

Allocation of Scarce Medical Resources in a Pandemic: Recommended Framework for Maryland

Adapted from Daugherty, et al., 2017^{1,2} & Ehmann, et al., 2020³

Introduction

Early in the COVID-19 pandemic, Johns Hopkins Medicine, the University of Maryland Medical System, MedStar Health, Lifebridge Health, and Luminis Health (the “5H” group) partnered and developed a framework for the allocation of scarce, life-sustaining resources if that became necessary in their institutions.³ This multi-system framework was based in part on a previous, 5-year effort that included public input to understand the values of Maryland citizens and health care professionals regarding the allocation of scarce critical care resources.^{1,2} Continuing this iterative process, the Maryland Healthcare Ethics Committee Network (MHECN), in collaboration with Justice in Aging (JIA) and Disability Rights Maryland (DRM), further modified the multi-system framework in an effort to address any potential for disparate impact on discrete populations (e.g., people with disabilities, older adults). Lastly, MHECN developed a generic response flow, vetted by the health care system representatives, Maryland Region III Health and Medical Coalition, and the Maryland Region V Emergency Preparedness Coalition, to serve as a template in developing each hospital’s implementation plan to support the responsibilities of the Triage Team through each hospital’s incident command system.

MHECN recommends this framework for use across Maryland hospitals in the event that demand outstrips supply for critical care resources at the state level during the pandemic. DRM, JIA, and MHECN met with the 5H group during 2021-2022 to reach consensus on one allocation of scarce resources (SRA) framework to use across state hospitals in a pandemic scenario when demand for critical care resources outstrips supply. This document is the result of those efforts.

The triage plans in this document are intended for use in patients who, after an informed discussion about their health condition and prognosis with them (or, if they lack decision-making capacity, with their surrogate), request access to life-prolonging critical care resources. Patients whose goals of care and preferences preclude implementing critical care interventions should receive non-ICU care with palliative support, with a Do-Not-Attempt-Resuscitation (DNAR) medical order written as appropriate. All efforts should be made to discuss goals of care and document end-of-life preferences for patients who have conditions that increase the probability of needing ICU-level care. Discussions about goals of care, in particular with respect to advance directives, palliative care, and end of life care should be central to any decisions about life-sustaining measures. Patients whose preference is for palliative and/or hospice care rather than aggressive intervention should have those preferences respected and are not candidates for the ASR framework.

If a clinician concludes, based on an individualized assessment and best available objective medical evidence, that a critical care resource or intervention would be medically ineffective in achieving its intended goal, it should be withheld or withdrawn according to the process outlined in [Maryland’s Health Care Decisions Act](#). This is not the same as triaging critical care resources during a pandemic crisis phase—it is part of usual and contingency phases.⁵

Guidance for Allocation of Scarce Resources

This guidance document is based on an ethical framework that includes the duty to provide care, duty to steward resources, distributive and procedural justice with equitable and standardized practices, and transparency, especially for vulnerable populations that have been marginalized and may be distrustful of the health system (e.g., including, but not limited to, age-based discrimination, persons from racial and ethnic minority groups, persons with disabilities, persons with limited English proficiency, persons who are LGBTQ+, the uninsured, and immigrants to the U.S.). The primary goal is to maximize benefit of treatment and to enhance survival for as many patients as possible when resources are scarce. To accomplish the goal of prioritizing

patients for whom ventilator therapy and other scarce lifesaving interventions would be required, the following tenets should apply:

A. Patients who, on presentation or at any point during their hospitalization, have a medical condition that will result in immediate or near-immediate mortality even with aggressive therapy are not eligible for critical care interventions.

B. Applying evidence-based risk factors for mortality, the Triage Team (see Item I below) will determine whether patients are at high risk of mortality during the current hospitalization. For example, the Triage Team will use scores such as SOFA or mSOFA, PELOD-2, nSOFA, and SNAPPE-II to determine whether patients should receive a scarce resource or continue to receive a scarce resource already given. Evidence-based mortality predictors such as SOFA and its variations are limited based on the research methods, populations, assumptions, and expected applications. Modifications exist to correct for inadvertent disability bias. As other systematic biases are identified (e.g., corrections of SOFA and mSOFA based on race), they may also require correction.

C. Basis for Resource Allocation: For their patients requiring a scarce life-sustaining resource (e.g., ventilators, dialysis), attending physicians will, as per usual standard of care, conduct regular clinical assessments to inform the triage score. In addition, based upon the aforementioned validated scoring systems (SOFA, mSOFA, nSOFA, SNAPPE-II), the Triage Team (see Item I) will evaluate the clinical data (SOFA, mSOFA, nSOFA or SNAPP-I and survival prognosis to hospital discharge) decide whether patients should continue with their treatments (see Appendix A). Any decision to remove/reallocate a life-sustaining resource should be carefully considered, be based upon ethical principles, applied equitably, and not discriminate based upon non-clinical factors or sociodemographic characteristics (see tenet G). Appendix B provides a flowchart of various roles and responsibilities.

D. Alternatives: Patients who are triaged not to receive a life-sustaining resource will be offered alternative forms of care, including palliative care or hospice services. See Appendix C for scripts that suggest approaches to conversations with patients and families.

E. Right of appeal: If triaged not to receive a life-sustaining resource, patients or their authorized decision-maker, as well as the attending physician, will be notified of the decision and may request a secondary review, as described in Appendix A. In emergent triage situations, a secondary review may not be available.

F. State guidance: To assure that secondary review processes are consistent with effective, fair, and timely application as described within the Allocation of Scarce Medical Resources framework, we support the creation of a state-appointed review committee to receive information about triage decisions from participating hospitals. The committee may recommend modifications to the future allocation processes based upon accumulated data. By design, this review will be conducted retrospectively and not punitively.

G. Non-discrimination principles: Every person in need of medical care will be assessed using the same standardized method, applied equally to all. Patients will not be assessed using any other non-clinical factor or sociodemographic characteristic that would violate federal civil rights laws and will not be discriminated against, excluded, or treated differently based upon their race, color, ethnicity, national origin, age, language, physical or mental disability, religion, sex, sexual orientation, gender identity or expression, immigration status, or ability to pay. In particular, persons with disabilities and older adults will not be denied medical care on the basis of stereotypes, assessments of quality of life, functional impairment, need for assistance with activities of daily living, or judgments about a person's relative "worth" based on the presence or absence of disabilities.⁴

H. Retaining Personal Resources: Any person presenting to the hospital with their own personal ventilator used in their day-to-day lives will not have that ventilator re-allocated for use by another patient. The person with their own ventilator may nonetheless be subject to other allocation decisions.

1. Patients with disabilities have the right to a support person to assist them in communicating their health care needs and decisions, and the hospital will provide reasonable accommodations for the support person's inclusion while maintaining infection control protections.

I. Prioritization: All Triage Teams, rather than the patient's providers, will implement the priority structure in this guidance based upon clinical data provided by the patient's providers. This role sequestration serves to provide greater objectivity to decisions and limit moral distress to the care team. Hospital size may affect the ability to achieve role sequestration; best efforts should be implemented to achieve this standard.

J. Transparency will be achieved by: (a) communicating the alternative standards of care provided by this framework to patients and families both on admission to the hospital and when triage decisions are made and (b) through efforts to inform the public regarding the goals of this framework.

K. Health Care Provider Support: Hospitals will develop and implement multi-faceted mechanisms to support health care providers experiencing moral distress, psychological trauma or burnout as a result of providing care under this framework.

REFERENCES

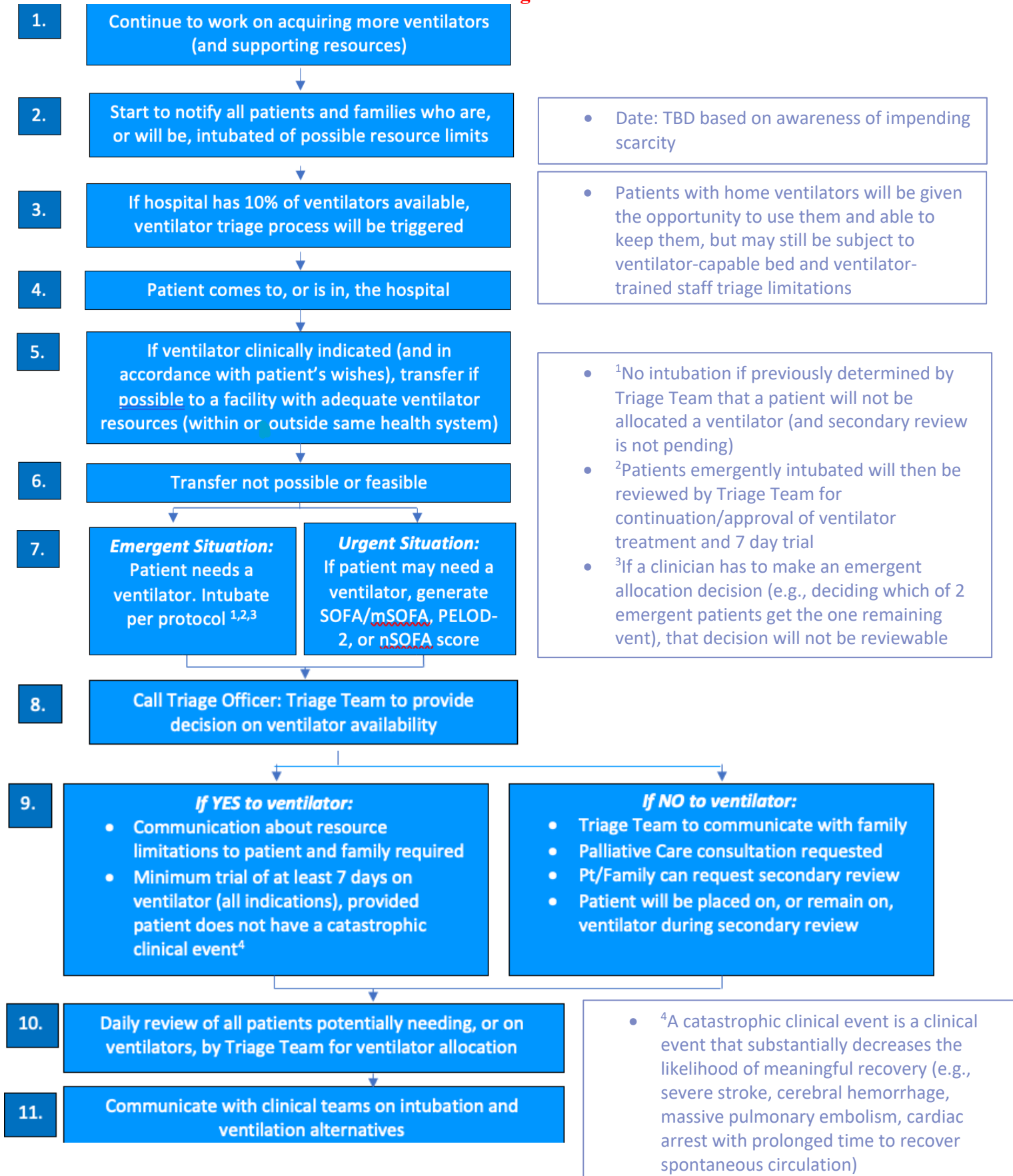
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ACRONYMS

ASR	Allocation of Scarce Resources	ICS	Incident Command System
BIPOC	Black, indigenous people of color	ICT	Incident Command Team
CCS	Critical Care Support	ICU	Intensive Care Unit
CHF	Congestive Heart Failure	IT	Information Technology
CSR	Cost Sharing Reduction	JIC	Joint Information Center
CVVH	Continuous Veno-Venous Hemofiltration	LOC	Level of Consciousness
CVVHD	Continuous Veno-Venous Hemodialysis	mSOFA	Modified Sequential Organ Failure Assessment
CVP	Central Venous Pressure	nSOFA	Neonatal Sequential Organ Failure Assessment
DIC	Disseminated Intravascular Coagulation	OPS	Operations
DNI	Do Not Intubate	OR	Operating Room
DNR	Do Not Resuscitate	PACU	Post-Anesthesia Care Unit
ECMO	Extra-Corporeal Membrane Oxygenation	PD	Peritoneal Dialysis
ED	Emergency Department	PELOD-2	Pediatric logistic organ dysfunction score-2
EID	Emerging Infectious Disease	PIO	Public Information Officer
EUA	Emergency Use Authorization	PPE	Personal Protective Equipment
GCS	Glasgow Coma Score	ROSC	Return of Spontaneous Circulation
HD	Hemodialysis	SNAPPE-II	Score for Neonatal Acute Physiology with Perinatal Extension-II
HEIC	Hospital Epidemiologist, Infection Control	SOFA	Sequential Organ Failure Assessment
HFO	High Frequency Oscillatory	TAVR	Transcatheter Aortic Valve Replacement
		TT	Triage Team

NOTE: Based upon currently available data, the following treatment allocation plans were endorsed by DRM, JIA, MHECN and the 5H group. Evidence-based therapeutics continue to evolve and should be re-evaluated as new data emerge.

