Ethical Concerns in Pandemic Influenza Preparation and Responses

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Introduction

The influenza pandemic of 1917-18 was arguably the greatest health crisis faced by the world in the modern era. There is a reasonable chance for a similar influenza pandemic in the next few years. Since 1918 there have been considerable advances in our understanding of human rights, medical ethics, and public health ethics. The anticipation of an imminent pandemic has caused scholars and practitioners to apply ethics to public health with an unprecedented intensity. This paper aims to enable public health practitioners to make use of the recent developments in public health ethics in their preparations for pandemics.

Presented here are: background on the factors that give rise to the ethical concerns; an orientation to pandemic flu preparation in the United States; historical lessons from previous epidemics; an accounting of the values in ethical public health decision-making identified by various groups; a description of common recommendations for commonly recognized ethical concerns; a list of ethical concerns commonly overlooked; and final recommendations.

Epidemiologically relevant facts

Influenza is a viral infection of the lower respiratory tract. There are three major types of the virus: A, B, and C. All are infectious to humans. Type A strains are further classified according to the proteins on the surface of the virus that enable it to attach to and infect cells; hemagglutinin (H) and neuraminidase (N). These proteins change over time, usually though a gradual process (antigenic drift) and occasionally abruptly (antigenic shift). Since the discovery of these proteins, the viral types have been named sequentially. Thus, the first was subtype H1N1.

The strains emerging from drift are less pathogenic than those emerging from shift. Immunity resulting from one season’s strain will usually confer some cross-over immunity to the next season’s strain, which maintains some structural similarity. But a strain emerging from a shift bears little resemblance to a previous one and thus does not encounter an immune response that recognizes it. Because virtually everyone is susceptible, transmission is worldwide and the epidemic is thus referred to as a pandemic.

Wild birds are a natural reservoir for the type A viruses, which seldom makes them sick. However, domesticated birds, such as those raised for food, can also be infected and are more often sick from the infection. Furthermore, some viral subtypes are more pathogenic than others. Low pathogenicity subtypes include H7N7, H9N2, and H7N2. The subtype presently epidemic in birds, H5N1, is highly pathogenic and has caused a high proportion of deaths among the many birds and few humans it has infected. It is this high pathogenicity and virulence that causes alarm when considering the potential for pandemic spread.

The H5N1 virus occasionally infects humans who have direct contact with infected birds; usually because they are raising or selling birds for food. However, the virus must mutate further to become infectious between humans. This can occur through the recombination of the viral genetic material, a process for the influenza virus that is constant and rapid compared to most other viruses. The passage of the virus between birds and humans creates new possibilities for recombination in the direction of a human influenza. Transmission between humans is through respiratory excretions, usually in droplets over relatively short distances.

The H5N1 avian virus is spreading globally via interactions between domestic poultry and wild migratory birds. Consequently, human cases are also occurring in an increasingly large geographical range. With each human infection there are new possibilities for a mutation from an avian to a human influenza
virus. At the time of this writing, there have not been any human cases of avian influenza reported in the western hemisphere. But the arrival of infected migratory birds flying from the Asian continent into Alaska is expected any day. Although avian influenza was first noted in Southeast Asia, with the present dissemination human influenza could start in almost any country.

The World Health Organization (WHO) delineates three periods relevant to a pandemic: (1) the interpandemic period, in which some animals but no humans have been infected with a new viral subtype (thus “avian” flu); (2) the pandemic alert period in which there are individual cases and case clusters among humans; and (3) the pandemic period, consisting of sustained transmission in the general population (“pandemic” flu). At the time of this writing, we are in pandemic alert, the second period, with a few human cases and only rare or suspicious transmission between humans.

Pandemics of influenza have occurred on average three times every 100 years. In the 20th century, pandemics occurred in 1918-19, 1957-58 and 1968-69. The 1918 pandemic remains the worst of any disease experienced in the modern era. The most common estimate of the worldwide mortality is 50 million, though some say the counting of deaths in some countries was so inadequate that the actual toll may have been as much as 100 million. The pandemics since then killed an estimated 1.5 million and 650,000, respectively (Billings, 1997). Estimates of the proportion of the world’s populations that will be affected in the next pandemic use the 1918 dimensions as a worst case scenario. Today’s population, 6.6 billion, is nearly four times the 1.8 billion in 1918. Today’s larger population size, greater population density, and greater interconnectedness through jet travel, could result in a death toll several times that of 1918.

Medical and public health resources

Resources for responding to a pandemic are often grouped into two categories: pharmaceutical and non-pharmaceutical. The pharmaceuticals include vaccine and antiviral medications. Vaccines for influenza have been available since 1945. However, because of the ever changing structure of the virus, and because of the time it takes to discern the viral structure and develop a vaccine, this year’s vaccine is based on last year’s most prevalent strains. This method provides a measure of immunity for a new strain that is related to a previous one. But if a pandemic strain emerges, this method will not work and a new vaccine based on the pandemic variant will have to be developed, a process that would take six to eight months. A vaccine based on the current avian influenza could provide a head start in understanding the structure of the eventual human pandemic virus. But since the avian form must mutate into the human form, the pandemic strain could also be significantly different from the avian strain.

