



www.Help4ADHD.org
(800) 233-4050
Help4ADHD@CHADD.org

Ask the Expert

5 Ways Nutrition Can Impact ADHD Symptoms



Laura Stevens, MS

The National Resource Center on ADHD: A Program of CHADD is the nation's clearinghouse for evidence-based information on ADHD. This Ask the Expert webcast is supported by Cooperative Agreement Number NU18DD000376 from the Centers for Disease Control and Prevention (CDC) and does not necessarily represent the official views of the CDC. The National Resource Center on ADHD, CHADD and the CDC do not endorse, support, represent or guarantee the accuracy of any content presented or endorse any opinions expressed in this webcast.

CHADD is home to the



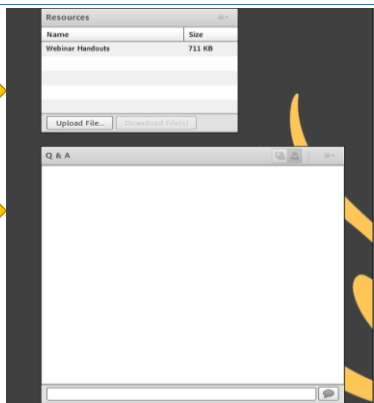
A partnership between CHADD and the US Centers for Disease Control and Prevention (CDC)

For more information:
<http://www.chadd.org/About-CHADD/National-Resource-Center.aspx>



Slides →

Ask a question →






Do you need help with choosing what direction to go?

Call and speak to an ADHD Information and Resource Specialist

1-800-233-4050
Mon-Fri, 1-5pm ET






www.Help4ADHD.org
(800) 233-4050
Help4ADHD@CHADD.org

Ask the Expert

5 Ways Nutrition Can Impact ADHD Symptoms




Laura Stevens, MS

The National Resource Center on ADHD: A Program of CHADD is the nation's clearinghouse for evidence-based information on ADHD. This Ask the Expert webcast is supported by Cooperative Agreement Number 1U39CE0005276 from the Centers for Disease Control and Prevention (CDC) and does not necessarily represent the official views of the CDC. The National Resource Center on ADHD, CHADD and the CDC do not endorse, support, represent or guarantee the accuracy of any content presented or endorse any opinions expressed in this webcast.


Food for Thought:

5 Ways Nutrition Can Impact ADHD Symptoms



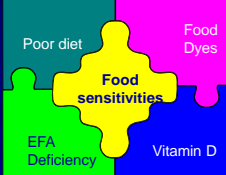
Laura J. Stevens, M.S.

Helping a child with ADHD is like solving a jigsaw puzzle



Five Nutritional Jigsaw Puzzle Pieces

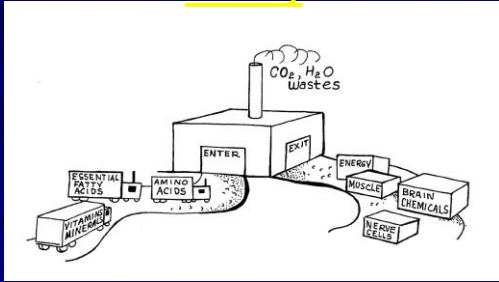
- 1. Fixing poor diets
- 2. Artificial food colors & flavors
- 3. Food sensitivities
- 4. Essential fatty acid deficiencies
- 5. Vitamin D deficiency



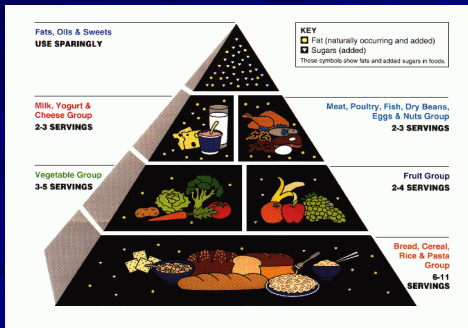
#1 Eating an A+ Diet



Tommy's Amazing Chemical Factory



Food Guide Pyramid



Food Guide Pyramid and American Preschoolers

- 1% met all recommendations
- 16% didn't meet any recommendations
- Preschoolers
 - Vegetables 18%
 - Fruit 34%
 - Grain 22%
 - Meat 14%
 - Dairy 35%



#1 Grains

- Limit white rice and white bread
- Choose a variety of whole grains
 - 100 % whole grain bread, crackers
 - Low sugar 100% whole grain cereals
 - Brown rice
 - Whole grain pasta
 - Popcorn



#2 Vegetables

- The more the better!
- Provide
 - Vitamins
 - Iron, Calcium
 - Trace minerals
 - Complex carbs
 - Fiber
 - Phytochemicals
- Snacks
- Dip
- Vegetable soup
- Don't overcook
- Set a good example!



