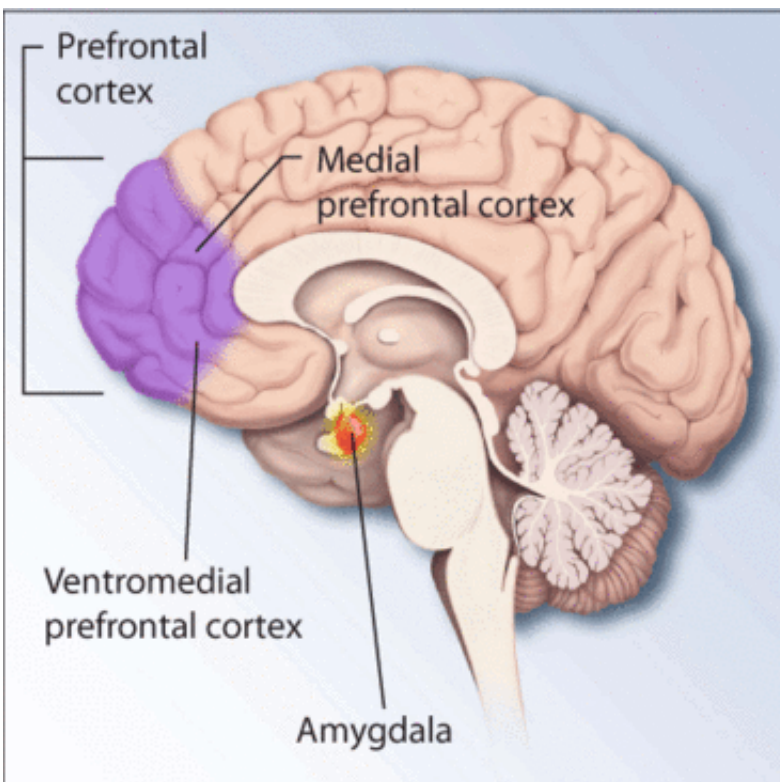


Identified brain circuitry bridges neural and behavioral roles in PTSD

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Regions of the brain associated with stress and posttraumatic stress disorder.
Credit: National Institutes of Health

Specific cerebral circuitry bridges chemical changes deep in the brain and the more outward behavioral expressions associated with post-traumatic stress disorder (PTSD), which could lead to more objective biomarkers for the disorder, according to a comprehensive review of

rapidly changing data published June 22 in the *New England Journal of Medicine*.

In this latest, comprehensive review, the authors—from the Steven and Alexandra Cohen Veterans Center (CVC) in the Department of Psychiatry at NYU Langone Medical Center and the University of Michigan/Veterans Affairs Ann Arbor Health Systems Mental Health Service - have identified four neural-behavioral models associated with PTSD. These models pinpoint specific circuits in the brain that "mediate" between chemical changes - which are being examined as possible PTSD biomarkers - and the expression of certain characteristics often associated with PTSD. These include fear responses, avoidance of trauma reminders, impaired emotional balance and the persistence of defensive responses despite a safe environment.

"These neural-behavioral models account for, and help further explain, many of the peripheral findings in PTSD," says study co-author Israel Liberzon, MD, professor of Psychiatry, Psychology and Neuroscience from University of Michigan. "These models will be valuable roadmaps in examining whether certain PTSD-related behaviors have particular chemical roots. This, in turn, could advance the identification of objective biomarkers for PTSD."

The authors point out that one of the major challenges with PTSD is that it is painstakingly difficult to objectively profile and diagnose. PTSD sufferers come from a wide swath of society, with higher rates of illness among socially disadvantaged individuals, younger persons, women, military personnel, police officers, firefighters and first responders to trauma. It also is prevalent in victims of physical and sexual assault, and those requiring assistance from first responders.

The American Psychiatric Association recently updated its diagnostic criteria for PTSD in the fifth edition of its Diagnostic and Statistical

Manual of Mental Disorders. But the co-authors point out that even when examining these changes comparatively with the APA's prior criteria as well as criteria from the World Health Organization, there is only a 30% overlap in those meeting diagnostic criteria across the three measurements.

"There continues to be major concerns with diagnosing PTSD," says co-author Charles R. Marmar, MD, the Lucius Littauer Professor and chair of psychiatry at NYU Langone and director of the CVC. "While biomarker research continues - and we are making important strides—clinicians need to be alerted to the differences between criteria meant to index PTSD and the broader array of symptoms."

Study Includes Guidelines to Help Identify PTSD

To address this, the authors included in their review detailed and easy-to-follow tables that provide information to better recognize signs and symptoms of PTSD for healthcare providers like primary care physicians, often the first point of contact for patients.

"We know a lot more about PTSD and related conditions than in the past," says co-author Arieh Shalev, MD, the Barbara Wilson Professor in the Department of Psychiatry at NYU Langone and a co-director of the CVC. "Our goal is to provide a highly precise and concise summary of all of the evidence-based findings thus far for understanding, diagnosing and treating PTSD."

The authors also say that there are more therapeutic options to offer patients, including cognitive behavior therapy, such as prolonged exposure and cognitive processing therapies; eye movement desensitization and reprocessing therapy; stress management; and medication. The review also includes data about the effectiveness of neurofeedback; transcranial magnetic stimulation; and endocannabinoid

modulators, such as marijuana-derived medications.

PTSD remains the most prevalent psychological consequence of trauma. An estimated 70 percent of adults worldwide will experience a traumatic event in their lifetime, and approximately 10 percent will develop the disorder. According to the U.S. Department of Veterans Affairs National Center for PTSD, approximately eight million American adults suffer from PTSD in a given year.

Provided by New York University School of Medicine

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