During the 1918 pandemic, infection swept through a typical city in about 6-8 weeks. With a vaccine requiring several months for development, and then more time for mass production and distribution, the early stages of the pandemic will transpire without the benefit of a vaccine. Furthermore, there is some chance that an effective vaccine will require more than one dose separated by a number of days or weeks, further limiting the number of people who will benefit from a vaccine when it is first available.

Also available are several medications that lessen the symptoms of influenza infections. These antivirals are of two general types: neuraminidase inhibitors (with brand names Tamiflu and Relenza) and M2 inhibitors (brand names Amantadine and Rimantadine). Antiviral production is a time-consuming process that results in a trickle in availability. Under present conditions, even when a country stockpiles antivirals for future use, there will be inadequate supplies for all who would benefit from them.

Non-pharmaceutical resources and approaches include “social distancing” and a few technologies. Social distancing is intended to lessen the opportunities for transmission. The two most common forms are isolation, for those known to be infected, and quarantine for those who are not sick but may have been
exposed to infection. Surgical masks are a means of limiting transmission when pharmaceuticals are not available and social distancing is not possible. Furthermore, the fatal end stage of influenza is often pneumonia, a condition for which individuals may be placed on an artificial respirator. The allocation of scarce resources and enforcement of social distancing measures are the most commonly recognized ethical issues in addressing pandemic influenza. They are discussed further, below.

Preparations: logistical and ethical

The WHO was the first to warn of pandemic influenza. They exhorted countries to prepare and published recommended steps. A number of countries have developed national plans and have published them online (World Health Organization [a]).

In November 2005 the United States President’s Homeland Security Council laid out a broad national strategy, followed thereafter by a more detailed pandemic influenza plan and subsequent supplements issued by the Department of Health and Human Services (HHS, 2005; HHS [a], 2006; HHS [b], 2006). The plan and supplements describe the role the federal government would play in a pandemic and provide guidance to state and local governments, with whom the principal responsibilities for planning and responding lie. Pandemic influenza preparedness plans have been developed by every state and can viewed online at the website of the Council of State and Territorial Epidemiologists (www.cste.org/specialprojects/Influenzaplan/StateMap.asp).

The principal concerns of national and state pandemic plans are: (1) clarifying which government offices are responsible for which aspects of the pandemic response, referred to in some literature as issues of “command and control”; (2) addressing the anticipated surge in medical needs; (3) allocation of scarce resources; and (4) recommendations for social distancing.

Each of these components has profound ethical implications, not only in the saving of lives, but also in preserving of human rights, maintaining a functioning society and achieving of social justice. Considering the ethics of a situation entails reflection and discussion, skills that require preparation and practice. In a review of the US national and state pandemic flu plans, Thomas, et al (2007) found that most plans recognize an ethical dimension to pandemic influenza responses and identify a number of the key ethical issues, such as resource allocation and constraints of civil liberties. At times they prescribe an action that implies an ethical perspective, such as the identification of priority groups for vaccinations. However, more often than not, the documents are opaque in their ethical reasoning. The implied messages are a combination of “Trust us and do as we say” and “Ethics are self-evident; just do what is needed to preserve lives.”

The HHS plan does not guide states to prepare for ethical decision-making. Although it recommends priorities for allocating scarce quantities of antiviral medications and vaccines, and reasons for placing importance in particular sets of recipients, it does not articulate the underlying ethical values or principles that would enable states to rethink or refine the priorities. Moreover, an ethicist is not listed among the 13 offices and 10 “additional participants” who should compose a state-level pandemic influenza coordinating committee. Similarly, although the HHS plan recommends that each hospital develop an education and training plan, training in ethical decision-making is not listed among the needed skills, and professionals trained in ethics are not listed among the 37 types of expertise to be represented in a healthcare facility pandemic influenza planning committee. The recent statement on Ethical Guidelines in Pandemic Influenza, developed by the Centers for Disease Control and Prevention (CDC), provides an ethical rationale for the allocation scarce resources and the constraint of civil liberties, but it does not prescribe a structure or process for states or local agencies to reason through ethical challenges (CDC, 2007).
Historical lessons about ethics in an epidemic

The need to address ethical decision making processes in pre-pandemic phases can be seen in historical examples. The influenza pandemic of 1918 was remarkable in its extent and virulence. The pandemic of an H1N1 influenza virus was thought to have resulted in half a million deaths in the United States. To the US public, the incongruity between the experience and the public messages about the pandemic in the US was surreal. As described in John Barry’s history (2004), the federal government regarded the pandemic as a distraction from the country’s engagement in World War I. Thus, rather than addressing the epidemic, it ignored and denied it. Due to the wartime constraint of civil liberties, newspapers were not permitted to write about the epidemic in a way that would alarm readers. Instead, they offered wishful assurances that all was well. To a public that was living a different story, the denials and false assurances created distrust of the media and government, fear that grew out of ignorance, and chaos resulting from a lack of leadership. The environment of distrust, fear, and chaos gave birth to a litany of actions with ethical implications: medical advice on means to contain the pandemic was ignored by governing authorities; responsible agencies did not coordinate their efforts; crowd events that could facilitate transmission were not cancelled; retired health care providers were called back into service; health care agencies poached employees from other agencies; families offered bribes for care for their loved ones; and research dollars were directed to unlikely causes and countermeasures for the pandemic.

