



U.S. Department of Veterans Affairs

Veterans Health Administration
Office of Research & Development

Selected highlights of VA research: April 1 – May 11, 2021

Recently published studies

COVID-19 ‘long-haulers’ face increased risk of death, other health problems—A large VA study showed that people who have had COVID-19 are at heightened risk of both death and many other health problems. In the largest post-acute COVID-19 study to date, VA Saint Louis Health Care System researchers characterized many potential long-term consequences of COVID-19. The researchers looked at outcomes on more than 73,000 VA patients who survived COVID-19 and close to 5 million who did not contract the disease. The COVID-19 group had a higher risk of dying six months after diagnosis. They were also at higher risk of health problems affecting virtually every organ system in the body, not just the lungs. About 8% to 10% of people affected by COVID-19 will likely have long-term effects, say the researchers. They say the study can help in planning strategies to reduce chronic and permanent health problems caused by the virus. (*Nature*, April 22, 2021)

Vaccines led to drop in COVID-19 in nursing homes—Positive COVID-19 tests declined in VA and community nursing homes following the start of vaccine availability, found two studies by VA researchers. Among the findings: The number of positive tests dropped among all residents in the fourth week after vaccination, even though some residents refused the vaccine. One week after their first vaccine clinics, non-VA nursing homes had 2.5 fewer new COVID-19 infection per 100 at-risk residents, compared with facilities with later vaccinations. After seven weeks, early-vaccination facilities had 5.2 fewer infections and five fewer hospitalizations or deaths per 100 residents. The results show vaccines are an effective way to stop the spread of COVID-19 in nursing homes, say the researchers. (*Journal of the American Geriatric Society*, April 16, 2021; [article 1](#), [article 2](#))

Researchers use genetics to identify potential COVID-19 drugs—A study using genetics suggests clinical trials should prioritize existing, approved drugs that target two specific proteins to find new treatments to manage COVID-19 in its early stages. VA researchers and international collaborators studied the genomes of more than 7,500 patients hospitalized with COVID-19 and more than a million controls. Based on the genetic samples, from VA’s [Million](#)

Veteran Program and other sources, they pinpointed two proteins, ACE2 and IFNAR2, that appear to be elevated in those requiring COVID-19 hospitalization. (*Nature Medicine*, April 9, 2021)

Suicide risk in American Indian, Alaska Native Veterans—American Indian and Alaska Native (AI/AN) Veterans have more than twice the risk of suicidal thoughts compared to white Veterans, found a VA Salt Lake City study. Researchers looked at data from two large national surveys. In the Behavioral Risk Factor Surveillance System, 9.1% of AI/AN Veterans reported suicidal thoughts, compared with 3.5% of white Veterans. In the National Survey on Drug Use and Health, 8.9% of AI/AN Veterans reported suicidal thoughts, compared with 3.7% of white Veterans. Suicide prevention efforts in collaboration with these communities are needed, conclude the researchers. (*Military Psychology*, April 8, 2021)

Stem cell therapy for ischemia—Stem cells may be an effective treatment for life-threatening ischemia, according to a mouse study led by a VA Connecticut researcher. Ischemia is when an organ does not get enough blood, which can cause serious organ problems. Researchers treated ischemic mice with smooth muscle cells derived from pluripotent stem cells that had been grown in a lab. Pluripotent stem cells are base cells that can be reprogrammed to form into different types of body cells. Treated mice had improved functional outcomes and blood flow, compared with controls. They also showed signs of improved wound healing. The results show that stem-cell therapy has potential to effectively treat ischemia in humans, say the researchers. (*Cells*, April 2, 2021)

COVIDVax risk model could save lives with vaccination prioritization—Researchers with the VA Puget Sound Healthcare System developed a model called COVIDVax to estimate COVID-19 risk and guide vaccine prioritization. To develop the model, the researchers used data from more than 7.5 million VA patients to predict COVID-19-related death. COVIDVax was highly accurate at predicting which patients were at greatest risk of dying from COVID-19. Using this model to prioritize vaccination was estimated to be able to prevent 64% of deaths that would occur by the time half of all VA enrollees are vaccinated. Prioritizing vaccination based on COVIDVax could prevent deaths, say the researchers. (*JAMA Network Open*, April 1, 2021)

Gene therapy for Alzheimer's shows promise in mouse model—Researchers with VA and UCSD used gene therapy to boost learning and curb memory loss in a mouse model of Alzheimer's disease. The team used SynCav1 gene therapy, which is patented through VA and UC San Diego. Mice that received a single dose in the brain's hippocampus showed substantial improvements. The lab is now testing SynCav1 gene delivery in other mouse models of Alzheimer's, as well as in a mouse model of amyotrophic lateral sclerosis (Lou Gehrig's disease). The researchers hope to advance to human clinical trials soon. (*Molecular Therapy-Methods & Clinical Development*, ahead of print in June 2021)

