Do Pandemic Preparedness Planning Systems Ignore Critical Community- and Local-Level Operational Challenges?

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Nothing fails like failure, and nothing succeeds like success.
                                           —Sir Arthur Helps, 1868

The system and process by which pandemics are investigated and controlled are defined under the International Health Regulation (IHR) Treaty of 2007, supported by individual nation-state strategic-, tactical-, and operational-level plans and the resources to implement them properly. Recent pandemics have shown that the system's success or failure depends on each country's weakest link. This process, from which no country is immune, can be chaotic, confusing, and politically charged.

Among the hierarchical models that deal with disasters in general, strategic-level disaster planning establishes and examines the implications of long-term goals and objectives. Tactical plans manage the overall response and public information for a disaster by coordinating the activities of multiple organizational and agency responders while anticipating resource needs. Operational-level plans are supposed to achieve results, using systems and resources to respond directly to the impacts of the disaster and include all first-level responders.[1] The fact that pandemics begin and end at the local level underscores the importance of robust operational plans and resources.

For decades most conventional disasters, especially natural ones, have relied on "bottom-up" local disaster experiences to drive the knowledge base, management, and planning that subsequently influence tactical and strategic thinking and decision making. In contrast, pandemic planning and response, especially in developed countries that have not experienced pandemics in many years, differs from that of conventional disasters in that the existing pandemic knowledge base of novel infections has primarily originated at the strategic and tactical levels as a "top down" approach. As such, robust strategic and tactical planning documents dominate global, national-, federal-, and regional-level organizations and agencies; many large businesses and health facilities have similar plans in place. Operational pandemic planning and response teams that support local communities, however, have received less attention and scrutiny, resulting in inadequate mass illness plans that often differ little from existing conventional disaster plans or are mere language modifications of these documents. Too often, evidence-based operational level studies simply languish in the literature and seldom find their way into promoting, accelerating, or even influencing policy at the community level or are acknowledged and addressed by strategic- or tactical-level planners.

OPERATIONAL-LEVEL FAILURES

Studies of Asia-Pacific region pandemic influenza preparedness activities in 2006 were considered polarized. Thailand, China, and Vietnam focused on a strategic vision to strengthen future capacity in preparedness planning, whereas Hong Kong's, Australia's, and New Zealand's approaches were strategic, aimed primarily at harnessing available resources or preparing for the deployment of resources such as stockpiled antiviral agents and vaccines. Whereas this assessment compared favorably with the best of the European national plans, the weaknesses were much the same as those described for Europe. Specifically, important gaps, weaknesses, and inconsistencies remained, with the need for operational level planning and to adequately address operational responsibility at the local level. Operational responsibility remained unclear at the local level, with an emphasis on the need to create operational plans for response. A principal point was that plans lacked specific ways to care for patients at home, the maintenance of essential services, and adequate operational procedures for key stakeholders.[2]

In 2005, after the severe acute respiratory syndrome (SARS) epidemic in Canada, authors emphasized that "virtually all health care operations, including public health, are undertaken only at the local or regional level." Lacking was "local establishment of a flexible and sustainable emergency management system," and "workable plans to deliver health care."[3] During the May 2009 swine flu epidemic in Australia, the role of the robust primary care general practitioner force was made extremely difficult by deficiencies in implementation of the strategic level Australian Health Management Plan for Pandemic Influenza, including resource supply failures, time-consuming administrative burdens, delays in receiving laboratory test results and approval for provision of antivirals to patients, and lack of clear communication about policy changes as the situation progressed. Eizenberg emphasized that "there appears to be endemic failure on the part of health authorities to really understand the importance of implementation issues for community based operations."[4] Similarly, an analysis of strategic national preparedness plans from 53 developing and highly health challenged African countries showed that case management, triage procedures, and health facilities lacked "operational clarity."[5]

IS THE UNITED STATES AT RISK FOR A SIMILAR PREDICAMENT?

