

Effective Health Risk Communication About Pandemic Influenza for Vulnerable Populations

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The consequences of pandemic influenza for vulnerable populations will depend partly on the effectiveness of health risk communications. Strategic planning should fully consider how life circumstances, cultural values, and perspectives on risk influence behavior during a pandemic.

We summarize recent scientific evidence on communication challenges and examine how sociocultural, economic, psychological, and health factors can jeopardize or facilitate public health interventions that require a cooperative public. If ignored, current communication gaps for vulnerable populations could result in unequal protection across society during an influenza pandemic.

We offer insights on communication preparedness gleaned from scientific studies and the deliberations of public health experts at a meeting convened by the Centers for Disease Control and Prevention, May 1 and 2, 2008. (*Am J Public Health*. 2009;99:S324–S332. doi:10.2105/AJPH.2009.162537)

EFFECTIVE STRATEGIES FOR health risk communication are essential for protecting public health in the event of pandemic influenza.^{1–3} Reducing negative consequences relies heavily on gaining cooperation from diverse countrywide entities.^{1–3} Communications must successfully instruct, inform, and motivate appropriate self-protective behavior; update risk information; build trust in officials; and dispel rumors.^{1–4} However, responses to influenza risk information are influenced by existing psychological, social, cultural, health, and socioeconomic factors, which greatly affect how individuals interpret health risk communications, as well as their willingness and ability to act in a timely manner.^{2–4}

Ideally, pandemic communications maximize the public's capacity to act as an effective partner by encouraging prevention, promoting containment, and fostering resilience and recovery.^{3–6} Moreover, with an expanded role in pandemic planning and response, communication processes can prepare the public to adapt to changing circumstances or uncertainty during an emerging pandemic, educate public health planners about existing vulnerabilities and resources that affect influenza risk for specific populations, facilitate anticipation of surprising events, create dialogue between potentially affected populations and risk managers, and foster an environment of mutual trust.^{3,7,8} Preparedness strategies must consider what may be asked and expected of individuals

at all stages of a pandemic to guide communication planning.^{2–4} A pandemic may require minimally disruptive actions (e.g., increasing hand washing), but other behaviors may be difficult, evoke strong emotions, raise concerns, and fuel controversy (e.g., quarantines and school and public facility closures).^{2–6} Moreover, disturbing information may need to be conveyed without harming public cooperation.^{1–3}

The quality of the societal response depends partly on meeting the specific communication needs of all populations—especially those most vulnerable to the risks and most likely to experience communication gaps.^{5,7,9,10} Although there is not one universally accepted definition of vulnerable populations,¹¹ from a public health perspective, vulnerability can be defined simply as an increased potential for loss in a hazardous situation, including reduced capability to respond effectively.^{11,12} For an influenza pandemic, a useful framework for defining and identifying sources of vulnerability considers the likelihood of exposure, of contracting the disease if exposed, and of timely and effective response or treatment.⁷ Vulnerability can refer to individuals, groups, communities, or places and can result from many factors.^{7,8,12} Health disparities, differences in treatment access, living conditions, health literacy, language, immigration status, risk perceptions, and confidence in the government's ability to respond could exacerbate risks for particular populations.^{1–12} Furthermore, understanding the geographic

aspects of social vulnerability in the United States can advance pandemic planning and decisions about resource allocation during an emerging event.¹²

Undoubtedly, some life circumstances predict disproportionate effects of a pandemic and present different challenges for mitigation.^{10–15} Lessons learned from historical and recent public health crises suggest that inappropriate communications and insufficient planning can greatly compromise risk reduction.^{15–20} A few missteps can trigger loss of trust in the government's ability to manage serious public health threats, leading to unexpected and highly undesirable outcomes for vulnerable populations.^{5,18,19} Good communication practices will not substitute for bad planning, uninformed policies, or misconceptions about vulnerable populations (e.g., they are homogeneous, ignore public health messages, view pandemic flu as a remote threat, and lack the knowledge, ability, or will to change behavior). However, even the best strategies can be rendered ineffective by inadequate health risk communications or failure to integrate a communication perspective and community engagement at every stage of planning, response, and recovery.^{1–3,16–18}

