THE MARYLAND STRATEGIC PLAN TO IMPROVE THE HEALTH AND MEDICAL RESPONSE TO TERRORISM

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IMPROVED HEALTH and MEDICAL RESPONSE TO WEAPONS of MASS DESTRUCTION in MARYLAND

INTRODUCTION

In June, 1995, following the Tokyo, Japan subway attack and the Oklahoma City bombing, both President Clinton and the Congress intensified efforts to identify, address and eventually strengthen preparedness for terrorist attacks and the use of a weapon of mass destruction in the United States.

The President issued Presidential Decision Directive (PDD-39 in June 1995, establishing the national policy framework on the federal response to WMD terrorism. In addition to PDD-39, Public Law 104-201 passed the Congress in 1997, establishing the mechanisms and policies now known as the Domestic Preparedness Program in Defense against Weapons of Mass Destruction. This law outlined the status of programs and initiatives required to enhance federal, state and local capabilities to respond to a WMD.

In 1998, President Clinton issued two additional Presidential Decision Directives (PDD-62 and PDD-63) to improve coordination of the federal WMD counterterrorism and WMD responses in the U.S.

In Maryland, the Maryland Emergency Management Agency ("MEMA"), the agency responsible to the Governor for disaster preparedness and response, established the Maryland Terrorism Forum in March 1998. The Forum, with representatives of all the major state and federal agencies with a role in detecting, preventing and responding to a terrorist attack, provides a means to inform and coordinate activities around WMD.

The MEMA requested two of its partners, the Maryland Institute for Emergency Medical Services and Systems ("MIEMSS") and the Maryland Department of Health and Mental Hygiene ("DHMH") to assist with developing improved medical response to a WMD incident in Maryland.

Following a WMD Medical Summit held in June 1998, the MIEMSS and DHMH created a WMD Health and Medical Steering Committee, composed of all the major stakeholders in the health and first responder community, to oversee and assist with planning improved preparedness and response to a terrorist attack in Maryland.

The Summit and the Steering Committee recommended the establishment of three core focus groups (Emergency Medical Services, Hospital and Public Health Services) to review the current preparedness and response capabilities. They also recommended that the state develop a strategic planning process to assist with identification of priorities and the development of a strategic plan to guide development activities.

The Focus group reports were completed and released in June 1999, and the Strategic Plan was released for review in July 1999. Approximately 100 written and verbal, formal and informal, comments were received suggesting improvements and enhancements. This document, the Strategic Plan for Improving the Health and Medical Response to Weapons of Mass Destruction, is the product of that work.

It is the goal of MIEMSS, DHMH, MEMA and the Steering Committee to have the Strategic Plan, and the planning process, establish a framework for an appropriate health and medical response to a deliberate WMD event in Maryland. Furthermore, it is hoped that the Plan will become a model that can be utilized around the country to aid other communities to prepare for and respond to a WMD incident.

The Strategic Planning Process

The Strategic Plan examines the current environment of WMD response and preparedness, identifies major areas where improvements are necessary, establishes priorities for investment of time, money and energies, and identifies a process of engagement of stakeholders to help assure that priority goals are actually being accomplished.

Operational Plans and Implementation Plans (the Work Plan) follows development of the Strategic Plan and executes the priorities and directionality of the Strategic Plan. Such a WMD Work Plan describes the responsibilities of Maryland Agencies and Departments, and describes the activities that the State's health and medical resources must undertake for detection, preparedness and response. The Work Plan is the detailed action plan implementing the Strategic Plan.

A Strategic Planning Process is also about how an organization adapts to changes in its environment, in this case, the increased threat of terrorist acts. By developing a planning process that includes the stakeholders in improving preparedness and response, Maryland can significantly improve awareness of terrorism, improve the levels of technical knowledge of WMD agents, and dramatically heighten the understanding of roles and responses to a WMD incident. A process of inclusion and education of the public and private health care community can decrease the "learning curve" that exists to develop effective strategies against terrorism and WMD.

In Maryland, the overarching goal of the planning process is to produce the Health and Medical Annex to the MEMA Terrorism Disaster Plan. In this way, the Strategic Plan, the Focus Group Reports, the planning process, and the Work Plan can be brought together to improve preparedness and response by the health and medical community to a WMD disaster.

Important Definitions and Concepts in Strategic Planning for WMD in Maryland

A WMD is deliberately intended to cause mass casualties, to disrupt the normal social order, to engender fear and confusion, and to overwhelm health, medical, social, public safety and government functions.

"Weapon of Mass Destruction" ("WMD") is defined in the United States Code as "(A) Any explosive, incendiary, or poison gas, bomb, grenade, rocket having a propellant charge of more than four ounces, or a missile having an explosive or incendiary charge of more than one quarter ounce, or mine or device similar to the above; (B) poison gas, (C) any weapon involving a disease organism; or (D) any weapon that is designed to release radiation or radioactivity at a level dangerous to human life." *(18 USC, Section 2332a).*

"Terrorism" is defined by the Federal Bureau of Investigation as the "unlawful use of force or violence, committed by a group(s) of two or more individuals, against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives."

"Crisis Management" of WMD is defined by statute and the Federal Government as including "measures to identify, acquire, and plan the use of resources needed to anticipate, prevent, and / or resolve a threat or act of terrorism. The laws of the United States assign primary authority to the Federal Government to prevent and respond to acts of terrorism; State and local governments provide assistance as required. Crisis management is predominantly a law enforcement response. Based on the situation, a Federal crisis management response may be supported by technical operations, and by federal consequence management, which may operate concurrently." The FBI is the lead federal agency for Crisis Management activities.

"Consequence Management" is defined in Federal statute as including "measures to protect public health and safety, restore essential government services, and provide relief to governments, business and individuals affected by the consequence of terrorism. The laws of the United States assign primary authority to the States to respond to the consequences of terrorism; the Federal Government provides assistance as required." The Federal Emergency Management Agency ("FEMA") is the lead federal agency for Consequence Management activities.

"Health and Medical Annex" to the Maryland Emergency Management Agency Statewide Terrorism Disaster Plan is the response plan to an incident in Maryland. The Annex is the health and medical work plan for preparedness and response to a threat or actual terrorist incident in Maryland.

"Technical Response" is the action(s) taken to minimize the loss of life and property, and recovery from, a terrorist WMD attack in Maryland. Technical Response includes public health surveillance, medical care and treatment, and coordination of activities and responses by the health and medical community.

UNDERSTANDING TERRORISM AND THE THREAT

Much of the preparation for terrorism has revolved around discrete events that have been imprinted through disaster training and media exposure to such events as the New York World Trade Center bombing and the Alfred P. Murrah Federal Building bombing in Oklahoma City. A new dimension was brought by the 1995 sarin nerve gas attack in Tokyo and by anthrax threats in many U.S. cities. The global political dimension was brought by the Persian Gulf War with Iraq and the threat of chemical and biological warfare from "rogue nations" such as North Korea, Libya, Syria and Iran.

In the United States, according to the Federal Bureau of Investigation, the number of criminal investigations in response to threats regarding the use of WMD has grown in the past three years. In 1996 there were 37 incidents, 1997 had 74 incidents, and there were 181 incidents in 1998. Three quarters of these incidents were threatened biological attacks with anthrax the most often cited agent. The vast majority of these threats were determined to be "non-credible, have been small scale and committed primarily by individuals or smaller splinter / extremist elements of right wing groups which are unrelated to larger terrorist organizations." (www.fbi.gov/pressrm/congress/bioleg3.htm)

An analysis of worldwide terrorism indicates a trend toward fewer events but greater lethality of attacks. In *Patterns of Global Terrorism,* a report by the U.S. Department of State, there were 273 international terrorist attacks during 1998, down from 304 attacks recorded in 1997. However, the number of persons killed or wounded in terrorist attacks was the highest on record with 741 persons killed and 5,962 injured in 1998.

In the First Annual Report to the President and the Congress of the Advisory Panel to Assess Domestic Response Capabilities for Terrorism involving Weapons of Mass Destruction (December 15, 1999), reference is made to "Is Transnational Terrorism Becoming More Threatening? A Time Series Investigation", (footnote 31) with the following data: "Between 1990 and 1996… a total of 50,070 people were killed in the combined indigenous terrorist incidents (against fellow citizens or foreigners within the terrorists' country's borders) and international terrorist attacks around the world. This nearly doubles the 28,110 who lost their lives in comparable incidents in the fourteen years between 1970 and 1983. With respect to nonfatal casualties, the figures are even more dramatic. The 69,833 injured in such incidents between 1990 and 1996 more than triples the figure of 18,925 recorded between 1970 and 1983, with the annual average rising more than sevenfold, from 1,352 (1970 – 1983) to 9,976 (1990 – 1996)."

The proceedings of a conference conducted by the Chemical and Biological Arms Control Institute in April 1999 titled "The New Terrorism: Does it Exist? How Real are the Risks of Mass Casualty Attacks?" (www.nbc-med.org) states:

> "Incidents to date have been small-scale, have had a limited impact, and were driven by a variety of motivations. History, therefore, provides only limited insights. Because [nuclear, biological and chemical] terrorist activity has been so idiosyncratic, there is no way to extrapolate from historical data any major conclusions regarding terrorist

> targets or the motivations that link an attack to a target. This is not to argue that history can make no contribution, however, to recognizing current trends and predicting future changes. Two databases, the RAND Chronology of International Terrorism … and the Monterey Institute for International Studies, Center for Nonproliferation Studies database have 560 known cases of attempted acquisition or use of chemical / biological weapons."

The First Annual Report of the Advisory Panel to Assess Domestic Response Capabilities for Terrorism stated:

> "Many government officials and concerned citizens believe that it is not a question of if, but when an incident will occur that involves the use by a terrorist of a chemical biological radiological and nuclear (CBRN) weapon – a so-called "weapon of mass destruction" (WMD) – that is designed, intended, or has the capability to cause "mass destruction" or "mass casualties." In recent years, some have depicted terrorist incidents as causing catastrophic loss of life and extensive structural and environmental damage as not only possible but probable. Such depictions do not accurately portray the full range of terrorist threats."

PLANNING FOR A TERRORIST WMD ATTACK

Planning for improved preparedness and response to a terrorist incident using a weapon of mass destruction is complex. The planning effort must take into account the four different categories of agents that may be used, e.g., explosives, chemical agents, biological agents, and nuclear / radiological agents, as well as the different impacts of the agents. In addition, while the world and the United States have experienced terrorism, the State of Maryland has not experienced an actual terrorist attack using a WMD. Therefore, awareness and education of the health and medical community are essential if improved preparedness, knowledge, and response are to be achieved. New understandings of terrorism, its weapons and agents, its motivations, strategies and implications are necessary to develop responsible, measured and effective plans and responses.

A critical step in understanding terrorism and its implications is to identify scenarios and "Magnitude of Impact." Magnitude of Impact ("MOI") as a planning concept permits analysis of a potential terrorist incident by applying knowledge of the different agents, their characteristics, and their behaviors. This approach also enables the use of such concepts as high probability / low lethality, low probability / high lethality, hoax / credible threat, announced / unannounced event, and low casualty / mass casualty / catastrophic casualty levels. Magnitude of Impact ("MOI") is deliberately created and used in this Strategic Plan to refocus the understanding of the threat of terrorism and weapons of mass destruction from worst-case-scenario planning to planning along a continuum of potential threats and events. **The dynamics of planning for terrorist-caused mass casualty incidents ("MCI") may not be best accomplished by planning for the most catastrophic event; rather, assessments that factor in technical complexities, motivations of terrorists, population geo-demographics, and health system capacities and preparedness estimates will assist all stakeholders to understand the pre-paredness and response issues more clearly.** Therefore, the planning parameters used

in this effort will reflect these categories for terrorist-caused mass casualties: low mass casualties at 25 victims or fewer, mass casualties at 25 victims to the hundreds, catastrophic mass casualties at 1000 victims or greater.

Most current approaches to mass casualty incident planning are based on experience with natural and man-made disasters. An incident is reported, responders are dispatched, triage and patient care are accomplished, victims are transported to a health care facility, treatment and rehabilitation are provided, and, most often, the health and medical system returns to a normal state within a relatively short time from onset of the disaster.

