Crisis Standards of Care: Lessons from New York City Hospitals’ COVID-19 Experience The Emergency Medicine Perspective

A Meeting Report
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Executive Summary

New York City suffered an unprecedented surge of patients with novel coronavirus disease 2019 (COVID-19) from April to June 2020, and this surge was associated with extraordinary use of emergency department resources needed for severely ill patients. Hospitals were overwhelmed and unable to maintain conventional standards of care, forcing hospitals and healthcare workers to adjust the way that care was provided in order to do the most good for the greatest number of patients.

The purpose of this project was to convene a series of forums in which clinicians from hospitals across New York City could frankly discuss their experiences with implementation of crisis standards of care (CSC). The Johns Hopkins Center for Health Security, in collaboration with New York City Health + Hospitals, convened a virtual working group in October 2020, consisting of 15 New York City intensive care unit (ICU) directors, and interim recommendations were shared in November 2020.

A subsequent meeting with emergency physicians was convened on January 8, 2021. This report reflects findings from that discussion. Most participants agreed that the crisis brought out the best in the staff, despite their having to cope with an arduous and harrowing situation. There was a sense of duty, a heightened sense of camaraderie, and a wealth of innovative thinking. Participants spoke of “making the best of a bad situation.”

Several themes that had been discussed in the November 2020 meeting with ICU physicians emerged during this second meeting, such as:

• There was no patient load-balancing from one hospital system to another and none to hospitals outside New York City. Load-balancing involves moving patients from overwhelmed hospitals to other facilities that may have more resources on hand to deliver care.

• Load-balancing needs to be better coordinated, even within hospital systems.

• Legal counsel was seen as a barrier to making CSC plans.

• No CSC declaration was formally made by the state, city, or any hospital.

• Timely information exchange within hospitals was limited, impairing situational awareness.

• Medical and nursing staff were redeployed to help with COVID-19 patients, but they often lacked sufficient training or experience.

• Palliative care service proved to be invaluable in helping the families of dying patients.
In addition, during the January 8, 2021, meeting with emergency physicians, some new themes emerged and some issues raised earlier by ICU directors were expressed in a new way:

- Hospitals and healthcare systems were taken by surprise by the pandemic, and staff were unfamiliar with CSC concepts. There was a lack of awareness of how bad the situation might become, and nonclinician administrators could not appreciate the possibility of critical shortages. Most clinicians and administrators were not familiar with CSC principles and best practices.

- No hospital or health system represented in this meeting, and no city or state agency, had a CSC plan that was ready to be implemented.

- A culture of secrecy regarding the severity of the crisis impeded CSC implementation. Neither political nor government leaders wanted to admit to being in a crisis standards situation; therefore, any CSC-related documents were treated as secret and not shared with frontline clinicians.

- Staffing was a major challenge because of the surge of patients and illness among healthcare workers. Reinforcement clinicians were of limited help.

- There were widespread shortages of critical equipment and supplies, including ventilators, respiratory supplies, oxygen cylinders, intravenous pumps, and personal protective equipment.

- Emergency medical services protocols did not always align with emergency department (ED) protocols, leading to some staff conflict and demoralization.

- Infection control efforts were often at odds with efficient patient care. Normal infection prevention standards could not be maintained.

- ED staff were often redeployed to other parts of the hospital, despite the influx of COVID-19 patients, because total ED patient volume was much lower than normal.

- Because of the persistent lower ED volumes, many healthcare workers, including experienced doctors and nurses, have been furloughed or laid off, and many graduating emergency medicine resident physicians have had difficulty finding jobs.

- Shortages of both wall oxygen and oxygen cylinders were common in hospitals.

