning modules will be created and accessible to address the following:
    - Foundations of Critical Care Triage
    - Triage governance
    - What is my role
    - Supportive resources
    - Application of Critical Care Triage- Clinical scenarios

Communication and Awareness

The activation of Critical Care Triage will have significant implications for patients, families, and providers. For patients and families the activation of Critical Care Triage will be a new and unfamiliar way of experiencing the delivery of health care in Alberta. In particular it may be difficult for patients and families to shift frames; from having choice and giving consent in relation to their care to the utilitarian principle of –"greatest good for the greatest number". The realities that some choices will be unavailable and that their wishes may not be followed are likely to be incredibly distressing.

Public awareness of the triage protocol is an important part of pandemic readiness. AHS in collaboration with Alberta Health (AH) will develop and release public notification regarding the Triage protocol. It will be especially important for Albertans to understand the need for such protocols and the fair and unbiased way in which they will be implemented. This communication will provide Albertans with a foundational overview of the Triage protocol and specifically that the protocol:

- Uses validated clinical assessment tools that objectively predict benefit from critical care (relative ability to survive).
- Applies the same objective eligibility and ineligibility criteria to all patients equally.
- Prioritizes patients based on utilitarian principles: the relative capacity to survive critical illness as resources become more limited.
- Utilizes a team approach to assist with and increase fairness in this difficult decision-making process.
- Ensures that persons with disabilities are not discriminated against and are subject to the same criteria as all patients

Communication and engagement will be implemented in a phased approach beginning with socialization of the triage protocol with key stakeholder groups and culminating with public release of the document on the AHS website. For all communication it will be important to:

- Provide clear and simple messages that explain what the Critical Care Triage Protocol is, why it is needed, when and how it would be implemented, and by whom.

- Build trust in the process to assure Albertans that the protocol will only be activated when and if all available resources are used.
- Create confidence that should the protocol be activated, decisions will be made in a consistent, fair, and unbiased manner.
- Provide reassurance that care will continue to be provided and no one will be abandoned despite triage activation.

It is recognized that patient/ family or persons acting on their behalf may be distressed by the Triage protocol application outcome. During triage activation, AHS Patient Relations will continue to play a role in supporting patient/family though the Patient Concerns Resolution Process (PCRP) though resolution of critical care concerns will be altered as decisions for critical care eligibility and discontinuation are team based and ***are not subject to consent or appeal*** when Triage is activated.

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Appendices

A. Ethical Considerations

B. Triage Eligibility and Exclusion Criteria

Contributors

The following people have contributed to this Framework:

Provincial Critical Care Triage Oversight Committee:

Curtis Johnston, Co-chair	Edmonton	Deputy Zone Medical Director, Edmonton Zone
Nancy Fraser, Co-chair	Provincial	Senior Provincial Director, Critical Care Strategic Clinical Network
Brian Holroyd	Edmonton	Senior Medical Director, Emergency Strategic Clinical Network
Dan Zuege	Calgary	Senior Medical Director, Critical Care Strategic Clinical Network, Critical Care Medicine
Dominic Cave	Edmonton	Medical Director, PCICU, Stollery Children's Hospital
Duncan Steele	Provincial	Senior Consultant, Clinical Ethics Services, Health Professions Strategy and Practice
Emma Folz	Calgary	Executive Director, PLC; Critical Care Operations Lead CZ
Janine Sakatch	Provincial	Executive Director, Communications
Janis Sasaki	Provincial	Legal Counsel, Health Law, Legal & Privacy
Jeanna Morrissey	Provincial	Manager, Critical Care Strategic Clinical Network
John Kortbeek	Calgary	Physician, Critical Care Medicine, General Surgery
John Montpetit	Provincial	Provincial Director, RAAPID North/South, Respiratory Equipment and Services Program
Jonathan Davidow	Edmonton	Deputy Zone Clinical Department Head, Critical Care, Edmonton Zone
Jonathan Gilleland	Calgary	Deputy Section Head, Pediatric Critical Care Medicine
Kelly Longard	Central	Director, Cardiac Sciences, Critical Care & Respiratory Red Deer Regional Hospital
Kristin Robertson	Provincial	Practice Lead, Critical Care Strategic Clinical Network
Kyle Anstey	Provincial	Clinical Ethicist, Clinical Ethics Service, Calgary, Health, Profession Strategy and Practice
Michael Russell	Central	Medical Director, ICU, Red Deer Regional Hospital
Mishaela Houle	Edmonton	Executive Director, Cardiac Sciences, Mazankowski Alberta Heart Institute
Neeja Bakshi	Edmonton	Site Lead, Division of General Internal Medicine, Royal Alexandra Hospital
Peter Blondeel	Provincial	Sr. Project Manager, Clinical Project Support Services

