

# Differences in US Regional Healthcare Allocation Guidelines During the COVID-19 Pandemic



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**BACKGROUND:** Hospitals faced unprecedented scarcity of resources without parallel in modern times during the COVID-19 pandemic. This scarcity led healthcare systems and states to develop or modify scarce resource allocation guidelines that could be implemented during “crisis standards of care” (CSC). CSC describes a significant change in healthcare operations and the level of care provided during a public health emergency.

**OBJECTIVE:** Our study provides a comprehensive examination of the latest CSC guidelines in the western region of the USA, where Alaska and Idaho declared CSC, focusing on ethical issues and health disparities.

**DESIGN:** Mixed-methods survey study of physicians and/or ethicists and review of healthcare system and state allocation guidelines.

**PARTICIPANTS:** Ten physicians and/or ethicists who participated in scarce resource allocation guideline development from seven healthcare systems or three state-appointed committees from the western region of the USA including Alaska, California, Idaho, Oregon, and California.

**RESULTS:** All sites surveyed developed allocation guidelines, but only four (40%) were operationalized either statewide or for specific scarce resources. Most guidelines included comorbidities (70%), and half included adjustments for socioeconomic disadvantage (50%), while only one included specific priority groups (10%). Allocation tiebreakers included the life cycle principle and random number generators. Six guidelines evolved over time, removing restrictions such as age, severity of illness, and comorbidities. Additional palliative care (20%) and ethics (50%) resources were planned by some guidelines.

**CONCLUSIONS:** Allocation guidelines are essential to support clinicians during public health emergencies; however, significant deficits and differences in guidelines were identified that may perpetuate structural inequities and racism. While a universal triage protocol that is equally accepted by all communities is unlikely, the lack of regional agreement on standards with justification and

transparency has the potential to erode public trust and perpetuate inequity.

**KEY WORDS:** equity; health disparities; ethics; discrimination; crisis guidelines; racism.

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## BACKGROUND

During the COVID-19 pandemic, hospitals faced unprecedented scarcity of resources without parallel in modern times,<sup>1</sup> leading to increased care coordination across states. In response, scarce resource allocation guidelines were created and/or updated from previously developed crisis preparedness plans. Guidelines are implemented during “crisis standards of care” (CSC) which describes a significant change in healthcare operations and the level of care provided during a public health emergency. While nationwide, nine states and one county in Texas declared CSC, the full extent to which clinicians rationed resources—such as extracorporeal membrane oxygenation (ECMO)—will never be known.<sup>2</sup> Our study provides a comprehensive examination of the latest CSC guidelines in the western region of the USA, where Alaska and Idaho declared CSC, focusing on ethical issues and health disparities.

## METHODS

We examined published CSC guidelines across five western states in the same catchment area, reviewing state guidelines if available (Washington, Idaho, and Alaska) and healthcare system-specific (California and Oregon) guidelines otherwise. We used snowball sampling of ten physicians and/or ethicists working in diverse healthcare systems, all of whom were involved in statewide or healthcare system CSC guideline development to further characterize published guidelines. We

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Table 1 Healthcare System and Allocation Guideline Characteristics Among Five States in the Western United States

