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'The burden of wanting to make it right': thematic analysis of semistructured interviews to explore experiences of planning for crisis standards of care and ventilator allocation during the COVID-19 pandemic in the USA

Meredith MacMartin ,[1,2] Alison Zeng,[3] Julia Chelen,[2] Amber Barnato,[2] Elizabeth Chuang [4]

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For numbered affiliations see end of article.

Correspondence to
Dr Meredith MacMartin;
meredith.a.macmartin@hitchcock.org

ABSTRACT

Objectives The COVID-19 pandemic prompted planning for clinical surges and associated resource shortages, particularly of equipment such as ventilators. We sought to examine the experience of the healthcare professionals who created policies for crisis standards of care, and allocation of ventilators in the event of shortage.

Design To that end, we conducted semistructured interviews with healthcare professionals in the USA involved in institutional planning for resource shortages in the setting of the COVID-19 pandemic.

Setting USA.

Participants We conducted 25 interviews between May and July 2021. Half of the respondents were female (48%), many from Northeastern institutions (52%), and most practised in academic institutions (92%).

Results Many (64%) respondents reported that their institution had an approved policy to guide ventilator allocation in the event of a shortage. We identified one overarching theme: the work of planning for resource shortages imposed a psychological burden on many planners. We identified four subthemes that influenced that burden: impact of leadership, institutional variation in process and policies, faith in the policies and future directions.

Conclusions Improved leadership strategies and cross-institutional collaboration can reduce the psychological burden of planning and facilitate updating plans in anticipation of future shortages.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Timing of interviews>12 months after pandemic onset to capture enduring emotional experiences rather than early impressions.
- ⇒ Multiple strategies were employed to enhance trustworthiness, including extensive debriefing, memoing and inclusion of non-clinicians as coinvestigators.
- ⇒ Sample is predominantly from academic institutions, predominantly on the East and West coasts of the USA, limiting generalisability.
- ⇒ Participants who volunteered may be systematically different than those who did not volunteer, introducing potential bias to results.

INTRODUCTION

In March and April of 2020, emerging reports from Italy of significant healthcare equipment and staffing shortages due to COVID-19 prompted serious consideration in the USA about how to respond to similar resource constraints.[1] Healthcare operations in the setting of catastrophic resource shortages are known as 'crisis standards of care' (CSC), and are distinguished from *conventional* care (in which available resources are sufficient and consistent with usual practice), and *contingency* care (in which the resources are not consistent with daily practice but are enough to maintain or only minimally impact usual practice).[2] The Institute of Medicine recommends that CSC protocols have a strong ethical grounding, incorporate engagement with stakeholders including communities and medical providers, provide assurances regarding legal authority and liability, establish clear indicators for when to invoke these protocols and be evidence based.[3]

In the USA, where individual patient autonomy is prioritised in medical decision making over other principles, CSC impose a particular tension as individual clinicians do not typically have authority to overrule the wishes of patients or their surrogates even under resource constraints. At the onset of the pandemic, 29 states had publicly available policies to guide healthcare delivery under CSC.[4] Despite efforts by the U.S. Department of Health and Human Services Hospital Preparedness Program to encourage institutions to develop plans for crisis conditions,[5] two survey-based studies found that only approximately half of responding US healthcare institutions had policies to guide ventilator allocation in place.[6 7] For those institutions that did have policies, many were out of date, and lacked a process to operationalise these guidelines which prompted rapid development of institution-specific policies and procedures.[8]

We sought to examine the experience of healthcare professionals who developed policies to guide care under crisis standards a year into the pandemic, to understand how planning for CSC, and specifically for ventilator shortages, had progressed over the first year of COVID-19, and how the work impacted those doing the planning.

METHODS

Methods and results are described in compliance with the Consolidated Criteria for Reporting Qualitative Research checklist (online supplemental file 1).[9]

Participants

We recruited healthcare professionals in the USA who were involved in institutional planning for CSC. We recruited via email from three sources: (1) respondents who participated in a survey study regarding policies and procedures for triaging ICU and ventilator resources in March–April 2020 and who had indicated willingness to participate in follow-up interviews,[7] (2) personal contacts of study team members known to be involved in guidelines development, and (3) referrals from participants (snowball sampling). We did not exclude professional colleagues of members of the research team. Interviews were conducted between 11 May 2021 and 13 July 2021 via Zoom video conferencing.

