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Buying Biosafety — Is the Price Right?

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On September 30, 2003, Boston University and the University of Texas at Galveston were each awarded $120 million by the National Institute of Allergy and Infectious Diseases to build a biosafety level 4 laboratory. Nine regional biocontainment laboratories were funded along with these two national biocontainment laboratories. In announcing the awards, Secretary of Health and Human Services Tommy Thompson described them as "a major step towards being able to provide Americans with effective therapies, vaccines and diagnostics for diseases caused by agents of bioterror as well as for naturally occurring emerging infections."[1]

The funding was provided by the Department of Homeland Security. Of the department's $37.7 billion budget for 2003, $5.9 billion, or 16 percent, was devoted to defending the United States against bioterrorism. Of this amount, $2.4 billion was allocated to support scientific research and development to "provide America with the medical tools necessary to effectively respond to a biological attack."[2]

The University of Texas and Boston University, which won a competitive bidding process to receive the awards, have promised $50 million in matching funds. In Boston, estimates are that the laboratory will generate up to $1.7 billion in research grants during the next 20 years. The university anticipates the creation of 1960 new jobs, of which about 600 will be permanent research positions and the rest will be in construction work.

Economic benefits notwithstanding, there has been considerable popular opposition to such projects. Citing U.S. environmental law, community groups in California and New Mexico are suing to stop the expansion of biodefense facilities. The University of California at Davis competed for funding but was unsuccessful, at least in part because of community opposition: activists sent more than 1200 pages to the National Institutes of Health documenting their opposition, and the Davis City Council voted unanimously against the project. The University of Texas, which has been actively engaged in discussions with the community since 1997, has nevertheless faced public concern about building the facility in an area that is prone to hurricanes; the university has also been fighting freedom-of-information requests for details of its biodefense research.

In Boston, in spite of the support of the mayor, the governor of Massachusetts, and most state and local politicians, the project has met with vocal opposition from some community groups. The opponents argue that the facility would pose a health threat because of the possible release of deadly pathogens and the risks associated with transporting dangerous materials through busy city streets. They argue, moreover, that the presence of the facility would make Boston a target for terrorists. They also maintain that those who live in the community would not be qualified for the highly skilled jobs that would become available. Others oppose the facility on the grounds that much of the proposed research would be prohibited under Boston's 1994 public health regulations. Still others fear that the research in biocontainment laboratories undermines the international nonproliferation regime and particularly the 1975 Biological and Toxin Weapons Convention (BWC), which prohibits research on offensive biologic weapons.

Figure. CDC Researchers in a Biosafety Level 4 Laboratory, Atlanta.
Courtesy of James Gathany, Centers for Disease Control and Prevention (CDC).

These critics miss the point. There are real questions to be asked about the wisdom of establishing these costly facilities, but the critics are not asking them. The research could probably be squared with the BWC, which does permit limited defensive research on biologic weapons. Public health regulations are always subject to revision. With a concerted campaign to guarantee specific benefits to the community and present the readily available empirical evidence on the safety of high-security laboratories, Boston University could alleviate most of the community's worries, as the University of Texas has done. Moreover, the notion that terrorists would target a city because it hosts a biodefense facility flies in the face of everything we know about the practices of terrorists. Terrorists operate under conditions of enormous uncertainty and historically have been very conservative in their tactics. They prefer soft targets — a nightclub in Bali or commuter trains in Madrid — to protected sites such as a secure laboratory or military facility. Moreover, they like their victims to be as random as possible, because if no one is targeted then no one is safe, and the terror is more widespread.

The construction of these facilities may actually increase the likelihood of a terrorist attack involving the use of biologic weapons, but not in a way that the critics have predicted. The key scarcity among terrorists is a dearth of adherents with the skills to understand and deploy biologic weapons. The operation of these facilities will require the training of scores, if not hundreds, of people to work with deadly pathogens. By training more experts in biologic weapons, we are increasing the probability that one or more of them will have sympathies with a terrorist organization. There is much we still do not know about the anthrax attacks of 2001, but the anthrax has apparently been traced to a biosafety level 4 laboratory in Fort Detrick, Maryland, although there is no evidence of any link to foreign terrorists.

