Regionalization in Local Public Health Systems: Public Health Preparedness in the Washington Metropolitan Area

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SYNOPSIS

The Washington metropolitan area was closely examined to understand how these regional preparedness structures have been organized, implemented, and governed, as well as to assess the likely impact of such regional structures on public health preparedness and public health systems more generally. It was found that no single formal regional structure for the public health system exists in the Washington metropolitan area, although the region is designated by the Department of Homeland Security as the National Capital Region (NCR). In fact, the vast majority of preparedness planning and response activities in this area are the result of voluntary self-organization through both governmental and nongovernmental organizations. Some interviewed felt that this was an optimal arrangement, as personal relationships prove crucial in responding to a public health emergency and an informal response is often more timely than a formal response. The biggest challenge for public health preparedness in the NCR is incorporating all federal government agencies in the area in NCR preparedness planning.

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The experience of public health practitioners strongly suggests the importance of a regional approach to public health preparedness and response. Indeed, most states have responded to the increased interest in and funding for public health preparedness by setting up regional structures of some sort. However, the rationale for these structures, the way that they are implemented, and presumably the impact of this organizational change vary considerably. To learn from the experiences of areas that have adopted a regional approach, this is one of four collaborative case studies intended to (1) document the variation in the rationale for creating regional public health structures; (2) understand how these structures have been organized, implemented, and governed; and (3) assess the current and likely impact of regional structures on public health preparedness and public health systems more generally.

The focus of this article is the Washington, DC, metropolitan area, sometimes known as the National Capital Region (NCR). In addition to the city of Washington, suburban areas of Maryland and Virginia are also included, but definitions of the region vary. This case study is based on interviews with 19 health officials and others in the region, a review of documents provided by those we interviewed and/or available on the public record, observations of meetings and events, and the first author's experience in working in the region. The interview protocol is included as Figure 1 and a list of those interviewed appears in Figure 2. The interviews were conducted with the understanding that opinions about how well things went and how they could have been done differently were to be kept confidential; that is, the information would not be used in a way that identifies the interviewee without his/her consent. This protocol was approved by the RAND Human Subjects Protection Committee.

The case study is organized as follows. We begin with a discussion of the various definitions of the region, and then describe how and why regional efforts have evolved over time. We then describe how the region is organized and governed. Then, to enable comparisons with the other case studies, we address three approaches to regionalization:

- 1. Coordination: exchanging information on functions/activities so that voluntary individual efforts can work together more harmoniously;
- Standardization: creating uniformity across individual health departments in how this function is conducted and measured, which each participating health department agrees to adopt, so that resources can be shared more effectively in an emergency; and

 Developing regional capacity: to create a separate capacity above or in addition to what each individual health department would develop.

We then describe a series of regional activities and accomplishments, and conclude with some observations on the likely impact of these activities on regional preparedness.

THE NCR

The Washington metropolitan area includes the District of Columbia (DC) and parts of the Commonwealth of Virginia and the State of Maryland. People regularly cross the three jurisdictions for work, school, and entertainment, and tourists visit all three jurisdictions. However, there is no single, formal definition of the area, and with regard to public health preparedness and emergency response, health officials focus on five different definitions of the region.

The NCR, the first definition of the region, was formally established by the National Capital Planning Act of 1952 (Title 40, U.S.C., Section 71). The NCR includes DC; Montgomery and Prince George's Counties in Maryland; Arlington, Fairfax, Loudoun, and Prince William Counties in Virginia; and all cities in Maryland or Virginia within the geographic area bounded by the outer boundaries of the combined area of said counties.¹

With the exception of Frederick County in Maryland, the NCR corresponds to the boundaries of the jurisdictions that are members of the Metropolitan Washington Council of Governments (COG), as shown in Figure 3, which forms the second definition of the region. Frederick County was a recent readdition to COG after a long absence and is still not fully integrated with respect to preparedness issues, in part because of the county's exclusion from the Urban Area Security Initiative (UASI), described later in this article. There has been some interest in officially adding Frederick County to the NCR, but this opens up questions of whether other jurisdictions on the edge of the region should be added as well. Some feel that the region is expanding, particularly as defined by the metropolitan statistical area, which is used for funding items such as the Ryan White CARE Act, and that the region could in theory extend from Richmond, Virginia, to Baltimore, Maryland. The Table summarizes some demographic and health characteristics of the COG jurisdictions.

The media market supplies a third definition for the region. Mass media for the region reaches well beyond the borders described previously to include considerably more of Virginia and Maryland, as well as parts of Pennsylvania, West Virginia, and Delaware.

