



Allocating Resources — A Wicked Problem

By MARGARET R. MCLEAN, M.DIV., Ph.D.

I grew up in San Francisco, “earthquake country.” Although every school child participates in fire drills, we also had our days interrupted with earthquake drills and the requisite drop, duck and cover. We prepared regularly for “the big one.” Earthquake, wind, fire, pandemic and acts of terrorism beg us to be prepared — to have emergency kits, sturdy shoes, prescription medications, flashlights and a plan ready to go at, literally, a moment’s notice.¹

Since the dawn of the 21st century, we have become all too familiar with potential and actual mass medical casualties — 9/11; ricin letters; hurricanes Katrina and Ike; SARS; bird flu (first H5N1

and now H7N9); the Haitian earthquake; the Joplin tornado; Japan’s earthquake, tsunami and nuclear plant meltdown; bioweapons in Syria. And yet, we remain woefully unprepared, with



our eyes shut and hands over our ears.

A major challenge to being adequately prepared for disaster is the deniability and uncertainty of it all — we don't know where and when disaster will strike, and the farther away we are in time and distance from the last calamity, the less likely we are to be concerned and the more likely we are to underestimate risk.² Discussing disaster preparedness is usually a no-win situation — everything said and done before a disaster is overkill, and everything said and done afterward is too little, too late. Nonetheless, the inevitability of disaster imposes the duty to plan. We can neither predict nor prevent every disaster, but we can and must prepare both logistically and, perhaps more importantly, ethically, for “the big one.”

Although there is much to be said regarding disaster preparedness, the goal here is to underscore the necessity of ethical, as well as logistical, preparedness for disaster. A number of aspects in a disaster are ripe for ethical consideration, such as professional duty, limits on personal liberty, the role of social media, the advisability of engineering new viral strains capable of being easily transmitted through the air. However, this discussion considers resource allocation and treatment decisions, as they are likely to be among the first ethical challenges in a disaster, and fairness demands that we get them right.

SARS EXPOSED ETHICAL RISK

A decade ago, the outbreak of “atypical pneumonia” in mainland China, Hong Kong, Vietnam and Canada — an ailment later named “severe acute respiratory syndrome” (SARS) — brought to the public's attention the importance of developing an ethical framework for decision-making well ahead of social and medical disaster.³ The response to SARS can be called a public health success in that it stamped out the illness in eight months and in the old-fashioned way, that is, with rigorous infection control. However, the SARS crisis exposed the ethical risk in not explicitly identifying presuppositions and preferences inherent in disaster-preparedness planning and response — the loss of public trust, poor hospital staff morale, confusion regarding roles and responsibilities, stigmatization of vulnerable communities and misinformation.⁴

After the crisis had passed, researchers at the University of Toronto Joint Centre for Bioethics discovered that as SARS spread and more public restrictions were levied, people were increas-

ingly concerned about whose values were guiding public health decisions. The study suggests that developing an ethical framework prior to disaster can help public health officials and government leaders make better-informed, values-based decisions in a quickly unfolding health crisis.⁵ It also may support public trust, ease fear and

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reduce misinformation.⁶ SARS also taught: “In the midst of a crisis such as SARS where guidance is incomplete, consequences uncertain, and information constantly changing, where hour-by-hour decisions involve life and death, fairness is more important rather than less.”⁷

FRAMEWORK FOR DECISIONS

To mitigate against negative outcomes, especially the erosion of fairness and trust, disaster preparedness requires:

- Heightened ethical sensitivity during preparedness planning and plan implementation
- Understanding what is at stake ethically and for whom
- Mitigating against ethical failure through adequate, informed and transparent planning, preparedness and policy
- Recognizing that the ethical prime directive and decision-making framework may change as a function of disaster severity

Consider the following story told by Michelle Daniel, MD:

“I arrived in Haiti 10 days after the 12 January 2010 earthquake. I am an emergency room physician with prior experience working in developing countries, including 15 months in Haiti, but I had never before been deployed in a major disaster. I was assigned by Partners in Health [a Boston-based non-profit that brings health care to the poor in 10 countries] to work the night shifts at badly damaged University Hospital in downtown Port-au-Prince. The physical and psychological environments were unlike anything I had ever experienced. I routinely worked 14 to 16 hours at a stretch. Finding sleep was a challenge ...

