U.S. Department of Veterans Affairs

Veterans Health Administration
Office of Research & Development

Selected highlights of VA research: October — November 2021

Recently published studies

Lithium does not appear to improve suicide risk—Adding lithium to medication regimens does not help prevent suicide-related events in patients with mood disorders, found a VA study. Prior studies have suggested that lithium may prevent suicide in patients with bipolar disorder or depression. Researchers added lithium to the treatment of VA patients with bipolar disorder or depression who had survived a recent suicide-related event, such as a suicide attempt or a hospital admission to prevent suicide. The trial was stopped for futility after 519 Veterans were enrolled. No difference between lithium and placebo treatment was found. Both the lithium and placebo groups had similar rates of suicidal behavior. The findings suggest that adding lithium has no effect on suicidal behavior for patients with mood disorders, say the researchers. (*JAMA Psychiatry*, Nov. 17, 2021)

PTSD medication disparities between rural and urban VA patients mostly eliminated—Disparities in PTSD treatment between rural and urban VA patients have improved in the last decade, found an Iowa City VA study. Researchers looked at VA prescribing data from 2009 and 2019. They found that recommended PTSD medications were prescribed significantly less often in rural clinics than in larger medical centers in 2009. By 2019, recommended prescribing was about equal in rural and urban settings. In 2009, prescribing of medications not recommended for PTSD patients was higher among rural than urban residents. The rates were largely equal by 2019. The results show that rural discrepancies in PTSD prescribing in VA had largely been corrected by 2019, according to the researchers. (*Journal of Rural Health*, Nov. 9, 2021)

COVID-19 vaccine effectiveness wanes, but remains high against death—Vaccine protection against COVID-19 declined during 2021, but protection against death after infection remained high, according to a study by VA San Francisco researchers. The study looked at COVID-19 infection rates and deaths for more than 780,000 VA patients between February and October 2021. Effectiveness against infection for the three vaccines being given in the United States—created by Pfizer, Moderna, and Janssen—fell from an average of 88% to 48% as the Delta variant of the virus emerged. Although breakthrough infections increased, the vaccines proved

to be highly protective against death from COVID-19. Protection against death from COVID-19 remained above 73% for all three vaccines in patients younger than 65, and above 70% for older patients. The findings support efforts to increased vaccination, booster campaigns, and additional layers of protection against infection, say the researchers. (*Science*, Nov. 4, 2021)

Solar activity may be linked to high blood pressure in elderly men—Sunspots may be linked to higher blood pressure in older men, found a study including VA Boston researchers. The researchers studied blood pressure readings for 675 elderly men between 2000 and 2017. Participants were born between 1884 and 1945. They found that periods with high magnetic field activity from the sun corresponded with higher diastolic and systolic blood pressure patterns. The pattern was most evident when the number of sunspots and disturbance to Earth's magnetic field were high 16 days before blood pressure reading. The link between solar radiation and blood pressure was independent of pollution or ambient radioactivity levels. Previous research has shown that changes in magnetic field linked to sunspots and solar wind can affect autonomic nervous system activity. The results could have implications for long-term management of blood pressure, and also may help scientists interpret data from long studies, according to the researchers. (*Journal of the American Heart Association*, Nov. 2, 2021)

Smartphone app aims to help prevent Veteran suicide—Researchers from the Providence VA developed a smartphone app to help prevent suicide. The Mobile Application for the Prevention of Suicide (MAPS) uses assessment in the moment to identify suicide risk and deliver real-time treatment strategies. The app is personalized to each patient. Eight Veterans hospitalized for suicidal behavior tried MAPS for two weeks. They reported high levels of satisfaction. All eight Veterans opted to continue using the app after the trial period ended. MAPS could be a useful addition to treatment and may help better track suicide risk and provide assistance for high-risk Veterans, according to the researchers. (*Military Psychology*, Oct. 28, 2021)

E-cigarettes may increase inflammation, disease risk—E-cigarettes may increase inflammation and weaken immune response, according to a VA San Diego study. Researchers measured the levels of several biomarkers in the saliva, sputum, and blood of e-cigarette users and non-smoking controls. E-cigarette smokers had higher levels of proteins that indicate inflammation. Smokers also had lower levels of proteins that signal the immune response to help fight off infections. The immune response was also blunted in smokers when challenged by a bacteria. This suggests a decreased ability to respond to infection. The findings raise concerns that smoking e-cigarettes may make people more vulnerable to infectious disease, say the researchers. (*American Journal of Physiology*, Oct. 27, 2021)

In VA, COVID-19 vaccination rates higher in minority than white patients—COVID-19 vaccine receipt was higher among most racial/ethnic minority groups than in white patients in the VA health care system, found a study by VA Greater Los Angeles researchers and colleagues.

