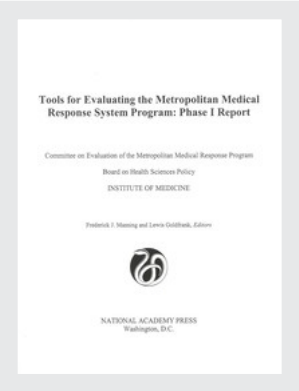

Tools for Evaluating the Metropolitan Medical Response System Program: Phase I Report

DETAILS

64 pages | 8.5 x 11 | PAPERBACK
ISBN 978-0-309-07647-0 | DOI 10.17226/10221

AUTHORS

Frederick J. Manning and Lewis Goldfrank, Editors, Committee on Evaluation of the Metropolitan Medical Response Program, Board on Health Sciences Policy, Institute of Medicine

Tools for Evaluating the Metropolitan Medical Response System Program: Phase I Report

Committee on Evaluation of the Metropolitan Medical Response Program

Board on Health Sciences Policy

INSTITUTE OF MEDICINE

Frederick J. Manning and Lewis Goldfrank, *Editors*

NATIONAL ACADEMY PRESS
Washington, D.C.

NATIONAL ACADEMY PRESS • 2101 Constitution Avenue, NW • Washington, DC 20418

NOTICE: The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The members of the committee responsible for this report were chosen for their special competences and with regard for appropriate balance.

Support for this project was provided by the Office of Emergency Preparedness, U.S. Department of Health and Human Services. This support does not constitute endorsement of the views expressed in the report.

International Standard Book Number 0-309-07647-1

Additional copies of this report are available for sale from the National Academy Press, 2101 Constitution Avenue, NW, Box 285, Washington, DC 20055. Call (800) 624-6242 or (202) 334-3313 (in the Washington metropolitan area), or visit the NAP's on-line bookstore at **www.nap.edu.**

The full text of the report is available on-line at **www.nap.edu/readingroom.**

For more information about the Institute of Medicine, visit the IOM home page at **www.iom.edu.**

Printed in the United States of America.

The serpent has been a symbol of long life, healing, and knowledge among almost all cultures and religions since the beginning of recorded history. The serpent adopted as a logotype by the Institute of Medicine is a relief carving from ancient Greece, now held by the Staatliche Museen in Berlin.

Knowing is not enough; we must apply.
Willing is not enough; we must do.

—Goethe

INSTITUTE OF MEDICINE

Shaping the Future for Health

THE NATIONAL ACADEMIES

National Academy of Sciences
National Academy of Engineering
Institute of Medicine
National Research Council

The **National Academy of Sciences** is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. Upon the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Bruce M. Alberts is president of the National Academy of Sciences.

The **National Academy of Engineering** was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. Wm. A. Wulf is president of the National Academy of Engineering.

The **Institute of Medicine** was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, upon its own initiative, to identify issues of medical care, research, and education. Dr. Kenneth I. Shine is president of the Institute of Medicine.

The **National Research Council** was organized by the national academy of sciences in 1916 to associate the broad community of science and technology with the academy's purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The council is administered jointly by both Academies and the Institute of Medicine. Dr. Bruce M. Alberts and Dr. Wm. A. Wulf are chairman and vice-chairman, respectively, of the National Research Council.

COMMITTEE ON EVALUATION OF THE METROPOLITAN MEDICAL RESPONSE PROGRAM

LEWIS GOLDFRANK *(Chair),* Director, Emergency Medicine, New York University Medical Center, Bellevue Hospital Center, New York, New York.
JOSEPH BARBERA, Director, Disaster Medicine Program, The George Washington University, Washington, DC
GEORGES C. BENJAMIN, Secretary, Maryland Department of Health and Mental Hygiene, Baltimore Maryland
JAMES BENTLEY, Senior Vice President, Strategic Policy Planning, American Hospital Association
KENNETH I. BERNS, Vice President for Health Affairs and Dean, College of Medicine, University of Florida, Gainseville, Florida.
RAYMOND M. DOWNEY, Battalion Chief and Chief of Rescue Operations, Special Operations Command, Fire Department City of New York (11/00 to 9/01)
FRANCES EDWARDS-WINSLOW, Director, Office of Emergency Services, San Jose, California
LINDA F. FAIN, Disaster Mental Health Consultant, Auburn, CA
FRED HENRETIG, Director, Clinical Toxicology, Director, Poison Control Center, Children's Hospital of Philadelphia.
ARNOLD HOWITT, Executive Director, Taubman Center, Kennedy School of Government, Harvard University, Cambridge, Massachusetts
LAURA LEVITON, Senior Program Officer for Research and Evaluation, Robert Wood Johnson Foundation, Princeton, New Jersey
WILLIAM MYERS, Health Commissioner, Columbus Ohio
DENNIS M. PERROTTA, State Epidemiologist and Chief, Bureau of Epidemiology, Texas Department of Health, Austin, Texas.
JEFFREY L. RUBIN, Chief, Disaster Medical Services Division, Emergency Medical Services Authority, State of California, Sacramento, California.
AMY E. SMITHSON, Senior Associate, Henry L. Stimson Center, Washington, DC (11/00 to 7/01)
DARREL STEPHENS, Chief, Charlotte-Mecklenburg Police Department, Charlotte, NC

Board on Health Sciences Policy Liaison

BERNARD GOLDSTEIN, Dean, Graduate School of Public Health, University of Pittsburgh

Study Staff

FREDERICK J. MANNING, Study Director
REBECCA LOEFFLER, Project Assistant

Institute of Medicine Staff

ANDREW POPE, Director, Board on Health Sciences Policy
ALDEN CHANG II, Board Administrative Assistant
CARLOS GABRIEL, Financial Associate

INDEPENDENT REPORT REVIEWERS

This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the NRC's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process. We wish to thank the following individuals for their review of this report:

GREGORY M. BOGDAN, Research Director and Medical Toxicology Coordinator, Rocky Mountain Poison & Drug Center, Denver, Colorado
GEORGE R. FLORES, Director of Public Health, San Diego Department of Health, San Diego, California
VINCENT T. FRANCISCO, Associate Director, Work Group on Health Promotion and Community Development, University of Kansas, Lawrence, Kansas
SALVATORE S. LANZILOTTI, Director, Honolulu Emergency Services Department, Honolulu, Hawaii
ROBERT MALSON, President, District of Columbia Hospital Association, Washington, D.C.
PAUL M. MANISCALCO, Past President, National Association of Emergency Medical Technicians
PETER ROSEN, Director, Emergency Medicine Residency Program, University of California, San Diego School of Medicine
ROBERT E. SHOPE, Professor of Pathology, University of Texas Medical Branch, Galveston, Texas
LESLEE STEIN-SPENCER, Chief, Division of Emergency Medical Services and Highway Safety, Illinois Department of Public Health, Springfield, Illinois

Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the conclusions or recommendations nor did they see the final draft of the report before its release. The review of this report was overseen by **LESTER N. WRIGHT,** Chief Medical Officer**,** New York Department of Correctional Services, Albany, New York, appointed by the Institute of Medicine, who was responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the authoring committee and the institution.

This report is dedicated to Ray Downey, Chief of Rescue Operations, Fire Department, City of New York, our friend and colleague on this Institute of Medicine committee, lost to us while leading rescue efforts at the World Trade Center after the terrorist attack on September 11, 2001.

Preface

When our committee began in the fall of 2000 to evaluate the potential of the Metropolitan Medical Response System (MMRS) program to enhance local ability to respond to the consequences of weapons of mass destruction terrorism, I could not have imagined the tragedies that would befall us as committee members and as a society.

Many of us on the committee have had personal losses from the assault on the World Trade Center and on our sense of physical and psychological safety. We are all deeply saddened by the death of Raymond Downey a longtime fire department veteran and expert in urban search and rescue who was a key committee member. His death is a great loss and his wisdom and leadership on our committee will be sorely missed. My department of emergency medicine at New York University Medical Center was among the hospitals that treated the critically ill and injured on September 11, 2001 and helped many individuals cope with traumatic stress in the ensuing weeks. Now the department is focusing immense energy on preparedness for potential future terrorist actions. Committee member Fred Henretig was involved in the care of victims and rescuers in New York as a member of a Disaster Medical Assistance Team from the Philadelphia area, and committee member Joe Barbera provided on-site advice on search and rescue operations at both the World Trade Center and the Pentagon.

Although much of the work described in this report was completed prior to September 11, 2001, our analysis of the MMRS program and means to assess it remain valid. This disaster has taught us: that decentralization of our resources is essential; that communications with rescue- and hospital-based systems are fragile; that the psychological impact on the families, friends, coworkers, city and country members cannot be overestimated; that hospital readiness may be far greater than is widely believed, even if severely compromised in the midst of disaster; that massive private and public resources can be mobilized very rapidly and very effectively in the face of a disaster; and that the enormous altruism and humanism of Americans permit a civic response that rapidly leads to optimism in the face of crisis and reaffirmation of the power of a democratic society.

This horrible event has allowed those of us working in New York City hospitals to understand terrorism better through the actions of our patients: the walking wounded who stayed away from healthcare for several weeks, the seriously ill who waited hours so as not to burden us, and the many suffering people who wished to talk, cry or sit in our healthcare centers.

The events of this Fall will allow people at all levels in our society to appreciate the importance of the MMRS concept. It is my belief that our committee's work will greatly aid the efforts of the Office of Emergency Preparedness (OEP) to analyze the disaster readiness of our cities. It is obvious that greater resources, stronger commitment to broader preparedness involvement and the study of terrorism, clearer understanding of the issues in question, and true interagency collaboration should follow logically from the recent terrorist assault. These changes in governmental vision and leadership will be essential to not only meet the letter, but the spirit of the contracts OEP has been signing with major cities. It is our hope that by analyzing preparedness we will decrease the risk from natural and intentional assaults on our environment and our well being.

We look forward in the second part of our project to developing creative strategic mechanisms for improving OEP analysis of preparedness for biological, chemical, and radiological terrorism. Our country and our people are entitled to a national approach to these problems based on a strong public health system. We, as a committee, are more motivated than ever to enhance mechanisms for assessing our country’s preparedness.

Lewis Goldfrank
Chair
October 10, 2001

Contents

INTRODUCTION 1

CHARGE TO THE COMMITTEE 2

METHODS 2

INITIAL OBSERVATIONS 3

MMRS PROGRAM CONTRACTS 6

ANSWERS TO SPECIFIC QUESTIONS ASKED BY OEP 7

PERFORMANCE MEASURES AND PREPAREDNESS INDICATORS 15

APPENDIX: PREPAREDNESS INDICATORS 19

INTRODUCTION

The U.S. Department of Health and Human Services' Metropolitan Medical Response (MMRS) program has evolved from an idea originally developed in the Washington, D.C., area in 1995. Using the combined personnel and equipment resources from Washington, D.C., Arlington County in Virginia, and Montgomery and Prince Georges Counties in Maryland, the Metropolitan Medical Strike Team (MMST) received training, equipment, and supplies specifically designed to facilitate an effective response to a mass-casualty terrorism incident with a weapon of mass destruction (WMD). The first of its kind in the civilian environment, the MMST was intended to be capable of providing initial, on-site emergency health, medical, and mental health services after a terrorist incident involving chemical, biological, or radiological (CBR) materials. The team's mission includes CBR agent detection and identification, patient decontamination, triage and medical treatment, emergency transportation of patients to local hospitals, coordination of movement of patients to more distant hospitals via the National Disaster Medical System (NDMS), and planning for the disposition of nonsurvivors. Building from the initial efforts of the Washington, D.C., Metropolitan Area MMST, OEP provided funding for the development of a similar team in the city of Atlanta in preparation for the 1996 Summer Olympic Games. The U.S. Congress has subsequently authorized and provided funding for additional contracts with the 120 most populous U.S. cities.