“At the hospital each night, I was faced with an overwhelming number of patients in need of care.

In my sleep-deprived state, I found myself making critical clinical and ethical decisions almost reflexively. I triaged, I rationed, I allocated scarce resources at the bedside. I made decisions and I moved on. I did not stop to reflect on my choices. Had I done so, I might have become incapacitated by the moral weight of those choices. It was only later, in my quiet moments alone, that I began to contemplate what I had done. I wondered if I had made the ‘right’ decisions.”⁸

Daniel goes on to describe a haunting scenario in which she had to choose which of four patients in acute respiratory distress to hook up to the single functioning oxygen tank, knowing full well that the others “would suffer and even die as a consequence” of her decision.⁹ Intubation was not an option. She describes how unprepared she felt, not medically but ethically, to prioritize her patients — the neurologically devastated 15-year-old with pneumonia; the 40-year-old mother of three with HIV and tuberculosis; the 25-year-old nurse three days post-op with a pulmonary embolus; the “heartbreakingly beautiful” 18-year-old with congestive heart failure.

Daniel reflects: “My residual anxiety over these cases led me to conclude that my current training wasn’t adequate to make such complex decisions. My moral intuition is strong, but perhaps my latent and unfair biases are stronger. A clear framework for decision-making in disasters would be invaluable to providers who find themselves having to make these difficult choices at the bedside.”¹⁰ As Daniel discovered, disasters raise serious ethical questions about individual need, community well-being and the personal and public perception of doing the right thing. Daniel still laments that she does not know if she decided rightly when she chose to give oxygen to the nurse.¹¹

A WICKED PROBLEM

Under ideal conditions, everyone has an equal claim to the health care that they need, and, generally in the United States, patients who need life-sustaining interventions get them. This claim is rooted in human dignity and respect for persons and recognizes that participation in family and community rests, at least in part, on being well.

A disaster necessarily alters opportunities for access to treatment due to the burden of mass ill-

ness and limited — perhaps steadily decreasing — resources, from food to gasoline to medication, hospital beds and physicians. In disaster planning, as in medicine in general, the allocation of scarce medical resources is a wicked problem.¹²

No one wants to acknowledge health-care rationing, but it occurs daily and necessarily escalates during a disaster. When medical and other basic resources are overwhelmed, as they were in Haiti after the 2010 earthquake, rationing is inevitable and begs for transparency, consistency, accountability, fairness and minimizing harm.

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Disaster changes ethical thinking as the unthinkable becomes reality and, as in Haiti, people die for want of an oxygen tank or a hospital bed. Everyday medical ethics in the United States privileges individual well-being and patient autonomy. Disaster necessarily refocuses clinical ethics so that the current duty to care for individual patients is supplanted by the duty to care for the community. The primacy of patient autonomy is replaced by concern for the common good.¹³

In a disaster, the interests and rights of individuals may be justifiably trumped by the common good and the need to keep society functioning. This is not to imply that some lives are not worth saving, but to recognize that not all lives worth saving can be saved and that devastatingly painful, ethically defensible choices must be made.

It is clear that an effective response to disaster cannot be worked out once the disaster strikes. It is important to maximize preparedness in an effort to minimize harm. Such planning requires not only operational preparedness — Where do we go? What do we do? — but also ethical preparedness — Why must we go? Why must we do what we must do? Once disaster hits, difficult decisions need to be made without the luxury of time.

Just as childhood earthquake drills increased my chance of surviving “the big one,” thinking through disaster scenarios and responses ahead of time creates the opportunity to keep our ethical priorities about us in a time of crisis. Explicitly



identifying the values and ethical perspectives inherent in preparedness planning provokes public commitment to and trust in the resulting plan.

The wicked problem of medical disaster demands collaboration and perseverance in:

1. Having an open and transparent planning and implementation process, seeking input from stakeholders, encouraging public participation in planning and providing a clear and defensible rationale for allocation and liberty-limiting decisions.

