I. POLICY

It is the policy of Torrance Memorial Medical Center (TMMC) that in a pandemic/epidemic public health emergency, if the number of patients requiring critical care-level resources exceeds the availability of those resources despite maximal efforts to increase capacity, the priority for which patients receive critical care-level resources will be determined by an allocation process, to be laid out below. The goal of the allocation process is to maximize population-level outcomes while conserving scarce resources. The allocation process is intended to be transparent and to be applied fairly and equally to all patients potentially requiring critical care-level resources, not only those with pandemic/epidemic-related disease or disorders. The allocation process will be implemented by one or more Critical Care Triage Teams working under the aegis of a specially formed Critical Care Allocation Committee as defined and described below. The algorithm for allocation will need to be rigorously reviewed and adapted, depending on the specific conditions of the pandemic/epidemic. In order to ensure that triage / rationing decisions treat all patients similarly, decisions are based on medically-relevant factors and without reference to factors such as race, gender and gender identity, ethnicity, language spoken, nation of origin, religion, immigration status, age, disability, socioeconomic status, insurance status, perceived self-worth, perceived quality of life, incarceration status, homelessness, past or future use of resources, ability to pay, weight/size, sexual orientation, and/or other non-medically-relevant factors. We will turn to this allocation algorithm only after every effort has been made to increase our critical care resources and coordinate with other healthcare facilities, the county and the state public health departments to serve the needs of our community.

II. DEFINITIONS

A. *Attending Physician* – a member of the Medical Staff who, without reference to Medical Staff membership category, is the principal provider of professional services to the patient during an inpatient hospitalization or an Emergency Department visit, and who directs the care for that patient during the course of the stay as evidenced by signed written orders and progress notes. The Attending Physician may designate another Physician or a Licensed Independent Practitioner to act on his or her behalf.

B. *Decision-Making Capacity* – a patient's ability to understand the nature and consequences of a healthcare decision relative to his or her care, including significant benefits, risks, and alternatives, and to communicate a decision.

C. *Legal Representative* – an individual authorized to participate in healthcare decision-making on a patient's behalf in accordance with an order of a Court or an Advance Directive (or other legally-recognized documentation granting power of attorney for healthcare for the patient to another individual).

D. *Physician* – a member of the Medical Staff with appropriate clinical privileges to provide indicated medical services.

E. *Surge context* – The point at which, in a pandemic/epidemic public health emergency, TMMC leadership determines that the number of patients requiring critical care-level resources at TMMC exceeds the availability of TMMC's critical care-level resources.

F. *Surrogate* – an adult recognized to participate in healthcare decision-making on the patient's behalf when there is no Legal Representative, or an adult explicitly identified by the patient during a specific admission to participate in decision-making during that admission (even if there is a Legal Representative otherwise identified by an Advance Directive).

III. PURPOSE

To outline the process for allocating scarce critical care resources during an epidemic or pandemic public health emergency in which the number of patients requiring critical care-level resources exceeds the availability of those resources.

IV. PROCEDURE

A. WHEN TMMC LEADERSHIP DETERMINES THAT TYPICAL TMMC CRITICAL CARE SERVICE CAPACITY MAY BE ADVERSELY AFFECTED BY DEVELOPING EPIDEMIC OR PANDEMIC PUBLIC HEALTH EMERGENCY, OR, WHEN 25% OF TYPICAL TMMC CRITICAL CARE SERVICE CAPACITY IS DEVOTED TO CARING FOR PATIENTS WITH EPIDEMIC- OR PANDEMIC-RELATED DISEASE OR DISORDERS:

1. TMMC's Chief Medical Officer (CMO) will alert the Chair of the Bioethics Committee that this threshold has been met.
2. The Chair of Bioethics will convene a Critical Care Allocation Committee (CCAC).
    a. CCAC membership will be drawn from TMMC's Bioethics Committee and will include at least the following:
        i. Chair of the Bioethics Committee
        ii. Medical Director of the Emergency Department (ED)
        iii. Medical Director of at least one TMMC Intensive Care Unit (ICU)
        iv. Nursing directors for Intensive Care Unit and/or Emergency Department
        v. Representative from Risk Management
        vi. Spiritual Care Advisor
        vii. Psychologist or psychiatrist for psychosocial support of the Triage Teams
        viii. Community member from the Bioethics Service.

        NOTE: Additional members may be added at the discretion of the Chair of the Bioethics Committee.

        A three-member core group will be designated by the chair of Bioethics, for daily oversight of the CCAC and triage process. It will consist of a lead physician, lead RN and the Bioethics chair or their designee.

    b. The purpose of the CCAC is to
        i. form and oversee the function of Critical Care Triage Teams (CCTTs);
        ii. develop, review and ensure that the processes for generating prognostic scores and allocation priority (Appendix 2) are up to date; as relevant clinical and/or epidemiological data become available during the public health emergency, the CCAC will update what data are used to generate prognostic scores and allocation priority assignments

ii. maintain records of allocation determinations made by ATTs;

iv. review outcomes of allocation decisions and provide a final report to the Torrance Memorial Chief Executive Officer (CEO) and CMO prior to the CCAC being dissolved.

The system best suited to the conditions of the pandemic/ epidemic will be recommended based on consensus of the CCAC, CMO, Chief Nursing Officer (CNO) and Chief of Staff. Urgent review with CEO, bioethics committee, medical executive committee and board of trustees will be implemented to ensure broad acceptance of the prognostic system and allocation priority tool. Minor changes may need to be made in the algorithm to adapt to evolving experience with the pandemic/epidemic conditions; these will be reviewed and approved by the CCAC, CMO, CNO and CEO, and reported to the Bioethics committee, medical executive committee and (if necessary) board of trustees for their review in a timely manner.