Patient and public involvement

Patients and the general public were not involved in the research process. We do intend to distribute the final published form of this work to our study participants.

Data collection

We collected participant demographic information via a preinterview survey. Interviewers were MM, a female palliative care physician with fellowship and research training; JC, a female research associate with training in decision and computer science; and EC, a female bioethicist and palliative care physician researcher with experience in triage operationalisation planning. AZ, a student researcher, observed 18 out of the 25 interviews. The full research team developed a semistructured interview guide asking about the participant's experience developing policies to allocate ventilators and other resources, which we then pilot tested among both the research team and non-participant colleagues (online supplemental file 2). We conducted all interviews virtually via Zoom, video-recorded and audio-recorded, and subsequently transcribed them verbatim. Interviews ranged in length from 29 to 86 min. We obtained institutional characteristics via web searches.

Analysis

We used a combination of deductive and inductive approaches to thematically analyse the interview transcripts in Dedoose, a secure, web-based platform for data management and qualitative analysis. The coding team (MM, EC and AZ) reviewed and coded a randomly selected set of transcripts using a small number of codes consistent with the areas of focus in our interview guide. The coding team then reviewed the initial codes iteratively, and developed a full code book. Each transcript was coded by at least two primary coders (MM, EC and AZ). The full coding team then reviewed all coded transcripts and resolved conflicting codes by consensus. We generated transcript excerpts with example quotations for each code and jointly reviewed to develop the final thematic schema. We provided the draft manuscript to participants for approval of deidentification practices.

RESULTS

We approached a total of 76 clinicians, 41 of whom had indicated willingness to participate in interviews when responding to a survey about COVID-19 resource and patient triage guidelines in March–April 2020. We approached another 31 personal contacts of the study team, and another 4 through respondent referral. Of the 76, 26 responded and 25 were interviewed (scheduling conflicts precluded interviewing one respondent); 23 of the 25 interviewees completed the preinterview survey. Respondents had a range of backgrounds: physicians, nursing, social work, ethics and law. While more than half (52%) were from the Northeast, all US regions were represented. The majority of respondents, 23 (92%), were from academic institutions (table 1).

The overarching theme that emerged from our respondents related to their experiences developing ventilator allocation policies in the setting of the COVID-19 pandemic was *the work of planning for resource shortages imposed a psychological burden on the planners.* There were three interconnected subthemes related to the psychological impact of planning, and a fourth subtheme describing ways to improve the planning process in the future.

The centrality of the psychological burden of planning for CSC was evident across interviews. Multiple respondents described the 'weight' or burden of planning for shortages above and beyond the baseline stress of the pandemic and other professional work that they were engaged in during the crisis.

Table 1 Characteristics of participants

Gender, n (%)	
Male	13 (52)
Female	12 (48)
Primary specialty, n (%)	
Critical care	7 (28)
HPM	6 (24)
Administrator	6 (24)
Ethics	3 (12)
Other (geriatrics, surgery, internal medicine)	3 (12)
Institutional characteristics	
Region, n (%)	
Northeast	13 (52)
West	7 (28)
South	4 (16)
Midwest	1 (4)
Type of institution, n (%)	
Academic	23 (92)
Community	2 (8)

> *"That was the biggest—I think the hardest thing for me personally, was that the burden of wanting to make it right."* (Participant 13)

> *"It was surreal. Contemplating the real possibility that we would be sitting in a committee and actually making judgments about who no longer qualifies for a ventilator or who would never get an opportunity beyond a ventilator was deeply disturbing and daunting. It doesn't get more real than that."* (Participant 25)

Respondents described feeling fear, anger, anxiety and physical manifestations of stress (table 2, excerpts 1, 2, and 3). Actual and anticipated threats from the public and concerns about professional repercussions added to the burden. Many did not anticipate this topic would become an area of focus, but felt a sense of duty to their colleagues and institution. Many respondents felt hesitant to have their professional reputation associated with the work, and found the work to detract from their other professional pursuits. (table 2, excerpt 4) Some respondents did not feel that they had the necessary expertise to engage in planning for ventilator shortages (table 2, excerpt 5).