Maryland's state and local emergency management operations are prepared for most emergency situations, including potential mass casualty producing events such as hurricanes, floods, tornadoes, train wrecks, plane crashes, HAZMAT accidents, fires and explosions, and other natural disasters. Maryland is fortunate in that the emergency management system is practiced, organized and for the most part known and understood by state and local authorities and the health care system.

A WMD event, however, is one for which the health and medical system is generally unprepared. It cannot be assumed that the health and medical system can effectively handle the low mass casualty scenario of 25 or fewer victims because of the differences among agents. The health and medical system cannot handle a terrorist event producing mass casualties numbering in the hundreds. A WMD event of catastrophic proportions – a live casualty population of one thousand persons plus fatalities and worried well – is not within the experience or planning horizons of the health and medical community. The health care system is based upon providing care to individuals, with patient management systems oriented toward caring for patients one at a time.

Illustration 1

Categories of Weapons Producing Mass Casualties / Weapons of Mass Destruction

Conventional Explosives	Industrial Chemicals	Biological Agents	Chemical Agents	Nuclear & Radiological
Examples: *				
Nitroglycerin	Chlorine	Anthrax	Sarin, Ricin	Cs-137, Co-60
Dynamite	Acids / Bases	Smallpox	Mustard	Uranium, Plut.
Nitrite Bombs	Bulk Toxins	Salmonella	Nerve Agents	Medical Waste
Military Ordn.	Phosgene	Bot. Tox.	Soman	Oralloy bombs
Fuel Mixes	Cryogenics	Tularemia	Herbicides	Stolen military

*(For illustrative purposes only, not definitive or prioritized)

Illustration 2

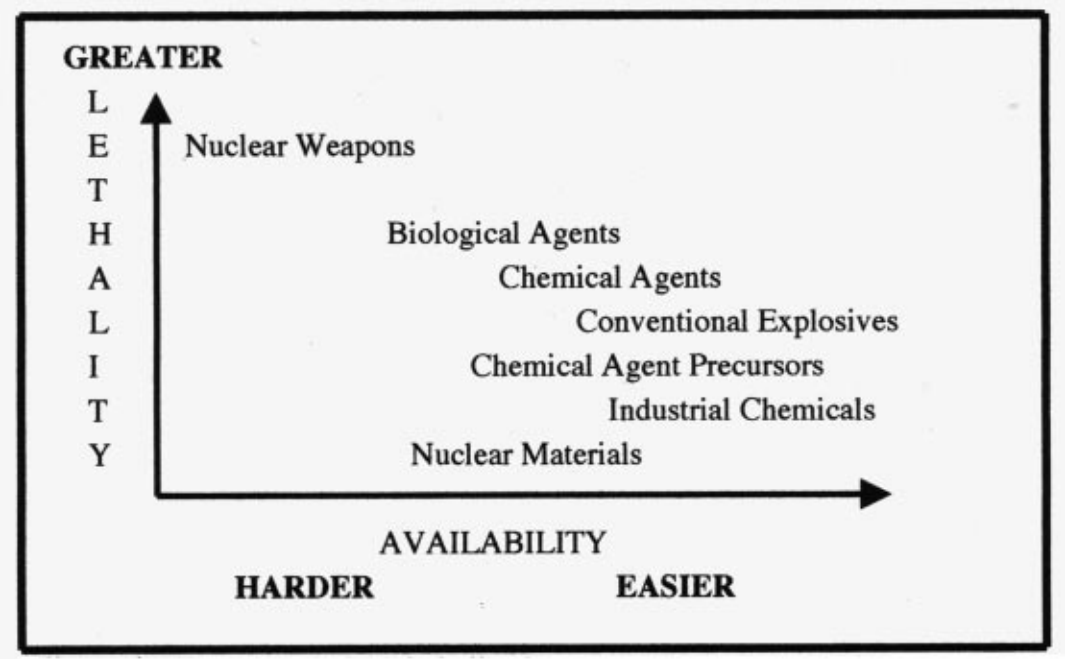


Illustration shows "relative" lethality (capacity of agents to produce death) and "relative" availability (from difficult to prepare / obtain to easier to prepare / obtain).

It is essential to recognize the implications of the different potential agents for reporting and detection of an incident. Methods for surveillance of the publics' health are different across the threat spectrum. Preparation for an incident, response to a threat or an actual incident by first responders and law enforcement must be tailored to the type of agent suspected. Prophylaxis, decontamination, treatment, rehabilitation and recovery for victims, as well as the impacted communities, are vastly different among the potential agents.

It is in this arena that the concepts of "high consequence / low probability" and "low consequence / high probability" have the greatest utility. By building on and better coordinating the existing systems of public health and private health services, and by improving our ability to handle large mass casualty events, we can improve our preparedness and response to the threat of a major, high risk terrorist event in Maryland and surrounding states. By applying the concepts of "low casualty", "mass casualty", and catastrophic casualty", preparedness planning and awareness can be measured, prudent and responsible. This approach also permits us to differentiate the magnitude of the event in planning and preparedness activities.

A Perspective on Terrorists' Motivations

It is not the purpose of a Strategic Plan to describe the psychology of terrorism or terrorists, however an important step in understanding terrorism, becoming prepared to handle a threat or incident, or responding to an event, is to obtain a basic understanding of the dynamics of the terrorist.

The First Annual Report of the Advisory Panel to Assess Domestic Response Capabilities for Terrorism (reference, above) describes terrorism in this way:

> "Terrorism is violence, or the threat of violence, calculated to create an atmosphere of fear and alarm, through acts designed to coerce others into actions they otherwise would not undertake or into refraining from actions that they desired to take. All terrorist acts are crimes. Many would also be violations of the rules of war, if a state of war existed. This violence or threat of violence is generally targeted against civilian targets. The motives of all terrorists are political, and terrorist actions are generally carried out in a way that will achieve maximum publicity, The perpetrators are usually members of an organized group,
> although increasingly lone actors or individuals who may have separated from a group can have both the motivation and potentially the capability to perpetrate a terrorist attack. Unlike other criminals, terrorists often claim credit for their acts. Finally, terrorist attacks are intended to produce effects beyond the immediate physical damage that they cause."

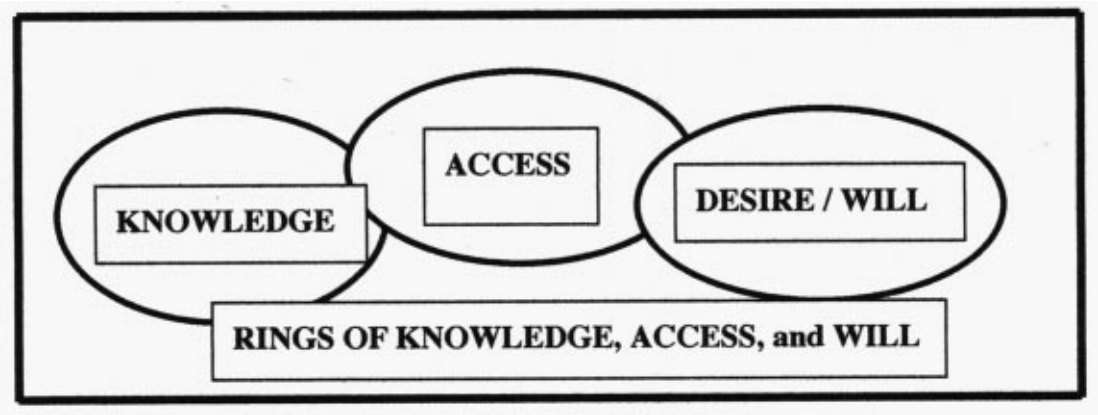
> "…[A] terrorist group is defined as a collection of individuals belonging to an autonomous nonstate or subnational revolutionary or antigovernment movement who are dedicated to the use of violence to achieve their objectives. Such an entity is seen as having at least some structure and command and control apparatus, that, no matter how loose or flexible, nonetheless provides an overall organizational framework and general strategic direction. This definition is meant to include contemporary religion-motivated and apocalyptic groups…that seek theological justification or divine sanction for their acts of violence."

The definition used by the Advisory Panel to Assess Domestic Preparedness, while different than that of the Federal Bureau of Investigation, is helpful to develop an understanding of the types and motivations of terrorists and terrorist activities. Fundamental to both approaches are the use of fear, intimidation, threat and criminal intent.

To a large extent, the effective ability of a terrorist, acting alone or in concert with others, is dependent on having the technical knowledge, obtaining access to agents and having the desire to plan, implement and execute an incident. An individual acting alone over time may be able to possess or obtain these three essential elements; a group may be better able to assemble these elements, however it may be more difficult for a group to maintain the cohesiveness and secrecy necessary to execute the operation.

When the three elements, knowledge, access to agents and will to act, converge, the likelihood and the threat increase exponentially.

Illustration 3



The ability of an individual acting alone to induce terror, a group acting in concert to commit a terrorist act, or state sponsored terrorism (terrorism committed by a government or its surrogates) can be understood in broad terms. This understanding does not in and of itself improve preparedness or response, but can serve as an underlayment to developing appropriate systems of prevention, detection, preparedness and responses.

Terrorism by its nature introduces fear and chaos into a society, bringing unpredictability and instability into the equation. Organized societies will always tend to move to stabilize themselves when threatened. Terrorism exploits this natural direction by upsetting stability through threats, intimidation and producing discomfort and crisis.

These phenomena have occurred in the United States as exemplified not only by the World Trade Center and Oklahoma City bombings, but by the fear induced by mailed anthrax threats to abortion clinics and other socially significant institutions. Other examples include the "epidemic" of school shootings where dramatic changes are sought following an incident to stabilize and prevent future incidents, the attention paid to the threat of terrorism by government, the media and individuals during preparations for Y2K and the precautions taken by cancellation of events around Y2K. All of the responses to these crises are well intentioned. They also are indicative of the maxim "fear of the event may be worse than the event itself." The introduction of fear and reactivity are necessary for terrorist(s) to accomplish their objectives. The difficulty for the target rests with distinguishing between a threat and an actual incident and bringing to bear the requisite responses, especially if the incident will produce mass or catastrophic casualties. Added to this complex are the implicit characteristics of criminality, violence and war-like actions that do not fit with most social institutions and values.

Motivation for terrorism, therefore, can be broken into four potentially overlapping and complex reasons: ideological, economic, personal and governmental expediency.

Ideological terrorism can evolve from political, religious, or social philosophies where the value and belief system of the individual or group embraces violence as a means toward a desired end or outcome. This category can include, but is certainly not limited

to, extremist organizations including ethnic-nationalists, ethnic separatists, religious extremists, political issue or social issue extremists, cults, militias, racial supremacists, and apocalyptic groups. Other examples might include the "lone wolf operator" with a loosely constructed community through newsletters or the internet, "Leaderless Resistance" cells, anarchists and fringe mythological / magical societies.

Economic terrorism can evolve from real or perceived need to obtain greater position or leverage in a system of financial reward, trade or exchange. This category can include elements of ideological terrorism and government terrorism, but may reflect inter-ethnic conflicts, inter- and intra business conflicts, and the seeking of revenge and retribution for actions taken or anticipated. This category includes criminal extremists and transnational and narco-terrorism organizations.

Personal terrorism can evolve from disaffection or isolation of an individual or group from the belief or value system in which that individual or group exists. This category can, but does not necessarily, include emotionally disturbed individuals; this category can include individuals and groups who are, in reality, removed from the mainstream of their culturally important references and are seeking revenge and retribution. Hostile employees, egoists and megalomaniacs or individuals without political or economic ideologies who are seeking some change through inflicting damage and mass casualties reflect personal terrorism. This category includes those who may have been psychologically or physically brutalized, such as social outcasts or domestic or international refugees.

Governmentally expedient terrorism can evolve from clashes or confrontations of states which are attempting to prevent, exploit, or create some advantage under the authority of its governmental power. Included in this category is state-sponsored terrorism, acting directly or through surrogates and agents supported by and acting on behalf of a sovereign government. Actions may be taken for economic, political, religious or social reasons, and may be driven by desperation or anticipation of circumstances, with or without an actual state of war.

