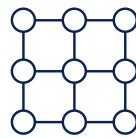




# Selected Studies on Choline & Prenatal Health



## Choline & DHA Interaction

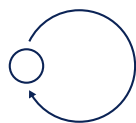
Klatt KC, et al., Prenatal choline supplementation improves biomarkers of maternal docosahexaenoic acid (DHA) status among pregnant participants consuming supplemental DHA: a randomized controlled trial. *Am J Clin Nutr* 2022; 116(3): 820-832.

<https://pubmed.ncbi.nlm.nih.gov/35575618/>

Loinard-González AAP, et al., Genetic variants in one-carbon metabolism and their effects on DHA biomarkers in pregnant women: a post-hoc analysis. *Nutrients* 2022; 14(18): 3801.

<https://pubmed.ncbi.nlm.nih.gov/36145177/>

West AA, et al. Choline intake influences phosphatidylcholine DHA enrichment in nonpregnant women but not in pregnant women in the third trimester. *Am J Clin Nutr* 2013; 97(4): 718-727. <https://pubmed.ncbi.nlm.nih.gov/23446897/>



## Choline Bioavailability

Taesuwan S, et al. Choline metabolome response to prenatal choline supplementation across pregnancy: a randomized controlled trial. *FASEB J* 2021; 35(12): e22063.

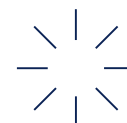
<https://pubmed.ncbi.nlm.nih.gov/34820909/>



## Choline & Lactation

Davenport C, et al. Choline intakes exceeding recommendations during human lactation improve breast milk choline content by increasing PEMT pathway metabolites. *J Nutr Biochem* 2015; 26(9): 901-911.

<https://pubmed.ncbi.nlm.nih.gov/26025328/>



## Maternal Choline Supplementation & Offspring Cognition

Caudill MA, et al. Maternal choline supplementation during the third trimester of pregnancy improves infant information processing speed: a randomized, double-blind, controlled feeding study. *FASEB J* 2018; 32(4): 2172-2180. <https://pubmed.ncbi.nlm.nih.gov/29217669/>

Bahnfleth CL, et al., Prenatal choline supplementation improves child sustained attention: a 7-year follow-up of a randomized controlled feeding trial. *FASEB J* 2022; 36(1): e22054.

<https://pubmed.ncbi.nlm.nih.gov/34962672/>

Obeid R, et al., Association between maternal choline, fetal brain development, and child neurocognition: systematic review and meta-analysis of human studies. *Adv Nutr* 2022; 13(6): 2445-2457.

<https://pubmed.ncbi.nlm.nih.gov/36041182/>

# Expert Group Recommendations on Choline



	Daily Adequate Intake	
	Institute of Medicine <sup>(1)</sup>	EFSA <sup>(2)</sup>
<u>Adult Women</u>	425 mg	400 mg
<u>Pregnancy</u>	450 mg	480 mg
<u>Lactation</u>	550 mg	520 mg

#### American Medical Association

"Adequate levels of choline—an important nutrient that helps a baby's brain and spinal cord to develop properly—are necessary to maintain normal pregnancy including neural development of the fetus..."<sup>(3)</sup>

"Prenatal vitamins only contain 0–55 mg of choline, leaving the majority of pregnant and lactating women without enough dietary choline to protect the health and development of their babies."<sup>(4)</sup>

The American Medical Association (AMA) supports "evidence-based amounts of choline in all prenatal vitamins."<sup>(4)</sup>

#### American Academy of Pediatrics

Choline is a "key nutrient that supports neurodevelopment".

Pediatricians should prioritize "public policies that ensure the provision of adequate nutrients and healthy eating" to help "ensure that all children have an early foundation for optimal neurodevelopment, a key factor in long-term health."<sup>(5)</sup>

#### American College of Obstetrics and Gynecology

"Choline plays a role in your fetus's brain development. . . . Experts recommend that pregnant women get 450 mg of choline each day."

"It's important to get choline from your diet because it is not found in most prenatal vitamins."<sup>(6)</sup>

#### 2020-2025 Dietary Guidelines for Americans

"Adequate intake of choline during [pregnancy & lactation] helps to both replenish maternal stores and support the growth and development of the child's brain and spinal cord."

"Many prenatal supplements do not contain choline or only contain small amounts inadequate to meet recommendations."<sup>(7)</sup>

#### March of Dimes

"Choline will help your baby's brain and spinal cord develop correctly. It's recommended that women get 425 milligrams a day before getting pregnant, and 450 milligrams a day while pregnant. . . . Some prenatal vitamins contain choline, but is only a small amount, about 55 mg of choline, so you will need to eat foods with choline to get enough."<sup>(8)</sup>

#### References:

- (1) Food and Nutrition Board, Institute of Medicine, 1998
- (2) EFSA J 2016; 14(8): 4484.
- (3) <https://www.ama-assn.org/delivering-care/public-health/ama-backs-global-health-experts-calling-infertility-disease>
- (4) <https://www.ama-assn.org/sites/ama-assn.org/files/corp/media-browser/public/hod/a17-reference-committee-reports.pdf>
- (5) Schwarzenberg SJ, et al; Pediatrics 2018; 141(2): e20173716.
- (6) <https://www.acog.org/womens-health/faqs/nutrition-during-pregnancy>
- (7) <https://www.dietaryguidelines.gov/>
- (8) <https://www.marchofdimes.org/find-support/topics/planning-baby/healthy-eating-having-baby>

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