Social marketing and health promotion perspectives have dominated discussions of communication preparedness for significant public health risks and provided a rationale for segmenting the population into subgroups (usually sociodemographic) for the design and delivery of risk and

health protection messages.^{3,9,21,22} Although useful, these paradigms do not necessarily lead to consideration of several crucial contributors to health decision-making, some barriers to effective communication (Table 1), or an analysis of pandemic influenza as an emerging risk event. Public health officials may gain additional insights about communicating with vulnerable groups from recent public health outreach efforts to at-risk and diverse populations,

research on risk communication within various sociocultural contexts, and viewing pandemic communication as a dynamic process. We summarize evidence about pandemic communication challenges for vulnerable populations and offer insights on communication preparedness derived partly from the perspectives of public health experts and program managers who participated in a meeting convened by the Centers for Disease Control and Prevention

(CDC) on May 1 and 2, 2008, in Atlanta, Georgia.

PANDEMIC COMMUNICATION CHALLENGES

Pandemic influenza presents a challenging context for communication about prevention, containment, treatment, and recovery. Rather than a single, one time big event, pandemic influenza is likely to present as a rising tide or

prolonged risk incident, with initial uncertainty that decreases (but can reemerge) as cases accumulate and consensus grows among experts.^{23–25} As an episode progresses, communications with vulnerable populations will also change.²³ The potential mortality, morbidity, and life disruptions may be difficult to predict initially, but waiting until facts are certain is unacceptable. Under these circumstances, usual assumptions about health risk or

TABLE 1—Factors Affecting the Acceptance of Public Health Messages

Environmental factors	Vulnerable populations are at increased risk from pandemic influenza because of a host of life conditions and environmental factors, including biology, age, gender, immune status, sociocultural behaviors, underlying chronic diseases, and disabilities. In addition, preexisting inequities in resources, significantly higher rates of poverty and near poverty, language barriers (e.g., limited English proficiency), and low rates of literacy influence communication needs. Access to health care, whether it is measured as having a usual source of care, a lack of health insurance, or other indicators, can also be worse for subgroups in these populations.
Social and cultural characteristics	Myriad individual, group, and subgroup differences affect response to infectious disease outbreaks (e.g., perceived gender roles, generational differences, language preferences, religious beliefs, and varying health literacy and education levels). The public health officials at the CDC meeting strongly agreed that there is a need to understand these factors and to develop and aggregate communication strategies that strengthen rather than diminish the value of community beliefs and traditions. For example, in some immigrant and refugee communities, how should our communications accommodate or alter traditional practices such as maintaining private bird flocks, cock fighting, the use of a communal pot for meals, or the 3-day-long funerals that are common in many cultures? Is there an incentive for leveraging these traditional practices as an opportunity to introduce the public health intervention in a culturally palatable way?
Language preferences	Both the appropriateness of the language and the translation of language are important. Ideally, all messages, materials, and documents should be culturally sensitive, match the language proficiency of targeted individuals, and be responsive to the changing conditions and needs of the audience as the crisis unfolds.
Difficulty of and attitudes toward public health interventions	Communication is critical in increasing the understanding, and ultimately the acceptability or unacceptability, of core pharmaceutical and nonpharmaceutical interventions. Vaccines: Supplies, access, and perceived effectiveness of vaccines have enormous implications for vulnerable populations because individuals and groups will be required to make decisions and take actions that may be incongruent with their health beliefs and values. Communications that address concerns arising from values, beliefs, and cultural traditions, and that feature spokespersons who are credible from the perspectives of targeted populations, will be more persuasive. Social distancing: Individuals who have limited financial means, rely on schools as a food source for their children, or have to work to feed their families may have difficulty following guidance to stay at home. Prepandemic planning and communications need to identify ways to make actions feasible and communications credible. PPE: Affordability, accessibility, availability, and appropriateness are real considerations for vulnerable populations in regard to PPE. Equally important are language considerations and ensuring that instructions on how and when to use PPE (e.g., masks, gloves) are clear and workable. Also, messages should inform about resources to obtain PPE if limited income is a factor. Hygiene: The concept of hygiene is defined differently across racial and ethnic populations. Moreover, for subgroups with limited economic resources there are real concerns about the cost of good hygiene practices and the amount of money that is required to achieve the standard of hygiene presented by government officials, the media, and others. Another concern is the stigmatizing stereotype that these subgroups may lack basic hygiene because they are poor.