As can be readily seen by the above categorical analysis, the motivation for terrorism is a complex of ideology, criminal intent, objectives, demographics, financial and intellectual resources and leadership.

The range of targets, which may be driven by the motivations, can become fixed on specific individuals, specific groups or general populations, and may be fixed on real or symbolic venues. An important note is the understanding that the "target value" for any given terrorist may be determined as much by the "value" placed by the target itself as on the "value" perceived by the terrorist.

VULNERABILITY

The purpose of this analysis is to describe the vulnerability of Maryland to a terrorist attack, particularly as it relates to the health and medical system and Maryland's ability to respond to a terrorist incident.

Maryland has twenty -four jurisdictions, including Baltimore City, with a total population of 5,219,125 (Maryland Office of Planning, projected for 2000).

Of the approximately 5.2 million residents, 4,387,075, or 84%, reside in the Washington – Baltimore Standard Metropolitan Statistical Area ("SMSA"), roughly following the Interstate 95 corridor. The counties included in this planning area include: Frederick with 193,000; Howard with 248,950; Carroll with 154,850; Baltimore County with 727,200; Harford with 224,650; Anne Arundel with 485,800; Baltimore City with 625,200; Montgomery with 860,000; Prince Georges with 790,250, and Calvert with 76,575. Contiguous to these counties is Washington, DC.

The remaining counties make up the balance of the state's 16% population with Garrett at 29,150; Allegany at 72,950; Washington County at 128,300; Caroline with 29,850; Cecil with 85,200; Kent with 19,300; Queen Anne with 41,450; Talbot with 33,475; Dorchester with 29,300; Somerset with 24,350; Wicomico with 79,925; Worcester with 43,950; Charles with 122,900; and St. Mary's County with 91,950.

Maryland has five Emergency Medical Service Regions, with Region 1 (Garrett and Allegany) having a total population of 102,100. Region 2 (Washington and Frederick Counties) has a total population of 321,900. Region 3 (Anne Arundel, Baltimore City, Baltimore County, Howard County, Harford County and Carroll County) has a total population of 2,466,150. Region 4 (Cecil, Kent, Queen Anne, Caroline, Talbot, Wicomico, Worcester and Somerset) has a total of 386,800. Within Region 4, the upper Eastern Shore has 238,575 and the lower Eastern Shore has 148,225. Region 5 (Montgomery, Prince Georges, Calvert, Charles and St. Mary's) has a total population of 1,941675. The two Region 5 counties contiguous to Washington, DC (Montgomery and Prince Georges) have a combined population of 1,650,250.

Maryland is bordered on the east by Delaware, north by Pennsylvania, west by West Virginia, south by Virginia and Washington, DC. The highway system connecting these states include some of the United States busiest, including I-95, I-70, and the Washington and Baltimore Beltways, I-495 and I-695. In addition US Routes 50 and 40 cross the state at Washington and Baltimore, respectively. Additional interstate routes include I-81 and I-68 in the western portion of the state, I-97 connecting Baltimore with Annapolis and I-195 to the Baltimore – Washington International Airport.

The Port of Baltimore is one of the nations's busiest, located in the Chesapeake Bay area, with extensive and busy rail and truck hub transportation services.

The Washington – Baltimore Metropolitan Corridor, encompasses 84% of the state's population, exclusive of the Washington, DC population or that of contiguous states, within a travel time radius of 1 1/2 hours. The majority of the population resides or works within a travel time radius of 45 minutes, with Washington and Baltimore separated by approximately 44 minutes.

Maryland and the Metro Region have a large number of historic, cultural, socially prominent institutions, a large number of symbolic institutions, an extensive number of military and state and federal government institutions and facilities, and is literally connected to the US capital with its symbols and government operations. In addition, Maryland has within its borders many chemical, industrial, production and high-technology resources that produce sensitive or potentially vulnerable information or materiel. The region has extensive mass gathering facilities and arenas of national significance and prominence.

The factors of geography, facilities, transportation and industrial plants, demographics, prominent and symbolic institutions, and the proximity to the nation's capital combine to make the Maryland and the Washington-Baltimore Metropolitan region vulnerable to terrorism. The area has quick and large access and egress points that are difficult to monitor or control.

Illustration 4

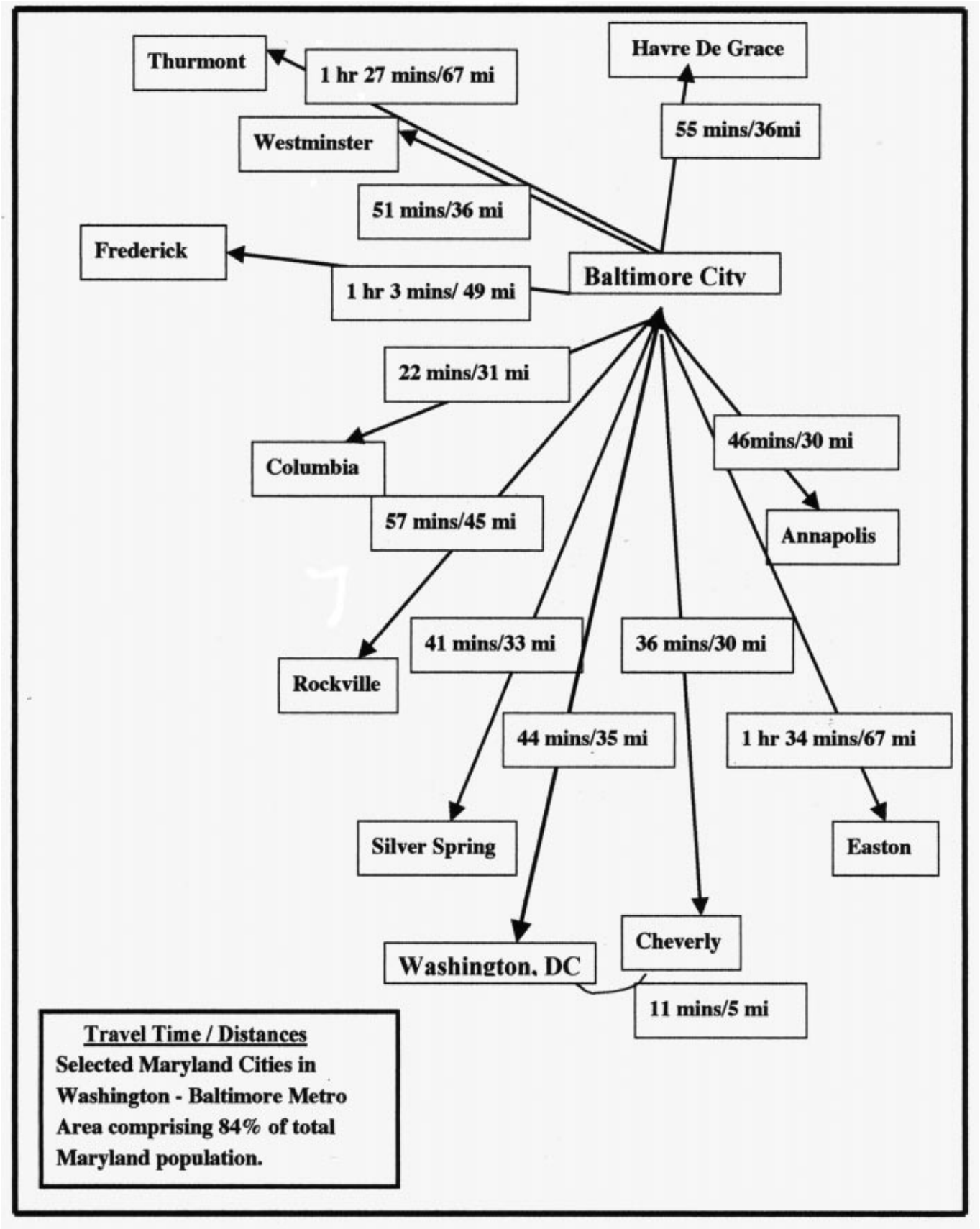
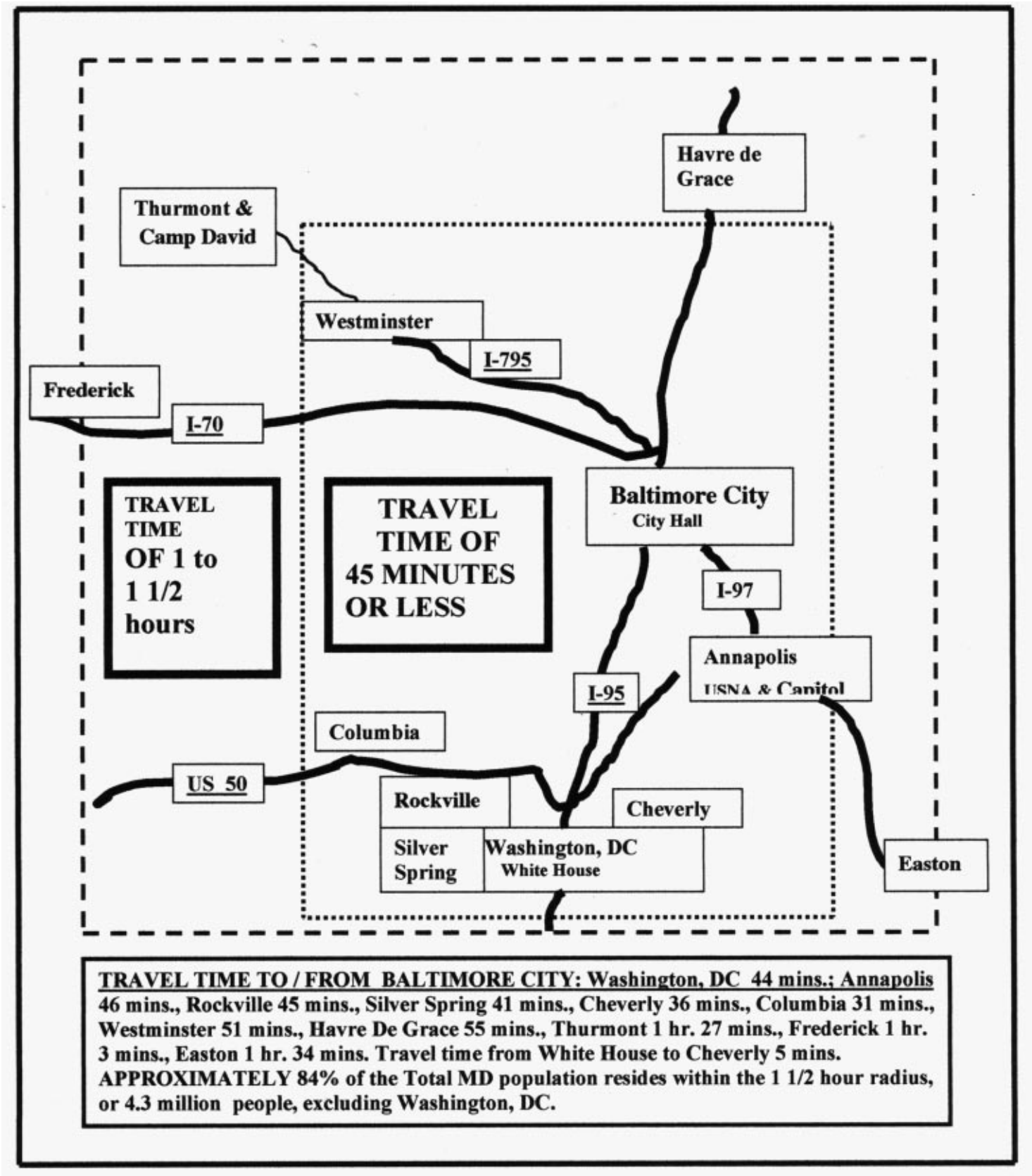


Illustration 5



Preparedness and Response Concepts

Maryland's strategic approach to preparedness and response to a terrorist incident is based on five interrelated concepts.

