

# Frameworks for Public Health Ethics and Their Application to the Statewide Allocation of Resources in Novel H1N1 Influenza

*A Report to the Texas Department of State Health Services*

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## **Executive Summary**

Literature on the ethics of the allocation of scarce resources in an influenza pandemic has grown in recent years. We reviewed the literature and summarized our findings. The findings are diverse. Many frameworks for consideration of allocation decisions draw expressly on a variety of principles or values which must then be balanced, in conjunction with utilitarian or other considerations, to yield results under particular circumstances. Many furthermore started from the traditional bioethical principle that autonomy or individual liberty holds priority, and that any infringement on individual liberty must satisfy certain standards before being permitted. Yet others valued society, human rights, and/or the needs of more vulnerable people more highly.

The spectrum of relevant ethical frameworks, then, can be said to range from the “traditional,” which tend to view public health issues through the lens of the individual, to the “expansive,” which tend to view public health through other lenses, such as those of human rights, social justice, or community needs. Relevant principles include individual liberty, protection of the public from harm, preservation of social structures and function, fostering of trust and solidarity, proportionality of response, reciprocity for those who risk infection to help others, good stewardship of resources, and care for those who are particularly vulnerable, whether because of social, economic, physiological, or medical risk factors.

How one balances these principles, among others, depends not only on one’s goals, but also the relative weight that one assigns to the principles in question. The preservation of life will always be a priority. But if one also seeks to prioritize solidarity and community, then one might establish a transparent and genuinely responsive process

of preparation devised to allot burdens and benefits in a way that does not cause further inequities among groups, with care expended to tailor plans to the particular needs of each segment of the community, especially for more vulnerable ones. If the preservation of social order is instead paramount, then one might prioritize essential government, commercial and medical personnel, in addition to consulting best evidence to determine how to allocate scarce resources in order to save the most lives.

Many if not most of the articles across the spectrum note that both transparency and public input into the process of creating a preparedness plan are crucial. No matter what ethical framework one might ultimately choose to inform one's plan, public trust and acceptance of the plan and its execution will be essential in ensuring the plan's success.

## **Introduction**

For some time after the field of study now commonly called “bioethics” developed in the late 1960s and early 1970s, the ethics of public health was largely neglected in favor of a focus on issues arising in the medical care of individual patients. More recently, the literature on public health ethics has expanded greatly. This expansion appears to have taken its impetus initially from HIV/AIDS in the 1980s, considerably bolstered by concerns raised by SARS (severe acute respiratory syndrome), avian influenza, and bioterrorism in the first decade of the 21<sup>st</sup> century. A portion of the new public health ethics literature proposes general theoretical frameworks or foundations.

We conducted a literature search to identify resources addressing principles of public health ethics and frameworks based upon those principles, with a special focus on those intended to assist resource allocation decision-making at the state level in the setting of a pandemic such as novel H1N1 influenza in 2009-2010. We found that the frameworks fall along a spectrum. At one end of the spectrum are “traditional” frameworks (those that view public health ethics as generally posing exceptions or additions to the ethics of individualized patient care) relevant to allocation decisions in a pandemic. At the other end are “expansive” frameworks (those that view public health ethics as necessarily grounded in social justice and/or otherwise as having a positive agenda in improving society). Frameworks may fall at any point along the spectrum. Frameworks near the traditional end may differ from those toward the expansive end by incorporating different basic ethical principles, incorporating the same principles in a different order of priority, or relying on alternate ethical theories. We review the helpful distinction between substantive and procedural principles. Finally, we list

recommendations for allocation decisions at the state level that emerge from ethical frameworks at either end of this spectrum.

## **Methods**

We searched the following databases: ETHXWeb (National Reference Center for Bioethics Literature), Westlaw's journals and law reviews database, PubMed, and Google Scholar. We used the terms "public health ethics," "ethics," "principles," "public health," "influenza," and "pandemic," singly or in combination. We discarded all articles pertaining to any subject other than public health ethics applicable in the context of pandemics or planning for pandemics (i.e., we discarded articles dealing primarily with genomics, research ethics, etc.). We also focused only on articles taking a system-wide rather than hospital- or provider-based perspective. We did not consider public health ethics in the context of global health issues, although we did sample ethical frameworks used in other countries and by international organizations (e.g., the World Health Organization) for the sake of comparison.

## **Results**

Our searches produced a range of over 10,500 hits (Google Scholar, searching for "ethics framework 'public health' influenza") to 3 hits (Westlaw journals and law reviews database, searching for "ti(ethics principles) & (pandemic! influenza)"). The total number of articles, books and plans yielded that met all our search criteria was 58.

## **The Importance of Theoretical Frameworks in Public Health Ethics**

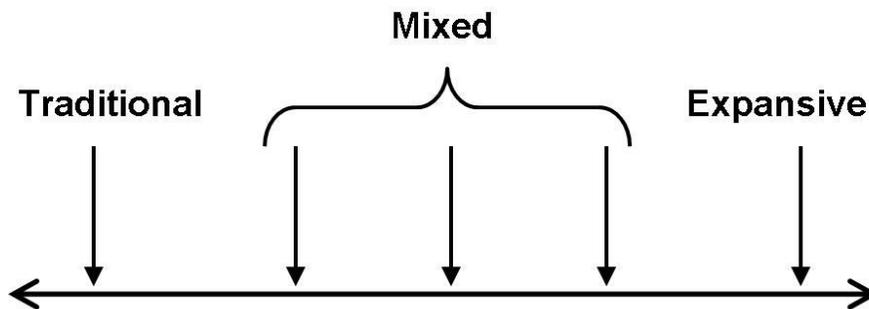
Frameworks offer certain advantages for public health ethics. Much of public health decision-making involves the balancing of different and potentially conflicting interests. Baum et al. (2007) propose that ethical frameworks can provide public health

practitioners with several advantages. First, systematic ethical thinking fosters greater transparency and allows government decision-makers to be more accountable to the public and to various stakeholders. Ethical frameworks balance economic analysis, which could disproportionately influence decision-making in the absence of explicit attention to ethics. Ethical frameworks therefore help assure that important societal values that may not be reflected in an economic balance sheet are kept clearly in sight. Finally, explicit ethical frameworks help policymakers identify the proper scope and limits of public health activities and thereby to set priorities and better allocate resources.

As additional considerations, one might add that ethical frameworks provide a vocabulary to assure commensurability of public health policies among jurisdictions. For example, there is an obvious practical value in state health departments agreeing to utilize the ethical framework proposed by the Institute of Medicine (IOM) report of September, 2009 for allocation decisions related to novel H1N1 influenza, simply to assure that the policies developed by different states can be readily compared and contrasted and are reasonably uniform. Furthermore, ethical frameworks constitute a democratizing element within public health decision-making that encourages productive community and public input. Public health policy requires a great deal of highly technical information, and the public at large may feel excluded from discussion that relies on that level of technical expertise. By contrast, we assume that all members of our society have some basic familiarity with matters of ethics, making it easier for all stakeholders to feel included in the conversation when it is couched in ethical terms. Frameworks further assist this process by providing a common vocabulary.