Ventilator Triage Plan



>>>SEE APPENDIX A FOR TRIAGE TEAM COMPOSITION & PROCESS<<<

Process for Triage Team to Allocate Ventilators

Step 1:

Assign individual score for ICU survival (with the support of a ventilator and other intensive care)

For adults (age ≥ 18 years), use the lowest SOFA score (i.e., lowest points) over the past 24 hours:

SOFA ≤ 8 = 1 point	SOFA 9-11 = 2 points	SOFA 12-14 = 3 points	SOFA > 14 = 4 points
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NOTE: Modifications may be necessary to ensure that SOFA scores accurately assess likelihood of survival, for example, if components of SOFA are missing (e.g., platelets, bilirubin) or if the person's baseline condition would render the standard SOFA scoring inaccurate. In calculating the Glasgow Coma Score (GCS), modifications need to be made for certain patients, especially those with stable neurological impairment at the time of admission. For example, for patients on chronic ventilator care, an estimated verbal score will be used. For patients with verbal impairments, only the eye score will be used and the verbal and movement categories will be assigned the best score. In the example of an individual with quadriplegia, the patient will be assigned the best motor score on the GCS and not penalized based on their baseline function.

For children (> 37 week gestation infants, age 1 month - 18 years), use the lowest PELOD-2 score (i.e., lowest points) over the past 24 hours:

PELOD-2 < 12 = 1 point	PELOD-2 12-13 = 2 points	PELOD-2 14-16 = 3 points	PELOD-2 ≥ 17 = 4 points
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For neonates (term infants > 37 week gestation, age 2 days – 30 days OR premature infants age > 2 days), use the lowest nSOFA score (i.e., lowest points) over the past 24 hours:

nSOFA 0-3 = 1 point	nSOFA 4-7 = 2 points	nSOFA 8-11 = 3 points	nSOFA ≥ 12 = 4 points
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For all neonates (day of birth until 2 days of age), use the SNAPPE-II tool:

SNAPPE-II 0-59 = 1 point	SNAPPE-II 60-69 = 2 points	SNAPPE-II 70-79 = 3 points	SNAPPE-II ≥ 80 = 4 points
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Individual ICU survival score = _____

Step 2:

Consider whether the patient has one or more severe comorbid conditions that are likely to result in death before hospital discharge.

It is likely that the patient will die before hospital discharge = 3 points
It is not likely that the patient will die before hospital discharge = 0 points

Individual survival to hospital discharge score = _____

Step 3:

Add scores from Step 1 and Step 2 to determine composite score (minimum 1, maximum 7)

For pregnant patients, obstetrical evaluation of a fetal heart beat should be performed urgently. Based on this evaluation, individuals in whom a fetal heart beat is expected and is detected will be given a 1-point "credit"

(reduction) on their composite score, thus giving them higher priority. For those individuals early in pregnancy where a fetal heart beat would not be expected to be detectable, they will be given a 1-point “credit” (reduction) on their composite score. All other criteria still apply.

Composite score (ICU survival score + hospital discharge survival score) = _____

Step 4:

In the event that equivalent composite scores are assigned to 2 or more individuals, proceed to Step 5

Otherwise, ventilator is preferentially allocated to that individual with lowest composite score from Step 3

Step 5 (if necessary):

When patients’ triage scores remain tied, a judgment should be made of which patient has the greater prospect of surviving to hospital discharge based on additional clinical evaluation of symptom presentation & medical record review, as long as the decision is not based on unlawful considerations of race, color, national origin, disability, age, or sex.

Step 6 (if necessary):

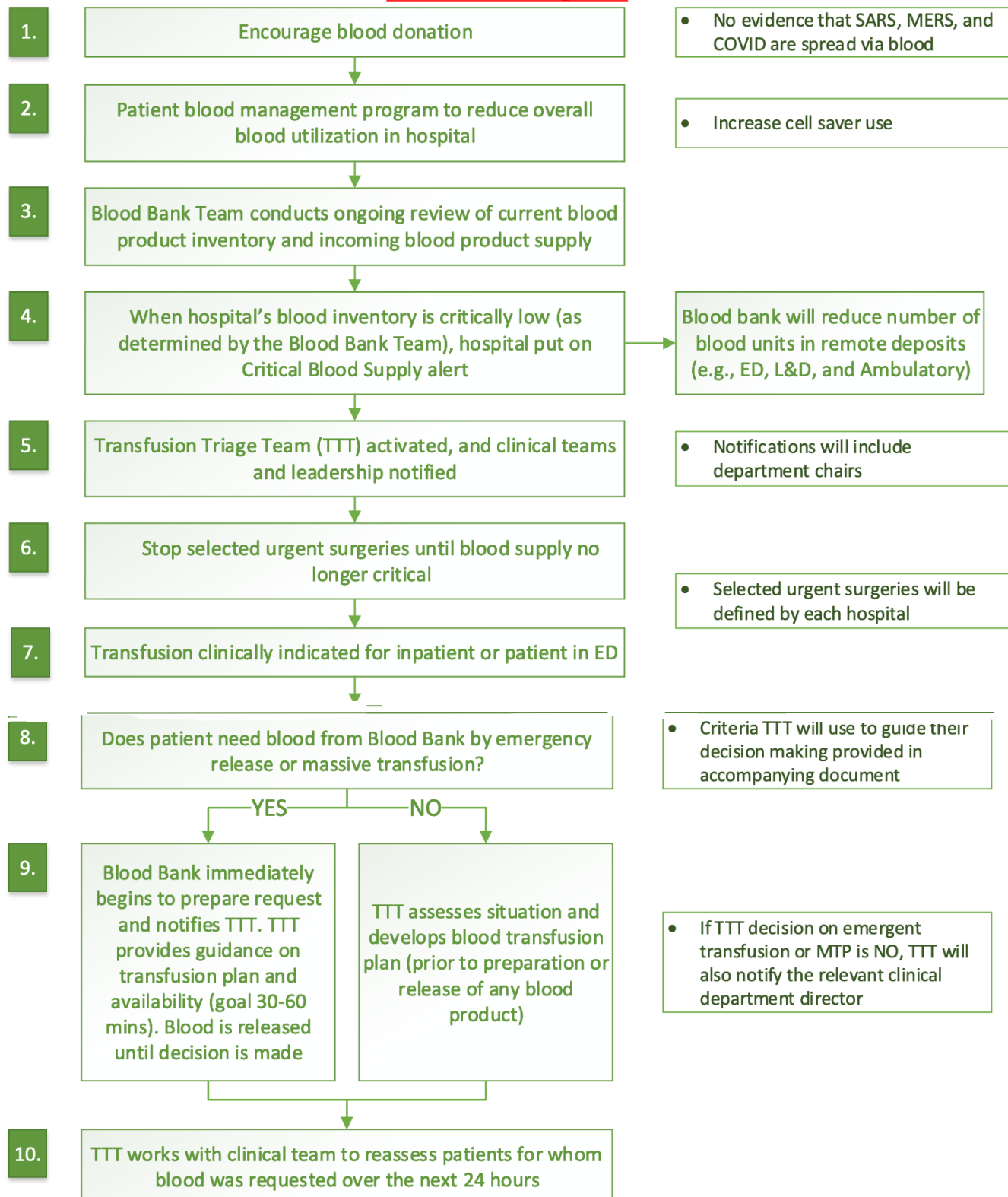
In case of equivalent composite scores for 2 or more individuals in Step 5, allocate ventilator based on fair chance wherein individuals with equivalent composite scores in Step 5 are each assigned a single lottery number, sequentially ordered beginning with 1, 2, 3, etc.

After all individuals with equivalent composite scores are assigned a single lottery number, a random drawing of assigned numbers is performed by the Triage Officer and the ventilator is allocated to that individual with the first-drawn corresponding lottery number

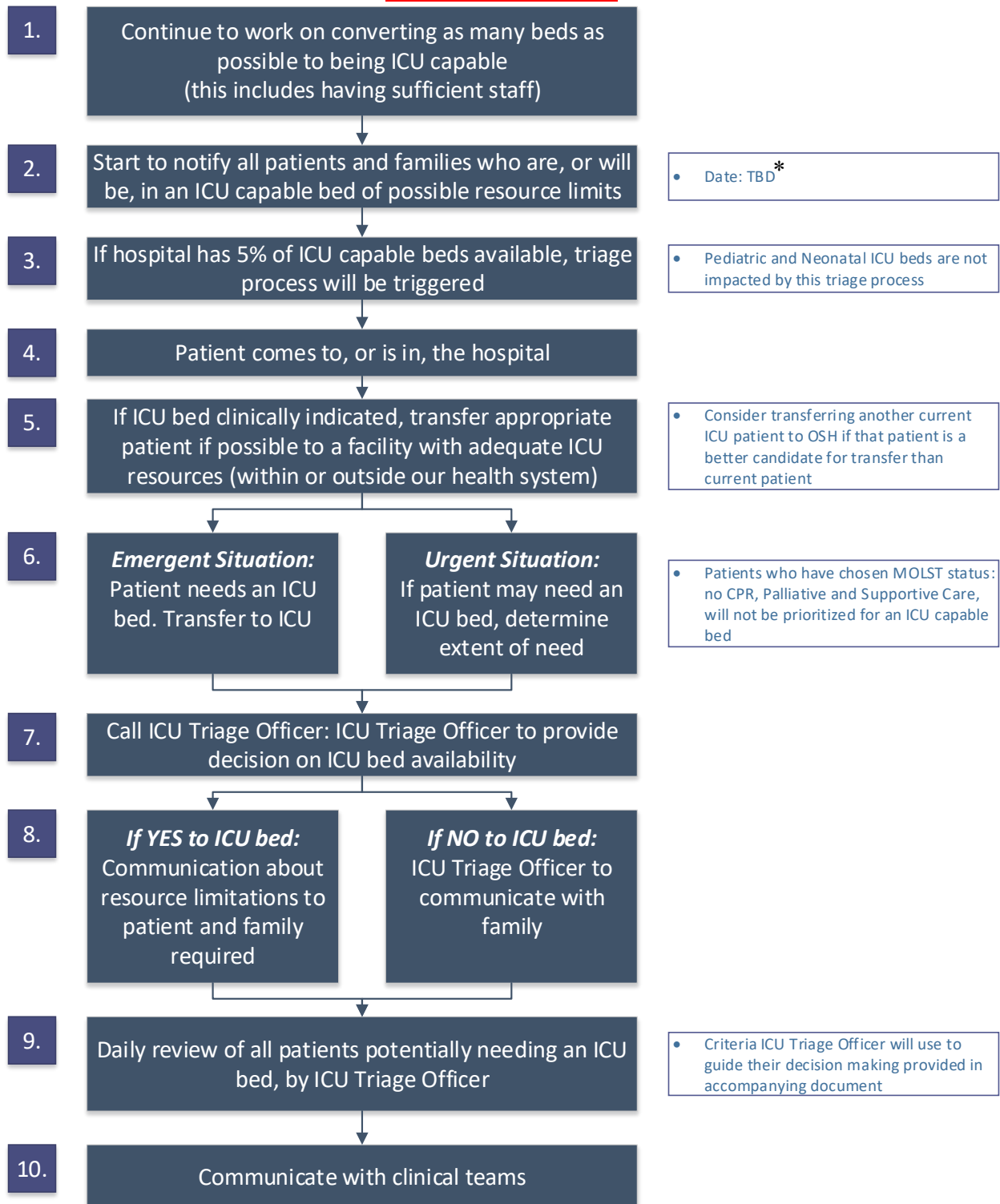
Sample Cases

1. Patient A, 24 years of age, has a SOFA score of 13, and no severe comorbid conditions resulting in likely death during hospitalization. Patient B, 52 years of age, has a SOFA score of 10, and no severe comorbid conditions. Patient A’s composite score is 3 points and Patient B’s composite score is 2 points. Patient B is prioritized.
2. Patient A, 20 years of age, has a SOFA score of 7. Patient B, 39 years of age, has a SOFA score of 8. Neither has severe comorbid conditions. Both receive a composite score of 1. Both are equally stable. The scarce resource is allocated based on chance in a fair and transparent way with a lottery. Patient A is assigned lottery #1 and Patient B is assigned lottery #2. The triage officer blindly draws #2, so Patient B is prioritized.