BrainGate team advances wireless brain-computer interface—BrainGate researchers with VA, Brown University and other institutions demonstrated the successful use of a wireless brain-computer interface system, featuring an implant in the brain’s cortex and an external wireless transmitter. The study involved volunteers with tetraplegia. The researchers say the work is an early but important step toward a major goal: a fully implantable intracortical system that aids in restoring independence for people who have lost the ability to move. While wireless devices with lower bandwidth have been reported previously, this is the first device to transmit the full spectrum of signals recorded by a sensor in the cortex. The trial participants—a 35-year-old man and a 63-year-old man, both paralyzed by spinal cord injuries—were able to use the system in their homes, as opposed to the lab, where most BCI research takes place. Unencumbered by cables, the participants were able to use the BCI continuously for up to 24 hours, giving the researchers far richer data than previously possible. (*IEEE Transactions on Biomedical Engineering*, April 1, 2021)

Ongoing projects

COVID-19 therapeutics trial in collaboration with NIH—A new Phase 3 trial to test the safety and efficacy of therapeutics for COVID-19 has begun enrolling patients hospitalized with life-threatening cases of COVID-19, including those with acute respiratory failure. The trial is supported by NIH and is part of the NIH Accelerating COVID-19 Treatment Interventions and Vaccines (ACTIV) public-private partnership. The randomized, blinded, placebo-controlled clinical trial is called ACTIV-3 Critical Care. It will begin by testing Zyesami, a formulation of aviptadil acetate; and the antiviral remdesivir. Dr. Victoria Davey is lead for the VA network of sites involved in the trial. More information: www.eurekalert.org/pub_releases/2021-04/nioa-cto042221.php

Big data leveraged for COVID-19 studies—VA is a key partner in the COVID-19 Insights Partnership, along with the departments of Energy (DOE) and Health and Human Services (HHS). The initiative is sharing research resources and expertise across federal agencies to aid in the fight against COVID-19. Published studies to date based on the partnership have compared COVID-19 testing patterns, positive test results, and 30-day mortality rates by race and ethnicity among VA patients; developed and validated short-term mortality indices for COVID-19 patients, based on their preexisting conditions; evaluated the effectiveness of hydroxychloroquine with and without azithromycin in VA patients with COVID-19; and shown the benefit of prophylactic anticoagulation at initial hospitalization. Ongoing studies are evaluating steroid therapies, antibody tests, and “long-hauler” syndrome. More information: www.ncbi.nlm.nih.gov/pmc/articles/PMC8083698/pdf/ocab062.pdf.

Partnership with DOD on long-term COVID study—VA and the Department of Defense are conducting an observational, natural history study of COVID-19 called EPIC³. Researchers will collect data and biospecimens from volunteers for up to two years to better understand the

clinical course of COVID-19. The study is being conducted under the auspices of the VA Cooperative Studies Program. It is planned to run through 2024. More information: [EPIC3](#).

New device to help with suicide prevention—The [Human Engineering Research Laboratories](#), a collaborative effort between VA Pittsburgh and the University of Pittsburgh, designed and produced a device that can be installed at the top of bathroom doors in mental health inpatient rooms to prevent those doors from being used as anchor points for hanging. The 3D-printed block, about the size of a coffee cup, has been installed throughout the mental health wing at the Pittsburgh VA and is available for use in other VAMCs. More information: www.research.va.gov/currents/0421-VA-hospital-improvises-with-new-device-to-prevent-in-patient-suicides.cfm

Expanding genetic research on minority Veterans—The [Million Veteran Program \(MVP\)](#) launched a new research tool that promises to speed breakthroughs to benefit Black and Hispanic Veterans and other members of minority ethnic and racial groups. The custom-designed “Ethnic Focused” (EF) genotyping array, or DNA chip, tests for more than 750,000 genetic variants in all, including nearly 25,000 variants shown in past studies to be relevant to minority populations. The tool will help VA researchers learn more about conditions such as cancer, diabetes, and heart disease in diverse populations—and develop targeted treatments. More information: www.research.va.gov/currents/0421-VA-program-using-special-DNA-chip-to-expand-genetic-research-on-minorities.cfm

Trial tests epidural stimulators to help paralyzed Veterans—Researchers at the Richmond VA in Virginia have launched a study to determine whether epidural stimulators can help paralyzed Veterans recover motor activity and control over their “inner systems”—their cardiovascular and bladder functions, for example. While epidural stimulators have shown some degree of success with limb paralysis in research elsewhere, this is the first such study in VA. It was made possible by a \$3.7 million grant from the Defense Department under the Congressionally Directed Medical Research Program. More information: www.military.com/daily-news/2021/04/25/va-testing-implant-could-allow-paralyzed-veterans-walk-again.html

Visit Research.va.gov to learn more about these and other VA studies. [Sign up here](#) to receive regular email updates.