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Pandemic Influenza Planning: An Extraordinary Ethical Dilemma for Local Government Officials

Tough Public Policy Choices Confronting America

The possibility of an influenza pandemic occurring within the next two decades is very real; the role of local governments in comprehensive preparation for this global threat is crucial. The federal government has provided broad guidelines for state and local officials who are ultimately responsible for emergency response and lifesaving services, vaccination and antiviral use, and the provision of other critical support. Much of this influenza pandemic preparedness has occurred under conditions of uncertainty, and these government actions may have unprecedented legal and ethical implications. This study evaluates the pandemic influenza policies of eight large U.S. cities to determine how Department of Health and Human Services recommendations with ethical and legal implications have been addressed. The authors find that several important aspects of these guidelines are vague in many plans, and input from key stakeholders is inadequate.

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The 1918 influenza pandemic killed more than 50 million people worldwide, with an estimated 675,000 deaths in the United States alone during the outbreak (DHHS 2007). A pandemic of this proportion occurring today would extrapolate to 1.9 million deaths in the United States and 180 million to 369 million deaths globally if public health interventions are not instigated (Osterholm 2005). The impact on cities, states, the nation, and the global community would be devastating. Experts note that there have been between 10 and 13 influenza pandemics in the world since the early 1700s, and they estimate that a pandemic will occur every 30 to 50 years (Knapp 2006). The last one occurred in 1968. Based on this information, the probability of another pandemic within the next quarter century is very real. The likelihood of its arrival means that emergency plans coordinating federal, state, and local responses must be in place. The role of local governments in the planning and implementation processes is paramount.

Planning for this health threat, however, can present numerous obstacles. Whether a pandemic will be caused by avian influenza or another virus is difficult to predict. While the federal government has stockpiled vaccine against the H5N1 strain, which is the most likely viral source, this vaccine has been shown to produce the desired level of antibody needed to reduce the risk of contracting influenza in only 45 percent of healthy adults in a clinical study (Progress Report 2007). Also, pandemics occur in waves and endure for at least 18 months. Government officials must be prepared to face the first wave without an effective vaccine and with a limited amount of antiviral medications. Experts note that the implementation of nonpharmaceutical interventions during this time period is perhaps the most crucial element in limiting the effects and dissemination of a deadly virus (Grinberg 2007). Such interventions may include hospital infection control, decreased social mixing and increased social distance, isolation and quarantine, and international travel and border controls.

A myriad of ethical issues will arise with the next influenza pandemic. Some of the decisions regarding these matters will be unprecedented. While banning public outings, closing public schools, and asking employees to stay at home may be troublesome measures for local public officials to undertake, the decisions regarding the allocation of limited resources such as vaccines and antivirals, the imposition of restrictive measures on the public such as isolation and quarantines, and the level of risk that the public workforce should be expected to face while assisting individuals infected with the influenza virus are much more formidable (Scanlon 2004; Upshur et al. 2007). While the federal government will provide only broad guidelines for state and local government actors, specific decisions regarding vaccination at the local level, maintenance of emergency response and lifesaving services, and provision of other critical needs may have unprecedented legal and ethical implications. Whether the next pandemic starts in the United States or abroad, it will only be a matter of time before local government officials see their first case. Extensive pandemic influenza preparedness is crucial, and much of this preparedness has occurred under

current conditions of uncertainty. These proposed interventions must take into account global interest and fundamental human rights if the American and international communities are expected to support restrictions that have the potential to impact individual civil liberties and national and world trade, travel, and economies.