In 1976, the US government feared a recurrence of the 1918 pandemic. In the first months of the year, a cluster of H1N1 virus infections occurred at Fort Dix, New Jersey. It was thought at the time that the H1N1 virus of the 1918 pandemic had established a reservoir among pigs in the Midwest (hence the name Swine Flu) and these cases might be the vanguard of another human epidemic. A decision was made to err on the side of action and vaccinate all 200 million people living in the US. Soon after the program began in October, there were complications from vaccinations. The most common was Guillain-Barré syndrome, an adverse interaction between the immunologic and nervous systems. In mid-1977 the vaccination program was stopped. By then about one fourth the US population had been vaccinated, not enough to prevent an epidemic. Still, an epidemic of swine flu never materialized.

The US Department of Health, Education, and Welfare commissioned an independent evaluation of the decision to vaccinate and of the vaccination program itself (Neustadt, 1978). The authors concluded the report with five recommendations, each having ethical implications. (1) Build a base for program review. There was no system to re-evaluate decisions, which were often made without the benefit of scientific information as more information became available. (2) Think about doing. The urgency of the Swine Flu program, once launched, hindered thorough consideration of the many details. (3) Consider the media. Says the report, “There was a glaring lack of institutional connections between medical professionals of every stripe and anybody knowing much of anything about the news profession…” Those managing the vaccination program did not inform the public well and, worse yet, made gaffes in how they communicated through the media. (4) Maintain credibility. In 1976, following the end of the war in Vietnam, the CDC was one of few federal agencies with a positive reputation. Then with its loss of credibility over the Swine Flu vaccination program, the CDC compromised its powers of persuasion for future initiatives. (5) Think twice about medical knowledge. The authors suggest that influenza is a “slippery disease” for a number of reasons: the virus is constantly changing, vaccine effectiveness is short-lived, the infection’s symptoms are widely misunderstood in the general public, other organisms can cause flu-like symptoms, and the many non-influenza virus causes of flu-like symptoms make it hard to monitor influenza in a population. Public health and other government agencies should think twice about radical action based on these “slippery” characteristics.

In November, 2002, hundreds of cases of a virulent and previously unknown disease, Sudden Acute Respiratory Syndrome (SARS), occurred in the Guangdong Province of China. By the following April, additional cases were identified in 22 countries, including Canada and the United States. By July, when the epidemic had run its course, there had been more than 8,000 cases in 32 countries and 680 deaths.
National responses to SARS varied by government type and the number of cases in the country. In Singapore and Hong Kong, where the governments are relatively authoritarian and where many cases occurred, stringent practices of screening, contact tracing, and isolation were implemented. For example: police detectives were used to locate family members and close friends of SARS cases; the identities of “superspreaders” were made public; the body temperatures of people interacting with the public (e.g., taxi drivers, bank tellers) were taken daily and those with a normal temperature wore a sticker reading “fever-free” (Gostin, 2003).

Toronto also experienced a high number of cases. Canada’s less authoritarian public health system was reflected, in part, by failures to report SARS cases that would, in turn, enable contact tracing (Gostin, 2003). A post-epidemic analysis of the ethical concerns by health care providers in Toronto, Israel, and Taiwan gave most attention to the duty of medical personnel to provide care to SARS patients, and to the rights of care-givers whose jobs placed them at risk of exposure to infection (Singer, 2006; Ovadia, 2005; Hsin-Chen Hsin, 2004). Other concerns mentioned were: public panic caused by exaggerated media reports of risk; the lack of attention paid to other important outbreaks overshadowed by SARS (e.g., Ebola in the Congo in March 2003); ill-advised use of isolation and quarantine; politically motivated scapegoating and hero-making rather than (or to conceal the lack of) systematic training for responding to outbreaks; and the absence of ethical deliberation or consultation.

Values to apply in public health ethics

Ethical deliberation entails a weighing of values. Only in the last 10-15 years have distinctions between values in medical and public health ethics been articulated in a handful of books, articles in professional journals, and the Public Health Code of Ethics (available online at www.phls.org/docs/PHLSethicsbrochure.pdf). The anticipation of an influenza pandemic has led to a flurry of activity in which ethical values in public health have been further clarified and applied. Most relevant documents are available only on-line; few have been published in journals. While there are discernible themes among the values identified by various groups, they do not yet represent a consensus. Because the statements represent a variety of cultures and health care systems, consensus may not even be appropriate. Thus, rather than synthesize a single list of values, those from each source are presented separately here.

Those identifying values in public health ethics commonly recognize five procedural values or characteristics of deliberation in which policies are determined and ethical issues are considered:

- **Transparency.** The process by which decisions are made should be evident to all who are interested. Decisions made should be publicized.
- **Inclusiveness.** The interests of all stakeholders should be considered. All stakeholders or their representatives should have an opportunity to contribute to the decision-making process.
- **Reasonableness.** Decisions should be made on the basis of the best evidence available, and to the degree possible should reflect values shared among the stakeholders.
- **Responsiveness.** Deliberations should address the concerns that led to them. There should be opportunities to evaluate decisions and outcomes as new information becomes available.
- **Accountability (or Responsibility).** Mechanisms should be in place to hold decision-makers accountable for their pronouncements.

