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; $P < .00001$). 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. 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.

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). 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. 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. The amount of EPA/DHA ranges from 300 to approximately 850 mg.
depending on the brand. The National Cholesterol Education Program expert panel has not recommended a specific dosage of omega-3 fatty acids for supplementation.

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REFERENCES