3. Critical Care Triage Teams (CCTTs) will be formed:
   a. CCTTs will be comprised of Physicians, nurses and members of the Bioethics Service.
   b. The members of CCTTs will be identified and contacted by the CCAC. Preference will be given to Physicians and RNs with >10 years of post-training clinical experience and >5 years as an attending physician or nurse leader at TMMC. Physicians with critical care experience as part of Fellowship training or as an attending-level Physician will also be given preference. Each CCTT will be led by an attending physician.
   c. The purpose of the CCTT is to conduct allocation assessments and determinations that are independent of the care teams providing clinical care to patients.

4. Once CCTT membership is established, the CCAC will provide a list of CCTT members to the CMO and the TMMC Chief of Staff (COS).
5. CCAC will meet with CCTT members to review the CCTTs' function as well as ensure familiarization with up-to-date TMMC best practice pandemic/epidemic-related guidelines. CCTT members will participate in the ongoing development of allocation algorithms and in logistical planning for allocation assessments. All CCTT and CCAC members will become members of the TMMC Bioethics Committee.
6. The Chair of the Bioethics Committee (or designee) will coordinate with CCTT members an on-call schedule for rapid activation of CCTTs. Call will become active at >50% baseline capacity, so that CCTTs can be available to the Emergency Department/Intensive Care Unit and hospitalist physicians for difficult decision-making in the pre-triage phase.
   a. Each CCTT will consist of 2 Physicians and one other member of the CCTT. A least one of the two Physicians on a CCTT should have both >10 years of post-training clinical experience and >5 years as an Attending Physician at TMMC.
   b. CCTTs will be available 24 hours per day, 7 days per week until TMMC is no longer in Surge Context and < 75% of normal critical care service capacity is devoted to caring for patients with pandemic/epidemic-related disease.

B. WHEN TMMC LEADERSHIP DETERMINES THAT 75% OF **NORMAL** CRITICAL CARE SERVICE CAPACITY IS DEVOTED TO CARING FOR PATIENTS WITH PANDEMIC/EPIDEMIC-RELATED DISEASE OR DISORDERS

1. TMMC's CMO will alert the Chair of the Bioethics Committee that this threshold has been met.
2. The CCAC will alert the Department of Emergency Medicine, the Medical Directors of ICUs, and the leaders of the hospitalist groups that CCTTs will now begin generating prognostic scores for a sub-group of patients being considered for or currently receiving critical care. **The prognostic scores will not be binding for allocation of critical care at this point, but the process will prepare the CCTTs if the surge context is reached.** Administration will generate a list of all patients receiving critical care or being considered for critical care, using criteria such as room number, oxygen supplementation and admitting diagnosis.
3. The CCAC will assign CCTT physicians to begin generating prognostic scores and allocation priority levels. Each CCTT will generate scores for at least 5 patients in order to learn the process and provide logistical feedback to the CCAC. The collection of clinical data necessary to generate prognostic scores may be done via remote access.
4. After the initial prognostic score is generated, scoring will be repeated by the CCTT physicians for patients (if they remain in the ICU) at 48 hours and 120 hours, and then every subsequent 24 hours (see Appendix 2 for the re-assessment prognostic scoring process).
5. CCTT physicians will share all prognostic scores with the CCAC core group within 8 hours, and the CCAC will meet with all CCTTs members on a regular schedule to review the scoring process.
6. The CCAC, CMO, CNO and Chief of Staff will develop a letter to be ready if a surge context is reached, to inform all patients admitted to TMMC that critical care will be allocated by a multiple principle strategy.

C. WHEN TMMC LEADERSHIP DETERMINES THAT 75% OF **MAXIMUM** CRITICAL CARE SERVICE CAPACITY IS DEVOTED TO CARING FOR PATIENTS WITH PANDEMIC/EPIDEMIC-RELATED DISEASE OR DISORDERS

1. TMMC's CMO will alert the Chair of the Bioethics Committee that this threshold has been met.
2. CCTTs will now begin generating prognostic scores and allocation priority levels for all patients being considered for or currently receiving critical care. The goal is to be ready for triage if it is needed.
3. The Los Angeles County Department of Public Health will be notified of the impending need for critical care triage.

D. WHEN TMMC LEADERSHIP DETERMINES THAT SURGE CONTEXT IS EXPECTED TO BE REACHED WITHIN 24 HOURS, SUCH THAT THERE ARE INSUFFICIENT CRITICAL CARE RESOURCES FOR THE ANTICIPATED PATIENT DEMAND:

1. TMMC's CMO will alert the Chair of the Bioethics Committee that this threshold has been met.
2. The CCAC will communicate with the Chair(s) of the Department of Emergency Medicine, the Medical and Nursing Directors of the ICUs, and the Medical Directors of

the primary hospitalist services serving TMMC to review contact information for on-call CCTTs and to address any questions regarding CCTT protocols in preparation for Surge Context.

E. DURING THE TIME OF SURGE CONTEXT

1. All patients admitted to TMMC will be informed by letter that a surge context has been reached and that critical care will be allocated by a triage system.
2. For all patients for whom critical care-level resources are being considered, and for all patients currently admitted to an ICU, the CCTTs will generate and document a prognostic score and, utilizing the Allocation Priority Tool (see Appendix 2), assign patients to allocation priority levels.

