



May 23, 2024

Jeanne Marrazzo, M.D., M.P.H.
Director
National Institute of Allergy and Infectious Diseases
5601 Fishers Lane
Rockville, MD 20892

Re: National Institute of Allergy and Infectious Diseases Strategic Plan Request for Information

Dear Director Marrazzo:

Thank you for the opportunity to provide input on the National Institute of Allergy and Infectious Diseases (NIAID) Strategic Plan updates.

The American Lung Association is the oldest voluntary public health association in the United States, representing the more than 34 million individuals living with lung disease. The Lung Association is the leading organization working to save lives by improving lung health and preventing lung disease through research, education and advocacy.

The Lung Association is pleased to share our perspective on critical research priorities, as well as to provide our thoughts on challenges or barriers that need to be addressed to support progress in any of the updated priority areas. The Lung Association offers the following input on NIAID's Strategic Plan:

Priority 1: Advance foundational research on the immune system, host-pathogen interactions, and pathogen biology.

The Lung Association supports the prioritization of foundational research on the immune system, particularly in understanding immune responses. While it is known that natural immunity can provide protection to patients who have been exposed to a disease, gaps remain in our understanding of the strength of natural immunity and how long natural immunity from disease exposure lasts (for example, a lack of understanding exists between pneumococcal carriage and the development of natural immunity). As vaccine technology continues to advance, it is important that research on natural immunity clearly establishes the effectiveness of active immunity through vaccinations when compared to natural immunity. NIAID needs to support more studies to understand how immune responses differ based on race, ethnicity, gender, and disability status, among other factors, to better protect these groups from severe illness.

Additionally, NIAID should prioritize further research on the immune system focused on patients with comorbidities and multiple risk factors. NIAID should focus on work to improve our understanding of how certain diseases and risk factors interact, such as the established links between respiratory syncytial virus (RSV) and adults with chronic kidney disease.¹² In order to



protect patients with underlying health conditions or risk factors, research on how pathogens affect immunity and interact with other conditions should be prioritized.

Priority 2: Apply foundational knowledge of the complex interactions between microbes and the immune system to develop and test medical countermeasures against known infectious diseases (non-HIV/AIDS).

The Lung Association supports NIAID's continued work to fund research that leads to the development of new medical countermeasures against infectious diseases. In addition to research on vaccinations, NIAID should prioritize other methods of disease prevention and treatment. NIAID should support more research on applications for monoclonal antibody therapies, which can be used when treating lung diseases and other serious conditions. NIAID should also prioritize development of antiviral treatments that can combat diseases once patients are infected or for post-exposure antiviral chemoprophylaxis of asymptomatic close contacts.

Furthermore, the Lung Association urges NIAID to prioritize bolstering the infrastructure needed to develop and implement diagnostic testing. Timely, accurate, and accessible diagnostic testing is crucial to preventing the spread of infectious diseases and treating patients. For example, when testing for lung diseases like COVID-19, influenza and RSV, polymerase chain reaction (PCR) tests are considered to be best practice for diagnosis. However, many patients are only able to access antigen tests, despite the lower detection rates these tests have.³ NIAID should prioritize developing diagnostic testing that is easily accessible and affordable, given that even small costs have been shown to deter patients from accessing medical care.⁴ The COVID-19 pandemic has also highlighted the need to build a clear framework for patients and providers on when and how to use diagnostics. NIAID should consider collaboration with other organizations, such as the Centers for Disease Control and Prevention (CDC) that do similar work to establish diagnostic guidelines and maintain disease surveillance systems.

NIAID should focus additional research efforts on addressing the emerging threat posed by Long COVID. Long COVID has affected an estimated 6.4% of noninstitutionalized adults in the U.S.,⁵ and can manifest in a wide variety of symptoms, including more serious and unexplained health challenges. Certain racial or ethnic minority groups and people with disabilities are at greater risk of developing Long COVID, highlighting the importance of research that identifies risk factors and health disparities among those affected by Long COVID.⁶ While it is known that COVID-19 poses an elevated risk for people with chronic conditions, including lung disease, our understanding of the impacts of Long COVID remains limited, as does the infrastructure to address this crisis. Efforts to further understand and mitigate the effects of Long COVID require additional work and collaboration from agencies like NIAID and CDC.

Priority 4: Apply knowledge of basic immunology to develop and enhance intervention strategies for asthma, allergic and immune-mediated diseases, and transplantation.

