

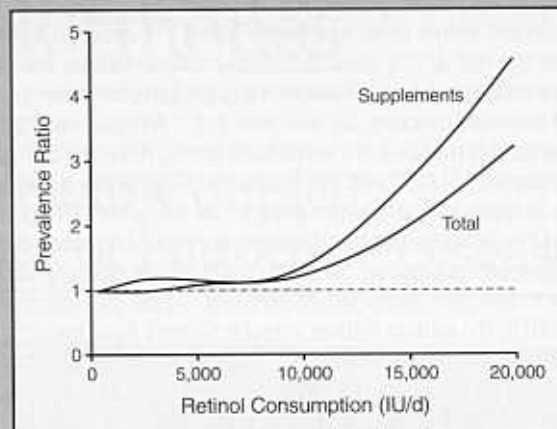
Table 1  
Birth Defects According to Category With  
Retinoic Acid Embryopathy

Type of Defect	No.
Cranial neural crest	
Craniofacial, central nervous system (except neural tube), and thymic	69
Heart	52
Total	121
Neural tube	48
Musculoskeletal and Urogenital	
Musculoskeletal	58
Urogenital	42
Total	100
Other	
Gastrointestinal	24
Nongastrointestinal	46
Total	70
Total	339

Rothman et al have interviewed 22,748 women concerning their diet and illnesses during the first trimester of pregnancy. All sources of retinol intake were tabulated and an association was made with various types of birth defects. There is a major concern regarding supplementary vitamin A but not the beta carotene of the dietary form of vitamin A. A relationship was found between high vitamin A consumption during early pregnancy and the occurrence of a variety of birth defects. The data appeared to indicate a teratogenic effect of vitamin A intake not far above the currently recommended dose. Consuming more than 10,000 IU per day was found to be associated with an increased incidence of birth defects when the high levels of vitamin A were taken before the seventh week of gestation (Figure 1). It was estimated that 1.4% of the women in the study averaged more than 10,000 IU of vitamin A per day.

Table 1 and Figure 1 reprinted by permission of *The New England Journal of Medicine*; Rothman K J, et al. *N Engl J Med* 1995;333: 1369-1373.

Figure 1  
Retinol Consumption (IU/d)



Estimated prevalence ratio for birth defects related to the cranial neural crest, according to retinol intake during the first trimester of pregnancy.

**Editor's comment:** This finding is of great concern because the general public thinks that vitamins are benign and if "a little is good, a lot is better." The study points out there is a fine line between enough and too much. Of particular concern are the additive effects of multivitamins, prenatal vitamins, and fortified foods. Care should be taken by pregnant women or women who wish to become pregnant to limit vitamin A supplementation. In view of the fact that we wish pregnant women to be sure to take sufficient folic acid prior to becoming pregnant and in early pregnancy, the situation can be confusing. It is quite clear that vitamin A can be teratogenic and can be related to other problems besides the classic picture of retinoic acid embryopathy.

Judith G. Hall, MD

## Growth and Physical Outcome of Children Conceived by in Vitro Fertilization

The authors report the status at 2 years of age of 289 Australian children from Victoria who were conceived by in vitro fertilization (IVF). The birth weights of singleton IVF and naturally conceived control infants were similar (IVF: 3,196 g; control: 3,294 g), while the birth weights and gestational ages of IVF twins were slightly greater than those of control twins (IVF: 2,297 g, 35.0 weeks; control: 2,053 g, 33.7 weeks). At 2 years of age, the weight and head circumference percentiles of the entire group of IVF and control children were similar (IVF: 56.3 g; 63.4 cm, respectively; control: 56.2 g; 65.7 cm, respectively). Length percentile of the IVF children was significantly ( $P=0.004$ ) greater than that of the control children (57.7 cm versus 49.9 cm), the reason for which was not apparent. There was no significant difference between

IVF and naturally conceived children with respect to: congenital malformations, subsequent hospitalizations and operations, or neurologic status. The investigators concluded that IVF had no adverse effect on growth, general health, and development at 2 years of age.

Saunders K, et al. *Pediatrics* 1996;97:688-692.

**Editor's comment:** More than 34,000 children have been delivered by assisted reproductive techniques. It is encouraging to note that these interventional methods have produced predominantly normal offspring.

Allen W. Root, MD