Appendix A- Ethical Considerations

Substantive Principles

Critical care triage is guided by substantive ethical principles in determining who should receive intensive care resources when they remain absolutely scarce despite attempts to increase their availability. The main principle anchoring the allocation and triage process is Capacity to Benefit. The best action when demand for absolutely scarce intensive care resources exceeds supply is to save the greatest number of lives possible. This entails prioritizing admission of patients who have a substantially better chance of surviving after receiving intensive care. Incremental survival differences are based on medical assessments of the patient as opposed to their personal or group characteristics themselves (i.e. the race, national or ethnic origin, colour, religion, sex, age, or disability).

Supplementary Criteria

Sometimes several patients may be assessed to have an equal likelihood to benefit from critical care. In these circumstances, Formal Equality will be used as a supplementary substantive principle. All individuals have equal moral worth. When they have equal likelihood to benefit and to survive, they ought to have the same access to healthcare resources that they need. Therefore, if distinctions cannot be made between patients' capacity to benefit from intensive care, they will be given an equal chance of receiving it. This will be determined by admitting them to intensive care on a first come, first-served basis: priority is given in the order that patients are admitted to a hospital. In situations where the time of presentation is the same between patients or cannot be determined, the use of random selection is appropriate. Both of these approaches avoid differentiating between patients based on other characteristics that offend the value of fairness.

Rejected Criteria:

There are a number of additional supplementary criteria that have been proposed in the literature and were then extensively discussed in the development of this triage protocol. The following supplementary criteria were rejected in the development of the Alberta Critical Care Triage protocol:

1. Fair innings or life-cycle: prioritizing resources to those who are at an earlier stage in the life-cycle in comparison to those at a later stage of the life-cycle. This criteria is rejected because age is accounted for as a predictor of clinical outcome in the primary triage criteria, and because the Canadian public in consultation post-H1N1, does not support allocation decisions based on demographic (including age), socio-economic, or religious characteristics. In Alberta, it has been agreed that there is insufficient ethical justification to use the Fair-innings or Life-cycle criterion.
2. Multiplier effect: The multiplier effect is the idea that certain persons have the skills and knowledge necessary to save others in a given situation; saving a “multiplier’s” life could (down the road) enable that person to save the lives of others, multiplying the net benefit to society by reducing mortality and morbidity within a population. Giving priority to a multiplier is only acceptable as long as it is reasonable to assume the person could recover sufficiently to return to their duties. In the case of the current COVID-19 Pandemic this assumption was not accepted. In further and alternate situations this principle would be re-evaluated.
3. Reciprocity and equity to health care professional, and essential service workers: Reciprocity is a central principle in other aspects of responding to pandemics (e.g. the provision of PPE resources and vaccines when available). In the ICU context, it is rejected because of the inability to manage the perceived conflict of interest of giving priority access to healthcare providers, and the ethically ambiguous task of defining ‘essential’ versus ‘non-essential’ workers.

Procedural Principles

In addition to principles that that affect the substantive outcome of who receives intensive care in triage, this protocol follows principles to ensure the triage process is fair. These procedural principles include Publicity, Relevance, Revisability and Review Mechanisms, and Enforcement.

1. Publicity:
    a. Consultation: Where time does not permit public consultation, the results of prior public engagement relevant to the resource allocation decision ought to be reviewed. The Provincial Pandemic Critical Care Triage Working Group reviewed prior public engagement research conducted by the Canadian Priority Setting Research Group (2009) on allocation decisions in a pandemic context. In addition, two engagement sessions, one with patient and family advisors and Advisory Council members and one with clinicians, were held in April, 2020. In both sessions, the response to the protocol was positive and members of the public encouraged AHS to release the plan stating they believed Albertans would be pleased to see there is a fair and objective process in place should it be needed.
    b. Transparency: When queue for admission exists the date and time for first come, first served and any process for random selection will be agreed upon in advance.
    c. Documentation of all exclusion and any relevant supplementary criteria used will be completed by the PCTT, TC, and communicated to the Provincial Triage leads.