Blood Product Triage Plan



ICU Bed Triage Plan



*NOTE: TBD = To be determined based on awareness of impending scarcity

ICU BED TRIAGE CRITERIA

NOTE: The scoring system below has limited evidence to support its validity and reliability, and thus should be used to supplement best clinical judgment.

	Criteria		Points
TREATMENT	Patient needs clinically indicated (taking into account patient preferences) TREATMENT that is usually available only in ICU	Need	0 or 20
	Need 20 pts (needs a treatment that can be delivered in ICU, but not floor or intermediate unit)	Urgency	0, 10, or 20
MONITORING	Patient needs clinically indicated MONITORING and potential rescue that is available only in ICU	Need	0 or 10
	Need 10 pts (needs monitoring that can be delivered in ICU, but not floor or intermediate unit)	Urgency	0, 5, or 10
SURVIVABILITY TO HOSPITAL DISCHARGE	SURVIVABILITY Low = 0 pts Mid-Range = 15 pts High = 30 pts		0, 15, or 30
PREGNANCY	PREGNANT PATIENT No = 0 pts Yes (see note 3 below) = 10 pts		0 or 10
ONLY FOR PATIENTS IN ICU: TIME IN ICU	< 72 hrs = + 10 pts 72 hrs to 168 hrs = 0 pts >7 - 13 days = - 10 pts >14 days = -20 pts		-20, -10, 0, 10
ONLY FOR PATIENTS IN ICU: SOFA SCORE CHANGE (since admission to ICU)	If patient in ICU < 72 hours, 0 pts Worsening: Score change < -1 pt = - 20 pts No change: Score change from -1 to 1 pt = 0 pts Improvement: Score change > 1 pt = 20 pts		-20, 0, 20
TOTAL			

Notes:

1. **The greater the number of points, the higher the patient will be placed on the list and the likelier they are to be allocated an ICU bed.** This is different than the ventilator allocation system where lower points lead to a higher likelihood of allocation.
2. DNR/DNI status does not result in a change in points.
3. For pregnant patients, obstetrical evaluation of a fetal heart beat should be performed urgently. Based on this evaluation, individuals in whom a fetal heart beat is expected and is detected will be given a 10 point credit. For those individuals early in pregnancy where a fetal heart beat would not be expected to be detectable, they will be given a 10 point credit. All other criteria still apply.
4. If a patient is discharged from the ICU and returns ≥ 24 hours later, the time in ICU clock restarts.
5. For patients going to surgery from the ICU and returning to the ICU, the time in ICU clock does not restart.
6. An "ICU capable" bed indicates that it is adequately staffed and supported per institutional policies and procedures.

TIEBREAK if points are equal (in descending order of priority)

1. If ED is not over capacity, by patient location (in descending order of priority):
 - Floor patients
 - ED
 - OR Holds/PACU
2. Time waiting for ICU bed

CONDITIONS OR TREATMENTS THAT SUPPORT PRIORITIZATION FOR ICU CAPABLE BED TREATMENT DURING PANDEMIC (These may vary somewhat depending upon the individual institutions' availability of more intensive nursing/technical support on floors outside of the ICU)

Respiratory

1. On ventilator (Patient must qualify for ventilator, if ventilators are in critical supply)
2. Hemoptysis >150 cc in a 12-hour period
3. Respiratory distress or failure with elevated CO_2 , sustained increased respiratory rate, and/or decreased O_2 saturation

Cardiovascular

4. Systolic BP >200 with organ dysfunction (papilledema, CHF, hematuria, seizure, encephalopathy) attributable to hypertension
5. Pulmonary arterial catheter placement and management
6. Hemodynamic monitoring, including arterial lines, pulmonary artery monitoring and CVP monitoring
7. Temporary (percutaneous) transvenous pacing, transcutaneous pacing
8. Unstable arrhythmia
9. Intra-aortic balloon pump placement and/or management
10. Patients s/p TAVR, immediately post procedure
11. Hemodynamically unstable pericardial tamponade, or actively progressing tamponade with high risk of hemodynamic compromise
12. Dissecting aortic aneurysm
13. Arterial and venous sheaths
14. Antiarrhythmic infusions
15. Vasopressor dependent

16. ECMO

Neuro

17. Rapidly changing neurological status (i.e., rapid or recent deterioration in LOC or neuromuscular function, e.g., Guillain-Barre) and/or neuro checks q1 hour or more
18. ICP Monitoring
19. Generalized status epilepticus
20. Persons placed in induced coma for treatment of convulsive or non-convulsive status epilepticus or acute brain anoxia
21. Thrombolytics (e.g., rt-PA after stroke) and continuous infusions for venous or arterial embolus

Endocrine

22. Thyroid storm or myxedema coma.
23. Diabetic ketoacidosis with pH < 7.3
24. Serum sodium <115 or >160
25. Use of hypertonic solutions
26. Any substance overdose with risk of arrhythmias, shock or other life-threatening organ dysfunction
27. Insulin infusions

General / Other Conditions / Treatments

1. Major active bleeding
2. Severe DIC
3. Severe agitation requiring frequent sedative boluses or changes in continuous IV sedation.
4. Worsening agitation from alcohol/substance withdrawal
5. Moderate or Conscious Sedation
6. CVVH

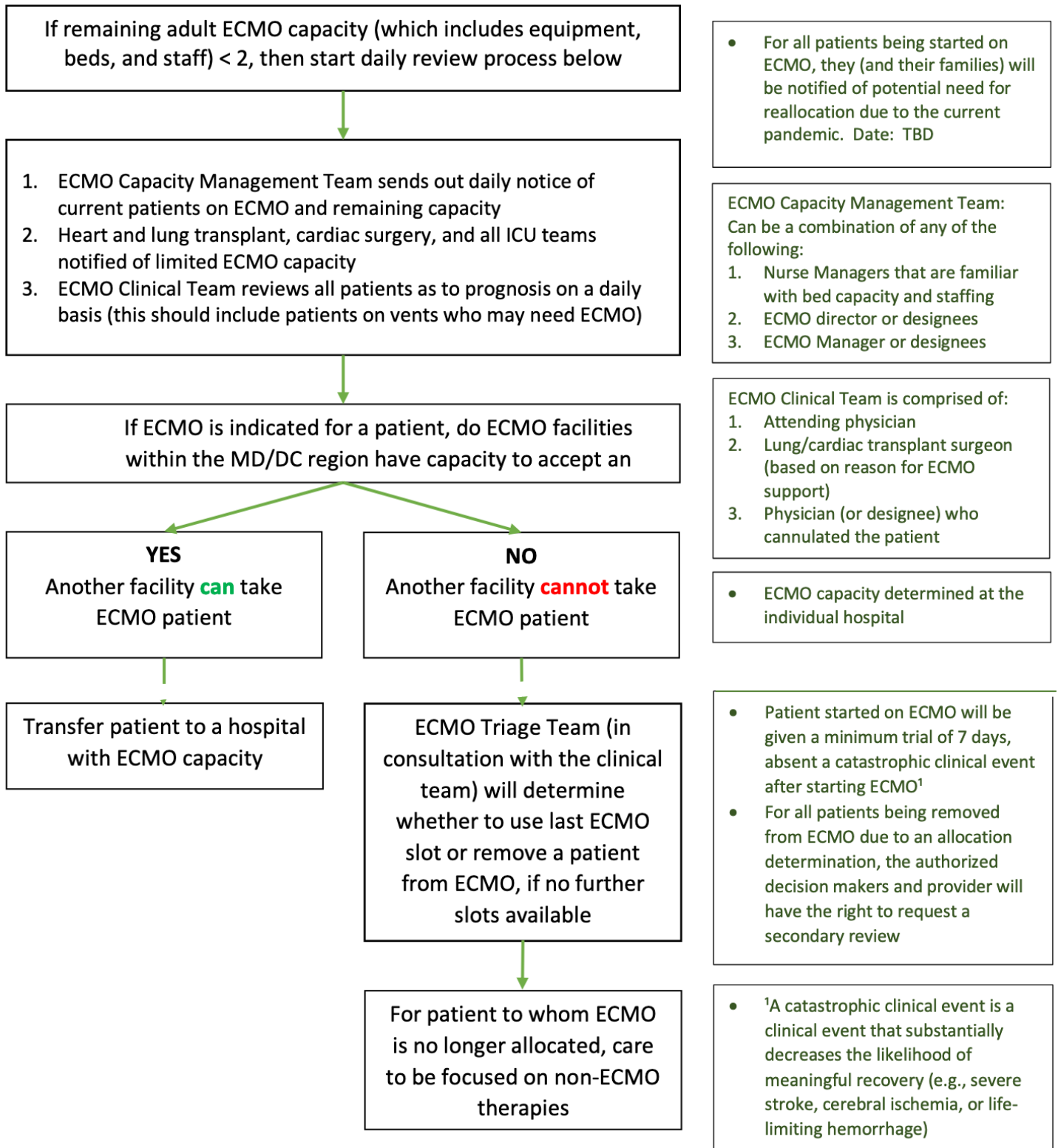
Infections

1. Severe sepsis with end organ dysfunction
2. Stevens Johnson syndrome

CONDITIONS OR TREATMENTS THAT WEIGH AGAINST PRIORITIZATION FOR ICU CAPABLE BED TREATMENT DURING PANDEMIC

1. Severe illness with low likelihood of survival to hospital discharge (e.g., sepsis with end organ dysfunction)
2. Cardiac arrest (with or without ROSC)
3. Severe and irreversible coagulopathy
4. Extensive burn injuries
5. Severe and irreversible organ failure in which survival to hospital discharge is unlikely
6. Invasive infection with low likelihood survival to hospital discharge
7. Comfort care only status

ECMO Triage Plan



ECMO TRIAGE TEAM

Membership of the ECMO Triage Team (ECMO TT):

- The ECMO TT will have 3 voting members. Decisions made by majority vote
- The team will have other members that will serve as advisors, but they are not required for emergent triage decisions
- Each team member will serve continuously and nominate a proxy if unavailable
- Their goal response time for ECMO requests is 30-60 minutes
- Daily review of current ECMO utilization and communication with ECMO Capacity Management Team, ECMO Clinical Team, and providers of potential ECMO requests

ECMO TT Composition:

1. Critical care physician (who is not or has not been the patient's physician)
2. Critical care nurse, one of the charge nurses (who is not or has not been the patient's nurse)
3. Pulmonary physician (who is not or has not been the patient's physician)
4. Non-voting advisor: Ethics representative
5. Non-voting advisor: CVSICU medical director
6. Non-voting advisor: Lung transplant surgical director
7. Non-voting advisor: Pediatric ECMO medical director

If any of the members above are not available, a proxy can be chosen.

Process ECMO TT will use for allocation decisions:

If there are more patients needing ECMO than there is ECMO capacity (and transfer to another facility is not possible), the ECMO TT will evaluate all patients on ECMO (using the criteria below) to determine whether they have little to no chance of recovery on ECMO.

- If there are patients that meet these criteria, the ECMO TT will talk with the families regarding stopping treatment. The number of patients removed will be no greater than the number of patients needing to initiate ECMO treatment. Those with less chance of recovery will be removed from ECMO first.
- If the ECMO TT determines that no patients have little to no chance of recovery, those patients will not be removed from ECMO in order to initiate new patients on ECMO (in this sense, it is a "first-come first-served" model. The difficulty results from the fact that ECMO therapy can last days and it is frequently hard to discern who will fail ECMO therapy).