The Potential Pandemic Strain: H5N1

An epidemic occurs when the population in a specific area is affected by the outbreak of a contagious disease. When this epidemic broadens its geographic area to include a region, nation, or the entire world, a pandemic occurs. According to public health experts, the avian flu should be considered a permanent pandemic threat. At the present time, the spread of highly pathogenic Influenza A virus subtype H5N1 has mainly been confined to animal populations. This virus is currently endemic in the bird populations of Southeast Asia, and outbreaks have occurred in Africa, Europe, and the Middle East (Gostin and Berkman 2007). Two of the three essential prerequisites for an influenza pandemic of this strain have been met on numerous occasions: (1) the identification of a novel strain in animal populations, and (2) viral replication causing the disease in humans (Gostin 2004). However, even though human-to-human transmission of avian influenza has occurred, the transmission has yet to be highly efficient; thus, the third prerequisite of a pandemic has not been fulfilled to this date. The H5N1 strain is sufficiently different from ordinary seasonal flu that individuals have little immunity to this virus.[1] This strain usually affects the tissues of the lower respiratory tract, resulting in the accumulation of large amounts of fluid in the lungs (Miller 2006). Death may result within 24 to 48 hours. The federal government drafted its pandemic influenza plan in 2005, after the H5N1 avian influenza virus had been documented in 16 countries. Since that time, presence of the virus has been noted in 60 countries, and approximately 300 people worldwide have been infected (Gostin and Berkman 2007). Of these infected individuals, 60 percent have been killed by the virus. If this strain is able to mutate into a form that is easily transmissible between humans, the stage for a global pandemic will be set. The mortality rate will depend on how many people become infected, the virulence of the virus, and the effectiveness of emergency preparedness plans.

While vaccination will be one of the most cost-effective interventions, a pandemic influenza vaccine most likely would not be available for at least six months. This six-month period results from the time needed to collect the virus, decipher its genetic makeup, develop a prototypic vaccine, and manufacture the final vaccine product, which must be evaluated by the Food and Drug Administration for use (Fauci 2006; Lister 2005). Currently, worldwide vaccination production is limited to only nine facilities. The existence of this small number of manufacturing facilities reduces production capabilities to an estimated 300 million to 424 million trivalent flu vaccines in the event of a pandemic outbreak (Emanuel and Wertheimer 2007; Lister 2005). This situation has left government officials with few options but to develop carefully planned vaccination distribution policies in order to maximize both the distribution of the vaccine and its effectiveness (Emanuel and Wertheimer 2007), and to develop emergency preparedness plans that incorporate other public health interventions focused on limiting the wide spread of the pandemic virus.

Emergency Management Framework

There are few natural disasters that have the capacity to significantly disrupt the economic and social underpinnings of society. Hurricanes, major earthquakes, and even volcanic eruptions are certainly capable of decimating towns or regions of the country. These natural occurrences pale in comparison, however, to the level of social, political, and economic disruption that a public health emergency such as an influenza pandemic would create. In fact, "an influenza pandemic has the potential to cause more deaths and illness than any other public health threat" (Milgrim 2007, 13). In the United States alone, current estimates predict an economic impact of $70 billion to $200 billion, 314,000 to 734,000 hospitalizations, and total deaths between 89,000 to 207,000 persons, depending on the severity of the viral strain (Haber et al. 2007; Lister 2005; Luke and Subbarao 2006).

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A recent poll found that 87 percent of Americans are unprepared for a public health crisis such as an infectious disease epidemic or food-born illness outbreak (Late 2007). While few disasters will offer advance notice, with proper planning and preparation, local officials and residents of a stricken area can reduce the unknowns that confound a normal response. The ultimate goal for residents is to reduce their own vulnerability, while the objective of municipal officials is to protect the public while minimizing interruptions to the operations of their governments (French, Goodman, and Stanley 2008). Emergency management requires much more than a rapid response to an emergency situation, and entails four phases that are common to all disasters: mitigation, preparedness, response, and recovery (Petak 1985; Waugh 1994; Waugh and Streib 2006). Mitigation includes evaluation of the risk presented by a potential disaster and attempts to minimize or eliminate these hazardous conditions. International efforts to mitigate the possibility of pandemic influenza from the H5N1 strain have included work to contain avian flu outbreaks among poultry and concentrated efforts to improve the laboratory diagnosis at the onset of an outbreak. The international community has also established early-warning networks in more than 75 countries and offered logistical and financial support to countries that have been hardest hit by this virus (Progress Report 2007). Preparedness plans of the U.S. government call for stockpiling enough vaccine to inoculate approximately 3 million Americans against the H5N1 virus and 16 million doses of antiviral drugs for treatment of exposed individuals. However, this stockpiling may be of little or no use, as the H5N1 strain tends to mutate, or the pandemic may be caused by a different virus.