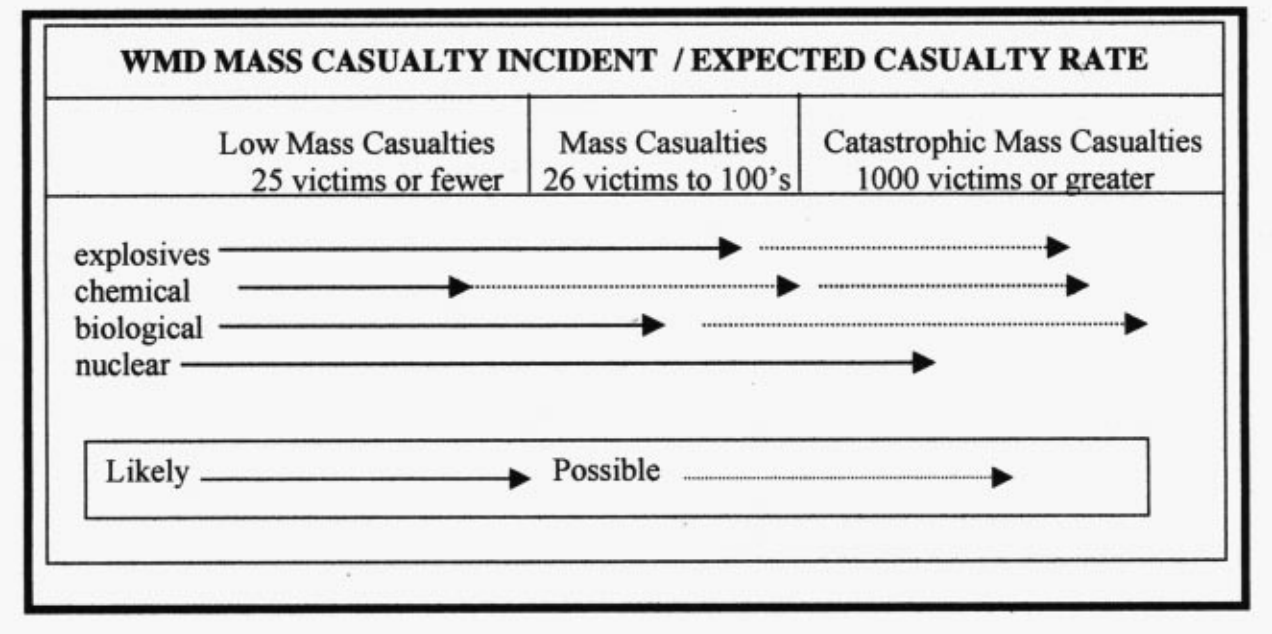
1. Fundamentally, awareness that terrorism is a real threat to the life and property of Marylanders must increase, and this threat cannot be handled as a matter of routine.

Maryland has not had a terrorist attack or a weapon of mass destruction incident within its boundaries. It is clearly important that an appropriate level of awareness that "it can happen here" is developed within the health and medical community to assure that training, education and necessary precautions have been taken. Health providers are both a first line of defense and a first line of response, and facilities and providers may themselves be targets for terrorism. Increased awareness and education will help protect and ensure availability of this valuable resource.

2. Mass Casualty Incident ("MCI") planning must be redefined to include much greater numbers of victims, casualties, and fatalities to have an adequate health system response.

By redefining Mass Casualty Incident planning to include much greater numbers of victims, the confusion and chaos that result from a large or catastrophic event can be minimized and recovery accomplished more quickly. There are significant differences between "routine" mass casualty incidents and larger magnitude events caused by a weapon of mass destruction; these differences must be identified and understood within the health and medical providing community. See Illus. 6

Illustration 6



3. The use of a weapon of mass destruction is a calculated and malevolent criminal act that requires the cooperation of health and medical providers with law enforcement and other public safety officials.

It is important that health care providers understand and be aware of the criminal aspects of terrorism and weapons of mass destruction. Unlike more routine acts of violence, information, evidence collection, preservation and handling will assist with investigations and apprehension of perpetrator(s). Law enforcement officials may be dependent on health care professionals to assist by providing information; creative ways to share sensitive information and maintain confidential patient information will have to be developed to minimize the threat and assist with prevention or successful prosecution if an incident occurs.

The deliberate use of a weapon of mass destruction will bring a reaction within the victim population and within the health providing community that must be better understood. Issues of crowd control, transport of victims and health care personnel, and release of public information may be critical to minimizing loss of life and reestablishing the public order. Critical incident stress management for the victim population and the responding / providing community will be needed.

Communication, cooperation and coordination between the health and medical community and the law enforcement and public safety communities is essential for each of these groups to best perform their tasks.

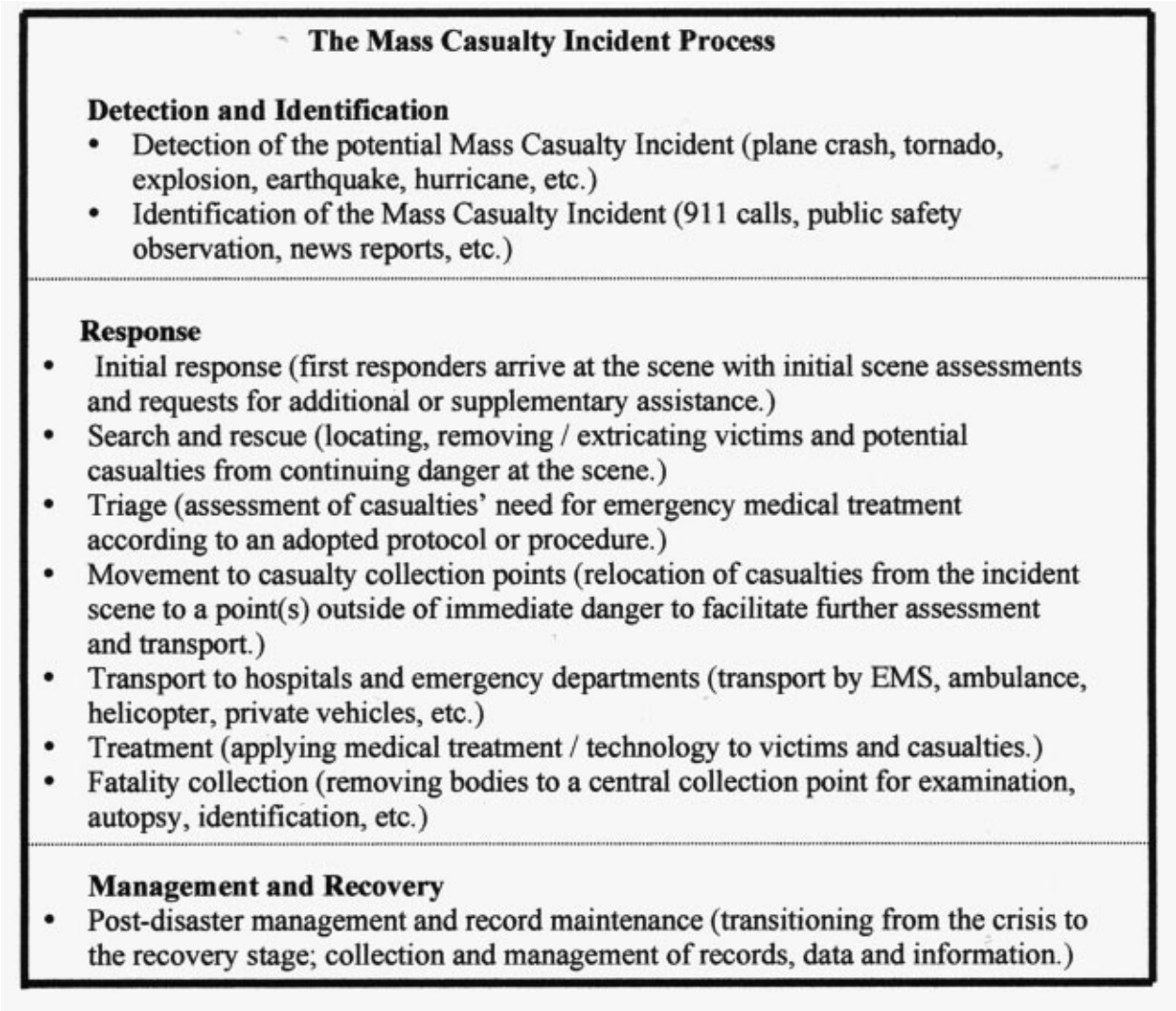
4. Planning for a deliberate weapon of mass destruction incident must be based on the existing system of handling mass casualty incidents, not a special purpose plan, in order to achieve measured and practiced response levels.

By building on the current knowledge and practices of emergency medical services, public health, hospital, and emergency management systems, the existing system can be enhanced rather than creating a special purpose response for a low probability, high lethality event. This approach allows efficient, but effective, overall coordination, planning, exercising and drilling. By basing weapon of mass destruction planning on the existing system of handling emergencies and disasters, gaps and needed improvements can potentially be more easily identified.

However, this planning must also recognize and incorporate the differential identification procedures, precautionary steps, tactical responses, and overall consequence management characteristics presented by conventional explosives, chemical agents, biological agents, and nuclear / radiological agents. Each of these agents requires tailored approaches based on the technical actions, potential magnitude and type of impacts, and rates and types of casualties.

The mass casualty incident process can be described in three phases: detection and identification, response, and management and recovery. See Illustration 7.

Illustration 7



5. The response to a weapon of mass destruction event must occur within an Incident Management System ("IMS") that is understood and practiced by the health and medical community.

A WMD event will create confusion, chaos and potential system breakdown. Police, fire, rescue, and other assets will have to be deployed rapidly into one or more scenes that are inherently confused and chaotic. Transportation of casualties and victims to emergency care points may or may not be done with triage and victims may arrive by private vehicle or mass transport and may need decontamination. The WMD agent may or may not be known, and effects may be immediate or delayed. Hospitals may find that the disaster has been relocated from the disaster scene to the Emergency Department. All levels of authority will face demands for accurate and reliable information by victims, their families, and the news media.

A terrorist - caused WMD event is both a health care disaster and a law enforcement matter. Given the potential magnitude of the disaster and the criminal nature of the act, the response plan must recognize that a WMD event will impact immediately at the local level, but will rapidly bring greater state and federal involvement. Detection and measured responses will then have to move upward to the regional, statewide and federal levels, along with investigation, coordinated public information, and overall consequence management.

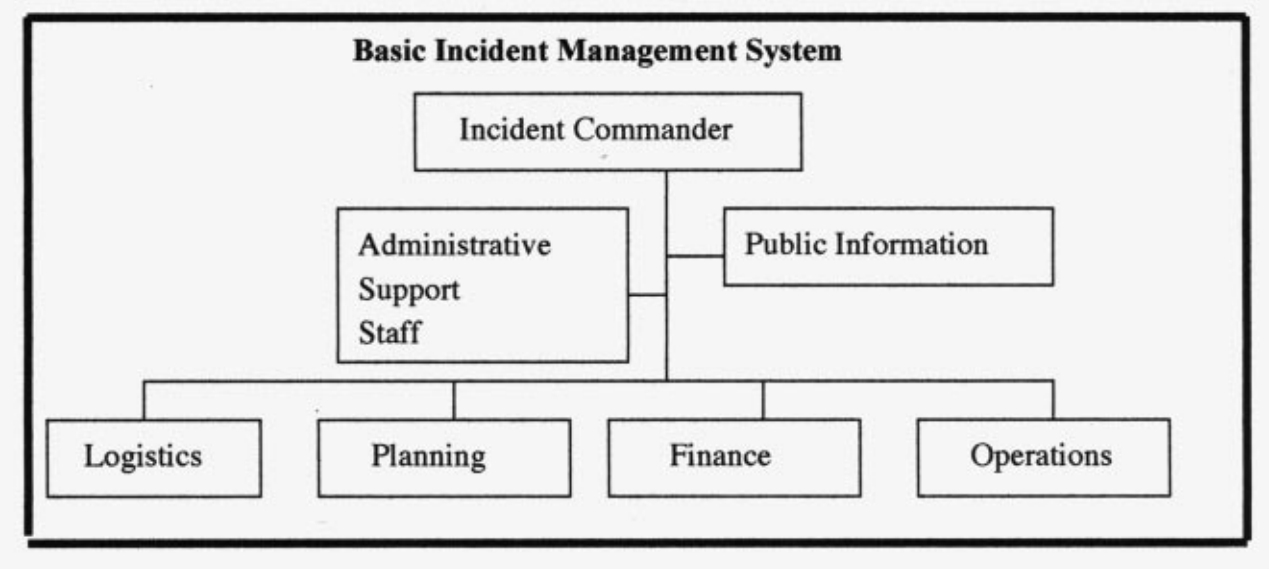
An Incident Management System ("IMS") provides a structure that is known and predictable, permits a flexible response as the event evolves, and is compatible with the existing decision-making hierarchy of the health care system. Such a structure will also facilitate transitions up and back down the governmental and emergency management hierarchy.

