Draft Report of Two NSABB Working Groups: Proposed Biosecurity Oversight Framework for the Future of Science

National Science Advisory Board for Biosecurity Meeting
January 27, 2023

Working Group 1 Co-chairs: Syra Madad, DHSc, MSc, MCP
Gerald W. Parker Jr., DVM, PhD

Working Group 2 Chair: Dennis Metzger, PhD

NSABB Charge

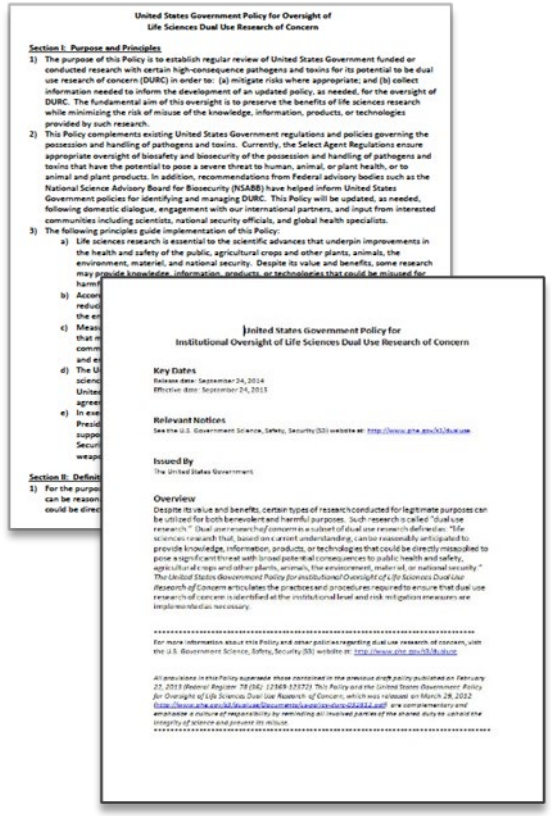
- **Phase 1 - P3CO Policy Evaluation - Evaluate and provide recommendations to the Office of Science and Technology Policy (OSTP) and the Department of Health and Human Services (HHS) on the effectiveness of the current oversight framework for research involving enhanced potential pandemic pathogens (ePPPs).**
  - ***OSTP Recommended Policy Guidance for Departmental Development of Review Mechanism for Potential Pandemic Pathogen Care and Oversight (P3CO)***
  - ***HHS Framework for Guiding Funding Decisions about Proposed Research Involving ePPPs***

NSABB Charge – Phase 1 P3CO Policy Evaluation (continued)

- **Evaluation should include:**
  - **Policy scope, in terms of preserving benefits of ePPP research while minimizing potential biosafety and biosecurity risks**
  - **Considerations for supporting ePPP research internationally**
  - **Balancing considerations regarding security and public transparency when sharing information about research involving ePPPs**
- **Consider Policy Guidance impact on research programs and institutions**

NSABB Charge Phase 2A – DURC Policy Review and Evaluation

- **Evaluate and analyze the U.S. Government federal and institutional policies for the oversight of dual use research of concern (DURC) to:**
  - **Evaluate effectiveness in achieving their intent**
  - **Evaluate impact on research institutions and U.S. Government's ability to support research**
  - **Identify implementation challenges**
  - **Evaluate effectiveness with regard to publication,**
  - **public communication, and dissemination of dual-use research methodologies and results**


United States Government Policy for Oversight of Life Sciences Dual Use Research of Concern

Section I: Purpose and Principles

United States Government Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern

Key Dates

Relevant Notices

Issued By

Overview

NSABB Charge Phase 2A – DURC Policy Review and Evaluation (continued)

- **Reevaluate DURC definition, considering advances in life sciences research and convergence with other scientific disciplines/sectors**
- **Evaluate effectiveness of DURC pathogen list and experimentation type construct to determine whether:**
  - **Approach sufficiently addresses future potential threats, across the spectrum of life sciences research**
  - **Approach is conducive to research risk-mitigation**
  - **Alternative approaches warrant consideration**

Phase 2B – DURC Policy Review and Evaluation

- **With regard to the Recommended Policy Guidance for Departmental Development of Review Mechanisms for Potential Pandemic Pathogen Care and Oversight:**
  - **Evaluate Section 8 "Future Commitments" and provide recommendations on possible P3CO Policy Guidance incorporation into policy frameworks associated with any recommended revisions of the DURC policies**
- **Throughout Phase 2, NSABB should consider flexible and adaptive governance approaches that:**
  - **Keep pace with scientific advances and evolving understanding of risks and benefits**
  - **Can coalesce and integrate existing governance guidance, or policy**
  - **Can be applied to mitigate risk not only from research of concern but other biosecurity and biosafety considerations**

