

NIH Blue Ribbon Panel for the Risk Assessment of the National Emerging Infectious Disease Laboratory at Boston University Medical Center

Working Group of the Advisory Committee to the Director

Summary of Public Meeting May 2, 2008

The NIH Blue Ribbon Panel for the Risk Assessment of the National Emerging Infectious Disease Laboratory (NEIDL) at Boston University (BU) Medical Center (Blue Ribbon Panel [BRP]), a working group of the Advisory Committee to the Director (ACD) of the National Institutes of Health (NIH), was convened for its second meeting at 8:30 a.m. on May 2, 2008, on the NIH campus, Building 31-C, Conference Room 10, Bethesda, Maryland. Dr. Adel Mahmoud (Chair) presided. In accordance with Public Law 92-463, the meeting was open to the public from 8:30 a.m. until 10:00 a.m. on May 2, 2008. Notice of this meeting was published in the *Federal Register* on April 21, 2008 (73 FR 21359). Topics covered at this meeting included a review of the Statement of Task given to the National Research Council (NRC) and an NRC Committee presentation of the letter report regarding strategies to address issues concerning the Draft Supplemental Risk Assessments and Site Suitability Analyses (DSRASSA) for the NEIDL.

Panel Members Present

Donald S. Burke, M.D., University of Pittsburgh
Stephen Eubank, Ph.D., Virginia Polytechnic Institute and State University
Vicki S. Freimuth, Ph.D., University of Georgia
George Friedman-Jiménez, M.D., Bellevue Hospital Center
Margaret A. Hamburg, M.D., Nuclear Threat Initiative
Karen A. Holbrook, Ph.D., University of South Florida
Dennis L. Kasper, M.D., Harvard Medical School and Brigham and Women's Hospital
Johnnye Lewis, Ph.D., University of New Mexico
Adel Mahmoud, M.D., Ph.D., Princeton University (Chair)
Mary E. Northridge, Ph.D., M.P.H., Columbia University
Jean Patterson, Ph.D., Southwest Foundation for Biomedical Research
Mark Gregory Robson, Ph.D., M.P.H., Rutgers, The State University of New Jersey
Samuel L. Stanley, Jr., M.D., Midwest Regional Center of Excellence for Biodefense and Emerging Infectious Diseases Research and Washington University in St. Louis
Wayne Thomann, Dr.P.H., Duke University/Duke University Medical Center

Ex Officio Members Present

Rima F. Khabbaz, M.D., Centers for Disease Control and Prevention

Speakers Present from the National Research Council

John F. Ahearne, Ph.D., Sigma Xi Center
Thomas W. Armstrong, Ph.D., TWA8HR Occupational Hygiene Consulting LLC
Gerardo Chowell, Ph.D., Arizona State University
Margaret E. Coleman, M.S., Syracuse Research Corporation
Gigi Kwik Gronvall, Ph.D., Center for Biosecurity of University of Pittsburgh Medical Center
Paul A. Locke, J.D., Dr.P.H., Johns Hopkins University
Jonathan Richmond, Ph.D., Jonathan Richmond & Associates
Gary Smith, D.Phil., University of Pennsylvania

NIH Staff Present

Amy P. Patterson, M.D., Office of the Director, NIH

Others

Approximately 35 people attended this BRP meeting.

I. Welcome and Opening Remarks/Dr. Mahmoud

Dr. Mahmoud, BRP Chair, called the meeting to order at 8:30 a.m. on May 2, 2008. BRP members and presenters introduced themselves.

Dr. Mahmoud restated the purpose of the BRP, which is to provide scientific and technical advice to the NIH regarding the construction and operation of a national biocontainment laboratory at the BU Medical Center. Courts, the local community, and the public have voiced comments and concerns. The major task of the BRP is to provide independent scientific advice regarding the scope of any additional risk assessments that might be necessary and regarding effective risk communication. The BRP will be especially mindful of issues related to National Environmental Policy Act requirements, environmental justice, community liaison, and risk communication. Dr. Mahmoud reiterated the BRP's specific tasks and enumerated the specific materials provided to the BRP by the NIH. The BRP is established as a Working Group of the standing Advisory Committee to the Director (ACD), NIH. As such, the BRP's recommendations will be conveyed to the NIH Director through the ACD. Collectively, BRP members provide wide-ranging expertise that is key, given the complexity of the issues.