Healthcare system designation	Private healthcare system	Specialized healthcare system	Public healthcare system	Public healthcare system	Private healthcare system	Private healthcare system	Public healthcare system	Private healthcare system	Specialized healthcare system	
<b>Allocation guideline</b>										
Scope	Statewide	Statewide	Healthcare system Finalized, approved, implemented	Statewide Finalized, approved	Healthcare system Finalized, approved, simulation	Healthcare system Finalized, approved	Healthcare system Finalized, approved, implemented Extracorporeal Membrane Oxygenation (ECMO)	Healthcare system Finalized	Healthcare system Finalized, approved, simulation	Healthcare system Finalized, approved, simulation
Final status <sup>A</sup>	Finalized, approved, implemented	Finalized, approved, implemented	Finalized, approved, implemented	Finalized, approved	Finalized, approved, simulation	Finalized, approved	Finalized, approved, implemented	Finalized	Finalized, approved, simulation	Finalized, approved, simulation
Operationalization examples	Crisis standards declared statewide	Crisis standards declared statewide	Blood products	-	-	-	-	-	-	-
<b>Allocation teams</b>										
Separate from clinical teams	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Team members	Fixed	Fixed	-	Rotating	Rotating	Rotating	Rotating	Rotating	Rotating	Rotating
Team leader	Yes	No	-	No	Yes	No	Yes	Yes	Yes	Yes
Team selection <sup>B</sup>	Solicited	Identified	-	Unknown	Solicited	Selected	Selected	Identified	Identified	Selected
Member disciplines	MD, RN, PC, HL	Multi-disciplinary but not specified	-	MD, RN, E, PC, SW, HL, PRP	MD, RN, E, PC, SW, HL	MD, RN, DEL, E, HL	MD, RN, DEL, E, PC, SW	MD, RN, E, PC, SW, CM	MD, RN, DEL, E, SW, HL	MD, RN, DEL, E, PC, SW, HL
<b>Training specified</b>	No	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
<b>Allocation criteria</b>										
Comorbidities	Yes	C, HF, P, LD, CKD, N	No	Yes	No	Yes	No	Yes	Yes	C, HF, P, LD, CKD, N
Cardio-pulmonary resuscitation <sup>C</sup>	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Short-term survival (<6 months)	Yes	Unknown	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Long-term survival	No	No	No	No	No	No	No	No	No	No
Physiology score	SOFA	SOFA	SOFA	SOFA	SOFA	mSOFA or similar	mSOFA	Expert clinical prognosis or mSOFA	SOFA	SOFA
Adjustment for health disparities	No	Race/ethnicity, SES, zip code	ADI	Only as a tiebreaker (SVI)	No	ADI	ADI	No	ADI	No
Magnitude of health disparity adjustment	-	1 point on 5-point scale	1 point on 5-point scale	-	-	1 point on 5-point scale	1 point on 5-point scale	-	1 point on 5-point scale	-
Tiebreakers (in order of application) <sup>D</sup>	1-Priority group	RNG	RNG/coin toss	SVI	RNG	1-Short-term survival	1-Short-term survival	-	1-Short-term survival	1-RNG
Priority groups	Children, pregnant women, HCWs, essential personnel	No	No	No	No	2-RNG	2-RNG	No	2-RNG	No
Disability	No	No	No	No	No	No	No	No	No	No
Quality of Life	No	No	No	No	No	No	No	No	No	No
Changes in allocation criteria from initial guidelines development	Removal of age	Removal of comorbidities	NA	NA	Restricted to SOFA	Short-term survival criteria	Removal of age	NA	Clinical consistency check added to confirm	NA

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Table 1. (continued)

Healthcare system designation	Private healthcare system	Specialized healthcare system	Public healthcare system	Public healthcare system	Private healthcare system	Private healthcare system	Public healthcare system	Private healthcare system	Specialized healthcare system
<b>Reallocation of resources</b>					narrowed to <6 months				
Reassessment timing <sup>E</sup>	96 hours	Not defined	Dependent on committee	NA	Therapeutic trial	NA	NA	NA	48 hours
Method	Predefined priority groups	For ventilators: worsening ventilatory parameters (e.g., oxygenation index)	Dependent on allocation committee	NA	SOFA	NA	NA	Clinical team input	SOFA

Definitions: <sup>A</sup>Finalized=guidelines were developed, <sup>B</sup>Approved=guidelines were approved by governing body (e.g., state health department), <sup>C</sup>Implemented=guidelines were used, <sup>D</sup>Table-top simulation=guidelines went through testing exercises; <sup>E</sup>Solicited= volunteers were asked for, <sup>F</sup>Identified= lists of potential team members were created, <sup>G</sup>Selected= team members were chosen; <sup>H</sup>Was cardiac arrest or recent CPR considered; <sup>I</sup>Life cycle principle/fair innings= to give greater priority to patients who had not yet lived through all the cycles of life; <sup>J</sup>Therapeutic trial= subjective time-limited period to assess potential benefit of treatment