Note. PPE = personal protective equipment.

crisis communications, message development, and community participation in risk reduction may not be tenable.³

Some communication approaches assume that effective messages can be well-defined in advance and then clearly conveyed to different audiences.³ However, unplanned changes in some early messages may be required to clarify uncertainties, alter public expectations, adapt to surprising events, and convince individuals to cooperate despite some uncertainty.^{2,8} Informational messages—regarding, for example, the availability, distribution, and safety of a vaccine or treatments; secondary medical complications; and recommended self-protection interventions^{2,3,24,25}—may need multiple corrections, repetitions, and modifications (e.g., pregnant women's concerns about side effects of medications or about keeping routine medical appointments may grow as a pandemic progresses, particularly if the media focus on cases of unanticipated complications).³

Building and Maintaining Trust

In the face of changing information, some steps to manage pandemic influenza may become controversial or difficult or may be perceived as unnecessary, increasing the challenges in engaging certain populations as partners in reducing risk.^{3,25} When information is provisional or ambiguous, trust in officials is crucial, but difficult to maintain³—especially among vulnerable populations in whom skepticism about the feasibility of interventions is more pronounced.^{7–10} Trust is central to how public health messages are heard, interpreted, and responded to^{9,10} and can determine whether communications are successful in

increasing motivation and intention to adopt or maintain recommended self-protective actions.^{16,22}

Trust consists of judgments about the competence, fairness, honesty, caring, accountability, and transparency of leaders or risk managers; it can be influenced by the characteristics and performance of official spokespersons and by message content during a pandemic outbreak.^{2,3,8,26,27} However, because trust is also highly influenced by previous experiences, shared cultural or historical knowledge about past events, and preexisting belief and value systems,^{1,10,18} efforts to build a strong foundation of trust among vulnerable populations must begin in earnest prior to the pandemic stage through engagement with targeted individuals or groups and those who serve them.^{1–3,15} Public health experts suggest that such engagement helps build trust if it yields communication approaches and content that resonate with the perspectives and life circumstances of vulnerable populations. Tables 2 and 3 list specific steps to accomplish this.

Even if compliance and trust initially are high, they can be eroded during an emerging pandemic. Through the mass media, the public is likely to notice any contradictory statements from experts or the contradiction of preliminary conclusions by subsequent developments.³ Moreover, government agencies do not always speak with one voice.^{1,2,18} Controlling the narrative may be challenging because varied information sources, including unauthorized or unofficial Web sites, could undermine official recommendations by raising valid questions about evidence justifying government actions and by presenting contrary, upsetting, or

invalid information.²⁶ If evolving information suggests a worsening situation, experts still may disagree about whether initial cases signal an unusual influenza season.^{3,23–25} Alternatively, initial assessments may overestimate the threat (false-positive scenario), and the anticipated serious or unusual risk circumstances may never materialize.²⁴

To maintain trust, public health officials will need to justify the timing of action or inaction through appropriate communications and to explain any errors in previous or early communications. For some vulnerable populations, uncertainties at early stages may discourage or delay compliance, particularly if self-protective actions extract a cost and are associated with life disruptions, economic hardships, or social risks.^{28–30} Iterative communication processes and outreach strategies at the prepandemic and early pandemic stages (Tables 2 and 3) can provide critical insights for risk managers about how to ease the burden of carrying out protection recommendations among vulnerable populations and to increase self-efficacy about proposed actions, especially when risk information is perceived as tentative.⁷

Other issues could threaten implementation of local, state, or national plans to mitigate the effects of pandemic influenza. Authorities and service providers need considerable flexibility in the emphasis, content, and goals of communications and in the delivery of services to vulnerable populations.^{1–3,10} Developing events can trigger distrust of traditional provider-based services if unexpected difficulties arise in implementing a preexisting plan, as witnessed during Hurricane Katrina.^{18–20} Therefore,

containment and treatment strategies must extend beyond the usual intervention settings, media, and personnel, and messages should reflect these changes.¹⁰ Good preparedness plans anticipate a possible need to regain public trust and sustain or renew interactions with vulnerable populations. This need could arise from uncertainty about health risks, new information (or rumors) about vaccine safety, perceived unfairness of interventions, subsequent and unanticipated waves of influenza, or less-than-predicted effectiveness of some treatment and prevention actions.^{2,10,26,30–33}