II. Review of Statement of Task Given to the National Research Council/Dr. Mahmoud

Dr. Mahmoud reviewed the history of the NRC committee, which was originally convened in 2007 to provide technical input on the DSRASSA as requested by the Massachusetts Executive Office of Energy and Environmental Affairs. The Committee's letter report, released in November 2007, was critical of the DSRASSA, raising specific concerns about agent selection, scenario development, modeling methodology, consideration of environmental justice issues, and risk communication. To obtain input about where the NIH might go from here, the NIH requested that the NRC committee reconvene to prepare a brief letter report summarizing its views on the scope (e.g., worst-case scenarios, alternative sites, biosafety level 3 [BSL-3] and BSL-4 facilities, selection of agents) and methodological approaches that would improve any additional risk assessment studies the NIH prepares.

The NRC responded to this charge and in late April 2008 conveyed a brief letter report of the committee's thoughts on additional NIH risk assessments and methodological approaches. Through this letter report and at today's BRP meeting, the NRC committee provided input on analytical approaches, risk assessment methodologies, and particular scenarios that the NIH could include in its work plan to address judicial requests and public concerns about the risks associated with the siting and operation of the NEIDL.

III. NRC Committee Presentation of the Letter Report Regarding Strategies to Address Issues Concerning the DSRASSA for the NEIDL/Dr. Ahearne, NRC Committee Chair; Dr. Armstrong, and Dr. Gronvall

Dr. Ahearne provided an overview of the committee's 2008 letter report. He clarified the scope of the letter report: the committee did not review the original NIH Final Environmental Impact Report or other risk assessment documents, its suggestions were based on a review of the DSRASSA and on improving the risk assessment presented in that report, and it did not conduct an independent assessment of the risks

associated with the proposed facility or possible alternative locations. He reiterated what had been noted in the first letter report—that the NRC committee is not saying that BSL-4 laboratories should not be built. These facilities are operated safely in both rural and urban areas; however, selection of sites should be supported by detailed analyses and transparent communication of the available scientific evidence regarding possible risks.

The NRC committee's 2008 letter report is structured around three overarching questions:

1. What could go wrong? (Meaning, what might be the sequence of events that could cause an infectious agent to escape the laboratory, set up a chain of transmission, and cause infectious disease in the surrounding community?)
2. What are the probabilities of such a sequence of events?
3. What would be the consequences of such a sequence of events?

A. What Could Go Wrong?/Dr. Gronvall

Dr. Gronvall explained that the NRC committee purposely used language that is different from the “worst-case scenario.” She stated that it is the NRC committee’s opinion that “worst case” is not the best approach but, if the NIH does use this scenario, “worst case” must be defined clearly. The problem with constructing a “worst-case scenario” is that someone can always construct a “worse worst-case scenario.”

The NRC committee suggested two phases of analysis: (1) risk assessment based on a variety of plausible scenarios designed to allow a realistic assessment of risks associated with the NEIDL in general and to illuminate the comparative risks to the communities at the three sites evaluated in the DSRASSA and (2) analysis of a highly unlikely but still credible high-consequence event. The committee recommended that discussions of potential agent release include procedural or work practice failures, including those that lead to worker exposures and infections; biocontainment system and equipment failures; and an appropriate array of malevolent actions. Agents to consider for risk assessment should include agents with appropriately diverse transmission characteristics, and the NIH should consider clarifying which agents and forms of agents will *not* be researched at the NEIDL (for example, smallpox and dry, powdered agents).

B. What Are the Probabilities?/Dr. Gronvall

Dr. Gronvall explained that the NRC committee suggested including three statements of probabilities that parallel the potential agent release scenarios—procedural or work practice failures, including those that lead to worker exposures and infections; biocontainment system and equipment failures; and an appropriate array of malevolent actions. The NIH should consider updating previously generated quantitative measurements of safety records so that the most current information is made available.

The NRC committee suggested that the NIH assess how the characteristics of agents that might be studied influence the likelihood of four types of outcomes (in the event of a release): no subsequent transmission after a small initial pool of infection, little or no subsequent disease transmission after multiple exposures, limited transmission that is contained by public health measures, and amplified transmission.

Dr. Gronvall emphasized the NRC committee’s view that transparency is most important. The rationale for decisions and choices made in performing the analysis is key to understanding what has been done and what should be done.

