

SYMPOSIUM

An Ethics Framework for Public Health and Avian Influenza Pandemic Preparedness[†]

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PART 1: GENERAL PUBLIC HEALTH ETHICS FRAMEWORK

Public health as an organized discipline began more than 100 years ago to improve the health, primarily, of populations rather than of individuals. Given its population-based focus, however, public health is forever facing dilemmas concerning the appropriate extent of its reach and when the work of public health professionals is infringing on individual liberties in ethically troublesome ways. Nonetheless, there have been few attempts to articulate an ethics of public health, despite the discipline's long and impressive history. Bioethics, as a discipline, helps health care professionals identify and respond to moral dilemmas in their work. This paper suggests that the contexts out of which bioethics emerged — medical care and human research — were oriented to a different set of concerns than those typically occurring in public health. While the founders of bioethics articulated principles equally relevant for public health, the more specific action guides and codes of health

care ethics that have followed are an imperfect fit for public health. Codes of medical and research ethics generally give high priority to individual autonomy, a priority that cannot be assumed to be appropriate for public health practice. A framework of ethics analysis geared specifically for public health is needed, both to provide practical guidance for public health professionals and also to highlight the defining values of public health, values that differ in morally relevant ways from values that define clinical practice and research. A first attempt at such a framework is offered here.

PUBLIC HEALTH

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. By maintaining a safe water supply, immunizing school children, or engaging in epidemiologic research, public health seeks to ensure societal conditions under

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which people can lead healthier lives [1], minimizing threats to our health “that can be averted or lessened only through collective actions aimed at the community” [1]. The providers of public health interventions often are governments, rather than private practitioners. Indeed, the provision of health services, generally the domain of medicine, becomes the responsibility of public health departments when provided by public clinics or hospitals.

Public health interventions date back more than three centuries. In 1701, Massachusetts passed laws for isolation of smallpox patients and for ship quarantine [1]. In the early 1800s, Edward Chadwick demonstrated in England that differences in social conditions led to a more than twofold difference in life expectancy between upper and lower classes. Also in the 1800s, Lemuel Shattuck implemented in Massachusetts the first system of vital health statistics [2]. Governments began conducting investigations of housing conditions and garbage heaps and mapping them in relation to outbreaks of disease [2], and by the end of the 19th century, state and local boards of health were being created to enforce sanitary regulations [1]. By the early 20th century, public health was seen as cost effective as well as useful [2], and more money was directed to public health programs. During World War II, given the need for a healthy population for the military, the Public Health Service established the Center for Controlling Malaria in the War Areas, later the Centers for Disease Control and Prevention. Epidemiology developed as the science of public health, to study “the distribution and determinants of health-related states and events in specified populations and [to apply this knowledge] to the control of health problems” [3].

Today, public health practitioners use tools in addition to epidemiology to accomplish their work, still focusing primarily on community-wide, typically prospective, approaches to improve

health. Some public health functions — surveillance, vital statistics, disease and injury reporting, and disease registries — relate to epidemiology and the collection of data. In addition, practitioners investigate outbreaks, conduct contact tracing, provide health education and other preventive interventions, and conduct research related to public health. Last, public health professionals sometimes create or enforce health related regulations and legislation — for example, mandating screening, treatment, immunizations, or, rarely, quarantine. States’ authority to pass laws to improve the public’s health dates to the 19th century and is referred to as the “police power,” “coercive action under state authority ... to encourage educational efforts ... or to seize property, close businesses, destroy animals, or involuntarily treat or even lock away individuals” [4]. These various public health tools and functions, while together successful in decreasing morbidity and mortality, nonetheless raise questions of ethics in terms of the means by which their successes are achieved.

BIOETHICS AND PUBLIC HEALTH

Bioethics helps health professionals and public-policy makers recognize moral dilemmas in health care and biomedical research and provides principles and moral rules to navigate through these dilemmas [5]. Dating to the 1960s and 1970s, bioethics grew out of questions of fairness in resource allocation, moral issues raised by new technologies, and a lack of oversight in human subjects research. The public was swept up in debate about whether the first artificial kidney center should allocate scarce resources based on social criteria, and whether Karen Ann Quinlan should be kept alive artificially when she had no meaningful cognition. In 1969, the Institute of Society, Ethics, and the Life Sciences (now the Hastings Center) was

created to address questions of bioethics and to provide frameworks by which to analyze contemporary moral dilemmas in medicine and science [6]. In 1974, after several reports of United States government sponsored research that compromised the rights and welfare of study subjects, a new national commission issued the Belmont Report [7], which included ethics principles to guide the conduct of human subjects research — beneficence, respect for persons, and justice. Early framers of bioethics elaborated on these principles and provided examples of how they were useful in analyzing dilemmas from other areas of health care, not just research [8].