Figure 1. Interview protocol

- 1. How do you and others define the National Capital Region (NCR)/Washington metropolitan area?
 - a. Is the region officially designated? If so, by whom?
 - b. Has the definition of the region changed over time?
 - c. Is the definition the same for all public health and preparedness purposes? If not, how does it vary by purpose?
- 2. What is the history of and rationale for forming the region?
 - a. When did the local health departments in the region start working together? For what purpose?
 - b. At what point or points did the nature of the regional organization become more formal? If so, why?
 - c. Have the motives for regional action changed over time? If so, how?
 - d. Have factors outside local public health agencies, such as state health departments, Centers for Disease Control and Prevention (CDC), and/or the Department of Homeland Security, led to a more regional approach to public health in the area? If so, how?
 - e. What are the most formidable barriers to regional activity? How were they overcome (if they were)?
- 3. How is regionalization implemented?
 - a. How are local public health agencies organized and governed on a regional basis?
 - b. Are there any official documents, such as memoranda of understanding, that formalize a regional approach to public health?
 - c. What other organizations (e.g., public safety agencies, hospitals, voluntary organizations) are involved in regional public health planning or response?
 - d. What approach(es) has the region taken as a whole? Refer to Project Public Health Ready (PPHR) approaches to regionalization (see box) if possible.
 - e. What approach has the region taken with regard to specific functions? Illustrate each if possible.
 - f. How have the states and the federal government facilitated or impeded a regional approach to public health preparedness?

To guide regional approaches to public health preparedness in PPHR, the National Association of County and City Health Officials has identified three approaches to regionalization, which apply differently depending on local capabilities and needs, and for different public health functions. These approaches, which will be used to structure the proposed research, are as follows.

- Coordinate: to exchange information on functions/activities so that voluntary individual efforts can work together more harmoniously.
- ✓ Standardize: to create some uniformity across individual health departments in how this function is conducted and measured, which each participating health department agrees to adopt, so that resources can be shared more effectively in an emergency.
- ✓ Develop regional capacity: to create a separate capacity above or in addition to what each individual health department would develop, possibly through a regional office of emergency preparedness.
- 4. What are some of the NCR's activities and accomplishments?
 - a. What are some activities on which local public health departments have worked together as a region? Please describe. Some activities to consider are:
 - i. Response to West Nile virus
 - ii. Response to anthrax crisis in 2001
 - iii. Regional disease surveillance (e.g., ESSENCE II, notifiable disease reporting, other activities)
 - iv. Regional
 - 1. planning
 - 2. training and workforce development
 - 3. drills and exercises
 - Distribution of federal preparedness funds (e.g., CDC, Health Resources and Services Administration, Urban Area Security Initiative) or sharing resources acquired through those funds
 - b. What has been accomplished through regional collaboration that might not have been accomplished if each public health agency was working on its own?
 - c. What else might have been accomplished if a regional approach was more developed or developed earlier?
- 5. Impact
 - a. What has been the impact of regional approaches on public health preparedness?
 - b. What has been the impact of regional approaches on public health systems more generally?

Consideration of the extent of the media market is essential for effective risk communication, especially to avoid public confusion over messages that are intended for a smaller audience than the one reached by the media or when public health jurisdictions within the market have different messages.

The health-care sector provides yet another definition. The hospitals in Northern Virginia, organized

through the Northern Virginia Hospital Alliance (NVHA), go beyond the traditional COG, NCR, and Northern Virginia borders to include Mary Washington Hospital in Stafford County and Fauquier Hospital in Fauquier County. These hospitals asked to be included in the Northern Virginia region because of proximity and referral patterns. The DC Hospital Association (DCHA) primarily serves hospitals within DC, but its Hospital Mutual Aid Radio System includes some hospitals in Virginia as well as the Maryland Incident Emergency Management System in Baltimore; the Office of the Attending Physician (OAP) for Congress; and the Army, Navy, Air Force, and Veterans Administration hospitals in the region. Maryland does not have an equivalent to the NVHA or the DCHA, but the hospitals in Montgomery County and Prince George's County have organized their own collaborative. In addition, Suburban Hospital in Montgomery County has developed a partnership with a Department of

Figure 2. Individuals interviewed

- Virginia Department of Health—Lisa Kaplowitz, Deputy Commissioner of Emergency Preparedness & Response
- Alexandria (VA) Health Department—Charles Konigsberg, Health Director
- Fairfax County (VA) Health Department—Gloria Addo-Ayensu, Health Director
- Arlington (VA) Department of Human Services (Public Health Division)—Reuben Varghese, Health Director
- Virginia Department of Health, Northern Virginia Team—Clark Beil, Regional Emergency Planner; David Wilder, Physician; Lisa Caldwell, Regional Public Information Officer
- Northern Virginia Hospital Alliance—Kevin Harlen, Executive Director
- Northern Virginia Regional Commission—David Schwengel, Director, Regional Emergency Preparedness Planning
- District of Columbia (DC) Department of Health—Gregg Pane, Director; John Davies-Cole, Chief, Bureau of Epidemiology & Health Risk Assessment; Beverly Pritchett, Senior Deputy Director, Emergency Health and Medical Services Administration (EHMSA); Sherry Adams, EHMSA
- DC Office of Homeland Security—Steve Kral, Administrator, Grants Administration
- DC Hospital Association—Jeffrey Elting, Medical Director for Bioterrorism Response Coordination
- U.S. Department of Homeland Security—Tom Lockwood, Director, Office of the National Capital Region Coordination
- Montgomery County Department of Health and Human Services—Richard Helfrich, Deputy Health Officer
- Suburban Hospital, Bethesda, MD—Patricia Hawes, Employee/ Occupational Health & Safety; Cindy Notobartolo, Emergency/Trauma, Safety & Security Services

Defense (DoD) facility, the National Naval Medical Center (NNMC), and a federal facility—the National Institutes of Health (NIH) Clinical Center for emergency preparedness.