There is more variation in the values identified for use in such proceedings. The University of Toronto, Joint Centre for Bioethics, Pandemic Influenza Working Group (2005) identified ten values which, described in their own words, are as follows:
**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 be: proportional, necessary and relevant; the least restrictive means available; and applied equitably.

**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: weigh the imperative for compliance; provide reasons for public health measures to encourage compliance; and establish mechanisms to review decisions.

**Proportionality.** 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 friends. Moreover, health care workers will face significant challenges related to resource allocation, scope of practice, professional liability and workplace conditions.

**Reciprocity.** Society should 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.

**Equity.** 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.

**Trust.** 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.

**Solidarity.** 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.

**Stewardship.** Those entrusted with governance roles 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.

In a paper commissioned by the Center for Infectious Disease Prevention and Control of Health Canada, another Canadian identified three other principles important for an ethical public health response to pandemic influenza (Kotalik, 2003):

**Subsidiarity.** If a small group or community is able to accomplish certain desirable objectives, then a higher or larger body should not assume that responsibility.
Precautionary principle. Before an intervention is applied, it must be assessed for potential harm or negative side effects.

Transparency. All information belongs to the public and should be made available to the public unless there are compelling reasons to withhold it.

The New Zealand National Ethics Advisory Committee (2006) identified six values to guide a response to pandemic influenza. In addition to being fewer in number than those identified by the Canadian Joint Centre for Bioethics, The New Zealand list of values reflects more of a communitarian language and perspective:

Minimize harm. Protecting one another from harm while also accepting restrictions on freedom where needed to protect others.

Respect. Recognizing that every person matters; supporting others to make their own decisions wherever possible; supporting those best placed to make decisions for people who can’t make their own decisions; restricting freedom as little as possible, and as fairly as possible, if freedom must be restricted for public good.

Fairness. Prioritizing fairly when there are not enough resources for all to get the services they seek; supporting others to get what they are entitled to; and minimizing inequalities.

Neighborliness. Helping and caring for neighbors and relations; working together where there is a need to be met.

Reciprocity. Acting in accordance with any special responsibilities or social standing one may have, such as those associated with professionalism; agreeing to extra support for those who have extra responsibilities to care for others.

Unity. Being committed to seeing this through together; showing our commitment to strengthening individuals and communities.

The WHO Project on Addressing Ethical Issues in Pandemic Influenza Planning divided themselves into four working groups: (1) Equitable access to therapeutic and prophylactic measures; (2) Ethics of public health measures in response to pandemic influenza; (3) The role and obligations of health-care workers during an outbreak of pandemic influenza; and (4) Issues that arise between governments when developing a multilateral response to a potential outbreak of pandemic influenza (WHO [b], 2006). The group addressing therapeutic and prophylactic measures identified three guiding values (WHO [c], 2006):

Efficiency. To maximize health benefits with given resources.

Equity. To avoid unjustified discrimination. Equity also supports giving priority to groups who are at highest risk for influenza-related death, and to prioritize children and young adults.

Accountability. Fair and reasonable procedures for justification, public consultation, and enforcement of compliance.

The working group addressing public health measures identified four values (WHO [d], 2006):

Public health necessity. A government should exercise its public health police powers on an individual or group only if the person or group poses a threat to the community such as the likelihood of spreading an infection.

Reasonable and effective means. The methods by which a threat is addressed should have a reasonable chance of being effective.

Proportionality. The human burden imposed by a public health regulation should be proportionate to the expected public health benefit.
Distributive justice. The risks, benefits, and burdens of public health action should be fairly distributed, thereby precluding the unjustified targeting of an already socially vulnerable population.

Speaking to the tension in public health between the rights of individuals and the good of the community, this group noted The Siracusa Principles, a set of principles regarding internationally recognized limitations on human rights, established at a meeting in Siracusa, Italy (University of Minnesota). They are as follows:

- The restriction is provided for and carried out in accordance with the law.
- The restriction is in the interest of a legitimate objective of general interest.
- The restriction is strictly necessary in a democratic society to achieve the objective.
- There are no less intrusive and restrictive means available to reach the same objective.
- The restriction is not drafted or imposed arbitrarily, that is, in an unreasonable or otherwise discriminatory manner.

Rather than list operative values, the conference on social justice and influenza held in Bellagio, Italy produced six statements on ethical responses to avian and pandemic influenza (Berman Institute of Bioethics, 2006):

1) All people should have ready access to accurate, up-to-date and easily understood information about avian and human pandemic influenza, public policy responses, and appropriate local and individual actions. Communications should be tailored to overcome obstacles that disadvantaged groups face in accessing such information.

2) Veterinary and public health strategies should foster wide engagement in planning for and responding to the avian and pandemic influenza threat. Civil society, religious groups and the private sector should be involved in helping to overcome barriers to effective engagement by disadvantaged groups.