NSABB Approach and Inputs to WG Deliberations

- NSABB Recommendations for the Evaluation and Oversight of Proposed Gain-of-Function Research (May 2016)
- NSABB public meetings (Jan. 2020 & Sept. 2022)
- NIH virtual meeting and listening sessions (Apr. & Jun. 2022)
- Federal department and agency representatives
- Research investigators and institutional administration & oversight staff
- National security experts
- Professional and scientific societies
- Publishing community
- Public comments

NSABB Working Group to Review and Evaluate Potential Pandemic Pathogen Care and Oversight (P3CO) Policy

Co-chairs: Syra Madad, DHSc, MSc, MCP
Gerald W. Parker Jr., DVM, PhD

Finding and Recommendation 1 - Potential Pandemic Pathogen (PPP) and Enhanced PPP (ePPP) Definitions

Finding

- **The current definitions of a PPP and enhanced PPP (ePPP) are too narrow. Overemphasis on pathogens that are both likely "highly" transmissible and likely "highly" virulent could result in overlooking some research involving the creation, transfer, or use of pathogens with enhanced potential to cause a pandemic.**

Recommendation

- **Amend USG P3CO policy to clarify that federal department-level review is required for research that is reasonably anticipated to enhance the transmissibility and/or virulence of any pathogen (i.e., PPPs and non-PPPs) such that the resulting pathogen is reasonably anticipated to exhibit the following characteristics that meet the definition of a PPP:**

  - **Likely moderately or highly transmissible and likely capable of wide and uncontrollable spread in human populations; and/or**
  - **Likely moderately or highly virulent and likely to cause significant morbidity and/or mortality in humans;**
    And, in addition
  - **Likely to pose a severe threat to public health, the capacity of public health systems to function, or national security.**

Finding and Recommendation 2 - Exclusions and Urgent Review

Finding

- **Assessments for the identification of ePPP research must be focused on the potential for an activity or a modification to involve or produce a pathogen that meets the characteristics for an ePPP and not on the specific experimental approach or method to be undertaken.**

Recommendation

- **Remove current blanket exclusions for research activities associated with surveillance and vaccine development or production. However, include and implement processes and procedures for urgent federal department level review and evaluation of ePPP research critical for public health or national security.**

Finding and Recommendation 3 - Enhanced Institutional Responsibility

Finding

- **Current P3CO policy does not adequately include roles for investigators and institutions in the identification, review, and ongoing oversight of ePPP research.**

Recommendation

- **Amend the USG P3CO framework to include and articulate specific roles, responsibilities, and expectations for investigators and institutions in the identification, review, and evaluation of research for potential involvement of ePPPs, taking into account existing review and oversight processes.**
- **Local, institutional compliance procedures must be better harmonized, strengthened where needed, and adequate technical and financial assistance provided.**
- **Designate a USG office with adequate technical and financial support to assist investigators and institutions in the review process to ensure consistent evaluation of PPP status.**

Finding and Recommendation 4 - P3CO Policy and Implementation Directives

Finding

- **The additional review process outlined under the P3CO framework is generally appropriate. However, implementation directives and guidance to funding agencies, research institutions, and investigators are needed to facilitate more consistent and efficient implementation and ongoing oversight.**

Recommendation

- **Amend the OSTP P3CO Policy Guidance to be consistent with the Belmont Report and amend the HHS P3CO Framework to clarify that the seven categories of research outlined must be given extra care and considered throughout the research proposal, review, evaluation, and ongoing oversight process.**

Recommendation 4 Continued - P3CO Policy and Implementation Directives

Recommendation

- **Develop principles and guidelines that can be applied and implemented to ensure, 1) there are no feasible alternative methods of obtaining the relevant benefits from proposed research that poses less risk; and 2) unnecessary risks have been eliminated and the remaining risks are justified by the potential benefits.**
- **Develop an implementation directive/plan, additional guidance, educational materials, and standard operating procedures, including ongoing review, evaluation, and oversight procedures and criteria that can be used or adapted by funding institutions, research institutions, and investigators when implementing the policy.**

Finding and Recommendation 5 - Transparency and Accountability

Finding

- **The review group constituted by HHS appears to have the appropriate expertise and the process appropriately protects potentially sensitive personal and proprietary information and facilitates open discussion. However, increased transparency in the review process is needed to engender public trust in the review and oversight processes.**