These early framers argued that, a priori, no principle ought to have moral superiority over any other. At the same time, the issues that animated bioethics in the early years — the need to tell patients and research subjects the truth, the right to refusal of care or research participation — were ones where the principle of respect for autonomy, perhaps given too little moral attention previously, was now given preeminent moral status [9-11]. Informed consent, a practical application of the autonomy principle, became a hallmark of the new bioethics, and codes of ethics for clinical practice, while still emphasizing the need not to harm the patient, added clauses requiring physicians to “best protect the dignity of man in patients or research subjects” [12].

That contemporary medical ethics or research codes have made the right to non-interference central, given the context out of which they emerged, is understandable. That public health practitioners, lacking guidelines of their own, must turn to these same codes for professional moral direction, however, is more problematic. In rare instances, existing medical or research codes do discuss traditional public health functions, such as breaching patient confidentiality to report diseases to the state [13]. In such instances, however, the

physician’s behavior is presented as an allowable exception to usual ethics rules, in the name of public health. At best, this leaves public health professionals needing to muddle through most other situations on their own; at worst, it could lead them, or even the public, to assume that public health is the branch of health care sanctioned by bioethics to make exceptions to existing ethics rules at will, in the name of public health and safety. Indeed, it is in great part because such power is vested in public health by law to safeguard health that a code or framework of ethics, designed specifically for public health, is so very important. The need for a code of ethics for public health, then, might be viewed as a code of restraint, a code to preserve fairly and appropriately negative rights of citizens to non-interference.

A code or framework of public health ethics must emphasize positive rights as well, however. Public health has affirmative obligations to improve the public’s health and, arguably, to reduce certain social inequities. A framework of public health ethics is needed to address such social justice functions of public health as well. While frameworks have been put forward in medicine to help clinicians think through the ethical issues in a clinical case [14, 15], no analogous framework is available for public health practitioners.

We live in a morally pluralistic society, and it is inevitable that moral appeals will conflict when trying to determine appropriate public policy. An attempt at a framework for public health ethics is offered here to help public health professionals recognize the multiple and varied moral issues in their work and consider means of responding to them.

AN ETHICS FRAMEWORK FOR PUBLIC HEALTH

A six-step framework for public health is proposed for consideration [16]. This is not a code of professional ethics,

which more likely would address general norms and expectations of professional behavior and likely would be the product of a professional society. Rather, this six-part framework is an analytic tool, designed to help public health professionals consider the ethics implications of proposed programs, interventions, research initiatives, and policy proposals.

1. What are the public health goals of the proposed intervention, policy, or program?

The first step for any proposed public health program is to identify what are the program's goals. These goals generally ought to be expressed in terms of public health improvement, that is, in terms of reduction of morbidity or mortality. For example, an HIV screening program should have as its ultimate goal fewer incident cases of HIV, not simply that a certain proportion of individuals will agree to be tested. A health education program in cardiac risk reduction should have as its ultimate goal, or be a piece of a larger program with the ultimate goal, that individuals will have fewer heart attacks, not simply that individuals will learn new information or even that they will change their behavior. A research study should have as its goal, or be a piece of a trajectory with the goal, that findings, if positive, will be implemented with the target population and improve its health status. While more proximate and process goals (such as whether individuals will learn health information or whether they will agree to be tested) are a critical piece of program planning and evaluation, and may be crucial steps to achieving health improvement, the fundamental goal of decreased morbidity and mortality is the outcome by which the program or series of programs ultimately must be assessed. This is not to say that each individual program or research study must achieve this end. Epidemiologic studies may provide descriptive data that lead scientists years

later to develop an intervention that will lead to a reduction in morbidity or mortality; a health education program may be one of multiple and varied interventions that together reduce risks and ill health. The argument put forth here, however, is that public health programs, interventions, or studies must be designed with an awareness of what the relationship is between this program and an ultimate reduction in morbidity or mortality.

Of course, other types of benefits, generally social benefits, can accrue from public health programs as well. Public health programs can result in greater employment, for example, as well as less tangible benefits, such as coalition building or the strengthening of communities. These benefits are extremely important and should be given strong consideration. They are, however, either the incidental or intermediary outcomes of public health programs rather than programs' final goal. If a program has as its goal to increase employment for its own sake (rather than, for example, to increase employment as a means to lower psychological morbidity or as a means to improve socioeconomic status to lead to improved health), or if a program has as its ultimate goal to strengthen communities (rather than to strengthen communities as a means to decrease interpersonal violence or as a means to help watch out for the well-being of the young or old persons in the community), then the program primarily is a social program, not one of public health. As described further below, a reduction in morbidity and mortality need not nor could not be the goal of every individual public health intervention or program; individual public health programs, however, should not be undertaken that are not part of a larger package of programs whose combined goal is the reduction of morbidity and mortality.