Although the first two MMSTs were essentially enhanced hazardous materials (hazmat) teams, with plans, training, and equipment centered around dealing with chemical agents, some of the other early MMRS cities changed the MMST concept by integrating on duty existing fire, emergency medical services, and police personnel into a "MMST response." In addition, their plans incorporated local public health officials, non-governmental organizations, state agencies, including the National Guard, federal military and non-military officials, and private healthcare organizations. OEP soon amended the initial contracts to focus more attention on coping with a covert release of a biological agent and changed the name of the program to the Metropolitan Medical Response System. The new name emphasizes that the program is intended to enhance the capabilities of existing systems that involve not just 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. This emphasis on enhancing existing systems rather than building new, and perhaps competing, CBR-specific systems was strongly recommended by a previous Institute of Medicine (IOM) committee as a first principle in efforts to prepare for CBR terrorism.[1]

It was in this spirit of system improvement and enhancement that OEP approached IOM about OEP's ongoing need to systematically assess and evaluate the preparedness of the MMRS cities ("MMRS city" is used throughout this report to mean the metropolitan area encompassed by a given MMRS program contract, which might involve several cities and counties) and understand the effectiveness of the overall program approach. Continuing improvement, as in any program, is

[1] Institute of Medicine. 1999. *Chemical and Biological Terrorism: Research and Development to Improve Civilian Medical Response*. Washington, DC: National Academy Press.

critically dependent on regular evaluation of successes and shortcomings, a task rendered more difficult in this case by the low rate of actual CBR terrorism incidents.

CHARGE TO THE COMMITTEE

IOM shall identify and develop performance measures and systems to assess the effectiveness of, and to identify barriers related to, the MMRS development process. Additionally, IOM shall establish appropriate evaluation methods, tools, and processes, based upon the performance measures, to assess the MMRS development process. The products of this work will assist OEP in determining appropriate mechanisms to assess the effectiveness of, and identify barriers related to, the MMRS development process.

In Phase I, an expert committee shall identify, recommend, and develop performance measures and systems to assess the effectiveness of, and identify barriers related to, the MMRS development process at the site, jurisdictional, and governmental levels. [OEP posed 11 more specific questions relevant to this task. The questions, and the committee's answers, are provided below in a separate section].

In Phase II, the committee shall use the performance measures developed from Phase I to recommend and then develop appropriate evaluation methods, tools, and processes to assess the MMRS development process.

The evaluation system(s) developed should be geared toward the timely assessment of each deliverable or phase of the development process with emphasis placed on identifying barriers, identifying solutions, and sharing successes of both the technical and administrative components of the MMRS program.

METHODS

In the fall of 2000, IOM assembled a committee whose members provided expertise from the fields of emergency medicine, emergency and disaster management, medical toxicology, urban planning, epidemiology, public safety, public health, hospital administration, infectious diseases, mental health services, and program evaluation. This was accomplished in accordance with the established procedures of the National Academies, including an examination of possible biases and conflicts of interest and provision of an opportunity for public comment.

A wide variety of sources were used to assemble the data and the information necessary to respond to the charge. A comprehensive list of individuals who assisted the committee in this effort will be provided in the final report. An initial organizational and data-gathering meeting of the committee in December 2000 provided an overview of the MMRS program from the viewpoints of both OEP and several of the initial MMRS cities. Other speakers provided an overview of program evaluation principles and practices and some insights into two Federal Emergency Management Agency (FEMA) programs focused on assessing state and local readiness for a variety of potential disasters.

At a subsequent meeting, in February 2001, the committee heard about the legislative and executive origins of the MMRS program and other federal counterterrorism programs.

Representatives from the U.S. Department of Justice (DOJ) and the Centers for Disease Control and Prevention (CDC) described their current programs aimed at enhancing state and local capabilities, and a Public Health Service (PHS) project officer described the different approaches used and the levels of success achieved by the 16 MMRS cities in his geographic area. That meeting also featured briefings on the assessment techniques and procedures used by medical organizations evaluating residency training programs, poison control centers, and individual physician specialists and by FEMA's National Urban Search and Rescue Team program. Follow-up with the speakers provided more detailed information and points of contact for additional questions.

The sponsors' project officers shared copies of completed plans from six MMRS cities from their files and put committee members in touch with offices that had relevant data. The committee members themselves contributed both personal contacts and specific information from their own files and experiences. The World Wide Web provided much information about additional organizations and counterterrorism activities, and IOM staff assembled a library of over 350 documents, published and unpublished, bearing on federal, state, and local preparations for managing the consequences of CBR terrorism incidents. These documents and other written materials presented to the committee are maintained by the Public Access Office of the National Research Council Library. Appointments to view these materials may be made by telephoning the library at (202) 334-3543 or by sending electronic mail to nrclib@nas.edu.

The present report was the result of extensive discussion among the committee members at a two-day meeting in May during which draft answers were formulated and initial preparedness indicators compiled. Subsequent versions of each were reviewed and modified via email, and committee members "signed off" on the review draft in late July.

INITIAL OBSERVATIONS

The MMRS program context presents some special challenges for evaluation. First, there is much to be learned from analysis of the local, state and federal responses to the terrorist attacks on the World Trade Center and the Pentagon in September 2001, but the committee believes that CBR terrorism incidents of the scale envisioned by OEP are unlikely to occur on a regular basis. As a result, **any evaluation of a response system will have to be indirect, in that it will have to measure the intermediate consequences of the MMRS program rather than the ultimate goal, which is to save lives and minimize morbidity from a terrorism incident.**

Second, every city's MMRS encompasses a web of planning activities, resources, intergovernmental agreements, and exercises at multiple levels of government. This web of activities is illustrated in Figure 1. The many activities in the box beneath "Emergency Capacity" represent only some of the capabilities required for an effective response to CBR terrorism events. Producing those capabilities is the concern of a wide variety of governmental and private-sector institutions through an equally wide variety of mechanisms, including the MMRS program. The MMRS program itself represents an effort to coordinate multiple entities and activities that are independently funded and that receive the authority for their activities from other sources. **This complexity means that isolation and quantification of OEP's role in creating readiness for a CBR terrorism incident will be nearly impossible, regardless of how well one might measure readiness in any given city.** It also suggests that caution is

necessary in making changes in any part of the web of activities, for they may have unintended consequences far from the locus of change.

Third, although many of the pieces of a response plan may be thoroughly evaluated, **evaluation of response capacity as a whole will, by necessity, be inferential; that is,** assumptions must be made about how the component parts should work together.

Fourth, **the wide variations in the resources and vulnerabilities of the MMRS municipalities may preclude use of a single yardstick or measure that places all the MMRS cities along a single scale of readiness**. For example, Washington, D.C., must anticipate attacks on numerous federal facilities and embassies, whereas Baton Rouge, Louisiana, has a variety of chemical plants that are vulnerable to attack. Some cities operate their own emergency medical services; others depend on county or state assets. OEP has dealt with this variation by not attempting to impose a single model or acceptable plan on all its MMRS cities, instead opting to encourage cities to build their own plans around available structures, resources, and vulnerabilities. This flexible approach results in a substantial reduction in the ability to impose universal performance measures and standards and a corresponding difficulty in devising fair and comparable evaluation tools.

Finally, the committee has been persuaded by both the first five observations and the written and oral explications of OEP that it should approach its tasks with a strong bias toward a formative rather than a summative evaluation. That is, **the committee takes as a given that the primary goal of the proposed evaluation is constructive feedback both to OEP staff and to the MMRS cities.**

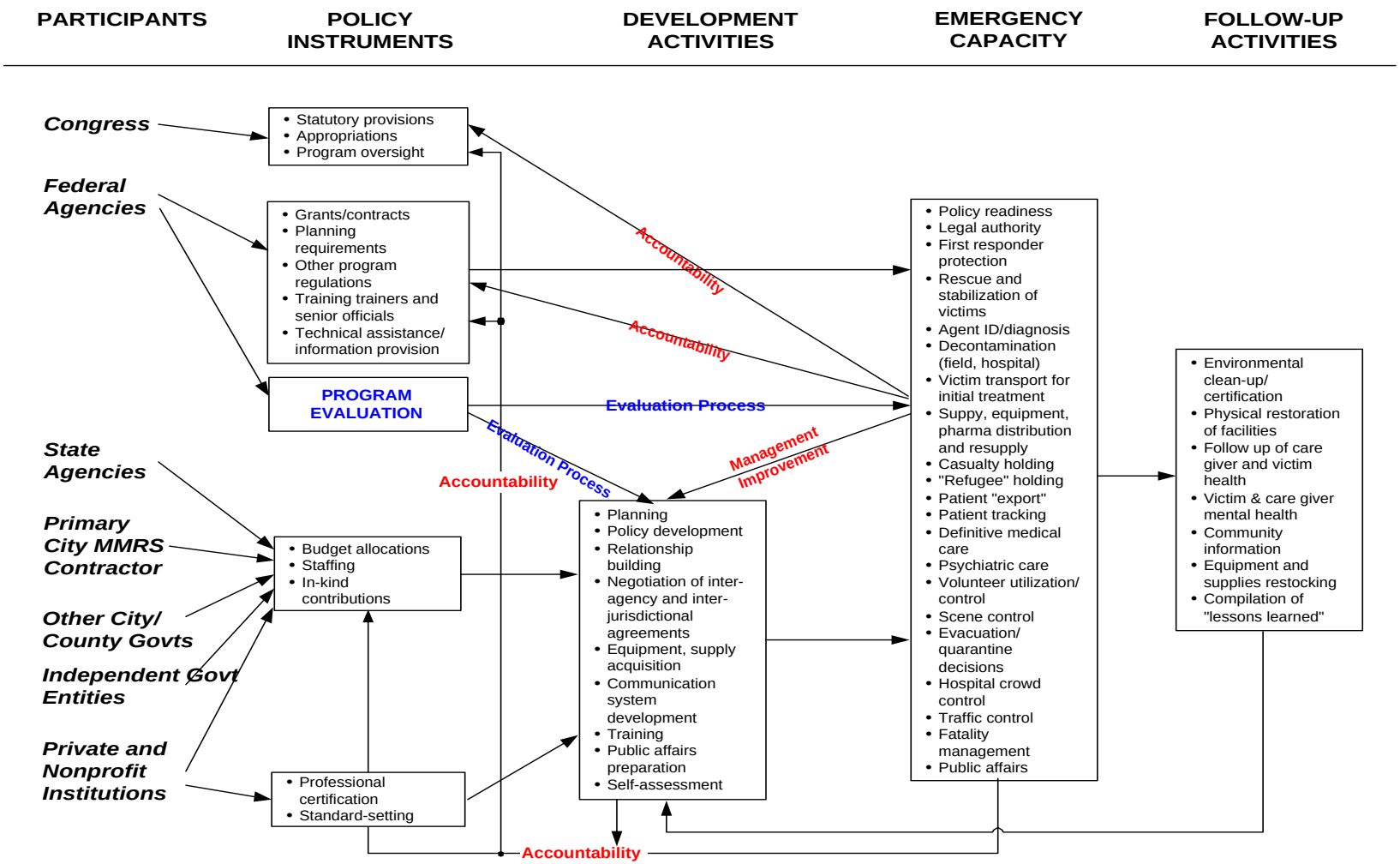

FIGURE 1 MMRS Program Participants, Policy Instruments, Development Activities, Emergency Capacity, and Follow-up Activities