2. Creating a plan that maximizes preparedness, and practicing the plan.

3. Implementing the plan fairly, paying particular attention to the formal principle of justice to treat people equally — or, if unequally, then fairly, based on an ethically defensible standard appropriate to the circumstances.

MOVING INTO BATTLEFIELD MODE

Reflecting on the “many species of calamity,” ethicist Kenneth Kipnis, Ph.D., has recently proposed a “scalar taxonomy” for systematic thinking about disaster.¹⁴ Beginning on Level 0 with a typical day in the emergency room, each successive level of disaster requires organizational adaptation and a shift in ethical paradigm. Since, typically, adequate hospital resources are available to meet patient need, the ethical prime directive on Level 0 is “no technically avoidable bad outcomes.”¹⁵ But, the typical day can be quickly disrupted by staff shortages and/or patient surges, outstripping hospital resources. Welcome to Level 1, diversion.

Many hospital employees are familiar with a “code red,” when the emergency room becomes overwhelmed and ambulances are diverted to other facilities. On Level 1, health care access is assured through the collective responsibility to care for patients by diversion to another hospital where patients can be seen, treated and/or admitted more quickly. However, diversion rapidly fails when community-wide disaster strikes. Welcome to Level 2, triage.

A disaster is not just a really big surge, but a “. . . large scale disrupter that creates a burden of patient need that exceeds the region’s clinical carrying capacity,”¹⁶ and diversion “fails as the fallback position just because the other medical centers are overwhelmed too.”¹⁷ So, disaster triage commences, and the ethical prime directive shifts from “no technically avoidable bad out-

comes” to the battlefield maxim, “save the most likely to recover,” vividly illustrated by tagging, a process during which patients are assigned to one of three acuity categories — the green-tagged walking wounded, who will likely survive even if not treated; the black-tagged seriously injured who will likely die no matter what; and the red-tagged middle who will likely live if treated and die if not.¹⁸

Within the red-tagged, priority is given to those whose injury or illness is most urgent and least complex. Attention and responsibility focus not on the individual patient, but on “the collectivity of those in need.”¹⁹ Since not everyone can be seen, severely compromised patients who would likely have survived on a Level 0 typical day will now be black-tagged so that less seriously ill, or injured patients more likely to recover, can be treated.

“Save the most likely to recover,” the battle-tested principle suggested by Kipnis, is not the only maxim available to determine who ought to be saved. Others include “save the most lives”; “save the sickest”; “save those who have waited longest”; and, particularly relevant to disaster preparedness, “save those who can best preserve society.”

This final maxim deserves careful consideration, as it directly supports the primary goal identified by the Centers for Disease Control and Prevention (CDC) in their “Ethical Guidelines in Pandemic Influenza.”²⁰ The CDC proposes these guidelines as a foundation for American planning for and responding to pandemic influenza,

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with the primary goal not of minimizing serious influenza-associated complications, but of preserving a functional society.²¹ Individuals who are essential to the provision of health care, public safety and other key aspects of societal functioning should receive priority in the distribution of scarce resources, including vaccines and antivirals. According to the CDC, the prime directive governing the distribution of scarce resources during pandemic is “to each according to social

worth,” an otherwise ethically indefensible standard.

Ethically inappropriate on Levels 0 and 1, making decisions based on social worth may be necessary to fulfill the duty to preserve a functioning society on Levels 2, 3 and 4. On a crowded Level 2, allocation according to social worth is necessitated by the need to give priority to those key to the preservation of society — think health care workers, bus and truck drivers, police, firefighters, electricians and plumbers, sanitation workers and vaccine scientists. The hard truth of the matter is that failure to make these sorts of distinctions could translate into a high level of injustice accompanied by social chaos, exacerbating an already wickedly complex situation. Hence, prioritizing certain essential personnel, while unfair on a typical day, may be the best way to minimize, and, ideally, avoid, escalating social breakdown during a disaster. Nonetheless, ethical caution must be exercised so as not to purposely or inadvertently extend the assessment of social worth to attributes or circumstances that are not ethically relevant or to exacerbate existing inequalities, injustice or prejudice.