   For patients arriving in the ED, if patients would not typically be considered appropriate candidates for transfer to an ICU, they are similarly not candidates during the Surge Context (see Appendix 5 for common conditions satisfying this criterion). Clinicians sometimes need to make the decision to intubate in minutes, so that there is no time to obtain labs and discuss with the triage team. In the setting of pandemic crisis, there will be times when the attending physician will decide to intubate, and then after knowing more about the patient's chance of recovery, the resources currently available, and review by the triage team, a decision will be made not to continue ventilation support. Careful consideration should be made to establishing code status with patient and family early in the admission, and to avoid a full resuscitative effort if possible.
3. The CCTT will communicate patients' allocation priority level to patients' Attending Physician.
4. Patients will or will not receive critical care-level resources based on their assigned allocation priority level, any relevant tie-breaker criteria (see Appendix 2), and the availability of those resources. Within 6 hours of generating prognostic scores, CCTT physicians will share patients' medical record numbers and prognostic scores as well as the data used to calculate the scores, with the CCAC core group.
5. The Attending Physician will communicate to the patient (or the patient's Legal Representative or Surrogate if the patient lacks decision-making capacity) their allocation priority level.
   a. For patients who are not prioritized to receive, or continue to receive, critical care-level support, the Attending Physician must discuss with the patient (or the patient's Legal Representative or Surrogate if the patient lacks decision-making capacity) the rationale for withholding or withdrawing medical interventions. A written, plain language explanation of the triage and appeals process will be provided to the patient or surrogate.
   b. Consent does not need to be affirmatively given prior to withholding or withdrawing such interventions (in the event of explicit disagreement with the allocation priority by a patient or their Legal Representative or Surrogate). See below for appeals mechanism.
   c. Upon request from the Attending Physician, the CCTT is available to assist with communication of such information to patients (or their Legal Representatives or Surrogate if the patient lacks decision-making capacity). Palliative Care consultation and hospice services will also be available to assist with these patients.

6. A member of the CCTT will document the patient's allocation priority level (including any relevant tie-breaker information) in the patient's medical record. Such documentation should include (at a minimum) an explanation of the grounds upon which the allocation priority level is based. The CCAC core group will review no less than 25% of prognostic scores received after the first 24 hours of receiving such scores in order to assess the accuracy of the CCTT's scoring. CCTT physicians will be contacted in a timely manner if the CCAC core group believes errors in scoring have been made.
7. The Attending Physician will document:
    a. a description of conversation(s) with the patient (or the patient's Legal Representative or Surrogate if the patient lacks decision-making capacity), regarding the allocation priority level determination;
    b. the general scope of the ensuing treatment plan, including specific instructions regarding limitation, continuation, and/or discontinuation of other forms of treatment based on the patient's allocation priority level and availability of scarce resources;
8. When patients will not be allocated scarce resources at this time, the Attending Physician will communicate in a timely manner to the medical and nursing staff involved in the care of the patient that an allocation decision to withhold and/or an order to withdraw life-sustaining treatments has been made and entered into the patient's medical record to ensure that the determination is known and understood.
9. ONGOING REVIEW: For all patients receiving critical care-level resources, the CCTTs will generate and document a prognostic score and, utilizing the Allocation Priority Tool (see Appendix 2), assign patients to allocation priority levels, at 48-hours and 120 hours, and then every subsequent 24 hours, or at an appropriate interval agreed upon by critical care, ER and Infectious Diseases leadership. One member of the CCTT will document the patient's updated allocation priority level (including any relevant tie-breaker information) in the patient's medical record. Such documentation should include (at a minimum) an explanation of the grounds upon which the allocation priority level is based.
10. APPEALS PROCESS: In the event a patient (or their Legal Representative or Surrogate, if the patient lacks decision-making capacity) or the patient's Attending Physician wishes to appeal an allocation determination, an appeals mechanism is required to resolve such disputes:
    a. For challenges to allocation determinations resulting in the **withholding** of critical care-level resources:
        i. The only permissible appeals are those based on a claim that an error was made in calculating the allocation priority level.
        ii. The CCTT will review and verify the accuracy of the prognostic scoring and subsequent allocation priority level assignment, and then communicate the results to the patient (or Legal Representative or Surrogate) or Attending Physician.
        iii. If errors are found, the patient's allocation priority will be corrected.
    b. For challenges to allocation determinations resulting in the **withdrawal** of critical care-level resources previously allocated:
        i. The Ethics Consultant from the CCTT will arrange for an Allocation Special Ethics Review (ASER) (see below).
        ii. Until the ASER is completed, the Attending Physician shall continue to provide the Medical Interventions under appeal.

11. Allocation Special Ethics Review
    a. The purpose of the ASER is:
        i. to allow the individuals who are appealing the allocation determination to explain their disagreement with the determination,
        ii. to review the procedural steps and accuracy of assessment of the primary CCTT,

        and to do so quickly enough that the appeals process does not unduly jeopardize the care of patients who are in the queue for the scarce resource.

        NOTE: Disagreements concerning the prognostic scoring and Allocation Priority Tools themselves cannot be addressed by the ASER.

    b. The ASER should be made up of at least three individuals, recruited from the following groups: Chief Medical Officer or designee, Chief Nursing Officer or designee, Legal Counsel, hospital Ethics Committee or Consult Service, community member of the bioethics committee, and/or an off-duty triage officer. In addition, the Triage Review Committee should have representation consistent with the patient population being served. Three committee members are needed for a quorum to render a decision, using a simple majority vote. The process can happen by telephone or in person, and the outcome should be promptly communicated to whomever brought the appeal.

    c. The Attending Physician, the patient (or Legal Representative or Surrogate), and others involved in the patient's care may be invited to provide input to the ASER. Invited individuals may provide their input separately and independently if they so choose or if expedient do to so.

    d. At the conclusion of the ASER process, the ASER will either
        i. recommend a re-evaluation of the allocation determination at a specific time (e.g., 24 or 48 hours) with rationale for why such an extension is medically warranted, and with explicit request for additional clinical criteria to be included in the re-evaluation.
        ii. uphold the allocation determination to withdraw critical care-level resource. The ASER, along with the patient's Attending Physician and other relevant members of the patient's care team (e.g., medical consultants, chaplains, social workers), will establish a timeframe and process for the withdrawal of critical care-level resources as well as a plan of care going forward that does not entail utilization of critical care-level resources.
        iii. The Bioethics chair will report in a timely manner the outcome of the ASER to the CCTC and the CMO.