We organized the articles on a spectrum, ranging from “traditional” to “expansive” approaches. The “traditional” approaches maintain a traditional western philosophical prioritization of individuals and individual liberty. Approaches falling toward this end of the spectrum require justification for any infringement on individual liberty. As we move closer to the “expansive” end, approaches increasingly treat community and solidarity as important values in themselves. Many also pay increasing attention to the problems posed by inequality, poverty, and physical vulnerability.

Figure 1. Spectrum of theoretical frameworks for public health ethics



**a. Traditional Approaches**

“Traditional” ethical frameworks are those that address public health issues through the lens of the individual. Society and community are viewed as simply the sum of many individuals. This means that traditional approaches depart very little from traditional western bioethics, particularly in principles classically used in clinical medical ethics and research ethics. Beauchamp and Childress’s seminal work, *Principles of*

*Biomedical Ethics* (Beauchamp and Childress 2008), provides a framework for clinical medical ethical decision-making, and came to predominate in western bioethics.

Beauchamp and Childress ground bioethics in four principles: autonomy, beneficence, nonmaleficence, and justice. Very generally, autonomy requires medical personnel to respect the self-determination of individuals, beneficence to benefit individuals on whom the personnel are acting, nonmaleficence to not harm those individuals, and justice to treat them fairly.

While none of the four are intended to predominate, the principle of autonomy is generally considered to do so (Kass 2001, Bayer & Fairchild 2004, Francis et al. 2005). This should come as little surprise, given the central place of individual freedom in the western tradition of liberalism (that is, the Enlightenment movement that traces itself to the philosophy of John Locke and that provided the basis for the U.S. Declaration of Independence. This longstanding use of the term ‘liberalism’ should not be confused with the more recent use of the term to describe left-leaning political views). As many commentators observe, however, an undue emphasis on autonomy can become problematic in the context of public health ethics, which has at its core protection of the health of society rather than that of discrete individuals (Bayer & Fairchild 2004, Bayer et al. 2007, Callahan & Jennings 2002, Charlton 1993, Kass 2001, Torda 2006)

Public health ethics can be distinguished from clinical medical ethics in three ways:

1. The orientation in public health ethics is toward the good of a population, rather than the good of an individual.
2. The measures proposed, by their nature, affect the entire population, rather than only selected individuals.

3. Public health practitioners generally represent government or similar agencies, so that the relationship between the practitioner and any individual patient cannot be viewed as a private contract (Bayer et al. 2007, pp. 3-24).

Traditional approaches to public health ethics nevertheless use the same principles that apply to clinical ethics as the point of departure. Hence, they too arise within the general context of the philosophical movement known as liberalism (Bayer et al. 2007:3-24). The core problem of liberalism is how society can maintain human freedom while securing the benefits of a just and orderly government. This problem is generated by the way liberalism conceives of human liberty—as a characteristic that human beings possess as individuals, apart from any social or political structure. The creation of government then presents a dilemma. On the one hand, government could exercise its powers in such a way as to secure benefits that no individual could achieve on her own, notably, protecting the public from external military threats. On the other hand, governments are always prone to use their powers in ways that hamper and restrict individual freedom.

A mandatory vaccination campaign in the face of an infectious threat is a pertinent example of the dilemma of liberalism. On the one hand, a mandatory campaign backed by government threat of coercion can achieve a much higher rate of immunity in the population, and this greater herd immunity protects all citizens from infection, even those who evade or refuse vaccination themselves. In the absence of government, no voluntary efforts on the part of a collection of private individuals could have achieved the same results. On the other hand, many citizens may regard the imposition of vaccination on themselves and their children as an offensive use of government power and a violation of their basic rights. Hence the emphasis many commentators put on the need for excellent public education and communication, both in advance of a public health crisis

and during such a crisis, and the need to use voluntary rather than mandatory measures to the greatest extent possible (Annas 2005, Bayer & Fairchild 2004, Kayman & Ablorh-Odjidja 2007). Yet some would go much farther than others in the degree of force they believe would be ethically permissible in mandating certain public health measures, given sufficiently dire circumstances (Gostin & Berkman 2007).

Public health ethics at the traditional end of the spectrum takes the dilemma of liberalism as the central, defining feature of the field. Therefore, respect for individual rights and liberties remains one very important ethical goal or principle (Coughlin 2008, Upshur 2005). A burden of proof, as it were, is placed on other ethical principles. They are presumed to be inadequate to override our commitment to individual liberty unless they rise above a threshold value. Therefore, for example, if the infectious disease risk in our mandatory vaccination example is a disease that is very seldom fatal or serious, or if there is good evidence that effective immunity for the entire population could be secured by voluntary instead of mandatory measures, then it might be judged that the ethical defense for the nationwide mandatory vaccination campaign is inadequate. The degree of benefit, or avoidance of harm, achieved by the campaign is insufficient to outweigh the loss of individual freedom. The way that the dilemma of liberalism is seen to set the basic agenda for public health ethics is reflected in the framework proposed by Childress et al. (2002). At one point, they offer five “justificatory conditions” (effectiveness, proportionality, necessity, least infringement, public justification) and state, “These conditions are intended to help determine whether promoting public health warrants overriding such values as individual liberty and justice in particular cases.”(Childress et al. 2002)

Accordingly, most traditional theorists and commentators use the individual as the primary focal point. They accept that the common good must also be considered, and at times may trump the needs and desires of discrete individuals. As an example of what the most extreme end of the traditional spectrum might look like, Coughlin (2008), of the Centers for Disease Control and Prevention, advocates using Beauchamp and Childress's four principles of bioethics as a foundation for public health ethics. He advocates them on the grounds of "endurance, resilience, and output capacity or yield," and claims they have the virtue of universalizability, at least within bioethics and public policy (Coughlin 2008:6). He does not, however, question their "fit" with public health concerns. This failure to address the principles' inconsistencies and deficits, as identified by numerous commentators, makes Coughlin's article a relative anomaly.

The four principles, while paramount to Coughlin, require the use of additional principles to determine, in concrete circumstances, which of the four should predominate and which should yield. Two of the most important of those subsidiary principles are the precautionary principle and solidarity. The precautionary principle, in the context of public health, pertains to "concern over the maintenance or improvement of population health and quality of life" (Coughlin 2008:10). It is useful to public health, he asserts, as a means of helping to balance principles in ethical decision-making. Solidarity, or interconnection and cooperation among members of a society, is also useful, Coughlin asserts, to the extent it provides additional moral guidance that cannot solely be derived from the principles discussed earlier (Coughlin 2008:11).