IMS - understood, practiced, exercised and uniform across the response system - will enable the health system to provide medical care safely and efficiently. It will also assist with obtaining needed additional or supplementary resources during an incident and recovery following the actual incident.

An IMS, with standardized job descriptions and functions that are familiar across the emergency, health, and disaster management systems, allows different organizations to merge resources and decision-making to respond to a WMD event. By having universal labeling and functions, the chaos resulting from a WMD can be minimized, normal operations can be resumed sooner, and valuable human and materiel resources can be used most effectively.

The Incident Management System is the most effective structure to manage this complex set of demands and decisions. See illustration 8.

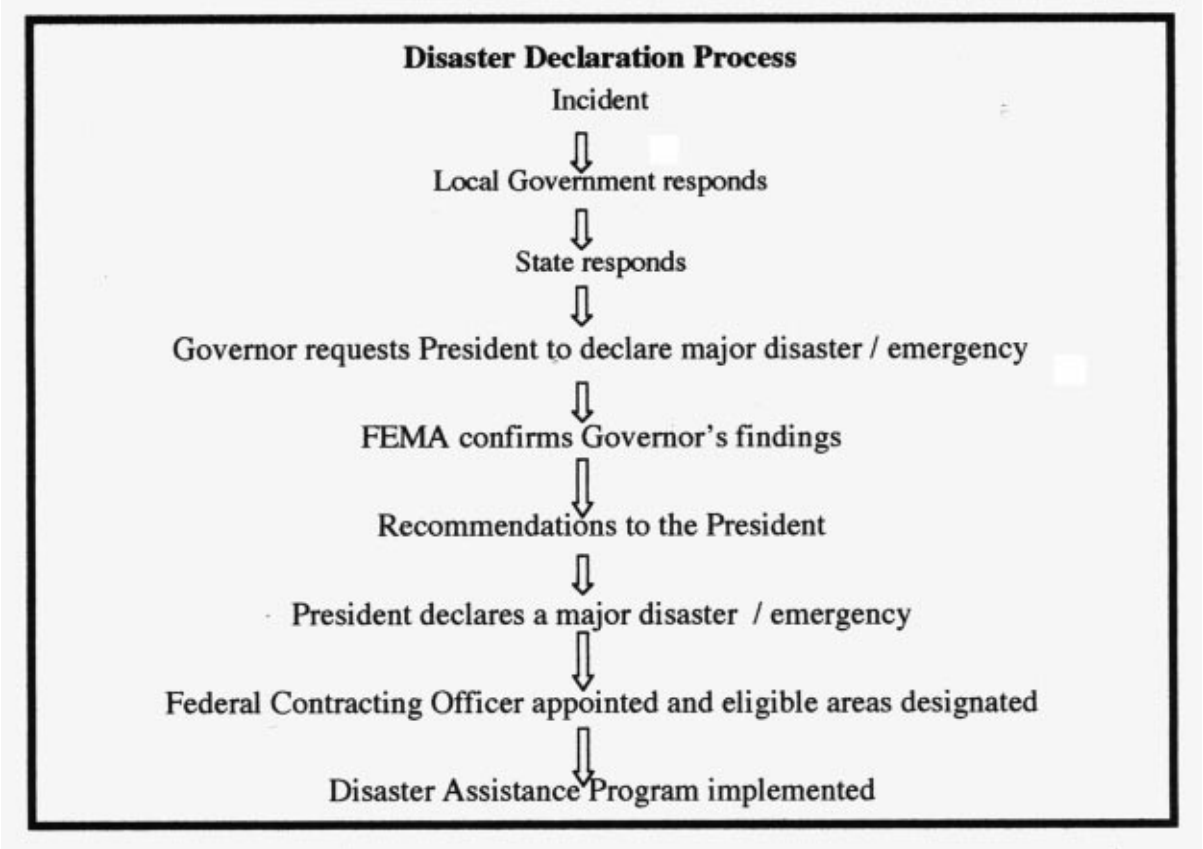
Illustration 8



The terms "Joint Operations Center," "Joint Information Center," "Incident Commander," "Public Information Officer," "Incident Safety Officer," and other functions must be understood and able to be integrated into health system WMD operational responses.

In addition to providing a structure within which to respond to and manage a WMD incident, first at the local level, then to the state level if the incident evolves and grows, the IMS must facilitate decision making at the state and federal government level. While not every disaster requires federal presence and assistance, terrorism is a federal crime, and the federal Disaster Declaration Process provides established mechanisms to request assistance. Typically, before federal agencies provide assistance to state and local governments, the Governor must request assistance and the President must then make a declaration of major disaster or emergency.

In Maryland, the progression will move from the local emergency management center to state level management operation by the Maryland Emergency Management Agency (MEMA). Contact will be made between the state and the Federal Emergency Management Agency (FEMA), with this contact taking place prior to or immediately following the disaster. (Note: The Federal Bureau of Investigation (FBI) is the lead agency for crisis management, while the FEMA is the lead agency for consequence management activities.) For a WMD incident, following a rapid intelligence gathering and damage assessment, federal authority, resources and assets, and assistance would become available. See illustration 9, below.



In summary, there are five major concepts that should be integrated into weapons of mass destruction planning and response system development. Health and medical personnel must become aware of the threat and implications of terrorism as the first line of defense and response. Traditional views of Mass Casualty Incidents must be redefined to include the potential for much greater numbers of victims and casualties caused by a premeditated criminal act. The existing system of handling mass casualties should form the basis for improved preparation and response, but coordination of actions and communication of sometimes sensitive and confidential information will be vital to an adequate response. The management of an incident should be accomplished within a chain of command, an Incident Management System, which is known and practiced by the members of the system. Finally, by developing improved preparation and response methods, assistance at the local and state levels can be obtained more quickly in a situation that will be chaotic and overwhelming to the health care system.

Capacity Analysis of the Maryland Health and Medical WMD Response System

The purpose of this analysis is to assess the current capacity of the Maryland health system to accommodate three levels of patient surge caused by a weapon of mass destruction.

The three levels selected are Low Mass Casualties at 25 victims or fewer, Mass Casualties at 26 to the hundreds of victims, and Catastrophic Mass Casualties at 1000 victims or greater. These levels were selected for planning purposes as representative of expected casualty numbers produced by the four major categories of agents: explosives, chemical agents, biological agents and nuclear / radiological agents.

It is not possible to predict the numbers of victims or casualties that may be produced by a weapon of mass destruction because of the unpredictable nature of the various agents and their impacts, the variables associated with a terrorist event, and the technical differences between and among agents. The impact of any given agent is dependent on such conditions as weather, exposed population, method of dispersal, and potential combinations of agents that can be concocted.

It is possible, however, to make certain assumptions about the abilities and capacities of the health care system to handle certain levels of patient surge, if those assumptions are instructed by basic facts about the various potential agents' characteristics.

For example, it is unlikely that a small, conventional explosive device, unless placed in a large mass gathering location with thousands of people present, would produce victims at the 1000 plus level. Obviously, locations such as the World Trade Center in New York City or the Oklahoma Federal Building change the dynamic of the impact of such a device. Similarly, the use of a chemical agent that is dispersed through direct contact with skin will produce a very different casualty rate than a chemical agent that is dispersed through the air with access through the respiratory system. The use of biological agents that are spread through the heating and ventilation system of a building or subway line

will have a different victim producing rate than spreading an agent on food that is eaten by a relatively small number of patrons at a restaurant or social event. The spreading of radioactive material around a congested public area in a city will have a different impact than a combination explosive device salted with nuclear material detonated at a major league sports game.

Implicit assumptions can and have been made about the potential impacts of the four agents. Illustration 4, earlier in this document, suggests that by identifying three levels of casualty rates (25 and fewer, 26 into the hundreds, and one thousand plus) and by positing levels of impact for the four categories of agents (smaller bombs versus major detonations; chemical agents released at a specific target versus a generalized attack; spreading a biological agent that is non-infective versus one that is highly infective, releasing medical radioactive material versus the use of stolen military devices) can assist with planning for various levels of casualties. Further, by making assumptions about "likely and "possible" casualty rates, one can begin to develop corridors of risk for the health system's ability to handle the various levels of patient surge.

It must be emphasized that the use of these assumptions and extrapolations does not indicate most- or least- likely scenarios. The value of the extrapolations rests within the ability to develop thresholds from which to test the capacities of the health system to respond to a terrorist attack using a weapon of mass destruction. Further utility is within projecting conditions under which a local emergency management system will be overwhelmed, projecting conditions under which state level resources will be needed, and to preplan conditions under which federal assistance will be required. Finally, there may be application for more "routine" disaster planning as additional information or data handling techniques become available for that purpose.

Description of the Health Care System

The base for this analysis is the community hospital, with the assumption that in the immediacy of a disaster, the community hospital and the emergency department is the place where Marylanders will go for care and treatment, arriving by EMS or by other transport.

Maryland has approximately fifty acute care community hospitals (defined as acute care facilities with an inpatient stay of less than thirty days). All acute care general community hospitals have a base service capacity of medical / surgical beds, and may have obstetric service, pediatric service, psychiatry, and / or a long-term care unit. Most have intensive care beds or coronary care beds; all have ventilator capacity. All have a recognized emergency service.

Each of these hospitals would be recognized by the general public as a hospital, either because of listing on a Maryland highway map or because of the blue "H" sign directing patients to the facility.

This number does not include specialty hospitals such as psychiatry or rehabilitation hospitals, nor does it include long term care, chronic hospitals or state owned and operated hospitals. This number does not include freestanding ambulatory surgery or outpatient centers, nor medical office buildings or clinics.

While not included in the capacity analysis, the number of nursing homes in Maryland is approximately 275 with approximately 28,000 beds. These facilities, licensed as "comprehensive care" and providing skilled nursing care, are not viewed as back-up capacity to handle a WMD patient surge because of existing patient utilization, current patient characteristics, and staffing patterns. These facilities would, however, likely be needed for long term care and rehabilitation of victims.

There are approximately 250 ambulatory surgery (single and multi-specialty) centers in Maryland. Many of these centers have sterile operating areas and medical gas capability but are not currently equipped or staffed to handle emergency casualties of significant volumes.

EMS regions are based on groupings of counties. Region I, the westernmost area with two counties and three hospitals, is the most rural and least populated. Region II with two counties has two hospitals and is mixed rural and suburban. Region III is the Baltimore portion of the Washington-Baltimore Standard Metropolitan Statistical Area ("SMSA") with six counties and twenty-five of the fifty Maryland hospitals. Region IV is the Eastern part of the state, mixed rural and suburban, with eight counties and seven hospitals. Region V is the Washington portion of the SMSA, with five counties and thirteen hospitals.

See Table 1.

Note: The discussion that follows uses hospital "beds" as a proxy for hospital infrastructure and is a term long used in health planning and health policy development. It is most useful to communicate and understand the relative size and availability of services in relation to other facilities and the complement of services that may be available. Hospitals are composed of complex and interrelated components, many of which are clinically related, such as laboratories, emergency departments, medical and surgical treatment, outpatient departments, pharmacy, and specialty clinics. Support component examples are laundry, dietary services, security, maintenance, and other administrative and managerial services.

The concept is intended to describe the totality of services that a hospital may have available in relationship to patient utilization and patient volumes. A hospital may have "bed capacity" within its physical plant, but may not have the staffing patterns (physicians, nurses, and other health care professionals) or other support services immediately available to optimize that number of "beds". This is particularly important when examining WMD because such casualties will require extensive treatment and support that may not be readily available to the degree necessary for an adequate response.

