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TECHNICAL REPORT

Public Health Preparedness

Integrating Public Health and Hospital Preparedness Programs

Lois M. Davis, Jeanne S. Ringel, Sarah K. Cotton,
Belle Griffin, Elizabeth Malcolm, Louis T. Mariano,
Jennifer E. Pace, Karen Ricci, Molly Shea,
Jeffrey Wasserman, James Zazzali

Prepared for the U.S. Department of Health and Human Services



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The research described in this report was prepared for the U.S. Department of Health and Human Services. This research was produced within the RAND Health Center for Domestic and International Health Security. RAND Health is a division of the RAND Corporation.

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Published 2006 by the RAND Corporation
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PREFACE

The September 11, 2001, terrorist attacks and the subsequent anthrax incidents and hoaxes underscored how important it is for medicine and public health to find new ways to collaborate with one another to address public health emergencies and to improve overall preparedness in their local areas. Indeed, encouraging linkages between local health departments and hospitals (as well as with other key stakeholders) has been an important component of the Centers for Disease Control and Prevention (CDC) and Health Resources and Services Administration (HRSA) cooperative agreements for public health and hospital emergency preparedness to more effectively address different aspects of preparedness. Hospitals and public health departments have employed different approaches for doing so and have varied in their focus on such areas as patient treatment and infection control, quarantine and isolation procedures, disease surveillance and reporting, and risk communication.

In this study, we examine different models for coordination that have been employed by local health departments and general acute-care hospitals to improve public health preparedness. The study's aims are to (1) describe those aspects of public health preparedness on which local health departments and hospitals are focusing their coordination effort ; (2) examine how these relationships have changed over time (from pre-September 11, 2001, through fall 2003); (3) identify factors that facilitate or hinder coordination; (4) understand how funding affects coordination; (5) identify the mechanisms, policies, and procedures that have been demonstrated to be effective in coordinating local health departments' and hospitals' public health preparedness activities; and (6) suggest strategies to improve coordination between local health departments and hospitals and the integration of their preparedness activities.

These results will be of interest to the U.S. Department of Health and Human Services (HHS), as well as to public health and medical professionals responsible for improving public health preparedness and ensuring collaboration between key stakeholders at the state and local levels.

This work was prepared for the U.S. Department of Health and Human Services, Office of Public Health Emergency Preparedness. The research was produced within the RAND Health Center for Domestic and International Health Security. RAND Health is a division of the RAND Corporation. A profile of the Center, abstracts of its publications, and ordering information can be found at

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SUMMARY

Medical and public health professionals have long been aware of the need to improve coordination between their communities. The September 11, 2001, terrorist and subsequent anthrax attacks underscored the importance of finding new ways to collaborate in order to address public health emergencies and to improve overall preparedness. The federal government's bioterrorism funding is aimed specifically at encouraging such collaboration, and the cooperative agreements of the Centers for Disease Control and Prevention (CDC) and Health Resources and Services Administration (HRSA) have encouraged linkages between local health departments and hospitals and other key stakeholders to improve public health preparedness.

Hospitals and public health departments have employed a variety of approaches to improving preparedness coordination. In this study, we examined different models for coordination used by local health departments and local acute-care hospitals. Understanding which strategies have been successful allowed us to identify which aspects of public health preparedness lend themselves to being coordinated, which factors facilitate or hinder coordination, how barriers to coordination have been overcome, and how local health departments and hospitals are using the separate funding streams provided by CDC and HRSA for coordination. We developed a conceptual framework to identify factors that are likely to influence coordination between local public health departments and local hospitals. This framework guided an examination of coordination activities undertaken in 2001 and 2003 and site visits to six locations, five of which were selected as successful models of public health and hospital coordination.

ANALYTIC FRAMEWORK

We developed a three-pronged approach to explore the issues surrounding coordination between local health departments and hospitals. We began with a literature review to inform the development of a conceptual framework for thinking about coordination issues. This framework then guided the development of our analysis plan, which comprises two distinct components. First, to provide a broad national picture of coordination between local health departments and hospitals, we analyzed data from the Surveys of Federal Preparedness Programs for Combating Terrorism (see the Survey Analysis section in Chapter 1). Then, to delve more deeply into the factors that facilitate

and hinder coordination, we conducted a series of site visits to counties in which coordination appeared to be taking place.

CONCEPTUAL FRAMEWORK

Before evaluating the various coordination mechanisms that could be used, we first considered the particular tasks that would need to be coordinated. For example, a bioterrorist attack would require tasks related to identifying cases, treating cases, containing the outbreak, communicating with the public, etc. Although the focus of this report is on hospital–public health coordination, some of the tasks that would need to be accomplished would require the involvement of additional organizations, such as law enforcement, emergency management organizations, emergency medical services, and other key stakeholders. The literature on organizational behavior argues that the characteristics of these tasks and the different organizations involved determine the coordination mechanisms that would be most effective.

Coordination can be conceptualized as the “conscious activity of assembling and synchronizing differentiated work efforts so that they function harmoniously in attainment of organizational objectives” (Longest and Klingensmith, 1994). The basic notion involves bringing together in some fashion various aspects of an organization (i.e., people, departments, etc.) or different organizations, so that there is an exchange of information and/or resources in accomplishing a common task or meeting a common goal.

Coordination mechanisms fall into two broad categories (Van de Ven, Delbecq, and Koenig, 1976): programming (impersonal, formal) mechanisms and feedback (personal, informal) mechanisms. *Programming mechanisms* include development of pre-established plans, schedules, and forecasts; formalized rules, work policies, processes, and procedures (including clinical guidelines, pathways, and protocols); outcome standards (e.g., quality assurance); and standardized information and communications systems. Roles are formally prescribed, and there is little, if any, room for discretion on the part of the organizational “actors” (i.e., the people doing the work). Programming mechanisms are usually formal and institutionalized.

Less formal *feedback mechanisms* (i.e., personal or group mechanisms) include personal modes of coordination that allow individuals to respond to feedback from vertical forms of communication (e.g., supervisory staff) or horizontal or lateral forms of communication (e.g., coworkers and peers). Group modes (such as teams) enable

individuals to receive feedback from other group members. Specific mechanisms of this type of coordination include the use of teams, committees, task forces, and work groups.

KEY FINDINGS

A Wide Array of Coordination Mechanisms Was Used in 2003

Our study considered a wide array of coordination mechanisms, including both programming mechanisms (e.g., plans, policies and procedures, standards, communication systems) and feedback mechanisms (e.g., person-to-person, group modes). To understand which coordination mechanisms were used, we analyzed results from the 2001 and 2003 Surveys of Federal Preparedness Programs for Combating Terrorism, which were administered to hospitals and local public health departments by RAND on behalf of the Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction, otherwise known as the Gilmore Commission.

The data used to provide a broad, national picture of coordination among local health departments and hospitals come from national Surveys of Federal Preparedness Programs for Combating Terrorism.

Table S.1 shows the proportion of hospitals and local health departments reporting use of various coordination mechanisms in 2003.

The results indicate that, two years following the September 11, 2001, terrorist attacks, the vast majority of both hospitals and local health departments had emergency response plans in place. These plans addressed a wide range of issues, including procedures for quarantine and isolation, as well as communication with other health responders (e.g., hospitals, medical providers, emergency medical services). Local health departments were ahead of hospitals in terms of integrating their plans with those of other local organizations.

Table S.1. Summary of Survey Results: Coordination Mechanisms Used in 2003

Coordination Mechanism	Hospitals	Local Health Departments
	Percent (s.e.)	Percent (s.e.)
Emergency response plan in place	98 (2)	88 (4)
Emergency response plan addresses integration with local organizations	82 (8)	88 (4)
Organization maintains a capability list of resources in the area ^a	N/A	46 (7)
Organization maintains a list of contacts at local, state, and federal levels ^a	83 (4)	86 (4)
Mutual-aid agreements are in place ^a	86 (4)	70 (5)
Hospital (local health department) conducted joint training for terrorism-related event with local health department (hospital)	65 (3)	80 (4)
Organization participates in an interagency task force	90 (3)	92 (3)

NOTES: Standard error of the percentage estimate is shown in parentheses. This table summarizes data that are presented in greater detail in Tables 4.1 and 4.2. N/A = question not asked of this group.

^a Indicates 2001 data.

Coordination Generally Improved Between 2001 and 2003

As shown in Table S.2, the percentage of hospitals and local health departments participating in key coordination activities increased between 2001 and 2003.¹

Between 2001 and 2003, both hospitals and health departments appear to have increased their use of informal, or feedback, coordination mechanisms, such as joint training, participation in interagency task forces or working groups for disaster preparedness, and joint training activities for terrorism-related incidents with other local health organizations. Although no causal relationship has been shown, these results are consistent with the hypothesis that the influx of bioterrorism funding following the 9/11 attacks helped facilitate adoption of such informal coordination mechanisms.

¹ Our ability to examine changes over time is somewhat limited by differences in the questionnaires that were fielded in 2001 and 2003: Only a few questions were worded the same way in both surveys. In addition, any changes observed between 2001 and 2003 likely reflect both actual changes in coordination and changes in respondents' perceptions and awareness following the events of 9/11.

Table S.2. Percentage-Point Increase Between 2001 and 2003

(for those organizations responding in both years)

	Hospitals	Local Health Departments
	Percent (s.e.)	Percent (s.e.)
Emergency response plan in place	0 (<1)	23 (6)
Emergency response plan addresses integration with local organizations	18 (13)	19 (7)
Hospital (local health department) conducted joint training for terrorism-related event with local health department (hospital)	54 (10)	47 (7)
Organization participates in an interagency task force	24 (11)	25 (6)

NOTE: Standard error of the estimate is shown in parentheses.

Case Studies Provide an In-Depth Look at the Critical Success Factors for Coordination

Our site visits provided several lessons about the critical success factors for coordination at the local level. Our study resulted in the following observations and recommendations, many of which require the involvement not only of hospitals and health departments, but of other stakeholders as well (e.g., law enforcement, emergency medical services).

Preexisting relationships. Prior relationships provide a framework from which to build coordination efforts for public health preparedness. For example, local health departments can use existing interagency groups to identify key stakeholders that need to be involved in preparedness planning.

An understanding by health departments and hospitals that coordination is mutually beneficial. Health departments have an education, or outreach, role to play. Public health is relatively new to the area of emergency preparedness and response and, thus, needs to communicate its usefulness clearly to hospitals.

Strong, but flexible, leadership. Strong leadership drives the coordination process forward by providing a clear and shared statement of the mission and objectives. A flexible management style allows leaders to bridge differences in culture and priorities across the many stakeholder organizations. While personality plays a role in leadership quality, there are many aspects of successful leadership that can be learned. Therefore,

health departments and hospitals could provide leadership training to those people charged with overseeing the coordination of public health preparedness activities.

A well-developed, facilitative process. To be successful, the process of coordination must involve all stakeholders as equal partners in decision-making and be respectful of their opinions, concerns, and time. Health departments can provide some structure and guide the effort to ensure that progress is made.

Institutionalized coordination mechanisms. The use of more-formal coordination mechanisms (e.g., interagency work groups, written plans, communications systems) insulates a county against the inevitable changes in personnel that can hinder less-formal coordination mechanisms (e.g., those based on personal relationships).

Funding for successful coordination efforts. All sites noted that HRSA and CDC funding streams have helped increase coordination, in part by making public health a player in this arena and also by helping support formal coordination mechanisms. However, inflexible restrictions regarding which agency can receive the funding, what the money can be used for, and the time frame for its use all caused widespread problems. In addition, HRSA and CDC funding was sometimes received from the state late in the fiscal year, with little prior information on how much money to expect, forcing local officials to make rush decisions on how to use the money.

RECOMMENDATIONS FOR STATE- AND FEDERAL-LEVEL OFFICIALS

It is important to recognize that public health preparedness is only one, albeit important, aspect of the overall emergency and disaster preparedness of a region. In this analysis, we focused specifically on public health and the interface between hospitals and health departments; however, many aspects of public health preparedness (e.g., distribution of the SNS, quarantine plans) will require the involvement of nonhealth stakeholders (e.g., law enforcement, emergency medical services, etc.), as well. Each stakeholder in this wider group is responsible for addressing different aspects of disaster preparedness and will bring its own funding sources, missions, organizational characteristics, and priorities to the planning table. Thus, it is important to understand that public health preparedness does not occur in a vacuum, but in the broader context of the overall disaster preparedness of a region.

Many of the insights gained from the survey and case-study analyses suggest ways in which HHS and state health departments can facilitate coordination at the local level between health departments and hospitals. More generally, many of the lessons learned

from this analysis apply not just to hospitals and health departments but to interagency coordination as a whole. Not unexpectedly, the majority of recommendations for the federal and state officials are related to the funding of preparedness activities through HRSA and CDC cooperative-agreement programs and other related programs, such as the Cities Readiness Initiative.

- ***Provide a clear statement of the mission and goals regarding public health preparedness.*** This is important at both the federal and state levels. Without such a statement, local health departments are unsure about where to focus their energy and resources.
- ***Make the CDC and HRSA cooperative-agreement programs more flexible in terms of:***
 - Who can receive the funding.*** Which organization takes the lead in coordinating public health preparedness at the local level will vary by region, availability of resources, and history of collaboration. The lead organization will not always be the health department. Dollars need to be made available to interagency task forces, planning bodies, hospital councils, or other organizations, and cooperative agreements need to be more flexible about the geographic areas they serve.
 - What the money can be used for.*** Cooperative-agreement restrictions regarding what activities must be undertaken or what types of equipment can be purchased constrain the process at the local level, sometimes resulting in the ineffective use of resources. Greater flexibility would allow the local stakeholders to choose those activities that they believe are most needed.
 - The time frame for use of the funds.*** HHS should review its cooperative-agreement programs and distribution of funding to identify bottlenecks at the federal level and solutions for streamlining the cooperative agreement-making process. HHS should also encourage and incentivize states to distribute funds quickly. HHS could extend the time frame for using cooperative-agreement monies; state health departments need to distribute cooperative-agreement monies in a timely manner.
- ***Coordinate the CDC and HRSA cooperative-agreement programs with those of other federal agencies, such as the Department of Homeland Security (DHS).*** In considering how to encourage coordination, HHS needs to think more broadly than a single cooperative agreement or cooperative-agreement program about how coordination can be funded and mandated, and needs to set requirements that

standardize coordination requirements across multiple cooperative-agreement programs. More broadly, there is a need to assess how different funding streams and programs can be better coordinated across agencies (primarily HHS and DHS).