Emergency management efforts frequently cross jurisdictional boundaries and often require the coordination of federal, state, and local responsibilities and authority (Waugh 1994). The National Strategy for Pandemic Influenza, which was issued by President

George W. Bush on November 1, 2005, outlines the responsibilities that individuals, industry, state and local governments, and the federal government have in preparing for and responding to a pandemic. The U.S. Department of Health and Human Services (DHHS) serves as the federal government's primary agency for response to a disease outbreak, while state, local, and tribal governments are responsible for detecting and responding to disease outbreaks, in addition to implementing activities to reduce the health, social, and economic consequences of an outbreak (DHHS 2007). Response and recovery in the event of a pandemic influenza outbreak require the collaboration and cooperation of these three levels of government. Also, businesses, community-based organizations, and faith-based organizations must have continuity of operations plans in the event of an influenza pandemic. Individuals and communities who are well prepared will fair better than those who are unprepared.

The Model for Influenza Preparedness

The DHHS has developed a pandemic influenza plan that provides the framework for the federal government's planning and response to the pandemic influenza threat. This strategic plan identifies key response actions, the roles and responsibilities of DHHS agencies and offices, and recommendations on the use of vaccines and antiviral drugs. The national plan also includes public health guidance for state and local partners that details how health departments and other local and state government agencies can prevent, mitigate, respond to, and recover from an influenza pandemic. Plans at the local level can be tailored to the needs of the specific local community. However, common efforts of these plans should include community preparedness and leadership, influenza surveillance, infection control, vaccine and antiviral drug distribution and use, public health communication, and public workforce support. In the event of a pandemic, local government officials have considerable responsibility, and they must be well prepared to meet a very broad spectrum of public health needs.

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Implementation of pandemic preparedness plans will have significant legal and ethical implications. The extent of the hardships that will occur, including disruptions to trade, travel, economics, and personal liberty, are consequences of a public health strategy that has been developed under conditions of scientific and political uncertainty. No one can predict with certainty when the next pandemic will take place; however, for this threat to become a reality, it requires only that the H5N1 virus mutate into a form that can be easily transmitted from one person to another. As a result, decision makers at all levels of government need to attempt to balance individual freedoms with the common good in order to minimize the human and economic harm that will result when another pandemic influenza outbreak occurs.

Ethical Concerns

Emergency management has evolved into a collaborative, dynamic, and flexible response that requires intergovernmental, multiorganizational, and intersectoral cooperation (Waugh and Streib 2006). While a national strategy for pandemic preparedness will focus on slowing the entry of the virus into the United States, local government officials will be responsible for implementing plans that address public health interventions and maintenance of the infrastructure of the community. The degree of hardship imposed by the next influenza pandemic will be significantly related to the quality of local government preparedness. While this planning occurs under several conditions of uncertainty, including the timing, virulence, and scope of the future outbreak, local preparation requires a public health strategy that considers both the legal and ethical implications of its implementation. The development of policy with respect to ethics and the implementation of policy in an ethical manner have become increasingly important for government in rebuilding public trust and ensuring that government officials and employees respond to situations in ways that are legally and morally standard (West et al. 1998).