Criteria for ECMO (Cardiac and Respiratory) Treatment Allocation

Not favoring allocation

- A catastrophic clinical event, defined as a clinical event that substantially decreases the likelihood of meaningful recovery (e.g., severe stroke, cerebral ischemia, or life-limiting hemorrhage)
- Severe illness with low likelihood of survival (e.g., sepsis with end organ dysfunction)
- Cardiac arrest (with or without ROSC)
- Severe and irreversible coagulopathy
- Severe and irreversible organ failure for which no treatment options are remaining
- Invasive infection with low likelihood of resolution or survival
- Multi-organ system failure
- Unrecoverable heart or lung and not a candidate for transplant or VAD
- Chronic organ dysfunction (e.g., emphysema, cirrhosis, renal failure)
- Prolonged time on ECMO
- Continuing treatment requires a circuit change that the patient is unlikely to tolerate

Evaluation of ECMO effectiveness:

At 5-7 days of ECMO support and, at the least, weekly reevaluations to determine advisability of continuing support, particularly if no interval improvement has occurred or if complications have developed during ECMO therapy

Note: Standard neonatal and pediatric ECMO will continue in accordance with existing Extracorporeal Life Support Organization (ELSO) and institutional guidelines.

SECONDARY REVIEW COMMITTEE PRINCIPLES

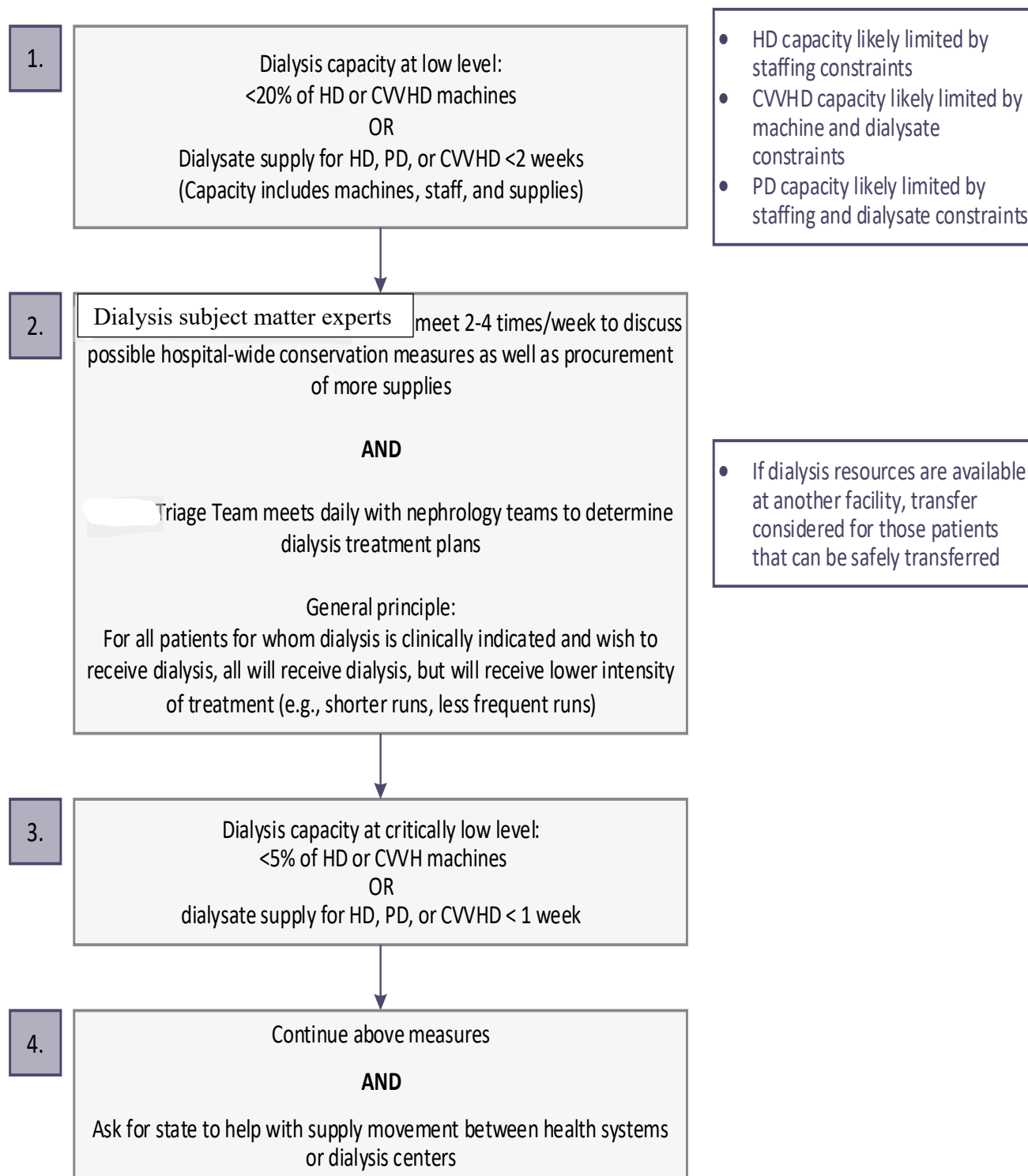
- Multidisciplinary
- Minimum of three members
- Oversight of the ECMO Triage Team
- Upon request, performs secondary reviews of ECMO Triage Team recommendations when scarce resources dictate need for cessation of ECMO support for individual patients

SECONDARY REVIEW PROCESS

1. Upon request of a secondary review by the patient, the patient's authorized decision maker, or the attending physician, the ECMO Triage Team immediately contacts the secondary review team.
2. The secondary review team reviews the steps by which the ECMO Triage Team made the decision to withdraw ECMO. The review will determine if the criteria for ECMO allocation were appropriately followed. The secondary review team will determine if a withholding decision had not considered all of the relevant clinical triage criteria or had misapplied the criteria in a way that created inequities.
3. The decision of the secondary review committee will be determined by a majority vote. The secondary review team will respond back to the ECMO Triage Team with its decision with a 1 hour goal (but may take longer depending on the complexity of the circumstances). The ECMO Triage Team will be responsible for ensuring the secondary review committee's decision is communicated to the requestor.
4. The secondary review team will consist of an attending physician for adults (for adult cases), attending physician for children (for pediatric cases) that possesses clinical expertise in ECMO, a critical care physician, and a nurse. Previous or current members of the patient's care team cannot be voting members. Legal counsel will be available for consultation but will not have voting privileges.

Secondary Review Team Role	Notes	Proposed Names
Attending physician for adults (adult cases) or attending physician for children (pediatric cases) with clinical expertise in ECMO	Previous or current members of the patient's care team cannot serve in this role	
Critical Care Attending Physician	Previous or current members of the patient's care team cannot serve in this role	
Nurse	Previous or current members of the patient's care team cannot serve in this role	
Ad hoc clinical advisors	Called, as needed (non-voting)	Lung transplant surgical director (for lung failure cases) Heart transplant surgical director (for heart failure ECMO)
Legal Counsel	Called, as needed (non-voting)	
Ethicist	Called, as needed (non-voting)	

Dialysis Triage Plan



DIALYSIS RESOURCE CONSERVATION TEAM

Goals: Conservation and supply procurement

Team will meet 2-4 times per week to review and make recommendations

Member
Clinical director of nephrology
Nephrology attendings on renal service
Pharmacy representative
Hospital supply chain representative
Nurse from dialysis unit
Pediatrics representative
Dialysis/dialysate supplier representative

DIALYSIS TRIAGE TEAM

Team will interface with nephrology attending(s) on clinical service to obtain patient information and refine patients' treatment plans. Goal is to minimize dialysis machine and supply use for each patient to the extent possible.

They will base recommendations on:

- Dialysis needs (HD, CVVHD, and PD) across the hospital
- Dialysis capacity

Member	Notes
Attending physician with renal expertise*	
Attending physician with critical care expertise*	
Attending physician with hospital medicine expertise*	
Palliative care	Available for consultation, non-voting
Nursing with dialysis experience	Available for consultation, non-voting
Ethicist	Available for consultation, non-voting

*To the extent possible, physicians that have been or are members of a patient's care team, should refrain from defining the alternate treatment plans for that patient.

Methods for Dialysis Resource Conservation

Intermittent Hemodialysis (IHD or HD)

- Shorter treatments 2.5 to 3 hours
- Fewer treatments per week
- Medical management of related issues
 - Hyperkalemia: Potassium Binders (Patiromer, sodium zirconium cyclosilicate, sodium polystyrene sulfonate (Kayexalate))
 - Acidosis: Bicarbonate
 - Volume overload: high dose diuretics if responsive patient
- Patient cohorting: Allows for nurse to monitor more than one patient at a time
 - Adjacent rooms on COVID unit
 - If available space with water supply, could consider bringing COVID patients who are stable to centralized location
- Use CVVHD if needed to allow for staff reduction (CVVHD in most institutions managed by ICU nurses – at JHH the dialysis nurses set up the circuit)
- Repurpose non-dialysis staff to set up and manage CVVHD to free up dialysis nurses

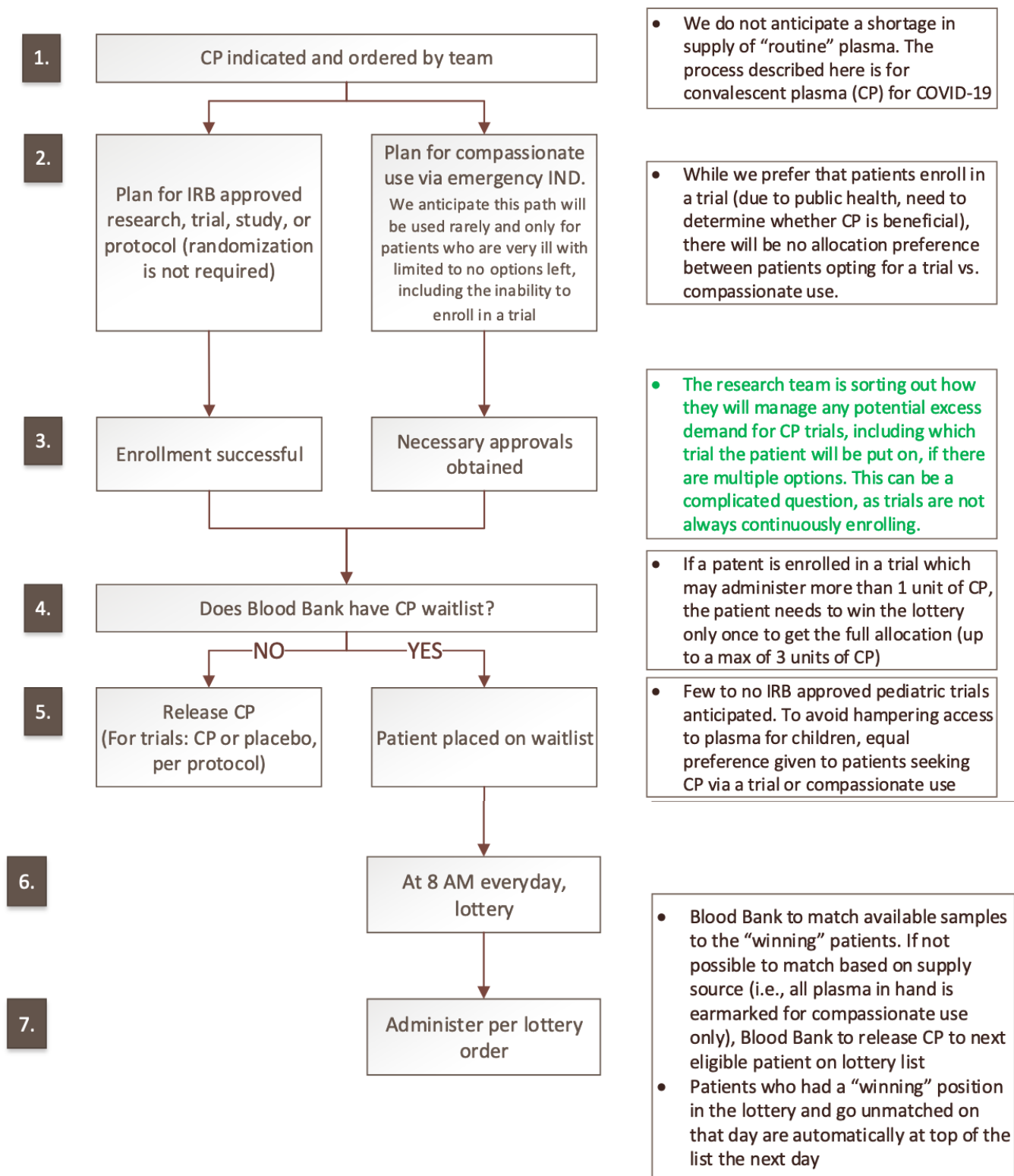
CVVHD

- Shortage of CVVHD machines
 - Do shorter duration daily treatments – 6-12 hours (PIRRT = prolonged intermittent RRT) with higher dialysate flows
 - Every other day treatments where possible
 - Use IHD machines (longer treatments, pressor use if needed to allow for UF goals) assuming dialysis staff is available
 - Acute peritoneal dialysis
 - Alternative CVVHD vendors – some newer companies that have different machines
- Dialysate shortage
 - Use of alternative dialysate – lactate based
 - Produce dialysate as needed – several recipes available
 - Early transition to IHD as possible
- Shortage of supplies other than dialysate
 - Strategies to reduce use of equipment
 - Use cartridges beyond recommended expiry (usually 72 hours) if still functioning without issues
 - Anticoagulation and other strategies to reduce
 - Work with vendors to obtain alternative supplies
 - Dialysis cartridges
 - Dialysis catheters