- ***Educate local health departments and hospitals about:***

- The importance of public health preparedness.*** Both HHS and state health departments can help make the case to local health departments and hospitals. Educating organizations about the importance of public health preparedness, even in remote areas, will help bring the relevant players to the table and jump-start the preparedness process.

- The importance of coordination between health departments and hospitals.*** In some cases, local health departments need to do a better job of communicating what they bring to the table and how they can contribute to preparedness activities. An education effort by HHS and/or state health departments could support such efforts.

- Ways of facilitating coordination across organizations in local communities.*** HHS could help disseminate guidelines and information on best-practice models regarding interagency coordination and how it applies to public health preparedness. Models from other areas, such as the integration of human services (e.g., provision of comprehensive services for welfare recipients) could also provide useful insights.

ACKNOWLEDGMENTS

The authors would like to thank the local health organizations that have provided thoughtful feedback and information on their approach to and challenges encountered in coordinating public health preparedness at the local level. We also wish to thank Dr. Donald Goldmann, Dr. Allison Diamante, and Ms. Lara Lamprecht who reviewed and commented on drafts of this report. Of course, any errors or omissions are the sole responsibility of the authors.

CHAPTER ONE. INTRODUCTION

In 1996, when the Committee on Medicine and Public Health was formed to examine collaboration between medicine and public health, focus groups composed of professionals from each of the two health disciplines revealed an interesting paradox in how they viewed one another and the intersection between their two disciplines (Lasker and the Committee on Medicine and Public Health, 1997): They believed that the two health disciplines were interlinked, with public health professionals tending to consider medicine as an arm of public health and medical professionals viewing public health as a subspecialty of medicine. However, the participants were unable to articulate the exact nature of this relationship. Further, most focus group participants reported little or no experience in working with professionals or organizations from the other health discipline, and few could describe how the activities of the other health discipline were relevant to what they did.

At the time of the committee's 1997 report, the authors commented that significant changes within the health care system required medicine and public health to find new opportunities for cross-sectoral collaboration (Lasker and the Committee on Medicine and Public Health, 1997). Some of these key changes included

- the restructuring of the health care system, with individual practitioners being replaced by corporate entities
- the redefining of the governmental role of public health
- the severe fiscal constraints associated with managed care and governmental downsizing and privatization.

Combined, these forces were seen as compelling medicine and public health to reexamine their roles and to consider more cross-sectoral collaboration to meet these new challenges. Yet, the committee noted that finding new ways to collaborate in such areas as managed care, community health, and indigent care would not be easy, given the differences between these two disciplines in how they viewed one another and their role in health care.

The September 11, 2001, terrorist attacks and the subsequent anthrax incidents and hoaxes further underscored the importance of medicine and public health finding new ways to collaborate with one another to address public health emergencies and to improve

their locality's and region's overall preparedness. Indeed, the federal government's bioterrorism funding is specifically aimed at encouraging such collaboration to improve public health preparedness. For example, an important component of the Centers for Disease Control and Prevention's (CDC's) and the Health and Research Services Administration's (HRSA's) cooperative agreements has been to encourage linkages between local health departments and hospitals (as well as with other key stakeholders) to more effectively address different aspects of public health preparedness.

Although the funding is meant to encourage coordination, in practice that goal has not been fully realized. Hospitals and public health departments have employed different approaches for improving preparedness and have varied in their choices regarding on which areas of preparedness to focus (e.g., patient treatment, infection control, quarantine and isolation procedures, disease surveillance and reporting, or risk communication). More generally, it appears that health departments and hospitals continue to lack an understanding of each other's respective roles and, more important, the benefits of coordinating their preparedness efforts. For example, during the public health preparedness exercises RAND has conducted, we frequently found that public health departments were unaware of hospitals' plans for responding to a bioterrorism (BT) event or other public health emergencies and that hospitals often do not include local health departments in their disaster exercises. The fact that states and localities vary in how the CDC and HRSA cooperative-agreement funds are being managed further adds to this problem.

In this study, we examine different models for coordination or integration that have been employed by local health departments and general acute-care hospitals. We use the terms *integration* and *coordination* interchangeably in our discussion to mean the activity of assembling and synchronizing differentiated work efforts so that they function harmoniously in attainment of shared goals and objectives. Understanding which strategies have been successfully undertaken to improve integration of health departments' and hospitals' preparedness efforts is important for several reasons: It allows us to identify (1) which aspects of public health preparedness lend themselves to being integrated; (2) which factors facilitate or hinder coordination; (3) which approaches to overcoming identified barriers to integration have been successful; (4) how local health departments and hospitals are funding these activities; and (5) most important, the successful strategies that may be implemented in other localities to improve public health and hospital coordination for preparedness.

In addition, the separate CDC and HRSA funding streams intended to promote integration may themselves present some structural constraints that may make integration more difficult to achieve. We examine the strategies health departments and hospitals have employed to try to overcome funding barriers and offer suggestions on how the state and federal levels may help to remove barriers to integration and encourage the adoption of promising models of integration. The study's results also provide important insights for other localities attempting to improve public health and hospital coordination in order to achieve better integration of their preparedness programs.

Public health preparedness requires many different types of coordination activities to occur both within and across organizations. To mount an effective public health response, local health departments must work closely and seamlessly with many other organizations, including

- local hospitals and/or hospital councils
- medical providers
- the state health department and other health departments in the region, and possibly federal agencies, including the CDC
- first responders (e.g., emergency medical services, fire service, law enforcement)
- emergency management
- interagency disaster planning groups, as well as local and state homeland security task forces.

In this study, we focused specifically on interagency coordination between local health departments and hospitals. However, in our case-study interviews with health department and hospital staff, issues related to other coordination activities and partners inevitably arose. We incorporate those findings in our discussion to provide important background and context for understanding the health department–hospital interface.

OBJECTIVES

This report addresses six key issues of interest to the U.S. Department of Health and Human Services (HHS): (1) describe on which aspects of public health preparedness local health departments and hospitals are focusing their coordination efforts; (2) examine how these relationships have changed over time (from pre–September 11, 2001, through fall 2003); (3) identify factors that facilitate or hinder coordination; (4); understand how

funding affects coordination; (5) identify the mechanisms, policies, and procedures that have been demonstrated to be effective in coordinating local health departments' and hospitals' public health preparedness activities; and (6) suggest strategies to improve the coordination between local health departments and hospitals and the integration of their preparedness activities.

To address these issues, we used a multipronged approach. To help guide our analysis, we first developed a conceptual framework to identify factors that are likely to influence coordination between these organizations. We then used the conceptual framework to inform the analysis of a 2003 survey of local health departments and general acute-care hospitals (both public and private) and compare changes in their coordination activities between 2001 and 2003. We also undertook a series of case studies to examine in-depth coordination in six localities, so that we could understand what factors facilitate and hinder coordination between hospitals and local health departments, and how funding influences coordination, and so that we could identify characteristics of successful examples of coordination.

ORGANIZATION OF THIS REPORT

In this report, we have organized the methods and results into five chapters. Chapters Two and Three present the analytic approach and conceptual framework, respectively. Chapter Four presents the survey results, which provide a broad national picture of coordination between local health departments and hospitals. Chapter Five presents the case-study results, organized around four key areas: leadership, culture and mission, organizational characteristics and environment, and funding. Chapter Six provides some conclusions and recommendations. The Appendix provides a copy of the interview protocol used for the case studies.

CHAPTER TWO. ANALYTIC APPROACH

We developed a three-pronged approach to explore the issues surrounding coordination between local health departments and hospitals. We began with a literature review to inform the development of a conceptual framework for thinking about coordination issues. This framework then guided the development of our analysis plan, which comprises two distinct components. First, to provide a broad national picture of coordination between local health departments and hospitals, we analyzed data from the Surveys of Federal Preparedness Programs for Combating Terrorism (see the Survey Analysis section below). Then, to delve more deeply into the factors that facilitate and hinder coordination, we conducted a series of site visits to counties in which coordination appeared to be taking place. We discuss our research methodologies for each component of the study below.

LITERATURE REVIEW

We reviewed key documents and reports on terrorism preparedness and response that discuss the role of public health departments and hospitals. These included the Gilmore Commission Reports (Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction, 2001, 2003) and U.S. General Accounting Office (GAO; now Government Accountability Office) reports. Taken together, these reports provided critical background information and identified issues to address in the survey data analyses and site-visit interviews.

In addition to reviewing the reports, we conducted a bibliographic search using the following computerized databases: Social Services Abstracts, Social Sciences Abstracts, ABI Inform, and MEDLINE. To search each of the databases, we developed the following set of key words:

Integration OR coordination OR collaboration

AND

Public health OR hospitals OR human services OR emergency preparedness

Upon completing the online searches, we retrieved all promising documents for closer review.

The reports and documents identified through the bibliographic searches informed the development of a conceptual framework for identifying organizational characteristics, task characteristics, and strategies associated with successful integration. In addition, the results of the literature review were used to develop the survey analysis plan and to identify topic areas and issues to include in the interview protocol for the site visits.

SURVEY ANALYSIS

The data used to provide a broad, national picture of coordination among local health departments and hospitals come from national Surveys of Federal Preparedness Programs for Combating Terrorism, which were administered to hospitals and local public health departments by RAND on behalf of The Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction, otherwise known as the Gilmore Commission.² The first of these surveys was fielded in late summer 2001, just prior to the terrorist attacks of September 11, 2001. Subsequent waves of data collection on this longitudinal sample occurred annually through 2003.³ For this analysis, we focus primarily on the data from 2003, the most recent year available, but do provide information where possible on how coordination changed between 2001 and 2003. All analyses of these data are weighted so that the results are nationally representative. The 2003 sample includes 132 local health departments and 103 general acute-care hospitals.

The hospital and public health versions of these surveys include items that address the specific preparedness needs and activities of these organizations, as well as more-

² The Gilmore Commission was established by Congress on October 17, 1998. Its goal was to assess federal agency efforts and programs for enhancing domestic preparedness programs for weapons of mass destruction (WMD). This assessment included evaluating the progress of federal training programs for local emergency response and recommending strategies for effective coordination of preparedness and response efforts among federal, state, and local governments and response organizations. As part of its support to the Gilmore Commission, RAND undertook a series of nationwide surveys of state and local response organizations likely to be involved in emergency response in general and in the initial stages of detection and response in the event of a domestic incident involving WMD. In addition to local health departments and general acute-care hospitals, other organizational groups surveyed included local emergency medical services; law enforcement agencies; fire departments; county offices of emergency management; and state-level organizations (state public health department, state office of emergency management, and state office of emergency medical services).

³ That is, the organizations in the sample were surveyed at three different points in time (summer of 2001, 2002, and 2003).

general preparedness questions applicable to a wider array of response organizations. The content of these surveys comprises several topic areas, including planning, training, funding of preparedness activities, and support needs. Embedded in each of these topic areas are questions pertaining to the organization's coordination efforts both within the health community and with other organization types that would respond to acts of terrorism and other emergencies. Details regarding the survey questionnaire have been published previously (Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction, 2001, 2003).

Our analyses of the survey data were primarily descriptive, reporting the proportion of hospitals and public health departments responding in a particular way to the questions of interest (e.g., the proportion of hospitals that report having an emergency response plan that addresses quarantine procedures, the proportion of local health departments [LHDs] that participates in an interagency emergency planning group). For comparisons of proportions across the two groups, we used the appropriate statistical tests of the difference/equality of proportions, taking into account the correlation among samples as necessary.

One of the attributes of the survey is its longitudinal structure. Having multiple waves of data allows us to look at changes over time in the overall level of preparedness and to measure progress toward integration and coordination of LHDs and hospitals. Unfortunately, the survey questionnaires fielded in 2001 and 2003 differed to some extent, which limited our ability to make comparisons over time. In some cases, questions asked in 2001 were dropped (or similarly, questions asked in 2003 were not asked in 2001), leaving us unable to make comparisons over time. In other cases, similar questions were asked in 2001 and 2003, but they were not exactly the same. In such cases, it is impossible to determine whether any change over time is real or merely reflects different responses to different question wording.

The results have been statistically adjusted to represent the entire population in each professional group (i.e., local health departments and general acute-care hospitals within the United States). A detailed description of the weighting methodology used to derive these estimates has been published previously (Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction, 2001, 2003).

CASE STUDIES

Selection of Candidate Models of Integration

Before beginning the selection process, the RAND team identified the following selection criteria: (1) localities that national public health and hospital leadership identify as having innovative public health or hospital preparedness programs, (2) programs from different types of counties (e.g., large versus small, urban versus rural), and (3) programs from different regions of the country.

We used a multipronged approach to identify candidate sites for the case-study analysis. As a preliminary step, data from the 2003 Survey of Federal Preparedness Programs for Combating Terrorism, administered to a sample of local health departments throughout the country, were used to identify those counties that appeared to be more actively engaged in addressing emergency preparedness in general and in which coordination among the health department and hospitals (as well as with other response organizations) appeared to be taking place. The initial sample of 132 counties was narrowed to 14, based on whether the local health departments reported having response plans in place for hospital surge capacity, quarantine, Strategic National Stockpile (SNS) distribution, and smallpox.⁴

Among these 14 counties, we examined the coordination-related questions and ranked the counties according to the reported levels of coordination between local health departments and hospitals. This analysis enabled us to identify those counties within the survey sample in which local health departments appeared to be more engaged in coordinating their preparedness activities with local hospitals. One of the attributes that these counties shared was being located in areas of the country that are more prone to major natural disasters (e.g., hurricanes, tornadoes, snowstorms, earthquakes), suggesting that such locations tend to foster an environment in which public health and local hospitals need to work together to be able to plan effectively for and respond to major disasters. Thus, one might expect that having such coordination mechanisms and relationships already established might better position health departments and hospitals to jointly address public health preparedness.

⁴ These plan aspects were the least common in the sample. As evidence, 78 percent, an SNS distribution plan; 70 percent, a quarantine plan; 64 percent of counties reported having a surge-capacity plan; and only 6 percent had a detailed smallpox plan. In contrast, 96 percent of counties reported having an Incident Command Structure (ICS) in place, 92 percent reported having a plan for disease surveillance, and 86 percent reported having a plan for risk communication.