12. The CCTTs will work in shifts lasting no longer than 13 hours. CCTTs will share their prognostic scores and allocation priority level assignments with the CCAC core group daily for review. The core group will give a daily report of triage decisions to hospital leadership.

F. AS SURGE CONTEXT RECEDES

1. As previously scarce critical care-level resources become available, patients will be allocated critical care-level resources in accordance with their allocation priority level determination.
2. All patients for whom critical care-level resources are being considered or provided (including those patients who previously had not been allocated critical care-level

resources) will continue to be assigned prognostic scores by CCTTs until ≤75% of surge critical care service capacity is devoted to caring for patients with pandemic/epidemic-related disease or disorders (according to TMMC leadership) in anticipation of fluctuations in patient census and to maintain clinical readiness of the CCTTs.

3. When TMMC leadership determines that ≤25% of normal critical care service capacity is devoted to caring for patients with pandemic/epidemic -related disease or disorders, or TMMC leadership announces that critical care-level resources are no longer considered scarce (whichever comes first), the CCAC will convene to debrief and outline a review process from the experience and a timeline by which substantive reports will be shared with the CMO and COS.

SUMMARY OF TRIGGERS FOR EACH PHASE:

1) >25% baseline capacity, start forming CCTCs, review prognostic scoring systems and allocation priority scores
2) >50% baseline capacity start 24 hour call service for urgent difficult decision-making pre-triage
3) >75% baseline capacity start practicing scoring
4) >75% maximum capacity start scoring each patient receiving/considered for critical care
5) Within 24 hours of maximum capacity, start triage
6) <75% maximum capacity stop scoring and triage
7) <50% baseline capacity stop urgent 24 hour call service.

APPENDIX 1

PANDEMIC/EPIDEMIC Critical Care Allocation Policy

ETHICAL FRAMEWORK

(for Medical Center staff use only)

Commitment to public health while caring for individuals

Ordinarily, health care providers' fiduciary relationship is directed toward their individual patients. In times of a public health emergency, however, medical decision-making must be made with a focus on the population as a whole. While this shift may place limits on the extent to which individual patient preferences can be accommodated (e.g., there may be fewer ICU beds available than the number of patients who would accept ICU-level interventions), all patients' goals, values, and preferences should be supported to the extent possible. Furthermore, even as public health concerns necessitate that not all patients are allocated scarce resources, every patient should receive compassionate care, whether aimed at maximizing survival on one end or supporting a dignified death on the other.

Equity/Fairness/Justice

A system of allocation during a public health emergency must be applied consistently and broadly, in order to maximize the chances of fairness and minimize the potential influence of subjective biases. Allocation decisions should seek to support access to care for all and allocation of scarce resources to as many possible, without reference to race, gender, ethnicity, religion, immigration status, insurance status, social status, or other non-medically relevant factors, while avoiding exacerbation of existing disparities in both access to health care and health outcomes. Because allocation determinations during a public health emergency are focused on population-level outcomes, i.e., maximizing the quantity of lives saved in the context of scarce resources, justice requires that likelihood of survival is a critical factor in determining who is allocated those resources. Quality of life assessments are therefore not appropriate determinants in the allocation process.

Conservation of scarce resources

In a public health emergency, all resources are potentially scarce, and all clinicians have a duty to protect both scarce resources and themselves. All resources should be carefully allocated according to their known scarcity, likelihood of renewal, and the extent to which they can be replaced or reused. This includes the commitment to delivering the best care possible given the available resources.

Transparency

To the extent practically feasible, allocation plans should be communicated as efficiently, widely, and comprehensively as possible across the healthcare system and moral community, inclusive of government agencies, nearby healthcare facilities, staff, patients, and other stakeholders. Such transparency is likely to minimize actual and vicarious trauma to patients, their surrogates and/or legal representatives, staff, and members of the public after the crisis has abated.

APPENDIX 2

There is active work across the country and at the California Department of Public Health to try to measure outcomes specific to pandemic/epidemic crises so that prognostic scoring systems can be validated. The Critical Care Allocation Committee will review new information and choose the appropriate algorithm, with modifications for our particular population and capabilities. Specific modifications which have been agreed upon are: The CCAC would not use any age cut-off as an exclusion criterion. In the event of a tie-breaking decision among patients with the same prognostic scores the CCAC would consider life expectancy of greater than or less than 1 year, from any cause. It is felt that a randomization function is simpler and more just than a first-come first-served approach for tie-breaking.

In the setting of the Covid-19 crisis, we will use the CDPH California SARS CoV-2 Crisis Care Guidelines as our primary resource (appended here). The White algorithm (Appendix 3) is a source document that we have benefited from in the development of our protocol. These two algorithms reflect some of the marked variation in possible approaches to making these difficult decisions. No algorithm has been validated in the setting of SARS-CoV-2. The triage algorithm will be modified as more outcome data become available.

California SARS-CoV-2 Crisis Care Guidelines June 2020

Part A.2: Allocation process for ICU admission/ventilation

The purpose of this section is to describe the allocation framework that should be used to make initial triage decisions for patients who present with illnesses that typically require critical care resources (i.e., illnesses that cannot be managed on a hospital ward in that hospital). The scoring system applies to all patients presenting with critical illness, not merely those with the disease or disorders that have caused the public health emergency. For example, in the setting of a severe pandemic, those patients with respiratory failure from illnesses not caused by the pandemic illness should also be subject to the allocation framework. Chronic ventilator patients using their own ventilators should not have their ventilators reallocated.