Many respondents described symptoms of stress months after their involvement in planning had ended. For example, some avoided thinking about planning due to the long-term effects of stress, while others described the experience as 'life-changing'. Respondents commonly became emotional during interviews—several to the point of tears—and one respondent commented that the interview itself was therapeutic as a chance to talk about their experience. Multiple respondents shared that they

Table 2 Overarching theme: the work of planning for resource shortages imposed a psychological burden on the planners, key excerpts from participant interviews

Excerpt #	
1	*"…the weight of working on this particular project was probably one of the heaviest I felt since I've ever been here, because everything about you as a clinician is geared towards helping a person who's experiencing an individual health or illness event." (Participant 18)*
2	*"I would say I sleep well, and I did not sleep well. I think this was probably one of the more, probably distressing initiatives that I've ever had to take on." (Participant 12)*
3	*"But that was the pain: the pain of realizing that we were completely ill-prepared for something that frankly…was not that hard to predict. And when more came out over time about how we sort of just sort of gutted our public health response—that I think, there was a lot of anger." (Participant 3)*
4	*"….you just realize your credibility is out there. Like you know, I'm like one of the lead death panelists for the state of [redacted] now…So this was really not in my portfolio before, and now it's kind of like all I've been doing for a year, which is a weird place to be." (Participant 24)*
5	*"I mean there was no surge plan. Period. This is a state that has so many natural disasters and there was literally no surge plan in existence at all…I thought that was stunning. I ended up writing the surge plan and I don't think that I have any particular qualifications to do such a thing." (Participant 20)*
6	*"When the paramedics stopped transporting actively dying patients, the community interpreted this—and this sort of steady drumbeat of we're a hair breath away from rationing—the community interpreted this as really conspiratorial. Like I was at a family meeting… with (a) 90 year old patient…and it was clear that she was going to die within the next 24 hours. So I called the family to let them know that, you know, it's time to think about the comfort…And the son looked me straight in the eye and said, "I know you get paid to kill people. And I know this is about, you will get the money if you let my mother die." (Participant 4)*
7	*"I knew it was work that needed to be done and it was good and important work, it just felt really bad to be a part of that in some way…I'm glad that I was a part of it…But also it took a significant toll on me personally and amongst everything else that was going on…I'm glad that most people were insulated from that, but it was hard. It was personally hard." (Participant 2)*

have been receiving mental health treatment following their experiences in the early pandemic.

Many respondents expressed concern about the impact of CSC planning on marginalised communities, highlighting the lack of confidence that the medical system has engendered for these populations prior to the pandemic, and worrying that resource shortages would further erode what trust existed (table 2, excerpt 6).

Not all respondents described a uniformly negative or burdensome experience. One participant did not experience significant stress from the planning process, and described strong support from administration and colleagues. Multiple respondents also felt a clear sense of the importance and urgency of the work, and derived a sense of satisfaction from making a vital contribution (table 2, excerpt 7).

Participants became involved in CSC planning for different reasons. Some were in leadership positions that required them to be involved and/or had prior expertise in resource allocation specifically. Many were simply individuals who recognised early on that resource shortages might become an issue due to their backgrounds in bioethics, disaster planning, or public health. Planners were often in their early career, and most volunteered their time for this work.

The following subthemes of leadership, variation in process and policies, and faith in the policies all influenced the psychological burden on planners, and in the final subtheme of future directions, planners identified areas of improvement that can reduce this burden moving forward.