Therapeutic countermeasures and public health interventions are the foundation of most plans, and these measures have the potential to create financial, political, and legal issues that must take into account economic interests and fundamental human rights in their resolution. Local government officials are faced with the task of weighing the advantages and disadvantages of their pandemic influenza plans. Responsibility and accountability to the public require that administrators and policy makers evaluate the potential risk associated with policies and practices (Hall and Jennings 2008). Ethical decision making, a fundamental basis of the democratic administration of policy, requires that considerable attention be given to the values and principles that guide the choices government leaders and employees make (Bowman and Knox 2008; Menzel 1993). They must consider the underlying values of each step and the potential consequences. Responsible risk taking requires that officials have respect for the democratic processes and legal responsibility of the task at hand and be committed to ethical decision making (Berman and West 1998). For example, the allocation of vaccines and antiviral therapy requires complex decision making that has several ethical dimensions. The governments of most developed countries now recommend that vaccinations be given to high-risk populations as a strategy for addressing seasonal influenza, and mass vaccination could be implemented in the event of a severe outbreak (Gostin 2004). However, the H5N1 strain is not a human pandemic virus. While the U.S. government has stockpiled vaccine against the current avian flu H5N1 strain, it is difficult to predict whether this strain will cause the next human pandemic. Regardless of which virus causes this health crisis, six months from its onset will be needed to develop the targeted vaccine.

As the vaccine becomes available, local government officials must implement a vaccine distribution prioritization policy that addresses the fair allocation of limited vaccines and antiviral medications. In a 2002 meeting of public health officials from 46 states, representatives attempted to determine which factors were of greatest importance—reducing deaths, reducing disease, limiting impact, ensuring essential services, or implementing equitable distribution of a vaccine—in the event of an influenza pandemic; the participants were hopelessly divided (Davis 2005). Local government officials must decide how to equitably balance the treatment of those individuals infected with the virus with the need to maintain

essential services provided by health care workers and first responders while preventing further spread of the virus to political leaders and other members of the population (Gostin 2004). Although the DHHS has published recommended guidelines for this policy, most state and local governments have tailored their vaccination distribution prioritization policies to their own preparedness plans. Many of these plans do follow the DHHS guidelines, which effectively have created a tiered system of eight groups, dividing higher-priority groups from others (DHHS 2005; Lister 2005). The first tier consists of "health care service" providers; the second tier of "medically high risk" individuals; the third and fifth tiers of "medically at-risk groups"; the fourth, sixth, and seventh tiers of people engaged in the "preservation of social function," and the eighth tier of the "lowest medical risk" (DHHS 2005). This prioritization policy considers medically high-risk and at-risk individuals to be of higher priority, based on their position within the system, than individuals who would ensure the preservation of social continuance. Ethical and legal concerns arise from these prioritizations and also from the imposition of vaccinations or treatment on individuals in society who oppose such interventions. Local government officials must be conscientious of the personal values of these individuals while preventing harm to the overall community. While public health officials do have the legal authority to compel vaccination and treatment, there must be a reasonable relationship between the public health intervention and the demonstrable threat to the community (Gostin and Berkman 2007).

In the event of a local outbreak of influenza caused by a pandemic strain, local government entities must be able to investigate and contain potential or known cases. Civil confinement may be required to separate infected or exposed individuals from the healthy population. Local officials may find it necessary to implement various levels of movement restriction within their jurisdiction. While isolation and quarantine are judicially sanctioned, an individual's entitlement to civil liberties becomes a concern. Isolation or quarantine must take place in a humane and habitable environment, and compensation for work and other essential activities are to be considered (Gostin 2004). The usefulness of isolation and quarantine measures depends a great deal on when the measures are initiated. Beyond the technical aspects of quarantine measures, however, there also are issues of civil liberties infringement and which level of government should have the power to enforce the quarantines.

