



# NeuRA

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POST-TRAUMATIC STRESS DISORDER LIBRARY

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## POST-TRAUMATIC STRESS DISORDER Factsheet

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### What is the immune system?

The immune system is the body's first line of defense and predominantly uses proteins called cytokines that are secreted by immune cells and act to allow cell-to-cell communication. Cytokines include interleukins (IL), interferons (IFN), tumor necrosis factors (TNF), transforming growth factors (TGF), and chemokines. These have influence over many cell types, including T helper lymphocytes (Th cells, or white blood cells) and act to regulate immunological and inflammatory responses to pathogens. They are understood to function as intermediaries between the immune system and the central nervous system (CNS). Alterations of these immune-system mediators could have widespread effects for immune system functioning. C-reactive protein (CRP) is released by the body during inflammation. Increased CRP blood levels are not only suggestive of infection, but also chronic inflammatory conditions, including cardiovascular disease, diabetes, and metabolic dysfunction.

### What is the evidence for changes in the immune system in people with PTSD?

Moderate to high quality evidence found large increases in IFN- $\gamma$ , IL-2, IL-1 $\beta$ , and IL-6, and medium-sized increases in TNF- $\alpha$ , WBC, and CRP in people with PTSD compared to controls. There were no differences in IL-4, IL-8, IL-10, lymphocyte, B lymphocyte, CD3+ T lymphocyte, CD4+ T lymphocyte, CD8+ T lymphocyte, or NK cell. The effect sizes became non-significant in medicated patients for IL-1 $\beta$ , IL-2, and IL-6. The effect for CD8+ T lymphocyte became significant when using only trauma-exposed controls (reduced levels in patients). When using only non-trauma-exposed controls, the effect for IL-1 $\beta$  became non-significant, while the effect for IL-10 became significant (increased levels in patients). In patients without comorbid major depression, the effect sizes for IL-8 and CD4+ T lymphocyte became significant (increased levels in patients).

For more information see the technical table

### HOW YOUR SUPPORT HELPS

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## NeuRA

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*NeuRA (Neuroscience Research Australia) is one of the largest independent medical and clinical research institutes in Australia and an international leader in neurological research.*

*Diseases of the brain and nervous system pose the greatest health, economic and social burden of any disease group because they are chronic, debilitating and have no known cures.*

*Medical research is the cornerstone of efforts to advance the health and wellbeing of families and the community. Our dedicated scientists are focussed on transforming their research into significant and practical benefits for all patients.*

*While we hope you find this information useful, it is always important to discuss any questions about PTSD and its treatment with your doctor or other health care provider.*