Andrew T. Price-Smith, a political scientist by training, developed the hypothesis that the capacity to control and protect a nation from infectious disease was the most sensitive predictor and measure of good governance.[6] In support, Suk points out that "one of the underappreciated insights from the SARS outbreak of 2003 is that during a pandemic, science and politics are difficult to disentangle."[7] This seems to be especially evident when crisis events affect the crucial interface between governance and science. For example, Hurricane Katrina immediately exposed levee incapacities in New Orleans that had been the topic of multiple-decadeslong scientific studies that were summarily ignored by decision makers. The difficulty of post-Katrina recovery was compounded by unresolved debates about whether the states or the federal government was responsible for recovery and rehabilitation. Pandemics serve as wise truth-tellers by exposing what can and cannot be reasonably disentangled from politics without compromising the public health. Each country must openly confront these dilemmas within its own political culture, especially as they apply to the IHR treaty of 2007. The latest iteration of the IHR vastly expands the range and nature of disease events beyond the previous cholera, plague, and yellow fever, and strengthens the World Health Organization's (WHO) nonbinding authority in recommending more demanding surveillance and response obligations, and applying human rights principles to public health interventions.[8] Being that pandemics are by definition public health emergencies the IHR grants the WHO Director-General the power to determine whether an event constitutes a public health emergency of international concern.[9]

The United States has not been without internal and external disputes over the IHR, controversies that, if not resolved, could threaten global health. Issues surrounding federalism have been the most compelling. The term federalism is used to describe a system of government in which sovereignty is constitutionally divided between a central governing authority and constituent political units, like states, as in the US system in which the power to govern is shared between national and state governments. Federal governments make up about 40% of the world's population and include India, the United States, and Canada. Federalism can create an obstacle to mounting a centralized approach to national crises when treaties are signed by the central government but lack cooperation from individual states or provinces.[10]

In the early weeks of the SARS outbreak, the Canadian government was handicapped in its management of the pandemic when it was unable to obtain critical data from authorities within the province of Ontario in a timely manner, contributing to WHO's decision to place Toronto in a quasiquarantine state. The US Centers for Disease Control and Prevention (CDC) found similar resistance during the 2001 anthrax attacks10 and with the timely reporting by individual states of probable SARS

cases. Conflict and confusion will undoubtedly arise unless it is clearly determined which seat of government has the authority to manage a pandemic. There is real concern that federations may not be able to comply with the IHR, which requires that all of the member nations notify WHO "within 24 hours of assessment of public health information, of all events which may constitute a public health emergency of international concern within its territory as well as any health measure implemented in response to those events."[10]

The United States attempted to insert a clause in the IHR acknowledging the unique structure of federations, but the attempt was denied. Subsequently, all major countries with federal systems, including Canada, have signed the IHR without reservation; however, the United States declared that it may not comply with IHR if the public health power belonged to the states rather than to the federal government. At the time of this writing, the legal authority of CDC to prevent the introduction, transmission, or spread of communicable diseases into or within the United States remains unresolved and archaic. If CDC tried to exercise power, then its legal authority would be challenged by that of the states, causing needless delays and uncertainty, and its actions could be ruled unconstitutional, leaving the nation in limbo and unable to guarantee the capacity to "effectively identify, respond to, and communicate information on disease outbreaks."[10]

In addition, reduced allocations from the federal government and state legislatures have left CDC with inadequate resources to support state and local health departments. If these states had strong surveillance systems that were highly integrated, then there may be less concern. Only a few states have strong surveillance systems, however, and "many others are deficient so that early warning and response are highly fragmented."[10]

Mostly ignored by the public, the May 2006 White House Pandemic Plan stressed that the federal government had only an "advisory role" during pandemics by telling local communities and individuals that they "must bear ultimate responsibility for protecting their assets themselves."[11] To compound the potential for future failure, federal funding for pandemic preparedness was drastically cut by Congress in early 2009. Too often, however, community-level pandemic exercises still anticipate a federal "rescue" in their scenarios, a view that is influenced by the dominance of top-down planning. Both federal and local government officials steadfastly held onto this premise until a major 2007 exercise in a large city revealed otherwise. International pandemic planning colleagues, who know first hand the importance of a highly coordinated approach to outbreaks, have stressed concern that the sovereignty of each state and community in the United States to come up with their own funding and operational plans independently for pandemics risks severe chaos and may ultimately slow down or even increase the transmission of the infectious agent.