3) Planning and response should facilitate public involvement in surveillance and reporting of possible cases without fear of discrimination, reprisal or uncompensated loss of livelihood. Recognizing their vulnerability, special efforts are needed to foster reporting by disadvantaged groups, as well as to protect them from negative impacts which could worsen their situation.

4) The impact and effectiveness of interventions and policies need to be evaluated and monitored, especially with respect to prospects for providing fair benefits to, and avoiding undue burdens on, disadvantaged groups, so that corrective adjustments can be made in a timely manner.

5) Developing as well as developed countries should have access to the best available scientific and socio-economic data and analyses to inform avian and pandemic influenza planning and response, including information on the particular burdens and secondary harms that a pandemic and pandemic responses may inflict on disadvantaged groups.

6) National and international efforts are needed to promote equitable access to vaccines, antivirals and other appropriate public health and social interventions, both between and within countries, so as to provide fair and non-discriminatory treatment for traditionally disadvantaged groups as well as those who are specially disadvantaged in the context of avian and human influenza.

Although these statements vary in their choice of words, they are consistent in the values they affirm. Prominent themes are equity, applying the minimum necessary coercion or civil restrictions, transparency and communication with the public, scientific information as a basis for action and evaluation, including all stakeholders in decision-making, and maintaining public trust. The New Zealand ethical values of neighborliness and unity are notable for an added emphasis on interdependence and for the obligations of citizens to care for one another.
Variation in perspectives among the groups addressing ethics in pandemic flu is manifested in the range of topics addressed and not as much in disagreements over approaches to particular issues. As the discussion moves eventually from the well-trodden paths of a few issues to more neglected concerns, such as the opportunity costs in preparation for pandemic influenza, the perspectives may be more diverse and the discussions more lively.

**Approaches to commonly recognized ethical concerns in pandemic influenza**

The vast majority of deliberation on ethical concerns in pandemic influenza has been devoted to three topics: the allocation of scarce resources such as antivirals, vaccine, and ventilators; the duties of care providers; and the restriction of civil liberties through isolation or quarantine.

*Allocation of scarce resources.* This is often the first concern identified by any individual or group addressing pandemic influenza. All but a few national and state pandemic influenza plans identify the people who should be first to receive the resources but without an accompanying ethical justification. Conversely, the documents that do provide ethical rationales seldom prescribe priorities (Gostin, 2006; WHO [a]; Kotalik, 2005; University of Toronto, 2005; Hick, 2006).

There are two broad rationales or strategies for allocation of life-saving resources: minimizing the number of deaths and preserving basic functions of society, such as clinical care providers, the police, and grocery store operators. Minimizing the number of deaths can be further divided into a strategy of protecting the most vulnerable, such as the very young and very old, and a strategy of minimizing transmission by curing or preventing illness in those who are most likely to infect others. This latter strategy stems from the classic disease control method of minimizing the “reproductive rate” of the average infection. In this scenario, vaccine or antivirals could be used to contain a localized outbreak and prevent ever-widening spread.

Most national plans are a mix between the strategies of protecting the most vulnerable and preserving critical social functions (Uscher-Pines, 2006). For example, in the US national plan, the top four priorities for vaccine allocation are: (1) vaccine and antiviral manufacturers; (2) medical workers and public health workers who are involved in direct patient contact; (3) persons 65 years of age or older with one or more influenza high-risk conditions, and (4) persons six months to 64 years of age with two or more influenza high-risk conditions (HHS, 2005).

The process by which priorities are set need to follow the procedural values of transparency, inclusiveness, reasonableness, responsiveness, and accountability. Thus, stakeholders, or the general community in this case, should know how the priorities were set, have an opportunity to contribute to the process of priority setting, and be able to comment on the outcomes (University of Toronto, 2005; Kotalik, 2005; WHO, 2005; Hick, 2006).

There is some irony in the allocation of pharmaceuticals receiving the most attention of all of the ethical concerns. Nearly by definition, scarce resources affect a minority of people. The scarcity of antivirals, vaccine, and ventilators for those who develop pneumonia is especially acute in developing countries where the majority of the world’s population lives, where poverty and crowding are the highest, and thus where rates of infection are likely to be highest. But even in western wealthy countries, antivirals are projected to be in short supply and a vaccine will be months in the making after the pandemic influenza virus variant emerges. Meanwhile, many concerns affecting virtually everyone have been overlooked.

The reasons for the intense attention to scarce resources may include a western penchant for technological solutions to problems, a fascination with the ethical gymnastics of “lifeboat” ethical conundrums, and inexperience identifying broader ethical issues in public health, in part because of the shallow history of the field.
Duty to provide care. Pandemic influenza will generate a surge in medical needs. Health care workers will have more work and increased exposure to infection. They will be essential to the survival of individuals and the functioning of society, vulnerable to unfair demands by their employers, and tempted to leave their jobs to avoid exposure and to care for their families.

Recommendations to ethically guide health care workers and their employers in this situation include ensuring that: professional codes of ethics address the duty to provide care and the rights of care providers; the safety of health care workers is protected; health care workers are trained in infection control measures; and strategies for assigning roles and responsibilities are fair and transparent (WHO, 2005; University of Toronto, 2005; Kotalik, 2005).