Table 1

Hospitals by EMS regions (I, II, III, IV, V)

Region I (Garrett, Allegany) 3

Garrett Memorial Hospital, Cumberland Memorial Hospital, Sacred Heart Hospital

Region II (Washington, Frederick) 2

Washington Co, Hospital, Frederick Memorial Hospital

Region III (Anne Arundel, Baltimore City, Baltimore Co., Carroll, Harford, Howard) 25

Balt. City 1: Sinai, Kernan, Maryland General
Balt. City 2: St. Agnes, Bon Secours, University
Balt. City 3: Mercy, Harbor
Balt. City 4: Johns Hopkins, Bayview, Good Samaritan, Union Memorial

Balt County: Northwest, St. Joseph, Franklin Square, GBMC

Anne Arundel: North Arundel, Anne Arundel Med. Ctr.

Harford: Harford Memorial, Fallston Hospital

Howard: Howard County Mem.

Carroll: Carroll County Gen.

Region IV (Cecil, Kent, Queen Anne's, Talbot, Dorchester, Wicomico, Worcester, Somerset) 7

Cecil: Union of Cecil
Kent: Kent/ Queen Anne's
Dorchester: Dorchester Gen.
Talbot: Easton Memorial
Wicomico: Peninsula Regional
Worcester: Atlantic General
Somerset: McCready

Region V (Montgomery, Prince Georges, Charles, Calvert, St. Mary's,) 13

Prince Georges: Prince Georges General, Southern Md. Hosp., Doctors, Laurel/Beltsville, Ft. Washington

Montgomery: Holy Cross, Suburban, Washington Adventist, Shady Grove, Montgomery General

Calvert: Calvert Memorial

Charles: CIVISTA

St. Mary's: St. Mary's

WMD Surge Capacity Methodology

The methodology for determining the surge capacity of Maryland hospitals and to develop a risk analysis takes the average daily census (ADC) of the hospitals and applies a surge factor of twenty percent added to ADC for each hospital, for each EMS region, the Washington – Baltimore Corridor, and for the state. All base statistics used are for calendar 1998 and are from the Utilization Trends Report for 1998 from the Center for Performance Studies of the Association of Maryland Hospitals and Health Systems. Calendar 1998 was chosen because it is the latest full year for which data is available. 1998 also is a relatively stable year system-wide for hospitals for admissions and occupancy.

Average Daily Census was chosen as the baseline because it more accurately reflects actual utilization and staffing patterns than the number of licensed beds. While any given hospital may have additional licensed bed capacity than shown by its average daily census, the pressures of cost containment and changes in the health care marketplace mean that that additional capacity is not staffed, may have been permanently or temporarily converted to other uses, and may not be available or suitable for patient care. Reliable information on actual Maryland hospital bed capacity is not available.

Average Daily Census has utility for WMD planning purposes, however, in that it expresses on the average the inpatient utilization over the year. While any given day may be more or less than the ADC, on average a specific hospital or group of hospitals will have that number of patients. Of more importance for mass casualty or WMD planning purposes, the ADC will reflect nurse staffing and other personnel staffing levels. In this way, ADC reflects "situation normal" within the hospital(s).

A disadvantage of using hospital-wide ADC as the baseline measure is that current data does not break out the utilization by service, i.e., medical / surgical, obstetrics, pediatrics, psychiatry, or intensive care / coronary care units. This disadvantage, however, means that when examining hospital capacity for a WMD patient surge, the estimates of available capacity are conservative rather than overly optimistic.

For example, if Hospital "X" has a total licensed bed capacity of 120 and an average daily census of 100patients, that hospital will probably be staffed to handle 100 patients. However, if that hospital has 20 obstetric beds and 20 pediatric beds, there may be only 60 general medical surgical beds available, with the obstetric and pediatric units not suitable or available for medical / surgical patients. Of the 60 medical / surgical beds, approximately two thirds may actually be staffed, or 40 beds available and the other 20 not immediately able to be brought on line. In a disaster, it is likely that several hospitals will be drawing from the same personnel on-call pool for staff, causing personnel shortages. Also, patients already in the hospital can be moved within the hospital, discharged, or relocated to another facility, but each of these consumes time and human resources. By using ADC, rather than total licensed bed capacity, or licensed medical / surgical bed capacity, the estimate of capacity is conservative and based within a normal hospital operating status. See Table 2

Table 2
HOSPITAL CAPACITY ANALYSIS –WMD

	ADC (98)	M/S beds (98)	Med ICU (98)	Lic. Beds (98)
Region I				
Garrett M.H	27	61	4	76
Cumberland M.H.	108	139	15	222
Sacred Heart	113	149	10	224
Region II				
Washington C.H.	162	178	11	294
Frederick M.H.	154	129	18	228
Region III				
Balt. 1 Sinai	278	240	34	446
Kernan	132	80	8	122
MD Gen.	131	159	10	276
Balt. 2 St. Agnes	190	281	16	383
Bon Secours	87	193	11	208
University	441	212	43	471
Balt. 3 Mercy	145	165	20	285
Harbor	130	294	24	376
Balt. 4 Johns Hopkins	659	550	74	915
Bayview	199	198	30	306
Good Sam.	170	149	7	268
Union Mem.	180	245	22	394
Balt. Co Northwest	121	203	20	223
St. Jos.	233	277	30	434
Frank. Sq.	211	218	37	387
GBMC	229	230	22	372
AA Co. No. Arundel	174	200	12	312
AAMC	157	184	16	291
Ho.Co.Gen.	108	121	12	233
Har. Co. Har. M.H.	70	188	14	283
Fallston	72	169	15	184
Car. Co. CCGH	113	80	0	168
Region IV				
Union of Cecil	61	119	8	166
KQA	33	48	6	64
Easton M.H.	92	121	8	166
Peninsula Reg.	204	214	19	300
Dorchester Gen.	45	65	10	95
Atlantic Gen.	24	26	6	32
McCready	12	20	0	20

Table 2, continued
Hospital Capacity Analysis – WMD, continued

	ADC (98)	M/S beds (98)	Med ICU (98)	Lic. Beds (98)
Region V				
PG Co. PG Gen.	226	278	16	467
So. Md. Hosp.	140	202	33	358
Doctors	116	221	29	250
Laurel	100	106	10	179
Ft. Wash.	26	29	4	33
Mont. Holy Cross	242	205	14	422
Suburban	151	246	12	338
Wash. Adv.	225	186	34	300
Shady Grove	182	167	21	253
Mont Gen.	98	136	16	213
Calvert	60	81	6	141
CIVISTA	66	104	10	131
St. Mary's	59	64	6	122

Note: Three hospitals in Baltimore City, Childrens and Liberty in Baltimore 1 and Church in Baltimore 3, have been closed and therefore are not listed or included in the analysis.

Source of base statistics: The Association of Maryland Hospitals and Health Systems, Center for Performance Studies, "Utilization Trends Report Fourth Quarter, 1998, number 63".

Using a twenty- percent factor to determine what impact an increase of 20% of the ADC would produce in capacity can develop a "risk corridor". Twenty percent was selected as an estimate to compare the capacity at 100% of ADC with 120% of ADC. This factor is an educated estimate that is conservative, is within the quick expansion range of most hospitals, and uses the upward flex that most hospitals keep in reserve for times when patient admissions unexpectedly increase. See Table 3

Region I could have a capacity increase of 48 beds, Region II of 62 beds, Region IV of 91 beds, and Region V of 354 beds. Region III with Baltimore City and suburban counties have 20% surge capacity of 451 beds and 293 beds respectively.

Region V includes Montgomery County and Prince Georges County, with a total population of approximately half of the state. Both counties are border jurisdictions with Washington, D.C., with a high potential target value to terrorists. Montgomery County could increase capacity by approximately 178 beds with the 20% factor, while Prince Georges county could potentially bring on line145 beds. Given the travel times across Montgomery County and the distances involved, and the distances, travel times and proximity to Washington, D.C. for both Prince Georges and Montgomery Counties, a combined total of 354 beds may be identified.

Region III, as described above, includes Baltimore City and five surrounding counties. For WMD planning purposes, Baltimore City was divided into four subsections dividing the city into four quadrants, identified in Table 4 as Balt. 1, 2, 3, and 4. By locating hospitals in the four quadrants, roughly corresponding to U.S. Route 40 from east to west and Charles Street from north to south, hospitals can be grouped by similar travel times and customary routes. See Table 4.

This analytic approach reveals that no quadrant in Baltimore City has the surge capacity to handle 1000 live casualties. Balt 1 actually has a decrease in surge handling capacity from 1998 to 1999 because of planned hospital closures in the interim. Balt. 2 can handle an additional 143 inpatient surge, Balt. 3, 68, and Balt 4 may have an additional 243 beds. By applying the 20% surge factor to the entire Baltimore City, an estimated surge capacity is estimated at 451 inpatient beds.

The suburban area of Region III including five counties, has a combined surge capacity of 293 beds. However, this is misleading because of the geographic dispersion of the hospitals, the distance from the city of at least six of the hospitals, and the relatively small surge capacity represented by the suburban counties.

Table 3
Hospital Average Daily Census and ER Visits

	ADC (98)	ADC + 20%	ER v av. Mo.	ER v av. day
Region I				
Garrett M.H.	27	32	1445	48
Cumberland M.H.	108	129	2442	81
Sacred Heart	113	135	2100	70
	248	296		199
Region II				
Washington C.H.	162	194	4269	142
Frederick M.H.	154	184	4188	139
	316	378		281
Region III				
Balt. 1 Sinai	278	333	5244	174
Kernan	132	XX	XX	XX
Maryland Gen.	131	157	2043	68
	636	598		242
Balt. 2 St. Agnes	190	228	5694	189
Bon Secours	87	104	1546	51
University	441	529	3322	110
	718	861		350
Balt. 3 Mercy	145	174	3129	104
Harbor	130	156	2512	83
	343	411		187
Balt.4 Johns Hopkins	659	790	6571	219
Bayview	199	238	3440	114
Good Sam.	170	204	2230	74
Union Mem.	180	216	3327	110
	1208	1448		517
Balt Co. Northwest	121	145	3443	114
St. Joseph	233	279	3067	102
Franklin Sq.	211	253	4681	156
GBMC	229	274	3628	120
	794	951		492
AA Co. North Arundel	174	208	4800	160
AAMC	157	188	3710	123
	331	396		283
Ho. Co. Howard Co.	108	129	3377	112
Har. Co. Har. Mem.	70	84	2092	69
Fallston	72	86	2160	72
	142	170		141
Car. Co. CCGH	113	135	2721	90

Table 3, continued
HOSPITAL CAPACITY ANALYSIS –WMD, continued

	ADC (98)	ADC + 20%	ER v av. Mo.	ER v av. day
Region IV				
Union of Cecil	61	73	1777	59
KQA	33	39	773	25
Easton Mem	92	110	2284	76
Penninsula Regional	204	244	3970	132
Dorchester Gen.	45	54	1101	36
Atlantic Gen.	24	28	1390	46
McCready	12	14	378	12
	471	562		386
Region V				
Prince G. Co. Prince G. Gen.	226	271	4216	140
Southern Md.	140	168	3206	106
Doctors	116	139	2925	97
Laurel	100	120	2657	88
Ft. Washington	26	31	1727	57
	584	729		488
Montgomery: Holy Cross	242	290	4065	135
Suburban	151	181	2457	81
Wash Adventist	225	270	2894	96
Shady Grove	182	218	5178	172
Mont, Gen	98	117	1886	62
	898	1076		546
Calvert: Calvert M.H.	60	72	1968	65
Charles: CIVISTA	66	79	2289	76
St. Mary's: St. Mary's H.	64	70	1787	59
	190	221		200

Source of base statistics: The Association of Maryland Hospitals and Health Systems, Center for Performance Studies, "Utilization Trends Report Fourth Quarter, 1998, number 63".

