

Shaw, GM, et al. Periconceptional dietary intake of choline and betain and neural tube defects in offspring. *Am J Epidemiol* 2004; 160:102-109.

Periconceptional intake of folic acid prevents some neural tube defects (NTDs). Other nutrients may also contribute to NTD etiologies; a likely candidate is choline. Similar to folic acid, choline is involved in one-carbon metabolism for methylation of homocysteine to methionine. The authors investigated whether maternal periconceptional dietary intakes of choline and its metabolite betaine influence NTD risk. Data were derived from a case-control study of fetuses and infants with NTDs among 1989–1991 California births. In-person interviews were conducted with mothers of 424 NTD cases and with mothers of 440 nonmalformed controls. A standard 100-item food frequency questionnaire was used to assess nutrient intake. Dietary intakes of choline were associated with reduced NTD risks. Controlling for intake of supplemental folic acid, dietary folate, dietary methionine, and other covariates did not substantially influence risk estimates for choline. NTD risk estimates were lowest for women whose diets were rich in choline, betaine, and methionine. That is, for women whose intake was above the 75th percentile compared with below the 25th percentile for all three nutrients, the odds ratio was 0.17 (95% confidence interval: 0.04, 0.76). Study findings for dietary components other than folic acid offer additional clues about the complex etiologies of NTDs.