Restriction of civil liberties. The classic ethical tension in public health is between the rights of individuals (or their civil liberties) and the good of the community. George Annas and Larry Gostin are two who have written prominently on this topic, each advocating for different poles in this tension (Annas, 2002; Gostin 2002). The most commonly recognized situation in which civil liberties might need to be restricted for the good of the community in the context of pandemic influenza is the isolation of individuals known to be infected and the quarantine of those thought to be exposed and perhaps incubating infection (University of Toronto, 2005; WHO, 2005). Although isolation and quarantine were employed during the SARS outbreak, they are likely to be less effective in containing transmission of influenza because infected individuals are usually infectious before they manifest symptoms. Nonetheless, recommendations for the ethical use of restrictions include: a comprehensive and transparent protocol for their implementation; ensuring that the methods used are legal, proportionate, necessary, and the least restrictive means available; and necessary services should be provided to individuals and communities affected by the social distancing measures (University of Toronto, 2005; WHO, 2005).

Social distancing is also accomplished at times through closing workplaces and restricting travel. Each of these can seriously affect the income of an individual, company, or country. The principles for the ethical implementation of isolation and quarantine also apply in these situations. In addition, there may be instances in which some financial compensation is appropriate for those who experience a personal financial loss in order that the safety of the community can be protected (University of Toronto, 2005; WHO, 2005).

In a frequency distribution of the ethical concerns addressed in published literature, these three topics would stand high above all others. The remainder forms a long, thin tail of infrequently addressed concerns.

Ethical concerns commonly overlooked

The lists of values in public health ethics, above, were proposed in the narrow context of action in a pandemic. Although most of the values are relevant to concerns outside of a pandemic, constructing a list with a view towards a particular event can result in overlooked values or principles that would be more obvious in other situations. The Public Health Code of Ethics was not written for a narrow concern and does, indeed, bring to light some ethical issues not immediately evident when thinking specifically of pandemic flu. For example, one principle in the Code addresses the necessarily collaborative nature of public health. In the context of a pandemic, collaboration will mean knowing who is responsible for what and having good relations between the key players. According to the Public Health Code of Ethics, the failure of public health agencies to work well with each other and other relevant organizations would be an ethical lapse. However, the ethical nature of collaboration and coordination is seldom mentioned in the context of preparation and responses to pandemic influenza.
The 12 principles of the Code of Ethics and respective ethical concerns in a pandemic are presented in Appendix A. The following list of items is a sample of ethical concerns identified by reflecting on the Code of Ethics or found mentioned infrequently in the literature on ethics in pandemic influenza.

**Command and Control.** Perhaps the most fundamental responsibility of government in a pandemic is to be clear about which offices serve which functions, and for those offices to ensure that all government functions necessary for responding to the pandemic are covered and well coordinated. Although the set of ethics recommendations reviewed for this paper do not address this issue, the US National Pandemic Influenza Plan describes the roles the federal government will play in a pandemic. The roles of local governments, private companies, and civic organizations are less clear. Neglected altogether is how organizations will interact with each other when an unanticipated need or task arises; how disagreements will be arbitrated; and how established responsibilities can be evaluated and revisited. For example, it should be clear to a local health department whether to follow directives from the state or the federal government, as well as the several departments within each of those, for particular circumstances in a pandemic.

**Global governance and international obligations.** A pandemic, by definition, affects the entire globe. How will nations interact with each other on issues of trade, travel, and distribution of resources? In what settings will those arrangements be made? The University of Toronto (2005) Joint Centre on Bioethics recommends that the WHO should be transparent and equitable in making travel recommendations. Resource-poor nations will suffer greater consequences of a pandemic. Do wealthier nations have any obligations to assist them? At least two groups have suggested that developed countries invest in the capacity of resource-poor countries to conduct surveillance of disease and generally develop their public health infrastructure (University of Toronto, 2005; WHO, 2005).

**Control of avian influenza.** The mutation of the influenza virus to a variant that can be transmitted among humans can be frustrated by decreasing the proximity of birds and animals in the settings where avian flu is most common. However, any attempt to separate the bird owners from their flocks will bring economic hardship to their families. The same is true for the culling of flocks in which infection has been found. Developed countries may need to assist undeveloped countries in compensating individuals for their losses incurred in the name of avian influenza control (WHO, 2005).

**Communicating with the public.** In the pandemic of 1918 the US government denied the existence of health emergency in order to keep the public focused on winning the war in Europe (Barry, 2004). Yet, in many cases, recommendations for ethical public health action in a pandemic include maintaining transparency and accountability, which require informing the public of plans, procedures, and the reasons for them. Each level of government is thus ethically obligated to design and carry out a strategy for effectively communicating with the public they serve (Kotalik, 2005).

