

## Type 2 Diabetes

### Egg Consumption and Risk of Type 2 Diabetes in Older Adults

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**Significance:** There was no association between egg consumption or dietary cholesterol and increased risk of incident type 2 diabetes.

This prospective study of 3898 subjects from the Cardiovascular Health Study (1989–2007) assessed the association between egg intake and incident type 2 diabetes (T2D) in older adults. During a mean follow-up of 11.3 y, 313 new cases of T2D occurred. Crude incidence rates of T2D were 7.39, 6.83, 7.00, 6.72, and 12.20/1000 person-years in people who reported egg consumption of never, <1 egg/mo, 1–3 eggs/mo, 1–4 eggs/wk, and almost daily, respectively. In multivariable-adjusted models, there was no association between egg consumption and increased risk of T2D in either sex and overall. In a secondary analysis, dietary cholesterol was not associated with incident diabetes ( $P$  for trend = 0.47). In addition, egg consumption was not associated with clinically meaningful differences in fasting glucose, fasting insulin, or measures of insulin resistance despite small absolute analytic differences that were significant.

## Metabolic Syndrome

### Effects of Glycemic Load on Metabolic Risk Markers in Subjects at Increased Risk of Developing Metabolic Syndrome

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**Significance:** When incorporated into a habitual diet, consumption of test foods with a decreased glycemic load does not ameliorate metabolic risk markers in overweight subjects.

This study tested side-by-side test foods with similar macronutrient and fiber compositions but with different sucrose-flour ratios or carbohydrate source to determine the effects of different glycemic index (GIs) and glycemic load (GLs) on metabolic risk markers in 15 overweight subjects. Subjects received in random order for 11-wk 4 test foods with an increased GI or a decreased GI (69 vs. 40, 86 vs. 48, 63 vs. 37, and 51 vs. 20, respectively). There was a GL difference of 32 units between the 2 interventions. At the end of the 11-wk intervention periods, the decreased

GL test foods did not change fasting plasma glucose (mean±SD: 5.83±0.6 vs. 5.94±0.6 mmol/L) or insulin (8.3±2.8 vs. 9.8±5.1 mU/L) concentrations compared with increased GL test foods. Serum total cholesterol, LDL-cholesterol, HDL-cholesterol, and triacylglycerol concentrations were also not significantly different for decreased and increased GL test foods. Finally, proinflammatory (high-sensitivity CRP, IL-6, TNF- $\alpha$ , monocyte chemoattractant protein 1) and prothrombotic (plasminogen activator inhibitor 1) markers were not affected.

### **Effect of Changes in Waist Circumference on Metabolic Syndrome Over a 6.6-year Follow-Up in Tehran**

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**Significance:** Intervention for reducing waist circumference could be an effective strategy to decrease incident metabolic syndrome.

The effect of waist change on metabolic syndrome (MetS) status and its parameters was evaluated in 5720 adults who were followed for a mean of 6.6-yrs. Waist circumference (WC) and MetS parameters were measured at baseline and at follow-up, and assessed across five groups: waist loss (<-2.0 cm); waist stable (-2.0-2.9 cm); mild (3.0–5.9 cm); moderate (6.0–8.9 cm) and large ( $\geq$ 9.0 cm) waist gain. At baseline, the mean±SD waist gain was 88.8±11.7cm. Between baseline and follow-up, the mean waist gain was 5±7.9cm. There was 16% (95% CI=13.6–18.4) age-adjusted incident MetS and for every centimeter of WC gained over 6.6-yrs, the risk of MetS increased by 10% (OR=1.10; 95% CI=1.09–1.12). Compared with a stable WC in both genders, ORs for MetS for different waist gain groups were: mild (OR=2.3; 95% CI=1.7–3.2); moderate (OR=3.5; 95% CI=2.6–4.7) and large (OR=5.8; 95% CI=4.5–7.6). Waist loss had a protective effect on MetS (OR=0.6= 95% CI=0.4–0.9). Waist gain showed a detrimental effect on all parameters of MetS, except for HDL-cholesterol and fasting blood sugar. Waist gain was a risk factor of the development of MetS and its parameters.

## **Cardiovascular Disease**

### **Dietary Fiber Intake Is Associated with Reduced Risk of Mortality from Cardiovascular Disease among Japanese Men and Women**

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**Significance:** Dietary intakes of fiber, both insoluble and soluble fibers, and especially fruit and cereal fibers, may reduce risk of mortality from coronary heart disease.