According to this view, an intervention whose goal is to improve access to care among hard-to-reach populations has

an extremely relevant public health goal, assuming, of course, the program is effective in improving access. Other examples of interventions designed to reduce social inequalities will be discussed further in Step 5.

Also relevant when considering public health goals and benefits is to whom the benefit will accrue. Public health interventions often are targeted to one set of individuals in order to protect other citizens' health. Partner notification programs or directly observed therapy for tuberculosis are designed, primarily, to protect citizens from the health threats posed by others. In some contexts, public health programs are designed, primarily, to protect individuals from themselves, revealing that much of public health is inherently and unabashedly paternalistic. Health education campaigns, blood pressure screening, seat belt laws, and 55 mph speed limits, while motivated in part by social concerns about costs are, I suggest, motivated primarily to further individuals' ability to protect their own health. Restricting someone's liberty to protect him or herself, or restricting liberty to protect a different person, pose different ethical burdens, discussed further in Step 3.

2. How effective is the intervention, policy, or program in achieving its stated goals?

Proposed interventions or programs are based on certain assumptions that lead us to believe the programs will achieve their stated goals. Step 2 asks us to examine what those assumptions are, and what data exist to substantiate each of them. The cardiac risk-reduction program would have as its ultimate goal to reduce fatal and nonfatal cardiac events. The assumptions of this education program (or the larger effort of which it is a piece) are that the program will reach individuals at risk of cardiac events; those individuals will learn the risk reduction messages; individuals will change their behavior (e.g., stop

smoking, change diets, or increase exercise) in ways suggested by the program; these changes would not have occurred without the program; and the behavior change in itself will result in fewer cardiac events. While many health education programs are very effective at transmitting information that recipients learn and understand, programs generally are less successful at inducing behavior change [17, 18]. Thus, while a rather narrow evaluation may demonstrate success (in terms of participants understanding the message) a program ultimately cannot claim success if behavior is unaffected, and morbidity and mortality rates remain unchanged.

This is not to suggest that each program must reduce morbidity by itself. Individual health education or screening programs, for example, might be pieces of larger initiatives to reduce cardiac morbidity and mortality. Data may show that multiple education campaigns in different formats and with different messages are required to induce widespread behavior change. Multi-dimensional efforts are appropriate and useful, if data show that the combination is likely to evoke the desired result. Again, however, if the multiple approaches are simply hypothesized or assumed to reduce illness events, then further research must be done; a public health program is not yet justified.

This step of examining existing data in order to challenge our assumptions and implement only data-based policies or programs is often neglected in public health. One can assume that this is not because professionals are indifferent to whether their methods relate to their outcomes but because we simply assume they do, and we neglect to find data that prove us right or wrong. Thus, we introduce a program based on the assumption that some number of people who learn that cigarettes cause asthma and lung cancer will quit or call for HIV screening assuming that individuals who learn they are infected will begin to use condoms in sexual

relationships. It is when our assumptions seem most intuitively obvious that we are at greatest risk of neglecting to determine to what extent they are supported by real evidence.

While all programs must be based on sound data rather than informed speculation, the quality and volume of existing data will vary. The question for policy and ethics analysis, then, is how much data is enough to justify a program's implementation? As a rule of thumb, the greater the burdens posed by a program — for example, in terms of cost, constraints on liberty, or targeting particular, already vulnerable segments of the population — the stronger the evidence must be to demonstrate that the program will achieve its goals. Indeed, because many public health programs are imposed on people by governments and not sought out by citizens, the burden of proof lies with governments or public health practitioners to prove that the program will achieve its goals. Thus, if at least some data do not exist to demonstrate the validity of a program's assumptions, the analysis can stop right here, and, ethically, the program should not be implemented. Conversely, the presence of good data alone does not justify the program; it allows us to move to the next stage of the analysis.

3. What are the known or potential burdens of the program?

If data suggest that a program is reasonably likely to achieve its stated goals, then the third step of the framework asks us to identify burdens or harms that could occur through our public health work. Step 4 of the framework, then, will address how these harms or burdens could be minimized, and Step 6 will address how to balance expected benefits against expected burdens. While a variety of burdens or harms might exist in public health programs, the majority of burdens will fall into three broad types: Risks to privacy and confidentiality, especially in data collection

activities; risks to liberty and self-determination, given the power accorded public health to enact almost any measure necessary to contain disease; and risks to justice, if public health practitioners propose targeting public health interventions only to certain groups. Different types of burdens are more or less likely to result from different types of public health activities.

Disease surveillance and vital statistics, designed to monitor health and population trends, raise potential privacy concerns, especially since data collection is mandatory, data often are individually identifiable, and, in many cases, are publicly available. While the data collected are not considered very personal nor sensitive by most persons, everyone has his or her own "boundary of privacy." Further, for some individuals, particular elements of vital statistics such as paternity or cause of death could be seen as troubling invasions of their privacy. Finally, vital statistics and other publicly collected data can reveal patterns about ethnic groups or neighborhoods that may be stigmatizing or otherwise harmful.