- The impact of the first pandemic surge on staff wellbeing was profound and enduring. Hospital staff are still suffering deep emotional ill effects of the initial surge and are having a “tough time” with subsequent surges.
Introduction

In the spring of 2020, hospitals in New York City suffered an unprecedented surge of novel coronavirus disease 2019 (COVID-19) patients.\textsuperscript{1,2} This surge was associated with the extraordinary use of emergency department, inpatient, and critical care resources and high case fatality ratios (the number deaths divided by the number of recognized cases).\textsuperscript{3-5} During this epidemic, there were many reports of hospitals being overwhelmed.\textsuperscript{6-8} There were also reports that conventional standards of care were unable to be maintained, forcing hospitals and healthcare workers to adjust the way care was provided in order to do the most good for the greatest number of patients.\textsuperscript{9}

Standard of care is a legal concept related to “the level at which the average, prudent provider in a given community would practice. It is how similarly qualified practitioners would have managed the patient’s care under the same or similar circumstances.”\textsuperscript{10} The term crisis standards of care (CSC) refers to “a substantial change in usual healthcare operations and the level of care it is possible to deliver, which is made necessary by a pervasive (eg, pandemic influenza) or catastrophic (eg, earthquake, hurricane) disaster.”\textsuperscript{11} It is a conceptual framework that was developed in the context of planning for surge capacity and capability challenges that might deplete available resources needed to deliver usual and expected healthcare services. The framework details a systems approach to managing such challenges, with emphasis on ethics, the rule of law, performance improvement, and a series of key recommendations, including provider and community engagement in planning for its implementation.\textsuperscript{11}

For over a decade, there has been considerable discussion within the professional healthcare preparedness community about CSC. In 2009, the Institute of Medicine, now named the National Academy of Medicine, produced the first in a series of seminal reports that have provided a foundation for CSC preparedness nationwide.\textsuperscript{11} Until the COVID-19 pandemic, the CSC framework had been largely theoretical, since there had not been a sustained crisis of sufficient severity to invoke it. The COVID-19 pandemic surge in New York City was the first time that a transition to crisis standards was contemplated on a large and prolonged scale in the United States. In private conversations, several healthcare workers reported experiences in which this transition to CSC did not go smoothly.

The purpose of this project was to provide a trusted space in which healthcare workers from hospitals across New York City could discuss their experiences with CSC implementation with each other and with national experts on CSC. The project was approved by the New York University School of Medicine Institutional Review Board.

An initial meeting, which included critical care physicians, was conducted on October 21, 2020. The report of that meeting can be found at https://www.centerforhealthsecurity.org/our-work/publications/crisis-standards-of-care-lessons-from-new-york-city-hospitals-covid-19-experience.\textsuperscript{12} This document reports on a subsequent virtual working group meeting of emergency physicians convened on
January 8, 2021, to assess the perspective of another department severely affected by the patient surge.

**Overview of Crisis Standards of Care**

Following initial research prompted by experience with the 9/11 attacks, Hurricane Katrina, severe acute respiratory syndrome, and H5N1 influenza, during the 2009 influenza pandemic the Assistant Secretary for Preparedness and Response at the Department of Health and Human Services commissioned the Institute of Medicine to address the following key questions: Who should receive care during a sustained or catastrophic disaster event when not all could receive care? Should the standard of care change as a result? This work culminated in 3 reports that have been the foundation of most CSC planning. Central to the CSC planning framework is the recognition of a continuum of standards of care related to the degree of surge response required in a large-scale disaster that range from conventional to contingency to crisis. These different levels of care have been defined as:

- **Conventional capacity** – The spaces, staff, and supplies used are consistent with daily practices within the institution. These spaces and practices are used during a major mass casualty incident that triggers activation of the facility emergency operations plan.

- **Contingency capacity** – The spaces, staff, and supplies used are not consistent with daily practices but maintain or have minimal impact on usual patient care practices. These spaces or practices may be used temporarily during a major mass casualty incident or on a more sustained basis during a disaster (when the demands of the incident exceed community resources).

- **Crisis capacity** – Adaptive spaces, staff, and supplies are not consistent with usual standards of care but provide sufficiency of care in the setting of a catastrophic disaster (ie, provide the best possible care to patients given the circumstances and resources available).