HEALTH-RELATED EMERGENCY OPERATIONS CENTERS

Even with the best strategic- and tactical-level plans, operational-level plans risk becoming pandemic "showstoppers" if provisions are not in place to ensure all operational challenges can be met. How do communities begin this process? One emerging organizational instrument with the potential to provide form and function to organize, evaluate, and effectively operationalize health decisions are health-related emergency operations centers (HEOCs). Today, HEOCs exist in some large metropolitan jurisdictions, but for most of the United States they remain either a concept in development or an unknown entity. Operational-level challenges are as pervasive as the transmission of the virus and should be addressed uniformly. Some semblance of an HEOC needs to emerge and be exercised at the community level, it is hoped, long before notification of a pandemic.

The incident command system (ICS) and the ICS-emergency operations center (EOC) in conventional disasters will deal with relatively few dilemma decisions that pertain completely to health; these are routinely managed well by local emergency medical services systems. In a mass illness disaster, the majority of the decisions will be health related, most being extremely complex. During the 2003 SARS pandemic all of the affected countries reported public noncompliance as the greatest threat to controlling the disease. This included large-scale failures to cooperate with epidemiological contact tracing, difficulties in obtaining public cooperation, mass disobedience of quarantine orders, and hospital concealment of SARS cases.[12]

In a pandemic, the ICS-EOC system requires an HEOC as a partner at community and regional levels[13] (Figure 1). The HEOC concept infrastructure provides the public health authority with the capacity to manage the subtleties of every health decision and implementation and execution requirements. Whereas the HEOC determines, screens, and authorizes specific surge capacity requirements for the population in need of health interventions and education, it also determines minimal qualifications for survival and exclusion criteria necessary for triage management. It is led by public health authorities and staffed by public health specialists, epidemiologists, infectious