During a changing risk event, different skills are required of risk communicators and service providers, and plans may be inadequate if the dynamic aspects of an influenza pandemic wave are underemphasized in preparedness exercises or drills.^{22–25} A communication process that has built sociodemographic, geographic, risk, and resilience profiles of vulnerable groups during the prepandemic period (e.g., locations, life circumstances, languages, and community resources to support public health efforts) will ensure that appropriate skills are emphasized in planning and training prior to an emerging pandemic.^{8,10–12}

Psychology of Communication Responses

Many factors that increase physical vulnerability to the spread and health consequences of pandemic influenza also influence how individuals respond psychologically.³⁴ Overcrowding, poverty, inadequate housing, malnutrition, immune suppression, and poor health status can affect a person's receptiveness to information and recommendations.^{35–38} During a pandemic, the way new

TABLE 2—A Framework for Communication Preparedness and Implementation

Phased and situation-specific communications	
Phased	Ensure that communication precedes and tracks with the tactical and operational response during the various stages of the outbreak, severe pandemic, moderate pandemic, or less severe pandemic. For example, vaccine messaging should emphasize that individuals who receive the vaccine first are more or less the same across the pandemic and include public health and health care workers, workers in critical infrastructure, and pregnant women and young children (because they are at high risk of severe complications).
Situation specific	<p>Communications before, during, and after a pandemic are directed to the venues and channels that vulnerable populations perceive as informative, credible, and accessible. Schools and childcare facilities, public gatherings, workplaces, and so forth all pose significant communication challenges.</p> <p>Schools and childcare centers: These are a major focal point in pandemic planning, central to the overall response effort, and viewed as community centers for the provision of basic services during a pandemic. Are vulnerable populations aware of schools and childcare centers as a resource? One communications opportunity is training teachers to teach in nontraditional ways by counseling children on what their parents need to know or vice versa.</p> <p>Public or social gatherings: Although vital to many cultures, these could pose a significant public health risk. Messages that direct the public to avoid eating in public gatherings could be missed or ignored. Alternative and more positive messaging could emphasize the need to postpone rather than cancel gatherings.</p> <p>Workplace: Communication should cover a range of issues, including ensuring that employee rights for ethnic and racial groups are included in decision-making, fluid and flexible work plans for employees and their families are available, and sick leave and lost-wages policies exist.</p>
Process	
Multiple channels	Print, broadcast, and electronic media provide a menu of options to choose from when communicating about a spectrum of pandemic issues, such as hygiene, isolation, quarantine, and personal protection. Criteria to consider when deciding which medium is most effective for which audience include cultural competence, linguistic and educational appropriateness, and visual appeal. Channels can include formal (advertising), informal (peer to peer), and new and innovative media such as several Internet portals, including Facebook, Twitter, and other social media. Ethnic radio and TV are also part of the media equation. Within the refugee population, for example, the adolescent children of immigrants are the primary drivers of cultural adjustment, change, and adoption of new communication modes such as those available on the Internet.
People	
Community-first approaches	Community first means using a participatory approach in engaging community members in every step from message conception to delivery. Community-first communication solutions are simple, doable, culturally compatible, and action based, and they tap into local media sources. When communicating with ethnically diverse populations, a community liaison should be identified: an individual or local entity who speaks the language of the population and can act as the conduit for message development and delivery.
Trusted and credible information sources	Fear, distrust, and resistance are common reactions when diverse beliefs are present (e.g., poor health is related to factors outside control of the individual). With a high-stress issue such as a pandemic, communication intermediaries are critical for moving people from awareness to action. They include community leaders, faith- and community-based organizations, pharmacists, PTAs, and others. Engaging these sources is the first step toward building viable and sustainable communication coalitions and partnerships.
Partners	
Community capacity and resources	For vulnerable individuals who reside within identifiable communities, these communities have varying capacity to mitigate the risks to individuals, families, and the community from serious health threats such as a pandemic. Although low-income communities may have community capacity, it often goes unrecognized or is underdeveloped or underused. Moreover, the ability of these communities to recover quickly and comprehensively following a public health emergency or disaster is linked to socioeconomic status. Building capacity and resources where none exist and leveraging existing resources is therefore crucial for communication to be successful. The role of communication strategy is to create capacity where possible, reinforce existing resources that are achieving results, and reduce or eliminate capacity and resources that work against achieving communications objectives.