This process involves two steps, detailed below:

1. Calculating each patient's Sequential Organ Failure Assessment (SOFA) or modified SOFA (mSOFA) score.

2. Determining each day how many priority groups will receive access to critical care interventions.

First responders and bedside clinicians should perform the immediate stabilization of any patient in need of critical care, as they would under normal circumstances. Along with stabilization, temporary ventilatory support if available may be offered to allow the triage officer to assess the patient for critical resource allocation. Every effort should be made to complete the initial triage assessment within 90 minutes of the recognition of the likely need for critical care resources.

Ethical goal of the allocation framework. Consistent with accepted standards during public health emergencies, the goals of the allocation framework are to maximize benefit for populations of patients and honor the ethical commitments to ensure meaningful access for all patients, with determinations based on individualized patient assessments, without regard to age, disability, race, sex, sexual orientation, gender identity, immigration status or other factors, including those listed in Key Points:

● Healthcare decisions, including allocation of scarce resources, cannot be based on age, race, disability (including weight-related disabilities and chronic medical conditions), gender, sexual orientation, gender identity, ethnicity (including national origin and language spoken), ability to pay, weight/size, socioeconomic status, insurance status, perceived self-worth, perceived quality of life, immigration status, incarceration status, homelessness, or past or future use of resources.

Note: All patients should have their physician orders for life-sustaining treatment (POLST) forms or advance directives reviewed, updated, and followed, so that patient's wishes can be followed to the extent possible in crisis care.

STEP 1: Calculate each patient's SOFA or mSOFA score, and assign priority group. Patients who are more likely to survive with intensive care are prioritized over patients who are less likely to survive with intensive care. As summarized in Table 1, the SOFA score is a validated, objective measure of probability of survival to hospital discharge. Alternately the mSOFA score can also be used to determine patients' prognoses for hospital survival. Lower scores indicate higher predicted benefit from critical care. If an objective, validated COVID specific scoring system which predicts survival becomes available, this may be used in place of the SOFA or mSOFA score, provided that the system does not use as a factor age, disability, or other characteristics listed in Key Points.

Table 1. SOFA score SOFA Scale**

Variable	0	1	2	3	4
PaO2/FiO2 mmHg	>400	≤ 400	≤ 300	≤ 200	≤ 100
Platelets, x 103/µL (x 106/L)	> 150 (>150)	≤ 150 (≤ 150)	≤ 100 (≤ 100)	≤50 (≤50)	≤ 20 (≤ 20)
Bilirubin, mg/dL (µmol/L)	<1.2 (<20)	1.2-1.9 (20 – 32)	2.0-5.9 (33 – 100)	6.0-11.9 (101 – 203)	>12 (> 203)
Hypotension	None	MABP < 70 mmHg	Dop ≤ 5	Dop > 5, Epi ≤ 0.1, Norepi ≤ 0.1	Dop > 15, Epi > 0.1, Norepi >0.1
Glasgow Coma Score (GCS) *	15	13 – 14	10 - 12	6 - 9	<6
Creatinine, mg/dL (µmol/L)	< 1.2 (<106)	1.2-1.9 (106 – 168)	2.0-3.4 (169 - 300)	3.5–4.9 (301 – 433)	>5 (> 434)

Sequential Organ Failure Assessment (SOFA) score SOFA Scale
Dopamine [Dop], epinephrine [Epi], norepinephrine [Norepi] doses in ug/kg/min SI units in brackets
Adapted from: Ferreira FI, Bota DP, Bross A, Melot C, Vincent JL. Serial evaluation of the SOFA score to predict outcome in critically ill patients. JAMA 2001; 286(14): 1754-1758.
**GCS should not add points to the SOFA score when a patient cannot articulate intelligible words, even if this condition is due to a pre-existing speech disability or chronic ventilation. Clinicians should use clinical judgment to adjust SOFA scores downward where appropriate to account for chronic baseline levels of physiological functional impairment not caused by COVID-19, including for any temporary elevation of a score or score element caused by any patient inability to access a regularly used stabilizing device or treatment (such as a CPAP or BiPAP unit, dialysis, or specific medications).*
***Modified SOFA or other objective, validated, nondiscriminatory survival scoring matrix may be used, including a COVID specific validated scoring system if one becomes available provided that the system does not use as a factor age, disability, or other characteristics listed in Key Points. TMMC addition: see mSOFA scoring at the end of Appendix 2).*

As shown in **Table 2**, priority groups are assigned according to the patient's SOFA or mSOFA score, with group 1 being given the highest priority and group 4 given the lowest priority to receive critical care.

Table 2. Priority group based on SOFA score

Principle	Specification	Priority Group*			
		1	2	3	4
Current Overall Clinical Status	Prognosis for acute survival (SOFA score, mSOFA, or other severity of illness score#)	SOFA score < 6 Or mSOFA<6	SOFA score 6-8 Or mSOFA 6-8	SOFA score 9-11 Or mSOFA 9-11	SOFA score ≥12 Or mSOFA ≥12

#SOFA= Sequential Organ Failure Assessment; note that a different, nondiscriminatory measure of acute physiology that predicts in-hospital mortality could be used in place of SOFA, provided that the system does not use as a factor age, disability, or other characteristics listed in Key Points, but should similarly be divided into 4 ranges.
*Scores range from 1-4, and persons with the lowest score would be given the highest priority to receive critical care beds and services.