#3 Fruits

- 3-4 child-size servings
- Provide
 - Vitamins A & C
 - Minerals
 - Complex carbs
 - Fiber
 - Phytochemicals*
- Rainbow of colors
- 100 % pure juice
 - Grape, apple juice--NO
 - Small glass OJ or tomato juice



Fruits

- Child-size portions
 - Small apple, banana or orange
 - Small melon wedge
 - ½ cup pure fruit juice
 - Avoid apple, grape
 - 1/3 cup cooked or canned fruit (own juice)
 - Unsweetened applesauce ½ cup



#4 Dairy

- 4 child-size servings
 - - Protein
 - Vitamins A, B12, D, riboflavin
 - Minerals: especially calcium, vitamin D
- Many ADHD children are "turned" on by dairy products
- If dairy-free, will need calcium and vitamin D supplements every day!!!



Dairy Serving Sizes



- 4 Child-size servings
 - ½ cup milk or yogurt
 - 1-inch cube of natural cheese
 - 1 slice natural cheese
 - (avoid processed cheese)

#5 Protein



- 3-5 child-size portions
- Low-fat meats, less red meat
- Poultry—broiled, stewed, baked
- Fish
 - Oily, cold-water fish-omega-3 fatty acids
- Dry beans
 - Kidney, navy, pinto, soy, red beans-omega-3 fatty acids
- Eggs
- Nut butters

#6 Fats and Oils

- Reduce some fats
 - Saturated
 - Hydrogenated, partially hydrogenated
 - Trans fatty acids
 - Omega-6 (corn, soy, sunflower, peanut, etc.)
- Increase other fats
 - Increase omega-3 fatty acids
 - Canola, walnut, flaxseed oil
 - Olive oil

#7 Reduce Sugar, Sweeteners

- Become label reader
 - Nutrition Facts look for "Sugar" 4 grams=1 teaspoon
 - Ingredient List- many different names
 - Avoid High Fructose Corn Syrup
- American Heart Association
 - Less than 6 teaspoons (or 24 g)/ day
 - How much for a child with ADHD?

Nutrition Facts Label

Limit these nutrients

Get enough of these nutrients

Quick Guide to % Daily Value: 5% or less is low, 20% or more is high

Nutrition facts	
Serving size 1 cup (9 oz - 255g)	
Servings per container 2	
Amount per serving	
Calories 485	Calories from fat 220
% Daily Value*	
Total fat 1 oz - 28 g	32%
Saturated fat 0.5 oz - 14g	38%
Trans fat 0.2 oz - 6g	
Sodium 0.03 oz - 0.9g	13%
Total carbohydrate 1.5 oz - 42g	11%
Dietary fiber 0.2 oz - 6g	0%
Sugars 0.2 oz - 6g	
Protein 0.2 oz - 6g	
Vitamin A 5%	Calcium 18%
Vitamin C 3%	Iron 6%

* Percent Daily Value are based on a 2500 calorie diet. Your Daily Value may be higher or lower depending on your calorie need.

Sugar Substitutes

- Aspartame-AVOID
- Saccharin-AVOID
- Sucralose -AVOID
- Stevia-OK
- Monk fruit-OK
- Xylitol-OK (may cause diarrhea for some)

Foods to Avoid

- All soda pop, fruit drinks, energy drinks, sports drinks
- All candy
- All high sugary foods
- White flour
- White potato chips, fries

Mediterranean Diet and ADHD

- Published in *Pediatrics* 2017
- Studied 120 children—60 healthy children, 60 ADHD children
- Dietary intake, adherence to Mediterranean diet
- Children with ADHD
 - Lower adherence to Med Diet
 - More skipped breakfast
 - Lower consumption of fruit, vegetables, pasta, and rice
 - Higher frequency of skipping breakfast, more fast food
 - Higher intake of sugar, candy, cola beverages, other soda
 - Lower consumption of fatty fish

Rios-Hernandez. *Pediatrics* Vol. 139 (2), 2017.