2. Relevance: The affected stakeholders must view as relevant the reasons, principles and evidence that form the basis of the rationale for fair decision-making on priorities.

3. Revisability: A Provincial Triage Oversight Committee will oversee the application of the process and will revise it as new scientific evidence becomes available.

4. Enforcement: Application of the Triage protocol will be overseen by a Provincial Triage Oversight Committee and Alberta Health Services.

Appendix B- Triage Eligibility and Exclusion Criteria

Adults

Eligibility Criteria

Eligibility Criteria for Initiation of Critical Care Consideration
Goals of Care Designation (GCD): Patient must have a goals of care designation of R1 **or** R2 **and**
Requirement for invasive mechanical ventilation support and/or inotropes/vasopressors.

Phase 1 and Phase 2 Exclusion Criteria

Exclusion Criteria for Initiation of Critical Care - Acutely Presenting Conditions:	
Sequential Organ Failure Assessment (SOFA) Score and Age exclusion criteria	
Phase 1 Triage: No exclusion criteria for SOFA score or age	Phase 2 Triage: Age >/= 60 with SOFA >/= 16 OR Age < 60 with SOFA >/= 18
Cardiac Arrest not responsive to ACLS interventions for > 20 min including time in field or Unwitnessed Arrest.	
Neuro Exclusion Criteria: Acute severe neurologic event with little chance of functional neurologic recovery including patients with, and not limited to, very severe traumatic brain injury & patients with intracerebral vascular disorders (ICH, SAH, Ischemic Stroke).	
Severe Traumatic Brain Injury (TBI): Calculate the “Glasgow Coma Score” (GCS) Consultation with neurosurgery is mandatory before final disposition. Neurosurgery consultation will consider operative candidacy (age, premorbid status), reversible confounders of the neurologic exam, the presence of surgically reversible pathology, and the projected time to operative intervention.	

Phase 1 Triage: Patients with a **GCS ≤ 4** after resuscitation are *ineligible for critical care* if agreed upon by Neurosurgery.	Phase 2 Triage: Patients with a **GCS ≤ 6** after resuscitation are *ineligible for critical care* if agreed upon by Neurosurgery.
Ischemic Stroke: Calculate the *"Risk Score for Ischemic or Hemorrhagic Stroke incorporating National Institutes of Health Stroke Scale (NIHSS)"*. A stroke service consultation is mandatory before final disposition as there are exceptional cases that may have a much better prognosis.	
Phase 1 Triage: Patients with a **Risk Score ≥85** are *ineligible for critical care* if agreed upon by the stroke service.	Phase 2 Triage: Patients with a **Risk Score ≥71** are *ineligible for critical care* if agreed upon by the stroke service.
Spontaneous Intracerebral Hemorrhage (ICH): Calculate the "ICH Score" Consultation with neurosurgery is mandatory before final disposition. Neurosurgery consultation will consider operative candidacy (age, premorbid status), reversible confounders of the neurologic exam, the presence of surgically reversible pathology, and the projected time to operative intervention.	
Phase 1 Triage: Patients with **ICH score ≥4** in Phase 1 Triage after resuscitation are *ineligible for critical care* if agreed upon by Neurosurgery.	Phase 2 Triage: Patients with **ICH score ≥3** in Phase 2 Triage after resuscitation are *ineligible for critical care* if agreed upon by Neurosurgery.
Spontaneous Subarachnoid Hemorrhage (SAH): Calculate the "World Federation of Neurological Surgeons (WFNS) Grade" Consultation with neurosurgery is mandatory before final disposition. Neurosurgery consultation will consider operative candidacy (age, premorbid status), reversible confounders of the neurologic exam, the presence of surgically reversible pathology (including hydrocephalus), and the projected time to operative intervention.	
Phase 1 Triage: Patients with **WFNS Grade V after resuscitation** are *ineligible for critical care* if agreed upon by Neurosurgery.	Phase 2 Triage: Patients with **WFNS Grade ≥ IV after resuscitation** are *ineligible for critical care* if agreed upon by Neurosurgery.

Severe Acute Trauma with a Revised Trauma Score (RTS) </=2**.**
Severe Burns: Use the patients age and percentage of total body surface area burned to plot the patient's predicted survival on American Burn Association Triage Decision Table of Benefit-to-Resource Ratio of Patient Age & Total Burn Size.

Phase 1 Triage: With a predicted survival </=10 % are ineligible for critical care.	Phase 2 Triage: With a predicted survival < 50 % are ineligible for critical care.