The information from the survey data was combined with results from the HHS project's previous year's tasks on exemplary practices and input from the National Association of County and City Health Officials (NACCHO) and the Association of State and Territorial Health Officials (ASTHO). This helped the study team to confirm which of the 14 counties merited closer examination and to identify other localities in which coordination between health departments and local hospitals appeared to be successful. The HHS project advisory board's input also was requested to help in the selection of localities in which site visits would be conducted. In all, six sites were selected: four counties, one rural region of a northeastern state, and one state itself. Given the variation across states in how the public health system is organized, we had to modify our definition of *sites* to include not only counties but also regions and in one instance an entire state.

Five of the six sites for in-depth case studies were thought to be examples of locations where coordination between the local health department and hospitals to integrate public health preparedness efforts were taking place successfully. To provide a contrasting view and to gain a better understanding of the barriers to coordination, we identified an additional site for which coordination between hospitals and the local health department appeared to be minimal. An analysis such as this, which draws from only six case studies, cannot by any means be called a *representative sample*. We selected the sites to achieve geographic variation as well as variation in different types of counties (urban versus rural; large versus small) to illuminate the range of issues and challenges one might encounter and the strategies for overcoming those challenges that have or have not worked.

In those sites for which coordination efforts were identified as being successful, RAND worked with the locality to identify the specific public health preparedness programs (e.g., communications, hospital-surge capacity) within the county or region that had benefited the most from coordination efforts.

Data Collection

For the case studies, we conducted in-depth interviews with key actors who have been involved in the development or implementation of the preparedness programs selected for examination. Interviewees included a wide range of personnel from local health departments and hospitals. At the health departments, interviewees generally included senior staff responsible for public health and hospital preparedness programs, such as the local health officer, other health department staff who have been involved in

the aspects of the preparedness program of interest, and the public information officer. At the hospitals, interviewees typically included infectious-disease officers, emergency department directors, laboratory directors, and public information officers. We also interviewed, where appropriate, representatives from the office of emergency management and other participants in county or regional interagency task forces to gain their perspective regarding coordination issues.

We developed a standardized protocol to guide our key-actor interviews. The protocol, which is in the Appendix, addressed the following issues:

- Perceptions regarding internal and external barriers to integration and strategies to address those barriers
- Areas considered as potential candidates for integration of preparedness programs and factors that led to the decision to focus on particular aspects of the programs
- Views regarding what functions and types of personnel facilitate the coordination or integration of program elements
- Resourcing of integration efforts, and how joint activities are funded
- Impacts of federal, state, or local cooperative-agreement requirements on the decision to undertake integration initiatives and ways in which requirements either facilitate or hinder such initiatives
- Support needs for improving coordination
- Suggestions regarding modifications to existing cooperative-agreement mechanisms or legislation to facilitate the use of funding, staff, or other resources in developing such initiatives.

In addition, we collected relevant documentation from each locality we visited, including descriptions of implemented programs, planning and lessons-learned documents, and reports describing local public health and hospital initiatives. Written documentation was used to augment the information from the interviews and helped identify any discrepancies in what the interview team learned.

Data Analysis

We provide a descriptive analysis of these qualitative data with the aim of identifying similarities and differences between sites with respect to the following domains: strategies considered and implemented; factors that motivated, facilitated, or

hindered integration; resourcing of coordination and integration activities; which aspects of their preparedness programs lend themselves to integration and which aspects do not; effects of cooperative-agreement requirements on integration initiatives; resourcing of integration activities; and support needs.

CHAPTER THREE. CONCEPTUAL FRAMEWORK

INTRODUCTION

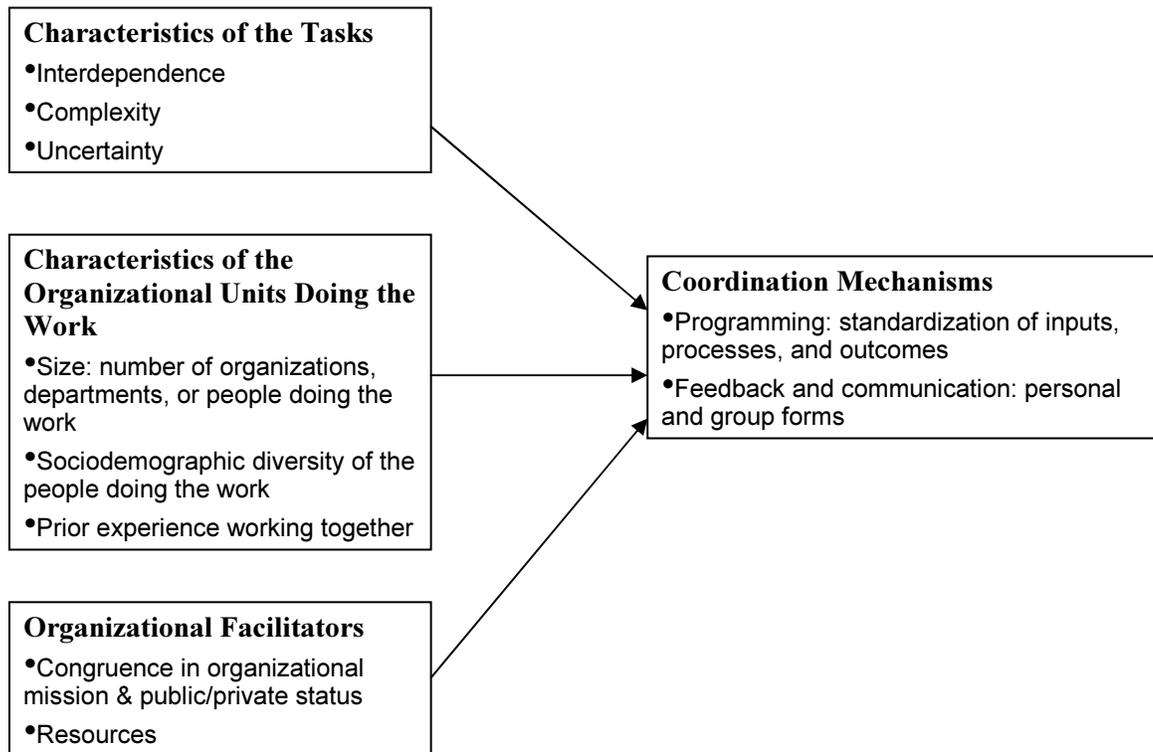
Our review of the literature aided in the development of a conceptual framework for understanding how and why hospitals and public health organizations coordinate their efforts in preparing for bioterrorism or other public health emergencies. The framework synthesizes the information from a number of different types of literature, such as organizational behavior that examine interagency coordination efforts. It provides a working definition of *coordination*, identifies the methods that organizations use to coordinate, and highlights the characteristics of the tasks and organizations that impact coordination efforts. In turn, the conceptual framework guided our survey analyses and the development of our case-study interview protocol. In this chapter, we provide a high-level description of the conceptual framework.

Coordination can be conceptualized as the "conscious activity of assembling and synchronizing differentiated work efforts so that they function harmoniously in attainment of organizational objectives" (Longest and Klingensmith, 1994). Other researchers have adopted a similar definition, but they include the notion that coordination reflects the extent to which organizational activities are "integrated" (Bloom and Alexander, 1982; Lawrence and Lorsch, 1967) and "linked together" (Van de Ven, Delbecq, and Koenig, 1976). The basic notion involves bringing together in some fashion various aspects of an organization (i.e., people, departments) or different organizations, so that there is an exchange of information and/or resources in accomplishing a common task or meeting a common goal.

Depending on various characteristics of the tasks or goals at hand and the people involved, coordination can be accomplished in a variety of ways. The different coordination mechanisms can be classified into two broad categories: programming and/or impersonal mechanisms and feedback and/or personal and/or group mechanisms (March and Simon, 1958; Van de Ven, Delbecq, and Koenig, 1976).

Figure 3.1 shows the different determinants of coordination as they pertain to public health preparedness.

Figure 3.1 Determinants of Coordination



Programming or impersonal mechanisms of coordination include “...the use of preestablished plans, schedules, forecasts, formalized rules, policies and procedures, and standardized information and communication systems.” (Van de Ven, Delbecq, and Koenig, 1976). Roles are formally prescribed, and there is little, if any, room for discretion on the part of the organizational “actors” (i.e., the people doing the work). Specific mechanisms of coordination include the use of standardization of work processes and procedures (including clinical guidelines, pathways, and protocols), adopting rules and schedules, and developing standards for work outcomes (e.g., quality assurance).

Coordination by feedback (i.e., personal or group mechanisms) is less formal and not as stringent or rigid as coordination by programming. It involves interaction between individuals or groups. The use of teams, committees, task forces, and workgroups as well as of other forms of communication to facilitate the achievement of common goals are specific mechanisms of this type of coordination (Daft, 1995; Scott, 1992).

The characteristics of the tasks at hand will affect the mechanisms of coordination that are used. The task characteristics that are relevant include the level of interdependence among the individuals or groups executing a particular set of tasks, and

the amount of uncertainty involved in executing tasks (i.e., the degree of predictability in performing one's job or how many exceptions are encountered), and the level of complexity involved (i.e., how many different pieces of information must be collected and processed to make a decision).

In addition to the characteristics of the task at hand, the characteristics of the organizations that must do the coordinating also affect the types of coordination mechanisms used and, potentially, the success of the coordination effort. For example, the size of the group performing the tasks is relevant when a task force or committee will be formed to perform a particular task. Generally speaking, larger groups find it more difficult to coordinate themselves because of the wide array of perspectives that may be found in large groups. In addition, the composition of the group performing the tasks is quite relevant to the ability of the group to coordinate its activities using feedback forms of coordination. More professionally or occupationally diverse groups may experience difficulty coming to consensus because of differences in professional training and the ways they have been taught to approach problems and problem solving. Differences in culture and mission between public health and private health organizations have been suggested as barriers to effective coordination across these groups (Lasker and the Committee on Medicine and Public Health, 1997). Furthermore, groups that are more diverse along gender, age, and racial and ethnic lines may also experience challenges with feedback forms of coordination. That said, more-diverse groups may develop more-creative solutions to problems they encounter. With good facilitators and leadership, it is quite possible that differentiated groups can effectively manage this terrain.

Process is the other key factor that affects the success of coordination efforts. A review of the literature in this area conducted by the GAO (1992) identified three general steps that are essential to successful coordination efforts: gaining commitment, building consensus, and creating an effective administrative entity. Gaining commitment, or "buy in," from involved parties requires obtaining and maintaining political support from key officials within and above the involved agencies. To obtain commitment and full participation, it may be useful to offer financial or other types of incentives to agency officials and service providers. Building consensus across organizations regarding the client needs that will be filled, the goals of the program, and the process for achieving those goals facilitates successful coordination. In addition, it is important that an effective administrative entity be created to oversee the coordination process. To be effective, the administrative entity must have the authority to make changes necessary for

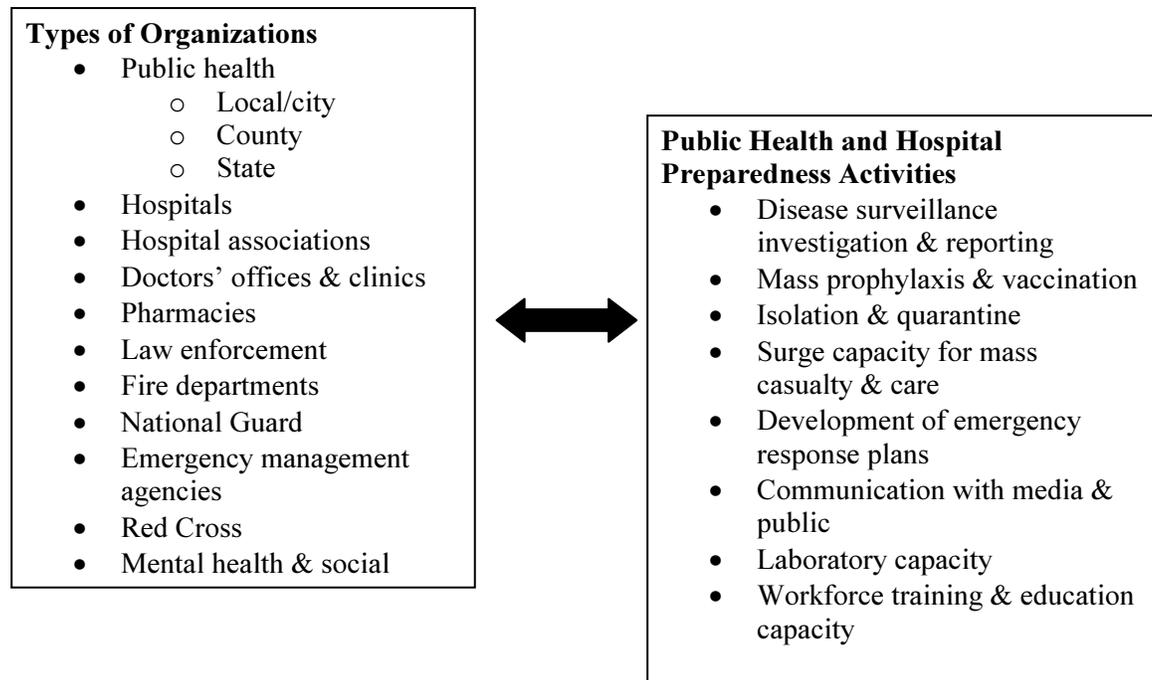
implementation. Without such authority, the process of coordination can become bogged down in the bureaucracy.

The literature identifies the primary barriers to effective coordination as including differences across organizations in philosophy, culture, and mission; issues related to turf protection; incompatible management information systems; and the lack of sufficient long-term funding for coordination efforts (GAO, 1992; Edwards and Stern, 1998; Martinson, 1999). The development of good working relationships and effective partnerships requires significant time and hard work. Moreover, the work is not finished when the collaboration is in place. The maintenance of such relationships requires the time and energy of all involved parties. Therefore, for successful coordination to take place, a stable and long-term stream of resources must be available for the effort. In the absence of such long-term resources, it may not be possible for coordination efforts to even be attempted.

