

Nutrition and Behavioral Health

How a better understanding of the immunological causes of depression and other mental health concerns could provide a primary care a prevention window into reducing Alaska's behavioral health needs

- A growing body of literature shows that inflammation and inflammatory markers such as pro-inflammatory cytokines, have a strong association with depression. In cases of major depression the inflammatory response system is often activated. Higher levels of inflammation also appear to increase the risk for the development of new depression cases. [Cytokines and Depression- How your immune system causes depression. Immunology of Major Depression. A Meta-analysis of Cytokines in Major Depression. Association of high-sensitivity C-reactive protein with *de novo* major depression]
- There are many known environmental factors that may elevate the risk of depression and that are associated with inflammation including stress, poor diet, and vitamin D deficiency. For example, studies have found that dietary interventions significantly lowered certain inflammation markers that have been associated with depression [So depression is an inflammatory disease....]
- Other studies have found association between vitamin D supplementation and reduced inflammatory markers associated with depression, as well as an association between vitamin D deficiency and suicide. [So depression is an inflammatory disease, but where does the inflammation come from? Suicidal Patients are deficient in vitamin D, associated with a pro-inflammatory status in the blood]
- Furthermore, vitamin supplementation is associated with an increased sense of wellbeing [So depression is an inflammatory disease, but where does the inflammation come from? Randomized comparison of the effects of the vitamin D3 adequate intake versus 100 mcg (4000 IU) per day on biochemical responses and the wellbeing of patients. Reanalysis of study finds vitamin D improves feelings of well-being in subjects with frequent respiratory tract infections]
- Last year, an expert panel found sufficient scientific evidence to support increase the Daily Recommended Intake of omega-3 of military members especially before combat. In fact, given the evidence for the reduction of depressive symptoms and suicide prevention, the panel found “It would be unethical to not attempt elevating the omega-3 status among military personnel.” [The Response of an Expert Panel to Nutritional Armor for the Warfighter]

- Behavioral health is a very important topic in Alaska. Right now we face a shortage of needed services, both because of a lack of parity in our current pay structure and because of a limited number of providers.
- Physicians and primary care providers report spending a good amount of time providing behavioral health care they were not trained to provide because they do not have somewhere to refer their patients.
- However, physicians can and do ask their patients about environmental factors such as diet. If the state or state-wide provider groups support physicians by providing information on the immunological causes of issues like depression (e.g. inflammation) and the modifiable environmental factors (e.g. diet, sleep, nutrition), primary care providers could help moderate some mental health concerns and even prevent *de novo* cases. This would reduce the stress on our behavioral health system as we work to expand access to it.

*From the authors of *So Depression is an inflammatory disease, but where does the inflammation come from?*:*

“The identification of a number of potential factors that are known sources of inflammation, and their correlation to quality evidence linking those factors to increased risk of depression, provides mechanistic support for inflammation as one of the mediating pathways to both risk and neuroprogression in depression. The pivotal element is that most of these are plastic, and amenable to intervention, both therapeutic and preventative. While inflammation has suggested a number of very promising anti-inflammatory therapies, including statins, aspirin, pioglitazone and celecoxib, the latter preventative need is perhaps the more pressing [14,250,251]. Psychiatry largely lacks an integrated model for conceptualizing modifiable risk factors for depression. It has, therefore, lacked conceptually and pragmatically coherent primary prevention strategies, prioritizing the treatment of established disorders. Yet the rationale, targets and imperative to focus on prevention of depression at a population level is clear.” Berk, et al. BMC Medicine. Page 10.