

Fish Oil for Treatment of Dyslipidemia

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Clinical Question

How effective is fish oil in lowering lipid levels in adults with dyslipidemia?

Evidence-Based Answer

Supplementation with omega-3 fatty acids decreases triglyceride and very low-density lipoprotein cholesterol levels. However, it can also increase low-density lipoprotein (LDL) cholesterol levels. Treatment with omega-3 fatty acids does not decrease total mortality, cardiovascular events, or cancer incidence, and therefore should not be recommended to patients to decrease their risk of dyslipidemia. (Strength of Recommendation: A, based on meta-analyses of randomized controlled trials [RCTs].)

Evidence Summary

IMPROVEMENTS IN LABORATORY VALUES

A Cochrane review of 23 RCTs involving 1,075 participants with type 2 diabetes mellitus showed that supplementation with fish oil (average dosage of 3.5 g per day for an average of 8.9 weeks) lowered triglyceride levels by 8.1 mg per dL (0.1 mmol per L; $P < .00001$).¹ In treated patients, very low-density lipoprotein cholesterol levels decreased by 1.26 mg per dL (0.03 mmol per L; $P = .04$), and LDL cholesterol levels increased by 1.98 mg per dL (0.05 mmol per L; $P = .05$). There was no change in high-density lipoprotein cholesterol levels.

An earlier Cochrane review of 17 RCTs (N = 3,918) sought to determine the effect of omega-3 fatty acid supplementation on rates of mortality and cardiovascular events.² The meta-analysis of studies that included adults at risk of cardiovascular disease found that omega-3 fatty acid supplementation significantly reduced serum triglyceride levels (weighted mean

difference = -7.2 mg per dL [-0.1 mmol per L]; 95% confidence interval [CI], -10.08 to -4.14). Total and high-density lipoprotein cholesterol levels did not change significantly. LDL cholesterol significantly increased (weighted mean difference = 2.34 mg per dL [0.06 mmol per L; 95% CI, 0.54 to 3.96]). It should be noted that this study examined omega-3 intake from fish and plant sources.

A systematic review of four RCTs concluded that supplementation with two omega-3 fatty acids (docosahexaenoic acid [DHA] and eicosapentaenoic acid [EPA]) in doses of 1.7 g or greater reduced triglyceride levels by at least 10% compared with baseline.³ Patients with higher baseline triglyceride levels had the greatest benefit.

NO IMPROVEMENTS IN PATIENT OUTCOMES

Two meta-analyses investigated the effects of fish oil supplementation on mortality rates. A meta-analysis of 17 RCTs (N = 63,279) identified no relationship between omega-3 fatty acid intake and mortality (relative risk = 0.96; 95% CI, 0.91 to 1.02).⁴ Follow-up for participants in the included studies ranged from one to 6.2 years. A Cochrane review of 48 RCTs (N = 36,913) and 41 cohort studies evaluating participants over six months showed no reduction in rates of overall mortality, cardiovascular events, or cancer.² However, the length of follow-up may have been inadequate to establish effectiveness.

Recommendations from Others

The American Heart Association recommends daily supplementation with 2 to 4 g of EPA/DHA for patients with elevated triglyceride levels.³ The amount of EPA/DHA ranges from 300 to approximately 850 mg, ►

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depending on the brand.³ The National Cholesterol Education Program expert panel has not recommended a specific dosage of omega-3 fatty acids for supplementation.⁵

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