DISCUSSION

Figure 3.2 shows the types of public health activities that may require coordination between public health and hospitals, as well as with other stakeholders. The types of activities public health may undertake to improve preparedness can range from disease surveillance, case reporting, ensuring hospital surge capacity, distribution of the SNS and mass prophylaxis, to workforce training, and development and coordination of communications plans with other stakeholders. The experience of various localities in responding to disease outbreaks or public health emergencies, such as West Nile Virus or Severe Acute Respiratory Syndrome (SARS) have highlighted the problems that can arise from inadequate communication plans or lack of coordination between local and state health departments, hospitals, and local officials in communicating with the media or public (Stoto et al., 2005).

Figure 3.2 Preparedness Activities and Types of Organizations that May Be Involved in Coordination



The conceptual framework guided our analyses by identifying the types of mechanisms that are available to health departments and hospitals to coordinate these various activities. In addition, the framework highlights the fact that different aspects of public health preparedness (whether it be distribution of the SNS, mass prophylaxis of a population, or isolation and quarantine, among others.) will differ according to the set of necessary tasks and the set of stakeholders that need to be involved. As a result, we would expect to see different coordination mechanisms in place, depending on the aspect of public health preparedness on which a local community is focusing. Similarly, the conceptual framework (Figure 3.1) indicates that characteristics of the organizations (in this case, health departments and hospitals) involved in coordination will also affect the coordination mechanisms used and, thus, will be important to examine in the case-study analysis. Lastly, the conceptual framework provides us with guidance on what types of factors may facilitate or hinder coordination between hospitals and health departments, including funding issues, differences in organizational mission and priorities, turf battles, and variation in the commitment of organizational leadership, among other factors.

The conceptual framework illustrated here draws primarily on literature from organization behavior and theory. Nonetheless, our interpretation of the paradigm is

relatively broad and is fully consistent with a number of different perspectives and issues raised in other disciplines. For example, sociologists and behavioral psychologists might emphasize group dynamics and effective communication as key determinants of coordination, which is completely consistent with the conceptual framework we have described here. Our framework suggests that the characteristics of the group and the organizations they represent would affect group dynamics and how successful feedback-type coordination will be. Similarly, for effective communication, the conceptual framework suggests that the characteristics of the task, as well as the characteristics of the people involved in coordination, would affect the level, quality, and need for personal or written communication. Therefore, although different disciplines may have different perspectives and potentially different models of how coordination within and across organizations work, we interpret the conceptual framework described here as broad enough to incorporate or speak to these different perspectives.

CHAPTER FOUR. SURVEY RESULTS

We used the conceptual framework developed in the preceding chapter to guide our analyses of the survey data for considering coordination issues between local public health departments and hospitals. The framework divides coordination activities into programming mechanisms, which tend to be more formal and generally impersonal in their use of preestablished plans, formalized rules, memoranda of understanding, and communication systems; and feedback mechanisms, which are generally less formal and more personal, and include both group modes (e.g., work groups, committees, and task forces) and individual modes (e.g., communication between a supervisor and a member of her staff or between coworkers).

To operationalize this framework for analyses of the survey data, we identified the questions that related to coordination mechanisms and classified them as programming or feedback mechanisms. We then estimated the proportion of local health departments and hospitals that report the use of each coordination mechanism. The analyses described here are meant to provide a broad national picture of coordination at the local level between health departments and general acute-care hospitals.

COORDINATION BETWEEN LOCAL HEALTH DEPARTMENTS AND HOSPITALS

Programming Mechanisms

The formal use of preestablished plans, formalized rules, memoranda of understanding, or communication systems by programming mechanisms mean that such mechanisms tend to be more institutionalized. The 2003 nationwide survey of local health departments and hospitals (Advisory Panel, 2003) asked a number of questions about the use of such mechanisms for public health preparedness, including whether the organization had an emergency or disaster response plan, what elements it addressed, the existence of mutual-aid agreements, the maintenance of contact lists, and the existence of communication systems. The proportion of hospitals and local health departments reporting the use of these coordination mechanisms is presented in Table 4.1. While many of these items refer specifically to coordination between local health departments and hospitals, others refer more generally to the issue of coordination within and across groups. Combined, these items provide a broad picture of the level or nature of coordination in these organizations.

The results indicate that, in 2003, the vast majority of both local health departments, 88 (s.e. 4)⁵ percent, and hospitals, 98 (s.e. 2) percent, had emergency response plans in place. These plans addressed a wide range of different issues. Among those organizations with plans, 94 (s.e. 3) percent of both hospitals and 93 (s.e. 3) percent of local health departments reported that the plan addressed communication with other health responders (e.g., hospitals, medical providers, emergency medical services). The integration of these plans with other organizations varied to some extent. Among hospitals with plans, 82 (s.e. 8) percent reported that their plan was integrated with other local response plans, 66 (s.e. 8) percent reported integration with their state's emergency response plans, and 52 (s.e. 8) percent reported integration with federal response plans. The pattern of responses was similar for local health departments, although they were more likely to report integration with state response plans than were hospitals. Among both hospitals and health departments, their emergency response plans typically addressed procedures for quarantine (hospitals, 73 [s.e. 6] percent; health departments, 66 [s.e. 6] percent), isolation (hospital, 90 [s.e. 4] percent; health department, 63 [s.e. 6] percent), and coordination with agencies outside their jurisdiction (hospitals, 83 [s.e. 5] percent; health departments, 90 [s.e. 4] percent).

⁵ Throughout this section, we present estimates generated from the survey data that are intended to be representative of local health departments and hospitals nationwide. We take into consideration the uncertainty in these estimates by citing the standard error (s.e.) of each estimate, in parentheses or brackets, immediately following the estimate. In general, plus or minus twice the standard error provides a 95-percent confidence interval for the estimate. For example, 88 percent of the local health department survey respondents indicated a written emergency response plan in place in 2003. With a standard error of 4 percent for this response, we are 95 percent confident that between 80 and 96 percent of local health departments nationwide had such a plan in place in 2003.

Table 4.1 Programming Coordination Mechanisms Used by Hospitals and Local Health Departments in 2003^a

Programming Mechanisms	Hospitals		Local Health Departments	
	Percent	(s.e.)	Percent	(s.e.)
Have a written emergency response plan	98	(2)	88	(4)
If so, does the plan address:				
Communication with other health responders	94	(3)	93	(3)
Quarantine procedures	73	(6)	66	(6)
Mass decontamination	87	(4)	44	(7)
Mass casualty management	96	(2)	54	(7)
Site/area decontamination	62	(7)	34	(6)
Isolation procedures	90	(4)	63	(6)
Coordination outside the jurisdiction	83	(5)	90	(4)
Integration with other local response plans	82	(8)	88	(4)
Integration with federal response plans	52	(8)	46	(7)
Integration with state response plans	66	(8)	90	(3)
Jurisdictional boundaries	80	(5)	94	(2)
Organization's rating of the adequacy of its plan to respond to a CBRNE ^b event (scale 1 [inadequate] to 5 [adequate])	Mean = 3.4	(0.1)	Mean = 3.2	(0.1)
Have a contingency plan to accommodate large numbers of people seeking medical care from nearby areas after a terrorism-related incident	79	(5)	54	(6)
Health department has worked with hospitals to develop a smallpox plan by:				
Developing medical teams to take care of smallpox patients	na		41	(6)
Developing emergency medical transportation teams	na		12	(4)
Vaccinating local hospitals' staff	na		46	(6)
Developing home care plans	na		13	(4)
Designating specific facilities to serve as smallpox treatment facilities	na		24	(5)

Table 4.1, Continued

Programming Mechanisms	Hospitals		Local Health Departments	
	Percent	(s.e.)	Percent	(s.e.)
Mutual-aid agreement in place at the local, regional, and/or state level ^c	86	(4)	70	(5)
Maintain a list of people at county, state, and federal levels to contact in an emergency ^c	83	(4)	86	(4)
Maintain a listing of local hospitals, clinics, laboratories, or other facilities that might be used in a large-scale disaster	na		46	(7)
Communications system in place to rapidly disseminate health alerts to major health care facilities ^c	na		73	(5)

NOTES: Standard error (s.e.) of the estimate is shown in parentheses. Numbers in the table represent percentages unless otherwise indicated. na = question not asked of that group.

^a Although the results for hospitals and health departments are presented together in the table as a convenient display, it is important to note that the survey's sampling plan was designed for comparisons within each organizational type, not necessarily for drawing comparisons across organizational types. Given that the same sample of counties was used for both organizational types, comparisons across the organizational types would have to capture the correlation due to clustering at the county level. In particular, the sample of hospitals was designed to be representative of general acute-care hospitals nationwide. However, although a hospital randomly selected within a county may not necessarily be representative of all general acute-care hospitals within that particular county, most counties have either a single or a few local health departments eligible for sampling.

^b CBRNE = chemical, biological, radiological, nuclear, or high-yield explosives. Ratings of plan adequacy for the type of event each individual organization deemed most important for preparation were used to compute the average.

^c Indicates that the data are from 2001, because the survey did not ask the question in 2003.

As part of the 2003 survey, local health departments and hospitals also were asked to identify for what type of event--chemical, biological, or radiological—it was most important for their organization to prepare. Local health departments tended to select a biological event; hospitals tended to select a chemical event (with biological events being a close second). With that event in mind, organizations were then asked to rate the adequacy of their emergency or disaster response plan for that particular type of event. On average, using a scale of 1 to 5, where 1 is equal to “inadequate” and 5 equal to “excellent,” hospitals rated the adequacy of their plan slightly higher than did local health departments (3.4 [s.e. 0.1] for hospitals, 3.2 [s.e. 0.1] for local health departments) (the difference in mean scores was not statistically significant), but both types of organizations appeared to feel that there was room for improvement.

For local health departments, the survey included questions regarding how the department has worked with hospitals to develop a smallpox plan. The estimates indicated that health departments’ coordination with hospitals on this issue appears, on the surface, to be widespread, with 90 (s.e. 3) percent reporting some activity (not shown in Table 4.1). However, the depth of coordination appears to be somewhat lower, with only 43 (S.E. 6) percent of health departments reporting multiple coordination activities (not shown in Table 4.1). As evidence, we found that 46 (s.e. 6) percent of health departments had helped vaccinate local hospital staff, 24 (s.e. 5) percent had designated a specific facility to serve as the smallpox treatment center, and only 13 (s.e. 4) percent had worked with hospitals to make plans for how patients could be treated at home. The “other activity” response category (not shown) was the most common, at 49 percent.

While data for 2003 were not available for some questions, we found that, in 2001, other coordination mechanisms complementing emergency response plans appeared to be quite prevalent. Among local health departments, 73 (s.e. 5) percent reported having a communications system in place to rapidly deliver health alerts to the major health care facilities in their area. In addition, from the 2001 survey, we found that 70 (s.e. 5) percent of health departments and 86 (s.e. 4) percent of hospitals reported having mutual-aid agreements in place at the local, state, and/or federal level. We also found that, in 2001, the maintenance of contact lists was quite prevalent (hospitals, 83 [s.e. 4] percent; health departments, 86 (s.e. 4) percent), although we have neither information regarding whether those lists were updated on a regular basis--a factor that would certainly affect their usefulness in an emergency--nor information on which communications mechanisms health departments would utilize to contact those on the list. In contrast to the high prevalence of contact lists in 2001, only 46 (s.e. 7) percent of local health departments maintained capability lists outlining the hospitals, clinics, laboratories, or other facilities that might be used in the event of a large-scale disaster.

Feedback Mechanisms

More-informal coordination tends to take place via feedback mechanisms, which include both individual and group modes of communication. The survey data are best suited to providing information about the group-communication mechanisms, such as joint training efforts, committees, and working groups. Among hospitals, joint training with other health-related organizations for both natural disasters and terrorism-related events in 2003 appeared to be relatively common. As shown in Table 4.2, for natural disasters, 74 (s.e. 7) percent of hospitals reported joint training efforts with emergency medical services (EMS) agencies, 49 (s.e. 7) percent with other hospitals, and 59 (s.e. 7) percent with their local health department. Among local health departments, 53 (s.e. 6) percent reported training with EMS, 58 (s.e. 6) percent with local hospitals, and 57 (s.e. 6) percent with other health departments. For hospitals, the proportion involved in joint training efforts for terrorism-related events was quite similar to that for natural disasters. In contrast, for health departments, we found higher rates of joint training for terrorism-related events than for natural disasters in 2003. Specifically, 72 (s.e.. 6) percent of health departments reported having trained or educated local health care and/or first-responder personnel on bioterrorism and terrorism response preparedness. Moreover, 68 (s.e. 5) percent of health departments reported having increased funding for such joint training or education efforts in the two years following the terrorist attacks of September 11, 2001.

In addition to joint training efforts, the 2003 survey also asked health departments and hospitals whether they had participated in either tabletop or field exercises with other local groups. As indicated in Table 4.2, hospital participation in exercises with other local organizations was most common for natural disasters and chemical incidents. Although the pattern is similar for local health departments, we saw statistically significant ($\alpha=0.05$) lower rates of exercise participation with other local organizations for natural disasters and chemical incidents. Although not significant, local health department survey respondents reported lower participation rates than hospitals for biological, radiological, and conventional explosive incidents as well.

Membership in an interagency task force is another coordination mechanism that appeared to be quite prevalent in 2003, with 90 (s.e. 3) percent of hospitals and 92 (s.e. 3) percent of local health departments indicating participation. While it is encouraging to see such high participation rates, it is very likely that the effectiveness of work groups or task forces varied substantially with such characteristics as size of the group, quality of the leadership, and level of funding. Unfortunately, the survey data do not provide any insight into the workings of these task forces, which organization served as the main coordinating body, the degree of participation of hospitals and health departments in these task forces, and how effective these task forces or work groups have been in coordinating preparedness activities across multiple organizations.