Mediterranean Diet cont.



Mediterranean Diet cont.

- More fish
- Low in red meats
- Moderate in eggs
- Moderate in dairy products
- Low in sugar and sweets
- High in fruits and vegetables
- Olive oil

#2 Artificial Food Colors & Flavors



Most Common Food Dyes

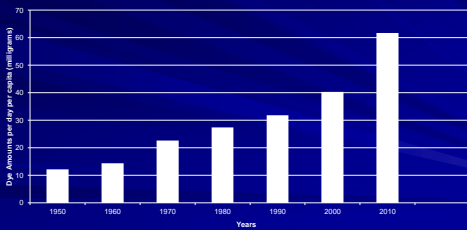
- Allura Red FD&C* Red #40
- Tartrazine FD&C Yellow #5
- Sunset Yellow FD&C Yellow #6
- Brilliant Blue FD&C Blue #1

■ *FD&C: Foods Drugs and Cosmetics

Other allowed food dyes

- Indigotine FD&C Blue #2
- Fast green FD&C Green #3
- Erythrosine FD&C Red #3

Trends in Production of Food Dyes in United States by FDA



Where are these colors found?

- Read all food, beverage, drugs & cosmetics labels
- If a food or beverage looks too pretty it's probably dyed with artificial colors!



Courtesy Feingold Association

34



35



36



37



38



39



40



41



42



43



44



45



46



47



48

Surprising places for dyes!!!



Why are artificial food dyes used?

- 1. To replace colors lost during processing
- 2. To standardize color in products
- 3. To match artificial flavor
- 4. **To attract consumers, especially children!!!**

Strawberry Milk



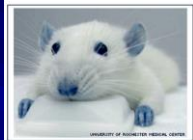
Strawberry Milk Ingredient List

■ LOWFAT MILK WITH VITAMIN A PALMITATE AND VITAMIN D3 ADDED, SUGAR, LESS THAN 2% OF MODIFIED CORN STARCH, CELLULOSE GEL, CALCIUM CARBONATE, GELLAN GUM, NATURAL AND ARTIFICIAL FLAVORS, CELLULOSE GUM, CARRAGEENAN, CITRIC ACID, SALT, RED 3.





Mouse given Blue #1



UNIVERSITY OF MISSOURI MEDICAL CENTER
Article on how Blue 1 is toxic to the cells that damage the spinal cord after an injury, thus preventing paralysis. This is a one-page article about this future medical use of Blue 1

Synthetic Food Coloring and Behavior: A Dose Response Effect in a Double-Blind, Placebo-Controlled, Repeated-Measures Study

- 200 children
- 6-week diet free of artificial colors
- 150 children improved behavior
- Worse when colors added back
- Irritability, restlessness, sleep problems
- 34 children in double-blind study
- 24 children clearly reacted
- Larger the dose, more prolonged reaction

K. Rowe. Journal of Pediatrics (1994): 691-98.

Take-Home Message

- Become a careful label reader
 - Foods
 - Beverages
 - Meds –choose white ones if possible
 - Over-the-counter medications
- Avoid all artificial colors and flavorings



#3

Food Sensitivities and ADHD

What foods “turn your child on”?

New Studies 1985-

- Few foods diets
- Reintroduction of suspected foods
- Double-blind studies of suspected foods disguised in other foods
- Published in major medical journals
 - Lancet (1985)
 - Pediatrics (1989)
 - Archives of Diseases of Childhood (1993)
 - Annals of Allergy (1994)
 - Journal of Pediatrics (1994)

Controlled Trial of Oligoantigenic Treatment in the Hyperkinetic Syndrome

- 79 children treated with few foods diet
- 62 children improved (almost 80%)
- Foods that caused symptoms
 - Artificial colors & flavors 79%
 - Soy 72%
 - Milk 64%
 - Chocolate 58%
 - Wheat 49%

J. Egger et al. *Lancet* (1985): 540-45.

Tracking Down Hidden Food Sensitivities

- Diet diary
- Elimination diet
 - Serve food
 - Remove totally from diet for 4-7 days
 - Add foods back, 1 per day
- Most common problems
 - Artificial colors, chocolate, milk
- Other common problems
 - Wheat, corn, rye, egg, citrus, legumes

Take-Home Message

1. Sensitivities to certain foods cause behavior changes in some children
2. Different children, different foods
3. Carry out careful elimination diet



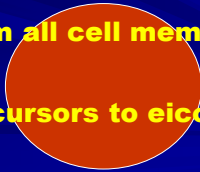
**#4 Essential Fatty Acids:
Are There Good Fats? Do Some Children Need "Oiling!?"**



Essential fatty acids are essential to everyone's diet

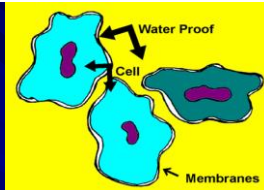
WHY? Your own body cannot make them!