Subtheme 1: institutional and governmental leadership around CSC planning varied widely, and impacted the burden on planners

Our respondents came from multiple states across geographical regions, with varying political environments. Some state governments worked closely with hospitals and health professionals to coordinate response and to provide legal and political support for CSC planning. Respondents from states with supportive leadership cited this as critical to their ability to plan and respond to the disaster (table 3, excerpt 8). Other respondents described a lack of preparation and expertise at the state level, with some describing complete political denial of the situation and the real or potential need for triaging resources (table 3, excerpt 9). Both of these latter situations increased the stress of planning and left respondents feeling vulnerable. In some states liability protection for care delivered under CSC was contingent on adopting the state-level policy, and that policy only went into effect if the governor declared that the state was under CSC. This left many planners who felt that their own institution was in crisis unable to implement policies they felt would be helpful or necessary (table 3, excerpt 10).

In institutions that lacked leadership support for CSC planning, the psychological burden was passed to planners and front-line clinicians (table 3, excerpt 11). Some institutions had only minimal plans for CSC, leaving planners to start nearly from scratch (table 3, excerpt 12). In one case, institutional leadership explicitly forbade planning for resource shortages so as not to cause more worry among staff, or out of political considerations (table 3, excerpt 13). Discordance between messaging from leadership and the situation on the front line was cited as a specific failure of leadership, as many institutions behaved as though they were operating under contingency standards of care when front-line clinicians and planners felt that the volume of patients was at crisis level. Tension between a personal sense of urgency and perceived lack thereof from administration was a source of distress for some respondents (table 3, excerpt 14). Leadership failures at the state and institution level and dissonance around crisis versus contingency standards of care created a sense of secretiveness around planning activities, which contributed to the psychological burden of planning. The secretiveness was at times explicit, with some respondents reporting they were specifically told not to discuss or publish on the topic of CSC policies (table 2, excerpt 15).

In some locations, lack of leadership support for CSC planning created strong incentives to augment capacity, allowing institutions to remain under contingency standards of care through the biggest surges. (table 3, excerpt 16). In contrast to the frustration, many respondents reported regarding institutional support for their work in policy planning; there were many respondents who were pleased and even impressed by their institutional early efforts (table 3, excerpt 17). Some participants articulated a sense of safety from strong, transparent and supportive leadership.

Subtheme 2: the process of planning for resource shortages varied significantly between institutions

Participants reported a wide range of processes for the planning and policy development around resource shortages, even for the most fundamental aspects of the process, such as who was involved and who initiated the process. Some institutions took a 'top-down' approach in which senior leadership assembled a comprehensive working group including other senior leaders. In other institutions, planning began with a 'bottom-up' approach when a front-line clinician raised the alarm and asked to begin the work themselves (table 4, excerpts 18 and 19). The composition of the working groups affected the ways that the planning process unfolded (table 4, excerpt 20).

A small number of respondents reported that they actively sought community input as policies were developed through public comment periods and public engagements surveys. All respondents described the impact of staffing shortages on both the ability to deliver safe care and plan for resource shortages. The increased clinical load made it difficult or impossible for clinicians to spare time planning for and implementing triaging policies (table 4, excerpts 21 and 22).

Table 3 Subtheme 1: Institutional and governmental leadership around triage planning varied widely, and impacted the burden on planners, key excerpts from participant interviews