The association between dietary fiber intake and mortality from cardiovascular disease (CVD) was evaluated in a prospective study of 58,730 Japanese men and women aged 40–79-yrs. During the 14-y follow-up, a total of 2080 CVD deaths (983 strokes, 422 coronary heart disease [CHD], and 675 other CVD) were documented. Total,

insoluble, and soluble dietary fiber intakes were inversely associated with risk of mortality from CHD and total CVD for both men and women. For men, the multivariable HR (95% CI) for CHD in the highest vs. the lowest quintiles were 0.81 [(95% CI=0.61–1.09)], 0.48 [(95% CI=0.27–0.84)], and 0.71 [(95% CI=0.41–0.97)] for total, insoluble, and soluble fiber, respectively. The respective HR (95% CI) for women were 0.80 [(95% CI=0.57–0.97)], 0.49 [(95% CI=0.27–0.86)], and 0.72 [(95% CI=0.34–0.99)], respectively. For fiber sources, intakes of fruit and cereal fibers but not vegetable fiber were inversely associated with risk of mortality from CHD.

## Special Report

### Total Folate and Folic Acid Intakes from Foods and Dietary Supplements of US Children Aged 1–13 y

R.L. Bailey, M.A. McDowell, K.W. Dodd, J.J. Gahche, J.T. Dwyer, M.F. Picciano

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**Significance:** Total folate intakes of most U.S. children meet the EARs; those who used dietary supplements had significantly higher total folate intakes and exceeded the UL by >50%.

This study computed total folate and total folic acid intakes of U.S. children aged 1–13y by using a statistical method that adjusts for within-person variability and compared these intakes with the Dietary Reference Intake guidelines for adequacy and excess. Data from the 2003–2006 NHANES were analyzed. Total folate intakes were derived by combining intakes of food folate (naturally occurring and folic acid from fortified foods) on the basis of 24-h dietary recall results and folic acid intakes from dietary supplements on the basis of a 30-d questionnaire. More than 95% of U.S. children consumed at least the EAR for folate from foods alone. More than one-third (35%) of U.S. children aged 1–13 y used dietary supplements, and 28% used dietary supplements containing folic acid. Supplement users had significantly higher total folate and folic acid intakes than did nonusers. More than half (53%) of dietary supplement users exceeded the UL for total folic acid (fortified food + supplements) as compared with 5% of nonusers.

### Unmetabolized Serum Folic Acid and its Relation to Folic Acid Intake from Diet and Supplements in a Nationally Representative Sample of Adults Aged $\geq 60$ y in the United States

R.L. Bailey, J.L. Mills, E.A. Yetley, J.J. Gahche, C.M. Pfeiffer, J.T. Dwyer, et al.

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<http://www.ajcn.org/cgi/content/full/92/2/353>

**Significance:** Approximately 40% of older adults in the U.S. have unmetabolized serum folic acid (UMFA) that persists after a fast, and the presence of UMFA is not easily explained in NHANES by folic acid intakes alone.

Unmetabolized serum folic acid (UMFA) concentrations in relation to dietary and supplemental folate and status biomarkers in the U.S. population aged  $\geq 60$  y were examined. Surplus sera were analyzed with the use of data from

the NHANES 2001–2002,  $n=1121$ . UMFA was detected in 38% of the population, with a mean concentration of  $4.4\pm 0.6$  nmol/L (median  $1.2\pm 0.2$  nmol/L). The group with UMFA (UMFA+) had a significantly higher proportion of folic acid supplement users vs. the group without UMFA (60% vs. 41%). UMFA+ men and women also had higher supplemental and total (food + supplements) folic acid intakes vs. their counterparts without UMFA. Forty percent of the UMFA+ group was in the highest quartile of total folic acid intake, but total folic acid intake was only moderately related to UMFA concentrations ( $r^2=0.07$ ). Serum folate concentrations were significantly higher in the UMFA+ group and were predictive of UMFA concentrations ( $r^2=0.15$ ). Serum 5-methyltetrahydrofolate and vitamin B-12 concentrations were higher in the UMFA+ group, whereas there was no difference between the 2 UMFA groups in red blood cell folate, serum homocysteine, or methylmalonic acid concentrations.