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From Fish Oil to Medicine

No nutrient is more important for decreasing cardiovascular death—and more lacking—than omega-3

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With all the talk about fat being bad—whether it's on our bodies or in our diet—we have failed to take seriously a significant nutritional fat *deficiency* that afflicts most Americans: We have too little omega-3s of the kind found in oily fish, which cannot be made by the human body yet are essential to metabolism. Even though we need only a small dose, our western diet runs woefully low, forcing our cells to run their engines slightly off balance. Over time, this takes its toll. The deficiency significantly increases the risk of heart attacks and sudden cardiac death, and mounting evidence suggests omega-3 shortages contribute to problems as disparate as premature birth, neurological disorders, mental illness, autoimmune disease, obesity, and certain cancers. This is no fish story: Raising omega-3s could be as important to public health as lowering cholesterol.

Think about that comparison. Reining in our nation's cholesterol levels over the past 40 years has yielded great benefit to health and longevity. The change was a grass-roots effort driven by individuals—patients motivated by test results and doctors who helped monitor and manage them. The National Cholesterol Education Program even launched a "know your number" campaign. But who knows their levels of omega-3s?

Well, we should. Omega-3 compounds, eicosapentaenoic acid, or EPA, and docosahexaenoic acid, or DHA, become embedded in the membrane of each of the trillions of cells that make up the body, and from that perch influence cell structure and function, including cell-to-cell communication and electrical stability. On demand, they also generate a reservoir of hormonelike molecules to help blood vessels relax, tame inflammation, and reduce blood clotting. All cells feel the pinch of omega-3 deficiencies. Like a car that's out of tune, they run at a suboptimal level and are more prone to breakdown.

Based on what we currently know, says William Harris, director of metabolism and nutrition research at Sanford Research in Sioux Falls, S.D., there is no nutrient more important for decreasing risk of cardiovascular death—and more lacking—than omega-3. And its benefit to other organs is rapidly taking shape.

It is possible to measure a person's omega-3 levels, but the tests are used mainly for research. We don't yet know the range of acceptable values (as was the case for cholesterol), so there is a compelling need to determine optimal levels for age, sex, or

medical condition. Knowing one's personal blood levels are too low would motivate dietary change or supplement use, and repeat testing would measure the patient's progress. Though the test is not covered by most insurance, individuals can get their numbers at boutique labs for \$100 to \$200.

Taking aim. For now, people use dietary targets rather than blood-level goals—that is, if they think about omega-3s at all. The recommendation of several public health organizations that everyone eat fish twice a week just isn't on the radar screens of most homes or doctor's offices. Moreover, not everyone responds the same way to a meal of omega-3s. Genes influence levels of omega-3s in the body, much as they do cholesterol. Some people, such as women of childbearing age, seem to be more effective in generating EPA and DHA from a lesser source, called alpha linolenic acid, found in certain plant oils. And, of course, not every fish meal delivers the same dose of nutrients. Nevertheless, the Japanese, who consume eight to 15 times more fish than we do—and have higher omega-3 blood levels to prove it—experience less heart disease and greater longevity despite smoking more.

Though the medical and nutrition communities generally believe eating fatty fish is the way to go, refined fish oil supplements with specified doses of EPA and DHA can make for a more certain prescription, and one that alleviates concerns about fish being contaminated with mercury or PCBs. (Nasty fish burps can be avoided by freezing the gel capsules and taking them at bedtime. And vegans can find supplements derived from algae, the fishes' omega-3 source.) The FDA, which oversees supplements, advises that patients should not take more than 2 grams without physician guidance. There is now a highly refined prescription form of omega-3 called Lovaza that can deliver the DHA and EPA at levels of 4 grams or more. That's right. The FDA has approved an omega-3 pill as a medicine. So, we have a treatment and we have a blood test. Before long, your personal omega-3 index just could be the new cholesterol—the number you want to brag about.