Excerpt #	
8	*"I think it helped that the state had a state policy that said you had to follow if you needed to ration and you wanted liability protection. So there was the imprimatur of respectability or acceptability that this was a concept, you know, I think is different from other states." (Participant 10)*
9	*People don't want to admit that they were not prepared. They don't want to admit that they're not prepared enough; they don't want to admit that they are overwhelmed; they certainly don't want to admit that they are, you know, having to let people die whom they normally could have saved…Who would ever want to say, "Okay, it's time to start letting people die who we would normally be able to save"? Because we just can't save everyone. (Participant 17)*
10	*That was, you know, because the whole pandemic guidance basically says, you know, the governor has to declare a state of emergency and then you can apply emergency standards, right? Crisis standards apply if there's a declared crisis, which he assiduously avoided declaring. Really hung out to dry. (Participant 7)*
11	*"I think one of the reasons that our hospital was unwilling to make certain policies or enact certain policies was that there was some fear that we were going to be opening up our staff to possible medical, legal consequences for making decisions where there's no immunities for those particular decisions. And I think the hospital's a little worried about their reputation too, and what it would do. So I think the state's lack of recognizing the crisis that the hospitals were in put the hospitals in a really bad position. And then hospital admins—sort of the snowball thing again, right—put our clinicians in a bad position." (Participant 21)*
12	*I was given instructions to dust off this giant binder, which had always been in existence in case of disaster. And reading through the thing, it was so clear that there was no resemblance or connection to reality for a pandemic. It was sort of geared around mass casualty incidents, something that was going to stop and start, in a finite period of time. The organizational plan and existence did not cover any sort of rolling, ongoing, long term stress. (Participant 4)*
13	*And to the point that we had a policy written and approved by the medical executive for University of [XXX], it was actively not being considered by [Hospital]. And they said, "We do not have such a policy, we will not have such a policy." Again, [Hospital] is….it is…. I don't know enough, but it's, you know, it's not a free standing institution…And so you know, those decisions are made elsewhere. But the decision was "we will not, we will not ascribe to having such a policy." (Participant 19)*
14	*I think the uncertainty was a predominant feeling. You're starting to see numbers develop…we were hit pretty hard. I was particularly concerned that our institution hadn't really thought about the looming prospect of having to allocate resources, until your actual Covid patients are in our household. We had not yet constituted any kind of ad hoc committee to even think about delegation. And I was advocating for us to do it. And some of my distress related to the sense of a lack of urgency from administration. (Participant 25)*
15	*I was basically censored. I was told I could not give interviews, I could not publish academically on this. I was censored for doing those things which were very much what I was doing… in many ways that I thought was unethical…If you have a global problem that people are trying to help figure out, transparency and communication is the high road to solving it. And because of risk concerns….I was literally barred from doing that. (Participant 8)*
16	*"I think he and the board of trustees recognized the situation, so that's probably support. I mean, I think everyone was focused on what we were doing and happy with the results each and every day. And we kept at it. I felt safe the whole time, I didn't feel overburdened." (Participant 11)*
17	*And I honestly, at the beginning, wasn't that confident that our institution could pull that off all of those pieces. But they did and it was pretty impressive and actually made me proud to work here, which I think was a pleasant feeling amidst everything else. (Participant 2)*

Subtheme 3: the policies developed to guide allocation of scarce resources varied from institution to institution, as did the confidence in those policies

Institutions varied in the level of specificity they reached in their plans (if any) to operationalise CSC policies. At one end of the spectrum, institutions simply adopted a state-level policy and did not engage in any specific planning for how the policy would be used, deferring such work until the time it was needed. At the other end of the spectrum, some institutions adopted and published policies, implemented tools within the electronic health record (EHR) to facilitate resource allocation, and conducted training exercises using simulations to fully prepare for using CSC policies (table 4, excerpt 23). Many institutions fell somewhere between these extremes.

One of the most marked differences in institutional policies was the role of individual clinician judgement in allocating scarce resources. Some respondents felt that triaging care was a substantial change from their usual practice, while others felt that rationing care on some level was an everyday occurrence as a consequence of financial and logistical constraints (table 4, excerpts 24 and 25). This tension was a source of debate in many institutions during planning sessions and created distress

