

# Abstract

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## Plasma omega-3 fatty acids and incident diabetes in older adults.

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**BACKGROUND:** Although long-chain omega-3 fatty acid (n-3 FA) consumption estimated via food-frequency questionnaires has been associated with a higher incidence of diabetes, limited prospective data on diabetes risk are available that use objective biomarkers of n-3 FAs.

**OBJECTIVE:** We sought to examine the relation between plasma phospholipid n-3 FAs and incident diabetes.

**DESIGN:** We prospectively analyzed data in 3088 older men and women (mean age: 75 y) from the Cardiovascular Health Study (1992-2007). Plasma phospholipid n-3 FAs were measured by using gas chromatography, and incident diabetes was ascertained by using information on hypoglycemic agents and serum glucose. We used Cox proportional hazards models to estimate multivariable-adjusted relative risks.

**RESULTS:** During a median follow-up of 10.6 y, 204 new cases of diabetes occurred. In a multivariable model that controlled for age, sex, race, clinic site, body mass index, alcohol intake, smoking, physical activity, LDL cholesterol, and linoleic acid, relative risks (95% CIs) for diabetes were 1.0 (reference), 0.96 (0.65, 1.43), 1.03 (0.69, 1.54), and 0.64 (0.41, 1.01) across consecutive quartiles of phospholipid eicosapentaenoic acid and docosahexaenoic acid (P for trend = 0.05). Corresponding relative risks (95% CIs) for phospholipid  $\alpha$ -linolenic acid (ALA) were 1.0 (reference), 0.93 (0.65, 1.34), 0.99 (0.68, 1.44), and 0.57 (0.36, 0.90) (P for trend = 0.03).

**CONCLUSIONS:** With the use of objective biomarkers, long-chain n-3 FAs and ALA were not associated with a higher incidence of diabetes. Individuals with the highest concentrations of both types of FAs had lower risk of diabetes.

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