Exclusion Criteria for Initiation of Critical Care - Chronic Health Conditions:	
Severe and irreversible chronic neurologic condition present with: Persistent Coma or Vegetative State.	
Known severe Dementia.	
Phase 1 Triage: Dementia Mortality Index >/=6, OR Global Deterioration Scale (GDS) >/= stage 5 are ineligible for critical care.	Phase 2 Triage: Dementia Mortality Index >/=6, OR Global Deterioration Scale (GDS) >/= stage 4 are ineligible for critical care.
Advanced Metastatic Malignant Disease with expected survival < than 1 year, with input from an oncologist if available:	
Phase 1 Triage: As estimated by an Eastern Cooperative Oncologic Group (ECOG) score of > 1	Phase 2 Triage: As estimated by an ECOG score of > 0
New York Heart Association (NYHA) Functional Classification system: Class IV.	
Ongoing requirement for chronic (> 3 months) mechanical ventilation (MV) via tracheostomy or mask including nocturnal MV (excluding therapy directed primarily for Sleep Disordered Breathing).	

Chronic Obstructive Pulmonary Disorder (COPD) & Cystic Fibrosis	
Phase 1 Triage: Forced expiratory volume in one second (FEV1) < 25 % predicted baseline & baseline PaCO2 > 60 mm Hg OR Known severe secondary pulmonary hypertension (mean PAP > 50 mmHg and/or the presence of severe RV dilation or dysfunction or right atrial enlargement on the most recent echocardiogram).	Phase 2 Triage: Forced expiratory volume in one second (FEV1) < 35 % predicted baseline & baseline PaCO2 > 50 mm Hg OR Known severe secondary pulmonary hypertension (mean PAP > 40 mmHg and/or the presence of moderate or worse RV dilation or dysfunction or right atrial enlargement on the most recent echocardiogram).
Chronic Oxygen Requirement	
Phase 1 Triage: Any requirement for continuous chronic (> 3 months) > 2LPM O2 therapy at home	Phase 2 Triage: Requirement for <u>any</u> continuous chronic (> 3 months) O2 therapy at home
Pulmonary Fibrosis	
Phase 1 Triage: Patients with vital capacity (VC) < 50 % predicted baseline AND • PaCO2 > 50 mm Hg OR • Supplemental home O2 > 2LPM OR Severe secondary pulmonary hypertension (mean PAP > 50 mmHg and/or the presence of moderate or worse RV dilation or dysfunction or right atrial enlargement on the most recent echocardiogram)	Phase 2 Triage: Patients with vital capacity (VC) < 60% predicted baseline AND • PaCO2 > 50 mm Hg OR • Need for any supplemental chronic O2 OR Severe secondary pulmonary hypertension (mean PAP > 40 mmHg and/or the presence of moderate or worse RV dilation or dysfunction or right atrial enlargement on the most recent echocardiogram)

Primary Pulmonary Hypertension	
Phase 1 Triage: Patients with established disease and NYHA class III or IV Heart Failure or with associated **severe RV dilation or dysfunction** on the most recent echocardiogram **OR** If right heart catheterization data available, a RAP >14 mmHg **OR** A cardiac index of <2 litres/min/m^2 on the most recent study	Phase 2 Triage: Patients with established disease and NYHA class III or IV Heart Failure or with associated **moderate or worse RV dilation or dysfunction** on the most recent echocardiogram **OR** If right heart catheterization data available, a RAP >12 mmHg **OR** A cardiac index of <2.25 litres/min/m^2 on the most recent study
Chronic Liver Disease - Model for End Stage Liver Disease MELD Score >/= 25.	

In-ICU Discontinuation Criteria

Discontinuation Criteria for Critical Care
Goals of Care Designation (GCD): R3, M1, M2, C1, C2
Patient **does not** have requirement for either **invasive mechanical ventilation support *or* inotropes/vasopressors**