Table 4 Key excerpts from participant interviews, subthemes 2 and 3

Subtheme 2: the process of planning for resource shortages varied significantly between institutions	
Excerpt #	
18	*“So myself and one of the [other] critical care senior faculty, and(a)colleague who was the senior faculty, also chaired that…committee. We had about 15 people from the various campuses: medical, surgical, and neuro critical care folks, as well as bioethicists, including some nursing leadership. We had a [diversity] representative…we had the senior [leadership]….the communications liaison and that kind of stuff. And then we had…general counsel…” (Participant 24)*
19	*“….the working group initially began with basically people who felt an urgency to do something.” (Participant 20)*
20	*“To tell you about the hierarchy in medicine, there were a few folks there that we had to be very careful. Is the nurse practitioner going to feel comfortable in a room and talking to physicians? So when we divided the teams up, we try to be sure there’s a physician, a social worker, a chaplain.” (Participant 15)*
21	*The challenging part was finding people who could set aside—and this is an important part I think about the implementation ability of these policies. It requires critical care people, sort of on triage teams—I'm sure you've read these policies, you know, in detail. And critical care people are not in supply when you have 2, 4 times, you know, when you have to surge your capacity. I mean, it’s not like you have somebody to pull to be on a triage team. (Participant 10)*
22	*I think a lot of people got burnt out. The human toll, I think, was significant. And I don't think institutions have figured out how to mitigate that…I don't know that we really thought about what we need to do to care for staff and to sustain them and to mitigate some of the trauma that the staff has gone through. You know…people that work seven days a week for weeks on end, people that had worked through the emotional trauma of separated families with multiple fatalities. (Participant 25)*
Subtheme 3: The policies developed to guide allocation of scarce resources varied from institution to institution, as did the confidence in those policies	
23	*“We practiced with the system, to see how we felt about what it was generating. I don't think we ever—scores were not put into the medical record, etc, but we were on the edge of doing that…We had little exercises where we had two patients and somebody played the primary care and somebody played the triage officer, etc. And we talked about how those discussions would go.” (Participant 22)*
24	*“But am I supposed to help the person I haven't met or am I supposed to help the person that I'm taking care of? I was told that under like a crisis standard, obligation to the society first then the individual patient. I don't know if that’s right.” (Participant 9)*
25	*“I think we ration care every day; I think we make these triage decisions all the time. And I think it is incredibly user-dependent.” (Participant 19)*
26	*“…normally in our everyday work, it’s really expertise that we rely on to make decisions for individual patients… In this situation the criteria are going to say ‘I’m sorry, of course I know that your expertise tells you if you had five more days to do this, the patient could get better. We’re not in that position right now, we’re going to have to make a different decision.” (Participant 18)*
27	*“Our residents expressed a lot of concern about the possibility of bias around patients from our diverse populations or minority populations on the whole…And my response is like, yes and we can't solve that inequality problem at the bedside right now, right?…by ventilating somebody who we don't think is actually going to survive, we are not resolving the issues of inequality in that moment.” (Participant 21)*
28	*I think fairly confident. I think it would take continued attention to staff well being. In other words, we've got this protocol. We're going to follow it, but human emotion comes into play, and we have limited staff, and we have a threat of sickness to those staff. So we would have had to spend as much time as we spend developing the protocols as supporting the staff through the application of the protocols. (Participant 11)*
29	*“I would say there'd be no chance of that policy being applied anytime in the future or present…No, there’s really no chance that that would be beneficial; it would never be invoked. Again, it’s like a thought experiment… it kind of makes logical sense, but that doesn't take into account anything like human beings or emotions or press or interpersonal relationships. So you know, it’s like at 2am in your college dorm and you're talking to your roommates. It, you know, it kind of makes sense but in practice, [you have no chance.]” (Participant 1)*

for many respondents (table 4, excerpt 26). Variation in respondent perspectives on triaging was reflected in how policies assigned responsibility for allocation decisions. At multiple institutions, respondents reported that there was no specific guidance on making triage decisions. Rather, decisions were made collaboratively based on the judgement of the primary medical team and unit leadership.

Many participants expressed that although their policies were imperfect, they were confident that they had done the best they could. Many groups relied on work from other institutions to ensure that their own

Box 1 Key excerpts from participant interviews, subtheme 4

Subtheme 4: Policy developers identified many directions for future work in this arena.