MMRS PROGRAM CONTRACTS

Unlike many federal programs of assistance to state and local governments that provide funds by means of grants or cooperative agreements, OEP chose to use contracts as the mechanism for providing funds to participating MMRS cities. A distinguishing characteristic of contracts is the level of detail provided in the "statement of work." Unlike grants, which often support desired processes and activities without specifying the expected product in any detail, contracts focus more closely on the products ("deliverables," in government jargon) and less closely on how the contractor is to produce them. The monetary value of the contracts have varied slightly with the size of the metropolitan area involved, but have averaged about $500,000. This is delivered in installments as the deliverables are produced. For example, contracts awarded to the fiscal year (FY) 2000 MMRS cities are 18 months in duration and call for phased delivery of 12 products:

1. Meeting with project officer (within 2 weeks of contract award);
2. MMRS Development Plan (within 3 months of contract award) [The plan for developing a plan]
3. Primary MMRS Plan (within 6 months of contract award);
4. Component MMRS plan for forward movement of patients utilizing the NDMS (within 8 months of contract award);
5. Component MMRS plan for responding to a chemical, radiological, or explosive WMD event (*not* a biological WMD event) (within 9 months of contract award);
6. Component plan for MMST if it is a component of the municipality's MMRS (within 12 months of contract award);
7. Component plan for managing the health consequences of a biological WMD (within 18 months of contract award);
8. Component plan for local hospital system (within 18 months of contract award);
9. MMRS training plan including training requirements and a follow-on training plan (within 18 months of contract award);
10. MMRS pharmaceutical and equipment plan that includes a maintenance plan and a timetable for procurement of equipment and pharmaceuticals that have been approved by the project officer (within 18 months of contract award);
11. Monthly progress reports; and
12. Final report.

The products of these contracts are thus a series of plans for organizing and responding to large-scale acts of CBR terrorism. Current MMSR contracts explicitly demand coordination with county government and neighboring jurisdictions, e.g. the Los Angeles MMRS involves 88 jurisdictions.

As noted above, the program has changed since its initiation in FY 1997, and that is reflected in the number and nature of the deliverables demanded by contracts let in subsequent years. Contracts awarded in fiscal years 1999, 2000, and 2001 are very similar to one another, although they differ in a number of respects from the FY 1997 contracts. The 1997 cities' "bioterrorism supplement" was incorporated into the body of the contract in subsequent years, and post-1997

cities were given the option to build the capabilities of an MMST into their existing response organizations rather than create a stand-alone team. Smaller changes clarified OEP intent in a number of places and provided cities with additional information about acceptable actions in others. No substantive requirements were added or deleted, and so, in the interests of brevity, only the provisions of the fiscal year 2000 contract are presented here.

OEP provides considerable guidance on the required elements of an acceptable plan, and those required elements form the basis for the organization of the committee's collection of preparedness indicators in a subsequent section of this report (see Appendix). The committee used the FY 2000 contract for that purpose, but the major substantive elements have been present in some form in every contract, and no city should be disadvantaged by the minor differences in wording or order of presentation that exist.

ANSWERS TO SPECIFIC QUESTIONS ASKED BY OEP

This IOM project is divided into two phases**.** In Phase I the committee was asked to identify performance measures and systems to assess the effectiveness of and identify barriers related to the MMRS development process at the site, jurisdictional, and governmental levels. OEP further asked the committee to "include the following considerations":

QUESTION A: How can OEP determine, at the program level, whether the strategies, resources, mechanisms, technical assistance, and monitoring processes provided to the MMRS development process are effective?

ANSWER A: This question concerns the performance of the OEP staff, as opposed to the performances of the MMRS cities, which are the focus of most of the succeeding questions. That said, the simple answer to this question is straightforward: ask the contractors, that is, the MMRS cities, about the extent to which they used OEP technical assistance and resources (e.g., the Public Health Service officers serving as Regional Emergency Coordinators) in fulfilling the terms of the contract, their perception of the value of OEP's technical assistance and resources, and to what extent community preparedness was improved by fulfilling the terms of the contract. That answer, however, assumes that fulfilling the terms of the contract is synonymous with the ultimate goal of the program: an enhanced local capability for coping with the consequences of a CBR terrorism incident. That is not the case. Although the contracts call for establishing a stockpile of appropriate pharmaceuticals, equipment, and supplies in the community, the primary demand on the contractor is the production of a series of plans. Although written plans, like a stockpile of equipment and supplies, are a necessary part of preparedness, they are not sufficient. OEP has recognized this in asking IOM not just for some tools to evaluate how OEP helps the MMRS cities fulfill the terms of the contracts but also for advice on the terms of the contracts themselves and for tools to evaluate preparedness at the local level. This Phase I report deals primarily, although not exclusively, with the last of these three tasks, but the final report will address all three in detail. It cannot be overemphasized, however, that whatever the state of local preparedness, many programs and initiatives—those of the federal government, state and local governments, and the private sector—as well as preexisting conditions in each jurisdiction contribute to preparedness. It is therefore impossible to disentangle the causal effects of the MMRS program from the effects of these other influences.

QUESTION B: How can OEP identify whether the performance objectives identified in the MMRS contract lead communities to preparedness?

ANSWER B: This question seeks the committee's opinions on the adequacy of the contract deliverables. Are they the right ones? Should there be more? That is, are the actions demanded of the MMRS communities by their contracts with OEP necessary and sufficient for preparedness? Although this is a question for which input from the contractors themselves would again be helpful, it is probably impossible even for them to unequivocally assert a causal link between the MMRS program and preparedness because of myriad confounding variables such as U.S. Department of Defense (DOD) and DOJ programs and professional society activities. The question also assumes an independent measure of preparedness, which is the major task of the committee. The committee nevertheless believes that several modifications and additions to the contract objectives (deliverables) will likely enhance a community's response to a CBR terrorism event. These modifications and additions are explained below in the response to Question C.

QUESTION C: What modifications, additions, or subtractions should be made to these performance objectives to assist communities throughout the development process?

ANSWER C: The evaluation of local preparedness that presumably will follow this committee's report should result in contract modifications appropriate to its findings. In the interim, the committee offers the following observations on the scope and appropriateness of the current objectives (i.e., the deliverables). OEP staff, PHS project officers, and contractors have identified two objectives as being especially important: Deliverable 2 (the MMRS development plan) and Deliverable 8 (Component Plan for Local Hospital and Healthcare System).

The required elements of Deliverable 2 include specification of the proposed leadership and membership of a development team and the roster of a steering committee that will assist in the planning and development of the MMRS. The contract suggests a number of organizations and agencies that should be considered, but variations among communities probably ensure that no list of suggested members would be appropriate for all communities. More importantly, the committee has repeatedly heard that the real value of assembling a steering committee lies in the personal relationships established in the course of preparing the plan. Yet, nowhere in the guidance to the contractor on this deliverable is that stated explicitly.

Also **missing from this deliverable is a preliminary assessment of the planning environment, that is, the community's strengths, weaknesses, opportunities, or threats and any barriers and resources that might be unique to the community.** A plan to enhance local capabilities should begin by identifying those capabilities in most need of enhancement. This should be a multidisciplinary effort offered by multiple voices in the community (e.g., members of the police force, firefighters, emergency medical technicians and paramedics, public health officials, and hospital personnel, among others), with participation attested to by the signatures of all parties. The committee recognizes that this proposed addition to the list of deliverables comes too late for the 122 cities already under contract but believes that it would be the most logical start to any OEP initiative to provide follow-on support to sustain their readiness.

Deliverable 8 does not distinguish between public and private health care facilities, although it is clear by now that MMRS program contractors have had great difficulty involving private hospitals and clinics. The contract's guidance on this deliverable should include or refer the contractor to some strategies, mechanisms, or incentives that have proved successful in other cities. In addition, the committee has identified **two important**

elements of coping with a mass-casualty event that are not addressed in the objective: staff callback procedures and replenishment of medical and ancillary (food, laundry, housekeeping, etc.) supplies and services.

The committee also identified **several other essential activities or MMRS functions that are not addressed at all in the current contracts:**

- Receipt and distribution of materials from the National Pharmaceutical Stockpile;
- Refugee holding (providing shelters for healthy people fleeing an area of real or perceived contamination);
- Volunteer utilization and management;
- Traffic control at the scene, at health care facilities, and in the community as a whole;
- Evidence development, collection, and protection;
- Evacuation and disease-containment decisions and procedures;
- Post-event follow-up of the health of responders and caregivers; and
- Plans for postevent amelioration of anxiety and feelings of vulnerability among the community at large.

It might be argued that several of these functions are not medical in nature and therefore do not fall within the scope of this DHHS project. However, all of these functions are essential to the ability of medical personnel to perform their jobs, even if, as seems likely, public safety personnel carry out the required actions. A realistic plan should therefore address these areas.

QUESTION D: How can existing standards be used to validate these performance objectives? If standards do not exist, how can new standards be created or how can the performance objectives be validated?

ANSWER D: Many of the personnel, professions, organizations, and jobs referred to in the plans of MMRS cities are governed by existing standards; some of these are legally mandated (Occupational Safety and Health Administration [OSHA] regulations) and others are voluntary. The following is a partial list of potentially relevant standards that the committee examined:

Joint Commission for Accreditation of Healthcare Organizations (JCAHCO)
- Standard EC.1.4—Emergency preparedness management plan
- Standard EC.2.9.1—Emergency preparedness drills
- Standard EC.1.4 (1997)—Security management plan
- Standard EC.1.5 (1997)—Hazardous materials and waste management plan

Commission on Accreditation of Ambulance Services Standards
- Organization (includes disaster plan, yearly disaster simulations)
- Management
- Community relations and public affairs
- Mutual aid agreements
- Human resources
- Clinical services
- Safety
- Equipment and facilities
- Communications

National Public Health Performance Standards (CDC)

National Fire Protection Association Standards

- NFPA 471—Recommended Practice for Responding to Hazardous Materials Incidents
- NFPA 472—Standard for Professional Competence of Responders to Hazardous Materials Incidents
- NFPA 473—Standard for Competencies for EMS Personnel Responding to Hazardous Materials Incidents
- NFPA 1600—Standard on Disaster/Emergency Management and Business Continuity Programs

OSHA Standard 29CFR1910.120—Hazardous waste operations and emergency response

Nuclear Regulatory Agency/FEMA Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants (NUREG–0654/FEMA–REP–1)

Department of Transportation National Highway Transportation Safety Agency Emergency Medical Services National Standard Curriculums

American College of Emergency Physicians Task Force Recommendations on Objectives, Content, and Competencies for training of Emergency Medical Technicians, Emergency Physicians, and Emergency Nurses on Caring for Casualties of NBC Incidents

With only a few exceptions, the committee deemed these standards to be of limited utility in assessing the preparedness of local communities for coping with a CBR terrorism incident. Most are qualitative in nature and are "enforced" only by well-publicized and infrequent inspections. None explicitly addresses CBR terrorism or an emergency of the scale described in the MMRS program contract, and attempts to apply these standards to such scenarios in the past have often proved counterproductive (e.g., misinterpretation of OSHA hazardous waste operations standards has led to expectations that hospital emergency department [ED] personnel should have Level A chemical protective suits). Furthermore, each standard applies to only one element, discipline, or agency involved in an MMRS. It is difficult to envision a successful MMRS in which any of the constituent elements fails to meet its own narrow standards, but it is also true that a collection of individually competent elements does not guarantee a successful system. Each of the standards listed above was nevertheless examined for elements that could be incorporated into an MMRS program-specific evaluation, and a number of those have been incorporated into the matrix of preparedness indicators provided later in this report.