PD

- Medical management as with hemodialysis
- Dialysate shortage
 - Fewer fluid exchanges
 - Lower fluid use as clinically tolerated
- Staffing
 - Train non-hemodialysis staff to administer the PD

Convalescent Plasma Triage Plan



CONVALESCENT PLASMA ALLOCATION COMMITTEE (CPAC) TASKS

General principles to guide the tasks of the CPAC:

- Run the lottery (patient's primary team to communicate the results)
- Troubleshoot any issues or address any concerns in the allocation process that arise
- Interface with research leadership and monitor for new research data
- Monitor allocation performance
- Flag potential areas for change and discuss with the scarce resource committee, the committee that will be responsible for oversight of the allocation process

MEMBERSHIP OF THE CONVALESCENT PLASMA ALLOCATION COMMITTEE (CPAC)

- Each hospital will have its own CPAC
- If decisions are required, the CPAC will have three voting members. Decisions made by majority vote
- To be a voting member, a CPAC member cannot be a member of any potential CP patient's clinical team or a member of a CP research team at the hospital

CPAC COMPOSITION

- (1) Organization's research leader (or designee with the relevant expertise)
- (2) Blood bank medical director (or designee with the relevant expertise)
- (3) Infectious disease expert
- (4) Nonvoting member: Administrative support for running the lottery and monitoring data
- (5) Nonvoting adviser, as needed: Hospital Administrative Leader
- (6) Nonvoting adviser, as needed: Epidemiologist
- (7) Nonvoting adviser, as needed: Ethicist

LOTTERY EXAMPLE

On Day #1, Blood Bank has 5 Units of CP

2 Earmarked for Trial Only- One with titer 1:320, the other 1:160

2 Earmarked for Compassionate Use Only (titers unknown)

1 Not earmarked (titer 1:320)

			In this case,
Lottery "Winners"	1	Trial requires titer of at least 1:320	Patient 1 would get CP
	2	Trial requires titer of at least 1:320	Patient 2 would get CP
	3	Trial requires titer of at least 1:320	Patient 3 would not get CP, but would be #1 on list next day (was in top 5)
	4	Trial requires titer of at least 1:320	Patient 4 will would get CP, but will be #2 on list next day (was in top 5)
	5	Compassionate Use	Patient 5 will get CP
	6	Trial requires titer of at least 1:320	Patient 6 will not get CP, and has to redraw in the lottery (was not in top 5)
	7	Trial requires titer of at least 1:160	Patient 7 will get CP
	8	Compassionate Use	Patient 8 would get CP
	9	Trial requires titer of at least 1:160	Patient 9 will not get CP, and has to redraw in the lottery (was not in top 5)
		and so on, as every patient gets a number....	Everyone else goes back into the lottery

On Day #2, Blood Bank has 6 units of CP

Patient 3 would be #1, Patient 4 will be #2

Everyone awaiting CP will get at least 1 number, but only 4 will be lottery winners

NOTES

1. Patients needing a second bag will likely have to go back into the lottery. However, patients enrolling in a trial that requires more than 1 unit will have all units (up to a max of 3) upon winning the lottery.

Remdesivir Triage Plan

1

Try to maintain a sufficient supply of remdesivir to meet demand



2

Remdesivir available to only those patients:
enrolled in an IRB-approved clinical trial, on compassionate use protocol, or meet EUA criteria



Clinical Trial

Expanded Access / Compassionate Use

Emergency Use Authorization



3

Anticipate that trials will provide their own remdesivir supply, if the trial uses it

(For example, ACTT-2 will have its own supply of remdesivir)

Gilead has been supplying the drug (separate from EUA supply)

Per Gilead, expanded access available for Peds or Pregnancy and may be phased out soon

The course and dosing of remdesivir provided through this channel should follow the expanded access protocol and NOT limited by any EUA allocation process

EUA criteria:

- Adults and children with suspected or lab-confirmed COVID-19; AND
- SpO2 ≤94% on room air, requiring supplemental oxygen, mechanical ventilation, or ECMO
- Given the current supply situation, for all patients prescribed remdesivir, administer no more than a total 5-day course. The only exception is for patients on a vent (w/ or w/o ECMO) at the time of completing first course: If their attending wishes to order another 5-day course on Day #6, the patient is eligible to go back into the allocation process for another 5-day course once, on Day #6 only.
- If we have supply on hand, we will not reserve any supply for future patients that may come in.
- If demand exceeds supply on a given day, follow tiered allocation system as below (Tier 1 patients with first priority for distribution)

Allocation Process

- All initial courses are limited to 5 days for all patients (whether or not on a vent or ECMO), regardless of their clinical status (Per the FDA, the optimal duration of treatment for COVID-19 is unknown). As above, there can be one request for a second course for vented patients
- Once started, a 5-day course will not be stopped to make drug available for another patient



4

Tier 1 Patients

- Meet EUA criteria
- AND all 4 of the below:**
- Confirmed COVID-19 (RNA-positive respiratory sample)
- In hospital ≤7 days (during this hospitalization) (earlier initiation of treatment is thought to provide the best chance at improvement)
- No evidence of clinical improvement (patients can be eligible immediately upon admission)
- Do not meet any Tier 3 criteria

Tier 2 Patients

Meet EUA criteria
AND are not in Tier 1
or Tier 3

Tier 3 Patients

- Meet EUA criteria
- BUT also meet ANY of the criteria below:**
- Requiring significant and more than 1 medication for vasopressor or inotropic support; or
- On ECMO

NOTES

The allocation process may change over time.

1. We will modify this protocol as more data become available

Random Selection

1. When remdesivir demand exceeds supply, the available supply will be allocated to patients based on a random selection every morning. Tier 1 random selection will take place first. If after all Tier 1 patients have been allocated remdesivir, then a random selection would follow for Tier 2 patients, and then Tier 3, as supplies allow.

2. All patients eligible for the random selection process will have only one "entry" in the random selection each day. There are no additional entries for time waiting for the drug.

3. The patient's tier status (by the patient's clinical team) is determined each morning of the random selection. For example, if a patient enters the random selection on Day #6 of hospitalization, but does not win the random selection on Day 6 or 7, the patient will move to Tier 2 on Day 8 by virtue of now being in the hospital > 7 days.

4. If a compassionate use IND (expanded access) program is NOT in place at the hospital, pregnant women will get first priority within their tier (i.e., they will be first for allocation before the random selection for the others—and if more pregnant woman than supply, a random selection within that group). For pregnancies where a fetal heart rate can be evaluated, it must be present and be consistent with a healthy fetus. To increase supply, hospitals will explore ensuring that expanded access protocols for pregnant women are in place as long as the manufacturer keeps them available. They will do the same for pediatric patients (however, no priority provided for children within the tier their clinical condition dictates).

Supply

1. At present, all allocation decisions will be made at the hospital entity level. As more information and supply comes in, hospitals will explore moving drug to meet demand within and across systems.

Identification of Patients Meeting EUA Criteria

1. Each hospital will determine how to identify patients that meet EUA criteria for remdesivir and whether the attending physician wishes to prescribe it.

Important Instructions for Health Care Providers

We will ask health care providers to communicate to patients or surrogate decision-makers information consistent with the "Fact Sheet for Patients and Parents/Caregivers" (See Link: <https://www.gilead.com/remdesivir>) prior to the patient receiving remdesivir, including:

- FDA has authorized the emergency use of remdesivir, which is not an FDA approved drug.
- The patient or surrogate decision-maker has the option to accept or refuse remdesivir.
- The significant known and potential risks and benefits of remdesivir, and the extent to which such risks and benefits are unknown.
- Information on available alternative treatments and the risks and benefits of those alternatives.
- Provider should document that the patient received the EUA Fact Sheet about remdesivir.

REMDESIVIR DOSING GUIDANCE UNDER EUA AND ALLOCATION CRITERIA

Patient Age/Weight	EUA Dosing Recommendation	Dosing Under Allocation System when Demand Greater than Supply
Adults and Pediatric Patients weighing greater than or equal to 40 kg <i>requiring mechanical ventilation or ECMO</i>	200 mg IV x 1 on day 1 followed by 100 mg IV daily x 9 days, for a total 10-day course	200 mg IV x 1 on day 1 followed by 100 mg IV daily x 4 days, for a total 5-day course *For patients on a ventilator at the end of the 5-day course, an additional 5-day course (100 mg IV daily) may be requested.
Adult and Pediatric Patients weighing \geq 40 kg <u>NOT</u> <i>requiring mechanical ventilation or ECMO</i>	200 mg IV x1 on day 1 followed by 100 mg IV daily x 4 days, for a total of 5 days; If a patient does not demonstrate clinical improvement, treatment may be extended for up to 5 additional days for a total of 10 days	200 mg IV x 1 on day 1 followed by 100 mg IV daily x 4 days, for a total 5-day course
Pediatric Patients between 3.5 kg to 40 kg <i>requiring mechanical ventilation or ECMO</i>	5 mg/kg IV x1 on day 1 followed by 2.5 mg/kg IV daily x 9 days for a total 10-day course	5 mg/kg IV x1 on day 1 followed by 2.5 mg/kg IV daily x 4 days for a total 5-day course *For patients on a ventilator at the end of the 5-day course, an additional 5-day course (100 mg IV daily) may be requested.
Pediatric Patients between 3.5 kg to 40 kg <u>NOT</u> <i>requiring mechanical ventilation or ECMO</i>	5 mg/kg IV x1 on day 1 followed by 2.5 mg/kg IV daily x 4 days, for a total of 5 days; If a patient does not demonstrate clinical improvement, treatment may be extended for up to 5 additional days for a total 10-day course	5 mg/kg IV x1 on day 1 followed by 2.5 mg/kg IV daily x 4 days for a total 5-day course

Once started, a complete (5 or 10 day) course should be administered unless adverse events require discontinuation, or the patient is discharged to another facility that does not have remdesivir available.

REMDESIVIR PATIENT HANDOUT

You may be eligible to receive a new investigational drug called remdesivir to treat the symptoms of COVID-19. You are receiving this information because your physician is considering this medicine for you.

About Remdesivir

Remdesivir is an intravenous (IV) medication, which means it is given into your vein. The Food and Drug Administration (FDA) has allowed remdesivir for emergency use for a limited group of patients with COVID-19. This drug has been shown to work against some viruses, including COVID-19. Remdesivir is still called investigational because it is still being studied. There is limited information known about the safety and effectiveness of using remdesivir to treat people in the hospital with COVID-19.