Table 4
HOSPITAL CAPACITY ANALYSIS –WMD, continued
Estimated Surge Capacity of Maryland Hospitals @ 20% of ADC

	ADC	ADC +20%	Surge Capacity
Region I	248	296	+48 beds
Region II	316	378	+62 beds
Region III			
Balt. 1	636	598	-38 beds
Balt. 2	718	861	+143 beds
Balt. 3	343	411	+68 beds
Balt. 4	1208	1448	+240 beds
Total, Baltimore City			+451 beds
Balt. Co.	794	951	+157 beds
AA Co.	331	396	+65 beds
How. Co.	108	129	+21 beds
Har. Co.	142	170	+28 beds
Car. Co.	113	135	+22 beds
Total, Baltimore suburban			+293 beds
Total, Baltimore metro Region III			**+744 beds**
Region IV	471	562	+91 beds
Region V			
P.G,Co.	584	729	+145 beds
Mont. Co.	898	1076	+178 beds
Total, Washington metro			+323 beds
Ch., Ca., SM	190	221	+31 beds
Total, Region V			+354 beds
Total Surge capacity, Maryland			**+1299 beds**

Source of base statistics: The Association of Maryland Hospitals and Health Systems, Center for Performance Studies, "Utilization Trends Report Fourth Quarter 1998, # 63

Table 5
Estimated Ambulance Capacity – WMD*

	Public	Commercial
Region I		
Garrett	7	2
Allegany	25	5
	32	**7**
Region II		
Washington	24	5
Frederick	39	7
	63	**12**
Region III		
Anne Arundel	29	22
Baltimore City	22	18
Baltimore County	47	85
Howard County	16	39
Harford County	23	11
Carroll County	17	2
	154	**177**
Region IV		
Cecil County	16	0
Kent County	7	0
Queen Anne	12	3
Caroline County	12	0
Talbot County	13	7
Wicomico County	23	15
Worcester	21	0
Somerset	6	5
	110	**30**
Region V		
Prince Georges	79	15
Montgomery	48	2 (20)
Calvert	14	0
Charles	15	0
St. Mary's	28	3
	184	**20(40)****
Total, Maryland	**543**	**246(266)**

*source: MIEMSS, estimated as of March 1999.
** additional number is due to multiple county license for some commercial ambulances.

MAXIMUM POTENTIAL HOSPITAL SURGE CAPACITY BY REGION AND CASUALTY LEVELS

+= surge capacity potentially available, -capacity not available to handle surge of patients

EMS REGION	LOW Casualty 25 or less	MASS Casualty n=100	CATASTROPHIC 1000+
I (+48)	+23 beds	-77 beds	not calculated
II (+62)	+47 beds	-53 beds	not calculated
III			
B.City			
B1(-38)	-63 beds	-163 beds	not calculated
B2(+143)	+118 beds	+43 beds	not calculated
B3(+68)	+43 beds	-57 beds	not calculated
B4(240)	+215 beds	+115 beds	not calculated
Total (+451)	+426 beds	+351	-649 beds
Subur.Cent,(+293)	+268 beds	+168 beds	-832
IV(+91)	+76 beds	-9 beds	not calculated
V			
Mont, PG(+323)	+298 beds	+198 beds	-802 beds
Southern(+31)	+6 beds	-69 beds	not calculated
Total(+354)	+329 beds	+229 beds	-771 beds
METRO CORRIDOR			
Frederick (+30)		-70 beds	
Howard (+21)		-79 beds	
Carroll (+22)		-88 beds	
Balt. Co (+157)		+57 beds	
Harford (+28)		-18beds	
Anne Arundel (+65)		-35 beds	
Balt. City (+451)		+426 beds	
Montgomery (+128)		+28beds	
Prince George (+145)		+45 beds	
Calvert (+12)		-88 beds	
Total (+756)		+481 beds	-244 beds

EMERGENCY DEPARTMENT CAPACITY

While some individual hospitals may have the potential to handle smaller scale incidents, it is doubtful that the required staff expertise is available for the kinds and types of injuries that would be presented or that the emergency department capacity exists to handle even a lower level event A basic risk analysis of Emergency Department surge capacity was performed by reviewing the average number of emergency department visits on an average day to Maryland hospitals.

AVERAGE EMERGENCY ROOM VISITS PER DAY				
<50 visits	50-100 visits	100-150 visits	151-200 visits	200> visits
8 hospitals	21 hospitals	15 hospitals	5 hospitals	1 hospital

Hospitals can, under current conditions, be expected to go on by-pass status almost immediately upon receiving a relatively small surge of patients who are either severely injured or presenting with a similar complex of symptoms. While disaster plans could be placed into effect, with the exception of an explosive agent, the hospital is not likely to be able to rapidly detect a chemical, biological or radiological agent and be able to implement the disaster plan. Upon discovery or identification, decontamination protocols would need to be implemented, further reducing the available emergency capacity. Depending on the agent and the patient volumes, neighboring hospitals would then be placed in back-up status, with the circle of dwindling capacity expanding to those hospitals.

No emergency department of Maryland hospitals in any county or region, by group or by geographic proximity has the available capacity to handle a Mass Casualty Incident numbering in the hundreds or a Catastrophic 1000 live casualty surge. Equally, no grouping of hospital emergency departments produces the surge capacity to handle this number of casualties.

SUMMARY and CONCLUSION

The use of a weapon of mass destruction in the United States or Maryland is an event for which the health and medical response system is unprepared. The overt release of a WMD agent, whether explosives, biological, chemical or radiological will produce a casualty rate that will rapidly overwhelm the emergency response system and the health care delivery system. A covert release of a biological, chemical or radiological agent, perhaps in combination with an explosive device is one that will be difficult to detect and may have immediate or delayed impact.

It is not likely that there is sufficient hospital capacity to handle a significant weapon of mass destruction event in Maryland. The analysis of surge capacity reveals that a Mass Casualty event with casualties in the hundreds would quickly overwhelm the health system. A Catastrophic Mass Casualty event would swamp the health care system almost immediately. It is not likely that there is sufficient hospital capacity to handle a significant weapon of mass destruction event in Maryland. The analysis of surge capacity reveals that a Mass Casualty event with casualties in the hundreds would quickly overwhelm the health system. A Catastrophic Mass Casualty event numbering in the thousands would swamp the health care system immediately.

An analysis of surge capacity of Maryland hospital inpatient capacity indicates that no county, group of counties, region or statewide configuration will provide sufficient capacity for either a Mass Casualty event or a Catastrophic event. By analyzing the capacity in each EMS Region, it becomes clear that no hospital could accommodate a patient surge at the Mass Casualty level, let alone a Catastrophic event. Additionally, when the metropolitan corridor including Washington and Baltimore is considered, numbering ten counties, notwithstanding the fairly proximate travel times, no configuration supports either a Mass Casualty event or a Catastrophic event. In fact, in the event of an actual, major terrorism attack, the proximity of the hospitals in the metro corridor may increase the overload as victims attempt to obtain care from providers outside their customary locations.

Further, a WMD will produce victims and casualties, expectant / fatally wounded, fatalities, "worried well," and persons and families requiring assistance. These patients will present to the EMS system and hospitals' emergency departments almost immediately after an incident. Emotional support and psychiatric care may be indicated for a significant portion of this population in addition to somatic medical care.

By calculating an estimated surge capacity at 20% of average daily census for the hospitals in Maryland, it is not likely that there is sufficient hospital capacity to handle a either a Mass Casualty or Catastrophic WMD event (explosion, biological, chemical or nuclear agents) in any county, region or by staging inpatients from one county or region to another.

The ambulance capacity by numbers of units, by region, for both public and commercial ambulances in Maryland has also been considered. The maximum number

available is approximately 809 statewide, including 543 public and 266 commercial. In the most populated regions, Region III and Region V, there are 154 public ambulances available and 184 available, respectively. Baltimore City has 22 public ambulances available, Montgomery County has 48, and Prince Georges has 79. This capacity is not sufficient for transporting victims of a Mass Casualty event.

To adequately prepare for and respond to a WMD event, a sustained commitment by government and health care leaders will be necessary.

The major areas of emphasis should include:

1. Improving awareness within the health and medical community about terrorism and the potential impacts of explosives, chemical, biological or radiological agents.

   The health and medical community must be educated and awareness must increase about terrorism and WMD. Health personnel, including first responders and facility based health personnel, must better know how to protect themselves, their equipment and their facilities in order to help assure their availability to provide medical care. Training and education are essential to provide a first line of defense against WMD.

2. Improving surveillance, monitoring and detection capability, particularly for chemical, biological and radiological agents, by the Maryland public health community and the private health care industry.

   The Maryland public health community must increase its disease monitoring, surveillance and detection capabilities, laboratory analysis capabilities, and epidemiological investigation ability in order to alert officials and trigger an appropriate response. Not only will such enhancements assist with identification of an incident, but will also enable better treatment, follow-up and recovery from a biological, chemical or radiological event.

3. Improving the response to all Mass Casualty Incidents by building on the response capability and better coordinating the Maryland EMS, public health, emergency operations centers, law enforcement and public safety, and health and medical resources in preparation for a WMD incident.

   By improving communications with technologies, developing and exercising uniform command systems, such as Incident Management Systems, and by identifying roles and functions of the health care system and its components, needed information and management practices can be implemented. Such improvements will assist with measured responses to threats and events and will save lives and help to handle catastrophic events.

4. Improving coordination of local public health, emergency medical services and emergency management agencies, and the state and federal counterparts, to assure adequate levels of preparation and readiness for an incident.

These improvements should be developed with participation by the stakeholders, embodied in a Health section of the Terrorism Annex to the MEMA Emergency Operations Plan, and be operationally practiced and exercised by the public and private health and medical community. The focus of these efforts should be on surveillance and early recognition, mass immunization and prophylaxis mass patient care, mass fatality management, and technical communications ability.

The development of a Strategic Plan and a Strategic Planning Process can contribute to both preparedness and an improved response. The Plan, and the Process, should be used to simultaneously develop awareness, preparedness and readiness for a terrorist use of a WMD. In this way, the stakeholders are involved in designing the response system and are learning about terrorism and WMD impacts at the same time.

Explosives, biological, chemical and radiological agents have similarities, but are also inherently different and will require differential responses. A Strategic Plan does not cover all the unique qualities and differences, but instead identifies the similarities and major issues that cut across the agents and the response systems. A Strategic Plan also identifies the priority issues that must be undertaken to position an organization, in this instance the State of Maryland, to better defend itself against terrorism.

Several essential tasks must be completed to prepare for a WMD event. Continuous monitoring and surveillance of health indicators is necessary. Organizing the health and medical response system into a coordinated, cooperative structure that can communicate effectively will save lives and help to minimize damage. Establishing a statewide system of response and mutual aid will assist communities whose resources will be overwhelmed. Developing a response system on existing systems of casualty management will enable efficient practicing, exercising and learning. A process that includes the stakeholders will increase awareness and assist with developing the working relationships that are essential. Participation in the planning and implementation process will help to achieve the buy-in that is important to a well-conceived response plan.

The advantage that a terrorist has over an organized society is the element of surprise. The best counter to that advantage is establishing a standard of coordination, cooperation and communication between and among the agencies and authorities responsible for responding to a terrorist threat or act.

STRATEGIC PRIORITIES

Priority 1. To develop a process that is inclusive of the health community for awareness, and improved preparedness and response, for a terrorist WMD incident.

Priority 2. To develop a health indicators surveillance, monitoring and detection system for chemical and biological agents.

Priority 3. To improve existing Mass Casualty Disaster Plans to handle a WMD Mass Casualty event numbering in the hundreds of victims and a WMD Catastrophic Mass Casualty incident at the 1000 live victim levels.

Priority 4. To develop a Health Incident Command System that is known, understood and practiced within the health and medical community and coordinated with the local and state emergency management centers.

Priority 5. To better coordinate statewide emergency medical services by reviewing and examining existing mutual aid agreements for fire and rescue services.

Priority 6. To develop a coordinated communications mechanism for the health and medical community, supportive of MEMA activities, that informs the partners and stakeholders of activities, programs, and initiatives concerning WMD and terrorism.

APPENDIX 1

Focus Group Reports

Three core focus groups were established to intensively review and develop recommendations to improve the response to the use of a weapon of mass destruction in Maryland. The Emergency Medical Services Focus Group, the Hospital Focus Group and the Public Health Focus Group together generated approximately one hundred ninety recommendations to improve the health and medical system response.

