The NEW ENGLAND JOURNAL of MEDICINE

Perspective

Facing Covid-19 in Italy — Ethics, Logistics, and Therapeutics on the Epidemic's Front Line

Lisa Rosenbaum, M.D.

A few weeks ago, Dr. D., a middle-aged chief of cardiology at one of the biggest hospitals in northern Italy, developed a fever. Fearing he might have Covid-19, he sought confirmatory testing but was told there weren't enough tests available for those who hadn't had demonstrated exposure to an infected person. He was therefore advised to stay home until the fever resolved. He returned to work 6 days later, but 5 days after that, a mild fever recurred, and soon he developed a cough. He again quarantined himself in the basement of his home so as not to expose his family.

With half his hospital's 1000 beds occupied by patients with Covid-19, Dr. D., who finally received a positive test result on March 10, knows he's fortunate. About 60 to 90 patients with symptoms suggestive of Covid-19 were presenting to his hospital's emergency department daily. Noninvasive ventilation was attempted in as many as possible, but the rapidity of respiratory deterioration in the most severely affected patients, including some young ones, was striking and often unforeseeable. "You have no predictive bible to help you," Dr. D. told me. This uncertainty only heightened the agony of the impossible decisions doctors were facing. "We have to decide who can go forward," he said.

Dr. D. was one of three physicians I spoke with who've been caring for patients in northern Italy, which has borne the brunt of the country's thousands of confirmed coronavirus infections and, as of mid-March, more than 1000 deaths. Though the catastrophic nature of Lombardy's outbreak has since been widely publicized,[1] when we spoke, all three requested anonymity, in accordance with the guidance they'd been given. Dr. L., a staff doctor at a different hospital, had received a hospital memo forbidding press interviews so as to avoid causing further public alarm. Yet, as he emphasized, minimizing the gravity of the situation was having lethal consequences. "The citizens won't accept the restrictions," he said, "unless you tell them the truth."

That truth is rather grim. Though Italy's health system is highly regarded and has 3.2 hospital beds per 1000 people (as compared with 2.8 in the United States), it has been impossible to meet the needs of so many critically ill patients simultaneously. Elective surgeries have been cancelled, semielective procedures postponed, and operating rooms turned into makeshift ICUs. With all beds occupied, corridors and administrative areas are lined with patients, some of them receiving noninvasive ventilation.

How to treat these patients?

Beyond the ventilatory support for the severe interstitial pneumonias that develop, therapy is empirical, though lopinavir–ritonavir, chloroquine, and sometimes high-dose steroids are all being tried.

And how to care for patients presenting with unrelated illnesses? Though hospitals are attempting to create Covid-19 units, it's been difficult to protect other patients from exposure. Dr. D. told me, for instance, that at least five patients who'd been admitted to his hospital for myocardial infarction were presumed to have been infected with Covid-19 while hospitalized.

If protecting patients is difficult, so is protecting health care workers, including nurses, respiratory therapists, and those tasked to clean the rooms between patients. When we spoke, Dr. D. was one of six physicians in his division to have suspected Covid-19 infection. Given testing lags and the proportion of infected people who remain asymptomatic, it's too soon to know the rate of infection among caregivers. And it is precisely these circumstances that make infection control so difficult. "The infection is everywhere in the hospital," Dr. D. told me. "Although you wear protective gear and do the best you can, you cannot control it."

The challenge, he suggested, had less to do with caring for patients with Covid-19–related critical illness, in whose rooms clinicians are shielded in protective gear, than with caregivers' many other daily activities: touching computers, riding elevators, seeing outpatients, eating lunch. Mandatory quarantine of infected workers, even those with mild illness, seems critical to infection control. But not all caregivers are equally vulnerable to severe illness, and workforce shortages will have to be managed somehow. One junior attending, Dr. S., told me that at his hospital young physicians were on the front lines, signing up for extra shifts and working outside their specialties. Nevertheless, he describes an eagerness among his senior colleagues to step up. "You can see the fear in their eyes," he said, "but they want to help."

Whatever fears these caregivers may harbor about their own health, what they seemed to find far more unbearable was watching people die because resource constraints limited the availability of ventilatory support. So aversive was this rationing that they hesitated to describe how these decisions were being made. Dr. S. offered a hypothetical scenario involving two patients with respiratory failure, one 65 and the other 85 with coexisting conditions. With only one ventilator, you intubate the 65-year-old. Dr. D. told me his hospital was also considering, in addition to the number of comorbidities, the severity of respiratory failure and probability of surviving prolonged intubation, aiming to dedicate its limited resources to those who both stand to benefit most and have the highest chance of surviving.

But though approaches vary even within a single hospital, I sensed that age was often given the most weight. I heard one story, for instance, about an 80-year-old who was "perfect physically" until he developed Covid-19–related respiratory failure. He died because mechanical ventilation could not be offered. Though Lombardy's richly resourced health care system has expanded critical care capacity as much as possible, there simply were not enough ventilators for all patients who needed them. "There is no way to find an exception," Dr. L. told me. "We have to decide who must die and whom we shall keep alive."