There is a real possibility that terrorists will use biologic weapons, but the probability is lower than media speculation suggests. Biologic agents are not easy weapons for terrorists to use. The Aum Shinrikyo cult in Japan, the group that released sarin gas in the Tokyo subway in 1995, was unusual because of the number of skilled scientists among its members, its immunity from police surveillance because of its religious affiliation, and the extent of its resources. Yet Aum Shinrikyo tried for years to create a successful biologic weapon and eventually gave up in favor of easier chemical weapons. Even then, the group's deployment of sarin gas succeeded in killing only 12 people, despite 12 attempts in five years. Moreover, even with the use of highly refined anthrax in the United States, only 5 people died and 22 were sickened, as compared with the far greater casualties caused by far more mundane weapons. Terrorists prefer simple, easily accessible weapons, such as fertilizer, cellular telephones, box cutters, and jet fuel, to complex and hard-to-deploy weapons such as biologic and chemical agents. Ironically,

then, the effort to reduce the threat of biologic weapons could actually increase it by rendering more people competent in their use.

Would our vulnerability to a bioterrorist attack be more likely to be reduced by other expenditures? With unlimited resources, one would fund all good ideas, but in a time of budgetary restraints, trade-offs must be made. One relevant program that has been chronically underfunded and poorly managed is the Cooperative Threat Reduction (CTR) program of the Department of Defense. This program was established in 1991 to secure sites housing nuclear, chemical, and biologic weapons in the former Soviet Union. The Soviet Union had the most intensive biologic-weapons program in history, and stores of dangerous pathogens such as anthrax, smallpox, and Ebola virus remain in unsecured sites in areas where terrorist groups with a declared interest in using such weapons have been increasing their activities. Four years after the CTR began focusing on the security of such facilities, security projects are under way at only 4 of the 49 known biologic-weapons sites, and only 2 of these sites have been secured against external threats.[3] The CTR has been funded at approximately $1 billion per year since the 1990s, in spite of the recommendation of a bipartisan panel in 2001 that the funding be tripled. Securing stocks of dangerous pathogens that are known to exist would enhance our security far more than developing new facilities in which to conduct research on new stocks.

The construction of the new laboratories will undoubtedly carry substantial economic benefits for the community and important spinoff benefits for medical research and public health. It has not been demonstrated that these laboratories will reduce the risk of terrorist attack, nor that they are the most cost-effective means of enhancing our security with regard to bioterrorism. Medical research will benefit from the infusion of government funding, but the best medical research is likely to be driven by the priorities identified by medical researchers, not by what politicians think may be in the minds of terrorists.

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Pediatric Antecedents of Adult Cardiovascular Disease — Awareness and Intervention

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Hypertension, which is common among adults in the United States, has for several decades been recognized as a cardiovascular risk factor. Since blood pressure tends to "track" along the same percentile throughout life, children with higher blood pressures are more likely to become adults with hypertension. Therefore, the early recognition of the seeds of hypertension is crucial for introducing early interventions and reducing cardiovascular morbidity and mortality among adults. The potential benefits of initiatives targeting such early recognition are obvious.

One such initiative, Healthy People 2010, has been launched by the U.S. government with the declared "overarching goals" of increasing the quality and duration of healthy life and eliminating disparities in health. The prevention of cardiovascular diseases is targeted specifically, since a large segment of the adult population has hypertension and is consequently at risk for serious disease. As part of the mechanism to achieve the stated goals, the government has developed a network of Cardiovascular Disease Enhanced Dissemination and Utilization Centers, created as performance-based projects with the dual aim of educating high-risk communities and promoting heart-healthy behavior in