Note. PTA = parent-teacher association.

information is filtered, processed, and evaluated will be influenced by individuals' daily life circumstances, cultural and psychological risk orientations, traditions regarding health practices, reasoning strategies, past experiences, and trust in government and public health systems.^{26,33} These factors provide the lens through which a pandemic and communications regarding it

are viewed; they also suggest ways to enhance communication strategies. Some orientations facilitate action; others act as barriers to action and greatly intensify negative emotions or fear, risk perceptions, and skepticism about official recommendations, particularly among those who believe their livelihood is threatened or

who feel little control over the situation.^{3,9,32-35} When distress is high, individuals are less likely to accept the validity of communications.³⁴ Other psychological processes can promote apathy, denial, and reluctance to actively participate in risk reduction efforts.^{31,32,35,36} Preparedness for pandemic influenza must anticipate which

health risk communication approaches successfully reinforce desirable health attitudes and behaviors. For example, communication processes that personalize influenza risk for vulnerable and other populations (while increasing self-efficacy) and provide clear instructions about specific actions increase the chances of successful adoption of

TABLE 3—Recommendations for Public Health Planners and Risk Managers to Enhance Health Risk Communication Preparedness for Vulnerable Populations

Goal	Recommended Action
Strengthen the personal relevance of communications.	<p>Adapt communications to the language, spokespersons, cultural references, outreach strategies, daily life conditions, and cultural values of vulnerable populations to promote the adoption of risk reduction behaviors. Gather relevant information through partnerships with organizations and individuals who serve or interact routinely with vulnerable groups.</p> <p>Obtain prepandemic knowledge of relevant perspectives, priorities, and vulnerabilities of families, groups, and communities by interacting with community organizations, researchers, and other individuals and agencies that can provide a resilience and vulnerability profile of at-risk populations. Efforts should go beyond segmenting vulnerable individuals into typical sociodemographic groups and consider psychological perspectives, geographic factors, social media use, and other life circumstances that affect influenza risk and health-protective behavior.</p> <p>Use concrete message imagery (rather than just risk statistics) in a way that is compatible with the reasoning strategies of targeted groups (e.g., risk-benefit assessment of interventions, decision heuristics) and communications that reflect the particular risk circumstances of a targeted population.</p> <p>Plan for multifaceted, prolonged, and repeated communication, as well as direct and indirect (e.g., through community organizations) communications. As part of a preparedness plan, prepandemic messages will need to be justified to vulnerable populations and present clear information about what individuals are being asked to do or consider.</p>
Build self-efficacy and trust regarding pandemic interventions.	<p>Involve trusted members of the targeted population or respected outsiders in communication products, and present clear steps to perform recommended actions to enhance self-efficacy.</p> <p>During and preceding a pandemic episode, provide clear advice about what can be done personally to reduce influenza risk or secondary complications. Anticipate and explicitly address barriers to implementing recommended interventions. Reduce stress or negative emotions about performing these actions by designing interventions that are feasible and by using positive messages about how actions can be successfully performed.</p> <p>Anticipate possible variability in compliance, trust, and self-efficacy over time and plan to reengage vulnerable populations if necessary as the pandemic progresses (or successive waves occur). Build flexibility into communication processes to deal with a possible loss of trust and self-efficacy because of rumors or unanticipated difficulties in implementing intervention strategies. Communications should be open, clear, transparent, and culturally relevant when conveying information about the challenges of some recommended interventions.</p> <p>To encourage trust in public health officials, be open and honest about any disturbing aspects of the pandemic and any uncertainties regarding influenza risk or mitigation strategies, but juxtapose these messages with communications about the specific steps taken by public health and government officials to minimize risk, treat the afflicted, and rapidly detect or monitor exposure patterns. Explicitly address the value priorities of audiences (e.g., fairness and equity in health services distribution and explanations for any differences in mitigation strategies for particular populations).</p>
Prepare for a dynamic risk event and uncertainty management.	<p>Prepare public health officials, service providers, the media, and the general public in advance for some uncertainty in communications during various stages of an evolving influenza pandemic.</p> <p>Generate early initial messages that reorient expectations for immediate, certain risk information regarding infection rates, morbidity, and unfolding events.</p> <p>Prepare for unanticipated developments during the course of a pandemic by building into communication plans flexibility, ongoing evaluation and timely feedback from service providers and targeted populations, and drills and exercises that test the capacity for adaptation of communication processes, channels, and content.</p> <p>Build capacity for communication adaptability in the event of changes in recommendations about when to seek care, new information about vaccine or medication availability and distribution, unanticipated presenting symptoms associated with the pandemic influenza strain, unforeseen conflicting information about the pandemic, and needed adjustments in outreach strategies for difficult-to-access populations.</p> <p>Develop formal plans to update information, incorporate evolving knowledge about the pandemic into messages, and correct previous errors or missteps in communications in a time-sensitive, transparent, and open manner. For example, early warnings could result in false-positive errors, whereas premature reassurances could result in false-negative information.</p> <p>Prepare to identify and rapidly respond to emerging public concerns about interventions or the risks presented by the influenza pandemic. Communications about unanticipated complications should be timely and ongoing. A strong foundation of trust among vulnerable populations, service providers, and public health officials is crucial for uncertainty management during a pandemic, and the capacity for partnerships should be strengthened during the prepandemic period.</p>

