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Concepts in Disaster Medicine

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What Do You Do When You Can Do No More? Limited Resources, Unimaginable Environments, Personal Danger: What Have Previous Disasters Taught Us About Moral and Ethical Challenges?

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Abstract

Historically, natural and manmade disasters create many victims and impose pressures on health-care infrastructure and staff; potentially hampering the provision of patient care and overloading clinician capacity. Throughout the course of history, clinicians have performed heroics to work well above their required duty, despite limitations, even putting their own health and safety at risk. In times when clinicians needed to either physically abandon patients or consider abandoning active treatment, we have seen extreme hesitancy to do so, fearing that they may be giving up too soon, that undue harm may come to patients, or even feeling unsure of legal or moral burdens that may ensue. In times when clinicians are placed in this unimaginable position, feeling isolated and overwhelmed, it is essential that they be supported and provided with resources to standardize decision-making.

As we reflect on the ongoing pandemic, it is evident that society wants to move forward, celebrate our successes, and move beyond the bizarre and painful past 2 y. Although this mentality is enticing, it is crucial for us to now consider the lessons we have learned, including the most recent disturbing reality that medical supplies and clinicians are not unlimited. Now, more than ever, we must reflect not only on the current pandemic, but on previous disasters, and assess the options we have when resources are literally exhausted. We must develop clear criteria for providing care with limited resources in these disaster environments, to ensure a humane and objective process is implemented.

Discussion

The Canadian Medical Association's Code of Ethics and Professionalism states that physicians must "take all reasonable steps to prevent or minimize harm to the patient", "protect and further the patient's best interests and goals of care by using the physician's expertise, knowledge, and prudent clinical judgment", and "recognize suffering and vulnerability and seek to understand the unique circumstances of each patient and to alleviate the patient's suffering".[1] Disasters challenge the boundaries of this mandate for clinicians: what defines reasonable steps when resources are unavailable, or clinicians themselves are in danger? To what degree can a clinician alleviate suffering, and does this only apply to current or also to anticipated suffering? Exploring the ethical dilemmas imposed by previous disasters may provide unique insights to the seemingly impossible decisions many clinicians were forced to make about who shall receive priority care, often independently, while working in unbearable conditions with limited resources.[2–5]

In reviewing the below historical examples, consider this lens: is it reasonable for clinicians to remain in harm's way to deliver an expected standard of care to patients? Is it morally acceptable for clinicians to extend patient suffering as a result of limited resources or in the event of mandatory abandonment? What is the expectation of clinicians, when facing these challenges, and what support do they have in making these decisions? These questions emphasize the importance of past reflection for future preparedness.

1. Severe acute respiratory syndrome (SARS), Canada – 2003: The SARS outbreak represented a frightening and stressful period for all those who contracted SARS, were forced into mandatory quarantine, or were families and friends of those directly affected. Additionally, it created an immensely stressful environment for the clinicians. Specifically, Ontario was devastated by the epidemic, with 247 of the 251 probable cases in Canada, 44 deaths, and a case fatality rate estimated at approximately 17.1% of probable cases compared with 9.6% world case fatality rate for probable cases. It is, therefore, understandable that clinicians were concerned for the welfare of themselves and their families.[6]

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Coupled with this concern, nursing staff shortages were a significant issue during the SARS epidemic, with resources stretched to their limits, and the low surge capacity increasing the vulnerability of the entire health-care system.[7] Clinicians were generally left unsupported by the provincial health system to manage the situation. In the SARS Commission Executive Summary, Campbell concluded that "SARS showed Ontario's central public health system to be unprepared, fragmented, poorly led, uncoordinated, inadequately resourced, professionally impoverished, and generally incapable of discharging its mandate".[8] Nevertheless, these clinicians responded heroically, often jeopardizing their personal safety to care for others. Frontline health-care providers consistently demonstrated their extraordinary commitment to providing high-quality care to patients, families, and colleagues,[9] despite the ethical dilemmas clinicians providing care often faced: caught between their professional obligation to serve the greater good and the concern of transmission to friends and family.[10]