QUESTION E: What strategies have communities used to enhance their existing capabilities? What are the most effective means to measure these additional capabilities?

ANSWER E: It is probably fair to say that before 1995 few of the MMRS cities had given much thought to preparedness for CBR terrorism events at all. Certainly, all the nation's largest

cities had preexisting hazmat teams; those with nuclear power plants in close proximity had plans and equipment for coping with radiation releases; and all-hazards emergency response plans were influenced heavily by the frequency with which they had experienced earthquakes, floods, tornadoes, and so forth. To the extent that any of the cities had begun to address coping with a CBR terrorism incident, they were reacting to the attack with a nerve agent on the Tokyo subway and therefore emphasized chemical agents. Although biological agents were not ignored, DOD and DOJ training and equipment programs begun in 1997 reinforced that emphasis on chemical agents, and as a result their equipment money and training was most often directed at firefighters and emergency medical technicians rather than hospital personnel.

Most cities used their MMRS program contracts to expand their capabilities by incorporating CBR-specific training and equipment for city personnel, primarily those involved with public safety, into existing all-hazard plans. In some cities, for example, in Honolulu, the MMRS program appears to have been extremely successful in promoting extensive mutual-aid agreements with surrounding communities and nearby military facilities.

The committee expects that cities with such extensive aid networks will enhance their preparedness not just for CBR terrorism incidents but for all hazards. **In retrospect it appears that such "relationship building" across disciplines and communities may be a critical element in meeting the demands of the MMRS program contract and, along with dual-use equipment and procedures, may be the key to sustaining preparedness.** Although a lack of pre-MMRS measures or control cities precludes a causal analysis, finding ways to measure these additional capabilities is a central element of the committee's task and will be fully addressed in the final report. The committee cannot provide a concise answer to this question at this stage of the project.

QUESTION F: Can the relationships between traditional first responders-public safety officials and their supporting hospitals and public health offices be assessed? If so, how?

ANSWER F: A number of complementary strategies can be used to assess these relationships. The MMRS program contract already demands the minutes of all MMRS-related meetings, presumably including those who attended the meetings, in the requisite monthly progress reports. More intrusive measures might include independent oral or written queries of key personnel in each of these sectors regarding the joint actions specified in the community's response plan. An Agency for Healthcare Research and Services (AHRQ) grant is supporting SAIC, Inc and its subcontractor, the Joint Commission for Accreditation of Healthcare Organizations **(**JCAHCO), in developing an assessment tool for measurement of hospital-community linkages. Designed as a 20-minute self-assessment survey, the draft version made available to the committee demands short answers from hospital administrators to a variety of questions about the hospital's interactions not only with the community's first responder-public safety community but with other hospitals as well.

QUESTION G: What tools and models exist to measure preparedness for natural disasters?

ANSWER G: The committee examined the following assessment tools for possible application in whole or in part to the task of evaluating preparedness for CBR terrorism events:

Capability Assessment for Readiness (CAR)
—FEMA self-assessment instrument to evaluate state emergency management
—A 1,801-element survey administered to all states and territories in 1997

—"All-hazards" document with only a handful of items related to chemical and biological weapons

Local Capability Assessment for Readiness (LCAR)
- —FEMA's smaller, local community version of CAR
- —Currently undergoing pilot testing in selected counties

Hazardous Materials Exercise Evaluation Supplement
- —Instructions and checklist for peer reviewers in FEMA's Comprehensive HAZMAT Emergency Response-Capability Assessment Program
- —Sixteen elements, each with 10 to 50 "points of review"
- —Yes-or-no responses and the time that the specific action was observed

Epidemiologic Capacity Assessment Guide
- —Step two of a three-step process (Step 1 is document collection, and Step 3 is site visit) designed by the Council of State and Territorial Epidemiologists
- —Self-assessment questionnaire
- —Short answers or essays and data on speed of investigation from recent cases
- —Suggestions for interviews of key personnel

State Domestic Preparedness Equipment Program Assessment and Strategy Development Tool Kit
- —Instruments developed by DOJ, the Federal Bureau of Investigation, and CDC to evaluate vulnerability, threat, and public health performance combined with assessments of required and current capabilities in the realms of fire services, hazmat, emergency medical service (EMS), law enforcement, public works, public health, and emergency management
- —A 100-page "Tool Kit" provided for use by the state and local personnel assigned to fill out the forms, but could be the basis of peer interviews
- —State assessment designed to be a compilation of local assessments, so it is really a local instrument

Public Health Assessment Instrument for Public Health Emergency Preparedness (CDC)
- —Ten essential public health services amplified specifically for preparedness for CBR terrorism events
- —Nineteen "indicators," each with multiple subparts requiring mostly yes-or-no answers
- —Part of DOJ state assessment instrument

Assessment of Community Linkages in Response to a Bioterrorism Event
- —Draft product of JCAHCO and SAIC for AHRQ due out in June 2001
- —Forty-item questionnaire for hospitals (yes-or-no and short answers)

Each of these instruments seeks information about elements of disaster preparedness that are directly relevant to CBR terrorism preparedness. All are written self-reports, and either of the

two most comprehensive assessments, done properly, would take several people many hours or even several days to complete. In addition, the committee believes that self-reports are vulnerable to corruption of indicators. It has long been understood in evaluations of health and social programs that when rewards and punishments result from people's apparent performance on an indicator, that indicator can sometimes change in ways that have no bearing on the actual outcomes of the governmental program. In the MMRS context, at least two possible forces can lead to "corruption of indicators." First, to the extent that municipalities may believe that continued federal funding is contingent on contract compliance, self-reports may make the situation appear to be better than it really is. Second, and alternatively, if local officials believe that further funding is dependent on need, self-reporting may actually lead to an underestimate of preparedness. **The committee will reexamine the possible utility of these self-assessment instruments in Phase II of the study, but for the present, the committee views them as providing too little additional assurance for the substantial effort involved.**

QUESTION H: Do current federal performance measures for natural disasters or other programs (mitigation and response) have application to preparedness for a terrorism incident involving WMD (e.g., FEMA Project IMPACT)?

ANSWER H: According to Jeff Glick, director of FEMA's Assessment Branch, postdisaster assessments of the performances of federal, state, and local government offices and agencies during natural disasters are ad hoc and very much event specific. He reports that no common template or database of findings is available for possible use in evaluating the preparedness of MMRS program communities. He anticipates that a current effort by FEMA, the National Emergency Management Association, and others to create an emergency management accreditation program will eventually include performance standards as well as preparedness indicators based on LCAR.

QUESTION I: How can casualty assumptions for communities of varying populations be established (percent of population, historical data)?

ANSWER I: Casualty assumptions, including those generated by "plume" models and computer programs showing how a release spreads, all depend heavily on fairly extensive knowledge of the agent—how much, what kind, and how dispersed—but these are all facts that are least likely to be known in a terrorist incident. Modest changes in these "initial terms" lead to casualty predictions that can vary by orders of magnitude. Computers, of course, can be used to generate a potentially huge table or series of tables by systematically varying the initial terms, but the committee sees little to be gained by this approach, the rationale for which is presumably the requirement to estimate the need for hospital beds, medications, other supplies and equipment, and personnel.

OEP's arbitrary selection of 1,000 casualties from release of a chemical agent as a target figure for use in preparation of plans is probably a better approach. The same holds for biological agent incidents, for which the MMRS program contracts demand three levels of planning: one plan for handling an event with less than 100 victims, a second plan for handling an event with 100 to 10,000 casualties, and a third plan for handling events with greater than 10,000 casualties.

Given the infinite number of possible incidents, an even better approach may be to turn 180 degrees and seek estimates of capacity rather than estimates of numbers of casualties. That is, ask cities how many patients they can currently care for with current staffing levels and standards of care; how many patients they could care for in a true mass-casualty situation,

allowing for some attrition of regular staff but with help from outside the community and a different standard of care; and finally, how many patients would truly overwhelm the system, with or without outside help.

QUESTION J: How can OEP measure the preexisting systems, methodologies, and plans that public safety, public health, and health services agencies use to communicate during day-to-day operations? How can OEP measure the impact that the MMRS development process has had on the level of this communication or the expectations for this communication, or both?

ANSWER J: The committee suggested above, in its answer to Question C, that a missing but important part of Deliverable 2 is a prospective assessment of community strengths and weaknesses. This would certainly have to include communication among the fire department, the police department, EDs, trauma centers, poison control centers, EMSs, hazmat units, medical evacuation (Medevac) units, and other state and local agencies and institutions. Examination of existing mutual aid agreements or lack thereof should certainly be included.

As noted previously, even with pre- and postcontract measures, which will not actually be possible for at least the 122 cities that have already contracted with OEP, it would be very difficult to analyze the effects of the MMRS program independently of the effects of other concurrent federal, state, and private-sector initiatives. Asking cities directly is probably better than no assessment, but the current status is really all that can be objectively determined. That assessment could be carried out by independent questioning, written or oral, of essential participants in the public safety, public health, and health services sectors or through evidence from periodic testing of emergency communication systems under adverse conditions and at times of typically low activity. Some of the communications-related areas that might be probed would be access to a common radio frequency and how often it is used, the numbers and compatibilities of cell phones, existing agreements and mechanisms for gaining priority use of wireless and landline phones, and Internet and intranet connectivity.

The committee cautions that although it is possible that under some circumstances planning for an extraordinary event might improve the ability to conduct ordinary activities, it is by no means certain. Planning for detection of and coping with epidemics caused by bioterrorism may well make detection of and coping with a meningitis outbreak more efficient, but it is not likely that everyday care of individual patients with infectious diseases will be similarly affected. Certainly, **it would be a mistake to judge preparations for a rare mass-casualty event solely by changes, or lack of changes, in everyday effectiveness or efficiency.**

QUESTION K: How can financial barriers related to WMD preparedness be identified and measured?

ANSWER K: In the course of its data collection effort, the committee has become aware of some financial barriers (no doubt known to OEP as well) that hinder preparedness in at least some MMRS cities. Most prominent is the difficulty of sharing funding or material purchased with OEP contract dollars with adjacent jurisdictions and private-sector entities, especially hospitals and physicians. In the former case, political, and sometimes legal considerations underlie a predictable reluctance of elected officials to spend “their” money on others’ constituents. In the case of private-sector hospitals, financial pressures from the current adverse economic climate in health care, including competition from other local hospitals, have led most hospitals to eliminate all spare or surge capacity to cope with disasters of any sort. Even “free” equipment results in an obligation to provide expensive maintenance and training to staff.