The Emergency Medical Services Focus Group was composed of representatives of MIEMSS and DHMH, the Commercial Ambulance Advisory Council, Critical Incident Stress Management, Emergency Medical Services Broadcasting, Emergency Numbers Board / 911, Emergency Medical Services Jurisdictional Advisory Council, Maryland Fire and Rescue Institute, Maryland State Firemens Association, Maryland HAZMAT Association, Maryland State Police, Regional Fire Chiefs Council, State Emergency Medical Systems Advisory Committee, American College of Emergency Physicians, Maryland National Guard, and the American Re Cross.

The Hospital Focus Group was composed of representatives of MIEMSS and DHMH, the American College of Emergency Physicians, Critical Incident Stress Management, Emergency Nurses Association, Maryland Hospital Association, Veterans Administration Hospital, and the Infection Control Network.

The Public Health Focus Group was composed of representatives of DHMH and MIEMSS, Federal Bureau of Investigation, US Public Health Service, Maryland State Police, Maryland Department of Agriculture, Maryland Veterinary Association, Maryland Medical Society, Critical Incident Stress Management, American Red Cross, Maryland Poison Control Center, and the DHMH administrations, including Local Health Departments, Medical Examiners Office, Laboratories, Office of the Attorney General, Information Systems, Epidemiology and Disease Control, and Mental Hygiene Administration. Other members included the Maryland Pharmacy Association and the Johns Hopkins Center for Civilian Biodefense Studies.

The Medical Communications Focus Group was deferred to not duplicate efforts by the MEMA and other State agencies that are actively working to enhance the states communications abilities. The three core focus groups, however, examined the issues of interoperability and communications within each subject area.

While presented here in summary form, each Focus Group Report is a complete and freestanding document that includes recommendations, discussion, and rationale for the recommendations

Summary Analysis of the Focus Group Reports

In Intelligence and Surveillance, the Reports recommended the establishment of a statewide system of surveillance of public health indicators to detect a WMD incident at the earliest possible time. Additionally, all reports recommended the development of a "Threat Condition" system that would alert the EMS and health providing community of an impending or actual event in order to prepare for and implement disaster plans.

In Operations and Implementation, the Reports recommended the development and establishment of a statewide Incident Management System that can integrate and manage the response of the health care system to a mass casualty incident or a WMD. The Reports also recommended the development of a WMD Disaster Plan that enables the different roles and functions of the hospital and its departments to be identified and integrated into a system-wide response capability. Specific recommendations were made on development of enhanced laboratory capability for detection of biological and chemical agents, medication protocols and caches. Each Report recommended exercising and drilling with the Incident Management System to increase awareness and preparedness.

In Notification and Mobilization, the Reports recommended a statewide notification and alerting system that permits graded and measured responses. Such a system, using a Threat Condition designation, should allow the health care system to know if there is a threat, if the threat is credible, if a WMD event is impending or has occurred. The reports recognized that preparation for a WMD event is costly, will take resources for existing patient loads, and will require pre-planning and pre-positioning of personnel, equipment and supplies.

In Training and Education, the Reports recommend three levels of activity. General public awareness is needed, health and medical providers need training to protect themselves and provide appropriate care to casualties, and the health and medical system needs educated in how to detect and respond to a WMD event.

In Equipment and Supplies, the Reports recommend the inventorying of and pre-positioning of appropriate medications and antidotes, as well as the development of levels of personal protective equipment for different levels of personal exposure to agents.

In Logistics, the Reports recommend pre-planning the availability of supplies and equipment that will be needed for a mass casualty incident / WMD event. Human resources should also be inventoried to help assure that existing resources, capabilities and expertise are known. Mutual Aid agreements should be reviewed from a statewide view to help assure that assistance will be available when needed.

In Public Information, two areas were recommended for development. Contacts with the media and the release of public information must be coordinated to assure that information is accurate, available and consistent. Fact sheets should be prepared, positioned and available for the general public to assist the public with accessing

information regarding agents; similar but technically oriented fact sheets should be available to the EMS, first responder, hospital, public heath and health systems.

In Communications, the Reports recommended the development of a system-wide, electronically based, interoperable communications network that will transmit information, data and assist with overall communication. Such a system is seen as essential for the health and medical system, with use as a matter of routine assuring that the network will work during a disaster.

In Personnel, the Reports recommend the development of education packages tailored to the needs of all the different segments of the health and medical community. Deployment plans between and among hospitals and other health care facilities should be developed to assist with handling patient surges. All health and medical personnel should be instructed to report to their home facility or base station for deployment with a unit, rather than as individual responders, to facilitate incident management and to protect the individual responder.

In Legislation, action is recommended to increase the authority of the Department of Health and Mental Hygiene to collect statewide information on reportable diseases to better manage and detect outbreaks, to clarify the authority of the Secretary and Local Health Officers on quarantine, isolation and treatment to protect the general public health, and to clarify the authority of Maryland State government over health care facilities in a WMD event. Legislation is also recommended to support inter-facility assignment and transfer of personnel in a WMD event. Current statutes should be reviewed in the areas of mass fatalities and burial, control of biological and chemical agents and precursors, mutual aid agreements, and release of public information.

WEAPONS OF MASS DESTRUCTION
HEALTH & MEDICAL
STRATEGIC PLAN

Key Assumptions / Planning Principles

Approved and adopted by Steering Committee March 18,1999

- The Objective: To assess the capability and capacity of the Maryland health and medical system to handle a WMD event; and to identify issues and make recommendations to improve the detection of and response to such an event.

1. Planning for a WMD event in Maryland will be based upon the existing system of handling a mass casualty incident (MCI) rather than special purpose plans.
   This approach is efficient when planning for a low-probability, high lethality event; allows clearer identification of gaps; allows enhancements to existing systems rather than creating new one's, and facilitates coordination, drills and exercises.

2. Planning for a WMD event will be for a scenario involving 1000 live victims. This approach helps assure that smaller mass casualty incidents can be handled and thereby contributes to overall preparedness.

3. The order of priority for strategic planning is explosion, biological, chemical, and radiological, with emphasis on biological and chemical WMD agents.

4. The response plan must recognize that a WMD event will impact immediately at the local level; detection and measured responses will then have to move upward to the regional, statewide and federal levels.

5. The nature of biological and chemical WMD agents means that the local and state governments will be "on their own" for up to thirty-six hours from time of detection.

6. The nature of explosive, biological, chemical and radiological agents requires that planning for the event be based upon fundamental similarities but responses be tailored to significant differences between the agents.

7. Preparedness for biological and chemical events rests with early detection, surveillance and monitoring capabilities that are minimal at best, are not well coordinated, and will require intelligence and data transfers between heaith, medical, law enforcement and others that do not currently have the ability to share and transfer information and intelligence.

8. Pre-positioning and deploying health and medical detection, diagnostic and treatment resources will require mutual aid between jurisdictions and public and private entities that may not have existing relationships.

9. The phases of a WMD event in Maryland will follow the federal definitions, i.e. crisis management and consequence management.

   Crisis management — includes measures to identify, acquire, and plan the use of resources needed to anticipate, prevent, and/or resolve a threat or act of terrorism. The laws of the United States assign primary authority to the Federal Government to prevent and respond to acts of terrorism; State and local governments provide assistance as required. Crisis management is predominantly a law enforcement response. Based on the situation, a Federal crisis management response may be supported by technical operations, and by federal consequence management, which may operate concurrently.

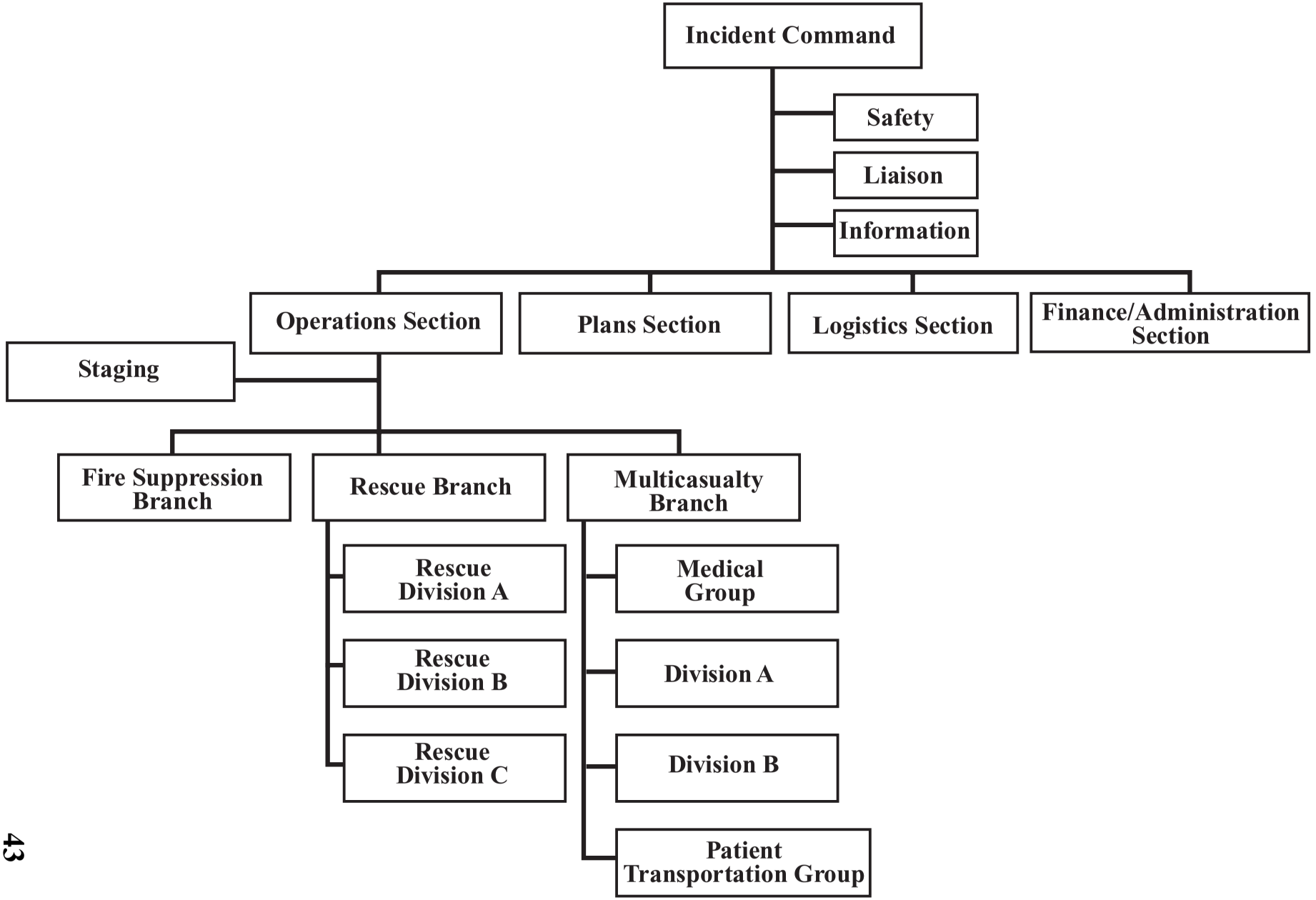
   Consequence management — includes measures to protect public health and safety, restore essential Government services, and provide emergency relief to governments, business and individuals affected by the consequences of terrorism. The laws of the United States assign primary authority to the States to respond to the consequences of terrorism; the Federal Government provides assistance as required.

10. The organization structure of handling a WMD event will utilize the Integrated Command Structure, Incident Command System (ICS), Unified Command System (UCS), or the Incident Management System (IMS) for both the public and private sectors, to assure public health and safety.

11. The ICS will be built in such a way as to transition the incident management from the local level to the statewide level to the federal level Emergency Operations Center (EOC) following the Joint Operations Center (JOC) and Joint Information Center.

12. The JOC is organizationally co-located with MEMA with pre-identified and pre-positioned technical and professional health and medical advice and support available to it.

James R. Stanton 4/5/99


Incident Command
Safety
Liaison
Information
Operations Section
Plans Section
Logistics Section
Finance/Administration Section
Staging
Fire Suppression Branch
Rescue Branch
Multicasualty Branch
Rescue Division A
Rescue Division B
Rescue Division C
Medical Group
Division A
Division B
Patient Transportation Group

STATE ORGANIZATIONAL CHART