A Limited Supply

The federal and state governments have sent a limited supply of remdesivir to some Maryland and Washington DC hospitals. If we have adequate supply on hand for all patients, remdesivir will be provided to you if your physician prescribes it. When the demand is greater than the supply, a team at the hospital will oversee the process to determine who receives the medication. This team is different from your care team. We are doing everything we can to make this a fair and equitable process for all patients.

Determining Who Receives Remdesivir

If the demand is greater than supply, the hospital will use the same criteria for all patients when making difficult decisions about giving remdesivir. The criteria include the following:

- lab test confirmation of COVID-19
- length of time you have been in the hospital
- how your recovery is going

Based on these criteria, we will put patients into priority groupings. For patients in the highest priority group, we will use a process that chooses at random which patients will receive remdesivir. If there is still medication on hand, we will then run the same process for those in lower priority groups, until all of the drug has been dispensed.

Taking Remdesivir

According to the FDA, the optimal length of treatment is not known. If you are chosen to receive this medicine, a 5-day course of treatment will be reserved for you. We will monitor you daily for any side effects. You will receive the full 5-day course unless you have a significant side effect that requires stopping the medication, you are well enough to be discharged from the hospital, or you choose to stop it. By providing a 5-day course of treatment (instead of 10 days), the maximum number of patients will have a chance to receive and benefit from remdesivir. Some patients on a ventilator may qualify for an additional 5-day course.

For more details, we have provided you with a fact sheet about the medication. Please read it.

Your physician will also speak with you about the benefits and risks of remdesivir as well as alternative treatments.

Questions

Our care teams are committed to providing you with exceptional, compassionate care. Please do not hesitate to speak with any member of your care team if you have any questions.

Hydroxychloroquine Management Strategies

BACKGROUND

In the setting of the current outbreak of 2019 novel coronavirus (SARS-CoV-2, or COVID-19), there has been ongoing discussion regarding what medications are available for the treatment of COVID-19, and this is the guidance put forth for how we will dispense hydroxychloroquine (HCQ), given that it is in high demand and at risk of supply depletion.

Currently, no definitive data is available on the effectiveness or comparative effectiveness of HCQ or chloroquine (CQ) for the treatment of COVID-19. HCQ is preferred due to better tolerability and lower toxicity ¹, and CQ is currently unavailable for ordering. Guidance is based on very limited evidence that suggests treatment with HCQ or CQ may result in more rapid reduction in viral shedding and may be associated with improved clinical outcomes

The goal is to keep a minimum of a three-month supply of pre-COVID-19 outpatient utilization and a one-month supply of pre-COVID-19 inpatient utilization on hand.

OUTPATIENT RESTRICTIONS AND ESCALATION PROCESS

The guidance that follows is in alignment with the Executive Order of the Governor of the State of Maryland Number 20-04-14-01 titled "Preserving the Supply of Necessary Drugs." The restrictions will continue until the state of emergency is terminated and the proclamation of the catastrophic health emergency is rescinded. Chloroquine, hydroxychloroquine, and azithromycin will not be dispensed as treatment for symptoms of undiagnosed COVID-19 or as prophylaxis for undiagnosed COVID-19.

Outpatient pharmacists must ensure the indication for all hydroxychloroquine (HCQ) prescriptions is clear. The Executive Order requires the indication be clearly written on the prescription (hard copy or electronic). If the indication is unclear, the pharmacist shall assess indication based on information in the electronic health record (EHR), CRISP data, and/or a discussion with the prescriber. HCQ outpatient prescriptions should only be filled for the following reasons:

- Continuation of therapy for a diagnosed rheumatologic disease (e.g., lupus or rheumatoid arthritis).
- Initiation of therapy for newly diagnosed rheumatologic disease with confirmed laboratory markers.
- Treatment of confirmed COVID-19 diagnosis.
- For this indication, each prescription is reviewed on a case-by-case basis.
- NOTE: Some health systems are restricting HCQ use to only hospitalized patients. Consideration should be given to the appropriateness and need for COVID-19 treatment in the outpatient setting, including continuation of therapy at discharge. It is important to consider that HCQ has a half-life of 40 days when determining if continuation of therapy upon hospital discharge is needed.

If the prescription is not for confirmed continuation or initiation of therapy for rheumatologic disease, the following process will be enacted:

1. Outpatient pharmacist will profile the prescription.
2. Outpatient pharmacist will notify the Director of Pharmacy or designee of the prescription details.
3. The Director of Pharmacy or designee will review the prescriptions with infectious diseases (ID) and rheumatology medical leadership, as appropriate
 - 3.1.1. No prescriptions will be filled for any patient for prophylaxis of COVID-19.
 - 3.1.2. Prescriptions for outpatient HCQ therapy will be reviewed by ID and must follow current institutional COVID-19 treatment guidelines.
 - 3.1.3. Prescriptions for continuation of HCQ therapy post-hospitalization for treatment of COVID-19 will be assessed on a case-by-case basis.
 - 3.1.4. Non-health system patients requesting prescription fill for Systemic Lupus Erythematosus (SLE) will be considered based on current supply.

- 3.1.5. Requested prescription fills for non-health system patients for all other indications will not be dispensed.
- 3.2. ID and rheumatology will jointly review and approve all escalated prescriptions.
- 3.3. All other indications, non-health system patient requests and appeals will be escalated to designated institutional physician leader (e.g., Chief Medical Officer or Department Director) for review and tie-breaking vote (if needed).
4. Once a determination has been made, the Director of Pharmacy will communicate the decision to the dispensing pharmacist, including the plan to communicate with the prescriber and patient.

Pharmacists should also look for combinations of azithromycin and HCQ, which carries the risk of QT prolongation and requires further clinical review of risks and benefits based on underlying conditions and other concomitant drug therapy.

The following guidelines will be used for dispensing quantities:

- Dispense up to a three-month supply for a:
 - Refill for ongoing treatment of lupus confirmed by previous fills in electronic health record (EHR)
 - New prescription for confirmed new diagnosis of lupus confirmed by diagnosis in EHR
- Dispense up to a one-month supply for a:
 - Refill for ongoing treatment for other rheumatic disease (e.g., rheumatoid arthritis) confirmed by previous fills and diagnosis in her
- Dispense no more than a 14-day supply for outpatient treatment of confirmed COVID-19. Consider if a shorter duration is appropriate based on available evidence. Five to seven day duration should be encouraged. Again consideration should be given to the necessity and benefit of HCQ therapy for COVID-19 positive outpatients.

INPATIENT FORMULARY RESTRICTIONS AND ESCALATION PATHWAY

Hydroxychloroquine will be restricted via formulary as follows.

- Patients meeting one of the following criteria:
 - COVID-19 positive patients
 - Q-fever or Whipple disease
 - Continuation of home use for chronic conditions
- If a patient does not have one of the approved indications listed below, follow hospital determined formulary restriction approval process.

CRITICALLY LOW SUPPLY DEFINITION AND PATIENT PRIORITIZATION

If current supply reaches less than a four-week supply based on current projected hospitalized patient volumes (considering both pre-COVID-19 utilization patterns and projected COVID-19 cases), the patient prioritization pathway below will be enacted.

See Appendix A for prioritization if critically low supply threshold is reached.

APPENDIX A – SRA TRIAGE TEAM

SRA TRIAGE OFFICER/TEAM PRINCIPLES

- Officers and Teams will possess critical or acute care expertise and administrative support, as needed
- Officers and Teams shall adhere to anti-discrimination principles to safeguard against implicit and explicit bias that leads to discrimination or disparate impact (see *non-discrimination principles*, page 2, Item G)
- The size of each team, the number of teams, and the number of officers will be commensurate with the number of ICU beds, life-saving resources (e.g., ventilators and dialysis), and staffing available in the hospital, but must have a minimum of three voting members (all of whom are clinicians)

ROLE OF THE SRA TRIAGE OFFICER AND/OR TEAMS

- The Triage Officer or Teams will review the clinical information:
 - of all patients who have had emergent, newly initiated life-support (e.g., mechanical ventilation)
 - for patients that the clinical teams have reported might require mechanical ventilation in the near future
 - for all mechanically ventilated patients daily
- A standardized scoring system will be utilized for all evaluations
- When necessary, the Triage Team will consider transfer to other facilities with capacity to provide the limited resource (e.g., ventilators, dialysis, staffed beds)
- If scarce resource circumstances dictate need for discontinuation of life support, the Triage Officer or Team will have responsibility to communicate these recommendations to the patient and/or family. The Triage Officer will coordinate with the patient's clinical team on how best to communicate.
- If a clinician has to make an emergent allocation decision (e.g., deciding which of 2 emergent patients receives the one remaining scarce life-saving resource such as a ventilator), that decision will not be reviewable. An emergent situation arises when the attending physician determines-- with a reasonable degree of medical certainty—that there is a substantial risk of death or immediate and serious harm to the patient and that the life or health of the patient would be affected adversely by delaying treatment. An *emergent allocation decision* occurs when two or more patients are similarly situated in an emergency.
- The Triage Officer or Team's decision to withdraw support will be subject to a secondary review if so requested by the patient or authorized decision-maker, or the attending physician.

SECONDARY REVIEW COMMITTEE PRINCIPLES

- Multidisciplinary
- Minimum of three members
- Committee members shall adhere to *non-discrimination principles* (page 2, Item G) to safeguard against implicit and explicit bias that leads to discrimination or disparate impact
- Oversight of the Triage Officer and Team
- Upon request, performs secondary reviews of Triage Team recommendations when scarce resources dictate need for cessation of support for individual patients

SECONDARY REVIEW PROCESS

1. Upon request for a secondary review by the patient, the patient's authorized decision maker, or the attending physician, the Triage Officer immediately contacts the Secondary Review Team.
2. The Secondary Review Team reviews the steps by which the Triage Team made the decision to withhold or withdraw the scarce resource. The review will determine if the criteria for allocation were appropriately followed. The Secondary Review Team will determine if a withdrawal or withholding

decision had not considered all of the relevant clinical triage criteria or had misapplied the criteria in a way that created inequities, such as by considering non-clinical factors or sociodemographic characteristics.

3. The decision of the secondary review committee will be determined by a majority vote. The Secondary Review Team will respond back to the Triage Officer with its decision within 1 hour (but may take longer depending on the complexity of the circumstances). As with the initial Triage Team decision, the Triage Team will be responsible for communicating the secondary review committee's decision to the requestor.
4. The Secondary Review Team will consist of an attending level physician for adults (for adult cases), attending level physician for children (for pediatric cases), a nurse, and another clinician with relevant expertise. A patient's care provider cannot serve on the Secondary Review Team. A Triage Officer (or a member of the Triage Team) will be available to answer questions about the initial triage decision and criteria used. Depending on available resources, an ethicist or member of the ethics committee, representative from the Office of Diversity and Inclusion, community representative, and legal counsel may be available for consultation but will not have voting privileges.

Secondary Review Team Role	Notes	Proposed Names
Attending level physician for adults (adult cases) or Attending level physician for children (pediatric cases)		
Nurse		
Clinician with relevant expertise		
Ethicist	May be available for consultation, but nonvoting member	
Triage Officer (or a member of the Triage Team)	May be available for consultation, but nonvoting member	
Legal Counsel	May be available for consultation, but nonvoting member	
Representative for Diversity and Inclusion or Disabilities	May be available for consultation, but nonvoting member	
Community representative	May be available for consultation, but nonvoting member	

APPENDIX B – ASR Framework Response Flow

This Allocation of Scarce Resources (ASR) response flow serves as the foundation for hospitals to develop their responsibilities to support the role of the Triage Team (TT). It aligns the tasks developed for the TT with those tasks assigned to other groups. These essential responsibilities will support the TT through the hospital or health care system incident command team (ICT), as described in the middle column and other hospital departments and local/state agencies in the third column. All these duties will allow the TT to select the next patient when critical care resources become available. Where “ventilator” is listed below, this may also refer more generally to critical care support (CCS).

Also, we proposed the following positions to assume these responsibilities. If these ICT positions do not exist in your hospital or health care system ICT, assign the tasks to the most appropriate person, group, or department. All these responsibilities represent the essential components to support the TT.