The Lung Association appreciates NIAID's focus on developing and enhancing intervention strategies for asthma. There are still gaps in our understanding of the etiology, detection, and management of asthma.



NIAID should continue and expand its research efforts to better understand and identify causes of asthma, including the effects of air quality. Limited research exists investigating the impact of occupational exposures on long-term lung health, though research estimates that occupational exposures cause 1 in 6 adult-onset asthma cases.^{7,8} NIAID needs to prioritize work to understand how air quality and exposures may cause asthma.

The Lung Association urges NIAID to continue research on best practices for the treatment of asthma. For example, Single Maintenance and Reliever Therapy (SMART) has recently emerged as an effective method to treat persistent moderate to severe asthma. New biologic medications can also help certain patients with moderate to severe forms of asthma that are not well-controlled with standard therapy. By supporting research on these and other new treatment options, NIAID can help to improve asthma control and reduce the burden of this disease on patients and families.

In addition, asthma treatment research largely remains limited to patients who only have asthma, instead of those who also have comorbidities. For example, very little research exists on patients with dual asthma and COPD diagnoses. Most asthma or COPD-specific studies exclude patients who have been diagnosed with both disorders, leading to limited research on how these diseases interact. NIAID should ensure that asthma research includes patients with comorbidities to improve treatment options for different patient groups.

Priority 5: Support innovative research efforts to prepare for and respond to nationally or internationally significant biological incidents affecting public health.

It is critical that our nation remains prepared to address public health emergencies as they arise. NIAID should prioritize research on zoonotic diseases such as COVID-19, avian influenza and swine flu. Zoonotic diseases continue to pose a significant threat to public health, and CDC estimates that 3 out of every 4 emerging infectious diseases originate from animals.⁹ NIAID should also work to establish and maintain response plans for these emerging infections. Ongoing research and preparation will help safeguard patient health in an emergency.

Finally, to address both the health needs of patients and emerging health threats, the Lung Association encourages NIAID to expand its collaborations with other research institutes and federal agencies. Many health issues that result from or cause disease are broad and require collaboration between multiple stakeholders to properly address their more complex research needs. For example, because domestic and international surveillance is critical to preventing the spread of disease, the CDC maintains up-to-date, top tier data on the prevalence of certain diseases, their severity, and the most affected populations. Specifically, CDC's Coronavirus and Other Respiratory Viruses Division determines with respiratory viruses are circulating and vaccine effectiveness. NIAID should partner with CDC and its prevention programs to better develop and maintain measures to prepare for future public health emergencies.

Additional Themes: Diversity, equity, inclusion, and accessibility (DEIA); Women's Health; health disparities; research inclusivity; and global health.

It is crucial that addressing health disparities be a central focus of NIAID's research related to allergy and infectious disease. Health disparities are identifiable in numerous aspects of lung disease. For example, Black individuals are 42% more likely to have asthma than white



individuals.¹⁰ Flu hospitalization rates were found to be 80% higher among Black adults and 20% higher among Hispanic adults.¹¹ It is clear that NIAID needs to support further research and other strategies to meet patients' needs across demographics.

NIAID should work to develop better strategies for identifying and addressing these disparities. Research should leverage existing data on structural and sociocultural contexts (e.g., housing indices, distance to highways, air pollution levels, food insecurity), as well as individual and family level-behavior (e.g, medication use, healthcare utilization). This would allow us to better understand health disparities beyond race, gender, and ethnicity, and would identify areas for change that would promote health equity. As the aforementioned disparities persist, it is critical that more work is done to identify and mitigate the effects of these barriers to care.

Addressing health disparities and tackling their biological underpinnings requires an increased focus on improving the diversity of the research workforce and of clinical trial participants. It is imperative that effort is made to support a diverse workforce for research investigators and other study personnel. Similarly, NIAID needs to support research to understand how to improve recruitment and retention in cohort studies and clinical trials, especially of individuals who are typically underrepresented in biomedical research, including women and historically underrepresented communities. Robust representation is necessary to better understand how diseases like asthma work. Current approaches to improving diversity in clinical trials have seen limited success. NIAID should work to ensure that clinical trials are easily accessible to all eligible groups and are considered a part of the continuum of care for patients.