Crisis capacity activation constitutes a significant adjustment to standards of care.

One aspect of CSC relates to the allocation of scarce resources—especially life-sustaining resources such as mechanical ventilation or dialysis. Earlier research has explored the ethical basis for making difficult decisions about allocating scarce resources. Frameworks for such allocations were developed in several states, including a draft framework in New York.
Description of the Working Group Meeting

The virtual meeting was convened by the Johns Hopkins Center for Health Security in collaboration with New York City Health + Hospitals on January 8, 2021.

The meeting included 13 emergency physicians who treated patients in New York City hospitals from April through June 2020. These participants were recruited by personal outreach from one of the intensive care unit (ICU) directors. Other participants were 3 physicians from the New York City Department of Health and Mental Hygiene who were involved in the COVID-19 response, 2 individuals working in hospital emergency management, 2 authors of the Institute of Medicine's CSC reports, and several physician scholars and researchers from the Johns Hopkins Center for Health Security. The list of attendees can be found in Appendix A.

The working group was conducted under Chatham House Rules, meaning that nothing said in the meeting can be quoted or attributed to an individual or institution. The project was approved by the New York University School of Medicine Center Institutional Review Board and informed consent was obtained from all participants.

After a brief background presentation on CSC, the participants were asked to discuss the following 6 questions in a moderated discussion relating to the surge of cases in New York during the spring of 2020:

- Was there a CSC plan at your hospital and was it implemented?
- To what degree was there institutional engagement and support in CSC planning and implementation?
- To what degree did institutions collaborate?
- To what degree did bedside clinicians have situational awareness?
- How well did CSC plans work?
- What has been the post-CSC impact on healthcare worker resilience and healthcare worker wellness?

Simultaneous notes from 4 notetakers were compiled and underwent thematic analysis. This report is the product of that analysis.

Major Themes Emerging from the Meeting

Many of the themes discussed were consistent with the themes that emerged from the ICU directors' meeting held in November 2020. These included the following:

- There was no patient load-balancing from one hospital system to another and none to hospitals outside of New York City. It was noted that New York is a big state that had a lot of bed capacity outside of the city. Participants felt that it was unethical to have unused capacity while CSC was being implemented so close by.
• Load-balancing needs to be better coordinated, even within hospital systems.

• Legal counsel was seen as a barrier to making CSC plans. Participants understood that if plans were created, the lawyers would be concerned that the plans would be made public, potentially leading to a public relations problem.

• No CSC declaration was ever formally made by the state, city, or any hospital. Participants' understanding was that leaders at all levels were concerned about both civil and criminal liability risk as well as public relations and reputational risk.

• Timely information exchange within hospitals was limited, and, therefore, situational awareness was impaired. Staff huddles were often an effective means of updating clinicians within a unit.

• Medical and nursing staff were often redeployed to help with COVID-19 patients, but they often lacked sufficient training or experience.

• Palliative care service proved to be invaluable in helping with the families of dying patients.

Additional themes that emerged during the January 2021 meeting with emergency care providers are described below.

**Hospitals and healthcare systems were taken by surprise by the pandemic, and staff were unfamiliar with CSC concepts.**

Participants in the meeting expressed that in March and April 2020, when the first wave of COVID-19 patients flooded the hospitals, there was a lack of awareness of how bad the situation might become, and nonclinician administrators could not appreciate the possibility of critical shortages. Furthermore, most clinicians and administrators were not familiar with CSC principles and best practices.

> “People didn’t want to go there [think about CSC], they didn’t think it would ever be needed in the United States or New York City.”

Frontline staff were communicating with each other, but it was hard to effectively convey the gravity of the situation they were facing to those who were not at the bedside and experiencing firsthand the surge of COVID-19 patients. Decisions had to be made that could not wait for administrators to accept or conceive of the extremity of the situation.

Participants sensed that hospital leaders understood CSC to mean only rationing of lifesaving care and not being about conservation of needed resources to avoid absolute scarcity.