FIGURE 1

Partnership with an HEOC affords the ICS the opportunity to be operationally effective during pandemics. HEOC, health-related emergency operations center; ICS, incident command system; SNS, Strategic National Stockpile.[13]
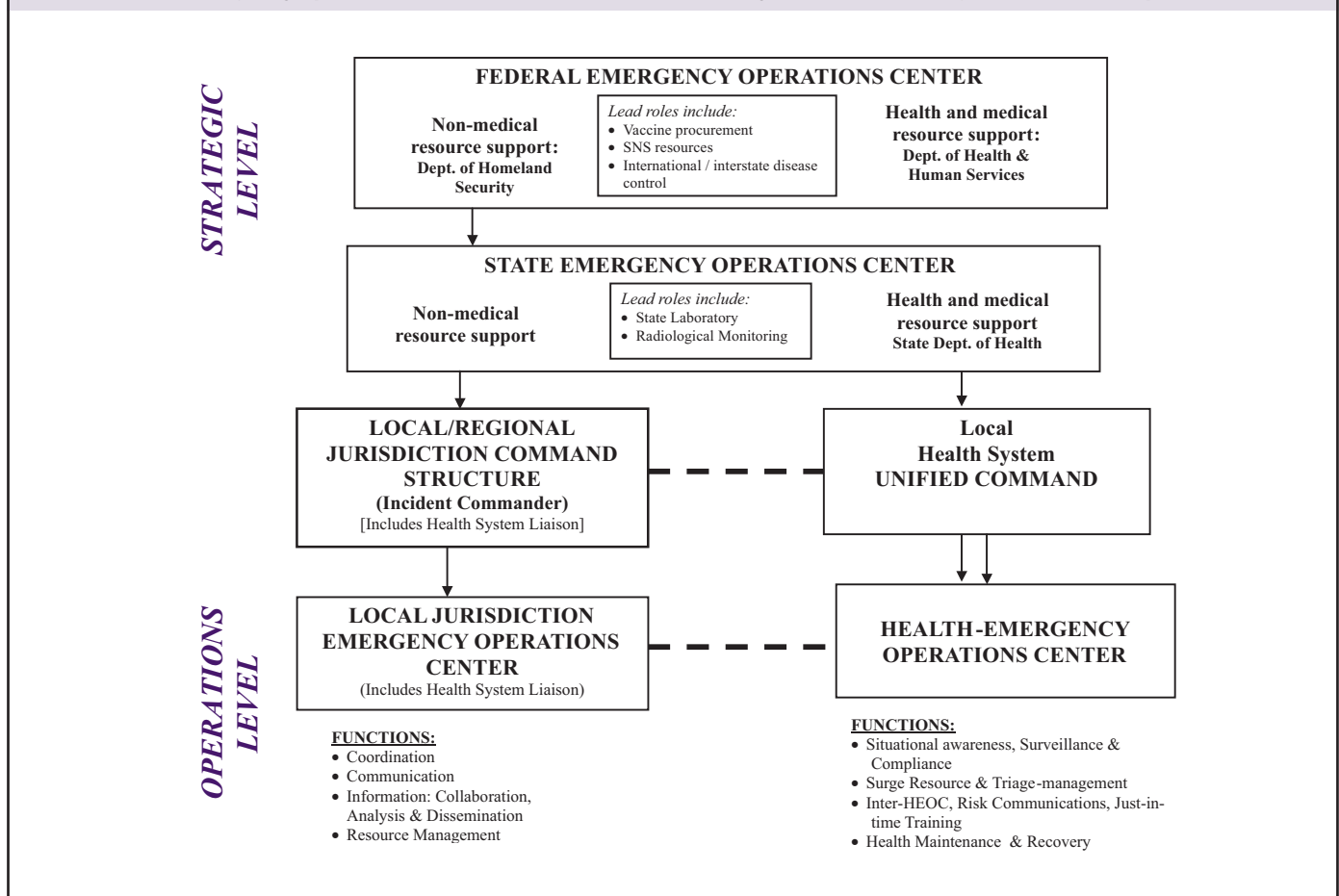
disease specialists, clinical and health facility representatives, mental health and behavioral specialists, clergy, legal authorities, ethicists, and advocates for specific population-management groups (eg, susceptible, exposed, infectious), among others.[14] The HEOC becomes a public health operations and training coordination center that deals with the following[13,15]:

- Situational awareness: a clearinghouse for all health data collection, analyses, and daily reports
- Linkage of regional health resources
- Development and maintenance of strategic health alliances (eg, CDC, state health departments, WHO emergency teams)
- Facilitation and integration of health surge capacity resources
- Communication and reinforcement of health advisories and directives coming from public health resources and their impact on clinical management at every level
- Creation of triage management protocol decisions and criteria for execution and implementation
- Ensure resources for mental health and behavioral requirements (eg, fear- and panic-based reactions, mass grieving)
- Just-in-time training to meet health requirements (eg, self, self-assisted care)
- Measures of effectiveness

ICS assets such as the conventional disaster EOC must have a central health jurisdictional authority partner who works in tandem when a health-related disaster occurs. When a pandemic occurs a unified command structure will have already been deployed and this concept would be referred to as the jurisdictional emergency management hub that provides interagency coordination as the EOC. The nonhealth components will continue to enforce compliance and logistical and security elements to ensure that health decisions are properly implemented and executed.[13,15]

