FAX to
Heather Christenson
202-334-1978

E-20

US Response to Possible Bioterrorism

National Academy of Sciences
2 May 2000

D.A.Henderson, M.D.,M.P.H.
University Distinguished Service Professor
The Johns Hopkins University

The symposium today has dealt at length with the subject of bioterrorism. It is now widely acknowledged that the biological weapons, in terms of destructiveness and in the generation of panic and civil disorder could produce an effect that is equivalent to that of a nuclear weapon. Many national leaders have expressed this concern. They include the President of the United States, General Colin Powell, the Rudman-Hart United States Commission on National Security, Senator John Warner, Secretary William Cohen and many more. From national experts in the field, you have today learned of the historical and technical aspects of biological weapons, the nature of the threat, possible future challenges and what might be done in terms of international initiatives to limit such weapons.

Several weeks ago, I was asked to offer an additional paper describing the current status of the civilian response to this challenge. I hesitated because it is near impossible to summarize succinctly the status of what is best characterized as a miscellaneous array of fragmented, poorly coordinated initiatives, some of which are ill-considered at best and

many of which are floundering. At this time, however, it seemed to me that both the importance of the threat and this audience deserved an independent accounting with an emphasis more on candor than diplomacy. Let me cut to the conclusion by stating, in brief, that the threat is sufficiently serious and our response to date so inadequate, indeed dysfunctional, that a reconsideration both of strategy and structure are indicated.

There is, as yet, no agreed upon national strategy or plan to deal with bioterrorism. Close examination of optimistic program reports provided by federal, state and local agencies and departments generally reveal little more than superficial generalities and initiatives of doubtful utility that have not been critically evaluated. Some of the most potentially relevant and needed programs are only now just beginning. We are today, in fact, little better prepared to deal with the challenges of bioterrorism than we were five years ago when Presidential Decision Directive 39 was issued.

If we are to address the problem effectively, it is important to understand why we face this state of affairs. There are several reasons. Most important has been the failure by policy makers to understand that the ultimate manifestation of the release of a biological agent is an epidemic. Release of a chemical agent or the occurrence of an explosion results in a visibly dramatic event, usually with casualties. It requires the "sirens and flashing lights" type of intervention by emergency rescue teams, fire fighters and law enforcement personnel. They are needed to

evacuate the wounded, to decontaminate and to secure the site. Such persons are now commonly referred to as "first responders".

Release of a microbial aerosol on the other hand would almost certainly go unnoticed. It would be silent, invisible, odorless and tasteless. Days to weeks later, persons ill with the disease -- be it smallpox or plague or anthrax -- would begin appearing in emergency rooms and doctors' offices. As the cases mounted, public health officials would be summoned to diagnose cases, to identify the origin of the epidemic and to organize control measures. The first responders would not be fire and police personnel but physicians, nurses and public health officials. This may seem self-evident to you and it is perfectly clear to us in the medical field but I can assure you that it is a fact still little understood by many in national and state leadership positions.

Until recently, strategic planning, program implementation and research related to bioterrorism have been dominated by those whose backgrounds are in fields other than medicine and public health -- by persons with little or no knowledge of infectious diseases and rarely any who have ever dealt with an epidemic. As in today's program, an occasional token physician or public health professional has been included but primary direction has been provided by those who best understand military strategy, chemistry, physics, political science, arms control, law enforcement and fire fighting. Although well-intentioned, the planners, not surprisingly, have launched programs appropriate to the threats with which

they are familiar -- chemical and nuclear weapons. Only recently has it become apparent that the biological challenge is very different in all respects -- in terms of the needed response, in terms of appropriate research, in terms of intelligence requirements and in terms of arms control initiatives.

Specific examples help to illustrate the situation. The Domestic Preparedness Program of the 1996 Defense Against Weapons of Mass Destruction Act included as one of its key initiatives, the formation of so-called Metropolitan Medical Strike Teams (MMSTs) which are intended to be constituted, trained and equipped in each of 120 cities. The Department of Defense was given the lead responsibility for implementing this program. By the end of this year, the program is expected to have reached 72 cities. The training is fundamentally similar to that provided to the already numerous hazardous material teams that throughout the country now deal routinely with accidental chemical spills and leaks of all sorts.

The Domestic Preparedness program assumed that the training relevant to handling a chemical release would be equally relevant to dealing with an epidemic resulting from the release of a microbe. The word "chembio" was and is routinely used. "Chembio" is a thoroughly regrettable word as the threats and the responses called for could not be more different. The program has not gone well, and now, in a partial mid-course correction, the effort is being recast as a planning exercise to incorporate initiatives pertaining to the biological threat. The cities are

now being given funds both for planning and equipment but no one has considered how these initiatives will relate to newly initiated state planning efforts. State programs are now being funded and coordinated by the Centers for Disease Control. That Center, of course, has traditionally dealt with epidemic preparedness and emergencies. The confusion grows because city-based Domestic Preparedness programs are run primarily through the emergency medical services that have no responsibilities for dealing with epidemics. The CDC-sponsored programs are run through the State Health Departments that traditionally do deal with disease outbreaks.

Most difficult to understand is the fact that for all the planning and training efforts that have been supported and the substantial sums of money expended, no systematic effort has yet been made to incorporate hospitals into the planning process. Our Center very recently held the first pilot conference with hospitals to explore the principal issues pertaining to bioterrorism and the handling of mass casualties. This was followed by an expanded conference convened by the American Hospital Association. The unanimous conclusion was that, as of today, no US hospital is prepared to deal with community-wide disasters for a whole host of financial, legal and staffing reasons. Solving this problem will not be easy. There will be significant costs for expanding staff and staff training to respond to abrupt surges in demand for care, for outfitting decontamination facilities and rooms to isolate infectious patients, to say nothing of the costs of providing such as respirators and emergency

drugs. What specifically will be required and how it is to be paid for has yet to be defined.