A 2003 report to the Centers for Disease Control and Prevention on quarantine and isolation lessons learned from SARS (severe acute respiratory syndrome) revealed some interesting points concerning these issues. This report reviewed the expansive and intrusive (although effective) measures used by many Asian countries, including China and Singapore, to contain the disease. These measures included mandatory closure of schools, child care facilities, markets, and public transportation; restrictions on travel; and the cordoning off of entire sections of towns (Rothstein et al. 2003). These countries enforced the usage of electronic cameras in homes to ensure that individuals did not break the quarantine, and individuals were required to take their temperature in front of the camera several times a day. Government officials also used telephone calls as another measure to ensure that individuals did not break the quarantine. Finally, both law enforcement officials and the military were used to enforce these measures, and for anyone who did break the quarantine, an electronic tag was placed around their ankle (Rothstein et al. 2003). Clearly, such actions, if attempted in the United States, would face many social, cultural and political challenges.

In addition to quarantine measures, local government officials may find it necessary to restrict social mixing and increase social distance during a declared state of emergency for an influenza pandemic. Businesses or schools may need to close, and public meetings may be suspended. Also, voluntary social distancing would allow individuals to avoid exposure. Civic activities, large gatherings, and mass transportation systems would be affected as local authorities intervene to avert spread of the influenza virus at the earliest stage. The importance of public cooperation in the enforcement of these measures does have historical precedence. A study was conducted of seven U.S. communities that implemented significant social isolation measures during the second wave of the deadly 1918 influenza pandemic. The authors of this study reviewed nearly 300 federal, state, and local documents, as well as more than 1,400 periodicals and medical journals published between 1918 and 1920 (Markel et al. 2006). Based on this extensive review of these documents, they found that public cooperation played a major role in the successfulness of the quarantine measures. Specifically, "protective sequestration, if enacted early enough in the pandemic, crafted so as to encourage the compliance of the population involved, and continued for the lengthy time period in which the area is at risk, stands the best chance of guarding against infection" (Markel et al. 2006, 1963). Ultimately, if government officials expect the American public to accept social distancing measures, they must understand that social, political, and cultural factors will play a predominant role.

In the event of an influenza pandemic, careful attention to these social, political, and cultural factors will be required if government officials expect the American public to "buy in" to the potentially extensive restrictions that could be placed on civil liberties. The quality of democracy and its administration is rooted in ethical decision making (Bowman and Knox 2008). Public health interventions that are intended to address the pandemic spread of H5N1 influenza have created ethical and legal questions whose answers require the delicate balance of personal liberty with restrictions that could severely impact national and world trade, travel, and economics. Ethical decision making during this health crisis should be focused on the best patient and public health outcomes with respect to the unique circumstances created by an avian influenza pandemic (Upshur et al. 2007). In addition, local government officials must address these issues with community stakeholders and solicit input from all members of their localities. If local government authority and accountability in policy decisions are addressed before the onset of a pandemic, the individuals affected, both directly and indirectly, by public health interventions will be more familiar with and

If local government authority and accountability in policy decisions are addressed before the onset of a pandemic, the individuals affected, both directly and indirectly, by public health interventions will be more familiar with and understanding of the purpose and challenges of the pandemic influenza plan.

understanding of the purpose and challenges of the pandemic influenza plan. Educating the public regarding these objectives and the actions that local government authorities have taken to safeguard their individual rights is essential to maintaining the trust that citizen members have placed in their local political and administrative leaders.

Case Studies

The DHHS has developed a state and local pandemic influenza planning checklist based on the Federal Pandemic Influenza Plan that identifies important activities that are recommended for inclusion in state and local plans. This checklist is divided into 10 areas, outlining key aspects for state and local jurisdictions preparedness in the event of a disease outbreak.[2] The authors have identified several of the recommendations included in the checklist that have ethical implications for local community stakeholders. These guidelines were found under the areas of community preparedness leadership and networking, vaccine distribution and use, antiviral drug distribution and use, community disease control and prevention, public health communications, and workforce support. The authors considered these areas to have the potential to create political, legal, and financial issues that must take into account economic interest and fundamental human rights in their resolution.[3] The following table outlines key recommendations by the DHHS that are used in this study.