Communicable disease reporting raises privacy concerns as well, but the infringement and risks potentially are greater, since names are reported only of those who have reportable (and often socially stigmatizing) conditions. Given that individuals typically want the ability to control whether and to whom private information is disclosed, disease reporting carries the additional risk of a breach of confidentiality if security measures are not followed or do not work. For some, there is a risk of privacy infringement only to the extent that confidentiality is not maintained, and harms such as social stigma or loss of employment ensue from unwarranted disclosure. For others, the privacy infringement is viewed as a wrong in itself, regardless of whether any tangible harm ensues.

Disease reporting is an example of a public health function that at least on its

face is distributionally unfair, in that the burdens of the program are borne by those with the disease, generally for the benefit of others who do not have the disease. This unevenness of burdens and benefits, (described below) may be justified in certain instances, when the benefits are important, and when there are no less burdensome ways to achieve them. Unevenness in benefits and burdens is never appropriate, however, if groups are burdened in ways that are arbitrary and without public health justification. Further, a program that does not target particular groups explicitly may, in fact, lead to targeting in its implementation. One study, for example, suggested that doctors are more likely to report a patient with HIV to the health department if the patient is black and is male [19], despite language in the statute requiring the reporting of all persons with HIV. The appropriateness of creating targeted public health programs justified by epidemiologic data will be discussed further in Step 6 below.

Contact tracing, which sometimes accompanies communicable disease reporting, poses additional privacy risks. Not only are an individual's name and condition reported, but individuals are asked to provide the names of other (usually sexual) contacts they have had. Obviously a privacy infringement in itself, contact tracing also invades the privacy of individuals whose names are disclosed, who could not decide for themselves whether to release their names to officials. As stated above, harms can occur if confidentiality protections fail; and individuals can feel wronged simply by virtue of the violation of their privacy. As above, justice concerns also arise if contact tracing programs are not implemented fairly.

Health education poses interesting questions in terms of ethics. In certain ways, health education is the ideal public health intervention, since it is completely voluntary, and it seeks to empower people to make their own autonomous decisions

regarding their health, once equipped with accurate information. From an ethics perspective, education clearly is preferable to other preventive strategies, to the extent that they are equally effective, because it poses few, if any, burdens. Health education, however, while an essential component of most public health campaigns, will never be appropriate for all situations. First and foremost, education may not work in all settings, and more burdensome measures may be required. Second, to increase effectiveness, educational programs may introduce ethically questionable practices such as manipulation or even coercion. A smoking cessation program, for example, may try to manipulate attitudes by suggesting that smokers are unpopular and providing only partial or even false information in order to achieve its ends [20]. All health education campaigns potentially are paternalistic, suggesting that certain ways of being (e.g., in greater aerobic health) are universally valued. Additional work is needed to examine when and where paternalism in public health is justified, especially since biomedical ethics generally has steered professionals away from paternalism, except when specifically requested by patients [21]. Third, health education programs may target messages to certain audiences. While, as described above, often justified on public health grounds (e.g., epidemiologic data demonstrate that this is the population at greatest risk, so their pictures will go on the billboards and messages will be promoted on the radio stations they listen to), the social and even public health ramifications of targeting must be seriously considered. Social stigma can result if, for example, certain subgroups of the population are assumed to be the ones who carry sexually transmitted diseases, and opportunities for public health intervention will be missed entirely if we all come to believe, through well-intentioned media campaigns, that only certain groups are at risk for domestic violence or HIV. Finally,

health education campaigns may be accompanied by incentives. Incentives generally are considered ethically less problematic than coercive measures or threats, but even incentives could be ethically questionable in certain contexts, such as when financial incentives are given for using particular types of birth control or avoiding pregnancy [22].

Public health research

Human subjects regulations already describe the types of harms that could occur through research participation. These include medical risks if the research is clinical and psychological or social risks if the research is epidemiological or social science. In recent years, there has also been increased attention on the personal and social burdens that can result from injustice or exploitation in research when certain populations are disproportionately disadvantaged or privileged through research participation.

In addition to these well articulated risks, however, is the harm that can come through public health research findings never being implemented into public health policy or practice. Any study that is conducted imposes, at very least, the burden of inconvenience to those who participate and may, of course, pose more significant risks to the individuals or communities who volunteer. An institutional review board allows research to go forward because of the benefits expected to emerge from study findings. If research findings are never translated into policy, however, — a situation that recurs far too often — no benefits accrue from the research. In such instances, participants were wronged through a misleading (albeit, not deliberately so) informed consent process, and the risk-to-benefit ratio could rarely be considered favorable.