Excerpt #

But I think that we need to do better at recognizing staffing as a scarce resource first. Because we were really asking people in some ways to act contrary to their professional ethics. And the nurses…couldn't do the work that they needed to do. And they certainly couldn't do it in a way that allowed them to actually sit and be with the patients in any way. (Participant 21)

People need to understand the fear and panic…And I say this because part of managing the pandemic was also actually managing people's impressions, fears, anxieties, as well as expectations, you know. Like some of it was really kind of unfounded in many ways, driven not by rational kind of, you know, rational thoughts. (Participant 14)

So as a group we've sort of worked together, you know, developing similar policies…If we thought that we were going to restrict visitors, which we did, we would all do it together…we actually organized, you know, press conferences, so that [we] could appear together. (Participant 3)

But if we don't know what unintended consequences we're generating or what does and doesn't work, we're not actually prepared. And I like to joke in any meeting I've ever talked about this with, I've never worked so hard on something I never want to see the light of day. We all need to take this opportunity to learn. And so I hope that other systems will learn from the work you're doing, the work we're doing, and that they will also consider taking this on themselves. (Participant 22)

"I am never going to look at this shit again. I want nothing to do with COVID triage." (Participant 8)

institutional policies aligned with others. There were concerns that health inequities would be perpetuated by decision making processes. At the same time, many had a sense that their work was at a minimum justifiable under the exigent circumstances, and that there was a limit to how much inequity could feasibly be addressed in the setting of CSC (table 4, excerpt 27). Despite respondents' confidence in the content of their policies, there was substantial scepticism that institutions would ever actually use these policies even if needed, primarily due to concerns about liability, institutional reputation and the emotional burden of implementing these processes (table 4, excerpts 28 and 29).

Subtheme 4: policy developers identified many directions for future research and development of CSC policies

Participants identified attention to human resources, collaboration outside of the institution both with colleagues and communities, and ongoing scholarship as focus areas moving forward. Planning for staffing shortages was identified as a specific area to be addressed when planning for similar crisis events (box 1, excerpt 30). Additionally, respondents emphasised the need to plan for the emotional response of staff to crisis situations (box 1, excerpt 31). Although there were only a few institutions that reported collaboration with their community, the majority of respondents identified the relationship between their institutions and community as important and highlighted the need for collaboration in planning for pandemics.

One clearly positive action reported was a significant increase in collaboration between clinicians, institutions and health systems. In the absence of robust evidence-based guidelines, many respondents relied on colleagues both within and outside their institutions. Shared resources were developed and easily accessible through platforms such as Google Drive. Respondents described collaboration on policy development to ensure parity across local institutions not only regarding allocation of scarce resources, but also on clinical care issues such as visitor policies. Several respondents described weekly or even daily conference calls between institutional leaders to discuss patient care challenges, coordinate patient allocation across institutions, and review triage planning (box 1, excerpt 32). Coordinating efforts typically drew on previous relationships, but were novel in terms of their frequency and complexity. Most respondents felt that these relationships were very important to their success in managing the pandemic, and there was wide agreement that such relationships should continue to be developed to support future efforts.

Finally, nearly all respondents identified the need for ongoing study of CSC planning, to develop an evidence base and establish precedents to rely on in the event of another pandemic (box 1, excerpt 33). Given that a major contributor to the moral distress experienced by planners was an overall lack of preparedness, many respondents conveyed hope that institutions would maintain and improve on plans developed in the early stages of the pandemic, with revisions done on some regular basis to incorporate new evidence. In particular, respondents identified potential bias and equity challenges as areas that would benefit from further study to ensure that future policies to guide resource allocation are as fair as possible. Despite recognising the need for future work, however, many respondents expressed a strong preference to not be part of further planning processes (box 1, excerpt 34).

DISCUSSION

We found that there were psychological burdens of planning for ventilator shortages, above and beyond the burdens of providing healthcare in the pandemic. This adds to the literature describing the psychological impacts of the pandemic on doctors, nurses and other clinicians, and identifies another distinct subgroup of healthcare workers at potential risk for occupational moral injury.[10–13] Even early on, it was clear that the work of planning for resource shortages carried a 'substantial moral weight'.[14] Our findings, from data gathered 12–15 months into the pandemic, add to work by Butler *et al* describing leadership gaps and moral distress.

We also found that legal, administrative and political systems affected the processes of planning for resource shortages and implementation of plans, and learnt about the ways in which institutions engaged (or did not) with their communities. While some institutions demonstrated the feasibility of including the public in crafting these high-stakes policies even in conditions of great urgency, many others showed great reluctance to share the details or even the existence of a policy planning for resource shortages with the group that would be most affected: the community of potential patients.