Table 4.2 Feedback Coordination Mechanisms Used by Hospitals and Local Health Departments in 2003

Feedback Mechanisms	Hospitals		Local Health Departments	
	Percent	(s.e.)	Percent	(s.e.)
Joint training for natural disasters with				
EMS	74	(7)	53	(6)
Local hospitals	49	(7)	58	(6)
Local health departments	59	(7)	57	(6)
Joint training for terrorism-related incidents with				
EMS	69	(7)	80	(4)
Local hospitals	55	(7)	80	(4)
Local health departments	65	(6)	71	(5)
Educated local health care and/or first responder personnel on bioterrorism and terrorism response	na		72	(6)
Increased funding to conduct education and training of public health professionals, infectious disease specialists, emergency department personnel, and other health care providers	na		68	(5)
Conducted tabletop or field exercise with local organizations for:				
Chemical incidents	75	(7)	48	(7)
Biological incidents	68	(7)	65	(7)
Radiological incidents	39	(9)	17	(5)
Conventional explosive incidents	32	(8)	17	(4)
Natural disasters	72	(6)	43	(7)
Receipt and distribution of SNS	na		20	(5)
Participate in task force or interagency workgroup	90	(3)	92	(3)

NOTES: Standard error (s.e.) of the estimate is shown in parentheses. na=indicates that the question was not asked of that group. Refer to Table 4.1's footnote regarding comparisons across organizational types.

Changes in Coordination Between 2001 and 2003

The longitudinal nature of the survey data provides a unique opportunity to examine how coordination had changed between the summer 2001 (just prior to the terrorist attacks) and in the two years following the September 11 attacks and the subsequent influx of bioterrorism funding to improve public health and hospital preparedness. Nevertheless, our ability to examine changes over time is somewhat limited by differences in the questionnaires that were fielded in 2001 and 2003. In this section, we provide information on changes over time for a limited set of variables that were consistently measured across the two waves of data. These variables are summarized in

Table 4.3. It is important to note, however, that even though the questions may be worded in the same way, the events of September 11, 2001, clearly changed health professionals' perceptions of preparedness and increased their awareness of preparedness-related issues. Therefore, any changes observed between 2001 and 2003 likely reflect both actual changes in coordination and changes in respondents' perceptions and awareness. While this is true to some extent for all questions, it will be particularly true for the subjective questions regarding the quality of organizations' emergency response plans.

Focusing first on programming mechanisms of coordination, we found that, because nearly all hospitals had an emergency response plan in place in 2001 (Table 4.3), there was little scope to increase the proportion by 2003. In contrast, among local health departments, the proportion with an emergency response plan in place increased 23 (s.e. 6) percentage points from 2001 to 2003, among the organizations responding in both years.⁶ It is possible that the rate for health departments appears to be low because some of the health departments without an emergency response plan were included as part of the local Office of Emergency Management's (OEM) plan. We were able to verify this possibility in the 2001 data, in which 81 (s.e. 9) percent of the health departments without a plan reported being part of their city or county's emergency management plan. The data from 2003 do not allow us to investigate this possibility.

Among those organizations with a written response plan, the level of plan integration with local, state, and federal plans grew substantially between 2001 and 2003 for both hospitals and local health departments. The largest gains were found in hospital integration with state and federal plans, with increases of 45 (s.e. 10) and 42 (s.e. 10) percentage points, respectively, among those responding in both years. There was also an increase for both organizational types in the subjective rating of plan adequacy. For hospitals, the average rating increased 1.2 (s.e. 0.2) on a 5-point scale, among those responding in both years. Similarly, for local health departments, the average rating also increased. Although these increases seem rather small, given the influx of resources from the federal level that have been allocated to states to improve public health preparedness efforts, it is likely that this difference reflects the counteractive effects of increases in overall preparation and increases in the respondents' standards for what is adequate.

⁶ Note that the cited increase does not exactly match the difference between the 2003 and 2001 columns in Table 4.3. The table cites the yearly estimates for each year based upon all responses for that year. To account for correlation between the 2001 and 2003 samples, estimates of increases from 2001 to 2003 use only the data from those organizations responding to the survey in both years.

Table 4.3 Comparison of Coordination Mechanisms Used by Local Health Departments and Hospitals in 2001 and 2003^a

	Hospitals				Local Health Departments			
	2001		2003		2001		2003	
Programming Mechanisms	Percent (s.e.)		Percent (s.e.)		Percent (s.e.)		Percent (s.e.)	
Have a written emergency response plan	99	(1)	98	(2)	68	(5)	88 ⁱ	(4)
If so, does the plan address:								
Integration with other local response plans	69	(6)	82	(8)	65	(5)	88 ⁱ	(4)
Integration with federal response plans	18	(5)	52 ⁱ	(8)	30	(5)	46 ⁱ	(7)
Integration with state response plans	27	(6)	66 ⁱ	(8)	75	(5)	90 ⁱⁱ	(3)
Organization's rating of the adequacy of their plan to respond to a CBRNE ^b event (scale 1 = inadequate to 5 = adequate)	Mean =		Mean =		Mean =		Mean =	
	2.4	(0.1)	3.4 ⁱ	(0.1)	2.1	(0.1)	3.2 ⁱ	(0.1)
Feedback Mechanisms								
Joint training for natural disasters with								
EMS	91	(5)	74	(7)	49	(5)	53	(6)
Local hospitals	53	(6)	49	(7)	50	(5)	58	(6)
Local health departments	36	(6)	59 ⁱ	(7)	26	(5)	57 ⁱ	(6)
Joint training for terrorism-related incidents with								
EMS	30	(6)	69 ⁱ	(7)	28	(4)	80 ⁱ	(4)
Local hospitals	24	(6)	55 ⁱ	(7)	31	(5)	80 ⁱ	(4)
Local health departments	11	(4)	65 ⁱ	(6)	22	(4)	71 ⁱ	(5)
Participate in task force or interagency workgroup	72	(6)	90 ⁱ	(3)	63	(5)	92 ⁱ	(3)

NOTES: Standard error of the estimate is shown in parentheses. Numbers in the table represent percentages unless otherwise indicated.

^a Individual cell entries reflect all responses for the given year, regardless of whether individual organizations responded in both years. 2003 values marked with a superscript "i" indicate a significant increase from 2001 to 2003 at the $\alpha=0.05$ level, based upon a two-sided hypothesis. Similarly, "ii" indicates a significant increase at the $\alpha=0.10$ level. Hypothesis tests for an increase from 2001 to 2003 are based on only those organizations responding in both 2001 and 2003.

^bCBRNE = chemical, biological, radiological, nuclear, or high-yield explosives.

Turning to feedback mechanisms for coordination, we found that while there was not a great deal of change in the proportion of health departments and hospitals involved in joint training efforts aimed at natural disasters, that both hospitals and local health departments reported increases in joint training with other local health departments. In contrast, there were substantial increases in participation in joint training efforts for terrorism-related events.⁷ As seen in Table 4.3, hospitals and local health departments indicated across-the-board increases in joint training for terrorism-related incidents with other local health-related entities. Though the increases are intuitively appealing, it is important to note that the increases seen here may be due in part to wording changes between the 2001 and 2003 questionnaires. In 2001, the survey asked about joint training for incident response to weapons of mass destruction, whereas in 2003 the survey asked about joint training for terrorism-related incident response. If *terrorism* was interpreted more broadly than use of weapons of mass destruction, then the observed changes may not reflect actual increases in joint training.

The estimates also indicate a substantial increase in participation in interagency task forces and working groups between 2001 and 2003. Among hospitals, participation increased 24 (11) percentage points from 2001 to 2003.⁸ Similarly, among health departments, we see an increase of 25 (s.e. 6) percentage points.

DISCUSSION

The survey results enable us to paint a broad national picture of the types of coordination mechanisms health departments and hospitals have utilized and how that use has changed over time. In 2001, hospitals appeared to rely more on formal or programming mechanisms to coordinate their preparedness activities than did local health departments. By 2003, both hospitals and health departments reported utilizing extensively such programming mechanisms as having disaster response plans that addressed communication with other health responders and, to varying degrees, plans that were integrated with other local emergency response plans or with state and federal response plans. Other programming mechanisms reported by local health departments in 2003 included having a communications system in place to rapidly deliver health alerts to the major health care facilities in their area or county. Although in 2003 nearly all health departments reported having worked with hospitals to develop a smallpox plan, the depth of

⁷ *Terrorism-related events* could include the use of conventional weapons as well as the use of chemical, biological, radiological, nuclear, or high-yield explosives.

⁸ Note that the cited increase does not exactly match the difference between the 2003 and 2001 columns in Table 4.3. The table cites the yearly estimates for each year based upon all responses for that year. To account for correlation between the 2001 and 2003 samples, estimates of increases from 2001 to 2003 use only the data from those organizations responding to the survey in both years.

coordination appeared to be relatively low, with many health departments reporting only one coordination activity in this area (e.g., helping to vaccinate local hospital staff, having designated a specific health facility to serve as the smallpox treatment center, or working with hospitals to make plans for how patients could be treated at home).

By 2003, both hospitals and health departments reported extensive use of feedback coordination mechanisms, such as joint training, participation with other organizations in tabletop or field exercises, and participation in interagency task forces to address preparedness for natural disasters and terrorism-related incidents. The survey results suggest that the influx of bioterrorism funding that followed the September 11, 2001, attacks may have helped facilitate public health's adoption of both formal and informal mechanisms of coordination over time.

The above results also imply what we might expect to find in the in-depth case studies reported in the next chapter.

LIMITATIONS OF THE SURVEY ANALYSIS

As is true of survey research in general, there are several study limitations that the reader should keep in mind. The survey focused on the organizational level. However, we recognize that the survey responses depend on how informed a particular individual is about his or her organization's experiences with preparedness and with his or her organization's emergency response and planning activities. We attempted to control for this dependence by asking the organizational head to designate the person within their organization who would be most informed about public health and emergency preparedness activities to fill out the survey.

It is also important to keep in mind that the general acute-care hospitals in our sample may not fully represent what is occurring within a particular county at the hospital level. Within each county, we randomly selected one organization from each of the following respondent groups—general acute-care hospitals and local health departments—to be in our survey. Depending on the size of the county and the number of general acute-care hospitals within a county, this meant that the chance of a hospital within a particular county being selected into the study varied. In contrast, most counties either had a single city health department or a county health department, which meant that, at the county level, these organizations had a greater chance of being selected into the sample than did hospitals. Therefore, it is possible that some of the general acute-care hospitals in our survey may not have been as actively engaged in preparedness (and coordination) as other hospitals within a particular county, which did not make it into our sample.

The 2001 survey was conducted in summer 2001, just prior to the September 11, 2001, terrorist attacks and the 2003 survey was conducted two years following this incident. One might expect that, in 2003, respondents within local health departments and hospitals may have been more sensitized to the issue of terrorism and public health preparedness than those who

responded in 2001. It is difficult to predict the direction of the bias. For example, one might argue that heightened sensitivity may lead some individuals in the 2003 survey to understate the level of preparedness of their organization—that is, the more you know, the more likely you are to assess your organization as being less prepared. Then again, individuals who were less sensitized to this issue in 2001 or less aware of the issue may be more likely to overstate their organization's level of preparedness. We suspect that the direction and magnitude of the bias resulting from this sensitivity will differ for objective versus subjective measures. In this report, we largely focus on objective measures, such as planning, training, and other preparedness activities (e.g., whether an organization has a response plan as opposed to self-assessed ratings of preparedness).

CHAPTER FIVE. CASE-STUDY RESULTS

INTRODUCTION

The conceptual framework identified a number of factors that may facilitate or hinder interagency coordination, including the role of leadership and buy-in from agency directors; differences in organizations' missions and cultures; the characteristics of organizations and the environment (such as number of stakeholders, organizational size, and degree of geographic isolation); and funding. In this chapter, we report on the experience of health departments and hospitals within the six case-study sites in coordinating on different aspects of preparedness. We also highlight some promising approaches to coordination that may be generalizable to other localities.

CASE-STUDY RESULTS

As noted in Chapter Two, our selection criteria included: (1) localities that national public health and hospital leadership identified as having innovative public health or hospital preparedness programs, (2) programs from different types of counties (e.g., large versus small, urban versus rural), and (3) programs from different regions of the country. We used a multipronged approach to identify candidate sites for the case-study analysis. We drew on an analysis of the 2003 Survey of Federal Preparedness Programs for Combating Terrorism for local health departments to identify those counties that appeared to be more actively engaged in addressing emergency preparedness in general and for which coordination among the health department and hospitals (as well as with other response organizations) appeared to be taking place. The information from the survey data was combined with results from the previous year's tasks on exemplary practices and input from the National Association of County and City Health Officials (NACCHO) and the Association of State and Territorial Health Officials (ASTHO) to identify counties and sites that merited closer examination. Table 5.1 shows the characteristics of the six case-study sites.

Table 5.1 Characteristics of Case Study Sites

Site	Description	Organization of PH System	Region of Country	Population Density (persons/mi²)
Site A	Urban county; borders another state	Decentralized	West	1,518
Site B	Mixture of urban and rural	Centralized	West	26.5
Site C	Urban, large metropolitan area	Centralized	South	1,158
Site D	Urban, large metropolitan area	Mixed	Southwest	1,675
Site E	Rural county, with international border	Mixed	West	34
Site F	Rural; borders 3 other states	Decentralized	New England	145

NOTE: We interviewed between 4 and 12 individuals per site, including representatives from the health department, local hospitals, hospital associations, interagency working groups, and emergency management.

In selecting sites for the case studies, we sought to identify successful models of coordination between local health departments and hospitals. However, our visits to the selected sites revealed that, in some cases, there was a disconnect between the “paper” version of coordination efforts and the reality. We found that substantial coordination between local health departments and hospitals was occurring in only three of the six sites. Nonetheless, our visits to the other three sites enabled us to extract valuable information regarding coordination barriers.

The in-depth interviews generated a great deal of information regarding the characteristics of successful coordination efforts, as well as common barriers to coordination. In our synthesis of these data, we found that the majority of issues could be categorized into the four key areas identified in the conceptual framework: leadership, culture and mission, organizational characteristics and environment, and funding.

Leadership

The importance of leadership in promoting coordination is a theme that emerged across all sites.