Regulations and legislation, strictly speaking, are coercive, since they impose penalties for noncompliance. As such, they pose risks to liberty and self-gover-

nance. While many of these measures, like reduced speed limits, childproof bottles, and immunizations, have demonstrated efficacy, they nonetheless are the most intrusive approach to public health. Edmund Pellegrino writes,

Involuntary and coercive measures ... must be undertaken with a clear perception of the dangers they pose to a democratic society: loss of personal freedom to choose a lifestyle, dependence upon governments to define values and concepts of the good life, and the imposition of cultural homogeneity. Involuntary measures also assume a benign, wise, and responsive government — something history finds singularly rare [11].

While threats to autonomy are the most obvious threat posed by public health regulations and legislation, they can, in some circumstances, be associated with physical risks, or risks to individuals' health, as well. Federally approved and mandated vaccinations carry health risks to individuals; and widespread spraying to prevent the spread of mosquito-borne viruses can cause proximate health problems to some individuals who inhale the chemicals. Finally, in this instance as well, the law can impose by design or inadvertently threats to justice if regulations pose undue burden on particular segments of society.

4. How can burdens be minimized? Are there alternative approaches to achieve the same goals?

This piece of the framework requires us to minimize burdens, once burdens have been identified. If Step 3 suggests that a program or policy carries potential or actual burdens, we are ethically required to determine if the program could be modified in ways that minimized the burdens, while not greatly reducing the program's efficacy. Public health professionals, for example, when ready to report a patient's name and disease to the state, should inform patients that their names, by law, must be reported to public health

authorities, but that the law also requires that they be reported confidentially. While reporting programs are not optional, the policy is more respectful of patients if patients are adequately informed. Contact tracing programs, similarly, pose threats to privacy and to confidentiality, and yet contact tracing programs, strictly speaking, are voluntary, in that no sanctions are imposed on citizens who refuse to cooperate. It is ethically incumbent upon public health practitioners to inform individuals sought for contact tracing of their right to refuse disclosure of names of their partners altogether, as well as of their right to inform partners themselves, have a known provider do it, or have partners contacted by an agent of the state.

If two options exist to address a public health problem, it is required, ethically, to choose the approach that poses fewer risks to other moral claims such as liberty, privacy, opportunity, and justice, assuming benefits are not significantly reduced. Making this assessment relies on the existence of sound data. If data show that a voluntary screening program will test essentially equal numbers of individuals as a mandatory one, because almost no individuals refuse testing when asked, then it would be ethically improper to implement a mandatory program [23]. If disease surveillance is equally effective with unique identifiers as with names, a program of unique identifiers is the morally preferable choice.

5. Is the program implemented fairly?

This piece of the framework corresponds to the ethics principle of distributive justice, requiring the fair distribution of benefits and burdens [8]. Public health benefits, such as clean water, cannot be limited to one community alone, nor can a single population be subject to disproportionate burdens. HIV screening programs, for example, cannot be implemented only in poor or minority communities without strong justification [24]; cardiac risk

reduction programs cannot be targeted exclusively to white men, when women and minorities also are at substantial risk of heart disease. That programs be implemented fairly is even more important if restrictive measures are proposed. Injustice is wrong for its own sake, and also for the material harms it can evoke. Social harms result if social stereotypes are created or perpetuated, such as the stereotype that only certain segments of the population are vulnerable to sexually transmitted diseases. In addition, real public health harms result when individuals do not believe that they are at risk of disease because they were never targeted in education campaigns, or because their own doctors never screened them for a condition because they didn't fit the popular risk profile [25]. This does not mean that programs or resources must be allocated equally to all communities — rather, the allocations must be fair. That is, differences cannot be proposed arbitrarily or based on historical assumptions about who might be at risk. Rather, again, unequal distributions of programs must be justified with strong attention to data. Moreover, the social consequences must be considered if communities are allotted resources unequally, and these must be balanced against the benefits to that community or others.

Discussed less frequently is whether or the degree to which public health has any explicit role in righting existing injustices, especially given the strong link between poor living conditions and poor health outcomes. How much is there a positive responsibility on the part of public health professionals to advocate for better housing, better jobs, and better access to food programs, since this might be the best route to improving the public's health? Several notions of justice allow and even require unequal allocation of benefits in order to right existing inequities. John Rawls posits that justice requires us to allocate our resources

unequally in order to help the least well off [26]; Norman Daniels discusses the need for all members of society to be brought to a level of “species-typical normal functioning” [27], which also could result in the unequal distribution of certain resources. Admittedly, not all philosophers have adopted this notion of justice, distinguishing preexisting societal inequities that are unfair (because they resulted from a person or community having been wronged by an identifiable source) to be the ones where intervention is owed, from those inequities that merely are unfortunate (that is, due to acts of God or circumstance) where no intervention would be morally required [28].