Indeed, participation in the local MMRS at all results in a similar training obligation, and as a result, cities unable to provide financial incentives have had great difficulty in bringing about the participation of private hospitals. This MMRS program is a direct response to a "national security threat" and as such should be funded by the federal government at a level and in a manner that will both cover all initial costs and the continuing costs of sustaining preparedness. This does not seem to be an unreasonable expectation given the very large increases in funding for counter-terrorism programs being proposed in the FY 2002 federal budget.

As to the larger methodological question of how OEP can identify and measure such financial barriers, it would seem that a large piece of the committee's Phase II task will be to put together a postcontract questionnaire (or final deliverable) that asks cities about this question and any changes in the way in which they carry out everyday business might be attributable to the MMRS program (see Questions and Answers A, B, C, E, and J).

PERFORMANCE MEASURES AND PREPAREDNESS INDICATORS

The MMRS contract deliverables are all written plans, and although written plans are certainly necessary elements of preparedness, they are in most cases only the beginning of a continuing process. Some elements of these plans can be carried out only during or after an actual incident or a very realistic exercise, but many require advance preparations, such as the purchase of equipment, hiring or training of personnel, or even changes in the way in which everyday business is conducted (for example, citywide electronic surveillance of ED calls). Even though these advance preparations and their documentation are actions, and are necessary for preparedness, they are not the same sort of performances that might be assessed in an actual mass-casualty event (whether it involves CBR terrorism or not) or a drill or field exercise. Measures related to advance preparations are generally easier and cheaper to access, however, and can provide a measure of effective response capability or potential (although, in the absence of an act of mass-casualty-producing CBR terrorism, there are no data that can validate the relationship between the selected indicators and actual performance). **The committee therefore prefers the more inclusive term "preparedness indicators" to "performance measures."**

The committee's recommended preparedness indicators are presented in Attachment 2 as a series of tables. A separate table is provided for each of the substantive deliverables of the MMRS program's fiscal year (FY) 2000 contract (omitted are deliverables calling for a meeting with the project officer, monthly progress reports, and a final report). In each table the far left column, labeled "Plan Elements," lists the required elements of the deliverable, numbered in accord with the checklist supplied to FY 2000 MMRS cities by OEP under the title "2000 MMRS Contract Deliverable Evaluation Instrument."

The remaining three columns of the tables present the committee's suggested preparedness indicators for each plan element. These fall into three categories: inputs, processes, and outputs.

Inputs are the constituent parts called for, implicitly or explicitly, by a given deliverable. An adequate plan itself would contain at least one input for nearly every deliverable, assuming that the required plans would have been completed at the point that assessment is being undertaken. Other inputs could be designated personnel; standard operating procedures; equipment and supplies; or schedules of planned meetings, training, and other future activities.

Processes are evidence of actions taken to support or implement the plan. Evidence that such actions had been taken or are under way might include minutes of meetings, agreements prepared, training sessions conducted, or the numbers or percentages of personnel trained to use CBR detection equipment.

Outputs are indicators of effective capabilities developed through the actions included under processes, that is, indicators of the effectiveness of actions taken to support or implement the MMRS plan. They would include preparations that have been completed, for example, establishment of a stockpile of antidotes and antibiotics appropriate for the agents that pose the greatest threat, with evidence of adequate maintenance and deployment procedures. Another output would be demonstration of critical knowledge, skills, and abilities in tabletop exercises, full-scale drills, or surrogate incidents (hoaxes, nondeliberate chemical releases, naturally occurring epidemics, or isolated cases of rare diseases). Outputs may be evaluated through expert judgment by peer reviewers of answers to written questions or on-site probes. In all cases care should be taken to avoid inappropriate generalization from chemical to biological incidents and vice versa.

The best evidence for preparedness will always be outputs, which are the end products of processes undertaken with inputs. A variety of circumstances, including the timing of the assessment, may make collection of output data impossible or impractical. In this circumstance evidence for preparedness might be sought among inputs and processes. All three types of indicators are, however, merely surrogate or proxy measures of MMRS effectiveness that are based on the judgment of knowledgeable students of the field but that have never been truly validated (and cannot be, short of an actual mass-casualty CBR terrorism incident).

The tables in the Appendix present many preparedness indicators, in part because of the committee's decision to derive indicators for each of the items on OEP's checklist of elements required in the plan. In fact, no practical evaluation program could or should use all the indicators listed. Use of the output-based indicators, presented in the far right column of each table, provides the best means of assessing readiness, and whenever possible these indicators should be used in preference to process- or input-based indicators. In fact, the importance of the output-based indicators, especially those obtained from exercises or careful evaluation of real disasters, cannot be overemphasized. The committee will expand on this point in Phase II of the study, but an important advantage of outputs is that they reflect intangibles not easily captured by the input and process indicators we suggest. For example, a strong MMRS takes a champion with desire and commitment to continually advocate for the project, individuals who are willing to cooperate, a change in attitude by organizational leadership that will adopt an inter-organizational and systemic approach to the MMRS, and leaders from local, state, federal, and private agencies with trust and sensitivity to each other's missions, goals, strengths and weaknesses.

Similarly, process-based indicators should take preference over input-based indicators. In addition, it should be clear that every element of the plan need not be given equal weight in the evaluation of preparedness. Indeed, it may not be necessary to include every element in even a very comprehensive evaluation. This selection and prioritization process will constitute a significant focus of the committee's work in Phase II of this project, as will determination of the most effective and efficient means of collecting the desired information and attempting to specify some minimum standards for preparedness, whenever possible.

At a more general level, the committee has been favorably impressed by the catalytic role of the MMRS program in many communities. As noted above, the concurrent efforts of three

federal agencies in the nation's largest cities make it impossible to unequivocally assign credit for improvements in preparedness. However, the committee believes that **OEP's emphasis on collaboration, the use of existing agencies and programs, and the promotion of local discretion in addressing preparedness gaps, although difficult to measure, has been an undeniable contribution.** One of the challenges of Phase II will be to ensure that assessment gives that collaboration appropriate weight.

Appendix

Preparedness Indicators

Deliverable 2: MMRS Development Plan

Plan Elements	Inputs	Processes	Outputs
2.02 Description of how responses to a CBR terrorism incident by public safety, public health, and health services sectors will be coordinated	–List of relevant safety and health organizations –Description of proposed mechanisms for coordination of responses –Lead agency/official	–Meeting minutes –Draft documents and letters –Deliverable signed by representatives from each participating organization	–Demonstration of effective coordination in an exercise or documentation of effective coordination in an actual incident with or without CBR agents
2.03 Identification of leadership and membership of the developmental team	–List of relevant safety and health organizations	–Sign-off by appropriate officials –Designated individual and contact information (point of contact [POC]) for each organization –Memorandum of understanding (MOU) or other formal written agreement where appropriate	–Ability of designated officials to talk knowledgeably about their agency's role in the MMRS plan
New. Description of the planning environment	–Plan for soliciting input or gathering data	–Evidence of ongoing analysis of community strengths, weaknesses, opportunities, and threats	–Identified strengths, barriers/challenges –Priority list for planning efforts –Designated officials/agencies and deadlines for each effort
2.04 Statement of the philosophy of approach	–Mission/vision statement		–Ability of representatives from different levels of key institutions to explain mission/vision statement to peer reviewer

2.05 Description of the geographic area	–Map of metropolitan area or list of jurisdictions in metropolitan area	–Written commitment by participating jurisdictions and state officials –Designated individual and contact information for each jurisdiction	–Map or list of participating jurisdictions –See entry for proposed new plan element on identifying the planning environment.
2.06/2.07 Inclusion on steering committee of all relevant organizations, including broad base of emergency response disciplines	–Representation by senior officials from public safety, public health, and health care communities –Organizational tables and contact numbers	–Evidence of attendance and participation in steering committee meetings by representatives from public safety, public health, and health care communities (e.g., minutes)	–Written or oral guidance to drafters of the MMRS plan components
New. Periodic review of membership, gaps in planning, execution of plan, response to CBR terrorism and proxy incidents	–Schedule of reviews	–Meeting minutes	–Restructured coordinating committee as required –File of periodic and after-action evaluations –Reports on quality/system improvements

Deliverable 3: Primary MMRS Plan

Plan Elements	Inputs	Processes	Outputs
3.02 Indication of existing system(s) being enhanced	–Relevant pre-MMRS disaster plans, emergency operations plans, hazmat procedures, state and local laws and regulations	–Identification of gaps, shortfalls of existing plans Designation of officials or agencies to address identified gaps and shortfalls	–Goals and objectives for enhancing existing plans
3.03 Establishment of interfaces with state plan	–State plan –State plan POC	–Meeting minutes, e-mail, and other evidence of interaction with state POC –Sign-off on MMRS plan by state plan POC	–Alterations in state plan or functioning reflecting MMRS planning –Evidence from exercises or actual events demonstrates workable interface between local and state plans
3.04 Coordination with other political, mutual-aid, or other MMRS program jurisdictions	–List of other relevant agencies in local jurisdictions, with POCs	–Meeting minutes, e-mail, and other evidence of interaction with local POCs –Sign-off on MMRS plan by local POCs	–Alterations in plans or functioning of other local jurisdictions reflecting MMRS planning –Evidence from exercises or actual events demonstrates workable interface among local plans
3.05 Identification and plan for accommodating resident federal assets of potential use	–List of resident or neighboring federal assets, with POCs	–Meeting minutes, e-mail, and other evidence of interaction with local federal facility POCs during the planning process –Sign-off on MMRS plan by local federal facility POCs, with MOUs,	–Involvement of federal partners in tabletop or field exercises and other emergency response activities

		where appropriate	
3.06 Identification of command-and-control measures	–Description of current command-and-control measures	–Enhancements or revisions to command-and-control measures for MMRS plan, if needed –Distribution of identified measures to affected agencies	–Evidence (documentation or as a result of an actual incident with or without CBR agents) of agreement that all affected agencies have agreed to integration into a command structure that in some instances will make them subordinate to a sister agency
3.07 Detailed notification and alert procedures	–MMRS communication plans (phone, fax numbers, e-mail addresses, radio frequencies and call signs, etc.)	–Periodic testing, including during all shifts and under adverse conditions (during holidays, storms, etc.)	–Documented success in regular testing or actual use in an emergency
3.08 Detailed management procedures for public affairs	–Designated spokesperson(s) and media plan –List of topics for preplanned media packages –List of news media outlets, including those serving non-English speakers and those with impaired sight or hearing –Protocols for media credentialing	–Draft or incomplete set of communiqués for news media on agents, procedures, and public safety –Arrangements for backup communication systems through state emergency management agency or law enforcement channels	–Collection of finished communiqués –Documented use of media packages in CBR-related hoaxes or incidents or other hazmat or epidemic events
3.09 Provisions for accurate and timely dissemination of information among MMRS	–List of current and planned communication systems, including telephone and	–Evidence of dissemination to all relevant organizations –Record or schedule of system	–Demonstration of effective use of all systems in periods of peak demand through unannounced