There is clear evidence for the impact of state and institutional leadership on the experience of planners, and many of the burdens described were worsened or caused entirely by leadership failures. Specifically, the lack of preparation and expertise at the state and institutional level, the tying of liability protection to an official declaration of CSC, censorship, denial of existing resource shortages and outright obstruction of the planning process, made a difficult situation more so. On the other hand, supportive and transparent leadership, and high levels of collaboration with other institutions and governmental agencies facilitated the task of planning for crisis.

To fully capitalise on the lessons learnt, and mitigate the lack of appetite to revisit crisis planning, institutions should provide dedicated support for those professionals engaged in planning for ventilator and other resource shortages in terms of time and administrative support, mental health support and academic recognition of the work. We note that while ventilator triage was rarely (if ever) needed in the USA, triaging of other resources certainly did occur; thus, we hope that the findings in this work may be applied more broadly to resource shortages generally rather than confining application to ventilators specifically. Engaging clinicians, legal counsel and patient communities, in the planning and implementation of policies would be best done outside of a crisis situation to allow for thoughtful collaboration, and should address triaging of a variety of scarce resources, including staff time and effort. Planning must also include data infrastructure to support triage activities, documentation of workflows and tabletop exercises to train staff in triage implementation. Finally, maintaining and growing collaborative relationships between institutions to facilitate coordination of triage policies and processes, and effective local allocation of scarce resources if and when needed, is critical to maintain consistency of care and potentially reduce moral distress in frontline care providers. Guidelines are emerging for when to declare CSC, and how to implement necessary changes in care under those conditions[15 16]; we urge institutional and governmental health officials to take seriously the scholarship on these topics. There are limitations to this qualitative work. One of the investigators (EC) was in the unique position of being both a coinvestigator on the study and eligible for inclusion in the study, as a member of a team responsible for developing resource allocation guidelines. We used multiple strategies to maximise the trustworthiness of our findings, including extensive debriefs with one another after interviews to identify potential areas of bias and to enhance reflexivity, memoing and inclusion of coinvestigators who are not clinicians to further help identify potential biases. Our sample population is predominantly from academic medical centres, and we had only one respondent from the Midwest region, limiting generalisability. Finally, it is likely that those who responded to our request for participation are systematically different, perhaps having some personal experience or motivation to share their experiences. Without knowing the characteristics of all individuals involved in CSC planning across the country, we cannot know how this potential bias may have affected our findings.

Strengths of this work include the timing of our interviews. Although the elapsed time between pandemic onset and interviews may have impacted the ability to recall specific events or other facts, the emotional experiences described by our respondents are those that endured in their memories and thus may be less likely to represent experiences in the 'heat of the moment' during the initial wave of COVID-19 infections. The timing of this study also means the respondents experienced subsequent waves of infection, providing greater exposure to the challenges of planning for crisis standards and opportunities to explore the activation and/or operationalisation of the standards across time.

CONCLUSION

The psychological burden on planners is significant and may hinder planning for future crises. Improvements in political and institutional leadership, collaboration across institutions and with communities, and allocation of human and material resources towards planning during non-crisis periods are critical steps that can be taken now to avoid future moral tragedy.

Author affiliations
[1]Department of Medicine, Dartmouth College Geisel School of Medicine, Lebanon, New Hampshire, USA
[2]The Dartmouth Institute for Health Policy & Clinical Practice, Dartmouth College Geisel School of Medicine, Hanover, New Hampshire, USA
[3]Dartmouth College, Hanover, New Hampshire, USA
[4]Family and Social Medicine, Yeshiva University Albert Einstein College of Medicine, Bronx, New York, USA

Twitter Meredith MacMartin @GraniteDoc and Elizabeth Chuang @dr_liz_chuang

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ORCID iDs
Meredith MacMartin http://orcid.org/0000-0002-6614-6091
Elizabeth Chuang http://orcid.org/0000-0002-2505-8159

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