Abbreviations: ADI area deprivation index, C cancer, CKD chronic kidney disease, CM case management personnel, E ethics representatives, DEI diversity, equity, and inclusion representatives, HCW health care worker, HF heart failure, HL hospital leadership, LC/FI life cycles/fair innings, LD liver disease, MD physicians, mSOFA modified sequential organ failure assessment, N neurologic impairment, P pulmonary disease, PC palliative care clinicians, PRP patient relations personnel, RN nurses, RNG random number generator, SES socioeconomic status, SOFA sequential organ failure assessment, SVI social vulnerability index, SW social workers

administered a 48-question survey developed via an iterative process of review and revision with multiple choice and open-ended questions to inform five domains: hospital/healthcare system characteristics, guideline development, allocation team characteristics/training, allocation criteria, and implementation. Survey response rate was 100%. Responses were aggregated, de-identified to preserve anonymity, and compared descriptively.

**RESULTS**

Information about healthcare system characteristics, allocation teams, allocation and reallocation criteria are presented (Table 1). All sites surveyed developed guidelines, but only four (40%) were operationalized either statewide or for specific resources (e.g., ECMO). Most guidelines specified allocation teams separate from clinical teams (90%) with member disciplines including hospital leadership, nurses, physicians, and patient relations personnel among others. Allocation team training was specified in 70% of guidelines. Most guidelines included comorbidities (70%), and half included adjustments for socioeconomic disadvantage (50%), while only one included specific priority groups (10%). No guidelines incorporated disabilities and/or quality of life as exclusions. Allocation tiebreakers included the life cycle principle (i.e., the goal is to give each individual equal opportunity to live through all life phases) and random number generators. Six guidelines evolved over time, removing restrictions such as age, severity of illness, and comorbidities. Additional palliative care (20%) and ethics (50%) resources were planned in some health systems.

**DISCUSSION**

Within a shared healthcare catchment area in the western region of the USA, we identified marked differences in current allocation guidelines, many of which risk worsening inequity. Allocation guidelines are essential to support clinicians; however, during the COVID-19 pandemic, significant deficits were identified in previously developed guidelines.<sup>3</sup> Guidelines may perpetuate structural inequities and racism,<sup>3,4</sup> such as inclusion of comorbidities in allocation criteria, which often arise from unjust differences in healthcare access and the “social conditions in which people are born, grow, live, work, and age”. A focus on survival in guidelines assumes sound and valid prognostication exists, but the lack of definitive data on outcomes and therapeutic options during the pandemic was evident.<sup>5</sup> Even previously validated physiology scoring systems (e.g., SOFA) were found inadequate and at risk of worsening disparities.<sup>4</sup> Some guidelines attempted to mitigate inequities by prioritizing disadvantaged patients (i.e., use of ADI); others did not incorporate any adjustment for disparities.

Our results are limited to the western region of the USA in a catchment area where two states declared CSC and may not be generalizable to other regions. No central repository exists for

state or healthcare system plans related to CSC guidelines. In our cohort, Idaho had no published guidelines prior to 2020, Oregon dissolved published guidelines from 2018 during the pandemic, and Alaska, California, and Washington created or revised previous guidelines.<sup>6</sup> Surveys used a combination of multiple choice and open-ended questions, guiding some responses into predefined categories.

While a universal triage protocol that is equally accepted by all communities is unlikely, the lack of regional agreement on standards with justification and transparency has the potential to erode public trust and perpetuate structural inequities and racism. Ongoing assessments of allocation guidelines and their outcomes are needed to establish and implement policies that more equitably allocate scarce resources which should be a planning priority for the current and future pandemics.

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**Declarations:**

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