Contributing to the resource scarcity is the prolonged intubation many of these patients require as they recover from pneumonia — often 15 to 20 days of mechanical ventilation, with several hours spent in the prone position and then, typically, a very slow weaning. In the midst of the outbreak's peak in northern Italy, as physicians struggled to wean patients off ventilators while others developed severe respiratory decompensation, hospitals had to lower the age cutoff — from 80 to 75 at one hospital, for instance. Though the physicians I spoke with were clearly not responsible for the crisis in capacity, all seemed exquisitely uncomfortable when asked to describe how these rationing decisions were being made. My questions were met with silence — or the exhortation to focus solely on the need for prevention and social distancing. When I pressed Dr. S., for instance, about whether age-based cutoffs were being used to allocate ventilators, he eventually admitted how ashamed he was to talk about it. "This is not a nice thing to say," he told me. "You will just scare a lot of people."

Dr. S. was hardly alone. The agony of these decisions prompted several of the region's physicians to seek ethical counsel. In response, the Italian College of Anesthesia, Analgesia, Resuscitation, and Intensive Care (SIAARTI) issued recommendations under the direction of Marco Vergano, an anesthesiologist and chair of the SIAARTI's Ethics Section.[2] Vergano, who worked on the recommendations between caring for critically ill patients in the ICU, said that the committee urged "clinical reasonableness" as well

as what he called a "soft utilitarian" approach in the face of resource scarcity. Though the guidelines did not suggest that age should be the only factor determining resource allocation, the committee acknowledged that an age limit for ICU admission may ultimately need to be set.

Explaining the recommendations' rationale, Vergano described how difficult it was for the frail and elderly to survive the prolonged intubation required to recover from Covid-19–related pneumonia. As excruciating as it was to admit, about a week into the epidemic's peak, it became clear that ventilating patients who were extremely unlikely to survive meant denying ventilatory support to many who could. Nevertheless, even under the direst circumstances, rationing is often better tolerated when done silently. Indeed, the ethical guidance was widely criticized. Committee members were accused of ageism, and critics suggested that the gravity of the situation had been exaggerated and that Covid-19 was no worse than influenza.

Though ethical dilemmas, by definition, have no right answer, if and when other health systems face similar rationing decisions, is societal backlash inevitable? To create an ethical framework for resource allocation reflecting society's priorities, Lee Biddison, an intensivist at Johns Hopkins, led focus groups around Maryland to discuss community members' preferences. The resultant document, published in 2019 and entitled "Too Many Patients . . . A Framework to Guide Statewide Allocation of Scarce Mechanical Ventilation during Disasters" — noting that "an influenza pandemic similar to that of 1918 would require ICU and mechanical ventilation capacity that is significantly greater than what is available" — emphasizes ethical principles similar to those of the Italian committee.[3]

Participants seemed to value most saving people with the greatest chance of short-term survival, followed by saving those who, thanks to a relative lack of coexisting conditions, have the greatest chance of long-term survival. Though participants' input suggested that age should not be the primary or the sole criterion for resource allocation, people also recognized that there were circumstances under which "it may be appropriate to consider stage of life in decision making."

No matter the ethical framework, should such resource scarcity occur, there are many scenarios that will still feel morally untenable, particularly in the face of heightened prognostic uncertainty. Would you remove a ventilator from one patient who was having a rocky course, for instance, to give it to another in the throes of an initial decompensation? Would you preferentially intubate a healthy 55-year-old over a young mother with breast cancer whose prognosis is unknown? In an effort to address such quandaries, Biddison and colleagues also offered three process-related principles that seemed as imperative as the ethical ones.

The first and most important is to separate clinicians providing care from those making triage decisions. The "triage officer," backed by a team with expertise in nursing and respiratory therapy, would make resource-allocation decisions and communicate them to the clinical team, the patient, and the family. Second, these decisions should be reviewed regularly by a centralized state-level monitoring committee to ensure that there are no inappropriate inequities. Third, the triage algorithm should also be reviewed regularly as knowledge about the disease evolves. If we decided not to intubate patients with Covid-19 for longer than 10 days, for example, but then learned that these patients need 15 days to recover, we would need to change our algorithms.

Unifying all these principles, both ethical and pragmatic, is the recognition that only with transparency and inclusivity can public trust and cooperation be achieved. Around the world — from muzzled doctors in China, to false promises of testing capacity in the United States, to refutations of resource-rationing claims in Italy — we are seeing that denial is deadly. The point at which preparedness dissolves into panic will always be context-dependent. But the tragedy in Italy reinforces the wisdom of many public health experts: the best outcome of this pandemic would be being accused of having overprepared.

Disclosure forms provided by the author are available at NEJM.org.

Dr. Rosenbaum is a national correspondent for the *Journal*.

This article was published on March 18, 2020, at NEJM.org.

1. Horowitz J. Italy's health care system groans under coronavirus — a warning to the world. New York Times. March 12, 2020 (https://www.nytimes.com/2020/03/12/world/europe/12italy-coronavirus-health-care.html).
2. Società Italiana di Anestesia Analgesia Rianimazione e Terapia Intensiva. Clinical ethics recommendations for the allocation of intensive care treatments, in exceptional, resource-limited circumstances (http://www.siaarti.it/SiteAssets/News/COVID19%20-%20documenti%20SIAARTI/SIAARTI%20-%20Covid-19%20-%20Clinical%20Ethics%20Reccomendations.pdf).
3. Daugherty Biddison EL, Faden R, Gwon HS, et al. Too many patients…a framework to guide statewide allocation of scarce mechanical ventilation during disasters. Chest 2019;155:848-54.

DOI: 10.1056/NEJMp2005492