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Demystifying recent Vitamin Hype

There has been extensive media coverage in the last few weeks regarding the potential harm of vitamin and mineral supplements. These discussions arose from recent findings from a poorly designed study, the Iowa Women's Study. This observational study enrolled a group of 40,000 women mean age of 61.5 in 1986. Now, 25 years later we are told these women had higher mortality rates than the general population due in part to their vitamin and mineral intake!

Study authors acknowledged many limitations of their own study. These limitations were not mentioned by the media, however. Substantive scientific findings are lacking in this study.

Limitations of the Iowa study are listed below:

- Accuracy of self-reporting is poor, but coupled with an aging population and non-standard dosing and formulations, there is no scientific justification to ascribe causality.
- Population bias: Inconsistent dosing and formulation of the supplements. Who took supplements, who did not, and why did some take and others not? Health issues? Were they sicker?
- Recall bias: Self-reported information (reporting of vitamin intake) can be misrepresented, incorrectly recalled, compromising the validity of these data.
- Average age of death in the study population is 82, which is slightly older than life expectancy for women in 2010. Media claimed mortality was increased in the study!
- This study consisted of 40,000 white women aged 60-84… not very generalizable to the general population.
- When several analyses are run in an analysis, it is common for some results to show a significant difference by chance alone in the absence of true biologic effects. There is a statistical adjustment for this which the authors did not use. Therefore it is unclear if these findings occurred by statistical chance alone.
- The study was not designed to address the effects of supplement use on life span.

One study finding reported 3% greater risk of mortality due to iron supplement consumption. First of all, iron supplementation is usually NOT prescribed for post menopausal women.

While this study should not be ignored, more accurate estimation of the supplements effect could be found in a controlled study which prescribes standardized recommended dosing and formulation of the supplement taken. This ensures that the population is taking the same recommended dose and ingredients. Many of these women reported taking iron supplements. A study with postmenopausal women would never prescribe a supplement with iron.

Perhaps they dosed excessively high on the supplements. Anti-oxidants taken at very high levels can become pro-oxidants.

Despite the fact that hormone replacement therapy (HRT) was widely used from 1986-2004, they did not adjust for HRT use in the regression models.

Let's conclude with the following excerpt which was taken from an article by Dr. Mark Hyman, M.D. an expert in functional medicine and the use of supplements:

"Overwhelming basic science and experimental data support the use of nutritional supplements for the prevention of disease and the support of optimal health. Literature reviews in the *Journal of the American Medical Association* [7] and the *New England Journal of Medicine* [8] also support this view. The concept that nutritional supplements "could be harmful" to women flies in the face of all reasonable facts from both intervention trials and outcome studies published over the past 40 years. Recent trials published within the last two years indicate that modest nutritional supplementation in middle age women found their telomeres didn't shorten [9]. Keeping your telomeres (the little end caps on your DNA) long is the hallmark of longevity and reduced risk of disease.

These include the use of calcium and vitamin D in women with bone loss; folic acid in people with cervical dysplasia (pre-cancerous lesions); iron for anemics, B-complex vitamins to improve cognitive function, zinc; vitamin C, E, and carotenoids to lower the risk of macular degeneration [10], and folate and vitamin B12 to treat depression [11]. This is but a handful of examples. There are many more."