members	pager numbers, radio frequencies and call signs, and Internet or intranet addresses of all participating organizations –Standard operating procedures (SOPs) describing when and how to use basic equipment –Equipment and procedures for communication in conditions where demand or infrastructure damage may make public systems unreliable or unavailable	checks or tests	tests or use in an actual emergency
3.10 Provisions for centralized communications control	–See 3.09	–See 3.09	–See 3.09
3.11 Provisions for control of transportation assets, medical and nonmedical	–List of available sources for vehicles and drivers, including those available through mutual-aid agreements, state agencies, and local federal institutions -SOPs for accessing assets	–Evidence of periodic communication with managers of assets	–Availability of anticipated assets on short notice for random check, planned exercise, or actual emergency
3.12 Detailed procedures for the management/ augmentation of medical personnel	–Collection of staff augmentation plans –List of sources of additional medical personnel, with POCs	–Communitywide list of augmentation personnel, without duplicates –Record or schedule of system checks	–Demonstration of effective use of all systems, at multiple sites and for several types of medical personnel, in periods of peak demand, through unannounced

			tests or use in an actual emergency (snowstorm, hurricane, etc.) –Documented resolution of any issues related to cross-jurisdictional licensure and liability coverage
3.13 Provisions for management of medical supplies and equipment (see also Deliverable 10)	–Communitywide list of routine inventory by location –See Deliverable 10.	–Periodic assessment of actual inventory -See Deliverable 10	–See Deliverable 10
3.14 Provisions for emergency management of legal issues and credentialing	–POC for legal affairs –Clear explanation of legal status and liability of medical and other personnel, including volunteers, responding as part of the MMRS program –Copies of or reference to relevant laws and regulations –Procedure for requesting emergency waivers or exceptions	–Confirmation of MMRS plan description of legal issues by legal POCs –Evidence that efforts are under way to eliminate legal obstacles to preparedness	–Confirmation by legal authorities that MMRS plans conform to local, state, and federal laws (e.g., the Emergency Medical Treatment and Labor Act)
3.15 Provisions for emergency management of patient tracking and record-keeping	MMRS plan	–Evidence of implementation of patient tracking plan, software, and training at health care facilities in metropolitan area (e.g., meeting minutes, purchases, training log)	–Demonstration of effective patient tracking in an exercise or a multiple-casualty incident of any sort involving large-scale movement of patients within and across health care facilities

3.16 Provisions for augmentation of epidemiological services and support	–List of supporting agencies or institutions, with POCs	–Evidence of interaction with and input to planning by POCs. –Sign-off or other evidence of agreement with MMRS plan by epidemiological support POCs	–Demonstration of epidemiological support (data collection or analysis) in exercises, suspected CBR incidents, or natural disease outbreaks
3.17 Provisions for laboratory support	–List of supporting agencies or institutions, with POCs	–Evidence of interaction with and input to planning by POCs –Sign-off or other evidence of agreement with MMRS plan by laboratory support POCs	–Demonstration of laboratory support in exercises, CBR-related hoaxes, actual disaster, or CBR event
3.18 Provisions for crowd control	–MMRS plan –List of law enforcement/security assets available, with POCs	–Evidence of formal or informal agreements with organizations designated to provide emergency security personnel (e.g., National Guard, private security firms)	–Availability of anticipated assets on short notice for random check, planned exercise, or actual emergency –Time from request to appearance on site if request is for immediate help –After-action reports from events with large attendance such as sporting events, concerts, and political conventions
3.19 Provisions for protection of treatment facilities and personnel	–Same as 3.18	–Same as 3.18	–Same as 3.18
3.20 A schedule for exercises	–Inclusion on the schedule of an exercise of all required MMRS program functions, separately or	–Meeting minutes or other evidence of exercise planning	–Exercises completed on schedule –Collection of after-action reports

	together, at least on a yearly basis –Inclusion on the schedule of a full-scale field exercise at least every 2 years		
3.21 Assignment of responsibility for after-action reports and addressing report findings	–Name(s) of designated individual(s)	–Meeting minutes or other evidence of after-action report production, including revisions or comments by key agencies –Documented process for evaluation of exercises for development of after-action reports and addressing recommendations of those reports	–Possession by all participating agencies and institutions of collection of after-action reports –Evidence for changes in structure or functioning in response to reported deficiencies
3.22 Designation of mental health care for emergency workers, victims and their families, and others in community needing special assistance	–List of local mental health practitioners and sources of extralocal practitioners –SOPs for provision of on-scene and community support	–Evidence of interaction with local mental health organization/agency –Agreements with private organizations and individual practitioners to provide mental health services for all segments of population –Evidence of practitioner training or experience providing services to disaster victims and/or responders	–After-action reports from other kinds of disasters or exercises that document coordination, availability, use, and effectiveness of mental health professionals
3.23 Provisions for proper examination, care, and disposition of fatalities (see Plan elements 7.09, 7.10, and 7.11)	–List of facilities or sites for expanded operations of medical examiner/coroner –List of local undertakers –List of local religious leaders –Disaster Mortuary	–Meeting minutes or other evidence of interaction with POCs in funeral business and religious community regarding mass fatalities –MOUs, contracts, or other evidence of support of MMRS	–After-action reports from other disasters or crimes that document satisfactory processing of large numbers of human remains –Tabletop exercises testing disposition plans and procedures for fatalities

	Operational Response Team (DMORT) POCs	plan by undertaking and religious POCs	

Deliverable 4: MMRS Plan for Forward Movement of Patients Utilizing the NDMS

Plan Elements	Inputs	Processes	Outputs
4.01 Detailed procedures for preparing patients for movement to other areas of the region or nation	–A fully developed SOP	–SOPs distributed to EMS, local hospitals	–Awareness of plan and SOPs by EMSs and hospital officials and when and how to initiate them
4.02 Identification of who makes the decision to implement forward movement of patients	–Name(s) of individual(s) at each patient care facility to make decision	–Appointment or notification letter, instructions	–Sign-off by designated individual(s)
4.03 Indication that NMDS would provide transportation and care	–Text of plan and NDMS POC –Signed agreements between participating hospitals and NDMS	–Documentation of contact with NDMS –Identification of their own and federal POCs for facilities with signed NDMS agreements	–Evidence of NDMS support for MMRS plan and SOPs for activation (e.g., from joint training, tabletop demonstration of interface)

Deliverable 5: MMRS Chemical/Radiological Plan

Plan Elements	Inputs	Processes	Outputs
5.01 Procedures for effective management of the health consequences of a chemical or radiological incident	–Medical protocols for at least the chemical agents specified in the MMRS program contract (nerve agents, blister agents, choking agents, and blood agents) –Medical protocols for radiation injuries	–Distribution of copies to all relevant sites –Percentage of medical personnel trained –Number of classes conducted –Training schedule –List of trained medical personnel and date of training	–Hands-on demonstration (for peer reviewer or in a large-scale drill or actual hazmat incident) of protocol knowledge –Certification or other nationally recognized affirmation of CBR-specific knowledge and skills, if such means of verification become available in the future
5.02 Detailed procedures for detection and identification of agents	–Detectors for all agents specified in the MMRS program contract –SOPs for use of detectors –NFPA standards for hazmat operations	–Percentage of hazmat personnel trained –Number of classes conducted –Training schedule –Training log	–Hands-on demonstration (for peer reviewer or in a large-scale drill or actual hazmat incident) of agent detection and identification
5.03 Detailed procedures for extraction of victims from incident site	–SOPs reflecting state laws and local regulations and practices –NFPA standards on extraction of victims	–Percentage of rescue personnel trained –Number of classes conducted –Training schedule –Training log	–Hands-on demonstration (for peer reviewer or in a large-scale drill or actual hazmat incident) of safe and efficient extraction of a victim from a contaminated area
5.04 Detailed procedures for administration of appropriate antidote	–SOPs reflecting state laws and local regulations and practices	–Percentage of eligible emergency medical personnel trained	–Hands-on demonstration (for peer reviewer or in a large-scale drill or actual hazmat incident) of

	–Medical protocols for all agents specified in contract	–Number of classes conducted –Training schedule –Training log	administration of proper antidote
5.05 Detailed procedures for decontamination of victims	–SOPs reflecting state laws and local regulations and practices –List of any special equipment required	–Percentage of personnel trained –Number of classes conducted –Training schedule –Training log	–Hands-on demonstration (for peer reviewer, or in a large-scale drill or actual hazmat incident) of decontamination of victims –List of all required equipment on hand or readily accessible
5.06 Procedures for victim triage and initial care before transport to definitive medical care facility	–SOPs reflecting state laws and local regulations and practices	–Number of classes conducted –Training schedule –Training log –Percentage of personnel trained	–Hands-on demonstration (for peer reviewer, or in a large-scale drill or actual hazmat incident) of victim triage and initial care
5.07 Provisions for emergency medical transportation of victims	–Inventory of transport vehicles – SOPs reflecting state laws and local regulations and practices –Current contracts and local procedures	–MOUs and other agreements with private and public entities for emergency transport (buses, vans, trucks)	–Availability and response times in exercises or actual mass-casualty events
5.08 Provisions for emergency and inpatient services in hospitals with capacity and capability for definitive care required or at designated off-site treatment facilities (1,000	–List of hospitals, with the identification of capability of each to provide definitive care in individual clinical specialties –List of potential off-site	–MOUs or other acknowledgment of the MMRS plan by listed hospitals and sites	–Expert opinion on adequacy of response in exercise or actual mass-casualty event

victims of chemical agent release)	treatment facilities –Designated individual to decide on need and location of off-site facilities –Poison Control Center staff contact information		
5.09 Procedures for managing patients arriving at hospitals without prior field screening or decontamination	–Shower or other source of running water –Provisions for maintaining privacy of patients during decontamination –Personal protective equipment for staff –Source of heat in cold weather –Procedure for securing personal valuables of victims –Written procedures available to ED personnel –Procedure for rapidly establishing medical records for arriving patients	–Evidence of training –JCAHCO evaluation	–Actual decontamination of individual patients in small CBR or other hazmat incidents. –Successful decontamination of multiple patients in an exercise or actual hazmat event
5.10 Procedures for procurement and provision of appropriate pharmaceuticals for up to 1,000 victims (see Deliverable 10)	–List of antidotes and pharmaceutical equipment and supplies appropriate for the designated agents –Purchase plan for appropriate antidotes and drugs –Written procedures for maintenance, disposition,	–Periodic inventory (see Deliverable 10)	–Appropriate types and quantities of antidotes and drugs on hand or readily accessible –Demonstration of timely deployment of stocks in an exercise or actual event (see Deliverable 10)

	deployment, and resupply		
5.11 Procedures for procurement and provision of appropriate equipment and supplies (see Deliverable 10)	–List of equipment and supplies appropriate for the designated agents, considering the needs of both adult and pediatric patients. –Purchase plan for appropriate equipment and supplies –Written procedures for maintenance, disposition, deployment, and resupply –List of suppliers with additional critical materials	–Periodic inventory, including checks that "perishable" supplies and pharmaceuticals are within their "use by" dates (see Deliverable 10)	–Appropriate types and quantities of equipment and supplies on hand or readily accessible -Demonstration of timely deployment of stocks in exercise or actual event (see Deliverable 10)