Discontinuation Criteria for Critical Care - Acute Conditions
Cardiac Arrest not responsive to ACLS interventions for > 20 min including time in field or Unwitnessed Arrest
Neuro Exclusion Criteria Acute severe neurologic event with little chance of functional neurologic recovery including patients with and not limited to very severe traumatic brain injury & patients with intracerebral vascular disorders (ICH, SAH, Ischemic Stroke).
Severe Traumatic Brain Injury (TBI): Calculate the "Glasgow Coma Score" (GCS) Consultation with neurosurgery is mandatory before final disposition. Neurosurgery consultation will consider operative candidacy (age, premorbid status), reversible confounders of the neurologic exam, the presence of surgically reversible pathology, and the projected time to operative intervention. Patients with a **GCS ≤ 6** after resuscitation are ***ineligible for continuation of critical care*** if agreed upon by Neurosurgery.
Ischemic stroke: Calculate the *"Risk Score for Ischemic or Hemorrhagic Stroke incorporating National Institutes of Health Stroke Scale (NIHSS)"*. A Stroke Service Consultation is mandatory before final disposition as there are exceptional cases that may have a much better prognosis.

Patients with a **Risk Score ≥71** are ***ineligible for continuation of critical care*** if agreed upon by the Stroke Service**.**
Spontaneous Intracerebral Hemorrhage (ICH): Calculate the "ICH Score" Consultation with neurosurgery is mandatory before final disposition. Neurosurgery consultation will consider operative candidacy (age, premorbid status), reversible confounders of the neurologic exam, the presence of surgically reversible pathology, and the projected time to operative intervention. Patients with **ICH score ≥3** in Phase 2 Triage after resuscitation are ***ineligible for continuation of critical care*** if agreed upon by Neurosurgery**.**
Spontaneous Subarachnoid Hemorrhage (SAH): Calculate the "World Federation of Neurological Surgeons (WFNS) Grade Consultation with neurosurgery is mandatory before final disposition. Neurosurgery consultation will consider operative candidacy (age, premorbid status), reversible confounders of the neurologic exam, the presence of surgically reversible pathology (including hydrocephalus), and the projected time to operative intervention. Patients with **WFNS grade ≥ IV after resuscitation** are ***ineligible for continuation of critical care*** if agreed upon by Neurosurgery.
Severe Acute Trauma: Revised Trauma Score (RTS) **</= 2**
Severe Burns with a predicted survival **< 50 %** using American Burn Association Triage Decision Table of Benefit-to-Resource Ratio of Patient Age & Total Burn Size

Discontinuation Criteria for Critical Care - Chronic Health Conditions present at time of admission to Critical Care
Severe and irreversible chronic neurologic condition Present with Persistent Coma or Vegetative State
Known Severe Dementia Dementia Mortality Index >/=6, **OR** Global Deterioration Scale (GDS) >/= stage 4
Advanced Metastatic Malignant Disease: With expected survival < than 1 year, with input from an oncologist if available: As estimated by an ECOG score of > 0
New York Heart Association (NYHA) Functional Classification system: Class IV
Ongoing requirement for chronic (> 3 months) mechanical ventilation (MV) via tracheostomy or mask including nocturnal MV (excluding therapy directed primarily for Sleep Disordered Breathing)
Chronic Obstructive Pulmonary Disorder (COPD) & Cystic Fibrosis Forced expiratory volume in one second (FEV1) < 35 %_predicted baseline and a baseline PaCO2 > 50 mm Hg **OR** Known severe secondary pulmonary hypertension (mean PAP > 40 mmHg and/or the presence of moderate or worse RV dilation or dysfunction or right atrial enlargement on the most recent echocardiogram).
Chronic Oxygen Requirement Requirement for any continuous chronic O2 therapy at home (> 3 months).
Pulmonary Fibrosis Patients with a vital capacity (VC) < 60% predicted baseline **AND** PaCO2 > 50 mm Hg_ **OR** Need for any supplemental chronic O2 **OR**

Severe secondary pulmonary hypertension (mean PAP > 40 mmHg and/or the presence of moderate or worse RV dilation or dysfunction OR right atrial enlargement on the most recent echocardiogram).
Primary Pulmonary Hypertension Patients with established disease and NYHA class III or IV Heart Failure or with associated moderate or worse RV dilation or dysfunction on the most recent echocardiogram **OR** If right heart catheterization data available, a RAP >12 mmHg **OR** A cardiac index of <2.25 litres/min/m^2 on the most recent study
Chronic Liver Disease: Model for End Stage Liver Disease MELD Score >/= 25

Discontinuation Criteria for Critical Care - Starting on day 14 of invasive mechanical ventilation
ProVent 14 score >/= 4

Pediatrics

Eligibility Criteria

Eligibility Criteria for Initiation of Critical Care Consideration
Goals of Care Designation (GCD): Patient must have a goals of care designation of R1 **or** R2 **and**
Have any organ dysfunction or condition **that *CANNOT* be safely managed on an inpatient unit**; final determination for eligibility is via PICU consultation. Examples are, but not limited to:

System	Criteria
RESP	Need for invasive or non-invasive positive pressure support.
CVS	Need for vasoactive and/or antiarrhythmic infusions.
CNS	Altered LOC causing inability to protect or maintain airway or the need for intravenous sedatives, analgesics or anticonvulsants.
Post-operative care, procedures	Procedures performed outside of the PICU or post-op patients.