Operational Examples of HEOCs

HEOC-like bodies have been deployed in Los Angeles, Seattle, San Antonio, northern Virginia, Phoenix, and Houston, and all of them reflect the political-cultural-organizational preferences of authorities at local and regional levels. In 2003 Los Angeles County developed, with the county's health department, a health-related departmental operations center structure.[16] In fact, there are departmental operations center equivalents by which individual agencies (eg, health, law enforcement, emergency medical services, public works, major utilities) run their own responses. Comes a crisis, there is 1 integrated jurisdictional EOC to provide unified command over all of the participating agencies, which, if the incident is a health emergency, would be led by a health incident commander (Figure 2). The county favors the integration of a health official as the lead in the existing jurisdictional EOC that brings emergency management and public health into the same organizational system of response, rather than developing a separate HEOC (S. Rottman, personal communication, May 19, 2003).

The northern Virginia HEOC remains in development and centers on a regional hospital coordinating center, 1 of 6 such coordinating centers across the Commonwealth of Virginia that serve to coordinate the clinical aspects of a regional health care response. For example, it may bring in an infectious disease specialist and public health liaison during a pandemic. It serves to support jurisdictional EOCs with health and medical situational awareness. Triage-management decisions are promulgated centrally from the regional hospital coordinating center, but issues of overall legal authority, coordination of an alternate care system, and standards of care decisions remain under development (D. Hanfling and Z. Corrigan, personal communication, May 21, 2009).[17] The structure of an HEOC in Phoenix was adopted after lessons learned from a major pandemic exercise in 2007. The Phoenix Department of Health, recognizing the need for an HEOC-like body but with their own limitations in resources, chose to partner with a more robust private health services system for planning and staffing that they named the medical coordination center.[18]

The Houston Catastrophic Medical Operations Center (CMOC) is 1 of 3 medical operations centers in the state and is co-located with the city of Houston EOC. The CMOC is a robust public–private partnership that represents the interests of the largest population base and health consumer resources within Texas (J. Gustafson, personal communication, June 23, 2009). The CMOC is funded by the Trauma Regional Advisory Council, a not-for-profit organization that is in itself funded by Texas Department of State Health Services (DSHS). It is mainly aligned (via multiple grant funds) with private sector hospitals compared with the 2 other medical operations centers in Texas, known as regional medical operations centers, which are oriented with public health authorities in charge.[19] The Houston CMOC coordinates National Incident Management System–compliant clinical health care response to all disasters, including pandemics. Crossregion coordination and collaboration is provided across 18 counties, 177 cities, 130 private and public hospitals, more than 500 nursing facilities/assisted living centers, thousands of home health care residencies, and EMS/ambulance services with more than 600 vehicles in southeast Texas. It works directly with jurisdictional executives (eg, mayors, commissioners), the city of Houston EOC, more than 100 other EOCs, the Houston Department of Public Health, and the DSHS to define legal authority and establish, implement, and promulgate standards of care decisions. During the current AH1N1 crisis the CMOC is serving as the situational awareness and communications center for all health care facilities, including physician practices, in their region. Through the public health component of the CMOC requests for resources, the development and distribution of advice to citizenry occurs and is poised to institute additional alternate treatment centers and testing sites (J. Gustafson, personal communication, June 23, 2009); however, governance and decision-making power in Texas lies with county jurisdictions or councils of governance. Public health districts overlap with individual councils of governance that during a crisis determine

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how and where public health implementations will be executed (R. Swienton, personal communication, June 28, 2009). This became problematic during Hurricane Ike, when the DSHS authority recommended that the city of Galveston be closed and the population be evacuated for health reasons. The local county jurisdiction chose not to follow this recommendation. Whereas health-related decisions made during hurricanes are instructive, they reveal that more complex health decisions, characteristic of any pandemic, will significantly challenge the competing interests between existing county jurisdictions and public health.