> “There was a visceral fear of going to any type of crisis standards of care.”
There were no operational CSC plans.

Participants were unaware of any New York City hospital or health system or state agency with a CSC plan that was ready to be implemented. All hospitals and healthcare systems had general emergency operations plans (disaster plans), but none specifically addressed CSC in detail. In some cases, the emergency operation plan had been written with the help of consultants (vendors), but when the crisis occurred, the consultants were not there and plans were not adhered to.

“Absence of planning will result in worse outcomes.”

Participants added that once into the crisis, conversations around CSC started in the boardroom but did not include representation from the Emergency Department (ED) clinical leadership. This had an adverse impact on the ED. In the view of the participants, other departments initially ignored what was happening in the ED. Then, when case numbers started to soar, the other departments were surprised that the ED could not handle them. In contrast, the emergency physicians participating in this meeting felt that when the inpatient units started to see many patients, it was “all hands-on-deck.”

A “culture of secrecy” regarding the severity of the crisis impeded CSC implementation.

Participants believed that leaders of hospitals, hospital systems, the city, and the state were afraid to admit to being in a crisis standards situation; therefore, CSC plans and other related documents were not widely disseminated to frontline staff. Because the documents were not widely shared, there was no common understanding of the plan, strategies, or protocols among the staff and across departments. Specifically, there were disagreements over interpretations of what the criteria were for determining when a patient should be deemed “do-not-resuscitate.” In part, secrecy reflected a fear of investigations by regulators. There was widespread concern that complaints by patients or their families would prompt “surveys” (compliance investigations) by city or state authorities that would find deviations from normal accepted practice and standards. The financial penalties for such violations can be very harsh.

Despite the many awful challenges, there were bright spots.

Participants generally agreed that the crisis brought out the best in the staff despite how arduous the situation was. There was a pervasive sense of duty to the patients and the community as well as a heightened sense of camaraderie. In particular, the dedication of the faculties of the medical schools was noted. Both attending and resident physicians would work long hours, 7 days a week, and eventually had to be told to take time off.

Many participants commented on the wealth of innovative thinking—“MacGyvering,” as they called it. Examples included converting pediatric ventilators for use for adults,
leverage telehealth for a variety of novel applications, and finding or improvising alternatives to scarce equipment and supplies. One downside to improvising patient care solutions, however, was that it could complicate the handoff between clinicians, and the lack of shared knowledge of these innovative approaches could pose a patient safety risk.

**Staffing was a major challenge.**

According to participants, illness among healthcare workers was a huge challenge. One participant noted that a third of the faculty and residents became infected and were out sick during the surge. Those who were out sick were reluctant to come to the hospital for treatment if they were getting worse. At one hospital, leaders developed a buddy system to check in on staff who were sick at home and assess their need for in-person evaluation. Specifically, the buddies called to assess respiratory rate and difficulty breathing. If the buddy determined that there was a need for evaluation, then that evaluation was mandatory.

> “I felt lots of guilt for not getting sick when my residents got sick.”

Many temporary personnel were brought on board to augment staff and to backfill staff who were out sick. Some of these were travelers or locum tenens providers; others were deployed federal personnel or other volunteers. These clinicians had limited familiarity with the hospital in which they were working and no lasting connection to the institution. Some of the participants found them to be of limited help and, in some cases, thought they were a hindrance.

**There were widespread shortages of critical equipment and supplies.**

Participants reported that items that were in short supply included respiratory supplies, oxygen cylinders, intravenous pumps, and personal protective equipment (PPE). Because of unresolved shortages, staff had to find ways to clean and reuse disposable items, sometimes with approved methods and sometimes without.

> “As an example of ‘MacGyvering,’ we rigged up a BiPAP system in place of a vent, which worked quite well, but the handoff to other staff was challenging, of course.”

The shortage of ventilators was filled by bringing in a variety of new ventilators of various types, some provided from the federal or state stockpiles. This created a challenge because the new ventilators were often unfamiliar to the staff using them.