Recommendation

- **Take additional steps to increase transparency in the review process at the federal and local levels, including sharing a summary of key determinants that informed ePPP research funding decisions.**

Finding and Recommendation 6 - Animal and Plant Pathogens

Finding

- **The focus of the current P3CO framework on pathogens that are likely to cause disease in humans is appropriate. However, an analogous oversight framework is lacking for research involving enhanced animal or plant pathogens.**

Recommendation

- **Consider development of analogous policies and processes for identification, review, evaluation, and ongoing oversight of relevant research involving enhanced pathogens likely to pose severe threats to human health, food security, economic security, or national security by its impacts on animals or plants or to animal or plant products.**

Finding and Recommendation 7 – International ePPP Research

Finding

- **Global collaboration is vital to U.S. pandemic preparedness and response and broader global health security. Support for international ePPP research by the U.S. should be coupled to processes equivalent to requirements that govern domestic research in the U.S.**

Recommendation

- **The conduct of ePPP research at international institutions receiving USG support for life sciences research, either directly or indirectly (e.g., via subawards or contracts), must also be subject to review, evaluation, and ongoing oversight procedures that are equivalent to domestic U.S. policies and procedures.**

NSABB Working Group to Review and Evaluate Dual Use Research of Concern (DURC) Policies

Chair: Dennis Metzger, PhD

Finding and Recommendation 8 - Effectiveness of the Current DURC Policies

Finding

- **USG DURC policies appear to have achieved the original intent to establish and strengthen a shared system of review and oversight between the federal and local institutional levels to identify DURC and mitigate potential risks. However, the scope of the framework limits its success to a small fraction of the life sciences research enterprise.**

Recommendation

- **Continue to facilitate sharing of experiences and best practices regarding DURC policy implementation.**
- **Any updates to USG DURC policies, particularly updates regarding the scope of research subject to review and/or the relevant entities to which the policies apply, must involve relevant stakeholders and be accompanied by robust USG outreach and education and an adequate implementation period.**

Finding and Recommendation 9 – DURC Definition

Life sciences research that, based on current understanding, can be reasonably anticipated to provide knowledge, information, products, or technologies that could be directly misapplied to pose a significant threat with broad potential consequences to public health and safety, agricultural crops and other plants, animals, the environment, materiel, or national security.

Finding

- **A determination of whether research meets the definition of DURC requires assessments based on the best available information at the time but entails uncertainty.**

Recommendation

- **Remove the term "directly misapplied" from the DURC definition, which may not be beneficial to and could potentially limit the identification and oversight of research that may pose significant threats, whether deliberate or accidental in nature.**

Finding 10 - DURC Policy Scope

Finding

- **The current scope of the DURC policies is limited and the list-based approach to oversight is inherently less adaptive than other potential approaches. Some institutions have voluntarily expanded the scope of research reviewed for potential DURC to include the entirety of their pathogen research portfolios. However, this entails additional burden that varies based on the nature and size of the institution's or funding agency's pathogen research portfolio.**

Recommendation 10 - DURC Policy Scope

Recommendation

- **Expand the scope of research requiring review for potential DURC to include research that directly involves any human, animal, or plant pathogen, toxin, or agent that is reasonably anticipated to result in one or more of the seven experimental effects.**
- **Establish mechanisms and processes to help ensure that investigators and institutions are executing their responsibilities effectively**
- **Review of bioinformatics, modeling, and other in silico experimental approaches and research involving genes from or encoding pathogens, toxins, or other agents for potential DURC is not recommended at this time. However, investigators and institutions should be aware of the potential risks of such research and continued assessment of the risks and benefits associated with advances and applications of such approaches must inform the ongoing evaluation of the scope of these policies.**

Finding and Recommendation 11 – Responsible Communication

Finding

- **Responsible communication of research methods and results is a central component of mitigating risks associated with DURC. Most of the research subject to the DURC policies is fundamental research and the findings are intended to, and can be, communicated responsibly if identified early in the research life cycle and adequate consideration is given to the timing, modes, and venues of communication, among other risk mitigation measures.**

Recommendation

- **Engage relevant stakeholder and publishing groups to encourage development and adoption of more uniform editorial policies, review processes, and best practices for identifying material that may raise significant biosecurity and biosafety concerns and facilitate the sharing of best practices and guidelines for assessing options for mitigating risks.**

Finding and Recommendation 12 - Enhanced Oversight of Non-Federally Funded Research

Finding

- **The potential biosafety and biosecurity risks associated with ePPP research and DURC justify USG efforts to introduce oversight of relevant research activities, regardless of the funding source.**