Additionally, research has made it clear that climate change can negatively affect health and exacerbate community vulnerabilities.¹² As climate change continues to impact numerous aspects of life, it is important that NIAID devote research to understanding how these changes affect patients with allergy and disease. For example, climate change is expected to lead to higher incidence in allergic illnesses.¹³ Several disease research opportunities exist related to climate change and air quality, including understanding the impacts of wildfires and smoke exposure for patients with asthma. The Lung Association urges NIAID to study air quality in relation to its impact on infectious and allergic diseases.

NIAID would be able to reach a better understanding of the links between air quality and lung disease by working with the EPA and other agencies that can build upon and add to NIAID's existing work. Ongoing lung health research at the NIAID can also be improved through collaboration with other institutes, including the National Institute on Minority Health and Health Disparities to better address health inequities found in allergy and infectious diseases and the National Institute on Environmental Health Sciences on issues related to air pollution, wildfire smoke and similar exposures. The Lung Association encourages NIAID to enhance its collaboration with organizations similarly committed to reducing negative health outcomes caused by allergy and infectious diseases.

Conclusion

The Lung Association appreciates the opportunity to provide input on the NIAID Strategic Plan updates. The Lung Association is proud to stand with NIAID as we work to fulfill our mission of saving lives by improving health and preventing lung disease.



Sincerely,

A handwritten signature in black ink that reads "Harold Wimmer".

Harold P. Wimmer
President and CEO

¹ Zhai S, Hu L, Zhong L, Guo Y, Dong L, Jia R, Wang Z. Respiratory Syncytial Virus Aggravates Renal Injury through Cytokines and Direct Renal Injury. *Front Cell Infect Microbiol*. 2016 Sep 30;6:112. doi: 10.3389/fcimb.2016.00112. PMID: 27747195; PMCID: PMC5043133.

² Woodruff, Rebecca C. Chronic Conditions as Risk Factors for RSV-Associated Hospitalization. Advisory Committee on Immunization Practices Meeting. Centers for Disease Control and Prevention. February 29, 2024. Available at: <https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2024-02-28-29/03-RSV-Adults-Woodruff-508.pdf>.

³ COVID19 Testing: What You Need to Know. Centers for Disease Control and Prevention. May 2, 2024. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/testing.html>.

⁴ Artiga, Samantha et al. The Effects of Premiums and Cost Sharing on Low-Income Populations: Updated Review of Research Findings. KFF. June 1, 2017. Available at: <https://www.kff.org/medicaid/issue-brief/the-effects-of-premiums-and-cost-sharing-on-low-income-populations-updated-review-of-research-findings/>.

⁵ Ford ND, Agedew A, Dalton AF, Singleton J, Perrine CG, Saydah S. *Notes from the Field: Long COVID Prevalence Among Adults — United States, 2022*. *MMWR Morb Mortal Wkly Rep* 2024;73:135–136. DOI: <http://dx.doi.org/10.15585/mmwr.mm7306a4>.

⁶ Long COVID or Post-COVID Conditions. National Center for Immunization and Respiratory Diseases, Division of Viral Diseases. Centers for Disease Control and Prevention. March 14, 2024. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/long-term-effects/index.html>.

⁷ American Lung Association. Asthma at work. Accessed December 2023. Available at: <https://www.lung.org/lung-health-diseases/lung-disease-lookup/asthma/managing-asthma/workplace>.

⁸ Blanc PD, Annesi-Maesano I, Balmes JR, et al. The occupational burden of nonmalignant respiratory diseases: An Official American Thoracic Society and European Respiratory Society Statement. *Am J Respir Crit Care Med*;199:1312–1334.

⁹ Zoonotic Diseases. Centers for Disease Control and Prevention. July 1, 2021. Available at: <https://www.cdc.gov/onehealth/basics/zoonotic-diseases.html>.

¹⁰ American Lung Association. Current Asthma Demographics. Accessed December 12, 2023. <https://www.lung.org/research/trends-in-lung-disease/asthma-trends-brief/current-demographics>

¹¹ Inequities in Flu Vaccine Uptake. Centers for Disease Control and Prevention. October 18, 2022. Available at: <https://www.cdc.gov/vitalsigns/flu-inequities/index.html>.

¹² U.S. Global Change Research Program. Fourth National Climate Assessment. Accessed December 2023. Available at: <https://nca2018.globalchange.gov/>.

¹³ U.S. Global Change Research Program. Fourth National Climate Assessment. Accessed December 2023. Available at: <https://nca2018.globalchange.gov/>.