Absence of categorical exclusion criteria: A central feature of this allocation framework is that it does not use categorical exclusion criteria to bar individuals from access to critical care services during a public health emergency. There are several ethical justifications for this. First, the use of rigid categorical exclusions would be a major departure from traditional medical ethics and raise fundamental questions of fairness. Second, such restrictive measures are not necessary to accomplish public health goals during a pandemic or disaster; it is equally feasible to assign all patients a priority score and allow the availability of resources to determine how many patients can receive the scarce resource. Third, categorical exclusion criteria may be interpreted by the public to mean that some groups are "not worth saving,"

leading to perceptions of unfairness and distrust. In a public health emergency, public trust will be essential to ensure cooperation with restrictive public health measures. Thus, an allocation system should make clear that all individuals are "worth saving" by keeping all patients who would receive critical care during routine clinical circumstances eligible, and by allowing the availability of beds and services to determine how many eligible patients receive them. It is important to note that there are some conditions that lead to immediate or near-immediate death despite aggressive therapy such that during routine clinical circumstances clinicians do not provide critical care services (e.g., cardiac arrest unresponsive to appropriate advanced cardiovascular life support, massive intracranial bleeds not amenable to surgical intervention, intractable shock despite all appropriate treatment). During a public health emergency, clinicians should still make judgments about the medical appropriateness of critical care using the same criteria they use during normal clinical practice.

STEP 2: Make daily determinations of how many priority groups can receive the scarce resource. Hospital leaders and triage officers should make determinations twice daily, or more frequently if needed, about which SOFA or mSOFA priority groups will result in access to critical care services. These determinations should be based on real-time knowledge of the degree of scarcity of the critical care resources, as well as information about the predicted volume of new cases that will be presenting for care over the immediate near-term. For example, if there is clear evidence that there is imminent shortage of critical care resources (i.e., few ventilators available and large numbers of new patients hourly), only patients with the highest priority (lowest scores) should receive scarce critical care resources. As scarcity subsides, patients with progressively lower priority (higher scores) should have access to critical care interventions.

Resolving "ties" in priority groups between patients. In the event that there are 'ties' in SOFA or mSOFA priority groups between patients and not enough critical care resources for all patients with the lowest scores, consideration can be given to severe medical co-morbidities and advanced chronic conditions that limit near-term duration of benefit and survival. Patients who do not have a severely limited near-term prognosis for survival are given priority over those who are likely to die in the near-term, even if they survive the acute critical illness. Age, disability, or any other characteristics from the Key Points do NOT define individuals likely to die in the near-term. Co-morbid medical conditions occur in a spectrum of severity, and should only be used in allocation decisions based on the clinical decision that they will impact near-term survival. It should be noted that due to widespread racial and ethnic health disparities, these conditions often have a higher prevalence among communities of color. Given the pervasiveness of implicit bias, it is critical that objective criteria be used to define the severity of a given comorbidity. The following are examples of severely life-limiting comorbidities which may correlate with a significantly increased risk of short-term mortality from critical illness.

- Minimally conscious or unresponsive wakeful state from prior neurologic injury
- American College of Cardiology/American Heart Association Stage D heart failure
- World Health Organization Class 4 pulmonary hypertension
- Severe chronic lung disease with FEV1<20% predicted, FVC<35% predicted
- Cirrhosis with a model for end-stage liver disease score >20
- Metastatic Cancer with expected survival < 6 months despite treatment
- Refractory hematologic malignancy (resistant or progressive despite conventional initial therapy)

If after consideration of severe comorbidities there are still ties, a lottery (i.e., random allocation) should be used to break the tie.

It is important to reiterate that all patients should be *eligible* to receive critical care beds and services regardless of their priority score. The availability of critical care resources should determine how many eligible patients will receive critical care.

Reassessment for ongoing provision of critical care/ventilation

The purpose of this section is to describe the process the triage team should use to conduct reassessments on patients who are receiving critical care services, in order to determine whether s/he continues with the treatment.

Ethical goal of reassessments of patients who are receiving critical care services. The ethical justification for such reassessment is that, in a public health emergency when there are not enough critical care resources for all, the goal of maximizing the benefit for communities of patients would be jeopardized if patients who were determined to be unlikely to survive hospitalization were allowed indefinite use of scarce critical care services. In addition, periodic reassessments

lessen the chance that arbitrary considerations, such as when an individual develops critical illness, unduly affect patients' access to treatment.

Approach to reassessment

All patients who are allocated critical care services should be allowed a therapeutic trial of a duration to be determined by the clinical characteristics of the disease. The decision about trial duration should ideally be made as early in the public health emergency as possible, when data becomes available about the natural history of the disease. Trial duration should be tailored for other non-pandemic diseases and patient contexts, given the concern that patients with certain disabilities may need longer trials to determine benefit. The trial duration should be modified as appropriate if subsequent data emerge about the clinical course of the pandemic illness. Patients who present for acute care and are already using a ventilator chronically for pre-existing respiratory conditions (e.g., home ventilation or ventilation at a skilled nursing facility) should NOT be separated from their chronic ventilator to reallocate it to other patients.

The triage team should conduct periodic reassessments of patients receiving critical care/ventilation. A multidimensional assessment should be used to quantify changes in complications, and treating clinicians' input. Patients showing improvement should continue with critical care/ventilation until the next assessment. If there are patients in the queue for critical care services, then patients who upon reassessment show substantial clinical deterioration, as evidenced by worsening severity of illness scores or overall clinical judgment should have critical care withdrawn, including discontinuation of mechanical ventilation, after this decision is disclosed to the patient and/or family. Although patients should generally be given the full duration of a trial, if patients experience a precipitous decline (e.g., refractory shock and disseminated intravascular coagulation) or a highly morbid complication (e.g., massive stroke) which portends a very poor prognosis for near-term survival, the triage team may make a decision before the completion of the specified trial length that the patient is no longer eligible for critical care treatment.