Finally, the inclusion of federal entities in the hospital definition reflects the reality that the federal government must be included in any definition of the region. The various agencies of the federal government, including the Congress as well as Executive Branch agencies, play an important role in public health preparedness and response, but their participation in NCR planning and response activities varies.

All of those interviewed from Virginia explicitly referred to both the Washington Metropolitan area and Northern Virginia as regions, and some seemed to consider the latter as more important. The Virginia Department of Health (VDH) has 35 districts and had five emergency preparedness and response regions in place prior to 9/11. However, these regions were provided with staffing and revitalized using federal bioterrorism grants after 9/11. In addition, Northern Virginia has an organization known as the Northern Virginia Regional Commission (NVRC), one of 21 planning district committees created by the Virginia General Assembly in 1969. After 9/11, the NVRC became more focused on and active in preparedness and public health.

ORGANIZATION AND GOVERNANCE

During the anthrax crisis of 2001, a high-level federal official is said to have urgently asked to speak to the "health officer for the NCR." However, there is no such office, and the question of "Who's in charge?" during an emergency remains a serious issue. Although regional public health preparedness and response activities are operationalized in a variety of ways in the NCR, there has been a dramatic increase in the amount and scale of these activities since 9/11.

The COG Health Officials Committee (HOC) has existed for many years and provides a forum to communicate on a regular basis. Before 9/11, the HOC helped public health officials coordinate activities related to tuberculosis control, West Nile virus (WNV), and other diseases. Since 9/11, the HOC increased the frequency of its meetings from bimonthly to monthly and established subgroups such as the Health Public Information Officers Committee, the Health Working Group/Emergency Support Function (ESF), and the Bioterrorism and Emergency Planning Subcommittee (BEPS).

COG is an independent, nonprofit association representing these local jurisdictions. COG does not have

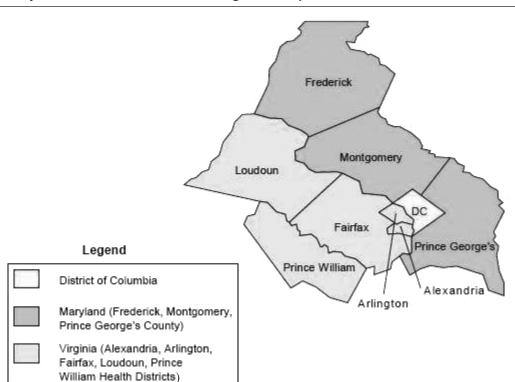


Figure 3. Local jurisdictions included in the Washington Metropolitan Council of Governments

legal authority, but functions because people with that authority agree to work together in a loose confederation. Especially for public health purposes, the State of Maryland and the Commonwealth of Virginia play important roles, and their health departments are represented in HOC and other activities. The Senior Policy Group (SPG) and the COG's Chief Administrative Officers (CAOs) committee address preparedness efforts more generally. The SPG consists of representatives of the governor of Virginia, the governor of Maryland, and the mayor of DC; the three emergency preparedness and response heads for those three jurisdictions; and the head of the Office of NCR Coordination at the Department of Homeland Security (DHS).

Other new regional entities such as the VDH Northern Virginia Regional Team (NVRT), the NVHA, and the Health & Medical Coordination Group, convened by the DC Department of Health and inclusive of federal agencies, have been established in recent years. The NVRT consists of an epidemiologist, planner, public information officer, physician, trainer, and industrial hygienist. The intent of this team and its equivalents elsewhere in Virginia was to relieve the burden on local health department staff regarding preparedness activities. But in Northern Virginia, the team also

stepped in to relieve the burden of communicating and coordinating with COG and the larger region. The DCHA's Medical Director for Bioterrorism Response Coordination, a new position, plays a similar role.

Maryland does not have the equivalent to the NVHA or DCHA, and the Maryland Hospital Association has no explicit focus in the Washington suburbs. Maryland also does not have an equivalent to the NVRT. Montgomery County and Prince George's County are part of Region 5 in Maryland, but the region only has a lowerlevel administrative staff member based in Baltimore and a representative to COG. The State of Maryland chose to give nearly all of its federal bioterrorism funds directly to county health departments and hospitals without keeping funds to create a state-run regional structure, so responsibility for interaction with the NCR mostly falls to Prince George's and Montgomery counties. Additionally, the Maryland Department of Health and Mental Hygiene has struggled with high turnover, interdepartmental collaboration, and division of labor problems.