The opposite of under-informing is inflaming fears with needless speculation and constant repetition of the dangers. Privately owned media may use fear-mongering to get people to buy their magazine or watch their television shows. The means of controlling this are not immediately obvious but they are likely to entail open lines of communication between the government offices responsible for disease control and the media. Alternatively, or in addition, there may be need for provisions to regulate the media in the extraordinary circumstances of a pandemic. As described above, such a step was taken in the US during the 1918 flu pandemic, though not to enhance communication about the pandemic but to silence it. Preventing excesses of the media while still allowing freedom of communication would be a challenge, but one that would most likely be resolved well if addressed before the need for its implementation.
Engaging communities in setting policies. Inclusiveness, which is one of the components of fair procedures listed above, demands that community members have the opportunity to voice concerns and opinions about pandemic control policies affecting them. But how is that best done? The Centers for Disease and Control has piloted a process for public meetings to seek community input (Centers for Disease Control and Prevention, 2005). Theirs is one of many possible means. Others include polling, internet interactions, and meetings in places of business, worship, or study. Research is needed to determine the effectiveness of these and other strategies for various types of information gathering from the community.

Research. Perhaps the most frequently recognized research need is for an effective vaccine and a means of cheaply and quickly producing antiviral medications. In advance of the emergence of the next variant transmissible among humans, the only influenza viruses we have to guide the development of pharmaceuticals is the present avian variant and those from prior epidemics. To better understand the 1918 pandemic, one set of researchers recovered the H1N1 virus from a preserved lung specimen and determined the complete gene sequence (Tumpey, 2005; Taubenberger, 2005). Publication of the sequence, with the potential for its misuse for terrorism, was controversial (Sharp, 2005; Von Bubnoff, 2005). The National Science Advisory Board for Biosecurity (NSABB), which was consulted about publication of the findings, concluded that the potential benefits of publishing the information outweighed the potential risks (Sharp, 2005).

Development of a vaccine for pandemic influenza will, by definition, take place in the context of a pandemic. The urgent need for a vaccine could bring pressure to lower the time-consuming safety standards for testing it, thereby increasing the chances of developing an ineffective vaccine or one with serious side-effects. This has implications for those on whom a vaccine would be tested, as well as the populations in which the final product would be used. Moreover, the pharmaceutical companies developing the vaccines will be vulnerable to litigation following adverse events if the vaccine has side-effects. If the government is pressuring them to move quickly, it may also be obligated to modulate their liability accordingly (WHO, 2005).

Research needs pertaining to pandemic influenza extend beyond biomedicine to ethics itself. How do public health agencies identify and address ethical issues in emergencies? How prepared are public health practitioners to participate in ethical deliberation? What organizational structures are needed to identify ethical concerns and to establish ethical public health policies and practices?

Opportunity costs. While a pandemic like the one of 1918 would seize the attention of the public by virtue of the speed of its devastation, there are many other endemic public health threats that are equally devastating, though acting over a longer period of time. Some, such as diarrheal disease, one of the most frequent causes of death worldwide, are so common that they are regarded as normal and unalarming. It is easier to amass resources for a sudden, dramatic event than for one that has become routine. However, resource accumulation inevitably means resource reallocation. Will preparation for pandemic influenza occur at the expense of programs for other public health concerns? Alternatively, might our preparation for public health emergencies be done in a way that enhances our overall public health infrastructure, thereby benefiting even the more routine needs?

Recommendations

Anticipation of pandemic influenza has stimulated several attempts to articulate core values in public health that should shape the field’s understanding of ethics and enable the ethical practice of public health in the context of a pandemic. Although the immediacy and intensity of a deadly pandemic has accelerated thinking about ethics, it has also narrowed the perspective. The urgent, dramatic, and
transient nature of a pandemic brings to center stage the temporary emergency measures that may be necessary to mitigate its effects. However, an emergency frame of mind not only redirects one’s thinking from endemic and routine concerns of public health, it threatens to draw resources away from them. Moreover, remembering the non-epidemic concerns of public health can be important for pandemic preparation: doing so helps one see ethical facets of an epidemic that are less obvious to a mind focused on an emergency.

While advances in ethical deliberation about the distribution of scarce resources for the protection of the public’s health is welcome, the pandemic should also be examined from the context of perennial public health concerns, such as “ensuring that the basic resources and conditions necessary for health are accessible to all,” as stated in the Public Health Code of Ethics. Those basic resources include, for example, housing, a safe work place, and clean air. Remembering these fundamental needs will raise new issues when considering the ethics of pandemic influenza responses, such as the allocation of public health resources. In such a light, a higher priority may be given to those resources that will equip a government to address an important aspect of the pandemic while also addressing endemic public health needs and goals. Examples would include resources for disease surveillance, development of skills for inter-institutional collaboration and coordination, development of means to receive community input into the processes of making and evaluating policies affecting the health of the public, and enhancing the ability of public health agencies to identify and address ethical issues.

A second recommendation is obvious but worth mentioning. If left unsaid, there is a real risk it will remain left undone. The ethical deliberation over the public health response to pandemic influenza must not end with deliberation; it must translate into training and actual practices in the day-to-day delivery of public health. This will require the writing of policies and the development of tools for training and evaluating the implementation of the policies. Public health practitioners, those who direct health departments and interact with the public, will have much to say about this process. They know intimately the constraints on implementing such practices, including mandates to enhance competencies in an ever growing number of areas while also experiencing cuts in resources.