Many of the HEOC-like bodies base their operational decisions on large-scale natural disasters, leaving the pandemic marriage between governance and public health unsettled. Each HEOC-like body is configured and named differently but remain similar in their goals and objectives. Without such capacity, both the ICS and public health authorities will find themselves without the means to fully optimize population-based health-related operational decision making, coordination, com-

munications, cooperation, and collaboration in a timely and accurate manner.

During a mass illness event, every management decision, no matter how small, is based on whether it will prevent transmission of the viral or bacterial agent[19] This is a novel concept for many decision makers who are not always savvy about the nuances of infectious disease, public health, and population-based management. Operational-level failures and successes must be understood at all levels (strategic, tactical, and operational). This global effort, defined by the IHR, must be seamless and timely if it is to support control of pandemics that begin and end at the local level. Communitylevel jurisdictions must be afforded equity in attention and basic resources (eg, HEOCs) to ensure operational success.

PARTING THOUGHTS

From my vantage point, strategic- and tactical-level plans are adequate to the task. Granted, the United States has come a long way since the immediate postanthrax era, when only 19%

FIGURE 2

Relationship of the Los Angeles County Public Health Department Operations Center within county, regional, and state emergency operations centers in California. (Reprinted with permission from Alonzo L. Plough, PhD, MPH, Director, Emergency Preparedness and Response Program, County of Los Angeles Department of Public Health.)
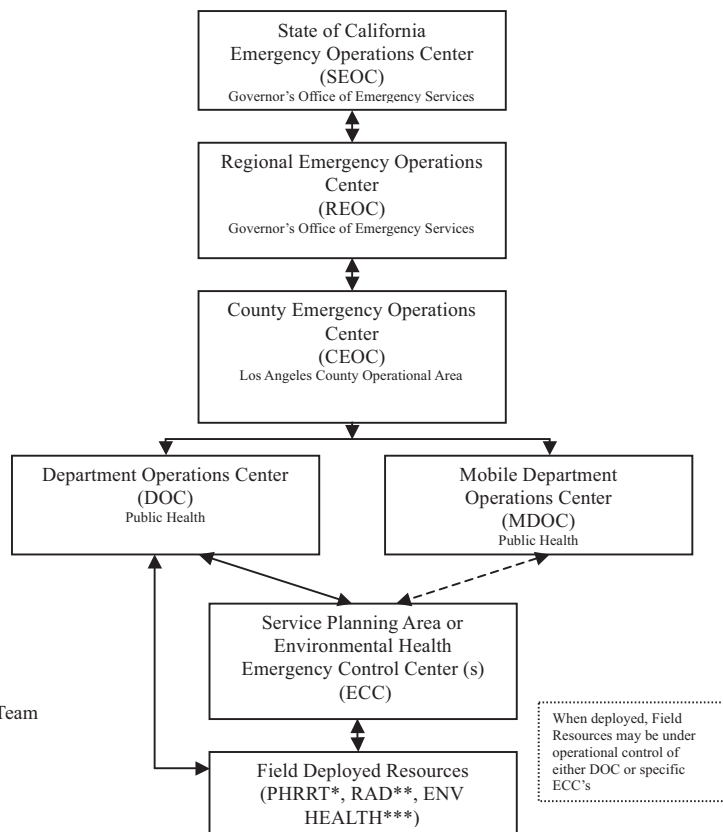
of departments of health had e-mail access. Today our Achilles' heel is 2-fold: One, can the United States meet obligations under the IHR to responsibly provide and share data in a timely manner? Through no fault of its own, CDC may find itself in an untenable situation. Two, are resources in place to ensure that the nearly 2800 state and local health departments have the means and venues to coordinate critical decisions that only a partnership of community public health and clinical workforce authorities have the capacity for in protecting their constituents? Unless this is fully understood and translated clearly at the operational level, communities risk increasing, not controlling, the transmission of disease. People today are better informed and share a strong knowledge base that expects high-quality care, performance, transparency, and accountability.

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