recommended self-protective actions.^{10,15,34} A growing consensus in the relevant literature and among experienced practitioners is that communications are most useful when they are open and transparent in addressing the concerns and priorities of targeted populations, culturally grounded, personally relevant, and strong in promoting self-efficacy about protective behaviors.^{14,26,33,34,39} Risk managers and public health planners can take several tangible steps (detailed in Tables 2 and 3) to ensure that early health risk communications build community capacity to respond effectively.

Individuals can also be vulnerable to pandemic influenza risks because of life circumstances that affect the beliefs and motivations associated with health appraisals and self-protective behavior.^{29–38} For example, chronic economic deprivation can create negative attitudes, such as lowered self-efficacy and decreased sense of control over life events,^{34,35,40} that are important barriers to the initiation or continued performance of precautionary practices.⁴¹ Health campaigns among vulnerable populations are most successful when communications address motivations, emotions, and ideas that might impede desirable behavioral change but also are compatible with individuals' reasoning strategies.^{2,33,34,38,42,43}

Some current communication preparedness plans incorrectly assume that the public's reasoning about prevention, containment, and treatment will be guided by an almost exclusive focus on risk beliefs about influenza instead of the more likely risk–benefit framing of the problem.^{3,10} The latter is a common decision-making strategy whereby risks are weighed against the costs of protective actions. Costs include the effort or

expense associated with treatment or prevention, interference with economic livelihood, social consequences, and risk perceptions about recommended actions.^{7,27,28} Risks are evaluated within the context of people's lives and priorities,³ and because of this, some risks may be judged as acceptable: people may be willing to take a chance by not adopting certain precautions. If individuals are overwhelmed by the difficulty of engaging in protective actions, any perceived uncertainty in risk information can provide a reason to avoid information, to hesitate to change behavior, or to selectively process messages, all of which can reduce the chances of timely action.³² When daily life circumstances present pragmatic challenges for both pharmaceutical and nonpharmaceutical interventions,¹⁰ then one function of health risk communication as a component of pre-pandemic planning is to generate information that results in feasible implementation plans for influenza interventions among vulnerable populations.

Trust in public health officials is likely to be diminished if self-protective guidance in communications does not seem credible. Iterative communication processes can help identify existing capabilities, resources (e.g., schools, faith- and community-based organizations, and alternative media outlets), and message dissemination strategies that can be used to strengthen response capacity and resilience during a pandemic.^{12,15,20,43} Highly relevant information to many of the more difficult pandemic interventions includes the locations and daily life challenges of subgroups within vulnerable populations that affect exposure and resistance to an

infectious disease agent.^{7,9,10} Because of existing communication gaps, groups that may especially benefit from these types of early communication, mapping, and outreach activities include difficult-to-access urban populations, undocumented immigrants, non-English speakers, and the homeless.^{7–10,43}