Leadership at all levels is needed to promote coordination efforts. Strong leadership is needed at all levels--federal, state, and local. At the federal and state levels, leaders need to provide a clear and consistent statement of the missions, goals and of objectives to guide local preparedness activities. While HRSA and CDC do provide guidance, a number of interviewees

noted that this guidance was unclear and changed from year to year, making it very difficult to move forward with preparedness activities. In some cases, local health departments were reluctant to begin coordination efforts until they felt that they had a clear set of goals and objectives to guide their activities from the federal government that would not change from year to year. Similarly, in a number of localities, interviewees indicated that no clear targets for preparedness efforts or measurable outcomes had been set by the state, leaving the localities confused about the priority areas they should be focusing on. It is important to note that the lack of clear guidance from federal and state officials stymied coordination efforts at some sites, but not at all sites. In at least one case where there was a state-level lack of leadership, local preparedness overall and, specifically, coordination efforts were thriving.

Although leadership from the federal and state levels facilitates local coordination, local leadership is key. The organizational location (whether within the health department or the hospital or a healthcare association or interagency group) of the leadership is less important than its quality. Judging from our site visits, we found that the coordinating body for local public health preparedness need not be the health department. In one of the successful models, a healthcare association (representing all hospitals in the state) took the lead in coordinating efforts. Its success in this role resulted largely from a prior history of collaboration between public health and the healthcare association. Both organizations had participated in an emergency management committee that was in existence prior to the receipt of HRSA funding. Moreover, the state contracted with the health care association to distribute the HRSA funding to local hospitals.

In the other two successful models, the health department took the lead in coordinating efforts between public health and hospitals. In these cases, the health department had historically been the organization that promoted coordination efforts. For example, in one site, the collaboration between the health department and local hospitals dated back over 12 years, with monthly meetings organized by the health department focused on addressing such issues as indigent care. This prior history of collaboration helped make coordination on public health preparedness easier to accomplish because the coordination framework was already in place.

Strong leadership can generate “buy-in” and promote coordination. Regardless of which organization takes the lead in organizing and coordinating public health preparedness efforts at the local level, there must be a strong individual, or group of individuals, to take charge of the effort. The buy-in of high-level officials was seen as critical to the success of collaborative efforts in most of the sites. For example, at one site, the interagency-coordination organization is composed of both private and public health care organizations. Hospital executives are the top tier. The second tier is the steering committee, composed of high-level representatives of each of the hospitals, public health representatives from each county, a representative from the state

health department, the executive director of the local medical society, emergency management representatives, and work group leaders. The steering committee does the bulk of the health preparedness coordination and charters topic-specific work groups, which accomplish specific planning tasks for the organization. Both the hospital and the public health members of the steering committee are high-level management in their respective organizations and are able to make routine policy decisions for their organizations. The participation of high-level hospital and public health managers conveys a clear message that working across organizations toward preparedness goals is a high priority.

While having a strong leader clearly facilitates coordination, there are also potential drawbacks. Individual personalities can become an impediment to coordination. Interviewees in one site noted that difficulties in coordinating with another state agency on security plans for distribution of the SNS were due, at least in part, to personality differences.

Taking ownership of the planning process and a facilitative leadership style were important factors in successful coordination efforts. Institutionalizing the coordination process is one step that has been taken in several localities to insulate preparedness activities from the negative effects of changes in leadership. These sites have adopted specific processes for preparedness planning that involve all of the key stakeholders. In one site, the health department, which serves as the coordinating body, has adopted a technique called “facilitative leadership.” One of the key principles of facilitative leadership involves taking ownership of the planning *process* as opposed to the planning outcomes. In other words, the health department sees its role as facilitating the process of planning and leaves the ownership of the planning decisions to the steering committee, the work groups, and the hospital corporate executive officers (CEOs). This facilitation role allows the leadership at the health department to be, in the words of one steering committee member, “an honest broker” and to not be seen as imposing a solution on hospitals. Hospital representatives appreciated the effort made by the health department to achieve consensus and make participation in the interagency group valuable to all parties.

Differences in Mission and Culture

As discussed in Chapter Three on the conceptual framework, differences in mission and culture between organizations are a common barrier to effective coordination efforts. Such differences are particularly relevant for coordination between public and private entities such as health departments and hospitals, because the differences exist on a number of levels, including prior experience with preparedness activities and the ways in which the organizations are financed. Moreover, each organization’s roles could overlap, leading to turf battles. In this

chapter, we discuss how similarities and differences impact coordination efforts and identify what has been done to successfully overcome these barriers.

The view that public health is new to the field of preparedness hinders coordination between public health and hospitals. Some of the hospital professionals argued that, historically, public health departments have not been viewed as being important partners, much less leaders, in the area of preparedness. In the areas of trauma care and emergency response, acute-care hospitals tend to have a longer history of involvement in preparedness and coordination with first responders than have health departments, in large part because the Joint Accreditation Commission of Healthcare Organizations (JACHO) requirements for hospital disaster preparedness have been in place for quite some time. As a result, hospitals view themselves as being farther along in setting up coordination mechanisms and establishing relationships with other hospitals and with the first-responder community.

We found that a number of hospital representatives felt that public health had nothing valuable to bring to the table, except perhaps some additional funding. In addition, in several sites, hospital interviewees were unable to identify or describe what public health's role would be in the event of a large-scale public health emergency. For example, when asked about a disease outbreak that required a quarantine, some of the hospital interviewees described their individual hospital's protocol, but were unable to describe what role the health department should play.

In the successful models of coordination, public health had been able to overcome this perception. For example, in one such site, public health used scenario-specific planning as a tool to generate buy-in from hospitals on the importance of public health in large-scale emergencies. Interviewees indicated that the scope and nature of the specific scenarios opened people's eyes to the fact that any one hospital or health department would not be able to fend for itself if a major disaster occurred.

Differences in the financing of public health and hospitals can create differences in the mission and culture of the organizations that hinder coordination. The differences are perhaps most stark between for-profit hospitals and public health. While many for-profit hospitals incorporate community service into their mission, they must also be focused on the bottom line; in many cases, they are less willing to allocate resources--primarily people--to local coordination efforts. The perceptions of hospital CEOs regarding their institution's role in public health preparedness vary and affect the degree to which hospital personnel are encouraged to be proactive in the area of preparedness.

In one of the successful models of coordination, the health department explicitly recognized the resource-related concerns of hospitals and developed the coordination process in a way that minimized the burden on the hospital partners. Specifically, the hospitals in the region did not have outside funding to support their participation in the regional planning council. To

minimize the burden placed on them, the health department assumed responsibility for setting up meetings and distributing background information to inform the work of the council, for ensuring that the agenda focused on decision-making and not simply information-sharing, and for bringing together only those members needed to address a specific issue. Because the hospitals felt that their needs were being recognized and that their time was being used productively, a broader array of hospitals became engaged and have remained engaged in the planning process.

Conflicting priorities and views among key stakeholders can impede coordination.

Turf battles also can impede coordination. They were mentioned by interviewees in most of the sites. For example, in one site, the Medical Reserve Corps (MRC) cooperative agreement was written by two local health departments. Local hospitals also were at the planning table and anticipated receiving part of the funding. However, in the end, the cooperative-agreement request focused on public health needs (training on the distribution of mass prophylaxis), rather than on hospital needs (handling of mass-casualty events), which became a point of contention between the hospitals and the health departments and resulted in a breakdown of trust between the partners. As a result, coordination efforts were hampered.

Characteristics of the Organizations and the Environment

As noted in the conceptual framework chapter, the characteristics of the organizations involved in coordination can influence the types and overall level of coordination achieved. The findings from the case studies indicate that four types of organizational and environmental characteristics can significantly affect coordination: the number of stakeholders involved, geographic isolation, prior history of collaboration on non-preparedness activities, and threat perceptions. In this section, we discuss our findings for each of these characteristics.

The number of stakeholders affects coordination. In general, bigger groups find coordination more difficult, largely because of the sheer logistics of bringing the key stakeholders together and the difficulty of making decisions, given the numerous perspectives at the table. The localities we identified as being successful examples of coordination had the advantage of a relatively small number of stakeholders. For example, in one rural site with few major stakeholders (three hospitals, one local health department), coordination on public health preparedness was easier to accomplish because all players knew each other and could readily reach consensus. In an urban site, interviewees noted that, although there were numerous hospitals in the area, most were owned by a small number of hospital systems. Again, the smaller number of stakeholders made coordination easier. Small size, however, does not always make coordination easier. Interviewees in small counties noted that they are challenged by *limited* staff and resources in that it was difficult to free up staff to participate in regional interagency task forces.

In a large metropolitan area, where coordination was not occurring, interviewees noted that the hospitals in their metropolitan area were very diverse in terms of ownership status, community mission, and organization. Such diversity in organizational structure and mission meant that the hospitals varied in the importance they placed on preparedness and interagency coordination.

Counties that are geographically isolated (i.e., far from a major urban center) have tended to develop greater self-reliance. In two of the successful examples of coordination geographic isolation has served to strengthen relationships between health departments, hospitals, first responders, and other key stakeholders, because they expect that, if a major disaster occurs, they will be on their own. These established relationships, in turn, have positioned these counties well for coordinating on public health preparedness and planning for the use of CDC and HRSA funding. For example, in one site, interviewees noted that even before they received bioterrorism funding, they considered their state to be far ahead of others in coordination on emergency preparedness because of its history of major disasters. They operate under the assumption that federal help will not be able to assist them in a timely manner in the event of a large-scale emergency. This shared viewpoint has underscored for stakeholders the importance of coordination in planning for and responding to public health emergencies.

Interviewees in a small rural county also noted concern that if there are multiple, simultaneous disease outbreaks, they will likely be left to fend for themselves. For example, following the 9/11 terrorist attacks and the subsequent anthrax scares, the county's protocol called for them to send white powder specimens to a neighboring large metropolitan county's public health laboratory for testing. Because their testing needs were given a low priority by the larger metropolitan county's laboratory, they experienced difficulty in even getting the laboratory to return their telephone calls. This experience convinced them that they could not count on the larger urban areas for support in a disaster, and thus increased their will to work together to develop their own capabilities.

A prior history of coordination between local health departments and hospitals on other issues (e.g., community health, natural disasters) facilitates coordination on preparedness activities. In the sites that were successful models of coordination between health departments and hospitals on preparedness activities, coordination was built on an existing relationship. These relationships positioned them well to effectively utilize the preparedness funding made available following 9/11. In some cases, the prior relationship was based on community health issues, such as providing care for the indigent. For example, the key stakeholders in one site had a history of coordinating on indigent care and managed care with the HRSA cooperative agreements, enabling them to formalize some of those relationships. In other cases, the relationship had developed in response to experiences with natural disasters.

Specifically, in several sites, the key stakeholder organizations had participated in emergency preparedness planning long before the HRSA funding became available and so already had established relationships that they could build upon. Regardless of the original motivation, the structures and relationships that were in place because of these prior coordination efforts laid the groundwork for successful coordination on preparedness activities.

In contrast, in the sites where coordination on public health preparedness was not taking place, there was no history of coordination.

Some localities do not believe their county or region is at risk for a bioterrorism attack and so view public health preparedness as a low priority. In some localities, hospital and public health personnel considered the risk of a bioterrorism attack (or other type of terrorist attack) to be very low. Preparedness for such incidents was not viewed as a high priority but rather as a diversion of needed resources away from other medical or public health needs.

Funding

As indicated by our review of the literature, funding is an issue that often arises in coordination efforts. Adequate levels and stable funding facilitates coordination; inadequate and/or unstable funding creates barriers. The findings from the case studies are consistent with this truism: Funding issues were noted in all sites that we visited.

Funding requirements drive the choice of coordination efforts. From our review of the literature, we hypothesized that some preparedness activities (e.g., those that are less complex and subject to less uncertainty) would be easier to coordinate than others and that local health departments and hospitals would consider this factor when deciding what aspects of preparedness they would focus on. The evidence from our interviews does not support this hypothesis. Rather, the decision regarding what activities to work on appeared to be driven primarily by funding requirements. Across all sites, interviewees indicated that they chose activities based on the guidance provided by HRSA and CDC (or by other funding sources, such as the Cities Readiness Initiative).

CDC and HRSA funding helped to facilitate coordination between health departments and hospitals. Although a number of the hospital or emergency management interviewees viewed public health as not being a significant player in emergency preparedness, they did acknowledge that the bioterrorism funding distributed following 9/11 has allowed local health departments to become more involved in local preparedness activities (e.g., planning, training) by enabling them to hire more staff and to fund specific training or planning activities. As noted by one emergency management official, “The public health department has been behind the curve. . . . The more funding the health department receives, the more and more they are becoming a player in the preparedness efforts.”

Funding not only brought the health department into the preparedness fold but also enabled stakeholders to take important steps toward the use of more-formal coordination mechanisms, such as institutionalized processes and standardized procedures. For example, one county used HRSA funding to formalize its plans for disaster preparedness, communications, and smallpox response. Its informal communications plan was formalized into a written policy, and a 24-hour hotline was established by the health department.

At another site, the interagency organization that addressed preparedness needs was formed before any CDC or HRSA funding was available. At the outset, the health department funded the administrative aspects of the organization (e.g., organizing meetings, distributing materials) through its regular operating budget, and the existing staff assumed the added responsibilities of overseeing coordination activities. When the HRSA bioterrorism funding became available, the funds were used to dedicate staff to this activity and to finance the framework of the coordination effort. Interviewees noted that these funds strengthened their ability to coordinate with hospitals. Specifically, the health department could take on even more of the administrative burden so that hospital participants did not have to take on too many added responsibilities or feel as though their time was being wasted by ineffective, poorly organized meetings.

In addition to the positive effects of funding described above, both health department and hospital interviewees also noted problems or barriers to coordination that they felt were created or exacerbated by the scope and nature of the funding mechanisms.

Funding mechanisms need to be more flexible, because one size does not fit all when it comes to public health preparedness. Funding flexibility was a theme that emerged in a number of different ways. A number of interviewees noted that greater flexibility in terms of to whom the money can be distributed, on what it can be spent, and when the funds can be spent could facilitate coordination. For example, the cooperative agreement requires a 24/7 capability. However, at one small rural county, the health department was composed of part-time public health personnel who lacked computers or Internet access, and had limited cell-phone coverage in their region. Interviewees noted that this made the 24/7 capability infeasible within the health department, and that this task could only be accomplished by involving the local hospitals, visiting nurses, and other local medical providers. For this arrangement to work effectively, the cooperative agreement should allow for the funding and involvement of a wide variety of stakeholders.