Appropriate clinical care of patients who cannot receive critical care.

Patients who are no longer eligible for critical care treatment should receive medical care including intensive symptom management and psychosocial support. Where available, specialist palliative care teams should be available for consultation. Where palliative care specialists are not available, the treating clinical teams should provide primary palliative care.

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Sequential Organ Failure Assessment (Modified): mSOFA Score

Input

O_2 Saturation		%
FIO_2		%O2
Jaundice	○ No (0)	
	○ Yes (3)	
Blood Pressure	○ Hypotension absent (0)	
	○ Mean arterial pressure <70 mmHg (1)	
	○ On Dopamine <=5 mcg/kg/min or any Dobutamine (2)	
	○ On Dopamine >5 mcg/kg/min, Epinephrine <=0.1 mcg/kg/min or Norepinephrine <=0.1 mcg/kg/min (3)	
	○ On Dopamine >15 mcg/kg/min or Epinephrine >0.1 mcg/kg/min or Norepinephrine >0.1 mcg/kg/min (4)	
Glasgow Coma Score		points
Creatinine		mg/dL

Results

O_2 Saturation/FIO_2		ratio
mSOFA Score		points

mSOFA Score Interpretation

0 to 7 points: 4% Mortality
8 to 11 points: 31% Mortality
12 to 19 points: 58% Mortality

Appendix 3

MPS scoring system (White algorithm)
Pandemic/Epidemic Critical Care Allocation Policy
PROCESS FOR GENERATING A MULTI-PRINCIPLE STRATEGY SCORE

NOTE: Once an MPS score is generated, it will be entered into the Allocation Priority Tool below in order to determine the patient's allocation priority assignment.

I. GENERATING AN INITIAL MULTI-PRINCIPLE STRATEGY SCORE

A. Assessment of in-hospital survival based on end-organ function utilizing the Sequential Organ Failure Assessment (SOFA) tool (score for use in the MPS Tool as indicated).[1]

Appendix 1: Scoring criteria for the Sequential Organ-Failure Assessment (SOFA) score*

	Score				
Variable	0	1	2	3	4
PaO_2/FIO_2, mm Hg	> 400	≤ 400	≤ 300	≤ 200	≤ 100
Platelet count, $\times 10^6$/L	> 150	≤ 150	≤ 100	≤ 50	≤ 20
Bilirubin level, mg/dL (μmol/L)	< 1.2 (< 20)	1.2–1.9 (20–32)	2.0–5.9 (33–100)	6.0–11.9 (101–203)	> 12 (> 203)
Hypotension†	None	MABP < 70	Dop ≤ 5	Dop > 5 Epi ≤ 0.1 Norepi ≤ 0.1	Dop > 15 Epi > 0.1 Norepi > 0.1
Glasgow Coma score	15	13–14	10–12	6–9	< 6
Creatinine level, mg/dL (μmol/L)	< 1.2 (< 106)	1.2–1.9 (106–168)	2.0–3.4 (169–300)	3.5–4.9 (301–433)	> 5 (> 434)

Note: PaO_2 = partial pressure of arterial oxygen; FIO_2 = fraction of inspired oxygen; MABP = mean arterial blood pressure, in mm Hg;
*Adapted, with permission, from Ferreira FL, Bota DP, Bross A, et al. Serial evaluation of the SOFA score to predict outcome in critically ill patients. *JAMA* 2001;286: 1754-8. Copyright © 2001, American Medical Association. All rights reserved.
†Dop (dopamine), epi (epinephrine) and norepi (norepinephrine) doses in μg/kg per min.

B. The presence of major or severe comorbidities will be determined via review of the patient's medical record (score for use in the MPS Tool is: 0 = no comorbidities; 2 = one or more major comorbidities but no severe comorbidities; 4 = one or more severe comorbidities)

Chronic major comorbidities

Comorbidity	**Criteria for establishing presence of comorbidity**
End-stage organ failure	• NYHA Class III heart failure • Severe inoperable multi-vessel CAD • Moderately severe chronic lung disease (COPD, IPF) • End-stage liver disease with MELD ≥20 • End-stage renal disease on hemodialysis • Progressive untreatable neuromuscular disease
Severe cognitive impairment	• Advanced dementia

Chronic and acute severe comorbidities (life expectancy <1 yr)

Comorbidity	Criteria for establishing presence of comorbidity
End-stage organ failure	• NYHA Class IV heart failure • Severe chronic lung disease defined by with FEV1<25% predicted, TLC<60% predicted, or baseline PaO2< 55mm Hg • Primary pulmonary hypertension with NYHA class III or IV heart failure • End-stage liver disease with MELD ≥40 • Advanced untreatable neuromuscular disease
Severe cognitive impairment	• Prior anoxic brain injury (>6 months), with no recovery and repeated hospitalizations for infection (PNA, UTI, etc.) • Advance dementia with frailty scale score > 5
Advanced Malignancy	• Malignant disease with life expectancy < 1 year or high-grade primary brain tumors receiving only palliative treatment
Acute catastrophic injury	• In-hospital cardiac arrest without ROSC after ≥30 mins of ACLS without shockable rhythm • New catastrophic irreversible neurologic injury

C. The Multi-Principle Strategy (MPS) Tool
A patient's score is determined by adding together the SOFA-based score and the comorbidity-based score:

Multi-Principle Strategy tool

Purpose	Clinical Assessment	MPS Point Scoring System			
		1	2	3	4
Prognosis for Hospital Survival		<6	6-9	10-12	>12
Purpose	**Clinical Assessment**	**MPS Point Scoring System**			
		1	**2**	**3**	**4**
Prognosis for Post-Discharge Survival		…	Presence of any Major Comorbidities (life exp ≤ 5 yrs)	…	Presence of any Severe Comorbidities (life exp ≤ 1 yrs)

