

Multivitamin Use and Oral Clefts

Cleft lip and/or cleft palate occur in 1 in 550 newborns—about 1000 babies born in California each year. Children with clefts need multiple corrective surgeries, and frequently have speech, hearing, and feeding problems. Average lifetime costs exceed \$100,000 per case.

Can oral clefts be prevented? Several studies have hinted that multivitamins containing folic acid might lower risk. This study by the California Birth Defects Monitoring Program is the largest to date looking at multivitamin use and clefts, and the first to examine risks for different cleft types.

25%-50% RISK REDUCTION SEEN

Mothers were asked about vitamin use 1 month before through 2 months after conception. Those who had taken multivitamins containing folic acid were less likely to have babies with clefts. The protective effect did not depend on the amount of folic acid taken—higher levels did not reduce risk more than low levels.

Risk reductions ranged from 25%-50%, depending on the type of cleft. The greatest reduction was for the most common diagnosis: vitamin users were 50% less likely to have babies with cleft lip with/without cleft palate and no other birth defects.

FORTIFIED CEREAL ALSO LOWERS RISK

One bowl of vitamin-fortified cereal contains at least 0.1 milligrams of folic acid—25% of the daily level recommended for women of childbearing age. Among women who did not take multivitamins, those consuming fortified cereal daily had lower risks for oral clefts. Other dietary sources of folic acid were not studied.

IS FOLIC ACID RESPONSIBLE?

Most studies of vitamins and birth defects have focused on folic acid. Yet few women take folic acid alone; most get it from multivitamins. We can't say

MULTIVITAMIN USE

- 14% of mothers of babies with clefts and 19% of mothers of normal infants took multivitamins before conception.
- By the end of the second month of pregnancy, 57% of mothers whose babies had clefts and 69% of those in the comparison group were taking multivitamins.
- 90% of women taking vitamins reported daily use.
- About 10% of women who did not take multivitamins ate vitamin-fortified cereal daily.

whether the reduced risk is due to folic acid, another component of multivitamins, or some other health behavior common in vitamin users. Until this is clarified, women of childbearing age should follow the current US Public Health Service recommendation: consume 0.4 milligrams of folic acid daily—the amount found in most multivitamins.

POPULATION-BASED STUDY DESIGN

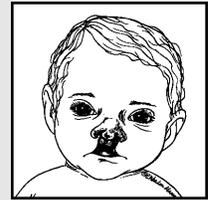
All cases were identified through ongoing surveillance by the California Birth Defects Monitoring Program registry, an actively ascertained, population-based database on children with birth defects.

Specific study elements follow:

- **Birth defects:** Cleft lip or palate or both. Infants with the chromosome abnormalities trisomy 21 (Down syndrome) or 45,X (Turner syndrome) were excluded. A medical geneticist classified cases according to the cleft type and whether additional birth defects were present.
- **Participants:** Mothers of infants or fetuses with clefts identified from 552,601 monitored births in 1987-1989, and a randomly selected comparison group of mothers delivering infants without birth defects in the same years. Mothers of 731 oral cleft cases agreed to be interviewed—85% of those eligible. Interviews also took place with 734 mothers in the comparison group—78% of those eligible.
- **Diagnostic information:** Abstracted from hospital medical records, including surgical reports.
- **Interviews:** 40-minute telephone interviews in English or Spanish asking about vitamin use,

PREVENTING RECURRENCES

Researcher Marie Tolarova, now with the California Birth Defects Monitoring Program, studied over 2000 Czech families where a parent or previous child had an oral cleft. These families face a much higher than average risk of having another affected child.



Beginning 2 months before conception, 221 mothers were given multivitamins plus 10 milligrams of folic acid daily. Compared with the other high-risk families, there were 65% fewer babies with clefts born to women in the supplemented group. The greatest risk reduction was found in families with less severe clefts.

*REFERENCE: Tolarova M, Harris J. Reduced recurrence of orofacial clefts after periconceptional supplementation with high-dose folic acid and multivitamins. **Teratology** 1995; 51:71-78.*

cereal consumption, medical and family history, and environmental exposures during pregnancy.

- **Folic acid intake:** Estimated from questions about vitamin/mineral supplement composition and frequency of use.

*REFERENCE: Shaw GM, Lammer EJ, Wasserman CR, O'Malley CD, Tolarova MM. Risks of orofacial clefts in children born to women using multivitamins containing folic acid periconceptionally. **Lancet** 1995; 346:393-396.*

The California Birth Defects Monitoring Program—a public health program devoted to finding causes of birth defects—is funded through the California Department of Health Services and jointly operated with the March of Dimes Birth Defects Foundation.