Many traditional frameworks emphasize a modified utilitarian conception of justice (seeking the greatest good for the greatest number of people, here specifically

emphasizing the preservation of human life), as the justificatory principle that counterbalances respect for individual rights and liberties. At first glance such frameworks might seem to deviate from the “traditional” end of the spectrum because they tend to weight the community side more heavily. We nevertheless class these frameworks as traditional because they still preserve the liberal dilemma discussed above. “The greatest good for the greatest number” places no value in society or community per se. Instead, the interests of a larger group of individuals win out over those of a smaller group. Such a traditional focus is in keeping with public polling such as that conducted by the Keystone Center for the CDC in 2009 on public preferences in a novel H1N1 outbreak (Centers for Disease Control et al., 2009). They tend also to be perhaps the most pragmatic, and are often those developed as part of pandemic influenza plans or, more generally, as codes of ethics developed by organizations.

The general framework promulgated by the Public Health Leadership Society (PHLS) and adopted by the American Public Health Association is one such exemplar. The PHLS promulgated a set of 12 ethical principles for public health in 2002. The principles prioritize addressing the “fundamental causes of disease and requirements for health” for communities (Public Health Leadership Society 2002:4). Yet the PHLS recognizes that communities are comprised of individuals, and that the educated input and cooperation of individuals are necessary to ensure the success of public health efforts.

Other organizations offer different sets of principles, although most have substantial areas of overlap with those covered above. The IOM Committee on Guidance for Establishing Standards of Care for Use in Disaster Situations issued a report in

September, 2009 that includes a list of “ethical considerations” that ought to form a component of the protocols of crisis standards of care developed by state health departments (IOM 2009) As noted in the previous section, three of the ethical considerations, transparency, consistency, and accountability, are procedural values. The remaining (substantive) ethical considerations are:

- Fairness
- Duty to care
- Duty to steward resources
- Proportionality

The four substantive considerations suggested by the IOM Committee appear to place their framework at the traditional end of the substantive spectrum. In particular, the principle of proportionality is very closely aligned with the dilemma of liberalism, which it tries to resolve by dictating that in the name of public health benefits, one must choose the means that do the least violence to individual liberties. The other ethical considerations are all consistent with the need to provide the maximal public health benefit for society, and the individuals that make up the society, while disturbing individual rights to the least possible degree.

Notably, the Minnesota Center for Health Care Ethics produced a guide for the ethical rationing of scarce resources in a severe pandemic (Vawter et al. 2009). It prioritized three principles. First, the population’s health must be protected. In the case of a severe pandemic, the corresponding goal would be to reduce mortality and serious morbidity. Second, public safety and civil order must be protected. As goals in a serious pandemic, the group identifies the reduction of disruption to “critical infrastructure” such as that related to health and welfare, and the promotion of public understanding and

confidence regarding public health measures. Third, people must be treated fairly and as moral equals. Corresponding goals in a severe pandemic would be the reduction of disparities between groups in their outcomes and in access to treatment, application of a “fair innings” approach under certain circumstances, use of a lottery or other blind rationing measure in allocating scarce resources among groups that are otherwise equally placed, and reciprocating to those who accept work with high risk of exposure during a pandemic (Vawter et al. 2009:13-14). The group’s work is particularly noteworthy for its provision of a detailed implementation plan for allocation of antiviral medications, vaccines, and personal protective equipment under conditions of scarcity in a pandemic.

The New York State Workgroup on Ventilator Allocation in a Pandemic Influenza Outbreak prepared one of three resource-specific guides being herein reviewed (New York State Workgroup 2007). Like many of the general resources covering public health ethics, this group privileges a familiar set of concerns: duty to care, duty to steward resources, duty to plan, distributive justice, and transparency. Just and transparent allocation of resources is paramount. An ethical allocation scheme will, according to the NY Workgroup, support the efforts of health care professionals and the provider/patient relationship and support autonomy, even while prioritizing the saving of as many lives as possible (New York State Workgroup 2007). Prior planning is a crucial governmental duty, and may help avoid placing difficult allocation decisions into the hands of “exhausted, over-taxed, front-line providers” (New York State Workgroup 2007:15). Distributive justice will require that resources be allocated without regard to power, income, or status, and must not aggravate existing health disparities. Planning must be carried out transparently, with proposed guidelines made widely available and accessible

to all members of the public and generous opportunity given for public comment and corresponding revision where indicated.

**b. Mixed Approaches**

While authors differ in the degree to which they make this distinction explicit, we found in our review that virtually all frameworks implicitly employ a distinction that we believe to be extremely helpful—a distinction between substantive and procedural principles. Substantive principles attempt to address the question, “What ethical rules or positions ought one to adopt?” Procedural principles by contrast attempt to address the question, “Apart from the specific content of the ethical rules or positions, by what procedures ought they to be selected?” Thus we would class justice as a substantive principle and transparency as a procedural principle. Procedural principles are often justified as supporting important substantive principles—for example, transparent procedures generally are more likely to lead to substantive ethical positions consistent with the principles of public trust and fairness. The distinction is perhaps most explicitly made in the report of the University of Toronto Joint Centre for Bioethics, *Stand On Guard for Thee* (citation), which we will review in detail below.

The University of Toronto Joint Centre for Bioethics’ report *Stand on Guard for Thee*, prepared following the SARS outbreak, provided one of the most extensive lists of ethical principles or considerations that might be relevant to public health. It proposes a set of 15 principles (or, in their terms, “values”) for use in pandemic preparedness planning (University of Toronto 2005). Ten are substantive, and five are procedural. We classify this framework as “mixed” instead of traditional because one of the values, solidarity, recognizes moral value in community and social cohesion rather than solely in

the rights and interests of individual persons. Because many other pandemic preparedness documents draw upon them or versions of them (e.g., Dep't of Health (United Kingdom) 2007, British Columbia 2009), it is worth setting out the principles proposed by *Stand on Guard for Thee* in full here.

Table 1: Values proposed in *Stand on Guard for Thee* (University of Toronto 2005).