Several interviewees commented that cooperative-agreement restrictions limited their options for using available funds. Interviewees in one county noted that the HRSA funds required that the hospitals focus on different aspects of preparedness in each year. The first year was focused specifically on equipment needs, and the second year of funding focused on

improving staff training and education. Interviewees felt that having to focus on what the cooperative agreement would allow, rather than on what the county really needed, left many stakeholders feeling dissatisfied and less likely to engage in the process in the future.

A number of sites noted that delays in the distribution of funds to the local level impeded coordination efforts. Delays in processing proposals or making final decisions about cooperative agreements at both the federal and state level have meant that some local health departments did not receive the expected funding until late in the fiscal year and so had a limited amount of time (e.g., a few months) to spend the funds. As a result, some projects were rushed and many stakeholders felt that the money was not used as effectively as it could have been. For example, a number of interviewees indicated that their county had made equipment purchases in order to use the money before the end of the fiscal year. However, because they were rushed, they ended up purchasing equipment that was either not compatible with or duplicated existing equipment. The ineffective use of resources reduced the credibility of the key decision makers at the local level and left many stakeholders dissatisfied with the process and less likely to participate in the future. Interviewees in several sites suggested that a more flexible time schedule for using the cooperative-agreement funds and more timely distribution of cooperative-agreement funds from the state level would solve these problems and enhance coordination efforts.

Multiple funding sources for preparedness activities can complicate coordination efforts. Table 5.2 shows the different funding programs in which the case-study sites reported that they participated. In all the sites, multiple funding sources supported different aspects of emergency and public health preparedness.

Table 5.2 is not a complete listing of the grant and cooperative-agreement programs at each site, but only a reflection of what interviewees reported. Each of the funding sources noted in Table 5.2 has its own objectives, requirements, and priorities. In turn, each influences the type and nature of the coordination that occurs at the local level. Different cooperative agreements also define different funding regions, making it necessary to collaborate with some regions on some issues and other regions on other issues. For example, in one site, a metropolitan region straddles two states. Because the HRSA funding is state-specific, a local health department in the adjacent state, which had always been at the regional planning table, could no longer participate in the interagency task force. It was not eligible for the neighboring state's HRSA funds, but instead had to meet the requirements and priorities of its own state's HRSA cooperative-agreement process. Interviewees noted that the funding mechanisms needed to be more flexible and consistent in the geographic areas they are designed to serve so that all relevant stakeholders could be involved in the process.

Table 5.2 Funding Programs Participated in by Case-Study Sites

Funding Program	Program Description	Number of Case-Study Sites Participating in Program
MMRS	The Metropolitan Medical Response System is a program intended to enhance the capabilities of existing systems that involve not just hazardous materials (HAZMAT) personnel, law enforcement, emergency medical service, public hospitals, and the American Red Cross, but also public health agencies and laboratories, private hospitals, clinics, independent physicians, and other private-sector organizations.	1
CDC: EWIDS (Early Warning Infectious Disease Surveillance)	This funding activity is led by the Office of the Assistant Secretary for Public Health Emergency Preparedness for the purpose of enhancing the surveillance and epidemiological capabilities at the U.S. northern and southern borders. Its emphasis is on creating interoperable systems with Canada and Mexico. The 20 U.S. border states are included in this cooperative agreement.	1
CDC Public Health Emergency Preparedness Cooperative Agreement Program	The Centers for Disease Control and Prevention's cooperative agreement on public health preparedness and response for bioterrorism is aimed at upgrading state and local public health jurisdictions' preparedness for and response to bioterrorism, other outbreaks of infectious disease, and other public health threats and emergencies.	All sites
HRSA Hospital Bioterrorism Preparedness Program	The goal of this program is the development of a health care workforce with the knowledge, skills, abilities, and core competencies to (1) recognize indications of a terrorist event; (2) meet the acute-care needs of patients, including pediatric and other vulnerable populations, in a safe and appropriate manner; (3) participate in a coordinated, multidisciplinary response to terrorist events and other public health emergencies, and include consideration of surge-capacity issues; and (4) rapidly and effectively alert the public health system of such an event at the community, state, and national levels.	All sites
CDC's Cities Readiness Initiative	Since 1999, the federal government has expended significant effort and resources to enhance the safety of Americans through the development of the Strategic National Stockpile. This cooperative agreement promotes the development of local distribution and dispensing plans and capabilities for providing stockpile items to citizens. The next step is to increase and enhance readiness of selected cities, in collaboration with state, federal, and private-sector partners, to make full and effective use of the SNS in the event of several possible types of catastrophic terrorist attacks for which the SNS contains applicable countermeasures. The CDC is providing special funding targeting 21 selected entities for the fiscal year (FY) 2004 cooperative agreement on public health preparedness and response for bioterrorism.	2
UASI	The Urban Area Security Initiative Program provides funding to state administrative agencies to help their urban areas prevent, deter, respond to, and recover from threats and incidents of terrorism. Also included in this cooperative agreement is funding to help secure and protect mass-transit systems. The program's intent is to create a sustainable national model program to enhance security and overall preparedness from acts of terrorism. Funding was initiated in response to 9/11, and funding was allocated for the first time in 2003.	3
City/County General Funds to Support Health Departments		All sites
HHS, Department of Homeland Security (DHS) Training Programs		Varies across sites

DISCUSSION

The findings from the case studies provide an in-depth look at the coordination between local health departments and hospitals on public health preparedness activities. While not all aspects of the lessons learned from the successful models of coordination can be applied more generally (e.g., small size, geographic isolation), a number of findings are relevant to other localities and suggest possible actions for leaders at the federal, state, and local levels.

Across all successful sites that we visited, the health department and hospital coordination efforts built upon an existing relationship that had been developed around such non-preparedness issues as community health, indigent care, and/or disaster preparedness. In addition, in many areas of the country, there is a strong relationship between the infection-control practitioners within hospitals and the epidemiologists within the health department. These relationships are important in that they can serve as a starting point for developing the broader coordination needed between health departments and hospitals to address the multifaceted aspects of preparedness. Having these relationships in place gave these successful sites a head start on preparedness efforts.

The successful sites provide useful information about how good relationships between hospitals and public health can be built. The key step is for health departments to make a compelling case to local hospitals that coordination on preparedness activities is mutually beneficial. Across the sites at which coordination was not occurring, we consistently heard from hospital interviewees that they did not feel that public health had anything to offer and that they could handle a disaster on their own. In contrast, in the successful sites, hospital interviewees could clearly describe what role public health would play in an emergency.

Once the case for coordination has been made, the effort requires strong leadership and a flexible management style. Strong leadership drives the process forward by providing a clear and shared statement of the mission and goals. Leadership buy-in and support from the top are also critical to conveying, within and across organizations, a commitment to investing staff time and resources to such efforts. A flexible management style allows the leader to bridge the differences in culture and priorities across the many different stakeholder organizations. Across all successful sites, we found that the process of coordination was important and that a consensus-building approach to decision-making had been adopted. In fact, in one successful site, the process was seen as the key reason for the success of the local coordination efforts. In this case, the health department adopted a facilitative leadership style whereby it took ownership of the process, but allowed the interagency coordinating body to take ownership of the decisions. As a result, hospitals viewed the health department as flexible and responsive to their issues and concerns.

Funding is another key element of successful coordination efforts. All sites noted that HRSA funding and CDC funding have served to increase coordination, in part by making public health a player in this arena. In addition, the successful sites used some of the funding to develop formal coordination mechanisms, such as interagency work groups, written emergency plans, standardized policies and procedures, and communications systems. Having more-formal mechanisms in place insulates the county against the effects of the inevitable changes in personnel. Another key element of success was that a specific agency assumed responsibility for the administration or management function of coordination, and the administrative function was funded either by cooperative-agreement monies or by an agency's own internal funds.

Other characteristics of successful examples of coordination include adoption of a regional approach to planning, and thus a regional perspective on public health preparedness. A strong commitment to public health preparedness within the community and among the leadership in the community was critical to successful coordination and collaboration. In each of the settings, a culture of taking public health preparedness seriously had developed for a variety of reasons. The sites also had a prior history of collaboration between the health department and hospitals on such issues as managed care, indigent care, or response to natural disasters and so already had established relationships and coordination mechanisms in place. Lastly, the examples of successful coordination tended to use a combination of programming (more formal) and feedback (more informal) coordination mechanisms to help institutionalize these relationships. For example, the successful counties used interagency work groups (a feedback mechanism) to develop emergency response plans (programming mechanism) that were understood and accepted by all involved parties.

Although we did not set out to explicitly categorize which aspects of public health preparedness are easier to coordinate on than others, we offer the following observations based on the case-study results. First, hospital surge capacity and quarantine appear to be more difficult to coordinate than some other aspects of preparedness. Surge capacity is a problem that local communities have grappled with for a long time; it is not unique to public health preparedness. Surge-capacity solutions can be difficult and often cannot be realized quickly. For example, one cannot create new staff or beds overnight. As for quarantine plans, states vary in the legal authorities and laws that govern this area, making it a very complex issue for coordination efforts. Hospital personnel tended to vary in their understanding of what the law states, who could impose a quarantine order, and who would enforce that order. For example, in one state, hospital interviewees believed they could force a patient to be put into isolation against his or her will, which under current law could be considered illegal incarceration.

On the other hand, areas of public health preparedness that appear to lend themselves more readily to coordination include disease surveillance and development of communication plans.

Health departments and hospitals had to coordinate on disease surveillance long before 9/11, and the coordinating players and actions are well understood (e.g., hospital infection-control specialists submit their reports to their counterpart within the health department). With respect to communications plans and/or systems, coordination is easier because, unlike quarantine, updating communication plans does not require changes in laws but, rather, development of agreements and purchases of equipment.

LIMITATIONS OF THE CASE-STUDY ANALYSIS

The in-depth examination of coordination within the case-study sites was intended to provide us with insights on the challenges and strategies these organizations faced in integrating their preparedness efforts. However, the degree to which some of the factors identified may be unique to these particular sites may limit the overall generalizability of our findings. Moreover, identifying promising models prior to a site visit proved to be more difficult than we expected. After visiting the sites, successful coordination only appeared to be taking place in three of the five sites that we had identified on paper as having successful models of coordination.

CHAPTER SIX. CONCLUSIONS

It is important to recognize that public health preparedness is only one aspect, albeit an important one, of the overall emergency and disaster preparedness of a region. Although we focused specifically on public health and the interface between hospitals and health departments, many aspects of public health preparedness (e.g., distribution of the SNS, quarantine plans) will require the involvement of nonhealth stakeholders (e.g., law enforcement, emergency medical services), as well. This wider group of stakeholders will bring their own funding sources, missions, organizational characteristics, and priorities to the planning table. All of these factors can increase the coordination challenges at the local level and complicate the relationship between local health departments and hospitals. That is, health organizations are not simply coordinating with one another, but also must coordinate and build relationships with these other nonhealth entities to address the multifaceted aspects of preparedness. Thus, it is important to understand that public health preparedness does not occur in a vacuum but in the broader context of the overall disaster preparedness of a region. Many of the lessons learned and insights from examining the coordination activities between hospitals and health departments apply more generally to interagency coordination as a whole. With this perspective in mind, we offer the following observations and recommendations.

CRITICAL SUCCESS FACTORS FOR COORDINATION AT THE LOCAL LEVEL

A number of the insights identified in this report are informative as to how coordination at the local level may be improved. In this section, we lay out the factors at the local level that were identified as playing an important role in the success of coordination efforts. Local organizations should consider this list of critical success factors and work to incorporate those aspects that are appropriate into their own coordination efforts:

The results of this study suggest the critical success factors for coordination at the local level are the following:

- ***Preexisting relationships.*** Prior relationships provide a framework from which to build coordination efforts for public health preparedness. For example, local health departments can use existing interagency groups to identify the key stakeholders that need to be involved in preparedness planning.
- ***An understanding by health departments and hospitals that coordination is mutually beneficial.*** That is, health departments have an education, or outreach, role to play. Public health is relatively new to the area of emergency preparedness and response and,

thus, needs to clearly communicate to hospitals what it brings to the table and how it can be useful. For example, the health department can help hospitals write cooperative-agreement applications for HRSA funds; organize exercises for the community; provide training to the hospitals on how to handle BT agents; and/or provide administrative support for coordinated planning efforts (e.g., plan and organize meetings).

- ***Strong, but flexible, leadership.*** Strong leadership drives the coordination process forward by providing a clear and shared statement of the mission, objectives, and goals. Leadership buy-in and support are also critical to conveying within an organization and across organizations a commitment to investing staff time and resources in such efforts. A flexible management style allows the leader to bridge the differences in culture and priorities across the many different stakeholder organizations. Although personality plays a role in leadership quality, certain aspects of leadership can be learned. Health departments should consider providing leadership training to those personnel charged with leading the coordination of preparedness activities.
- ***A well-developed, facilitative process.*** The process of coordination can play a significant role in whether the coordination efforts are successful. The process must involve all stakeholders as equal partners in decision-making and be respectful of their opinions, concerns, and time. While the goal is to build consensus among stakeholders, the health department needs to provide some structure and guide the effort, thereby ensuring that progress is made. Hospital partners will disengage from the process if it is viewed as unproductive.
- ***Institutionalized coordination mechanisms.*** Having more-formal coordination mechanisms in place (e.g., interagency work groups, written plans, communications systems) insulates a county against the inevitable changes in personnel that can hinder less-formal coordination mechanisms (e.g., those based on personal relationships).

RECOMMENDATIONS FOR STATE- AND FEDERAL-LEVEL OFFICIALS

Many of the insights gained from the survey and case-study analyses suggest ways in which HHS and state health departments can facilitate coordination at the local level between health departments and hospitals. Not unexpectedly, the majority of recommendations for the federal and state officials are related to the funding of preparedness activities through HRSA and CDC cooperative-agreement programs, as well as related cooperative-agreement programs, such as the Cities Readiness Initiative.