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On Level 3, disaster becomes catastrophe when previously functional hospitals and clinics collapse physically, as after a hurricane or tornado, or medically, for example, in response to pandemic or bioweapon attack. In a medical catastrophe, patient need overwhelms institutional response, and hospitals and clinics are no longer the primary loci of medical care.

Catastrophe-level health care is health care without hospitals. Hospitals give way to alternative care centers constructed in high school gymnasiums and hotel ballrooms and designed to provide supportive medical intervention, such as oxygen and fluids during pandemic influenza.

They are governed by standard orders and staffed by nonmedical volunteers. On Level 3, it is likely that “. . . the scale of human loss will be inversely proportional to a community’s preparation.”²²

One way to prepare for the catastrophe of Level 3 is to plan for alternative care centers that can provide supportive care to the red-tagged who likely will not benefit from hospitalization because it is unnecessary or unavailable, but who cannot be adequately cared for at home. Alternative care centers would be located in large public spaces and designed to treat as many disaster victims as possible. Developing and activating such centers maximizes medical benefit within the community and minimizes harm to the low- to moderate-acuity red-tagged patients.²³ If alternative care center activation is triggered on Level 2, escalation to Level 3 may be delayed or perhaps avoided altogether.

The final level, Level 4, is that of mega-pandemic, with its four defining characteristics: the disease is extremely contagious, has a high rate of mortality, is global and, as a practical matter, untreatable.²⁴ In all likelihood, everyone who is infected would be black-tagged. Think of H5N1 avian flu with its greater than 50 percent fatality rate, its ability to become resistant to antivirals and the lack of vaccine to prevent its spread.²⁵

Kipnis provides a troubling thought experiment: Assume an outbreak in the United States of H5N1 with 30 percent morbidity (similar to seasonal flu) and 51 percent mortality. Approximately 45 million Americans (15 percent of the population) would die, and more than 1 billion people would die globally. In this scenario of mega-pandemic, we face the possibility of health care without hospitals and clinicians, and we likely will fall back on the old-fashioned way of limiting infectious disease — isolation, quarantine and social distancing.²⁶ These may be the only tools left, and we must plan for them.

What will be needed are functional electricity, plumbing and communication systems and delivery pipelines for food and medicines that do not involve face-to-face contact, so as to limit the spread of disease. Planning shifts from medical preparedness to infrastructure preparedness. The cavalry is not coming; we’re on our own until the waves of pandemic subside.

MORE TO BE SAID

Kipnis admits that it can be “deeply disquieting to think through these hellish possibilities,”²⁷



but think about them we must if we are to fulfill the duty of preparedness. He acknowledges that “there is more to be said” regarding the “many species of calamity.”²⁸ I offer the following thoughts for Catholic health care:

- The normative principles that inform Catholic health care — human dignity, care for the poor, the common good, responsible stewardship and the well-formed conscience — provide support for the duty to prepare for disaster.

- The application of a shared ethical framework to disaster planning and plan implementation is critical. Ethics drills are as necessary to preparedness as earthquake or mass casualty drills. In a calamity, the challenge of medical decision-making may pale in comparison to ethical decision-making and getting it right, as it did for Michelle Daniel, the doctor in Haiti.

- The inevitability of triage and rationing demands plans, policies and procedures that are fair, transparent, respectful of persons, inclusive, accountable and that minimize harm.

- A common triage protocol must be used at all points of contact with health care, such as physicians’ offices, emergency rooms, urgent care, 911 response and alternative community care centers. This facilitates fairness across people, access points and time.

- It will not do to prepare only for lower-level disasters. Ethical preparedness demands planning for the worst possible disaster at the worst possible time in order to maximize medical benefit in the worst possible circumstances.

- Both procedural and distributive justice require explicit consideration during the planning process. Public participation is essential to public buy-in. Deciding which principles to use in allocating essential resources — both medical and non-medical — is a value judgment. Consideration of community values is essential, as it is the community that will bear the brunt of allocation and liberty-limiting decisions. Developing a fair process based on shared values bolsters public trust.