However, the hospitals in Montgomery County came together immediately after 9/11 and formed the Montgomery County Emergency Preparedness Collaboration (MOCEP), also known as the Montgomery County,

Table. Demographic and socioeconomic characteristics of Washington metropolitan area jurisdictions

	District of Columbia	Frederick County,	Montgomery	Prince George's	Alexandria, VA	Arlington County,	Fairfax County,	Loudon County,	Prince William County VA
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Area (in square miles)	61	999	496	485	15	26	403	520	350
People per square mile	9,378	295	1,761	1,653	8,552	7,287	2,406	326	802
Population, 2000	572,059	195,277	873,341	801,515	128,283	189,453	969,749	168,599	280,813
White (single race) (percent)	30.80	89.30	64.80	27.00	59.80	68.90	06.69	82.80	98.89
Black (single race) (percent)	90.09	6.40	15.10	62.70	22.50	9.30	8.60	9.90	18.80
Asian (single race) (percent)	2.70	1.70	11.00	3.90	5.70	8.70	13.00	5.30	3.80
Other single race (percent)	4.20	1.10	5.30	3.80	7.80	8.60	4.90	2.60	4.80
Two or more races (percent)	2.40	1.50	3.40	2.60	4.30	4.30	3.70	2.40	3.60
Hispanic (any race) (percent)	7.90	2.40	11.50	7.10	14.70	18.60	12.50	290.00	9.70
<18 years of age (percent)	20.10	27.60	25.40	26.80	16.80	16.50	25.40	29.80	30.40
≥65 years of age (percent)	12.20	09.6	11.20	7.70	9.00	9.40	7.90	2.60	4.80
<high (percent)<="" diploma="" school="" td=""><td>22.20</td><td>12.90</td><td>9.70</td><td>15.10</td><td>13.20</td><td>12.20</td><td>9.30</td><td>7.50</td><td>11.20</td></high>	22.20	12.90	9.70	15.10	13.20	12.20	9.30	7.50	11.20
High school diploma (percent)	20.60	30.10	14.50	27.30	12.70	11.70	13.90	17.70	24.90
Some college (percent)	15.40	20.50	16.70	25.00	15.50	12.30	16.90	20.90	25.10
≥Bachelor's degree or higher (percent)	39.10	30.00	54.60	27.20	54.30	90.20	54.80	47.20	31.50
Income, 2000									
Per capita personal income	\$28,659	\$25,404	\$35,684	\$23,360	\$37,645	\$37,706	\$36,888	\$33,530	\$25,641
People below poverty level (percent)	20.20	4.50	5.40	7.70	8.90	7.80	4.50	2.80	4.40
Median household income	\$40,127	\$60,276	\$71,551	55,256	\$56,054	\$78,877	\$81,050	\$80,648	\$65,960
Children <18 years of age in poverty (percent)	31.10	4.90	5.90	9.20	13.90	9.10	5.20	2.60	5.60
Unemployment rate, 2000	;		į	;	;	;	:		;
Annual mean (percent)	10.80	3.10	3.20	5.90	3.20	2.80	2.60	2.00	3.00

^aSource: U.S. Census Bureau. Census 2000. Washington: U.S. Government Printing Office; 2002.

MD = Maryland VA = Virginia

Maryland, Hospital, and Public Health Partnership Group (HPHPG). This group consists of five hospitals: Holy Cross, Washington Adventist, Suburban, Montgomery General, and Shady Grove Adventist. Although initiated by the hospitals, the county public health department joined in right away, as did the county's DHS, emergency medical systems, fire department, and police. Unlike in Virginia and DC, where DCHA and NVHA offer administrative support and are funded by hospital dues, there is no specific funding for this group and hospitals share the responsibilities. The hospitals in Montgomery and Prince George's counties have a representative at both COG – ESF 8 and the Health and Medical Regional Working Group.

One of the hospitals in MOCEP formed another group in 2004 with the NNMC and the NIH Clinical Center, known as The Partnership or, officially, the Bethesda Hospitals Emergency Preparedness Collaboration. The group was formed purely out of the visionary outlook of each of the facility's leaders.

Regional capacity

Some of the new activities represent the development of regional capacity. The ESSENCE II regional surveillance system, operated by The Johns Hopkins University Applied Physics Laboratory (JHU/APL), for instance, gathers data from hospitals and other sources in the region, analyzes them, and feeds them back to all jurisdictions in the NCR. ESSENCE II provides the region with the capability to show that an outbreak is not happening by negative confirmation of a bump in cases (e.g., possible food poisoning, the tularemia incident in 2005), and should be able to pick up bioterrorism events early. In addition, ESSENCE II has served as the basis for regional exercises that provide an opportunity for the jurisdictions in the NCR to jointly utilize the system as they would in a public health event.2 The system is regarded as having worked well and is often cited as the best example of a successful regional project.

ESSENCE II regional surveillance system. ESSENCE II was established in the NCR to fulfill the need for a centralized, interjurisdictionally coordinated regional disease surveillance system for the ongoing, systematic, and timely collection, analysis, and interpretation of infectious disease-related data. Prior to its development, the NCR jurisdictions were using a manual system to conduct hospital emergency department syndromic surveillance. The NCR Syndromic Surveillance Network was established based on existing relationships among Washington, DC, Maryland, and Virginia to fully automate data gathering, analysis, and reporting processes, and to provide a common view across the

three jurisdictions. This effort was funded by a UASI grant.

