

# Blood pressure may open door to personalized medicine for PTSD

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Treatment with the drug prazosin effectively reduces symptoms of posttraumatic stress disorder (PTSD) for many people, but about one third of patients don't respond to the treatment at all. Attempts to understand why people respond differently, based on symptom type or severity, have fallen short. Now, a new study reports that soldiers with higher blood pressure before beginning prazosin treatment see better results from the medication. The study, published in *Biological Psychiatry*, is the first to look for a biological marker that could be used to predict individual response to a drug treatment for combat PTSD.

"These findings suggest that higher standing [blood pressure](#) is a biomarker that can contribute to a personalized medicine approach to identifying soldiers and veterans with combat PTSD likely to benefit from prazosin," said Murray Raskind of the VA Puget Sound Health Care System and the University of Washington in Seattle, who led the study.

A biomarker such as blood pressure would have exceptional clinical utility because it would provide an easily measureable and immediate predictor of treatment response that could help doctors determine the role of prazosin or a similar medication in the treatment strategy for an individual.

Prazosin blocks  $\alpha$ 1-adrenergic receptors ( $\alpha$ 1AR), and through this mechanism prevents some of the effects of adrenaline and noradrenaline, chemicals released by the body during stress. "It would

make sense if prazosin was most effective in those patients with the greatest activation of noradrenaline systems," said John Krystal, Editor of Biological Psychiatry.

However, activity of  $\alpha$ 1AR cannot be measured directly in humans. So the researchers identified a peripheral [biological marker](#) that is regulated by  $\alpha$ 1AR activity; noradrenaline stimulation of  $\alpha$ 1AR increases blood pressure, suggesting that blood pressure may be a useful indicator of  $\alpha$ 1AR activity.

The researchers analyzed the combat PTSD symptoms and blood pressure measures collected previously as part of a randomized controlled trial of 67 soldiers who had returned from Iraq and Afghanistan. Thirty-two participants had received prazosin, and 35 had received placebo for 15 weeks.

"Pretreatment standing [systolic blood pressure](#) strongly predicted response to prazosin," said Raskind. By the end of the 15 week treatment period, participants with a higher initial blood pressure saw a bigger improvement in their PTSD symptoms, with a better outcome for every 10 mmHg increment above 110 mmHg.

In addition to suggesting that blood pressure may help predict which soldiers with PTSD will benefit the most from treatment, the findings also provide insight into the pathophysiology of the disorder.

"The increase in blood pressure in these PTSD patients may be a biomarker for patients who are more likely to benefit from prazosin," said Krystal. "If so, it may be a useful indicator of activation of noradrenergic activation associated with PTSD in these patients."

**More information:** Murray A. Raskind et al. Higher Pretreatment Blood Pressure Is Associated With Greater Posttraumatic Stress

Disorder Symptom Reduction in Soldiers Treated With Prazosin,  
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