<b>Substantive value</b>	<b>Description</b>
Individual liberty	In a public health crisis, restrictions to individual liberty may be necessary to protect the public from serious harm. Restrictions to individual liberty should: <ul style="list-style-type: none"> <li>• be proportional, necessary, and relevant;</li> <li>• employ the least restrictive means; and</li> <li>• be applied equitably.</li> </ul>
Protection of the public from harm	To protect the public from harm, health care organizations and public health authorities may be required to take actions that impinge on individual liberty. Decision makers should: <ul style="list-style-type: none"> <li>• weigh the imperative for compliance;</li> <li>• provide reasons for public health measures to encourage compliance; and</li> <li>• establish mechanisms to review decisions.</li> </ul>
Proportionality	Proportionality requires that restrictions to individual liberty and measures taken to protect the public from harm should not exceed what is necessary to address the actual level of risk to or critical needs of the community.
Privacy	Individuals have a right to privacy in health care. In a public health crisis, it may be necessary to override this right to protect the public from serious harm.
Duty to provide care	Inherent to all codes of ethics for health care professionals is the duty to provide care and to respond to suffering. Health care providers will have to weigh demands of their professional roles against other competing obligations to their own health, and to family and

	<p>friends. Moreover, health care workers will face significant challenges related to resource allocation, scope of practice, professional liability, and workplace conditions.</p>
Reciprocity	<p>Reciprocity requires that society support those who face a disproportionate burden in protecting the public good, and take steps to minimize burdens as much as possible. Measures to protect the public good are likely to impose a disproportionate burden on health care workers, patients, and their families.</p>
Equity	<p>All patients have an equal claim to receive the health care they need under normal conditions. During a pandemic, difficult decisions will need to be made about which health services to maintain and which to defer. Depending on the severity of the health crisis, this could curtail not only elective surgeries, but could also limit the provision of emergency or necessary services.</p>
Trust	<p>Trust is an essential component of the relationships among clinicians and patients, staff and their organizations, the public and health care providers or organizations, and among organizations within a health system. Decision makers will be confronted with the challenge of maintaining stakeholder trust while simultaneously implementing various control measures during an evolving health crisis. Trust is enhanced by upholding such process values as transparency.</p>
Solidarity	<p>As the world learned from SARS, a pandemic influenza outbreak, will require a new vision of global solidarity and a vision of solidarity among nations. A pandemic can challenge conventional ideas of national sovereignty, security or territoriality. It also requires solidarity within and among health care institutions. It calls for collaborative approaches that set aside traditional values of self-interest or territoriality among health care professionals, services, or institutions.</p>
Stewardship	<p>Those entrusted with governance roles</p>

	should be guided by the notion of stewardship. Inherent in stewardship are the notions of trust, ethical behaviour, and good decision-making. This implies that decisions regarding resources are intended to achieve the best patient health and public health outcomes given the unique circumstances of the influenza crisis.
<b>Procedural value</b>	<b>Description</b>
Reasonable	Decisions should be based on reasons (i.e., evidence, principles, and values) that stakeholders can agree are relevant to meeting health needs in a pandemic influenza crisis. The decisions should be made by people who are credible and accountable.
Open and transparent	The process by which decisions are made must be open to scrutiny, and the basis upon which decisions are made should be publicly accessible.
Inclusive	Decisions should be made explicitly with stakeholder views in mind, and there should be opportunities to engage stakeholders in the decision-making process.
Responsive	There should be opportunities to revisit and revise decisions as new information emerges throughout the crisis. There should be mechanisms to address disputes and complaints.
Accountable	There should be mechanisms in place to ensure that decision makers are answerable for their actions and inactions. Defense of actions and inactions should be grounded in the 14 other ethical values proposed above.

In most of these values or principles, we see the continued (traditional) balancing of individual liberties against the maximization of public protection. In a pandemic, using the principles in *Stand on Guard for Thee*, protection of the public health would need, where relevant and necessary, to trump individual liberties (University of Toronto 2005). However, in restricting individual liberties (such as freedom of movement or access to vaccines or antiviral medication), a government would then have an ethical duty to

minimize resulting harm (e.g., by ensuring individuals subject to quarantine are provided with food and other necessities) and to allocate scarce goods equitably and transparently, using processes that were developed in advance with input from stakeholders (University of Toronto 2005:12-16). At the same time, the principle of reciprocity might lead the government to prioritize certain members of the public who are critical in preserving life and/or society during the pandemic, such as responding health care workers, critical administrative and custodial staff, and others, in the allocation of protective resources such as antivirals, vaccines, and personal protective equipment. A government would need to exercise good stewardship by using the least restrictive means possible for achieving public health goals, ensuring that the means are proportionate to the goals in question, and keeping the public promptly and well informed. The public, in turn, would need to trust the quarantine and allocation processes and their communal protective effects, rather than jeopardize the communal good by pursuing their own, individual means of protection. In contrast to the generally traditional tilt, the inclusion of the principle of solidarity signals a small shift in the direction of the “expansive” end of the spectrum by recognizing, to a greater degree than Coughlin and other more traditional theorists, the value of social cohesion and community.

On the procedural side, the principle of transparency and openness in the development and communication of plans is prioritized, as it so often is in many of the articles we reviewed (Bayer & Fairchild 2004, Gostin & Berkman 2007, Kass 2001, Kass 2005, New York State Workgroup 2007, Public Health Leadership Society 2002, Torda 2006, University of Toronto 2005, Upshur 2005, Vawter et al. 2009). Canadian plans such as the national plan drafted in 2006 and the 2009 update, use similar frameworks to *Stand*

*on Guard for Thee* (Public Health Agency of Canada 2006, Interior Health (Canada 2009)).

Other mixed frameworks move toward the expansive end of the spectrum while still relying heavily on a utilitarian approach. One such theory that may be instructive to consider in some detail is that of Kass (2001). According to Kass, public health is the societal approach to protecting and promoting health. Generally through social, rather than individual, actions, public health seeks to improve the well-being of communities.

Kass notes the tension that exists between bioethics, with its focus on individual autonomy, and public health ethics, with its focus on population health. According to Kass, bioethics tends to see public health ethics always as an exception to the rule, since public health ethics almost always advises some constraint on individual liberty or autonomy in the name of a greater community good. This makes it difficult for bioethics to frame a positive agenda for public health, to improve and promote community well-being and to “reduce certain social inequities” (Kass 2001). These latter concerns seem to ally Kass with many authors who propose more expansive frameworks.

In response, Kass proposes a 6-step “framework” for public health ethics, as a decision tool to analyze a proposed public health intervention from an ethics perspective.

1. What are the public health goals of the proposed program? (Ideally these will ultimately involve actual, measurable health outcomes, improvements in mortality and morbidity. Individual public health initiatives may not produce tangible improvements in these outcomes but in that case they should be part of an overall package of interventions that promise to do so.)
2. How effective is the program in achieving its stated goals? (Too often public health proposals are based on optimistic assumptions rather than reasonably firm data.)
3. What are the known or potential burdens of the program? (Programs usually carry burdens or harms with them, even if only in the matter of cost. The harms are

occasionally physical harms to individuals; more often they consist of intrusions into individual privacy or choice. Sometimes burdens are community-wide such as when a targeted screening program leads to increased stigmatization of a minority group.)

4. Can the burdens be minimized? Are there alternative approaches?
5. Is the program implemented fairly? (Kass here proposes that the ethics of public health contains a component of social justice that demands efforts to redress significant health disparities and to improve general well-being even in area of life not entirely health related so long as there is some reasonable connection with health outcomes, such as poverty; cf. Powers and Faden(2008))
6. How can the burdens and benefits of a program be fairly balanced? (Kass here appeals to procedural fairness, to assure that relevant stakeholders and communities have input into the final decisions and to the weighing of burdens and benefits.)