Hospitals share their data with their respective local and state (DC is regarded as a state) health departments through secure ESSENCE II nodes at each jurisdiction's site. These data are then de-identified, aggregated, and transmitted to the central node housed at JHU/APL. The de-identified health information is integrated with additional data from nontraditional sources and made available to the system users in the NCR. Concerns about the protection of sensitive health information are minimized through the aggregation of data when presented multijurisdictionally. The individual jurisdictions follow up anomalies detected in these data using established protocols.

ESSENCE II offers many capabilities that enhance local and regional disease surveillance in the NCR. They include:

- Web-based access to near real-time health information:
- The ability to monitor the population's general health under normal conditions (i.e., when a community health event is not suspected);
- Situational awareness when an unusual disease pattern is detected, during the onset of an outbreak, and following the identification of an outbreak;
- The ability to flag statistical anomalies to assist with detecting outbreaks in a timely manner using both traditional and nontraditional data sources;
- Easy access to patient information for follow-up investigations (i.e., the ability to drill down to patient-level line listings);
- Historic disease trends-tracking capability;
- Inter- and intrajurisdictional disease surveillance capability;
- Communication among inter- and intrajurisdictional users about events identified through ESSENCE II using an embedded event communications tool; and
- Advanced visualizing capabilities, including the ability to quickly view statistical anomalies at the regional, state, and local levels, and advanced graphing and geographic information systems mapping capabilities.

Another example of regional capacity, COG's newly developed ability to set up conference calls on short notice, has been used during public health emergencies. COG has also developed the Regional Incident Communication and Coordination System, through which local, state, and federal officials can receive alerts and notices through pagers, cell phones, personal digital assistants, and e-mail and be connected within 30 minutes or less of an emergency. The DCHA's emergency radio network also has been expanded to cover hospitals and other entities throughout the region.

Although only a portion of the NCR is covered, the VDH NVRT represents an important addition to regional capacity. Although the number of team members is small, they have supported both a local health department in Northern Virginia and the VDH through representation in NCR preparedness planning activities and in responses to regional emergencies such as the 2005 anthrax false alarms. Unlike most local and state health department staff, who have a variety of nonpreparedness responsibilities, the regional team members are dedicated to preparedness and emergency response activities, and thus represent an important new resource that improves the preparedness of both local health departments and the region as a whole.

Coordination

The majority of new preparedness activities in the NCR fall into the category of coordination. This includes the HOC/BEPS activities with respect to WNV and pandemic influenza. The Health & Medical Regional Work Group was established by the DC Department of Health's Emergency Health and Medical Services Administration to prepare for the 2005 presidential inauguration, but its members saw the value of the opportunity for coordination, and have continued to meet on an informal basis since then. Another example is the ongoing effort by the BEPS Isolation and Quarantine subcommittee to harmonize policies on home isolation and quarantine and on alternative care sites.

The management of the DHS UASI process in the NCR is a good example of regional coordination for public health preparedness. Funds for the NCR are received by the DC mayor's office but are distributed according to a plan worked out cooperatively by a variety of groups, including the HOC/BEPS and the DCHA and its counterparts in Virginia and Maryland.

Hospital surge capacity has been increased through the use of the UASI grants. In both fiscal year 2004 and fiscal year 2005, the region received \$3 million to build surge capacity in area hospitals. In total, 1,000 fully equipped beds have been added compared with the 3,000 additional beds that some formulas would say were needed for a region with 4.5 million people.

Although there is coordination across the entire NCR, it seems to be strongest in the regions within the region. For example, the Northern Virginia health department's regional team reviews the pandemic flu plan for each health district in Northern Virginia and helps resolve any mixed messages or conflicts (e.g., if a jurisdiction is planning on using a facility for a certain purpose and another jurisdiction is planning on using the same facility for a different purpose).

Despite the efforts to improve coordination in the region, the question of "Who's in charge?" and who will call whom, especially during an emergency, is still somewhat unsettled. For example, DC officials report always contacting the state health departments in Maryland and Virginia, whereas the local health departments in the suburbs say they often contact whomever is needed, regardless of level.

In some ways, communication has increased too much, in the sense that staff members receive so many alerts and notices—both urgent and nonurgent, tests and real—that key people are inundated and are less likely to respond to an actual event. In addition, conference line information is provided to huge numbers of people such that the 100-line limit was reached during both the anthrax and tularemia events in 2005 without a system of prioritization, meaning that key people were left out. Both security and effectiveness are concerns on such calls and on sending out alerts en masse to people who may not be appropriate or necessary to include.

Coordination with the federal government is the most problematic aspect of coordination in the NCR. Many of those interviewed expressed a desire to know what the federal government thinks is its role in the region. There is a perception that federal agencies forget that they, their facilities, and their personnel are not in isolation from the local community, that the NCR is not one entity, and that they have neglected to communicate to the local governments that they are working on an event. This results in a sense that the local governments are on their own. There is recognition that the federal government feels much more ownership in this region than anywhere else in the country, that it has a huge presence, and that the fact that its mission is both national and international makes it difficult to also focus on local issues. In addition, there was a feeling that the federal government has an unfavorable history of communication, both across or within agencies and with local government. Local governments typically do not know people they can contact easily at the U.S. Department of Health and Human Services, NIH, DHS, or the DoD because of high turnover and lack of outreach, or, if they do, it is only as a result of personal interaction and relationships.

