Manuscript #555

1. Full Title: Intake of omega-3 fatty acids and cardiovascular disease
   Abbreviated title: Omega-3 fatty acids & CVD

2. Writing Group:
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3. Timeline:
   Immediately

4. Rationale:
   Omega-3 (ω-3) fatty acids are long-chain polyunsaturated fatty acids with important
   metabolic and structural properties. Eicosapentaenoic acid (C20:5 ω-3; EPA) and
docosahexaenoic acid (C22:6 ω-3; DHA) are mainly obtained in the diet from fatty fish
   and oily oils. Fish oil fatty acids affect eicosanoid production, increasing vasodilatation
   and inducing dose-dependent reductions in platelet aggregability, leukocyte activation
   and plasma triglycerides, which might reduce the risk of coronary disease. A protective
   effect of fish intake on coronary heart disease has been shown in some (e.g., Zutphen,
   MRFIT, Western Electric studies) but not all prospective studies (e.g., Physician's Health
   Study). Similarly, studies of the association of plasma or tissue levels of fish oils and
   incidence of myocardial infarction have yielded conflicting results. A randomized trial of
   diet in post-myocardial infarction patients found a significant reduction in ischemic heart
disease mortality in the group assigned to consuming fatty fish 2-3 times per week, but
   the number of ischemic events was not reduced (DART study, Lancet 1989;2:757-61).

   Alpha-linolenic acid (C18:3 ω-3; ALA), found in low amounts in vegetable oils, is an
   essential nutrient in humans. ALA may also reduce platelet aggregability either by
   modulating the effect of arachidonic acid, or through desaturation and elongation to EPA.
   Although the association of ALA and cardiovascular endpoints has received less
   attention, low levels of ALA were associated with increased risk of cardiac events in
   three previous studies, but this association was not significant after adjusting for linoleic
   acid in one of the studies (Lancet 1987;1:177-182). Further studies are needed to clarify
   the role of these nutrients on the development of coronary heart disease.

5. Main Hypotheses:
   Intake of ALA is inversely related to coronary heart disease incidence, and this
   association is independent of known cardiovascular risk factors.
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independent of known cardiovascular risk factors.