Phase 1 and Phase 2 Exclusion Criteria

Phase 1 - Exclusion Criteria for Initiation of Critical Care
No pediatric triage

Phase 2 - Exclusion Criteria for Initiation of Critical Care
Goals of Care Designation (GCD): R3, M1, M2, C1, C2
Have any organ dysfunction or condition **that *CAN* be safely managed on an inpatient unit**; final determination for eligibility is via PICU consultation.

Low probability of Survival Criteria*:

Cardiac arrest:

- Unwitnessed out of hospital cardiac arrest
- Witnessed cardiac arrest without sustained ROSC after > 20 min of effective resuscitation
- Recurrent cardiac arrest

In consultation with neurosurgery and/or neurology, severe irreversible neurologic condition expected to require prolonged technological dependence. Examples include but not limited to:

- Severe anoxic brain injury following prolonged resuscitation, very extensive brainstem stroke based on clinical and neuro-imaging with no clear expectation recovery
- Severe trauma with catastrophic injury such as Severe TBI with fixed dilated pupils, atlanto-occipital dislocation

Score-Generated Criteria*:

If possible to calculate, all patients with the following scores should be excluded:

- PELOD-2 >/= 18 OR
- pSOFA >/= 20

Short Life Expectancy Criteria*:

Known severe irreversible or progressive encephalopathy at advanced stage.

End stage organ failure with estimated survival < 1 year with no prospect of transplant (e.g., cardiac, respiratory, liver) and where invasive intensive care management is unlikely to reverse the underlying problem, is expected to require long term admission, and with limited expectation of successful liberation of PICU care

Severe and irreversible neurologic condition in a minimally conscious or permanent vegetative state, and/or GCS < 5

Advanced metastatic malignant disease or malignancy with poor prognosis and estimated survival < 1 year

* In addition to these examples listed above, any other clinical situation causing catastrophic injury/illness should be considered an exclusion criteria if it will require prolonged / intense use of ICU resources where there is low likelihood of significant benefit from ICU service

In-ICU Discontinuation Criteria

Phase 2 - Discontinuation Criteria for Critical Care
Goals of Care Designation (GCD): R3, M1, M2, C1, C2
Have any organ dysfunction or condition **that *CAN* be safely managed on an inpatient unit.**
PELOD-2 score is worsening and is >= 14 • Two scores, 24 hours apart whereby the second score is worse than the prior score. This is confirmation of a worsening trend. **A PELOD-2 score of >= 18**
Low probability of Survival Criteria*: **Cardiac Arrest**: • Unwitnessed out of hospital cardiac arrest • Witnessed cardiac arrest without sustained ROSC after > 20 min of effective resuscitation • Recurrent cardiac arrest **In consultation with neurosurgery and/or neurology, severe irreversible neurologic condition expected to require prolonged technological dependence.** Examples include but not limited to: • Severe anoxic brain injury following prolonged resuscitation, very extensive brainstem stroke based on clinical and neuro-imaging with no clear expectation recovery • Severe trauma with catastrophic injury such as Severe TBI with fixed dilated pupils, atlanto-occipital dislocation
Short Life Expectancy Criteria*: Known severe irreversible or progressive encephalopathy at advanced stage End stage organ failure with estimated survival < 1 year with no prospect of transplant (e.g., cardiac, respiratory, liver) and where invasive intensive care management is unlikely to reverse the underlying problem, is expected to require long term admission, and with limited expectation of successful liberation of PICU care Severe and irreversible neurologic condition in a minimally conscious or permanent vegetative state, and/or GCS < 5 Advanced metastatic malignant disease or malignancy with poor prognosis and estimated survival < 1 year
* In addition to these examples listed above, any other clinical situation causing catastrophic injury/illness should be considered an exclusion criteria if it will require prolonged / intense use of ICU resources where there is low likelihood of significant benefit from ICU service