C. What Would Be the Consequences?/Dr. Armstrong

Dr. Armstrong explained that the NRC committee suggested that the risk analyses start with qualitative assessments of the most likely outcomes for different diseases; this approach may be sufficient instead of detailed modeling. If there is a compelling rationale for using mathematical modeling, it must be done

credibly and transparently and to professional standards by an experienced team of epidemiological modelers and microbial risk assessors. The simpler the model, the more understandable it will be. Modeling results should be interpreted in light of the quality and strength of the data used to develop those results, and the strength of the science is key to acceptance of the model as a valid predictor of real-world experiences. The model-building procedure and the procedure for assigning values to parameters need to be clearly laid out and justified, and modeling should be accompanied by uncertainty analyses and sensitivity analyses.

Community characteristics should be taken into account in the risk assessment and analysis. Questions that should be considered include whether there is a high concentration of elderly, very young, and/or immune-compromised individuals and whether affected populations have equal access to supportive medical care. The NIH should use the wisdom accumulated in the published literature on effective risk communication.

IV. BRP Discussion

The following statements and conclusions emerged from the robust discussion period:

- “Appropriate array of malevolent actions” should include examples of animals that have escaped (a recent example in California and one at the NIH several years ago), an Animal Liberation Front break-in (discuss the safeguards in place to prevent such an event), and a disgruntled employee sprinkling radioactive material on food and water in the laboratories (include information about current increased attention to employees’ backgrounds). Commandos dropping from the sky or a bomb dropped from a plane are “too science fiction” to consider.
- The differences between risk assessment and threat assessment should be addressed.
- The NIH should be judicious about applying modeling and should consider using modeling only when the questions and data are appropriate and sufficient to generate a useful answer.
- The NIH should define what is meant by “worst-case scenario,” and that term should not be used unless a clear definition is provided. Other terms that might be more useful include “extreme scenarios that are barely conceivable” and “serious, highly unlikely, but still credible.” In the risk analysis profession, “worst-case scenario” is not used; in the field of nuclear reactor safety, it is a discredited term. Although this term was introduced in litigation and the court seemed enamored of it, going beyond credible risks to “worst-case scenarios” is neither helpful nor useful in forming the risk decision process. Although the court used that term, the NIH does not have to use that term in its response.
- The “worst case” could be defined as the worst case in history. The NIH could take real examples and show the possibilities of a repeat of such occurrences based on the current configurations and safety procedures of BSL-4 laboratories.
- “Acceptable risk” has been unpopular with communities, as a term and as a concept. The experience in Boston with BSL-3 laboratories may provide a useful database of risk estimates.
- Despite the fact that, in 80 years of BSL-4 laboratories, there has not been a single release, accident, or sickness, the argument of “it has never happened so it will not happen” is not believable. Before Three Mile Island and Chernobyl, the nuclear industry claimed that accidents were not possible. Therefore, using “highly unlikely but credible” risk language is more appropriate because it is more realistic and believable.
- The communities surrounding the BU Medical Center represent a competitive health care market with several strong health care providers, and BU is one of the main sources of health care. In

the first NRC report, the presence of excellent health care facilities was discussed; however, assumptions of health care utilization should be considered and included as part of the environmental justice evaluation.

V. Public Comment

Dr. Mahmoud requested that individuals wishing to make remarks sign up to do so at the check-in desk for this meeting.

Public attendees offered no comments.

VI. Next Steps/Dr. Mahmoud

Dr. Mahmoud outlined the next steps for the BRP, which will focus on developing study plans through a public meeting at the State House in Boston, Massachusetts, on May 16, 2008 (which will be videocast), and a presentation on June 6, 2008, to the NIH Advisory Committee to the Director.

VII. Adjournment

Dr. Mahmoud thanked the BRP members, the NRC speakers, and the NIH staff and adjourned the meeting at 10:00 a.m. on May 2, 2008.

[Note: This summary is based on notes taken at the meeting by a science writer and NIH staff members. More detailed information will be available in the minutes of this meeting. Actions approved by the BRP are considered recommendations to the ACD; therefore, actions are not considered final until approved by the ACD.]

Additional information about this Blue Ribbon Panel can be found at:
<http://www.nih.gov/about/director/acd/index.htm>.

Attachment: Roster NIH Blue Ribbon Panel

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