Baum et al. (2007) offer a different framework. They intend their theory to be a practical guide to the daily work of public health. Moreover, they claim that their theory was derived at least in part from empirical studies of public health practitioners. Finally, their framework offers further clarification as to how public health ethics differs from clinical medical ethics (which they equate with bioethics).

Baum et al. offer the following table both to distinguish bioethics from public health ethics, and also to indicate the “foundational principles and values” relevant to each:

Table 2: Issues and Values in Bioethics and Public Health Ethics

	<b>TRADITIONAL ISSUES</b>	<b>FOUNDATIONAL PRINCIPLES AND VALUES</b>
<b>BIOETHICS</b>	<ul style="list-style-type: none"> <li>• Informed consent and patient agency</li> <li>• Reproductive and end-of-life decision-making</li> <li>• Use of emergency technologies/bedside rationing</li> <li>• Clinical research ethics</li> <li>• Confidentiality</li> </ul>	<b>Autonomy</b> Beneficence Nonmaleficence Justice/fairness Utility Caring

<p><b>PUBLIC HEALTH ETHICS</b></p>	<ul style="list-style-type: none"> <li>• Vulnerable populations/uninsured</li> <li>• Infectious disease control</li> <li>• Social determinants of health</li> <li>• Cost-effective decision-making</li> <li>• Emergency preparedness</li> </ul>	<p><b>Population-level utility</b>  <b>Evidence</b>  <b>Justice/fairness</b>  <b>Accountability</b>  <b>Costs/efficiencies</b>  <b>Political feasibility</b></p> <p>Beneficence  Nonmaleficence  Autonomy</p>
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Baum et al. propose a number of ethical principles to guide public health ethics that are not pertinent to clinical ethics or bioethics. Moreover, those principles that are well-adapted to clinical ethics (notably autonomy) play a secondary role in the public health sphere.

They describe the principles unique to public health ethics as follows:

- **Population-level utility:** A public health action should be useful to the community and address a real community need, suggesting that the policymakers thoroughly understand the community’s values.
- **Evidence:** While there may be insufficient time and resources to accumulate the ideal amount of evidence before taking action, the eventual goal of public health ought to be to engage only in actions that are well-supported by evidence.
- **Justice/fairness:** Burdens and benefits of proposed actions should be distributed equitably through the affected community.
- **Accountability:** Public health policies should be transparent and accountable (see next section).
- **Costs/efficiencies:** Generally resources are limited so public health actions should be designed to responsibly conserve scarce resources as well as to produce benefits.
- **Political feasibility:** Local public health is a political activity and supported by a political apparatus, and ought to be realistic about this dimension of its activities. Baum et al. add that this principle should not be interpreted as ruling out taking unpopular actions; indeed such actions, where supported by evidence and bringing great community benefit, may be mandatory.

The principles proposed by Baum et al., for the most part, follow a generally utilitarian bent and can be interpreted as maximizing good outcomes for as many individuals as possible. The principles of justice/fairness also can be interpreted as

maximizing utility without violating individual rights. In those regards the framework seems to be operating within the traditional liberal philosophical context. Nevertheless, it does also contain a focus on vulnerable populations and the social determinants of health, and suggests an expanded agenda informed by some degree of communitarian or universal human rights theories.

Other articles offering a modified utilitarian approach include Field & Kaplan (2008), Kass (2005), Kass (2008), Kinlaw et al. (2009), Kotalik (2005), Letts (2006), Thompson et al. (2006), Verweij (2009), and Zimmerman (2007).

**c. Expansive Approaches**

Other discussions of public health ethics, including some from commentators already discussed, are more expansive, drawing on a variety of different ethical traditions even while incorporating some of the standard principles from bioethics. As we move toward the expansive end of the spectrum of frameworks, we find authors less willing to define the central problem of public health ethics in terms of the dilemma of liberalism. Instead of viewing public health activities as necessary evils, interfering with individual liberty in the name of the utilitarian goal of protecting vital social interests, expansive authors portray public health as a positive social good. They do not ignore individual rights; rather they reconceptualize individual rights as part and parcel of the expansive agenda of social good that public health should do its part in promoting. According to these expansive approaches, society and community have positive moral value in and of themselves, and not merely because they are made up of individuals. The human person in such an approach is viewed as an inherently social being who is properly at home only within a community.

One way to characterize the difference between traditional and expansive frameworks is to assess a comment from the New York State Workgroup on Ventilator Allocation in a Pandemic Influenza Outbreak: “Disaster planning must not serve as a covert means to resolving longstanding problems in health care.” (New York State Workgroup 2007) From the traditional standpoint, this sentiment is noncontroversial. But from the expansive standpoint, this statement makes no sense at all, except for agreement that there should be no *covert* policymaking. The entire point of public health, according to the most expansive frameworks, is precisely to “resolve longstanding problems in health care.” The policymaking should be explicit and transparent rather than covert, in keeping with widely accepted procedural principles, but the policymakers ought not to shy away from it.

Expansive approaches tend to utilize two primary lines of analysis, though many commentators draw on a variety of these strands. The first, draws on the language of human rights and/or social justice, and often moves toward the more expansive end of the spectrum. The second seeks more broadly to alter the principles of biomedical ethics by re-envisioning them through the lens of infectious disease, and is also more expansive than traditional.

### **1. Frameworks Emphasizing Human Rights and/or Social Justice**

At first glance, a human *rights* theory would seem to be merely a restatement of traditional liberalism with its emphasis on individuals. The human rights theories that have emerged in public health thinking, however, have notably different features:

The basic characteristics of human rights are that they are inherent in all people because they are human; they are universal, so that people everywhere in the world are “rights-holders;” and they create robust duties on the state. State duties

encompass the obligation to *respect* so that states do not interfere directly or indirectly with the enjoyment of human rights; *protect* so that states take measures to prevent private actors from interfering with the right; and *fulfill* or facilitate so that states take positive measures (e.g., legislative, budgetary, and promotional) to enable and assist individuals and communities to enjoy rights. Basic human rights are protected under international law so that a state can no longer assert that systematic maltreatment of its own nationals is exclusively a domestic concern. (World Health Organization 2006:2)

Human rights theories tend to rank positive rights (rights to receive certain goods and services) and negative rights (rights to free from interference by others) more or less on a par as equally important elements of human well-being. Traditional liberal rights theory, by contrast, tends to favor negative rights over positive rights, and in some versions even denies the existence of basic, positive human rights.

A number of frameworks depend on a human rights or similar approach. Gostin and Powers summarize the main thrust of this approach as follows:

A core insight of social justice is that there are multiple causal pathways to numerous dimensions of disadvantage. These include poverty, substandard housing, poor education, unhygienic and polluted environments, and social disintegration. These and many other causal agents lead to systematic disadvantage not only in health, but also in nearly every aspect of social, economic, and political life. Inequalities beget other inequalities, and existing inequalities compound, sustain, and reproduce a multitude of deprivations (Gostin and Powers 2006:1054)

Because environmental and social factors that threaten health are so varied, and so closely intertwined with factors that lead to other forms of deprivation and inequality, an expansive conception of the goals and mission of public health is required, according to frameworks in this category.