The pandemic influenza policies of eight large cities across the United States were evaluated to determine whether and how these recommendations have been incorporated into local government preparedness plans. The municipalities evaluated in this study include Austin/Travis County, Texas; Boston, Massachusetts; Cleveland/Cuyahoga County, Ohio; Kansas City, Missouri; Louisville, Kentucky; Memphis, Tennessee; Seattle/King County, Washington; and Tulsa/Tulsa County, Oklahoma. Each of these eight cities falls into the top 100 cities according to the 2000 population classification of the U.S. Census Bureau (2000). Also, at least one city from each of the four census regions is represented.[4] The preparedness plans for these localities varied in length from 21 pages to 336 pages. Some of the plans were very detailed in their preparations for pandemic influenza, while other plans were generalized and noted that specific details would be developed as the community progressed through the pandemic phases.

Discussion of Findings

The unique circumstances and uncertainty created by an influenza pandemic require considerable planning by local government officials with significant input from community stakeholders. The DHHS places substantial emphasis on community preparedness, leadership, and networking that includes all relevant stakeholders in the locality—government, public health, emergency response, education, business, faith-based organizations, and private citizens. This action helps to ensure that the pandemic influenza plan is responsive to the community's needs and that local government officials and employees are prepared to address the unprecedented issues that may arise from a pandemic. The pandemic influenza plans of only half the communities reviewed in this analysis referred directly to a pandemic preparedness coordinating committee representing relevant stakeholders. The City of Memphis/Shelby County Health Department actually noted community input obtained during a series of stakeholder meetings with leaders, including elected and appointed officials, emergency responders, health and medical providers, media, service and human need providers, schools and education community, and business and industry (Memphis/Shelby County Health Department 2007). The other plans did not mention specific consultation with other community stakeholders in their initial development.

Community preparedness leadership and networking also require that accountability and responsibility, capabilities, and resources for key stakeholders engaged in planning and executing specific components of the plan be delegated. All eight preparedness plans addressed this issue and specifically identified the legal authorities responsible for case identification, isolation, quarantine, movement restriction, and other health service requirements. In addition, these eight plans included detailed communication operational sections that addressed how information during the pandemic phases would be communicated to public and private sector audiences. Only four of the plans, however, identified state and local law enforcement personnel who would be responsible for maintaining public order and implementing control measures. Also, several of the plans did not address the provision of psychosocial support services for local community members affected by containment procedures, and several failed to create a demographic profile of the community that included special needs populations and language minorities to ensure that the needs of these residents were addressed in the operational plan.

In regard to vaccine and antiviral drug distribution and use, all eight plans incorporated state-based plans for distribution, use, and monitoring. Most of the plans also noted specific guidelines for the procurement, storage, security, distribution, and monitoring of actions to ensure access to the treatments during a pandemic. Specific references by six of the plans were made to procedures for tracking the number and priority of vaccine recipients, the training requirements of involved personnel, and the distribution plan for specific locations in the community. However, only two of the plans actually included information for citizens in advance about where they would be vaccinated. The needs of vulnerable and hard-to-reach populations were addressed in the operational plans of six of these localities. Yet contingency planning for the use of unlicensed antiviral drugs that might be administered under investigational new drug or emergency use guidelines was only included in two of these plans.

> Public health communication details for all plans included planning and coordination of emergency communication activities with private industry, education, and nonprofit partners and regular review, exercise, and updates of these plans.