Administration should also approve the TT as the official entity responsible for allocating scarce resources. We also suggested the TT has a dual reporting relationship with the highest medical position on the incident command team and also reports to the chief medical officer at each hospital.

Triage Team*	Incident Command Team (ICT)**	Other Group Support**
<p>1. Continue to work on acquiring more critical care resources</p> <p>Leader of Triage Team: Brief ICS (Incident Command System) Team members on approach to ensure support team is aware of process and procedures moving forward.</p>	<p><u><i>Incident Commander:</i></u> Ensure who the designated hospital representative(s) will receive the Governor or designee’s declaration of an ASR emergency</p> <p><u><i>Incident Commander:</i></u> Lead team to Implement internal actions to increase acute care and ICU surge beds to accommodate more patients as influx rises above staffed beds (see below)</p> <p><u><i>Incident Commander:</i></u> Conduct briefings with incident command team members, department leaders, c-suite, departmental leaders, and healthcare system ICT to discuss areas of focus, situational assessments, and tasks at scheduled intervals</p> <p><u><i>Medical Control Chief:</i></u> Inform triage team leader when acute care or ICU occupancy and/or scarce resources reach near 90% use levels</p> <p><u><i>Liaison Officer, Operations & Logistics Chiefs:</i></u> Activate diversion and transfer procedures for ER and</p>	<p><u><i>HEIC Hospital Epidemiologist, Infection Control, EM Surveillance:</i></u> Monitor the incidence of potential EIDs (Emerging Infectious Diseases) in the event it arrives in the US. If the Emerging Infectious Disease (EID) is spreading in the US, initiate surveillance process with HEIC to minimize transmission and/or implement appropriate levels of protection and preparedness (e.g., space, stuff, and staff) if the epidemic is heading toward this state and jurisdiction</p> <p><u><i>Respiratory Therapy and Anesthesia:</i></u> Activate use of approved backup ventilators, transport ventilators, and anesthesia machines, or other specified resources. Provide real time training when (for example) surge ventilators are put into operation</p> <p><u><i>P&T, Antibiotic Management Group, etc.:</i></u> Assume responsibility for addressing eligibility and distribution for drug shortages, EUA (Emergency Use Authorization) drugs, etc.</p>

	<p>transfer patients to other hospitals in collaboration with ED attendings or ICU attendings and ICU charge nurses</p> <p><u>Incident Commander:</u> Activate procedures to discharge/transfer as many patients to reduce overcapacity or occupancy when needed</p> <p><u>Operations (OPS) & Logistics Chiefs:</u> Transfer non-infected ICU patients to ICUs not caring for infectious patients if possible. Inventory key equipment and assume responsibility, along with designated depts., to track their availability and distribution</p> <p><u>Situational Assessment Chief:</u> Activate process to cohort infected patients from non-infected patients on acute care units. Provide scheduled situational assessment updates and new information at scheduled intervals to ICT and departments</p> <p><u>Incident Commander or Liaison Chief:</u> Activate mutual aid agreements or memoranda of understanding to request and receive space, stuff and/or staff</p> <p><u>ICT:</u> Delay activation of crisis standards of care for adult and/or pediatric patients by coordinating with designated depts. to implement and maintain:</p> <ol style="list-style-type: none"> 1) <u>Situational Assessment Chief:</u> Establishment of a 2-hospital system within each hospital to separate contagious from non-contagious patients that will facilitate care for infectious patients versus emergent and urgent non-infectious admissions if possible 	<p><u>Critical Care Committee or equivalent:</u> Coordinate critical care treatment plans across all ICUs and stepdown units for pandemic patient population</p> <p><u>Safety or Designee:</u> Prepare to activate real-time fit testing for alternate and reusable N-95 respirators when primary N-95 respirator masks are no longer available or in short supply</p> <p><u>CSR:</u> Determine feasibility to autoclave disposable respirators to reuse them</p> <p><u>HEIC:</u> Determine who is eligible to don N-95 masks versus surgical masks and other types of masks</p> <p><u>Supply Chain Depts.:</u> Buy more scarce resources: ventilators, ventilator accessories, PPE, respirators, drugs, etc. from private sector and mutual aid opportunities (in conjunction with Logistics Chief or Liaison Officer. Request assistance and/or approval from Financial and Administrative Chief if more financial resources are needed to buy more resources</p> <p><u>Bed Management/Admitting:</u> Each hospital will activate surge/additional acute and ICU beds in established bed management system to trigger appropriate tracking and delivery of supplies and services to critical care patients in contingency and crisis target status.</p> <p>Provide occupancy reports and access to data based for ICS to view inpatient bed occupancy. Notify support depts. of any acute care beds converted to ICU beds so appropriate resource are provided.</p> <p>If multiple hospitals exist in a health care system, each hospital's bed management system will independently complete these tasks. If beds are</p>
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	<p>2) <u>OPS & Logistic Chiefs</u>: Addition of surge bed capabilities and alternate care beds/space for acute care, ICU, and pre-discharge care (before official discharge) as needed through cancellation of elective surgeries and procedures, reverse triage, scheduling home care visits, etc.</p> <p>3) <u>Planning Chief</u>: Activation of tiered staffing models and real-time training before adding acute care and ICU beds</p> <p>4) <u>Medical Control Chief</u>: Lead process to repurpose critical care equipment</p> <p>5) <u>Operations & Logistic Chiefs</u>: Transfer patients pending admission to other facilities having resource capacity and capability if internal resources are exhausted. If no beds exist at other hospitals, implement shelter-in-place procedures</p> <p>6) <u>Medical Control Chief</u>: Consider discontinuing high resource alternative therapies [i.e., Extracorporeal Membrane Oxygenation (ECMO), High Frequency Oscillatory (HFO) Ventilation, Inhaled Nitric Oxide, Continuous Venovenous Hemodialysis (CVVHD), etc.), and therapeutics (i.e., drugs back ordered or in short supply) with medical leaders</p> <p>7) <u>Incident Commander</u>: Resolve any unique procedures within your hospital or health care system that are not part of the modified ASR framework without changing any key components in the modified framework</p>	<p>needed from a sister hospital, these reports will facilitate mutual aid functions between the hospitals by the designated liaisons.</p> <p><u>Administration</u>: Request Maryland OHCQ (Office Health Care Quality) to approve the expansion of acute care or ICU beds when rolling out these additional beds. Communicate decision to Incident Commander and Bed Management when decision is received from OHCQ</p> <p><u>Respiratory Therapy</u>: Work with Liaison Officer or Logistics Chief to get additional ventilators or ventilator accessories via mutual aid or Strategic National Stockpile (SNS) through City or County Health Departments. Develop real time training if ventilators received are different than those routinely used in hospital</p> <p><u>Planner and/or Logistics Chief</u>: Support established vaccination teams to administer vaccines to HCWs and other employees</p> <p><u>IT (Information Technology)</u>: Make ICU focused software and automated procedures accessible to staff on acute care units that had their beds converted to ICU beds and their associated critical care services to facilitate the completion of treatment plans and bedside procedures by clinical team members</p>
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	<p><u>Incident Commander</u>: Employ established procedures once triggers are met to consider ASR framework activation</p> <p><u>Medical Control Chief or Designee</u>: Oversee the effectiveness of the Triage Team along with Bed Management Teams and Attendings in the Emergency Room. Liaison with CMO (Chief Medical Officer) to communicate situational assessment issues, progress of Triage Team and Secondary Review Team. Complete requested tasks to direct or coordinated with leaders of Triage Team and Secondary Review to facilitate the completion of appeal and retrospective review processes.</p>	
2. Start to notify all patients and families possible resource limits	<p><u>OPS Chief</u>: Alert all appropriate departments</p> <p><u>Liaison Officer/OPS Chief</u>: Alert designated agencies of occupancy, resource, and staffing levels to support mutual aid and potential declaration of ASR framework</p>	<p><u>Admitting, ERs, Direct Admit Groups</u>: Change re-route status through Maryland Institute for Emergency Medical Services Systems (MIEMSS). Ensure compliance to EMTLA (Emergency Medical Treatment & Labor Act) regulations unless there are no more inpatient beds or medical discipline does not exist to treat newly transferred ER patient to your hospital</p>
3. If hospital has ≤10% of critical care support (CCS) capacity available, triage will be triggered and begin to review clinical information for all patients requiring that support	<p><u>Medical Control Chief, Situational Assessment Chief and Key Departments and Staff</u>: Begin preparatory process to activate established ASR framework procedures</p> <p>If hospital is not at 10% of its CCS capacity, but the jurisdiction, region or state activates this alert, comply with posting requested data points and monitor internal indicators to provide mutual aid when possible.</p> <p><u>PIO (Public Information Officer) or External Media PIO</u>: Work with state or regional JIC to develop one message for public. State JIC has priority over any other local or regional JIC activated.</p>	<p><u>IT</u>: Responsible group to produce reports (i.e., SOFA (Sequential Organ Failure Assessment) , PELOD-2 (Pediatric Logistic Organ Dysfunction-2), etc.) for Triage Team at scheduled intervals</p> <p><u>Lead of Secondary Review Team and Palliative Care Team</u> are also alerted when Triage Team are notified to activate</p> <p><u>Ethics Committee Members or Equivalent Body (Scarce Resource Allocation Committee or Team, etc.)</u>: Engage in Secondary Review Team or appeals process if requested to do so.</p>

	<u>PIO or Internal Media PIO</u> : Adopt equivalent message for internal use established by the Joint Information Center (JIC)	
4. Patient comes to, or is in, the hospital. If ventilator clinically indicated (and in accordance with patient's wishes), transfer, if possible, to a facility with adequate ventilator resources (within or outside health system)	<u>Operations and Logistic Chiefs</u> : Assist attendings and hospitalists in identifying potential external beds and ambulance transportation to expedite transfer of in-house patients	<p>If patient is on an acute care unit, <u>attending</u> will work with charge nurse and social work to identify an appropriate bed and continuity of care for early discharge or reverse triage (method to rapidly create inpatient surge capacity who do not require major medical treatment in a hospital. These patients can be discharged and, if necessary, schedule home care services to continue medical treatment at home).</p> <p>If an existing inpatient can be transferred to another hospital when reverse triage is activated, the <u>ICU Director</u> will identify a bed at another facility and then coordinate with <u>Logistics Chief</u> to transport patient</p>
<p>5. Transfer not possible or feasible: <u>Emergent Situation</u>: Patient needs a ventilator. Intubate per protocol^{1, 21 3}</p> <p><u>Urgent Situation</u>: If patient may need a ventilator, generate SOFA/mSOFA, PELOD-2, or nSOFA score</p>	<u>Liaison Chief</u> : Work with other hospitals, health care systems, and government to establish external surge capacity, surge capabilities, and quarantine sites for infected and close contact cases	<p><u>Admitting/Bed Mgt.</u>: Ensure bed availability report is up to date at scheduled intervals</p> <p><u>Inpatient Units</u>: Assure bed occupancy status is communicated to Bed Mgt. as bed is open for new admissions</p> <p><u>Bed Mgt.</u>: Turn on shadow bed management system to identify acute care beds converted to ICU or additional ICU beds created</p>
<p>6. Call Triage Officer: Triage Team to provide decision on ventilator availability: <u>If Yes to Ventilator</u></p> <ul style="list-style-type: none"> • Communication about resource limitations to patient and family required. • Minimum trial of at least 7 days on ventilator (all indications), provided 	<u>Medical Control Chief</u> : Support designated groups to facilitate decision-making and logistics for EUA drugs and new approved drugs in treatment of EID	<p><u>Legal Counsel, Risk Management, Social Work, Patient Relations, and Chaplain Services</u>: Prepare to respond to patient, family members and/or their representatives when ASR framework is activated</p> <p><u>Designated Groups</u>: Complete retrospective review or appeal to Triage Team decisions by the established group designated by the CMS (e.g., Secondary Review Team)</p>

<p>patient does not have a catastrophic clinical event</p> <p><u>If No to Ventilator</u></p> <ul style="list-style-type: none"> • Triage Team to communicate with family. • Palliative care consultation requested. • Pt. and family can request secondary review. Provide information collected by Triage Team to facilitate review of decision by Secondary Review Team • Patient will be placed on, or remain on, ventilator during secondary review 		<p>to withdraw a ventilator from an existing patient</p> <p><u>Secondary Review Team:</u> Communicate decision to Triage Officer within 1 hour, if possible. Also inform decision to requestor of review</p> <p><u>Attendings or Hospitalists:</u> Order palliative care or hospice consult when Triage Team informs bedside physician there are no more ventilators to assign, ICU beds available or ventilator is withdrawn.</p>
7. Daily review of all patients potentially needing, or on ventilators, by Triage Team for ventilator allocation		<u>Secondary Review Team:</u> Work with State's Central Triage Committee to address any changes to the state-wide decision-making process, maintain situational awareness, and perform research and modify allocation algorithms as needed
8. Communicate with clinical teams on intubation and ventilation alternatives		<u>Key Departments</u> (Respiratory Therapy, Anesthesia, ICU Directors, ICU Nurse, Mgrs., Charge Nurses, etc.) will be integral members to carry out alternative procedures
9. Provide summary report each shift containing decisions to withhold or withdrawal ventilators, areas of concerns and their status to MCC and designated leaders	<u>PIO or Designee:</u> Summarize report for each shift containing decisions that addressed concerns and their status, business continuity, support to Triage Teams, etc. for Incident Commander and designated leaders to approve prior to distribution	<u>Internal Psychological Services:</u> Provide services to support health care providers experiencing moral distress, psychological trauma, or burnout as a result of providing care under this guidance

Legend

* [Allocation of Scarce Medical Resources During the COVID-19 Crisis: Appendix 1](#), supplement to: Ehmann MR, et al. . Operational recommendations for scarce resource allocation in a public health crisis. *CHEST*, 2021; 159(3), 1076-1083.