Key players have reported some improvements in federal government involvement in recent years. For example, DC's DOH and the Emergency Health and Medical Services Administration have a good relationship with the OAP and the White House Medical Staff. These offices contacted both the Virginia and DC health departments with information on a visitor to Capitol Hill from the Midwest in the context of the mumps outbreak. DC considers its interaction with federal agencies different from that of Virginia and Maryland because it can go straight to the federal agencies rather than going through their state. In addition, DC invites federal agencies to events and engages with them in the Health & Medical Working Group, while the only federal presence in COG is a representative from DHS.

Standardization

We found relatively few efforts to standardize public health functions in the region. There is some degree of standardization within the states of Maryland and Virginia simply because all of the local health departments are part of the state system. Each state health department, for instance, has its own system for reporting notifiable diseases. There is, however, no uniform color system for hospital codes across the region, nor a regional patient tracking system, though there is a pilot program in its initial stages in Prince George's County. Key people observed that standardization of messages by public information officers and of technology used to communicate has not yet been achieved in the region. In addition, public health itself has been resistant to standardization of public health practice.

ACTIVITIES AND ACCOMPLISHMENTS

UASI

The UASI is a federal DHS grant to enhance local governments' ability to prepare for and respond to threats or incidents of terrorism by providing funds for equipment, training, exercises, and some planning to large urban areas. As a general rule, UASI funding only supports things that benefit the whole region. Fiscal year 2006 priorities were: surge/bed capacity for hospitals across the region, ESSENCE II, Medical Reserve Corps personnel, emergency planners, and a gap analysis that acts as a guide to NCR's position on public health and medical issues. For instance, as indicated previously, \$3 million was received and used to build 1,000 fully equipped surge beds.

Prince George's County also received funding to develop a patient tracking system that was intended as a regional system for use during major events and disasters and that would be particularly useful for patient transfers between jurisdictions. To be used effectively, however, it must be used at all times throughout the region. However, DC recently developed its own system and is reluctant to switch to a regional system. Conceptually, the Virginia hospitals have indicated an interest, but their participation would depend on installation and operational costs as well as other issues.

Because a regional application was required, UASI forced the region to come together. The consequence of closely working together may be more valuable than the funds themselves in an emergency. However, some feel it would work better, provide more flexibility, and be easier to implement if funding went to each of the three jurisdictions, and that coordination would still be preserved because it would be in the best interest of the two states and DC. Some also feel that the UASI process can prove divisive in deciding how to allocate across the jurisdictions, either evenly by jurisdiction or by population, threat risk, hospital capacity, and resources.

The selection of priorities for projects for UASI funding receives mixed responses from people. There is a sense that the ESF 8 group, which comes up with the initial prioritized list, has been consistent in its criteria over the years. But there were also reports that for fiscal year 2006, the process was reopened and the list was revisited in an unorganized fashion that was not transparent and did not rely on set criteria. The complexity of the funding process has led COG to consider adding a full-time position to deal with funding, because at present, the people participating are doing so in addition to their full-time jobs. Some feel that the SPG and the CAOs do not value public health because they do not understand it, in particular its labor intensity; they are used to purchasing equipment. In addition, the UASI funding is directed toward equipment (e.g., freestanding hospitals) rather than human resource costs, but no federal funding addresses the need for sustained labor funding.

WNV

Starting in the summer of 2000, the COG HOC and others have collaborated to produce the COG WNV Response Plan for the NCR. The purpose is to increase awareness, provide access to resources (local, state, and national) on WNV for residents of the Washington metropolitan area, and offer information about what is being done locally. This plan is intended for use by local health officials to better coordinate their jurisdictional efforts with the rest of the NCR; public information officers and health departments that will implement public education and outreach; and the

general public as a resource on WNV and integrated pest management in the NCR. From the start, it was realized that the individual jurisdictions in the region would make their own decisions about control activities, such as whether to use insecticides, but that coordination and communication would allow health officials in one jurisdiction to be prepared to say why they were taking a different approach than others.

Anthrax 2001³

The U.S. anthrax attacks in the fall of 2001 began with a case diagnosed in a Florida man in early October, followed by news organization personnel in New York City a week or two later. Anthrax became apparent in the Washington area with the delivery of a letter to Senator Tom Daschle's office on October 15. Congressional authorities were notified immediately, and the area was evacuated. On October 16, the Centers for Disease Control and Prevention (CDC) informed Congress and the DC Department of Health that the Daschle letter contained a virulent form of anthrax. Subsequent screening of staffers and others was done by and at the initiative of the OAP of the Capitol. CDC also indicated on October 16 that there was a "remote" chance of contamination at the Brentwood postal facility in DC, which sorted all mail for Congress and the rest of DC. It was later discovered that four Brentwood postal workers developed anthrax. On October 17, the DC Department of Health was notified that a postal worker at a congressional mail-sorting facility at P Street Southeast had tested positive for anthrax exposure two days earlier—the first indication that someone outside the Capitol had been affected.