Recommendation

- **In line with the NSABB's 2016 recommendation regarding ePPP research, promote and ensure that all research meeting the scope of these policy frameworks conducted within the U.S. and/or supported by the U.S. government be subject to equivalent oversight regardless of funding source.**

Finding and Recommendation 13 - Incorporation of ePPP Research and DURC Oversight

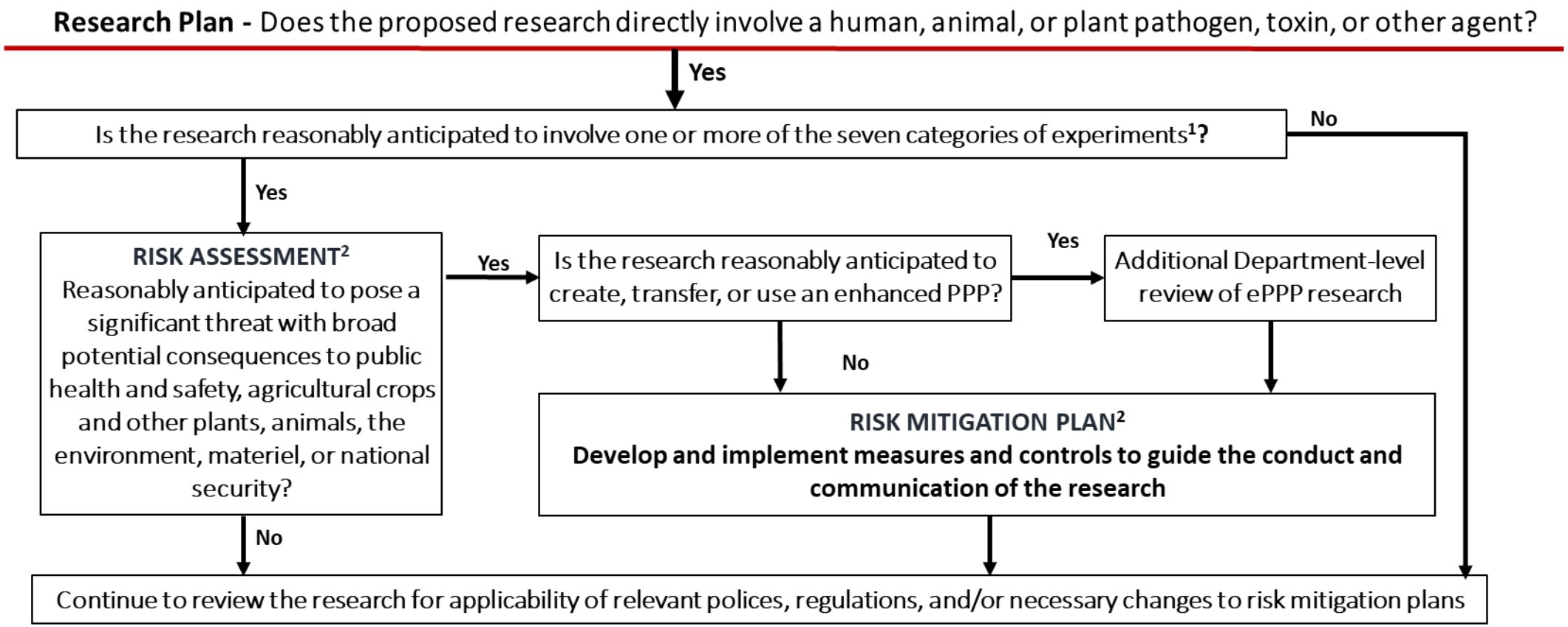
Finding

- **There are substantive overlaps between the DURC and ePPP oversight frameworks, including the overarching intents, as well as the entities involved in policy implementation. Current differences between the frameworks, including the timing of the initial assessments and the roles for investigators and institutions need to be reconciled.**

Recommendation

- **Develop an integrated approach to oversight of research that raises significant biosafety and biosecurity concerns, including ePPP research and DURC. Clearly articulate federal, institutional, and investigator responsibilities in the assessment and identification of proposed and ongoing research, and minimize the potential for duplicative or parallel institutional or federal review processes.**

Conceptual approach to oversight of research that raises significant biosafety and biosecurity concerns as described in this report. This process includes federal, institutional, and investigator responsibilities at different stages throughout the research lifecycle.



1. See *USG Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern*
2. See *Biosafety in Microbiological and Biomedical Laboratories* and *DURC Companion Guide* for guidance

Public Comment