Yet another program is about to begin under the aegis of the National Guard. It plans to train and equip what have been called Rapid Assessment and Initial Detection Teams-- (RAID teams). They are now being renamed "Civil Support Teams". In all, some 27 full-time 22 person units have been authorized and more than 50 are expected eventually. Such teams presumably are intended primarily to respond to chemical and explosive incidents. However, it is unclear as to how such teams, widely based as they must be, could possibly mobilize and reach the scene of a chemical release within the critical first few hours when early diagnosis and intervention could produce meaningful results. Meanwhile, neither I nor any other epidemiologist with whom I have discussed preparedness issues can imagine what possible function such teams would have in dealing with an epidemic.

Until the past fiscal year, no funds were provided to the Department of Health and Human Services to support the development of appropriate programs for detection, diagnosis and epidemic control in the event of a bioterrorist incident. Rather, funds were assigned initially, almost in their entirety, to the Departments of Defense, Justice and Energy. The Public Health Service's Centers for Disease Control, the lead federal agency for dealing with epidemic human disease was assigned no funds and, until a year ago, CDC had no identified program to deal with the problem.

Likewise, the nation's principal biomedical research agency, the National Institutes of Health, had neither funds nor a program for bioterrorism research until roughly a year ago.

The first serious efforts to implement a civilian program to counter bioterrorism emerged in the Spring of 1998. The President requested of Congress $175 million in support of activities to be initiated through the Department of Health, a request that received bipartisan support.

The primary thrust of the Public Health Service's strategy is to strengthen the state and local health infrastructure to enable rapid detection of cases and response. This involves the development of multi-component plans specific to local areas. They are, in turn, expected to be integrated with resources and initiatives of federal and state agencies: 1) The education of primary care givers and public health staff as to the characteristic clinical findings of agents that might be used; 2) The development of surveillance systems for early detection of cases and identification of those at risk; 3) Individual hospital and regional plans for caring for mass casualties; 4) Development of a laboratory network capable of rapid diagnosis of the principal agents; 5) Planning for the stockpiling and dispersal of large quantities of vaccines and drugs.

The plan, published only last week, provides only broad guidelines and must yet undertake the difficult task of elaborating these in detail sufficient to guide operations. They will need to be specifically adapted for individual state and local needs given the very different character of

political, health and medical structures in different parts of the county. Such efforts are only just beginning as funds for states reached them little more than nine months ago. However, It is already abundantly clear that far more resources than are now provided will be needed to adequately bolster our long-neglected state and local public health infrastructure. Meanwhile, the CDC program itself is not the most robust of structures for providing coordinated planning and direction. Rather, it is still an office buried within one of the CDC Centers with funds and operations matrixed across a number of other Centers. Clear impetus and definitive direction for a priority program is difficult at best to achieve with such matrix leadership.

Efforts to develop needed stockpiles of both drugs and vaccines have begun but they are not yet proceeding with the sense of urgency that one would expect in view of the threat involved. After protracted delays, a contract for the production of 40 million doses of smallpox vaccine is expected to be awarded this summer to supplement the present reserve of 150,000 vials. Unfortunately, three years, perhaps more, will be needed before the new supplies of vaccine can begin to be delivered. Research is in progress to develop a second generation recombinant anthrax vaccine, a vaccine that could conceivably induce satisfactory immunity after only two or three doses but this, too, is many years away, unless its development is assigned a far higher priority than at present.

A comprehensive research agenda to better deal with chemical and biological terrorism was developed by the Institute of Medicine and the National Research Council and published last year. It offers a varied menu of possible initiatives. Some recommendations are being implemented and progress has been made in some areas. To date, the principal agencies are the Departments of Defense and Energy joined, more recently, and with considerably less funding by the Public Health Service. There is a private sector component as well.

However, the research initiatives, like the other components of the bioweapons defense program, could be substantially improved were there a strategy and common understanding of the practical needs of the civilian program as defined by medical and public health professionals with practical experience. Too many of the research initiatives now appear to be developing solutions for problems that do not exist. Given the gravity of the problem, a further effort to better define biomedical research needs and policies to fund such research seem warranted.

In sum, a considerable expenditure of funds and energy has actually produced very little of relevance for dealing with the consequences of bioterrorism. However, the past 12 months have witnessed the nascent beginnings of a somewhat better focussed and more rational strategy. The foundation of its success rests in the strengthening of a seriously frayed public health infrastructure and in reestablishing effective working linkages between the public health and

medical communities. An effective response program must also encompass close working relationships with political authorities, law enforcement personnel, the media, and a host of public and private agencies. Working networks of this type require time to establish and must be regularly exercised if they are to function well in an emergency. Standby emergency teams are clearly not the answer, especially for bioterrorism, given the belief that such events in any given area are expected to be infrequent to rare, although potentially catastrophic should they occur.

Fortunately, the need for an emergency response to bioterrorism meshes neatly with growing concerns about the increasing problems of new and emergent infections -- West Nile encephalitis, Hong Kong influenza, HIV/AIDS, bovine spongioform encephalitis, increasing food borne disease outbreaks and growing numbers of antibiotic resistant microbes. The threat of bioterrorism is not going to disappear and new and emergent agents are likewise going to be a fact of life. Their manifestations will be in human suffering and death. We have the power to detect such cases early and to limit the disease and death that have throughout history marked human kind's encounters with infectious agents. If we fail to muster the will to build the systems which are needed to detect and counter disease outbreaks in their early stages, we may look forward to another AIDS epidemic or perhaps it will be pandemic influenza or smallpox.