- 1. Form all cell membranes**
- 2. Precursors to eicosanoids**



1. Cell membranes

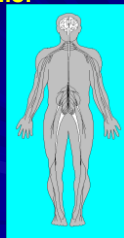
- 1. Life takes place in cells.
- 2. Inside stays separate from outside.
- 3. Intercepts and processes signals.
- 4. Composition of cell membrane.



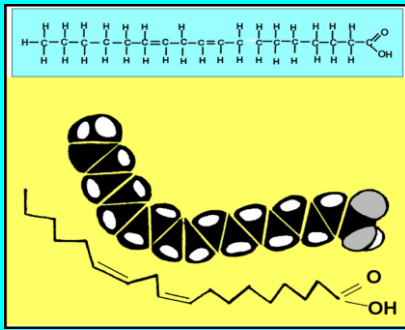
2. Essential Fatty Acids are parent molecules for eicosanoids -- powerful chemicals found in everyone's cells.

Vital cell-to-cell communicators and affect many body functions including

- neurotransmitters
- blood pressure
- childbirth
- blood clotting
- immune responses

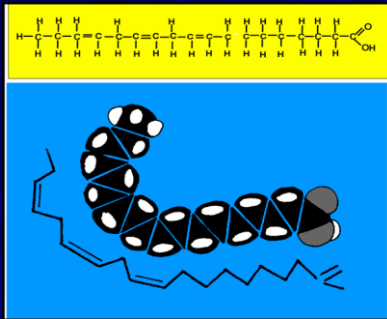


**Omega 6
fatty acid**



Essential linoleic acid (safflower, soy, sunflower, corn, sesame, peanut and other oils)

**Omega 3
fatty acid**



Essential alpha-linolenic acid (flax, canola, and walnut oils)

Essential Fatty Acid Pathways

Omega-6

- LA (Linoleic acid) (18 C, 2 DB)
 - ▼
 - GLA (primrose oil)
 - ▼
 - DGLA
 - ▼
 - AA (20 C, 4 DB)
 - ▼
 - Adrenic acid

Omega-3

- ALA (alpha linolenic acid) (18C 3 DB)
 - ▼
 - ▼
 - EPA(20 C, 5 DB) fish oil
 - ▼
 - DHA (22 C, 6 DB) fish oil

Seven Symptoms Associated with EFA Insufficiency



Does **your child** have
any of these symptoms?

Keeping Score!

- 0 Not at all
- 1 Just a little
- 2 Pretty much
- 3 Very much

#1 Excessive thirst



**#2
Frequent
urination**



**#3 Dry
skin**



**#4. Dry,
unmanageable
hair**



**#5
Dandruff**



**#6
Brittle nails**



**#7
Follicular
keratoses**



EFA Deficiency Score

ADD UP YOUR 7 Scores
1-21

High frequency of EFA symptoms (Score >3) correlated with lower plasma EFA

Stevens et al. Essential fatty acid metabolism in boys with attention-deficit hyperactivity disorder. American Journal of Clinical Nutrition 1995;62:761-768.

Food Sources of omega-6 fatty acids

- Linoleic Acid (LA)
- Safflower
- Sunflower
- Corn
- Peanut
- Soy

Food Sources of Omega-3 Fatty Acids

Alpha linolenic acid (ALA)

- Flaxseed, flaxseed oil
- Canola oil
- Soybeans, navy, kidney beans
- Walnuts and walnut oil
- Dark-green leafy veggies



Long chain omega-3 fatty acids

EPA and DHA

Cold water, oily fish

- Fresh, canned tuna
- Salmon
- Trout
- Mackerel
- Sardines



Take-Home Message

1. Essential fatty acids critical for good health and normal behavior
2. Consume fewer omega-6
3. Consume more omega-3
4. Consume oily fish 2-3/week
5. Use supplements

5 Vitamin D Deficiency



Vitamin D Deficiency Related to ADHD

1331 children and adolescents

- 5-10 years old
- Vitamin D significantly lower in blood in children with ADHD compared with healthy controls

Kamal, M. Is high prevalence of vitamin D deficiency a correlate for ADHD? *Atten Hyp Disorder*. 2014.