As these events unfolded, individuals who thought they might have been exposed began seeking evaluation and treatment at hospitals. In response, the DCHA began to host daily conference calls about the anthrax situation to allow hospital personnel in DC and surrounding areas to communicate about the patients they were seeing and how to respond. At the time, public health officials did not have the capacity to do this on their own. Although public health officials from DC and the neighboring areas were not initially invited to participate in the DCHA calls, those who learned about the calls were eventually included.

Two of the cases sought care from the Virginia health system and thus came to the attention of the same infectious disease specialist. As a result, both were diagnosed, treated, and survived. However, for the two men who died, their disease was not recognized until it was too late—despite urgent notices from the Maryland Department of Health and Mental Hygiene

to emergency departments in Maryland hospitals, as well as some in Virginia and DC, as early as October 11. Moreover, although there was reason to suspect postal mail as a source of exposure as early as October 17, when the first two cases sought care, neither was asked where they worked or other questions that might have made the connection. If health officials had known and been able to start active surveillance for anthrax throughout the region as soon as the Daschle letter had been received, the two men's fate could have been different.

The primary means of communication among the state and local health departments involved were phone calls between state health officials, contacts through CDC, and daily conference calls set up at the initiative of the DCHA. It took two days for the DC Department of Health to receive the positive results from the testing of a postal worker at a DC post office. This outbreak clearly challenged the public health infrastructure of the NCR, and it is not certain that any public health efforts would have made a difference. The lack of clear leadership and the inability to communicate effectively within public health and with other agencies did seem to limit the public health system's ability to respond effectively.

Anthrax 2005

The region's next experience with anthrax came in 2005, when routine testing detected traces of anthrax spores in the mail at the Pentagon (located in Arlington County, Virginia), and an alarm associated with air-handling equipment sounded on the same day in a DoD office in a privately owned building complex in Fairfax County, Virginia. The DoD did not notify the Arlington and Fairfax health departments as early as it might have, but once these departments became aware of the issue, they took effective steps to assess the situation and communicate with the public and the medical community.

A number of interviewees noted the importance of the health department's NVRT, which not only provided extra staff to support local activities, but also helped communicate with the rest of the NCR. The team notified health agencies in the region and helped maintain communications with the VDH and CDC. They took the lead in determining pharmaceutical needs and the status of the regional pharmaceutical cache. The team also coordinated with the VDH epidemiology office, monitored ESSENCE II, notified and updated hospitals and health departments in the NCR, provided input for press releases, supported the regional public information officers from the VDH, and prepared an after-action report about the incident.

On September 30, 2006, CDC notified the DC Department of Health that six bioterrorism sensors on the National Mall had detected signs of tularemia bacteria the day after thousands of people had gathered there for antiwar demonstrations and the National Book Festival. Because the test results from the DHS's BioWatch program were not definitive, DHS delayed notifying CDC for at least 72 hours. CDC also notified the Virginia and Maryland health departments, which in turn notified the local departments in the NCR.

Once the local health departments became aware of the alert, they worked together well. New communication mechanisms put in place since 9/11, such as the Regional Incident Communication and Coordination System and the COG HOC conference call facility, allowed these departments to communicate with each other. A conference call participant suggested that ESSENCE II be monitored for signs of resulting illness, and the lack of evidence was reassuring. Local health departments were also able to alert hospitals via e-mail, which would not have been possible four years earlier. The major concern that we heard about the local response was that too many people tried to join conference calls, making it impossible for key personnel to participate.

Pandemic influenza

Although there is no ongoing coordination of the pandemic influenza plans being developed in DC, Virginia, and Maryland, each jurisdiction invited the others to their respective summits, COG has discussed doing so, and DC invited the Attending Physician of the Capitol to its summit and to other meetings. DHS's Office of NCR Coordination participated in the summits in each state. In addition, the DC Deputy Mayor for Public Safety and Justice and the DC Department of Health asked the DCHA to put together protocols for both the health-care sector and the community at large for each of the World Health Organization pandemic flu phases. The DCHA's Infectious Disease Committee developed the protocols, shared them with the hospital associations in Virginia and Maryland, and distributed copies of the protocols to Maryland and Virginia at the COG HOC meeting. (Virginia and Maryland had not yet developed such protocols.) Similarly, a subcommittee of the NCR BEPS was working in the summer of 2006 to coordinate policies for isolation and quarantine in alternative care facilities.

CONCLUSIONS

Despite, or perhaps because of, the numerous regional entities, relationships among local and state health

departments and with various public health partners in the NCR tend to be informal rather than formal. Unlike the Northern Illinois Public Health Consortium, which was formally established by its member local health departments, or the public health regional offices set up by state health departments in Massachusetts and Nebraska, health departments and partner agencies tend to work together on a voluntary basis. (The UASI funding, which by law is provided by the DHS to the NCR, is an exception to this pattern.)

Pragmatically, given the different geographical boundaries and organizations represented in the various regional entities, a formal regional preparedness and response entity is probably not possible. The vesting of public health authorities and resources with the states further complicates the formation of a formal entity.