Rodriguez-Garcia and Akhter argue that adopting an expansive framework based on human rights theory would lead to an activist agenda for public health, that would include “preventive action [to prevent human suffering] ... social consciousness among

decision makers...a moral position [that includes] speaking out against human rights abuses of all kinds and pledging to uphold human rights for all the world's people.”

(Rodriguez-Garcia and Akhter 2000:694)

Other human rights-based theories draw more heavily on the tradition of liberalism. Annas (2005) offers one such example. He proposes a human rights framework in responding to public health challenges in the post 9/11 era. Public health, with its population focus, is well-suited to the language and priorities of human rights, which emphasize universality, equality, and human dignity. The framework is intended to preserve both traditional values such as liberty and individual dignity while also prioritizing the fulfillment of basic human needs, particularly those that impact health. It furthermore has the advantage of being nonpaternalistic and emphasizing voluntary action on individuals' parts.

Annas discusses measures taken in different countries in response to the SARS epidemic in some detail, and relates the difficulties involved in making people comply with traditional communicable disease control techniques such as quarantine. He argues that “draconian nineteenth-century quarantine and compulsory treatment methods” are misguided. Not only do they trample on liberty, but also destroy public trust and sow panic, both of which are likely to make the intervention far less effective than it otherwise could be. The power of public health officials to coerce the population in the context of a public health emergency should be restricted in favor of prioritizing trust, cooperation, and the preservation of human rights. He contrasts Florida law on the subject with Minnesota law, arguing that certain provisions in the Florida statute (e.g., permitting the forcible vaccination or treatment of individuals under certain circumstances) are

tantamount to an authorization for torture. He then draws parallels between the most draconian of public health powers authorized in the state and certain recent policies re the interrogation and detention of suspected terrorists. He argues both are unethical and encourage “unlawful and arbitrary action.”

Gostin and Berkman’s work (2007) takes human rights discourse in quite a different direction, giving a broad reading of human rights principles at the start, but then largely failing to connect them up with their ultimate recommendations. They address a wide range of issues, including certain ethical considerations, pertinent to national and international preparation for and response to influenza pandemics. They assume that, in the event of an H5N1 pandemic (the primary type they considered in the article), there will inevitably be far fewer doses of vaccine than are necessary to vaccinate the world’s population, and that no nation will receive a sufficient number of doses. Accordingly, they propose a number of considerations in allocating doses: (1) where relevant and feasible, doses should be quickly allocated to areas with localized outbreaks, where ring vaccination might help contain the spread of the virus; (2) priority should be given to the people developing countermeasures, administering health care, and developing policy to address the outbreak; (3) priority should also be given to first responders, people providing essential products and services, security, sanitation, and critical government workers; (4) priority should be given to people who are particularly vulnerable to the virus; (5) intergenerational equity should be considered but that, if the elderly are less likely to benefit from the vaccine due to poor immune function, then it may be advisable to focus instead on vaccinating those who are more likely to benefit; (6) social justice must be taken into account, particularly since allocation considerations (such as those

given above) tend to disproportionately favor those with higher social status and failing to consider issues of social justice risks diminishing public trust and social cohesion; (7) issues of global justice must be taken into account; and (8) pandemic preparation should involve close and substantial civic engagement, to foster trust and smooth functioning of the allocation system in a pandemic.

Gostin and Berkman list a wide variety of human rights applicable to pandemic planning and response, as provided in major international and regional treaties such as the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights, the International Covenant on Economic, Social and Cultural Rights, and the American Convention on Human Rights. Those rights include a right to privacy, a right from arbitrary search, seizure and arrest, a right to freedom of movement, a right to be free from discrimination, and a right to health (including hygiene and clean water). They observe that the conventions and interpretations of those conventions permit restrictions under appropriate circumstances and pursuant to appropriate controls, and that a state must respect human dignity and freedom in doing so.

It is, however, difficult to see where these rights hook up with the remainder of Gostin and Berkman's discussion, except to the extent that they perhaps provide a baseline statement of rights applicable in most normal, non-pandemic situations. Gostin and Berkman argue that, notwithstanding these rights, the state may take coercive measures when they are necessary to protect the public's health in the face of an actual threat. To be ethically permissible, there must be a reasonable and proportionate relationship between the public health measures taken and the achievement of a legitimate public health goal. They fail to define what it might mean for an intervention

to have a “reasonable chance” of achieving a legitimate public health goal, leaving it instead to the government to determine. They also give no guidelines for proportionality, noting only that “[i]f the intervention is gratuitously onerous or unfair, it may overstep ethical boundaries.” Considerations of distributive justice are invoked, and they note that resources must not be allocated in a way that “unduly” burdens “particularly vulnerable populations.” They, as do so many others, observe that trust, transparency and disclosure of relevant facts are essential to gain and maintain public trust and cooperation.

Gostin and Berkman apply these ethical considerations to specific interventions that may need to be taken and issues that otherwise will likely become relevant in a pandemic. (1) They address the role of communications in planning. They assert that because of different community priorities and norms (which must be a subject of community discussion in order to be determined and in order to get the community to buy in to the final determination), and because of different financial and other resources available in different localities, pandemic policies will necessarily differ from community to community. Where community participation cannot be obtained in advance, a post-enactment review process should be undertaken. (2) Research should be undertaken to determine the effectiveness of public health interventions as they are carried out, as such interventions, to the extent they impinge on civil and/or economic liberties, are only ethical to the extent that they are effective and proportionate. (3) Allocation provides particular problems. Resources must be delivered, in the context of pandemic influenza, such that they alleviate the greatest amount of suffering and death. Wealthy countries have a duty to assist poorer nations, particularly to the extent that a worldwide pandemic might be able to be stopped if quick assistance is given. (4) Surveillance and public

reporting must be performed in watching for what may become the start of a pandemic. Care should be taken to protect the identity of affected individuals, to as great an extent as possible, while prioritizing the health of the public. (5) Community hygiene measures (including, e.g., use of N95 respirators) must be undertaken, and must be carried out as consistently as possible. All will require good public information campaigns, especially including outreach efforts particularly targeted to more marginalized communities and communities with language barriers. They will also likely require rationing of scarce supplies, both in the community and in hospitals. Rationing should be done in a way that “maximizes health protection.” The effectiveness of hygiene measures in the context of a pandemic should also be studied, as Gostin and Berkman say that little research has been done in that respect. Governments should also institute training and monitoring programs for effective infection control in hospitals. Governments additionally should ensure that restrictions are not arbitrary, unreasonable, or discriminatory, and should last no longer than necessary. Also, procedures should be in place to challenge public health orders, but Gostin and Berkman state that those procedures may need to bend in an emergency.