II. RE-ASSESSMENT FOR UTILIZATION OF CRITICAL CARE RESOURCES

A. Generate a SOFA score using the criteria listed in section IA.

B. Calculate an MPS score using the MPS Tool (section IC)

ALLOCATION PRIORITY TOOL for MPS scoring system
(for Medical Center staff use only)

Priority Assignments Based on MPS Score	
Level of Priority and Code Color	**MPS Score**
RED – Highest priority (highest likelihood for survival) Manage with critical care resources if available and periodically reassess	**MPS: 1-3**
ORANGE – Intermediate priority (higher likelihood for survival) Manage with critical care resources if available and periodically reassess	**MPS: 4-5**
YELLOW – Lowest priority (lower likelihood of survival) Manage with critical care resources if available and periodically reassess	**MPS: 6-8**

II. Resolving "Ties" Between Patients Within Allocation Priority Levels

In the event that there are "ties" in priority scores, i.e., there are more patients within an allocation priority level than available critical care resources, patients will be further prioritized based on the following steps:

A. Number of Category 2 – Chronic severe comorbidities (life expectancy < 1 yr)
B. Number of Category 1 - Chronic major comorbidities (life expectancy <5 yrs)
C. SOFA score difference of greater than 2 points
D. Life cycle[1]
E. Randomization, i.e., by lottery

[1] Priority is given to younger patients because it is a valuable goal to give individuals equal opportunity to pass through the stages of life—childhood, young adulthood, middle age, and old age, and younger individuals would receive priority because they have had the least opportunity to live through life's stages (NOTE: there is a precedent for incorporating life-cycle considerations into pandemic/epidemic planning. The U.S. Department of Health and Human Services' plan to allocate vaccines and antivirals during an influenza pandemic/epidemic prioritizes infants and children over adults. Empirical data also suggest most believe younger patients should be prioritized over older ones (see Neuberger et al., BMJ, 1998) as does public engagement surveys (see Daugherty Biddison et al., Ann Am Thor Soc, 2014). Other strategies may be considered – societal role, number of dependents, cultural or religious factors – but all of these strategies risk the imposition of more significant bias than the generally-accepted bias of age as described.

APPENDIX 4

Pandemic/Epidemic Critical Care Allocation Policy

CODE BLUE GUIDELINES

(for Medical Center staff use only)

Ethics and Code Status concerns:

- In the Emergency Department, the attending Emergency Medicine Physician should check to see if the patient has a POLST indicating code status or if there is an Advance Healthcare Directive indicating preferences regarding code status, and the Attending Physician and nursing staff on the floor are to check and confirm code status
- The Attending Physician (or if in the Emergency Department, the attending Emergency Medicine Physician) should recommend early goals of care conversations.
- When there is not enough time or information available to assess critical lab data or goals of care, unless there are obvious contraindications, proceed with intubation; in light of subsequent information, the decision may be made not to continue ventilatory support.
- DNAR status should be discussed by the Attending Physician (or if in the Emergency Department, the attending Emergency Medicine Physician) early for any patient in whom CPR is not deemed medically appropriate based on current end-organ function and acute and chronic comorbidities.
- When CPR is determined not to be medically appropriate and not recommended, the Attending Physician (or in the Emergency Department, the attending Emergency Medicine Physician) is to change code status to DNAR and explain / help the patient and/or family understand the rationale for DNAR status. If the patient or the family protests / objects to code status change, Clinical Ethics Consultation is to be requested by the Physician by calling x4616. For urgent requests, call the CCTT member on first call.

There is no automatic DNAR on a COVID+ or PUI patient.

APPENDIX 5

Pandemic/Epidemic Critical Care Allocation Policy

COMMON EXCLUSION CRITERIA FOR ADMISSION TO ICU FROM ED

(for Medical Center staff use only)

I. Generic

Anticipated immediate or near-immediate death regardless of critical care support (due to any cause)

II. Cardiac

A. Unwitnessed out-of-hospital cardiac arrest without ROSC after ≥30 mins of ACLS without shockable rhythm

B. Cardiac arrest unresponsive to defibrillation or pacing

III. Neurologic (catastrophic and irreversible)

A. Ischemic stroke with HIAT-2 score 8-10

B. Brainstem hemorrhage > 2 cm or cerebellar hemorrhage, either one resulting in loss of brainstem reflexes

C. Intracranial hemorrhage > 100 cc in any hemisphere

D. Ruptured aneurysm in patient with Hunt-Hess score of 5 whose exam cannot be explained by reversible factors (seizure, hydrocephalus, or medication)

IV. Trauma

A. Catastrophic bodily trauma (e.g., Trauma Injury Severity Score predicting ≥90% mortality)

B Catastrophic neurologic trauma (e.g., Traumatic Brain Injury with Glasgow Coma Score motor response ≤ 1 at presentation)

C. Severe burns: Expected survival estimate < 10% by Burn ICU attending MD

V. Others

A. The best clinical judgment of Emergency Medicine physicians, as informed by up-to-date Emergency Medicine literature and input from medical consultants in the ED

B. When a patient's goals, values, and preferences, which have been confirmed in the ED by Emergency Medicine physicians, are incongruent with transfer to an ICU (these are often captured on Advance Healthcare Directives, POLST forms, and other pre-existing medical orders or documentation of patients' own statements)

Initial Approval and Major Revisions:

Bioethics Committee: 04/2020
Bylaws Committee: 08/18/2023
Medical Executive Committee: 07/2020; 10/10/2023
Board of Trustees: 07/2020; 10/31/2023

Additional Approvals by the CEO: 7/14/2020