2. Hurricane Katrina, USA - 2005: In August of 2005, Hurricane Katrina left Memorial Medical Center without power, fresh water, and a functional sanitation system.[11] The flood crippled the hospital's ability to provide standard medical care, and the 2000 patients, family members, and staff trapped inside created its own health hazard. Notwithstanding the initial opportunity to evacuate, a small number of staff chose to remain with their patients to provide care until rescued.[2] Despite their patience and trust in the federal, state, and local government assurances that everyone would be evacuated, it was ultimately announced that "those still in the hospital would be on their own".[2] After 4 d of struggling to provide care to critical patients, while enduring exhausting heat above 100° F, darkness, and repulsive stench, clinicians were forced to abandon their patients.[2,11] Some clinicians are thought to have ended the lives of a few patients, as no living patients were left behind.[2] Criminal investigations of a doctor and 2 nurses were conducted, and charges of homicide were laid. The local prosecutor dropped charges against the nurses and compelled them to testify at the grand jury investigating Dr. Pou. In 2009, the jury decided not to indict her.[2,5,11] In this way, Hurricane Katrina highlights the potential legal ramifications associated with complex moral challenges that disasters can place on clinicians.
3. Fukushima Tsunami, Japan - 2011: In March of 2011, a 9.0 magnitude earthquake and accompanying tsunami devastated Japan and caused a nuclear meltdown at the Fukushima nuclear plant, releasing toxic radioactive material into the environment.[12] Soldiers performing search and rescue found over 120 pensioners abandoned by medical staff at a hospital in Iwaki, just 6 miles and within the exclusion zone around the Fukushima plant, which continued to spew radioactive material into the atmosphere.[13] Another 129 patients, mostly bedridden and seriously disabled, were temporarily left behind at the Futaba Hospital in Okuma, also within Fukushima Prefecture.[14] News reports indicate that police officers urged health-care providers to evacuate and informed them that they had no choice but to leave, resulting in staff abandoning patients, and leading to the death of approximately 45 patients.[14] Many of these patients likely died alone, uncomfortable, and terrified.
4. Ebola, Sierra Leone - 2014: The 2014-2016 Ebola virus disease (EVD) outbreak in West Africa was the largest EVD outbreak ever documented,[15] with an initial case fatality rate of 64% reported among 3 countries—Guinea, Liberia, and Sierra Leone.[16] At the time, patient care was limited to supportive care only, as no approved treatment was known to be effective against EVD[17]; furthermore, despite the devastating prognosis associated with the virus, there were no clear guidelines for end-of-life care in terminal cases. In a specific case example, one 33-y-old man was diagnosed with EVD, and became progressively symptomatic, with a dramatically decreased level of consciousness and seizure-like activity on his 11th day of admission. As he continued to deteriorate, the decision was made on day 12 to declare the patient terminal and to aim to "keep him comfortable", but over the course of the next 3 d, the patient was seen by 6 different physicians who instead continued active treatment. The patient's condition remained poor, and on day 18 of admission, the patient was found to be deceased.[18] The clinicians documented belief that treatment was futile, and in fact lengthening the pain and suffering of the patient, but also expressed difficulty with predicting death in this new clinical entity. This emphasizes the challenges with medical decision-making in the absence of best practice guidelines.
5. Coronavirus disease 2019 (COVID-19), Italy - 2020: In late January 2020, Italy declared a national state of emergency, when its first confirmed cases of COVID-19 were identified, later escalating to control and quarantine measures in affected provinces in February. In March, the virus continued to spread, and the Italian government announced a mandatory quarantine for the entire country, eventually classifying as a health catastrophe.[19] The number of those infected overwhelmed hospitals, with a dramatic disproportion between the high number of requests for assistance and resources available. The health-care organization was inadequately prepared to respond to the pandemic, and hospitals were left with scarce resources, including intensive care beds and ventilators, while clinicians were forced to work wearisome, long shifts.[19] Given the impossibility of balancing the availability of resources with the clinical needs of the population, a working group published a document with suggested clear guidelines for decision making in "disaster medicine".[20] While these guidelines were controversial, their existence demonstrates a clear cry from health-care professionals: what do we do when we can do no more?

Impact

Reflecting upon the events that unfolded after Hurricane Katrina and the Fukushima Tsunami, we gain a greater understanding of some of the ethical dilemmas imposed upon clinicians that were required to abandon their patients as a result of a disaster. Although there was no stated requirement to do so, it is evident from society's response that there is an expectation of clinicians to remain with patients in disasters until they can be evacuated.[2,11,13] While reports from Katrina indicate that people were extremely grateful and amazed that clinicians stayed behind to care for patients, there was limited discussion around abandonment of the patients 4 d after the disaster[11]; however, there was a significant amount of controversy surrounding the potentially euthanized patients.[2,5,11] Would it have been legally permissive and acceptable to instead abandon patients and leave them to die in the sweltering heat without medical care? Would clinicians be required to answer either way? In the words of Lambert and Harrell, "If you want

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practitioners to continue to respond to disasters, you cannot put them in a position—when they are making very difficult decisions—where they'll be second guessed by someone who was not there".[5]

While clinicians working in the Ebola crisis experienced their own unique challenges in disaster management, making the decision to stop active treatment on a patient can be emotionally traumatizing and feel like abandonment. Without clear authority or guidelines to support this decision, and lacking literature to guide their decision-making, clinicians were left to rely on their own knowledge for when and how to implement palliative care.[18]

The challenges presented by COVID-19 are akin to other disasters discussed in this article. In Canada, we have triaged patients to prioritize who receives scarce resources such as medications, protective and lifesaving equipment, and personnel. We have had to rely on the military to redeploy soldiers for assistance in long-term care facilities, stand up field hospitals in facility parking lots, and transform cargo planes into biocontainers to transport intensive care patients interprovincially. Reflecting on the experiences shared globally throughout the pandemic, published guidelines for alternative approaches to health-care delivery and triage must be explored.