Researchers looked at data of more than 3 million VA patients from between December 2020 and February 2021. They found that Black, Hispanic, and Asian patients were more likely than white patients to receive COVID-19 vaccines. In the general U.S. population, minority patients have lower vaccine rates than white patients. American Indian/Alaskan Native patients were less likely than whites to receive a vaccine from VA, but only in areas with Indian Health Service care delivery, suggesting that Veterans may have received vaccines through IHS rather than VA. The results suggest that VA has reduced barriers to minority vaccination to a greater extent than than in non-VA care, say the researchers. (*American Journal of Preventive Medicine*, Oct. 20, 2021)

Biological pathways of suicide risk identified—VA Million Veteran Program researchers identified several biological factors related to suicide risk. Researchers conducted a genome-wide association study comparing Veterans with a history of suicide attempts with those without suicidal behavior. They found 30 biologic pathways associated with an increased risk of suicide attempts. Those pathways included differences in the signaling of oxytocin, a hormone involved in social bonding. Multiple stress pathways, including cortisol secretion and blood pressure regulation, were also found to be related to suicide risk. Subject groups also showed differences related to circadian rhythm. Identifying biological factors related to suicide risk could help identify new treatments, according to the researchers. (*American Society of Human Genetics*, Oct. 18, 2021)

Transcranial magnetic stimulation can improve depression, PTSD—Transcranial magnetic stimulation (TMS) was shown to reduce depression and PTSD symptoms, in the largest study to date of the treatment in Veterans. TMS noninvasively uses magnetic fields to affect the electrical signals in the brain. Researchers studied its effectiveness in 770 Veterans with major depressive disorder. Of those, 68% also had PTSD. TMS led to clinically meaningful symptom reductions for both conditions. Of patients who received an adequate dose of TMS, 41% saw depression symptom improvements, with a remission rate of 20%. For patients with PTSD, 65% had meaningful symptom reduction, and 46% no longer met the criteria for PTSD. The results support the effectiveness and safety of TMS for treating both depression and PTSD, say the researchers. (*Journal of Affective Disorders*, Oct. 20, 2021)

Statin use may increase diabetes progression—Statin use is linked to worsening diabetes progression, according to a study led by a VA North Texas researcher. Statins are drugs intended to lower cholesterol. Researchers compared data on over 80,000 VA patients with diabetes who took statins and a matched group not on statins. They found that diabetes worsened in 56% of patients taking statins, compared with 48% of those not on the drug. Patients taking statins were more likely to have begun insulin treatment, have high blood sugar, have diabetes complications, and take an increased number of prescriptions. Results show that the risks and benefits of statin use need to be carefully weighed in diabetes patients, say the researchers. (*JAMA Internal Medicine*, Oct. 4, 2021)

Ongoing projects

Grape juice may have the potential to improve cognitive performance in Gulf War Veterans—A VA pilot study found that Concord grape juice contains ingredients that may improve cognitive performance in Veterans with Gulf War illness. The results appeared in the journal Life Sciences The team is also testing blueberry extract and other sources of polyphenols, which are health-boosting compounds found in fruits and vegetables. They want to learn how polyphenols impact cells and various body functions in Veterans with Gulf War illness. Meanwhile they suggest Veterans speak with their providers about adding more polyphenols to their diets and assess for themselves if they see benefits. (11/24/21)

Computers 'learn' to support high-stakes decisions during heart surgery—VA experts in artificial intelligence are teaching computers to think like "perfusionists"—operating room staff who work heart-lung machines during surgery. In a recent paper titled "Using Machine Learning to Predict Perfusionists' Critical Decision-Making During Cardiac Surgery," researchers from the VA Boston Healthcare System, Harvard Medical School, Brigham and Women's Hospital, and Georgia Tech University detail their progress toward a computer-based system to help perfusionists in the OR make critical decisions as they operate the bypass machine. (11/18/21)

VA to lead new national initiative to improve effectiveness of pre-clinical brain research—VA has established a center to coordinate pre-clinical federal lab research on traumatic brain injury. The effort, called the Interagency Resource Coordinating Center for Preclinical TBI Research (IRCC), involves investigators at eight VA medical centers and colleagues at other agencies. It is expected to accelerate research toward new TBI therapies. VA created the IRCC in close collaboration with the Department of Defense and the National Institutes of Health. (11/18/21)

Filtering out COVID-19: New technology being tested by DoD, with VA help, to battle the virus—Scientists at the Department of Defense, VA, and partner institutions are testing a new technology to treat COVID-19. It's called the Seraph 100 blood filter. The treatment uses a novel approach to filter out viral particles and harmful molecules from the bloodstream of COVID-19 patients. (10/26/21)

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