Several of the DHHS guidelines regarding community disease control and prevention and public health communications were implemented in all of these plans. Operational plans for the investigation and containment of potential cases, including isolation, quarantine, and enforcement of these measures, were outlined in each of the eight communities' plans. Almost all of these plans included guidelines for utilizing various levels of movement

Table 1 Key Recommendations for Pandemic Influenza Planning

	Specific Activity
Community preparedness leadership and networking	Establish a Pandemic Preparedness Coordinating Committee representing all relevant stakeholders
	Delineate accountability and responsibility, capabilities, and resources for key stakeholders engaged in planning and executing specific components of the operational plan
	Within every state, clarify which activities will be performed at a state, local, or coordinated level, and indicate what role the state will have in providing guidance and assistance
	Ensure the existence of a demographic profile of the community (including special needs populations and language minorities) and ensure that the needs of these populations are addressed in the operation plan
	Address the provision of psychosocial support services for the community, including patients and their families, and those affected by community containment procedures in the plan
	Test the communication operational plan that addresses the needs of targeted public, private sector, government, public health, medical, and emergency network of communication personnel, including lead spokespersons and persons trained in emergency risk communication; and links to other communication networks
	Identify for all stakeholders the legal authorities responsible for executing the operational plan, especially those authorities responsible for case identification, isolation, quarantine, movement restriction, health care services, emergency care, and mutual aid
	Identify the state and local law enforcement personnel who will maintain public order and help implement control measures
Vaccine distribution and use	Work with health care partners and other stakeholders to develop state-based plans for vaccine distribution, use, and monitoring
	Exercise an operational plan that addresses the procurement, storage, security, distribution, and monitoring actions necessary to ensure access to this product during a pandemic
	Ensure the operational plan delineates procedures for tracking the number and priority of vaccine recipients, where and by whom vaccinations will be given, a distribution plan for ensuring that vaccine and necessary equipment and supplies are available at all points of distribution in the community, the security and logistical support for the points of distribution, and the training requirements for involved personnel
	Address vaccine security issues, cold chain requirements, transport and storage issues, and biohazardous waste issues in the operational plan
	Address the needs of vulnerable and hard-to-reach populations in the operational plan
	Inform citizens in advance about where they will be vaccinated
Antiviral drug distribution and use	Develop state-based plans for distribution and use of antiviral drugs during a pandemic through the Strategic National Stockpile
	Test the operational plan that addresses the procurement, storage, security, distribution, and monitoring actions necessary to assure access to these treatments during a pandemic
	Ensure the jurisdiction has a contingency plan if unlicensed antiviral drugs administered under Investigational New Drug or Emergency Use Authorization provisions are needed
Community disease control and prevention	Exercise the jurisdiction's operational plan to investigate and contain potential cases or local outbreaks of influenza potentially caused by a novel or pandemic strain
	Exercise the jurisdiction's containment operational plan that delineates procedures for isolation and quarantine, the procedures and legal authorities for implementing and enforcing these containment measures and the methods that will be used to support, service, and monitor those affected by these containment measures in health care facilities, other residential facilities, homes, community facilities, and other settings
	Ensure the jurisdiction has exercised the operational plan to implement various levels of movement restrictions within, to, and from the jurisdiction
	Inform citizens in advance about what containment procedures may be used in the community
Public health communications	Assess readiness to meet communications needs in preparation for an influenza pandemic, including regular review, exercise, and update of communications plans
	Plan and coordinate emergency communication activities with private industry, education, and nonprofit partners
Workforce support	Develop a continuity of operations plan for essential health department services, including contingency planning for increasing the public health workforce in response to absenteeism among health department staff and stakeholder groups that have key responsibilities under a community's response plan
	Ensure availability of psychosocial support services for employees who participate in or provide support for the response to public health emergencies such as influenza pandemics
	Develop workforce resilience programs and ensure readiness to deploy to maximize responders' performance and personal resilience during a public health emergency

restrictions within, to, and from the jurisdiction, and more than half detailed how citizens would be informed of the containment procedures that may be used in community disease control and prevention efforts. Public health communication details for all plans included planning and coordination of emergency communication activities with private industry, education, and nonprofit partners and regular review, exercise, and updates of these plans.