> “There were 9 different types of vents in the department at any given time. Staff was trained and comfortable on 2 to 3.”
To deal with this variety of unfamiliar machines, 1 physician shot videos of respiratory therapists providing instructions for the different ventilator types; the videos were then distributed to all clinicians over WhatsApp and email.

In some cases, participants described a misperception of scarcity. For example, frontline clinicians in the ED thought that the hospital was out of ventilators, while, in fact, there were unused ones elsewhere in the hospital. This illustrates the lack of situational awareness and communications noted during the October 2020 meeting with ICU physicians.

**Emergency medical services protocols did not always align with ED protocols.**

Some participants noted that, at the height of the spring wave, there was a period when emergency medical services (EMS) practice and protocols with regard to out-of-hospital resuscitation differed from ED practice and protocols. This sometimes resulted in resuscitation efforts being stopped on arrival at the ED, which was demoralizing and a source of distress for paramedics and EMS personnel.

> “[EMS] crews would get to the ED with a working arrest, and [ED] staff would immediately say, ‘I’m calling this [code] here.’”

Infection control efforts were challenging.

Participants noted that EDs were not well designed for a large-scale epidemic of a respiratory pathogen. Initial COVID-19 infection control and prevention guidelines indicated that patients receiving many types of ventilatory support should be treated in negative pressure isolation rooms. However, there were not nearly enough such rooms for all the patients who met those criteria.

> “We had 3 isolation rooms when we needed a whole wing.”

The ideal ED design for an epidemic like COVID-19 would include many closed patient rooms with negative pressure—unlike the design of most EDs in New York City. Furthermore, PPE was chronically in very short supply. Thus, the infection control that was needed to protect healthcare workers and other patients was a major challenge. Strict adherence to infection control and prevention guidance interfered with efficient patient care, forcing staff to take shortcuts and or improvise work-arounds. Participants stated that the hospitals’ infection control and prevention practitioners often had a different perspective from bedside clinicians on these improvised practices, leading to some conflict. Eventually, over approximately 6 months as the COVID-19 surge subsided, there was a shift in behavior with respect to PPE.
ED staff were often redeployed to other parts of the hospital.

Participants described the paradox that although EDs were sometimes overwhelmed with COVID-19 patients, total ED patient volume was much lower than normal because non-COVID-19 patient volume was dramatically lower than normal. The US Centers for Disease Control and Prevention estimated that there was a 42% decline. Consequently, ED staff were being redeployed to other unfamiliar parts of the hospital. Emergency physicians describe being sent to staff pop-up ICUs that were caring for the overflow of COVID-19 patients.

Furthermore, because of the persistent lower ED volumes, many healthcare workers, including experienced doctors and nurses, have been furloughed or laid off, and many emergency medicine resident physicians have been having difficulty finding jobs as they complete their training.

Oxygen shortages were common in the hospitals.

Participants noted that there were issues with both wall oxygen and oxygen cylinders. Because of the excessive draw on wall oxygen, gas pressures within the system often were low and low-pressure alarms were common. In addition, wall oxygen systems would sometimes freeze due to the excessive draw on the liquid oxygen supply tanks. Oxygen canisters were extensively used to augment wall systems and for alternative care sites in the hospitals where wall oxygen was not available. One participant described having so many patients on bottled oxygen in the ED that they established roving oxygen teams just to continuously check all the oxygen cylinders and oxygen saturation of each patient.

Beyond being an engineering issue, the shortage of oxygen took a toll on the staff.

“The importance of ‘norming’ the adherence process [became accepted]. You’d now be publicly shamed for not wearing a mask in most settings.”

The impact on staff wellbeing was profound and enduring.