Deliverable 6: Component Plan for Metropolitan Medical Strike Team if Community MMRS Includes Such a Team

Plan Elements	Inputs	Processes	Outputs
6.01 MMST mission statement and concept of operations	–Text of plan, including mission and concept of operations		–Explanation of mission and concept of operations to peer reviewer by representatives of key MMRS program institutions
6.02 Organization and membership of the team	–Mission statement and concept of operations –Organizational chart	–Organizational chart and membership list have current names and contact information.	–Description of organization and membership of the team to peer reviewer by selected sample of team members –Inclusion of all necessary areas of expertise on the team
6.03 Detailed procedures for activation and deployment	–Development and distribution of SOPs	–Regular testing of activation procedures –Periodic testing of deployment SOPs	–Speed and completeness of activation and deployment in exercises or actual incidents
6.04 Detailed procedures for identification of agent	–See 5.02	–See 5.02	–See 5.02
6.05 Detailed procedures for extraction of victims from the incident site	–See 5.03	–See 5.03	–See 5.03
6.06 Detailed procedures for administration of appropriate antidote	–See 5.04	–See 5.04	–See 5.04

6.07 Detailed procedures for human decontamination	–See 5.05	–See 5.05	–See 5.05
6.08 Detailed provisions for triage and initial care of victims	–See 5.06	–See 5.06	–See 5.06
6.09 Detailed preparation of victims for transport to definitive care facilities with sufficient supplies of appropriate antidotes to ensure adequate treatment	–See 5.06 and 5.07	–See 5.06 and 5.07	–See 5.06 and 5.07

Deliverable 7: MMRS Biological Plan

Plan Elements	Inputs	Processes	Outputs
7.01 Integration with existing local and state health surveillance plans for bioterrorism and influenza pandemic planning	–Relevant disease surveillance plan that includes regular and timely reporting from hospitals and independent medical doctors, as well as the capacity to analyze (in real time) trends and suspicious reports	–Evidence of regular communication among local, state, and federal public health entities (e.g., memos, MOUs, site surveys, software interaction) –Regularly maintained baseline data on reportable diseases	–Evidence of ongoing disease detection from actual cases, interviews by peer reviewers, or exercises/tests –Demonstration of effective surveillance for specific events (mass gatherings, controversial trials, etc.)
7.02 Coverage of early recognition, mass immunization/ prophylaxis, mass patient care, mass fatality management, and environmental surety	–MMRS plan	–None required	–MMRS plan that addresses early recognition, mass immunization/prophylaxis, mass patient care, mass fatality management, and environmental surety
7.03 Identification of early-warning indicators that will be used to alert local officials of a bioterrorism event	–List of plausible indicators (e.g., 911 calls, emergency medical service responses, poison control center calls, ED visits, medical examiner reports, school and work absenteeism, and reports from veterinarians of sick or dead animals) –Designated individual or office responsible for monitoring indicators	–Daily records or charts of baseline data from indicator collection system – Established thresholds above-which action is required –Record of training for laboratory personnel on assays for detection of agents responsible for the diseases specified in the contract (anthrax, botulism, hemorrhagic fevers, plague, smallpox, and tularemia)	–Demonstration of appropriate use of early-warning indicators in peer-review interview, exercise, or actual event –Percentage of laboratory personnel certified by relevant professional organization –Demonstration to peer reviewer of knowledge and availability of supplies to carry out specified assays, or successful detection of a test sample containing a close

	–List of local officials to be notified of possible bioterrorism event (or outbreak of disease) –POCs for laboratory diagnosis system that includes field sampling, local laboratory screening, and public health laboratory network connection/capacity –List of trained personnel (and on-call schedule) to conduct epidemiologic investigations and analyses to determine the scope and magnitude of the epidemic	–Record or schedule of laboratory quality assurance training and testing	relative of the designated agents
7.04 Identification of who will receive notification and who will make the decision to further implement response plans	–Name, organization, and position of designated individual	–Evidence that the office monitoring indicators knows the name of designated individual and has multiple means of relaying relevant information	–Confirmation by designated individual that he or she is the appropriate contact and demonstration that he or she is conversant with the MMRS plan
7.05 New plans or augmentation of existing plans for management and implementation of a mass immunization/prophylaxis plan (also see Deliverable 10)	–MMRS plan or augmented preexisting plan –Stockpile or plans for acquisition and storage of appropriate vaccines, antibiotics, and antitoxins –List of potential sites for mass immunization/prophylaxis	–Percentage of response and caregiving personnel immunized if plan calls for prophylactic immunization of these individuals –MOUs or other evidence that sites and designated personnel are aware of and knowledgeable about their roles in the plan –See Deliverable 10 for	–After-action report detailing successful response to a natural outbreak of disease (e.g., a meningitis or influenza vaccine campaign) or large-scale exercise

	–List of personnel or sources of personnel to conduct mass immunization/prophylaxis –List of personnel or sources of personnel to distribute vaccines or antibiotics to sites of mass immunization/prophylaxis –System for recording persons who have received mass immunization/prophylaxis	preparedness indicators for supplies and equipment	
7.06 Description of the decision-making process for initiating a mass immunization campaign and identifying the affected population	–MMRS plan that designates an individual (name, organization, and position) to make the decision to provide immunization/prophylaxis to staff and the community and the criteria to be used –Legal and regulatory references that provide the designated individual with the requisite authority	Verification that designated individual is cognizant of designation, legal authority, and SOPs –MOUs or other evidence of agreement by all parties to the plan	–After-action report detailing successful response to a natural outbreak of disease (e.g., a meningitis or influenza vaccine campaign) or large-scale exercise
7.07 New plans or augmentation of existing plan for providing care to a significant portion of the population (see plan element 7.08 and Deliverables 6 and 8)	–Comprehensive list of facilities, with POCs and phone and fax numbers –Number of beds, isolation capacity, and infection control capacity in the community, including special centers for care	–Evidence of periodic updates of information on beds and other resources –MOUs or other evidence of coordination by hospitals to make optimal use of available personnel, supplies, and equipment	–Remedy of deficiencies identified by after-action reports of mass-casualty exercises –Hands-on demonstration (in response to peer reviewer questions or in a drill or actual disease outbreak) of interhospital coordination of personnel,

	–Mass-casualty plans of area hospitals –Medical protocols for at least the agents specified in the MMRS program contract (those responsible for anthrax, botulism, hemorrhagic fever, plague, smallpox, and tularemia)	–Annual exercising of mass-casualty plans –Distribution of copies of medical protocols to all relevant sites	equipment, and supplies –Hands-on demonstration (in response to peer reviewer questions or in a drill or actual disease outbreak) of treatment protocol knowledge by medical personnel
7.08 Detailed procedures for rapid expansion of the existing health care system capacity and plans for taking care of people in excess of either existing or expanded capacity(see Deliverables 6 and 8)	–Number of beds, isolation capacity, and infection control capacity in the community, including special centers for care –Mass-casualty plans of area hospitals –List of medical personnel not employed full time by area hospitals, or sources of such personnel –List of potential sites for expedient patient care facilities, with the rationale for their selection	–MOUs or other agreements with participating agencies, institutions, and organizations –Contingency contracts for use of nonmedical sites for casualty collection and expedient patient care	–Hands-on demonstration (in a drill or actual disease outbreak) of ability to rapidly expand health care system capacity
7.09 New plans or augmentation of existing mass-fatality plans for respectful care and disposition of a large percentage of the population	–Existing plan –MMRS plan	–See 7.10 and 7.11	–See 7.10 and 7.11

7.10 Procedures for augmenting existing morgue facilities and staff	–List of hospital morgues, mortuaries, warehouses, other facilities with cold-storage capabilities, and sources of refrigerated trucks, with POCs –Contact information for federal support via specialized DMORT	–Contingency contracts or other forward arrangements for obtaining storage capacity –Evidence of NDMS support for MMRS plan and SOPs for activation (joint training, tabletop demonstration of interface with DMORT)	–No-notice test of system to determine if surge assets could be made available
7.11 Procedures for decontaminating or isolating human remains when appropriate	–SOPs covering decision to decontaminate and the decontamination process	–Evidence that SOPs are available at morgue facilities in sufficient quantity to distribute to any expedient sites and personnel required	–Hands-on demonstration of decontamination in an exercise or actual incident
7.12 Procedures for identifying environmental risk and determining the need for decontamination or vector intervention	–List of local, state, and federal environmental agencies, with POCs –Detection and agent identification equipment capable of verifying safety –Mass medical/infectious waste management plans	–See 7.13	–See 7.13
7.13 A process for safe reentry into the affected area in consultation with local, state, and federal environmental agencies	–List of local, state, and federal environmental agencies, with POCs –Detection and agent identification equipment capable of verifying safety	–Record of agreement with the MMRS plan by local, state, and federal environmental agencies Awareness by the individual or agency charged with judging safety of responsibility and has SOP for decision making	–Demonstration of an effective process to expert peer reviewer; in response to questioning; or by performance in an exercise, actual hazmat event, or disease outbreak

7.14 Three levels of response: for incidents with up to 100 victims, 100 to 10,000 victims, and more than 10,000 victims. **IOM Alternative** Identify three capacity levels: normal capacity, capacity with augmentation, and "overwhelmed" level)	–Each of the deliverable #7 inputs described above should be evaluated relative to each of these three scenarios	–Each of the deliverable #7 processes described above should be evaluated relative to each of these three scenarios	–Evaluation of each of the deliverable #7 outputs described above should be evaluated relative to each of these three scenarios

Deliverable 8: MMRS Hospital Plan

Plan Elements	Inputs	Processes	Outputs
8.01 Procedures for notification of hospitals, clinics, health maintenance organizations (HMOs), etc., that an incident has occurred	–Comprehensive list of facilities, with POCs and phone and fax numbers –Designated individual or office to initiate process, staff to carry it out –Communications equipment appropriate for rapid notice, e.g., radio, broadcast fax, or e-mail	–Periodic notification checks conducted at least weekly, including at nights, on weekends, and on holidays	–Percentage of facilities contacted in 1 hour during weekly notification checks –Time from initial contact to initiation of hospital disaster plan or incident command system –Time from initial contact until hospitals report beds and capabilities available
8.02 Procedures to protect hospitals, clinics, and HMOs from contamination from environmental or patient sources (lockdown procedures)	–Presence of plan at all local health care facilities –Availability of personal protective equipment required by plan –Capacity of facilities to secure all entrances and exits	–Evidence that personnel at all facilities are provided orientation on plan –Evidence that all facilities have SOPs and provide training to staff on safe care of highly infectious patients (e.g., patients with varicella, tuberculosis, or drug-resistant infections)	–Numbers of secondary infections of staff or other patients in prior 6 months –Current conversion rate for positive tuberculosis (purified protein derivative) skin tests among staff –Numbers of isolation rooms available, overall and in the ED. –Numbers of tuberculosis, rubella, or varicella patients admitted to nonisolation rooms in prior 6 months –Numbers of staff furloughed due to exposure to patients with varicella, rubella, or other infectious diseases in prior 6

			months –Numbers of hours from examination of most recent tuberculosis patient to isolation
8.03 Provisions for the capability of local health care facilities to provide triage and initiate definitive care	–Inventory of services/capabilities –Specification by each facility of three levels of capability: normal operations, operations with augmentation, and overwhelmed operations –SOPs on transfer process	–Facilities have clear policies and procedures for handling of ED overload and ED diversion	–Numbers, types, and durations of diversions in previous 3 months –Numbers and types of patients transferred out of the hospital to other facilities in previous 3 months –Expert assessment of MMRS program-wide hospital exercise or response to mass-casualty event
8.04 Assurance of adequate security to support these activities	–MMRS plan –List of law enforcement/security assets available, with POCs	–Evidence of formal or informal agreements with organizations designated to provide emergency security personnel (e.g., National Guard, private security firms) –Evidence that agreements include preexisting plans to allocate security staff when demand exceeds supply	–Anticipated assets available on short notice for a random check, planned exercise, or actual emergency –Number of unauthorized entrants during a drill or exercise
8.05 Availability of adequate personal protective equipment for hospital and clinic providers (see Deliverable 10)	–List of equipment needs –Purchase plan –Training plan for equipment users	–Equipment/inventory –Training logs	–Demonstration of competency with equipment (e.g., by a respirator fit test) for expert peer reviewer