Vitamin D Status in Children with ADHD

- 60 ADHD patients, 30 controls
Ages 7-18
- Serum levels of vitamin D in ADHD children significantly lower than healthy controls

Goksugur, S. Vitamin D Status in Children with ADHD. *Pediatrics*

Vitamin D Supplementation

- 62 children ages 5-12 with ADHD
 - On methylphenidate-Ritalin
- Gave one group 2000 IU vitamin D, the other placebo
- After 8 weeks, group receiving vitamin D decreased evening symptoms
- Increased vitamin D in blood

Mohammadpour, N. Effect of vitamin D supplementation... *Nutritional Neuroscience*, 2016.

Why Vitamin D Might Help

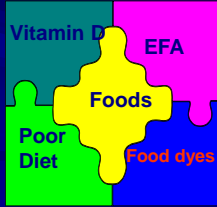
- Vitamin D receptors in brain
- Genes may be affected by vitamin D
- Neurotransmitters and transmission affected
- Control of free radicals

Take-Home Message

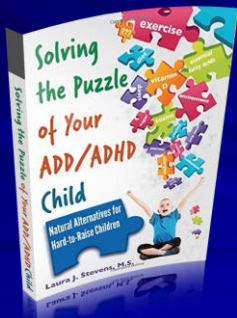
1. Ask your doctor to measure your child's vitamin D level
2. How to increase level
 - A. Direct sunlight for 15-20 minutes
Without sunscreen but not long enough to cause a sunburn
 - B. Vitamin D3 Supplement
1000-2000 IU/day
3. Repeat blood test after a few months

Conclusion

- Food for thought
- ADD/ADHD is like a jigsaw puzzle



Laura's New Book




Solving the Puzzle of Your ADD/ADHD Child

- Learn more about it on my website
- Order from amazon.com \$35.95
- Cheapest at Google-Books \$28.77

To contact Laura:

lstevens@nlci.com
stevens5@purdue.edu

Laura's Website
ADD/ADHD Online Newsletter
<http://youradhdnewsletter.com>




National Resource Center on ADHD
 A Program of CHADD

www.Help4ADHD.org
 (800) 233-4050
Help4ADHD@CHADD.org

Ask the Expert

5 Ways Nutrition Can Impact ADHD Symptoms



Laura Stevens, MS

The National Resource Center on ADHD: A Program of CHADD is the nation's clearinghouse for evidence-based information on ADHD. This Ask the Expert webcast is supported by Cooperative Agreement Number 1U39CE0005376 from the Centers for Disease Control and Prevention (CDC) and does not necessarily represent the official views of the CDC. The National Resource Center on ADHD, CHADD and the CDC do not endorse, support, represent or guarantee the accuracy of any content presented or endorse any opinions expressed in this webcast.

Upcoming Webinars

Improve Homework Time
 With Strategies That Work for ADHD
 Guest Expert: Cindy Goldrich, Ed.M, ACAC
 Thursday, March 23
 2 - 3 pm ET

How To Maximize the Benefits Of Screen Time
 for Children With ADHD
 Guest Expert: Randy Kulman, Ph.D.
 Tuesday, April 11
 3 - 4 pm ET

Register Now at
www.CHADD.org/AsktheExpert



This is a presentation of the



Provide feedback for the Ask the Expert webcast series!
Your opinion helps evaluate and improve these presentations.

www.Help4ADHD.org
800.233.4050



- The information provided in this episode of *Ask the Expert* is supported by Cooperative Agreement Number NU38DD005376 from the Centers for Disease Control and Prevention (CDC). The *Ask the Expert* webinars' contents are solely the responsibility of the invited guest Expert and do not necessarily represent the official views of CDC. Neither CHADD and the National Resource Center on ADHD, nor the CDC endorses, supports, represents or guarantees the accuracy of any material or content presented in the *Ask the Expert* webinars, nor endorses any opinions expressed in any material or content of the webinars. CHADD and the National Resource Center on ADHD offer webinars for educational purposes only; the information presented should not be regarded as medical advice or treatment information.