Other works emphasizing a human rights and/or social justice framework include Klopfenstein (2008), Powers and Faden (2008), and Uscher-Pines et al. (2007).

## **2. Frameworks Otherwise Re-Envisioning the Foundations of Public Health Ethics**

Other frameworks do not group together quite as neatly. Forster (1982), for example, holds that we need a communitarian ethic in which to ground public health, in order to achieve the latter’s goals. In communitarianism, solidarity, community, cooperation and inclusiveness are identified as goals in themselves, rather than as means

for achieving individual ends (Forster 1982). Communitarianism does not necessarily entail considerations of human rights or social justice, however.

Forster seeks in grounding his framework in communitarian ethics to avoid the liberal dilemma, discussed above. Health, to Forster, is a communitarian value, as it requires social cooperation in order to be most fully achieved. While Forster uses the example of mandating seat belt use, one could just as easily discuss vaccination imperatives for herd immunity or allocation of antivirals based on principles of need, infirmity and exposure.

Another re-envisioning of the foundations of public health ethics comes from Francis et al. (2005). Francis et al analyze the impact that the failure of bioethics to take infectious disease into account during bioethics' formative years had on the development of key concepts such as autonomy. They observe that, in infectious disease, the patient is both victim and vector, vulnerable to disease from others and susceptible to passing it on to others, often quite rapidly. Yet traditional bioethical analysis of informed consent, for example, fails to take the health impact on third parties into consideration. Similarly, distributive justice might develop a broader social slant if it took patient as victim and vector into account.

Infectious disease considerations, Francis et al argue, cannot simply be grafted onto today's bioethics. What, for example, if a patient refuses to accept treatment for an infectious disease after receiving all relevant information concerning it and discussing the matter with his or her physician? If we are to take infectious disease seriously, that cannot be the end of the matter, as it would be in a more traditional paradigm. What of tensions between autonomy and justice in infectious disease contexts? Use of the harm principle

(the principle that individual freedom can be restricted to prevent harm to others) will not resolve the problems raised by infectious disease, as there are too many variables that may be unknowable. We are interrelated in our vulnerability, a vulnerability which we do not choose, but which may be wholly accidental and unintentional. This contextualizes our agency, highlighting not just our physical susceptibility to disease spread by others, but also our relation to others as potential vectors. Such features are necessary aspects of agency, rather than extraneous constraints. They suggest that a full account of autonomy must incorporate this insight. While not “ignor[ing]” individual agency, such an account moves the patient from a lone and primary place, embodies him or her, and substantially enlarges the sphere of considerations involved in decision-making.

**The Spectrum: Strengths and Weaknesses**

We propose the traditional-to-expansive substantive spectrum as a descriptive tool to convey the breadth of content reflected in the current public health ethics literature. We do not intend by it a normative judgment on the superiority of ethical theories at either end. It seems rather that frameworks at each end of the spectrum have certain strengths, and that each set are open to certain criticisms. The Table below summarizes the strengths and weaknesses of each major grouping.

Table 3: Strengths and Weaknesses of Traditional and Expansive Frameworks

	<b>Traditional Frameworks</b>	<b>Expansive Frameworks</b>
<b>Strengths</b>	<ul style="list-style-type: none"> <li>• Rely on well-accepted, less controversial ethical principles</li> <li>• Recognize high value Americans place on individual liberty and rights</li> <li>• Rely on ethical</li> </ul>	<ul style="list-style-type: none"> <li>• Characterize a positive agenda for public health</li> <li>• Most clearly differentiate public health ethics from clinical bioethics</li> <li>• Attend more robustly to issues of</li> </ul>

	<p>values widely employed in clinical bioethics</p> <ul style="list-style-type: none"> <li>• Requires the least amount of modification of well-known bioethical principles</li> <li>• May lead to politically uncontroversial actions</li> </ul>	<p>social justice</p> <ul style="list-style-type: none"> <li>• Tends to expand the scope and role of public health</li> </ul>
<b>Weaknesses</b>	<ul style="list-style-type: none"> <li>• Fails to distinguish public health ethics sufficiently from clinical bioethics</li> <li>• Characterizes public health ethics in a negative fashion (as threat to individual rights)</li> <li>• May fail to call attention to pressing needs of social justice</li> </ul>	<ul style="list-style-type: none"> <li>• May lead to politically more controversial actions</li> <li>• May extend scope of public health beyond perceived legitimate boundaries, demanding greater use of resources</li> <li>• Employ ethical theories less well understood in bioethics</li> </ul>

One way further to assess the strengths and weakness of the two general types of ethical frameworks is to see how they perform in the context of a specific public health case study. For that, we now turn to the example provided by the novel H1N1 influenza pandemic and the decisions required at the state level of the allocation of resources.

**Novel H1N1 Influenza: Preliminary Observations**

Public health planners must address an influenza epidemic at the beginning, armed with only partial knowledge of the nature and likely effects of the particular strain of virus then circulating, and aware of the possibility of a mutation that will suddenly change the nature of that virus drastically. They must plan for the worst- as well as the best-case scenario. At the time this is written, we know a good deal about the nature and

scope of the novel H1N1 pandemic of 2009-2010, even though the pandemic has not ended and unanticipated developments remain possible. Most of this information was not available to public health officials at the state level in the U.S. when the World Health Organization declared a pandemic in June, 2009 or when the U.S. declared a public health emergency in July. (Chan M, 2009; Sebelius K, 2009) In assessing how different ethical frameworks would apply to the novel H1N1 case study, it is therefore most appropriate to take the approximate time frame of July-August 2009 as our starting reference point, and assuming as facts only what was known about the epidemic and the virus at that stage. As of that date, there were indicators that massive social breakdown due to absenteeism among workers in critical areas such as first responders, transport, and communications was unlikely to occur as a result of novel H1N1, and we make that assumption in what follows (Centers for Disease Control 2009).

Policymakers at the level of the state health department also have a circumscribed role in addressing an influenza epidemic. Specifically with regard to the allocation of resources, they are responsible for:

- Procuring and distributing resources such as medications and equipment
- Establishing criteria and rules by which others (private practitioners, local health departments, etc.) are expected to distribute the resources to individual patients

We will focus on the implications of frameworks of public health ethics for these specific policymaking tasks. We will further focus on four sorts of resources that may become scarce in an influenza epidemic:

- Vaccines
- Antiviral medications
- Personal protective equipment (e.g., N-95 masks)
- Ventilators

## Applications of the Frameworks

Our literature search revealed relatively few instances in which the loop was completely closed from a theoretical public health framework to a specific set of recommendations for the allocation of resources in the case of an epidemic such as novel H1N1. By contrast, the literature contains many more instances of:

- Discussions that analyze theoretical frameworks and then list the mid-level principles or considerations of public health ethics that arise from applying the frameworks.
- Discussions that make specific recommendations to address particular public health problems, and that as background, list the mid-level ethical principles or considerations that inform or justify the recommendations.

