



THE AEGIS CONSORTIUM  
Health Sciences Innovation  
Building (HSIB)  
1670 E Drachman St.  
Tucson, AZ 85721

[aegis.uahs.arizona.edu](http://aegis.uahs.arizona.edu)

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Major General Paul Friedrichs  
Office of Pandemic Preparedness and Response Policy  
Washington, D.C.

On behalf of the Aegis Consortium, I congratulate you on your new position as Director of the Office of Pandemic Preparedness and Response Policy. As we witness a resurgence of COVID cases nationally, we offer our support as subject matter experts across many pandemic response and mitigation sectors. Aegis openly collaborates and provides unparalleled assistance when and where it matters - feel free to reach out to us if we can assist at any time.

As background, The Aegis Consortium was born of a highly successful response of the University of Arizona to this pandemic and from our desire to best prepare for the next pandemic challenge. At the very start of the pandemic, we have been on the front lines with teams and continue to push for bold, innovative approaches to prepare, manage, and respond to extreme events. We unite a diverse coalition of experts from all corners of the human experience to develop pandemic solutions. We operate across disciplines, industries, and borders to create flexible solutions that can be implemented in communities worldwide, working to create a pandemic-free future.

In the three years since the initial outbreak, the Aegis Consortium has recognized and begun working to create a multi-disciplinary Resilient Arizona plan to create a comprehensive approach to mitigate impacts on crucial systems, both during the emergency phase of a pandemic and in the resultant long-term care needs created by the acute pandemic. For Aegis, a Resilient Arizona is both a plan and an action that we are constantly evolving to meet the needs of our state. We believe this approach can be duplicated and retrofitted to help establish a Resilient Nation.

The response to COVID-19 exemplifies the need for a health infrastructure necessary to handle such widespread economic, social, and public health concerns. While the resulting 103,910,034 cases and 1,135,343 deaths in the U.S. strained our emergency response, the post-infection condition of Long COVID symptoms, reported by 1 in 13 adults, requires its own response.



## Post-Acute Effects of Pandemics on Individuals and Societies

### **Long COVID is the next pandemic, with 15M+ patients and the national economic toll estimated at 2.6–3.7 trillion dollars.**

Aegis is a solutions catalyst that builds systems to deal with a continuum of public health crises. As one of the 14 Adult Cohort sites in the National Institutes of Health Researching COVID-19 to Enhance Recovery (RECOVER) Initiative, Aegis initiated, led, and convened RECOVER Adult Site PIs from 14 institutions, 24 states, and two territories to assert a national leadership role.

Through deep collaboration over the subsequent months, the RECOVER site PIs have identified gaps in the response to care for patients with Long COVID. As the RECOVER study was designed and funded as a research study, it was never meant to help with treatments, rehabilitation, and recovery from Long COVID. Our group has, therefore, developed strategies to address these gaps. We have established an effective collaborative network to serve as Centers of Excellence, building on the existing infrastructure and recruitment network to implement these strategies immediately.

Sites such as the RECOVER recruitment hubs, all of them with Long COVID clinics—or other similar sites with appropriate infrastructure already in place to treat Long COVID patients—are a natural next step to providing Long COVID patients with care. Our plan, currently before the Senate Appropriations Committee, includes the following elements:

- Support patients by coordinating clinical care and rehabilitation, reducing healthcare disparities, and addressing ongoing and complex medical and psychosocial needs, focusing on patients receiving fragmented care.
- Define, continuously improve, and implement standards of care and best practices through a coordinated exchange of information.
- Leverage novel methods to disseminate information and provide support to educate providers, patients, and communities to broaden access to high-quality care and further reduce disparities.
- Develop and implement workforce training programs for healthcare providers caring for Long COVID patients.



## **A Resilient Arizona is a model for a resilient nation.**

Until now, pandemics and emergencies have been managed across different channels and at many levels, with uncoordinated and haphazard responses and communications. But a resilient, comprehensive system can anticipate, detect, and warn of new disease threats early. In our Resilient Arizona, we imagine coordinating key activities across our departments of health, academic institutions, and counties simultaneously, providing advanced warning, early mitigation, and saving lives and health.