Recommendations

The authors make recommendations for health-care centers to adopt specific Resource Crisis Protocols (RCPs), to include the following when enacted:

1. TRIAGE PROTOCOLS: Establishment of triage protocols for patient care when resources are limited or overwhelmed. Many countries have developed useful tools throughout this pandemic, best summarized in the "Recommendations on COVID-19 triage: International comparison and ethical analysis".[21] While recommendations differ, their widespread existence demonstrates the desire from clinicians to standardize a decision-making process when resources are limited. At a minimum, health-care disaster response planning must include methods for determining which patient will receive treatment when resources are scarce and must clarify the type of treatment to be provided during the various stages of the disaster.[3] It is imperative to involve physicians and allied health-care professionals in early discussions surrounding the creation of guidelines, to ensure adequate time to process the prescribed rationale, gain familiarity with the decision-making matrix, and practice implementation prior to the next disaster.
2. CRISIS STANDARD OF CARE PROTOCOLS: Development of an institutionally accepted Crisis Standard of Care (CSOC), including guidance for a specific implementation trigger of acceptable practice guidelines. The Institute of Medicine (IOM) defines CSOC as a "substantial change in usual health-care operations and the level of care it is possible to deliver, which is made necessary by a pervasive ... or catastrophic ... disaster".[22] In their guidance for establishing CSOC, the IOM stresses the need to identify indicators and triggers for when to implement CSOC; in particular, they refer to disruption of critical infrastructure combined with failure of contingency/surge capacity. The IOM guidelines point to a loss of human, material, or patient care space resources.[22] In retrospect, it is evident that this criteria was met throughout this pandemic, as all 3 of these resources were overwhelmed or exhausted at various times. This concept is not new, and thorough guidelines are made available to us to help build policies specific to national or regional locations, yet we fall short in implementation.
3. LEGAL AUTHORITY PROTOCOLS: Clear legal authority and protection for clinicians must be implemented when Crisis Standards of Care (CSOC) are enacted. CSOCs must be developed in conjunction with clinician liability, and must include clarification of immunity when providing the best clinical care in times of limited resources. This should also include a discussion on professional licensing, scope of practice, and consider implication of providing care outside of local jurisdiction. As an example, within Canada, there were provincial administrative barriers limiting clinicians' ability to volunteer to assist in other overwhelmed provinces, as licenses are regulated by independent provincial colleges.
4. PATIENT ABANDONMENT PROTOCOLS: Development of a patient abandonment protocol to include legal obligations, community outreach plan, and standardized criteria for potential end of life care where death is imminently foreseeable. This is an incredibly challenging topic, both practically and ethically, but as history has demonstrated, it is a real possibility. The development of this protocol is essential to support clinicians that may find themselves in this devastating circumstance.

These recommendations are not exhaustive but serve as a starting point for an organization tool kit in creating and expanding upon their own RCPs. The importance of developing such protocols is not limited to pandemics, but is emphasized by numerous occurrences where resources have been depleted; this includes recent examples such as disastrous earthquakes, hurricanes, floods, tsunamis, regional epidemics, and even in isolated communities with significant logistical challenges. These protocols can offer support and guidance to clinicians in all settings.

Conclusions

The profession of health care is that of a helping profession; clinicians want to see patients recover from illness and injury. Furthermore, clinicians are required by license to do everything within their control to assist their patients. We must do the best that we can to advocate for our patients given the circumstances, limitations, and expectations placed upon us. Unfortunately, as seen in the recent pandemic, as well as throughout the history of disasters, these limitations may present significant difficulties and even impossibilities in achieving this standard of care. Documented throughout the course of history, clinicians have performed serious heroics to work well above their required hours, despite limited staff and resources, even putting their own health and safety at risk. In times when clinicians needed to either physically abandon patients or consider abandoning active treatment, there has been extreme hesitancy to do so, fearing that they may be giving up too soon, or even feeling unsure of legal or moral burdens that may ensue. In times when clinicians are placed in this unimaginable position, feeling isolated and overwhelmed, we must instead enable them to feel supported, and create resources to reinforce and standardize decision making. In an attempt to develop a humane and objective process, we must develop clear criteria for providing care with limited resources in these disaster environments.

Ethical dilemmas are a known constant in disaster management. Acknowledging this, parameters to prevent undue suffering

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in challenging circumstances must be clearly identified and supported. Society relies on clinicians in disasters; therefore, it would be unreasonable to not adequately prepare them and support them in making these difficult decisions. When disasters devastate the capability of a health-care system, battlefield-like conditions ensue. Death, disease, injury, thirst, hunger, sleep deprivation, and now civil litigation for any perceived misjudgment are added burdens on clinicians.[5] We can no longer allow ourselves to remain unprepared for these difficult decisions; when disaster strikes, we must be ready to support those on the front lines.

Author contributions. Dr. Stephanie Smith is a Canadian Armed Forces physician with a Masters in Emergency and Disaster Management, and previous service as a Nursing Officer. While on an international exercise in field medicine, she met the co-author and current medical student, previously military critical care flight nurse, Jessica Kuipers. They have deployed on global humanitarian missions as a part of various operations in Afghanistan, Haiti, Mali, the Philippines, Sierra Leone, Tunisia, and Wuhan.

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