As noted in the prior working group meeting with ICU physicians, emergency physician participants in this meeting agreed that hospital staff are still suffering the emotional ill effects of the spring surge and having a "tough time" with the second fall surge.
Participants emphasized the importance of provider engagement to prevent and address the moral distress that they and their colleagues experienced. They noted that as emergency physicians, they “sort of tough it out,” manage their emotions, and package those problems for another day. They recognized that this was not constructive in the long term and that there is a need to engage mental health experts who understand these issues. Further, they noted that the roles of mental health professionals with regard to healthcare worker wellbeing has not been emphasized enough in surge planning. Some participants recommended adopting an approach in which a meeting with a mental health counselor was automatic unless the staff member opted out.

Participants agreed that there is a need to better prepare clinicians to do and experience very disturbing things that they are not accustomed to. Two examples they offered were extubating patients for whom further mechanical ventilation was futile and witnessing large numbers of patients dying in unfamiliar settings and in unfamiliar ways.

“I see my colleagues; they are not the same people that they were before.”
Summary

This working group meeting provided a valuable opportunity for New York City emergency physicians to discuss their experiences in trying to implement aspects of CSC during the spring COVID-19 surge. Much has been learned from this working group that can inform CSC guidance going forward for the remainder of this pandemic and the next.

The following are some of the forward-looking themes that emerged from the discussion.

- There was general agreement that a formal CSC declaration would protect healthcare workers, allocate resources, could inform the stand-up of alternative care sites. Healthcare administrators, their legal counsels, and local and state officials should embrace CSC planning at the institutional and jurisdictional levels. Thoughtful and transparent CSC planning, along with effective implementation, should reduce inappropriate ad hoc decision making and unnecessary loss of life.

- Better collaboration is needed between bedside clinicians, especially those in EDs and ICUs, and infection control and prevention professionals on realistic standards that recognize the realities of efficient patient care in a crisis while at the same time providing as much protection as possible to patients and staff. It is likely that finding the right balance between these competing necessities will be difficult; therefore, this discussion must first happen at the national level among professional organizations, with input from US Centers for Disease Control and Prevention and other subject matter experts.

- Healthcare worker wellbeing should be an essential part of surge planning and pandemic preparedness. Mental health support informed by best practices needs to be built into plans and policies. Ways must be found to foster emotional resilience in non-ICU clinicians who are redeployed to work in an ICU. Expecting them to cope on their own should not be the default assumption.

- Most participants agreed that in the future ED’s need to be built differently, but that will be expensive and may lead to less efficient designs for normal times. Earlier suggestions for changes in one ED’s design to make it better suited for dealing with respiratory pathogens were rejected because of cost. Hospitals should consider renovating existing EDs to have more respiratory isolation capacity, and new construction should incorporate pandemic considerations in their core design principles.

- Participants also noted that hospital oxygen systems should be upgraded in both new and existing hospital designs to enable much higher flow volumes and to make wall oxygen available in potential surge treatment spaces. Furthermore, bottled oxygen needs to be more readily available, and oxygen resupply for both canisters and bulk liquid oxygen needs to be more assured.
• It was clear to many participants that a different and better approach to family notification is needed. It is essential to ensure that the family’s name and number be gathered at the door, along with a guarantee that someone who knows the patient will call back for status updates.

“Our biggest fear is that someday, someone will try to say that this experience never happened.”

Limitations

This project has several limitations. Its small size and convenience sample preclude it from being considered necessarily representative of all New York City emergency physicians. Selection bias could also be involved. Because only emergency physicians were included, it cannot be considered necessarily representative of all New York City healthcare workers. Ideally, healthcare coalitions would play a role in the issues discussed in this report; however, New York City has a unique approach to healthcare coalitions that may limit the generalizability of some of the findings. Recall bias may have played a role, because the meeting took place 9 months after the surge in April 2020.

Next Steps

The Johns Hopkins Center for Health Security intends to continue to work with New York City Health + Hospitals to convene a working group with New York City ICU nurses in the coming months to gain their perspectives. Other working groups are being planned for Boston and rural hospitals in the Midwest. The Center will continue to engage with CSC experts and consider recommendations to update CSC guidance.
References


## Appendix A. Participant List

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