- ***Provide a clear statement of the mission and goals regarding public health preparedness.*** This is important at both the federal and state levels. Without such a statement, local health departments are unsure about where to focus their energy and resources. As a result, local efforts can become scattered across multiple activities and, because too few resources are allocated to any one activity, do not translate into substantial improvements in public health preparedness.
- ***Make the CDC and HRSA cooperative-agreement programs more flexible in terms of:***
 - Who can receive the funding.*** HHS needs to recognize that which organization takes the lead in coordinating public health preparedness at the local level will vary by region, availability of resources, and history of collaboration. Moreover, the capability to implement or carry out requirements for public health preparedness at the local level may not always reside within the health department. Therefore, simply targeting funding to the health departments in order to support coordination may not always be the right answer. Instead, the dollars need to be made available to interagency task forces, planning bodies, hospital councils, or other organizations taking the lead in coordinating public health preparedness activities at the local level. Along the same lines, the cooperative agreements need to be more flexible about the boundaries of the geographic areas they serve. The state-based approach can impede coordination when health care markets, or metropolitan areas more generally, cross state lines.
 - What the money can be used for.*** Cooperative-agreement restrictions regarding what activities must be undertaken (e.g., smallpox planning) or what types of equipment can be purchased constrain the process at the local level and, in some cases, result in the ineffective use of resources. Consequently, the local stakeholders may disengage from the process of public health preparedness. Greater flexibility would allow the local stakeholders to choose those activities that they believe to be most needed.
 - The time frame for use of the funds.*** The timeframe allowed for spending cooperative-agreement funds is, in some cases, too short, particularly when the distribution of federal funds to the states is slow or the state health department is slow in distributing such funds to the local level. When local organizations are rushed to spend the money, they are often constrained in what they can do and sometimes make poor decisions. HHS could address this problem in three ways. First, HHS should undertake a review of its cooperative-agreement programs and distribution of funding to identify bottlenecks at the federal level and solutions for streamlining the

cooperative agreement-making process. Second, HHS should encourage and incentivize states to distribute funds quickly. Third, HHS could extend the time frame for using cooperative-agreement monies. At the same time, given the current time restrictions for spending cooperative-agreement funds, state health departments need to distribute cooperative-agreement monies in a timely manner, so that the local levels can make good decisions about how to spend the money.

- ***Coordinate the CDC and HRSA cooperative-agreement programs with each other and those of other federal agencies, such as DHS.*** Multiple funding streams either mandate or support interagency coordination at the local level, and many, though not all, of the streams are controlled by HHS. Some of the funding is controlled by DHS or other stakeholders (e.g., city or county general funds). In considering how to encourage coordination, HHS needs to think more broadly than a single cooperative-agreement program about how coordination can be funded and mandated, and standardize coordination requirements (e.g., which geographic entities are involved, which types of organizations should be involved) across the multiple funding streams provided by the federal government. More broadly, there is a need to assess how different funding streams and programs can be better coordinated across departments (primarily, HHS and DHS) to improve overall public health preparedness.
- ***Educate local health departments and hospitals about:***
 - The importance of public health preparedness.*** Both HHS and state health departments can play an important role in helping to make a case to local health departments and hospitals for the importance of public health preparedness in general. Given that, in some localities, the risk of a bioterrorism attack (or other type of terrorist attack) was considered to be very low, preparedness for such actions as quarantine, mass vaccination, and/or caring for the displacement of a large population were not viewed as a high priority. Even though an event or infectious-disease outbreak may occur far from a particular locality, its effects can spill over into other regions (e.g., a smallpox incident or avian-flu outbreak in a city resulting in the mass evacuation of a population into surrounding areas). Educating these organizations about the importance of public health preparedness, even in remote areas, will help bring the relevant players to the table and jump-start the preparedness process.
 - The importance of coordination between health departments and hospitals.*** As noted before, local health departments sometimes need to do a better job of communicating

what they bring to the table and how they can contribute to preparedness activities. While the responsibility for doing so lies primarily with the local health department, an education effort by HHS and/or state health departments could be beneficial.

--How to facilitate coordination across organizations in local communities. HHS could play an important education role by disseminating guidelines and information on best-practice models for interagency coordination and how such coordination applies to public health preparedness. The lessons learned and strategies used in localities that have successfully coordinated across the health department and hospitals should be shared with those that are still struggling to develop coordination on preparedness activities. In addition, since many of the challenges that organizations face to achieve this type of coordination are not unique to the public health–hospital interface, models from other areas, such as the integration of human services (e.g., provision of comprehensive services for welfare recipients) could provide useful insights on the coordination process as well.

SUMMARY AND FUTURE STEPS

This report identified three (out of the five initially chosen as successful examples) sites with examples of successful coordination between health departments and hospitals on public health preparedness. Improving and sustaining cross-sector coordination is a difficult challenge. Unlike other examples of public health–hospital collaboration to address such issues as managed care, indigent care, and tuberculosis control, preparedness differs in that it often requires the involvement of multiple stakeholders, both health-related and non–health-related, and thus the coordination challenges are greater. One worthwhile endeavor for HHS to consider is the development of a Web-based “promising practices network,” on which guiding principles are provided to health organizations on how to effectively undertake coordination in the area of preparedness and in-depth case studies of successful models of coordination are highlighted.

APPENDIX

CASE-STUDY PROTOCOL

Enhancing Public Health Preparedness, Phase II: Exercises, Exemplary Practices, and Lessons Learned

EXAMINING MODELS FOR INTEGRATING PUBLIC HEALTH AND HOSPITAL PREPAREDNESS PROGRAMS

Introduction Script

Introduction:

Thank you for taking the time to meet with us today. *[INTRODUCE SELF AND COLLEAGUES; PROVIDE BUSINESS CARDS];*

[INTRODUCE RAND AND THE STUDY]:

Before we begin, I'd like to give you some background information on RAND and this study, and also go over our confidentiality agreement. RAND is a private nonprofit research institution established in 1948 to conduct independent, objective research and analysis to advance public policy. RAND has been contracted to work with the U.S. Department of Health and Human Services' Office of the Assistant Secretary for Public Health Emergency Preparedness to develop resources and to prepare analyses to help describe and enhance key aspects of state and local public health emergency preparedness, including bioterrorism. We have taken the approach of defining *preparedness* rather broadly, so we are interested in preparedness for any kind of a public health emergency, including emerging infectious diseases, such as Sudden Acute Respiratory Syndrome (SARS) or pandemic influenza, and the activities needed to support such preparedness.

Required Consent Procedures: Before we get started, let me assure you that your responses to these questions will be held in strict confidence, except as required by law. Summary information from these interviews, together with material taken from public documents, will be presented at the state level; however, no specific individual will be identified by name or affiliation in any reports or publications without his or her permission. Findings from the study will be shared with all participants.

Your participation in this discussion is completely voluntary. We would like to have your responses to all of the questions; however, if you are uncomfortable with any question, we can skip it. We estimate that the interview will take about one hour.

Do you have any questions about our confidentiality procedures before we begin? (If yes, respond to all questions. If no, proceed with discussion.)

First, I want to assure you that we are *not* evaluating your emergency preparedness program in any way; we are here to learn about what health departments are doing to coordinate preparedness activities with hospitals and other stakeholders. We want to understand what works, what doesn't work, and what lessons you've learned about integrating emergency preparedness activities.

Now we would like to ask a few questions about your background and about your department [*AGENCY, ORGANIZATION, ETC.*]. Do you have any questions before we begin?

- To provide context for the interview, get background information on the respondent:
 - Current position: title and responsibilities
 - How long have you held your current position?
 - How long have you had duties related to bioterrorism (BT) and public health preparedness (PHP)?
 - How long have you been with the local public health department (LPHD)?
 - What did you do before coming to the LPHD?

INTEGRATION BETWEEN LPHD AND HOSPITALS IN IDENTIFIED PROGRAM AREA OF INTEREST

We understand that your department is coordinating with hospitals *and other stakeholders* (this will not be true in some sites, so intro will need to be tailored to the specific site) on (*fill in the identified program area*). We would like to talk to you about that coordination: how it was developed, how it works, etc.

1. What led your health department to focus on this particular area? (*Probe about the following:*)
 - To meet BT grant requirements
 - CDC [Centers for Disease Control and Prevention]/HHS [Health and Human Services] identified it as a priority area.
 - Priority of our state health department, local health department, or county

- Health department perceived a need for it.
- Some areas easier to implement than others. If so, in what ways?
- Funding was available.
- Past experience with public health emergencies indicated a need for a particular area to be addressed.
- Are you benchmarking yourself against other organizations or have you been influenced by the efforts of other health departments or communities that were seen as leaders in a particular area?
- Other reasons?

2. How does the LPHD coordinate with hospitals in this program area? (*Probe about the following:*)

- Interagency task force? If yes, ask the following:
 - What are the size and composition of the group?
 - How often does the group meet?
 - Who leads the group?
 - How long has the group been in place?
 - Is there much participant turnover?
 - What is the group's role (e.g., advisory, policymaking)?
 - Ask if they are willing to provide some documentation about the group (e.g., meeting minutes, task force charter, and/or mission statement).
- Informal workgroups? If yes, ask the following:
 - What are the size and composition of the group?
 - Does the group meet regularly?
- Preparedness plans (i.e., LPHD plan includes hospitals)? If yes, ask the following:
 - Is the plan documented (e.g., posted on a Web site, in a published manual)?
 - Does the LPHD have a formal Memorandum of Understanding with the hospitals and/or other groups?
- Joint training activities? If yes, ask the following:
 - Who provides the training?
 - What groups are invited to participate?
 - Who funds the training?
 - How often is the training offered?
- Exercises? If yes, ask the following:

- How often are exercises done?
 - What groups are included?
 - Do the participating groups meet afterward to discuss the exercise and how things could be improved?
3. Is the coordination with hospitals formalized? That is, does the coordination depend purely on personal relationships (e.g., Bill and Jane are old friends and talk everyday) or is it institutionalized in some way (e.g., a specific position designated, a Memorandum of Understanding, task force)?
 4. How do you gauge whether your coordination efforts are succeeding? Are there measurable benchmarks (e.g., plans developed, successful exercises)?
 5. How did the coordination between LPHD and hospitals in this program area develop? Did the health department take the lead, or did other organizations initiate the coordination? Did it build upon existing relationships, such as those developed for infection control? How has the coordination changed over time (e.g., expanded or contracted the number of groups represented, become more or less formalized)?
 6. What other agencies, groups, stakeholders are involved in this preparedness program area? (*Probe about the following:*)
 - Other health departments (e.g., bordering counties, bordering states)?
 - Local hospital council?
 - Emergency response organizations (e.g., law enforcement, fire department, EMS)?
 7. Are there other agencies or groups that you think you should be coordinating with, but currently aren't? If so, why do you think this coordination is not taking place?
 8. What are some of the factors, both inside and outside your department, that have helped you to coordinate with local hospitals in this program area? (*Probe about the following:*)
 - Resources?
 - Supportive leadership?
 - Personal relationships?
 - Agreement on priorities and objectives?
 - Others?

9. What are some of the barriers to coordination that you have had to overcome? (*Probe about the following:*)

--Resource constraints--overall level and/or earmarking?

--Lack of perceived need to coordinate activities?

--Differences in priorities, philosophies, and/or missions?

What strategies were most successful in overcoming these barriers?

COORDINATION WITH HOSPITALS ON OTHER ACTIVITIES

1. What other public health preparedness activities are the health department currently working on with local hospitals? (*Probe about the following:*)

--Isolation and quarantine?

--Communications with media and public?

--Mass prophylaxis and vaccination plans?

--Surge capacity?

--Disease surveillance, reporting, and investigation?

--Lab capacity?

--Improvements in workforce training, education, and capacity?

--Developing response plans that address incident command?

2. In general, are the methods of coordination in these areas different from what you described above for (*fill in the primary focus area*)? If so, how are the activities coordinated? (*Probe about the following:*)

--Interagency task force?

--Informal work groups?

--Preparedness plans?

--Joint training?

--Exercises?

3. Are the factors that have facilitated or hindered coordination in these areas different from what you described for (*fill in the primary focus area*)? If so, what additional facilitators and/or barriers have you encountered? (*Probe about the following:*)

--Resources?

--Leadership (supportive or unsupportive)?

--Personal relationships?

--Priorities, philosophies, mission (agreement or disagreement)?

4. What has been your previous experience with respect to coordinating with hospitals (*and other stakeholders*) on non–BT-related programs (e.g., infection control, disease prevention)? Are similar barriers being encountered? If not, what do you think makes this coordination effort different?
5. Are there any preparedness activities that you think the department should be working on with local hospitals but currently is not? If so, which ones? Why do you think that coordination is not occurring in these areas? (*Probe about the following:*)
 - No perceived need to coordinate?
 - Lack of resources?
 - Leadership not supportive?
 - Too difficult?
 - Others?

FUNDING OF COORDINATION ACTIVITIES

1. How does your health department fund the coordination of joint preparedness activities with local hospitals and other relevant stakeholders? (*Probe about the following:*)
 - CDC bioterrorism cooperative-agreement funding?
 - HRSA [Health Resources and Services Administration] bioterrorism cooperative-agreement funding?
 - UASI [Urban Area Security Initiative] grant?
 - MMRS [Metropolitan Medical Response System] grant?
 - State public health department funding/grant?
 - County government funding?
 - Others?
2. How is BT funding being disbursed among the key stakeholders (the health department, hospitals, and other emergency response organizations) and how is it being spent?
3. What role, if any, has BT funding played in helping facilitate coordination of preparedness activities?
 - If BT funding has not been helpful, please explain (e.g., “too many strings attached”).
4. What trade-offs, if any, have been made in order to allocate funding and staffing to the coordination of preparedness activities?

5. What impact, if any, have federal, state, or local grant requirements had on the LPHD's decision to coordinate on certain preparedness initiatives?
6. In what ways, if any, have federal, state, or local grant requirements facilitated or hindered coordination?
7. Do you have any suggestions regarding modifications to existing grant mechanisms or legislation to facilitate the use of funding, staff, or other resources to more effectively coordinate preparedness activities?

SUPPORT NEEDS

1. What types of support could HHS or the state health department provide that would aid in your efforts to coordinate with local hospitals? (*Probe about the following:*)
 - Resources?
 - Procurement of equipment?
 - Training or training aids?
 - Exercise coordination and support?
 - Assist with preparedness plan development?
 - Others?
2. Are there other things that HHS or the state health department could do to facilitate coordination between your department and local hospitals? (*Probe about the following:*)
 - Provide clearer guidance?
 - Streamline grant procedures?
 - Clarify which programs are relevant for health departments (i.e., the programs are so numerous it is difficult to figure out which ones to focus on)?

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