Most of the pandemic preparedness plans evaluated in this study had developed contingency plans for the provision of essential

health department services that addressed potential absenteeism among health department staff and stakeholder groups with key responsibilities in the community's response plan. However, only the City of Memphis/Shelby County Health Department included the availability of psychosocial support services for employees who would participate either directly or indirectly in the public health emergency responses. This locality's plan also provided for the development of workforce resilience programs aimed at enhancing and maximizing emergency responders' performance during a public health emergency. None of the other seven preparedness plans made specific reference or provisions for these issues.

Conclusions and Implications

The existing literature suggests that a future influenza pandemic is inevitable, and the severity of such a pandemic can only be mitigated by the thoughtful planning of government officials and the respectful interpretation of past influenza statistics. Government officials must use available information and guidelines in order to develop policies that will maximize positive social and economic return in their communities while being sensitive to public concerns regarding factors that were considered during policy formulation. While the federal government has provided only broad guidelines for state and local government actors, specific decisions regarding vaccination, nonpharmaceutical interventions, and the maintenance of critical services during a pandemic may have unprecedented legal and ethical implications. In many cases, these interventions must take into account economic and global interests and fundamental human rights. Effective emergency management during an influenza pandemic entails mitigation, preparedness, response, and recovery as local government officials focus on protecting the public with minimal interruptions to their government functions. In many cases, these efforts will require the coordination of federal, state, and local authorities; however, most of the responsibility for the development and implementation of these pandemic preparedness plans rests with local health departments. This consequence has the potential to be of great concern to city and town officials who will be directly involved with many of the nonpharmaceutical interventions.

The plans reviewed in this analysis illustrate the myriad of issues that will accompany the next influenza pandemic. There are numerous ethical and legal implications regarding the allocation of vaccines and antivirals, the imposition of restrictive measures such as isolation and quarantines, bans on public outings and assemblies, and the maintenance of emergency response and critical services in which leaders in public health positions may lack adequate preparation and training. Only half of the plans included in this study actually mentioned the existence of a pandemic preparedness committee representing all relevant stakeholders, and many segments of these plans are implemented with little or no input from the mayor, council, city manager, police chief, department heads, or other local government officials. The potential economic, political, and legal issues that will emerge with the next influenza pandemic require a plan that will be seen as both legitimate and in the best interest of all citizens. Local government officials are the first and most significant point of contact between citizens and their government, and their insight, knowledge, and expertise are crucial for policy decisions. In our democratic society, citizen members place their trust in political and administrative leaders who are expected to continually engage in ethical decision making. Ultimately, the effectiveness of these pandemic influenza plans rests on convincing the American public that the preparation and implementation of these measures are focused on the best patient and public health outcomes while safeguarding their individual rights.

Notes

1. Seasonal flu is caused by a virus that can be transmitted from person to person and produces a respiratory illness. Individuals may have some immunity, and a vaccine is available for reducing transmission. Low pathogenic avian (or bird) flu occurs commonly in the bird population and causes relatively few problems. The highly pathogenic H5N1 strain is fatal to domestic fowl, can be transmitted from birds to humans, and can cause death in individuals who become infected by the virus. Currently, a human vaccine is in very limited supply, and humans have no developed immunity to the H5N1 virus.
2. These 10 areas include community preparedness leadership and networking, surveillance, public health and clinical laboratories, health care and public health partners, infection control and clinical guidelines, vaccine distribution and use, antiviral drug distribution and use, community disease control and prevention, public health communications, and workforce support (including psychosocial considerations and information needs).
3. Coincidentally, after this research was completed, the Centers for Disease Control and Prevention published its "Planning and Responding to Pandemic Influenza Ethical Considerations Checklist." This checklist addresses many of the DHHS recommendations that were identified in this study as having ethical implications for local community stakeholders. The ethical considerations provided by this additional tool, if implemented, should enhance the legitimacy of decision making for pandemic influenza planning at the local government level.
4. The eight cities included in this analysis are not considered by the authors to be a representative sample of all top-100 population municipalities from which statistical inferences could be made. These cities were chosen based on their closeness in population and their respective locations across the United States. The pandemic preparedness plans of these eight cities were available online.

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