Some of those with whom we spoke viewed the current informal arrangement as optimal rather than just pragmatic, as in their opinion, personal relationships will prove crucial in responding to a regional public health emergency. There is a sense that the official chain can be slower and that no matter how many memoranda of agreement are signed, without day-today interaction and information sharing, regionalization efforts will not be successful. Most of the people with whom we spoke had informal contacts that they would call in other jurisdictions during an emergency to either give or get information. There is a liberal assumption that staff can and should contact whichever colleagues they think need to be contacted. Increased meeting frequency, such as the COG HOC group meeting every month instead of every other month, has strengthened informal relationships. Others noted, however, that although it was good to know colleagues in other jurisdictions, official points of contact were also useful, and a lack of formal contacts sometimes made things unclear. Furthermore, informal relationships can be problematic in some cases because of high turnover and the lack of formal relations between positions and titles, underscored by the fact that the different jurisdictions still don't understand each other's organization and structure. The NVRT and each Northern Virginia health district has set up a 24/7 pager for the one point of contact.

Despite strong coordination in the region, the question of "Who's in charge?" will remain an issue because there is no single entity legally charged with public health responsibilities. The number of jurisdictions and federal agencies involved, plus the fact that public health is largely left to the states as a Constitutional matter, make it unlikely that a clear chain of command will ever exist or that the jurisdictions will ever make the same decisions at the same time. However,

recognition that the region cannot be officially unified does not mean that jurisdictions cannot standardize, coordinate, and share resources. Indeed many public health officials in the region seem to feel that these steps are necessary and are taking them.

A number of interviewees in Northern Virginia suggested that the Northern Virginia region needed to first organize itself before moving to the more challenging NCR level. Indeed, the Northern Virginia region is currently working on pandemic flu plan coordination and a regional Metropolitan Medical Response System. Some people in DC had a similar idea: that all of the DC departments needed to coordinate their plans before moving them to the NCR level.

The biggest challenge for public health preparedness in the NCR is the federal government's role. Federal agencies such as CDC can be expected to play an important role in any public health emergency. CDC and other Department of Health and Human Services agencies, for instance, will play a central role in the response to pandemic flu. But because Washington is the seat of the federal government, this role is frequently amplified. For example, the anthrax attack of 2001 was focused on Senate offices, and as a result the OAP of the Capitol was heavily involved. The 2005 anthrax alarms occurred at the Pentagon and a DoD office in the NCR, and the DoD led the response. Not all federal agencies, however, are active in NCR planning and preparedness activities, and this could impede collaboration during a future emergency. Indeed, one local health official suggested that because CDC was likely to come into any future emergency and call the shots, the value of predetermined local plans was limited.

Is the NCR better prepared because of the increased level of activities since 9/11? One can never be sure, but two lines of evidence suggest that it is. First, regional capacities developed in recent years should facilitate a more effective response to public health emergencies. The VDH NVRT, for instance, played an important role in coordinating the response to the 2005 anthrax false alarms, which directly affected two Virginia counties and indirectly affected the entire region. The ESSENCE II system provided information to assure health officials that the tularemia alarms on the National Mall in 2005 did not indicate a significant health emergency. A variety of systems have been developed to communicate among officials in the region and with the public. And of course, each of the jurisdictions in the region also improved its individual response capabilities in a variety of ways, building on federal and state financial support. Each of the states, for instance, has increased its epidemiologic and laboratory capacity. The relative lack of regional standardization efforts, on the other hand, will likely weaken a regional response.

Second, since 9/11, state and local public health officials and public health partners from the entire NCR have been meeting with each other and working collaboratively in a variety of settings far more than in the past. These meetings were in response to federal funding opportunities such as UASI (which required the NCR to work together), a shared understanding that collaboration in planning and response was required (which seems to be the primary driver of the COG HOC), and a need to respond to regional events such as the 2001 anthrax attacks, the 2005 presidential inauguration, and the anthrax and tularemia false alarms in 2005. To the extent that these meetings are dominated by competition for limited resources, it is possible that they could become divisive. Those with whom we spoke, however, believe that so far the collaboration required to share resources in this way has strengthened the relationships that will be required to respond to public health emergencies in the NCR.

As this article was written, planning for pandemic influenza dominated public health preparedness efforts. As expected by the federal government, Maryland, Virginia, and DC are independently developing their own pandemic influenza plans, and local jurisdictions are each developing their own plans following their states' guidance. Private organizations such as the hospital associations in the region and the Greater Washington Taskforce on Nonprofit Emergency Preparedness are carrying out their own activities. Such independent efforts are likely to conflict in many ways, but efforts to coordinate them are beginning. The VDH NVRT, for example, is reviewing the local plans in its area to identify conflicting assumptions and suggest means of resolving them. On its own initiative, the COG BEPS is working to coordinate approaches to issues such as isolation and quarantine. Many of these organizations participated in a pandemic influenza tabletop exercise on July 19, 2006. Coordination of the many plans in the region could strengthen individual plans as overall regional preparedness. If severe as predicted, pandemic influenza will severely challenge the public health system in this country. But, if current regional coordination efforts succeed, it seems that they could strengthen the public health response and make a substantial difference.

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