8.06 Local availability of adequate pharmaceuticals and equipment (including ventilators) or plans to obtain them in a timely manner (see deliverable 10)	–List of desired pharmaceuticals –Medical treatment protocols for agents specified in the FY 2000 MMRS program contract (nerve agents; blister agents; choking agents; blood agents; and those responsible for anthrax, botulism, hemorrhagic fever, plague, smallpox, and tularemia) –Data on population of communities participating in the MMRS program	–MOUs or other collaborative agreements with other local medical care facilities for emergency loan and distribution of required equipment and pharmaceuticals, including pediatric ventilators –SOPs for requesting CBR-specific equipment, supplies, and pharmaceuticals from MMRS program stores	–Availability of all essential antidotes, antibiotics, and immune sera, in appropriate quantities, for inspection by site visit team or peer reviewer –Evidence of effective collaboration in coping with recent national shortages of influenza and tetanus vaccines, and gamma globulin and emergency shortages of antibiotics –Response time to retrieve requested items in drills or in actual cases
8.07 Ability of medical staff to recognize and treat casualties caused by WMD agents (see 8.08)	–Communitywide list of physicians with hospital privileges, with telephone contact information –Medical treatment protocols for agents specified in MMRS program contract (nerve agents; blister agents; choking agents; blood agents; and those responsible for anthrax, botulism, hemorrhagic fever, plague, smallpox, and tularemia) in FY 2000 –Essential antidotes, antibiotics, and immune sera, in appropriate quantities	–Credentialing, where applicable –Continuing medical education (CME) roster or training schedule –Numbers and percentages of staff trained on protocols –Linkage to local, state, federal experts via phone, e-mail, Health Alert Network, Internet, mass paging and alert systems, and the like.	–Laboratory quality assurance test results –Demonstration of knowledge in responses to peer reviewer questions, exercise, or actual event –Certification or other nationally recognized affirmation of CBR-specific knowledge and skills, if such means for certification become available in the future –Number of hours from examination of tuberculosis patients to isolation –Number of isolation rooms available in ED and in total –Number of tuberculosis patients admitted to nonisolation rooms –Number of staff furloughed due to

			exposure to patients with varicella, rubella, or other infectious diseases
8.08 Availability of treatment protocols	–Medical protocols for at least the agents specified in the MMRS program contract (nerve agents; blister agents; choking agents; blood agents; and those responsible for anthrax, botulism, hemorrhagic fever, plague, smallpox, and tularemia)	–Distribution of protocols to all physicians and availability of protocols at all major medical care sites –Training/CME schedule/roster –Numbers and percentages of staff trained on protocols	–Demonstration of knowledge by EDs, intensive care units, and primary care physicians and nurses in responses to peer reviewer questions, exercise, or actual event –Certification or other nationally recognized affirmation of CBR-specific knowledge and skills, if such means for certification become available in the future –Compliance with existing protocols
New. Procedures for recall of staff	–Telephone call list –Public communication plan –List of news media outlets and POCs	–Periodic tests of accuracy of phone numbers –Periodic tests of recall effectiveness –Test of recall lists to see how many facilities are counting the same people on recall list	–Calls to random sample of list show that list is up to date –Percentage of staff returning in 2 hours
New. Procedures for delivery of nonmedical supplies (see Deliverable 10)	–List of customary and alternative vendors of food, fuel, laundry, and other essential supplies	–Contingency contracts with alternative suppliers –Periodic shortages drill	–Production of no disruption of services due to shortages during a drill or mass-casualty event –Response times for deliveries –Alternative supplier has necessary quantities or can deliver in 24 hours

Deliverable 9: MMRS Training Plan

Plan Elements	Inputs	Processes	Outputs
9.01 Training requirements for all personnel responding to the scene of an incident or providing care to victims of a CBR incident	–Numbers and locations of police, fire, emergency medical technicians (EMTs), paramedics, vehicle drivers; ED staff- physicians, nurses; hospital administration and infection control officers, chemical and radiation safety officers, local and regional public health authorities, and U.S. Department of Veterans Affairs (VA) hospital staff (if present in the community) –Numbers of qualified, trained instructors –Curricula consistent with prior discipline-specific training or training agreements with appropriate agencies –Hands-on as well as didactic training schedule –List of chemical, biological, and radiological materials addressed –Estimate of logistical support required	–Number and content of courses provided, both lecture and hands-on courses (e.g., disaster drills), with critiques provided to participants –Number of people (and percentage of the target workforce) trained –Number of communitywide exercises including disaster drills and tabletop exercises	–Demonstration of knowledge of subject matter to peer reviewer by selected sample of trained personnel from all levels of all participating organizations or through functional drills, communitywide exercises, or responses to actual CBR, hazmat, or infectious disease outbreak events –Certification or other nationally recognized affirmation of CBR-specific knowledge and skills, if such means for certification become available in the future
9.02 Indication of how training	–List of prior training conducted	–Revised training	

previously received from DOD or DOJ affects initial training requirements, continuing education, and refresher training needs		requirements reflecting previous training	
9.03 Description of VA's role in training medical personnel in NDMS hospitals	–Location of and POCs at nearest VA hospital –Agreement with VA hospital to provide training to non-VA employees on space-available basis –Numbers of qualified, trained instructors –Curricula consistent with prior discipline-specific training or training agreements with appropriate agencies –Hands-on as well as didactic training schedule –List of chemical, biological, radiological materials addressed	–Number and content of courses provided, both lecture and hands-on courses (e.g., disaster drills), with critiques provided to participants) –Number of people (and percentage of the target workforce) trained	–Demonstration of knowledge of subject matter to peer reviewer by selected sample of trained personnel

Deliverable 10: MMRS Pharmaceutical/Equipment Plan

Plan Elements	Inputs	Processes	Outputs
10.01 List of pharmaceuticals consistent with mission of MMRS program	–List of desired pharmaceuticals –MMRS program mission statement –Medical treatment protocols for agents specified in MMRS program contract (nerve agents; blister agents; choking agents; blood agents; and those responsible for anthrax, botulism, hemorrhagic fever, plague, smallpox, and tularemia) in FY 2000	–Periodic assessment of appropriateness of agents (outdating, currency of pharmacopoeia, changes in threat) by a pharmacy and therapeutics committee	–List that includes all treatments and vaccines specified in MMRS program medical treatment protocols
10.02 Quantities of pharmaceuticals sufficient to care for 1,000 victims of a chemical agent and for entire affected population for 24 hours after a biological incident	–List of desired pharmaceuticals. –Medical treatment protocols for agents specified in MMRS program contract (nerve agents; blister agents; choking agents; blood agents; and those responsible for anthrax, botulism, hemorrhagic fever, plague, smallpox, and tularemia) in FY 2000 –Data on population of communities participating in the MMRS program	–Algorithm for calculating required quantities of pharmaceuticals –Verification that a project manager can explain the derivation of the algorithm to the satisfaction of an expert peer reviewer	–Availability of all essential antidotes, antibiotics, and immune sera, in appropriate quantities, for inspection by site visit team or peer reviewer
10.03 Timetable for procurement of pharmaceuticals and	–Timetable for initial procurement and replenishment based on differences in essential	–Establishment of mechanisms for review and update of pharmacopoeia	–Availability of all essential antidotes, antibiotics, and immune sera, in appropriate quantities, for

equipment	pharmaceuticals and equipment and personnel and those actually required in plan	–Establishment of mechanisms for monitoring pharmaceutical expiration dates and replacing stock	inspection by site visit team or peer reviewer
10.04 Detailed procedures for equipment maintenance and pharmaceutical storage	–Pharmacopoeia, with associated storage requirements –Equipment list, with associated maintenance requirements –Property officer(s) –SOPs for equipment maintenance –SOPs for pharmaceutical storage –Identification of secure storage site(s)	–Periodic assessment of safety of storage and delivery systems –Testing of appropriateness of agents over years (outdating**,** currency of pharmacopoeia**)** by a pharmacy and therapeutics committee –Periodic drills, actual events, or questioning by expert peer reviewer test mechanisms for coordination of activity at multiple sites as well as return and decontamination of equipment and unused supplies –Records of periodic maintenance of equipment –Records of training of logistics personnel on maintenance procedures	–Evidence that the mechanism of delivery and storage is secure in natural disasters, mock drills, earthquakes, or hazmat events –Consistency of inventory with records of pharmacy and therapeutics committee meetings –Knowledge of procedures for return of unused supplies and decontamination of equipment by logistics personnel –Evidence that a sample of equipment selected by peer reviewer is in working order –Performance of required maintenance and/or prompt retrieval of maintenance manual by logistics personnel when queried by peer reviewer
10.05 Identification of a property officer responsible for all property received and purchased under MMRS program contract	–Name and contact information for designated property officer	–Records of purchase and current location of all property	–Retrieval of inventory and maintenance records by property officer –Evidence that a sample of property in acceptable condition can be produced for expert peer reviewer at locations specified in property officer records

10.06 Harmoniz-ation of equipment purchases with equipment received from DOD, DOJ, and FEMA	–List of essential detection, protective, and decontamination equipment for both field and hospital –List of protective, detection, and decontamination equipment previously received from other federal sources	–Purchase plan that reflects equipment and supplies on hand from other sources	–Evidence that sum of equipment on hand, on order, or scheduled for purchase is not greater than documented need
New. Procedures for distributing pharmaceuticals and equipment to local personnel and facilities	–List of authorized local recipients –SOPs for release of pharmaceuticals and equipment	**–**Periodic training/testing of distribution plan	–Evidence from drill, actual event, or questioning by expert peer reviewer that local distribution of MMRS program pharmaceuticals and equipment will be rapid enough to maintain local supplies for at least the initial 24 hours of an event
New. Procedures for requesting, receiving, and distributing pharmaceuticals from the National Pharmaceutical Stockpile (NPS)	–SOPs, including phone and e-mail contacts at CDC –Source of personnel for breaking down and distributing CDC "push package" to health care facilities –Licenses and approvals as required by federal, state, and local laws governing dispensing of pharmaceuticals	–Periodic training/testing of distribution plan	–Evidence from drill, actual event, or questioning by expert peer reviewer that local distribution of NPS supplies will be rapid enough to maintain local supplies after initial 24 hours of an event