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## **Circulating Long-Chain $\omega$ -3 Fatty Acids and Incidence of Congestive Heart Failure in Older Adults: The Cardiovascular Health Study: A Cohort Study.**

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### **Source**

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### **Abstract**

**Background:** Few previous studies have evaluated associations between long-chain  $\omega$ -3 fatty acids and incidence of congestive heart failure (CHF), and those that have are typically based on diet questionnaires and yield conflicting results. Circulating fatty acid concentrations provide objective biomarkers of exposure. **Objective:** To determine whether plasma phospholipid concentrations of long-chain  $\omega$ -3 fatty acids, including eicosapentaenoic acid (EPA), docosapentaenoic acid (DPA), and docosahexaenoic acid (DHA), were associated with incident CHF. **Design:** Prospective cohort study. **Setting:** 4 U.S. communities. **Patients:** 2735 U.S. adults without prevalent heart disease who were enrolled in the Cardiovascular Health Study from 1992 to 2006. **Measurements:** Plasma phospholipid fatty acid concentrations and other cardiovascular risk factors were measured in 1992 by using standardized methods. Relationships with incident CHF (555 cases during 26 490 person-years, adjudicated by using medical records) were assessed by using Cox proportional hazards models. **Results:** After multivariate adjustment, plasma phospholipid EPA concentration was inversely associated with incident CHF; risk was approximately 50% lower in the highest versus the lowest quartile (hazard ratio [HR], 0.52 [95% CI, 0.38 to 0.72]; P for trend = 0.001). In similar analyses, trends toward lower risk were seen for DPA (HR, 0.76 [CI, 0.56 to 1.04]; P for trend = 0.057) and total long-chain  $\omega$ -3fatty acids (HR, 0.70 [CI, 0.49 to 0.99]; P for trend = 0.062) but not for DHA (HR, 0.84 [CI, 0.58 to 1.21]; P for trend = 0.38). In analyses censored to the middle of follow-up (7 years) to minimize exposure misclassification over time, multivariate-adjusted HRs were 0.48 for EPA (CI, 0.32 to 0.71; P for trend = 0.005), 0.61 for DPA (CI, 0.39 to 0.95; P for trend = 0.033), 0.64 for DHA (CI, 0.40 to 1.04; P for trend = 0.057), and 0.51 for total  $\omega$ -3 fatty acids (CI, 0.32 to 0.80; P for trend = 0.003). **Limitations:** Temporal changes in fatty acid concentrations over time may have caused underestimation of associations. Unmeasured or imperfectly measured covariates may have caused residual confounding. **Conclusion:** Circulating individual and total  $\omega$ -3fatty acid concentrations are associated with lower incidence of CHF in older adults. **Primary Funding Source:** National Institutes of Health.