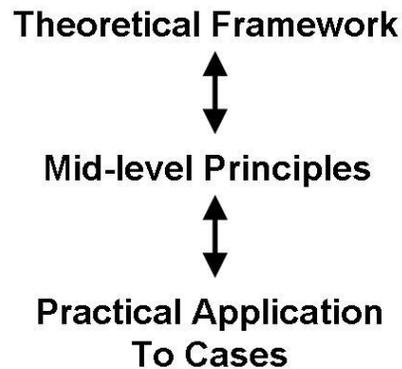
In this way our survey tends to support the importance for public health ethics of these mid-level considerations, analogous to the mid-level principles which, many argue, form a useful approach to addressing practical ethical problems in clinical bioethics.

Bioethicists commonly argue that these mid-level principles can be agreed upon even by those who continue to disagree about fundamental theoretical frameworks (Beauchamp and Childress 2008). It is for this reason that many mid-level principles or considerations may be considered as “shared values,” as depicted in the Table above summarizing the University of Toronto report, *Stand on Guard for Thee* (University of Toronto 2005).

Figure 2 indicates the relationship among these levels of ethical discussion. The double-headed arrows indicate that one can reason deductively from theoretical frameworks to principles, and then from principles to practical applications.

Alternatively, one can use knowledge gained from practical applications to revise or refine principles, and use a better understanding of applications of and priorities among principles to revise and refine one’s theoretical framework.

**Figure 2. Levels of Ethical Discussion in Public Health**



We have noted a number of different types of theoretical frameworks in the public health ethics literature: traditionally focused; expansively focused; and lying at various points along the spectrum between traditional and expansive. We also noted different theoretical variations that characterize theories at the expansive end of the spectrum. For purposes of case-study application we will simplify by assuming two general types of frameworks only, traditional and expansive, while setting aside the many mixed models that occupy the middle portion of the spectrum. We will also assume that the procedural principles or considerations (transparency, accountability, consistency, etc.) apply in all instances and so we will not further repeat mention of them (which is not to deny their importance in the ethical practice of public health).

Table 4 provides a set of examples of possible recommendations arising from the two different sorts of frameworks in the various novel H1N1 decision contexts. The related mid-level principles or considerations are listed along with the recommendations.

The Table demonstrates that adoption of a preferred ethical framework makes a practical difference in decisions that must be made at the state level in allocating scarce resources in the setting of an H1N1 epidemic (Baum et al. 2007). Depending on the framework one adopts, one will prioritize substantive principles differently and reach different practical conclusions about what courses of action to recommend.

Table 4: Recommendations for novel H1N1 Resource Allocation Arising from Traditional and Expansive Types of Public Health Ethics Frameworks

<b>Resource to be allocated</b>	<b>Traditional Framework</b>	<b>Related Mid-level Considerations</b>	<b>Expansive Framework</b>	<b>Related Mid-level Considerations</b>
<b>Vaccines</b>	<ol style="list-style-type: none"> <li>1. Distribute vaccines to all desiring them and for whom not medically contraindicated.</li> <li>2. In shortages, allocate vaccines first to those at highest risk and whose bodies can most effectively mount an immune response.</li> <li>3. Use existing health care infrastructure as much as possible for vaccine distribution and administration.</li> <li>4. Favor voluntary vaccination programs over mandatory, except in extreme emergencies.</li> </ol>	Fairness Duty to care Duty to steward resources Proportionality	<ol style="list-style-type: none"> <li>1. Prioritize for vaccination vulnerable populations. Once their needs are addressed, prioritize highest-risk groups in other populations.</li> <li>2. Consider creating special mechanisms to distribute and administer vaccine, based on concerns that using existing infrastructure may perpetuate and magnify existing disparities.</li> <li>3. While mandatory vaccination</li> </ol>	Social justice Fairness Duty to steward resources Solidarity Trust

			might be considered, it would most likely be ruled out as practically difficult and erosive of community trust.	
<b>Antivirals</b>	<ol style="list-style-type: none"> <li>1. Discourage prophylactic use and use without strong medical indications, to preserve supply.</li> <li>2. In shortages, prioritize allocation to those most likely to experience greatest medical benefit.</li> </ol>	<p>Duty to steward resources Fairness Duty to care</p>	<ol style="list-style-type: none"> <li>1. Consistent with medical benefit and preserving adequate supplies, make extra effort, where relevant, to assure distribution to currently disadvantaged and vulnerable populations.</li> <li>2. Consider using novel means of distribution where warranted. Educate patients as to prudent use of antivirals and hence need for information sources most trusted in each community</li> </ol>	<p>Social justice Duty to care Fairness Duty to steward resources Proportionality</p>
<b>Personal protective equipment</b>	<ol style="list-style-type: none"> <li>1. Assuming severe shortage of N95 masks, allocate only to health workers and prioritize those at greatest risk; exclude from use those with known</li> </ol>	<p>Duty to steward resources Fairness</p>	<ol style="list-style-type: none"> <li>1. Consistent with medical benefit, make extra effort, where relevant, to assure distribution to currently disadvantaged</li> </ol>	<p>Social justice Solidarity</p>

	immunity or successful vaccination (Vawter et al. 2009)		and vulnerable populations.	
<b>Ventilators</b>	<ol style="list-style-type: none"> <li>1. State policies should encourage optimal planning and resource sharing at local level. Avoid state allocation criteria that reward poor local planning.</li> <li>2. Prioritize distribution to regions that can most quickly utilize ventilators to assist a population of patients most likely to have chance of recovery significantly enhanced with ventilation support.</li> </ol>	Duty to steward resources Duty to care Fairness	<ol style="list-style-type: none"> <li>1. Focus especially on needs of vulnerable and disadvantaged populations. Consider that these populations and the institutions that serve them <ol style="list-style-type: none"> <li>a) may have fewer resources at baseline and</li> <li>b) may have limited resources for detailed planning exercises.</li> </ol> </li> </ol>	Social justice Solidarity Duty to care Duty to steward resources

**Conclusion**

To illustrate how different frameworks may yield different recommendations, we have selected for our example frameworks that occupy the extreme ends of the spectrum. Frameworks located along the middle portions of the spectrum might well yield more overlapping recommendations.

As we noted, there are relatively few discussions of public health ethics in the current literature that comprehensively demonstrate a reasoning process linking a theoretical framework, mid-level principles or other ethical considerations, and specific

practical recommendations relevant to state-level allocation policy. This raises a number of possibilities for future inquiry. It is possible that more research on the development and analysis of frameworks is required. It may be that despite the arguments listed previously in favor of attention to theoretical frameworks, one can reason directly to practical recommendations without recourse to them. Finally, it might be that state-level allocation decisions are particularly difficult ethical problems that resist cogent theoretical analysis, or that hinge most heavily on specific facts on the ground at any given time.

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