Even if communication processes successfully identify where and how to reach vulnerable populations, the messages themselves must be compatible with the cultural orientations, information priorities, and reasoning strategies of affected populations. A recent publication from the US Department of Health and Human Services provided detailed recommendations to health officials: “Emphasize the rationale and importance of adherence to public health measures that some people may consider intrusive (e.g., quarantine).”^{2(S10-1)} However, this advice often translates into messages that assume analytical or deliberative reasoning styles for information processing, even though individuals may not evaluate health or safety information in this way.^{41,43,44} Instead, they frequently employ legitimate alternative ways of reasoning about and framing the risks of an influenza pandemic.³⁴ Unless a communication plan is compatible with the affected populations' reasoning strategies, often characterized by different decision rules or simpler heuristics to assess the validity of risk information,⁴⁴ then even the most valid and reliable scientific information may be ignored, minimized, or processed in a way that results in unanticipated public responses.⁴⁵

The reasoning process and interpretation of health risk communications during a pandemic can be greatly influenced by

preexisting beliefs. The most extensive national survey to date of beliefs about possible public health interventions for pandemic influenza suggests considerable variability within the American population.⁴ This survey, conducted by Blendon et al. from the Harvard School of Public Health and the CDC, revealed that beliefs about pandemics varied by socioeconomic circumstances, cultural background, and health status. For example, a large percentage of African Americans and low-income, disabled, or chronically ill adults reported that they would have difficulty in finding someone to help should distancing interventions require them to remain and be cared for at home for an extended time.⁴

Employment security concerns also were more prevalent in certain social groups. Overall, only a minority of employed adults (29%) believed that they would be able to work from home for a month because of pandemic influenza; 44% of high-income workers and only 13% of low-income workers believed this was a possibility. Low-income, African American, and Hispanic individuals also were more likely to believe that salary or job loss would result if they or a family member adhered to public health recommendations to stay at home for more than a few days.⁴ In general, a greater percentage of certain social groups and chronically ill individuals believed that they would experience problems in complying with several public health recommendations, a significant issue for subgroups within these populations who are more vulnerable to risk.

These results highlight the need for informed risk reduction strategies that are realistic and for communications that promote

a sense of self-efficacy. Repeated and considerable efforts by experts will be required because coverage of a serious and emerging influenza pandemic in mass media outlets may not emphasize information that promotes self-efficacy and confidence in government officials.⁴⁶ Even among populations that are not typically defined as vulnerable (e.g., college-educated persons or high-income households), significant doubts may exist about the government's ability to stop the spread of a serious influenza outbreak.⁴⁷ Because national studies on risk perceptions and knowledge regarding pandemic influenza are few, evidence from investigations of public responses to other public health emergencies, such as the recent outbreaks of severe acute respiratory syndrome in several countries^{48,49} and

Hurricane Katrina,^{19,20} can supplement knowledge gained from pre-pandemic preparedness activities in vulnerable populations (Tables 1 and 2).

Cultural Values and Risk Communication

Public health officials and scholars agree that cultural values and traditions significantly influence responses to pandemic influenza,^{9,22,34} but certain groups' problem-solving perspectives, expectations, and values have not been routinely incorporated into plans.^{42,43} African Americans and many low-income community residents are more likely to evaluate risk problems and decision options in terms of fairness, equity, and justice.⁵⁰ This can lead to more intense and durable emotional responses to health

risks, greater risk perceptions, increased negative emotions such as anger or fear,⁵¹ and different challenges for risk reduction during a pandemic.^{15,16} For certain individuals, a shortage of vaccine or a decision to triage patient needs could lead to perceptions of unfair or discriminatory health services distribution,^{7,10} especially where large numbers of uninsured or urban minority populations are more likely to seek treatment in crowded emergency rooms during an influenza pandemic.⁷ Such circumstances not only test the surge capacity of care facilities and providers during an influenza pandemic,²³ but also require public health officials to communicate clearly about distributive justice issues and justify actions taken²³ or else risk social disruption that could

threaten public health interventions.¹⁶

Other cultural values (e.g., social norms importance, strong family ties, and social networks) can either impede or facilitate risk reduction efforts.^{43,52,53} Self-protective actions may be a family-level decision process,^{5,10} and messages about protecting loved ones may be more effective than those about just the individual.^{33,54} Effective communication strategies must fit the cultural values, life circumstances, and risk perceptions of targeted audiences.^{42,43,53,54}

Pandemic influenza plans may acknowledge the importance of cultural relevance in theory,^{1,2,7,52,54} but it is not always reflected in practice.⁵⁵ For example, a recent content analysis of a state's emergency preparedness