### **Disease Surveillance**

A comprehensive and effective public health response is vital to keep communities, especially underrepresented minority groups and those in rural areas, safe in the face of new pandemics. To that end, early detection is crucial to an effective public health response, and we welcome the Office of Pandemic Preparedness's input in developing a comprehensive early disease surveillance monitoring platform to analyze pathogens in the next pandemic, from vector-borne illnesses to cancer-causing viruses and bacteria. This disease surveillance platform will provide immediate "hot spotting" of case outbreaks across statewide emergency departments, public health clinics, urgent care centers, and physician offices.

Additionally, we propose a longitudinal study using wearable devices to predict the early onset of infections and understand the long-term effects of previous infections as well as the effects of specific vaccines. We recommend monitoring a community by partitioning it into several zones (15-20) that can identify densely populated, high-risk buildings for infectious disease transmission (schools, nursing homes, prisons). That includes a building monitoring system to determine health disparities by area in a community or region and a dashboard for these select communities to access health status and trends in disease incidence.

### **Wastewater Surveillance**

Through convening multi-disciplinary experts, we have concluded that implementing these disease surveillance systems in conjunction with wastewater-based tests will help generate heat maps of microbial appearance and concentrations in wastewater, helping us identify areas most impacted by diseases to predict future hotspots. This also provides a mechanism to generate an intersectional response by monitoring community mental health and illicit drug usage. Monitoring of border areas along the AZ southern border also allows advanced warning across potential entry points. The University of Arizona Water and Energy Sustainable



Technology Center has created a model for using municipal wastewater to monitor the incidence of the virus. Examples of the impacts of similar monitoring systems like this can be seen in the mass diminishing of the poliovirus through standardized regular testing.

The University of Arizona employed this successfully during the COVID-19 pandemic: [The University of Arizona says it caught a dorm's covid-19 outbreak before it started. Its secret weapon: Poop](#)

### **Surgeline Expansion, Universal Access AZ, and Rural Telemedicine + Native American Community**

It's essential to prioritize the needs of our most vulnerable populations when building resilience. That's why the Statewide Emergency Care Coordination Network, also known as "Surgeline," is a valuable resource for Arizonans. This network helps connect patients with the closest and most appropriate care facilities during a pandemic, which can be especially important for those at greater risk. By maintaining records of healthcare resources and potential surges, Surgeline helps ensure communities have access to the care they need. Additionally, partnerships with the ADHS have helped to expand these resources into smaller and more rural areas, which can often be underserved during outbreaks. Ultimately, ensuring health equity and quality of care is crucial for addressing Hospital Preparedness and Health Outcomes. Taking a comprehensive and effective approach to public health can help keep all communities safe, particularly those that are underrepresented or located in remote areas.

The University of Arizona employed this successfully during the COVID-19 pandemic: [Arizona Surge Line: An emergent statewide COVID-19 transfer service with equity as an outcome](#)

## Resilience of Built and Natural Environments in Pandemic Control

The pandemic forced our built environment to respond and change in entirely new ways to accommodate isolation, sanitize our environment, and quickly accommodate new expanding functions such as ICUs, COVID-19 testing sites, and immunization centers. Built and natural environment resilience is a focus of our 2025 efforts, and we welcome your participation in developing recommendations. Our current recommendations are as follows:



**Indoor Air Monitoring**

We encourage retrofitting Ion mobility spectrometry (IMS) to sample the air and continuously monitor for signatures of SARS-CoV-2 and other microorganisms. It can serve as a complementary sensing tool to IMS for benchmarking the overall quality of air filtration in an individual's personal space.

**Built Environment Rating System**

We recommend the development and validation of a "health index" or "rating system" for the built environment (similar to that used for energy efficiency in building design) that rates the risk of infection. For example, a Platinum rating would mean the risk of acquiring an infection by working in the building would be 10% or less. Aegis's multidisciplinary team of researchers is developing a dashboard ("DASH-SAFE"), which layers locations of subjective perceived risk and safety and objective measures of built environment viral spread risk factors over an interactive Geographic Information System (GIS) map to spatially and temporally visualize in near real-time locations of safety and risk.

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We welcome the opportunity to work alongside the Office of Pandemic Preparedness and Response Policy to catalyze policy public health and policy solutions. We value your consideration of our insights and suggestions and look forward to working alongside you to create a pandemic-free future. We would be delighted to meet and discuss these and other planned activities.

Sincerely,



Janko Ž. Nikolich, MD, Ph.D.  
Director  
Aegis Consortium