- The poor and vulnerable deserve special consideration in disaster planning and response. At minimum, disadvantaged groups should be identified, engaged in the planning process and have their special needs identified and addressed.²⁹

CONCLUSION

Difficult choices need to be made in any crisis, from those occurring on a typical day in earthquake country to the hellish context of mega-pandemic. A framework for ethical decision-making appropriate to the context — be it on Level 0 or Level 4 — informs decision-making, provides consistency, enables transparency and supports accountability in our consideration of the wicked problem of disaster. Level-specific prime directives — from “no technically avoidable bad outcomes” to “save those critical to society’s survival” — and associated values and principles

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must be carefully deliberated, not only by experts and policymakers, but by the general public and disadvantaged groups as well.³⁰

Community-informed, level-specific ethical frameworks must be developed with:

- Sensitivity to human dignity and the common good
- Fairness and trust
- Collaboration and perseverance
- Concern for the disadvantaged and those disproportionately affected by disaster planning and disaster itself

Perhaps most importantly, ethical preparedness requires creativity and courage to face the wicked problem of disaster.

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NOTES

1. Although the origin, duration and outcome of natural disasters are different from those of pandemic or bioterrorism, preparedness is beneficial across contexts. Having a two-week supply of food, water and medica-

tions and an understanding of the need to evacuate or to shelter in place for reasons of safety will benefit both individuals and communities in all types of disasters.

2. This phenomenon is the result of taking a mental shortcut in decision-making that relies on immediate examples that come easily to mind. The “availability heuristic” allows a person to reach quick conclusions based on things that spring easily to mind. For example, people who have recently experienced a magnitude 7 earthquake might overestimate risk; those who cannot readily recall earthquake damage may underestimate risk. See Amos Tversky and Daniel Kahneman, “Availability: A Heuristic for Judging Frequency and Probability,” *Cognitive Psychology* 5, 2 (1973), 207-232.

3. The first known case of SARS was in November 2002, a 45-year-old man in southern China. It was later discovered that the SARS virus originated in bats and likely was transmitted to humans by animals traded in wild-animal markets. Martin Enserink, “War Stories,” *Science* 339, no. 6125 (March 15, 2013), 1264-1268.

4. Alison K. Thompson et al., “Pandemic Influenza Preparedness: An Ethical Framework to Guide Decision-making,” *BMC Medical Ethics* 7 (2006), 13.

5. During a public health crisis in the United States, resource allocation and social distancing decisions fall to county and state public health departments, with federal guidance. Health care systems, hospitals and physicians will execute allocation decisions on behalf of public health departments.

6. University of Toronto Joint Centre for Bioethics Influenza Working Group, *Stand on Guard for Thee: Ethical Considerations in Preparedness Planning for Pandemic Influenza*, (Toronto: University of Toronto, November 2005). www.jointcentreforbioethics.ca/people/documents/upshur_stand_guard.pdf.

7. Jennifer AH Bell et al., “SARS and Hospital Priority Setting: A Qualitative Case Study and Evaluation,” *BMC Health Services Research*, 4 (Dec. 19, 2004), 42. www.biomedcentral.com/1472-6963/4/36.

8. Michelle Daniel, “Bedside Resource Stewardship in Disasters: A Provider’s Dilemma Practicing in an Ethical Gap,” *The Journal of Clinical Ethics* 23, no. 4 (Winter 2012): 331.

9. Daniel, 332.

10. Daniel, 335.

11. Daniel, 334. In determining which of the four patients would receive the oxygen, Daniel considered each patient’s short-term and long-term survivability, role in society, potential contribution to saving other lives, dependents, and, likely, shared life experiences, empathy and quality of life. She gave the oxygen to the nurse, and she treated the others as best as she could under the circumstances. When Daniel left Haiti a week later,

the nurse was improving, the mother was still alive and the two young people were dead. Interestingly, Daniel has asked over 100 physicians, students and laypeople what they would have done, and the overwhelming majority chose the patient she chose.