Public health, I would argue, does have this positive responsibility to engage programs and interventions that seek to lessen societal inequalities, at very least where those inequalities (as essentially all do) relate to health outcomes. Indeed, it is hard to find a more powerful predictor of health than class [29, 30], and it is thus an appropriate, if not obligatory, function of public health to reduce poverty, substandard housing conditions, and threats to a meaningful education, to reduce, if for no other reason, the incidence of disease.

6. How can the public health benefits and the accompanying burdens be balanced? What procedures will best allow for the fair consideration of differing views?

If it is determined that a proposed public health intervention, policy, or program is likely to achieve its stated goals, if its potential burdens are recognized and minimized, and if the program is expected to be implemented in a nondiscriminatory way, a decision must be reached about whether the expected benefits justify the burdens identified. Recognizing, of course, that public policy is based on multiple considerations in addition to ethics, the question must still be asked whether, from an ethics perspective, the program

should go forward. Health department officials and other public health professionals may not have the power to implement all programs that they think would be beneficial, but they do have a responsibility both to advocate for programs that do improve health and to remove from policy debate programs that are unethical, either because of insufficient data, clearly discriminatory procedures, or unjustified limitations on personal liberties. And yet while most reasonable people will agree in the abstract that burdens and benefits must be balanced, and that the most burdensome programs can be implemented only in the context of extensive and important benefits, disagreements can be all but guaranteed over the relevant details. Depending on one’s perspective, there will be differing views over how burdensome various programs are, such as having one’s name reported to the state, or requiring immunizations before starting school. Citizens can be expected to differ over how important it is to protect a water supply for future generations, particularly if it means significantly higher taxes or the prohibition of recreational use of public bodies of water, clearly a benefit, not only in terms of individual pleasure, but also in terms of community cohesiveness.

While disagreements of this nature are inevitable, decisions must be reached through a system of fair procedures. Procedural justice requires a society to engage in a democratic process to determine which public health functions it wants its government to maintain, recognizing that some liberty infringements and other burdens are unavoidable. There should be open discussion of what a society gains from good public health, and why such benefits often cannot be obtained through less communal or more liberty-preserving methods. Discussion, of course, also should address why other interests also have moral claim. Such a process, even when procedurally fair by most standards, must not result in decisions based solely on the will of the

majority. Indeed, deliberations, particularly around significantly burdensome proposals, must be scrutinized to ensure that the views of the minority are given due consideration. Highly burdensome programs should be preceded by public hearings, and not just votes, so that minority views can be heard and considered. At the same time, it is important to acknowledge that there always will be some number of persons who do not want their water fluoridated, do not want their children immunized, do not want to wear seat belts, and do not want speed limits on public roads. That there is dissent is insufficient justification for blocking a public health program; indeed dissent is inevitable in all proposals. Dissent must be considered, however, and deserves special attention if raised exclusively by a particular, identified subgroup, such as an ethnic minority, a particular age group, or residents of a particular neighborhood.

In balancing values and interests, the greater the burden imposed by a program, the greater must be the expected public health benefit, and the more uneven the benefits and burdens (that is, burdens are imposed on one group in order to protect the health of another), the greater must be the expected benefit. Programs that are coercive should be used to a minimum, should never be implemented when a less restrictive program would achieve comparable goals, and should be implemented only in the face of clear public health need and good data demonstrating effectiveness. Nonetheless, we are a pluralistic society, including with regard to our notions of ethics. Different states and communities will decide differently which public health activities are appropriate and which are overly burdensome. Ultimately, that different communities will enact different public policies, based on their own balancing of benefits and burdens may be indicative of a fair process, or at least a pluralistic process, steering local public health policy.

Of course, public policy is based on many factors in addition to public health

goals and ethical reasoning. Weighing alternatives according to this public health ethics framework should lead to an ethically acceptable option, but may not lead to the politically preferable one for a given time. That politics often takes a divergent and somewhat unpredictable path is not an excuse for abandoning ethics analysis when a public health proposal is up for discussion, however. Ethics analysis always must be conducted, both because bringing truth, fairness, and respect to one's work is right in itself, but also because, from a more utilitarian perspective, public health work will be more effective if we do. Engaging in the steps of an ethics analysis makes us meticulous in our reasoning, requiring us to advocate for interventions based on fact and not merely belief. Further, an ethics analysis holds us to high standards, not only for scientific method, but also for how respectfully we communicate with and involve constituent communities. The involvement of communities will help identify the public health threats divergent groups face and will create, if not partnerships, at least, one can hope, some reasonable trust. In order to succeed, the field of public health must garner some reasonable amount of public trust that the inevitable higher proportion of government involvement and population targeting imposed by public health, relative to other branches of health care, are appropriate and in these various communities' best interests. Public health professionals must go through the steps of an ethics analysis to assure the public of their integrity. The public must feel confident that public health professionals will offer only those proposals that will improve the health of the public, that proposed measures are minimally burdensome, and that a fair procedure has determined that the magnitude of the problem and ensuing benefits justify overriding the conflicting moral claims. It is reasonable to assume that the public will be concerned about which functions are necessary and which

are overly burdensome, offensive, or simply wasteful. This process, then, must be integrated, constant, and ongoing. The most important asset that public health can have is the public's trust that work is being done on its own behalf. In such a context, public health professionals can and must advocate for what they believe, on balance, are the ethically best approaches for furthering social justice and the public's health.