In addition, although academic ethicists bring a valuable knowledge of the ethics literature, very few have worked in a health department where needs are encountered and decisions are implemented. For this reason they risk overlooking some ethical concerns or prescribing actions that are unrealistic or perhaps even irrelevant. Deliberations about public health ethics require the insights of practitioners, even though they are unlikely to have formal training in ethics. This can occur through dialog between academic ethicists and public health practitioners and by providing ethics training to practitioners.

In sum, our greatest chances of responding ethically to pandemic influenza lie in remembering the ethical concerns of endemic public health, by working closely with public health practitioners to identify practical measures, and equipping public health practitioners to identify and address ethical issues.
References


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World Health Organization [c], Project on Addressing Ethical Issues in Pandemic Influenza Planning: Draft paper for working group one: Equitable access to therapeutic and prophylactic measures. October 2006. Available at http://www.who.int/entity/eth/ethics/PIEthicsdraftpaperWG120oct06.pdf.*


Appendix A

The Public Health Code of Ethics and Pandemic Influenza

The US Public Health Code of Ethics was not written specifically with a few to pandemic influenza. Rather it was written as a touchstone to remind people of key values in public health when considering the ethics of an issue. The 12 principles of the Code and a sample of the ethical issues they raise for public health preparation for and response to pandemic influenza are presented in Table 1.

Table 1. The 12 principles of the public health code of ethics sample implications for pandemic influenza.

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<tr>
<th>Ethical Principle of the Code</th>
<th>Example Implications for Pandemic Influenza</th>
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<tr>
<td>1. Public health should address principally the fundamental causes of disease and requirements for health, aiming to prevent adverse health outcomes</td>
<td>♦ What are the factors causing people in Southeast Asia to live in such close proximity to the birds they are raising? Can we lessen the likelihood of an epidemic by addressing those factors?</td>
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<td>2. Public health should achieve community health in a way that respects the rights of individuals in the community.</td>
<td>♦ Limiting transmission via social distancing should be achieved with the minimum constraint on civil liberties. ♦ Extra protection will be needed for people with impaired or diminished autonomy, such as prison inmates. ♦ The principle of informed consent will have many applications. One will be community trials of a vaccine for the pandemic variant.</td>
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<td>3. Public health policies, programs, and priorities should be developed and evaluated through processes that ensure an opportunity for input from community members.</td>
<td>♦ Communities should have input into the disease-control policies affecting them. Input should be sought before, during, and after the epidemic.</td>
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<td>4. Public health should advocate for, or work for the empowerment of, disenfranchised community members, ensuring that the basic resources and conditions necessary for health are accessible to all people in the community.</td>
<td>♦ How will the epidemic be addressed in ways that don’t exacerbate existing racial and ethnic disparities? ♦ What provisions will be made for prisoners, who have low social status and few freedoms?</td>
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<td>5. Public health should seek the information needed to implement effective policies and programs that protect and promote health.</td>
<td>♦ Decisions with ethical implications should be informed by scientific reasoning. For example the effectiveness of various control measures should be evaluated through mathematical modeling before they are implemented.</td>
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<td>6. Public health institutions should provide communities with the information they have that is needed for decisions on policies or programs and to obtain the community’s consent for their implementation.</td>
<td>♦ How will communities be informed about the risks and needed actions in a pandemic? ♦ How will we prevent or lessen misinformation or fear-mongering?</td>
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<th><strong>7.</strong> Public health institutions should act in a timely manner on the information they have within the resources and the mandate given to them by the public.</th>
<th>♦ Ethically, the most important component of response to a pandemic is preparation before it occurs, so that when it occurs, public health practitioners can act swiftly, skillfully, in a coordinated manner, and ethically.</th>
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<td><strong>8.</strong> Public health programs and policies should incorporate a variety of approaches that anticipate and respect diverse values, beliefs, and cultures in the community.</td>
<td>♦ Virtually every public health action will need to be implemented in Spanish as well as English.</td>
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<td><strong>9.</strong> Public health programs and policies should be implemented in a manner that most enhances the physical and social environment.</td>
<td>♦ What other needs of the public will go unmet because resources are diverted to preparation for a potential pandemic? ♦ How can we effectively respond to the pandemic without undermining the public’s trust. Failing to do so will compromise our ability to implement other programs in the future.</td>
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<td><strong>10.</strong> Public health institutions should protect the confidentiality of information that can bring harm to an individual or community if made public. Exceptions must be justified on the basis of the high likelihood of significant harm to the individual or others.</td>
<td>♦ What personal information is necessary for monitoring an epidemic, and what protections should be given to that information?</td>
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<td><strong>11.</strong> Public health institutions should ensure the professional competence of their employees.</td>
<td>♦ How will health department employees be trained in ethical decision-making?</td>
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<td><strong>12.</strong> Public health institutions and their employees should engage in collaborations and affiliations in such a way that they build the public’s trust and the institution’s effectiveness.</td>
<td>♦ The responsibilities of the government, private companies, and civic organizations must be clear in order to achieve efficient disease control and to minimize the effects of the pandemic.</td>
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Appendix B
Websites providing background information relevant to pandemic influenza ethics*

International, national and US state pandemic flu plans


History


General


*All sites accessed online May 21, 2007.