12. John Kolko, *Wicked Problems: Problems Worth Solving* (Austin, Texas: Austin Center for Design, 2012).

According to Kolko, a “wicked problem is a social or cultural problem that is difficult or impossible to solve for as many as four reasons: incomplete or contradictory knowledge, the number of people and opinions involved, the large economic burden, and the interconnected nature of these problems with other problems. . . . Based on these characteristics, not all hard-to-solve problems are wicked, only those with an indeterminate scope and scale. So most social problems — such as inequality, political instability, death, disease, or famine — are wicked” demanding “interdisciplinary collaboration, and most importantly, perseverance.” www.ssireview.org/articles/entry/wicked_problems_problems_worth_solving.

13. The “common good” focuses on the interests of a group or community and posits that interlocking relationships among people — not individual autonomy or rights — is the basis for ethical reasoning. Here it draws attention to the common conditions that are important to the welfare of everyone during a time of disaster.

14. Kenneth Kipnis, “Disasters, Catastrophes, and Worse: A Scalar Taxonomy,” *Cambridge Quarterly of Healthcare Ethics*, 22 (2013), 297-307.

15. Kipnis, 298.

16. The regional “carrying capacity” is the maximum number of individuals who can be treated without significantly degrading and/or depleting medical resources.

17. Kipnis, 299-300.

18. Although those who are black-tagged should not receive scarce resources that hold no benefit for them, they should not be cast aside, but receive the benefits of palliative and spiritual care, as well as family presence, as is reasonably possible.

19. Kipnis, 300.

20. Kathy Kinlaw and Robert Levine, *Ethical Guidelines in Pandemic Influenza: Recommendations of the Ethics Subcommittee*, (Washington, D.C.: Centers for Disease Control and Prevention, November 2005). www.cdc.gov/od/science/integrity/phethics/panflu_ethic_guidelines.pdf

21. “Ethical Guidelines,” 2-3.

22. Kipnis., 304.

23. Planning now for the availability of alternative care centers requires collaboration with the public health department and assuring that floor space, cots, equipment, medications and personnel are available when the



disaster siren sounds.

24. In a mega-pandemic, everyone across the globe is affected — everyone is sick, caring for someone who is sick or burying the dead. No one will come to the rescue. For a detailed discussion of pandemic preparedness and Catholic health care, see *Health Progress* 88, no. 6 (Nov.-Dec. 2007), 1-42.

25. Newly found avian flu virus H7N9 is also highly pathogenic. As of Aug. 12, 2013, there have been 135 confirmed human cases since February, with 44 deaths. Increased human-to-human transmissibility could result in widespread infection and possible pandemic. www.who.int/influenza/human_animal_interface/influenza_h7n9/Data_Reports/en/index.html.

26. Isolation is separating those infected from others. Quarantine involves separating those exposed from those who have not been exposed. Social distancing is the cancellation of public events, e.g., school, football games, concerts, in order to decrease the spread of disease.

27. Kipnis, 306.

28. Kipnis, 297.

29. These criteria were suggested by an international group of experts whose 2006 meeting in Bellagio, Italy, addressed pandemic influenza as a social justice issue. See the “Statement of Principles” and “Checklist for Pandemic Influenza Preparedness and Response Plans” developed from the group’s deliberations. www.unicef.org/avianflu/files/Bellagio_Statement.pdf.

www.bioethicsinstitute.org/wp-content/uploads/2012/12/Influenza-Checklist-English1.pdf.

30. Faith communities and faith-based community organizations, including hospitals, can play a vital role in disaster preparedness by hosting and facilitating community conversations as well as by gearing up to provide needed services from shelter to child care to counseling during times of disaster. See Scott Santibañez, “Faith-Based Organizations and Pandemic Preparedness,” *Health Progress* 88, no. 6 (Nov.-Dec. 2007), 26-31. www.chausa.org/publications/health-progress/article/november-december-2007/faith-based-organizations-and-pandemic-preparedness.

JOURNAL OF THE CATHOLIC HEALTH ASSOCIATION OF THE UNITED STATES

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