PART 2: FRAMEWORK APPLIED TO AVIAN INFLUENZA PANDEMIC PREPAREDNESS PROGRAMS

The following comments begin to provide examples of how this framework could be applied to avian flu. What follows is not an exhaustive analysis of the ethics issues raised by a potential avian flu pandemic, nor is it an exhaustive list of how the framework provided here could be used to help navigate the extraordinary public health and ethics challenges such a pandemic would precipitate. Rather, these comments help to illustrate how the framework might provide structure to thinking through a sampling of ethics issues raised by such a public health disaster.

Step 1. What are the goals of the public health program or intervention?

A. At the most general level, the goals of intervening in the face of an avian flu pandemic are obvious: to reduce the morbidity and mortality associated with the epidemic. On the ground, however, more specific goals must be identified, and the realization of these will lead to somewhat different courses of action and, in turn, somewhat different ethics considerations. One goal may be to reduce global incidence of the disease and limit the spread of the disease to the greatest extent possible. An alternative goal may be to protect one's own citizens to the greatest extent possible, thereby minimizing morbidity and mortality within one's own borders.

Alternatively, the goal may be to maintain as much of a society's infrastructure (either globally or nationally) as possible.

B. Articulating the overarching goals of pandemic preparedness and response is critical in order to design a plan of action. However, it is in articulating the goal of an avian flu preparedness and response effort that one can examine the ethical ramifications of the response. While we all belong to multiple communities, ranging from our family to our country to the world, articulating our overarching goals helps us to set priorities about where our commitments will be greatest.

Step 2. What are proposed interventions? How effective are they at achieving stated goals?

A. It is here that one must design a plan of action. In the case of avian flu, the plan would need to be very specific, delineating who is provided with vaccines and drugs, who must report for work, who shall be isolated or quarantined, and what types of data must be collected.

B. Once a plan of action is set, one must then examine whether the plan of action is likely to be effective in achieving the overarching goal. One would need to determine, for example, when isolation would reasonably reduce spread and which types of data are needed to improve the response. Importantly, one must try to distinguish between sound, "hard" data relevant to proposed interventions vs. logical assumptions about what might be effective. At the same time, much of the data one, ideally, would have on hand will not be available, and yet one will need to take action. Ethics reminds us that the more serious the public health threat, the better justified we are imposing burdens, including in the face of incomplete evidence.

C. One is always making an educated guess, and yet the stakes could not be higher. Non-governmental scientists as well as non-political appointees with relevant expertise must be included in devel-

opment of response plans, not only to increase the evidence base with which decisions can be made, but also to better assure the public that decisions are scientifically rather than politically motivated. There may be appeals to the “precautionary principle,” arguing that, when the factual underpinnings are insufficient to actually predict whether an action guide will be successful, one can still invoke the plan of action as a reasonable “precaution,” since the consequences of not acting can be so severe [31]. It is impossible to delineate the amount or quality of data required to justify a course of action. In the face of heightened mortality, however, the public will tolerate more restrictive measures, especially if experience begins to demonstrate that these measures are effective and maintain some amount of order.

Step 3. What are the known or potential burdens of the program?

A. This step requires leaders to identify, in advance if possible, the burdens associated with the approach they are proposing. Who is disadvantaged and in what ways are they disadvantaged? Most significant will be threats to liberty due directly to the various interventions imposed. There likely will be restrictions on travel, freedom to work, and freedom to associate. These liberty restrictions may be justified in terms of minimizing the chance of epidemic spread, but they pose a burden both psychologically and financially. There also will be threats to privacy and confidentiality once names are put on lists, contacts are traced, and the public potentially can act on its interest in learning who is at risk and who has the disease. Indeed, there is the potential for violent reactions targeted to those known to be vectors of a dangerous disease. There will undoubtedly be “wrongs” to people — citizens feeling violated for having names publicly shared — as well as tangible harms from disclosures of private information.

Public health programs often carry physical risks, and this is no exception. Interventions like medicines and vaccines will pose risks, although the public likely will be clamoring for any of these available. There will certainly be those infected in the line of duty. As above, public fear may result in interpersonal violence, and neighbors may further seek to deny needed provisions to those they suspect or know to already be ill. Finally, there will be justice violations. At baseline, access to health care, services, and a wide variety of important privileges are inequitably distributed in the United States, and one can predict that benefits and burdens associated with the response may inequitably be distributed as well.