TABLE 4—Experts' Insights: CDC Partners Meeting on Pandemic Influenza and Protecting Vulnerable Populations, Atlanta, GA, May 1–2, 2008

Communication myths and stereotypes	Communication strategies for vulnerable populations are more likely to be effective if plans are not based on misconceptions.
Communication challenges and opportunities	To meet communication challenges, public health officials must plan from the perspective of the targeted population, which requires a culturally competent synthesis of public health practice and science, communications science, and behavioral social science. The most effective strategies require support for agencies (e.g., CDC) to enact science-based policies and communication approaches based on valid and reliable information. Strategic communication is an ongoing process during the prepandemic period that should be flexible and revisable. The formal evaluation of communication plans—before and during an outbreak—acts as a barometer of communication progress and performance.
Key considerations in communication strategy development	During a pandemic, the quality and acceptance of public health communications among vulnerable populations will depend in large measure on whether the content and delivery method of the messages reflect a depth and breadth of understanding and sensitivity to the factors listed in Table 1.
A comprehensive framework for effective and integrated communications	Planning efforts must reflect inclusiveness, a phased strategy, and situation-specific approaches. Too often (but less frequently since 2001 and Hurricane Katrina), federal, state, and local government agencies that draft emergency plans do not have sufficient input from vulnerable segments of the populations for whom plans are intended. Some government officials are surprised when they learn that, despite their best efforts to engage targeted individuals or groups, vulnerable segments of the population know nothing about a plan and do not know what to do or to whom they should reach out in the event of a pandemic. A recent report to the Homeland Security Council assessed states' operating plans to combat pandemic influenza and noted significant progress in developing communication plans for influenza response. ⁵² However, assessments also revealed, "In general, there is a paucity of sufficient plans for the development of culturally appropriate and language-specific essential information in appropriate media and in advance as part of the preparation for an influenza pandemic, particularly in the area of outreach to vulnerable populations." ⁵⁶ Yet, there are enormous communication opportunities (Table 2) before a pandemic strikes to prevent or mitigate the impact on vulnerable populations by ensuring that communications are a central part of plans and are robust and adequately resourced.

Note. CDC = Centers for Disease Control and Prevention.

communication materials targeting low-income African American and Hispanic populations found them inadequate.⁴² Other recent analyses of public health emergency messages concluded that many materials were inappropriate for certain vulnerable populations (e.g., recent immigrants) because of readability issues, cultural references, language, or required health literacy level.^{9,21,43,50–55}

INSIGHTS FROM PUBLIC HEALTH EXPERTS AND RESEARCH

Experts' conclusions at the CDC-convened meeting were similar to themes in the scientific literature (Table 4 provides more detail):

- Communication strategies are most effective when not based on misconceptions.
- Plans should be made from the perspective of the targeted population.
- Messages must be sensitive to and relevant for the audience.
- Communications must be integrated.

Current communication plans for pandemic influenza reflect thoughtful, evidence-based strategies but could be strengthened by more emphasis on managing a dynamic risk event and improving the fit between communication processes and life circumstances that influence behavior during a pandemic. Current evidence about factors that contribute to vulnerability and resiliency during public health emergencies^{12,57} can help officials anticipate where adjustments in effort and planning are likely to be required for optimal risk reduction and communication during an evolving influenza pandemic.

Although the underlying communication goals are similar across populations, strategies to achieve these objectives require a range of approaches that address the specific communication needs of vulnerable populations during the prepandemic period through the recovery stage.^{18,21,42,54,57,58}

Because of the dynamic nature of a pandemic, delineating it into prepandemic, pandemic, and post-pandemic stages may present too simplistic a model for designing the most effective exercises and preparedness drills. An identified pandemic episode is unlikely to progress in a strictly linear fashion and may unfold over a prolonged period or in multiple waves. The communication demands of the pandemic stage are best described in more dynamic terms, emphasizing how developing and emerging events could modify communication needs and demand flexibility in the content and delivery of crucial messages, especially for vulnerable populations.^{8,10,12} Several strategies to enhance health risk communication preparedness are offered in Table 3. These insights from our review of the literature and from experts at the CDC meeting underscore how participatory and phased communication approaches can support efforts to produce a good fit between the vulnerable populations targeted for influenza risk reduction and adopted strategies. Several pandemic preparedness Web sites now emphasize these approaches.^{1,2,56,59}

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Contributors

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