**Other References

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APPENDIX C - SCRIPTS

Allocation of Resources Script for Patients / Families

Keep in mind that the patient and the patient's authorized decision-maker may be dealing with a range of emotions. Try using the SHARE mnemonic (adapted from VitalTalk COVID Ready Communication Playbook. <https://www.vitaltalk.org/guides/covid-19-communication-skills/>). Communication tools should be modified to accommodate persons with disabilities or limited English proficiency/language differences.

NOTE: These are conversations to inform patients/surrogates about the basis for decision-making under crisis standards of care; this differs from consent conversations in clinical shared decision-making. Individuals should be informed that requests for appeal may be limited based on the nature of the public health emergency.

“SHARE”

For crisis use only*.** Talking about resource allocation (i.e. rationing).

S how the guideline	“Here’s what our institution / system / region is doing for patients with this condition.” (State the part directly relevant to that person.)
H eadline what it means for the patient’s care	“So for you, what this means is that we care for you on the floor and do everything we can to help you feel better and treat this illness. What we won’t do is to transfer you to the ICU.” (Note that you talk about what you <i>*will*</i> do first, then what you won’t do)
A ffirm the care you will provide	“We will be doing [the care plan], and we hope you will recover.”
R espond to emotion	“I can see that you are concerned.”
E mphasize that the same rules apply to everyone	“We are using the same rules with every other patient in this hospital / system /institution. We are not singling you out.”

***This talking map is only used when an institution has declared use of crisis standards of care, or a surge state. When the crisis standards or surge are discontinued, this map should no longer be used.



Part 1: PREAMBLE FOR EVERY PATIENT (OR AUTHORIZED DECISION-MAKER) REGARDLESS OF DIAGNOSIS

Before starting the conversation, ask the patient with decision-making capacity (or their authorized decision-maker):

- How do you think you are doing right now?
- Have you talked with anyone about using a ventilator or breathing machine during your hospital stay?
- What concerns do you have now?

When communicating with the patient or the authorized decision maker, remember to:

- Allow time for the information to sink in
- Show empathy
- Speak clearly (not too fast)
- Ask questions
- Listen
- Wait for the person's response
- Don't just ask the patient or the authorized decision maker if they understand. Instead, use the Teach-Back method to have the patient or the authorized decision maker explain to you what has been said.

This document is written to support conversations with patients. The language should be customized if you are speaking to an authorized decision-maker.

Healthcare provider:

We are currently in a national health care crisis because of the Coronavirus outbreak. As a result, we are treating more patients than usual, who are much sicker than our hospitals normally serve. Although we did our best to prepare, we do not have all of the resources that we need at this time. We have joined with other health care systems in Maryland to design a way to share these limited resources with those who need them and are most likely to recover. We want to assure you that we are doing everything we can to make this a fair and equitable process. But, this means that not everyone will be able to receive certain treatments.

This is difficult news for me to share. I know how hard it must be for you to hear this. Unfortunately, we will have to make difficult decisions during these challenging times. We want all of our patients to get better and we remain committed to providing all patients with fair, equitable, respectful and compassionate care.

FOR ALL PATIENTS

If our supplies get low, we will follow these steps:

1. Do you have an advance directive? If yes, do you have it with you? What does it say?
2. If you become too sick to speak for yourself, is there someone you have chosen to make medical decisions for you?
3. If you become sick enough to need treatment to stay alive, what treatments would you want? Are there any treatments that you would not want, such as CPR or a breathing machine?
4. We will evaluate every patient using the same clinical scoring system to see whether they would benefit from a breathing machine or ventilator.

5. The same scale will be applied to every patient regardless of their race, color, ethnicity, national origin, age, language, physical or mental disability, religion, sex, sexual orientation, and gender identity or expression, immigration status, or ability to pay. Patients will not be denied medical care on the basis of stereotypes, assessments of quality of life, or judgments about a person's relative "worth" based on the presence or absence of disabilities. Every person in need of medical care will be assessed using the same standardized method.
6. This clinical scoring system will help us make decisions about who receives which treatments. This scoring system considers the patient's current illness, their chances of recovering from their current illness as well as their one year survival.
7. A Triage Team, which is different from your regular care team, will use this evaluation to see which treatments may work for you. Your regular care team will keep treating you to the best of their abilities.
8. If you don't agree with the Triage Team's decision, you can ask for a review by a Secondary Review Team that is also different than your care team
9. We are here to answer any questions you may have and to guide you through the next steps of your treatment.

Part 2: ONLY TO PATIENTS ELIGIBLE FOR VENTILATOR

1. To recover, you may need the help of a breathing machine or ventilator. We plan to keep you on the breathing machine until your illness improves and you no longer need it to help you breathe.
2. If your condition does not improve with the help of the breathing machine, it is possible that the breathing machine will be stopped. We would keep providing other treatments to relieve your symptoms and increase your comfort at that time.
3. We will let you and your authorized decision-maker know of your progress and the treatments that are available to you.
4. We are here to answer any questions you may have and to guide you through the next steps of your treatment.

Part 3: ONLY TO PATIENTS WHO ARE NOT ELIGIBLE FOR VENTILATOR

1. Based on the clinical evaluation we use for everyone, we will manage your breathing problems by using medications and other treatments. We cannot provide you with a breathing machine. at this time. We know this is difficult news to hear and wish we had different news to share.
2. We will keep providing other types of treatments to relieve your symptoms and increase your comfort for as long as you need them.
3. If you don't agree with the Triage Team's decision, you can ask for a review by a Secondary Review Team that is not currently providing you care.
4. We are here to answer any questions you may have and to guide you through the next steps of your treatment.

Part 4: FOR PATIENTS WHOSE CONDITIONS ARE NOT IMPROVING AND ARE AT RISK OF DISCONTINUING VENTILATION

1. We may need to stop using the breathing machine since your illness is not improving.
2. We know this is difficult news to hear and wish we had different news to share.
3. Would you like to speak with someone to make sense of this difficult situation? (Offer the services of spiritual care and chaplaincy, palliative care, or social work.)
4. We will keep watching your condition. If the breathing machine is no longer helping you, we will need to stop it in about 24 hours.

5. We will keep providing other types of treatments to relieve your symptoms and increase your comfort after the ventilator is removed. We will continue to support you and your loved ones during this difficult time.
6. If you don't agree with the Triage Team's decision, you can ask for a secondary review by a different team that is not currently providing you care.
7. We are here to answer any questions you may have and to guide you through the next steps of your treatment.

Part 5: FOR PATIENTS YOU EXPECT WILL PROGRESS TO DEATH

1. We are worried that you may not survive because your illness is not responding to treatment.
2. As your illness gets worse, we will keep providing other treatments to relieve your symptoms and increase your comfort as you near the end of life taking into account your advance directive preferences.
3. We will provide support to you and your loved ones, including spiritual care and chaplaincy, comfort care specialists (palliative care), and others.
4. Depending on hospital policy, we may be able to only allow 1-2 visitors (or none) at this time, but we will do our best to work with them as much as possible during this crisis. In accordance with Maryland law, disability support persons are exempted from these limitations as a reasonable accommodation.
5. Please let us know what things are important to you during this time.
6. We are here to answer any questions you may have and to guide you through the next steps.

Part 6: NEONATAL AND PEDIATRIC PATIENTS

1. We will evaluate infants and children as needed using the same clinical scoring system to see whether they would benefit from a breathing machine or ventilator.
2. We will not treat any patients differently based upon their race, color, ethnicity, national origin, age, language, physical or mental disability, religion, sex, sexual orientation, gender identity or expression, immigration status, or ability to pay.
3. This clinical scoring system will help us make decisions about who receives which supplies. This scoring system considers the patient's current illness, their chances of recovering from their current illness as well as their 30 day survival.
4. A Triage Team, which is different from your child's regular care team, will use this evaluation to see which treatments may work for your child. Your child's regular care team will keep treating your child to the best of their abilities.
5. If you don't agree with the Triage Team's decision, you can ask for a review by a Secondary Review Team that is not currently providing your child care.
6. We are here to answer any questions you may have and to guide you through the next steps of your treatment.

REQUESTS FOR SECONDARY REVIEW OF TRIAGE TEAM DECISION:

Part 7: FOR PATIENTS OR AUTHORIZED DECISION-MAKERS WHO REQUEST SECONDARY REVIEW

1. We understand you do not agree with the Triage Team's decision about the breathing machine and have asked for a review by a Secondary Review Team that is not currently providing you care. We will let the review team know about your request.
2. The Secondary Review Team includes an experienced attending physician, a senior nurse, and another clinician with relevant expertise. Some hospital's secondary review teams may also include an ethicist

or member of the ethics committee, representative from the Office of Diversity and Inclusion, or a community representative..

3. Once their review is done, a member of the Secondary Review Team will contact the Triage Officer and we will talk to you about their decision.

Part 8: FOR PATIENTS FOR WHOM THE TRIAGE TEAM DECISION IS CONFIRMED BY THE SECONDARY REVIEW

1. The Secondary Review Team met and reviewed the evaluation that the Triage Team used to make its decision about not using (or stopping) the breathing machine.
2. The Secondary Review Team agreed with the Triage Team's decision. We know this is difficult news to hear and wish we had different news to share.
3. We are unable to provide treatment with a breathing machine now. We will keep providing other types of treatments to relieve your symptoms and increase your comfort as long as you need it.
4. We are here to answer any questions you may have and to guide you through the next steps of your treatment.

Part 9: FOR PATIENTS FOR WHOM THE TRIAGE TEAM DECISION IS OVERTURNED BY THE SECONDARY REVIEW

1. The Secondary Review Team met and reviewed the evaluation that the Triage Team used to make its decision about not using (or stopping) the breathing machine.
2. The Secondary Review Team disagreed with the Triage Team's decision. There were factors that the Triage Team did not fully consider in your evaluation.
3. You remain very sick and your regular care team will continue to keep treating you to the best of their abilities.
4. We will keep watching your condition. If your condition does not improve with the help of the breathing machine, it is possible that the breathing machine will be stopped in the future.

In addition to this guidance, clinicians may want to consider including suggested communication skills tips from VITALtalk COVID Ready Communication Playbook: <https://www.vitaltalk.org/guides/covid-19-communication-skills/>

APPENDIX D – PRIORITIZATION IF CRITICAL INVENTORY LEVEL REACHED

Inpatient Operations

- Initiate use of patient's own supply HCQ for chronic maintenance continuation.
- New HCQ orders to follow Health system Formulary Restriction

Outpatient Operations

- No more than a one-month supply dispensed for ALL patients