Step 4. Minimizing burdens and identifying the least restrictive approach.

A. Burdens are inevitable, but they must be minimized to the greatest extent possible, without significantly altering the impact of a response. One important and effective means of minimizing the burden of many interventions is transparency, both in the preparation for and implementation of a pandemic response. The more the public can be informed about what avian influenza will look like, what strategies likely will be used in a response, and which interventions likely will unequally target certain groups, the more the public should be able to understand and, one hopes, accept, the approach being taken. Next, while it will be necessary to use and disclose individuals’ names for certain purposes, one must maintain the public health commitment to disclosing names only when necessary to fulfill a legitimate public health purpose. Anticipating that those who are isolated will have extraordinary needs is critical. Identifying public and private means of attending to requirements for food and communication will minimize one of the most significant burdens. Finally, questions inevitably emerge in public health ethics around the question

of whether response interventions should be voluntary or mandatory. While public health is granted extraordinary authority through its police powers to intervene when necessary, this does not mean that the most extreme response either is necessary or appropriate in all situations, even in the context of a public health crisis. It is likely that the public will voluntarily comply with many measures — particularly if those measures seem reasonable to them — out of their own fears of disease and death.

Step 5. Is the program implemented fairly? Is there justice in the distribution of the plan's burdens and benefits?

A. Step five of the framework asks whether the response is implemented fairly. There will be multiple ways that food, medicines, and needed emergency personnel can be rationed and distributed. What ethics requires, however, is that there is some rational system for the distribution of scarce resources and, more broadly, of what are viewed as benefits and burdens of the response. This system, then, should be one that can be justified to the public. For example, it is rational to impose travel and immigration restrictions during a pandemic response, while it is not rational to allow extra burdens or discrimination on U.S. residents whose national origin is the same as the epicenter of the pandemic. Fairness also requires consideration of compensation to those willing to come forward as emergency responders.

Step 6. Fair procedures for creating a preparedness plan and for implementation of a response.

A. During the response stage, one should involve and educate multiple stakeholders and should publicize in different communities what response plans will look like. How burdensome members of the public view isolation, name-reporting, or the inability to assemble with others, however, will vary tremendously from

person to person. Some will think the government response is too harsh, while others will view it as insufficient. Individuals will care differently about the need to safeguard against discrimination. The goal of involving the public — a form of procedural justice — is not to reach consensus, for consensus is impossible. Instead, this involvement not only attends to transparency — a critical duty out of both respect and minimizing burdens, as above — it also allows one to identify the source of objections. While objections can be anticipated, if they emerge systematically from within a racial, age, or class group, then it is necessary for public health professionals to reexamine those pieces of response plans. The interplay among sociocultural and political considerations within a response will be enormous. As such, we must do our best to maintain respect for the communities with whom we interact. This means not only disclosing information to them in ways they can best understand, but also trying to organize different neighborhood groups to work out their own response plans and report back their conclusions. Further, one can assume that involving the public will allow public health professionals to better refine their thinking, as considerations likely will be raised that were not apparent in their own planning.

In balancing competing preferences and views, general ethics guidelines for balancing benefits and burdens should be followed. The greater the burdens imposed on individuals, families, or communities, the greater the need for transparency and justification. Less burdensome interventions often can be implemented without prior public disclosure; heavily burdensome interventions clearly cannot. Conversely, the greater the external threat to the public's health, the lower the threshold for intervening, imposing restrictions, and delaying informing of the public. While transparency, justification, and accountability always are important, one

can sacrifice or, at least, postpone them in certain emergency situations when it is clear that threats are both imminent and severe. At the same time, however, to the extent that communicating the rationale for one's plan of action does not delay the plan's implementation, it always is important, in terms of both respect and strategy, to minimize burdens by providing the public with information. The pre-pandemic period is a critical time to engage the public. By the time of a crisis response, disclosures or discussions simply may be overruled out of expediency. Actions that can be anticipated and discussed months in advance may have the effect of minimizing how burdensome restrictive measures are perceived to be by those on whom they are imposed.

CONCLUSION

Public health ethics is intended to be practical. As such, ethics demands of us that we act now to work out plans of action and consider questions of both harm and of fairness in the preparation stage. The public should be engaged now and pushed to consider which responses are appropriate and make sense. It is in our ethical best interest to educate the public about public health, how public health accomplishes its work, and that the target group being protected is, indeed, the public. To the extent that the public currently takes for granted the daily work of public health — for example in maintaining a safe water supply, ensuring restaurants are safe, and imposing restrictions on unsafe products — the public may be less willing to accept interventions that are critical to achieving even some effective response in reducing the morbidity and mortality of pandemic flu.

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