

# How Parents Can Make a Difference for Their Child with Autism

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Janelle M. Love, MD  
[www.AutismBusters.com](http://www.AutismBusters.com)  
Arnold, MD  
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# ON THE MENU

- I. Think Outside the Box
- II. Hypothesis of Autism Pathways
- III. Steps You Can Take to Help Your Child

# Conventional Medicine

- Classifies Autism as a psychiatric disorder
- Suggests Speech Therapy, Occupational Therapy, Educational Therapies, Social Skills Class
- Offers prescription medications such as Risperadol



After using conventional therapies, if your child is not making progress, do you give up?

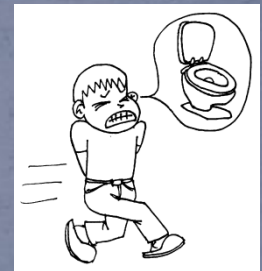


# Conventional Medicine

- If autism is strictly a psychiatric disorder:
  - Why do people with autism have behaviors such as OCD that resolve when real medical problems are treated?
  - Why do behaviors improve when intestinal infections are treated?
  - Why do some children start talking or improve their speech when gluten and casein are removed from the diet?

# Why do conventional therapies fail?

- Conventional therapies treat the symptoms, NOT THE CAUSE
- Enemas help remove stool. Why was it stuck? Are you enema deficient?



- Imodium helps stop diarrhea. Why do you have diarrhea? Are you imodium deficient?



# TRY IT

- THINK OUTSIDE THE BOX



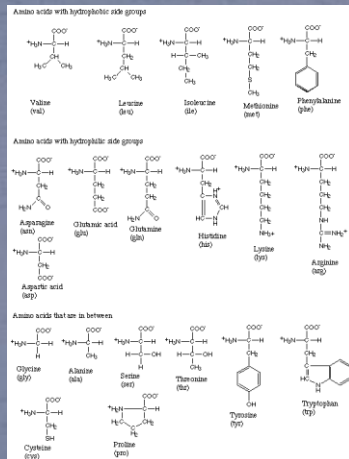
- Always ask “WHY?”

- Our Story





# Hypothesis of Autism Pathways



**Periodic Table of Elements**

1	2											8	9					
1 H	2 He											10 Ne	11 Na					
3 Li	4 Be											12 Mg	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr	
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe	
55 Cs	56 Ba	57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu		
87 Fr	88 Ra	89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr		

\* Lanthanide Series: 58 Ce, 59 Pr, 60 Nd, 61 Pm, 62 Sm, 63 Eu, 64 Gd, 65 Tb, 66 Dy, 67 Ho, 68 Er, 69 Tm, 70 Yb, 71 Lu  
 \* Actinide Series: 89 Ac, 90 Th, 91 Pa, 92 U, 93 Np, 94 Pu, 95 Am, 96 Cm, 97 Bk, 98 Cf, 99 Es, 100 Fm, 101 Md, 102 No, 103 Lr

Legend - click to find out more...

- H - gas
- Li - solid
- Br - liquid
- Tc - synthetic
- Non-Metals
- Transition Metals
- Rare Earth Metals
- Halogens
- Alkali Metals
- Alkali Earth Metals
- Other Metals
- Inert Elements

# The Cycle



- 1<sup>ST</sup> step: Toxin exposure (ex. mercury, lead, pesticides, preservatives, prescription medications)



# Toxins

- Studies have correlated the number of amalgams (silver dental fillings) in a mother's mouth is proportional to the amount of mercury in the placenta



- FDA Web posting: amalgams "contain mercury, which may have neurotoxic effects on the nervous systems of developing children and fetuses" 2009



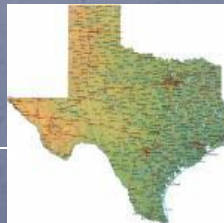
# Babies Born with Toxins



- Cord **blood** has over 287 toxins when a child is born
  - 217 toxic to brain/CNS
- Teflon found in **blood** of 99% of newborns
- Australian study in 25 newborn's first **bowel movement** (published in 2000): 78% lindane (outlawed 1985), 59% Dursban
  - 52% DDT (outlawed 1981), 43% pentachlorophenol, 34% malathion, 27% PCBs
- Perchlorate (from rocket fuel) found in 100% of children's **urine** samples tested

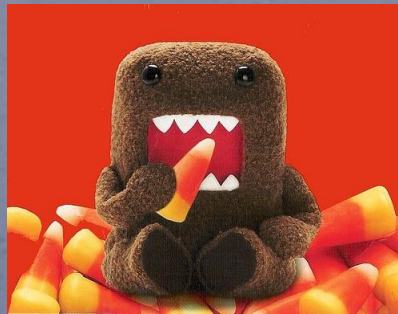
# More Toxins

- The USDA has found as many as **37 different chemicals on apples**—10 are pesticides
- Longer **bottled water** sat, higher the **antimony** level
  - Journal of Environmental Monitoring, 2006, 8, 288-292
- Higher levels of **PCB in mother's milk**, the more the infant had compromised nervous system
- TEXAS studies: “on average for **each 1000#** of environmentally released mercury, there was a **43% increase in special education** services and a **61% increase in the rate of autism**”



# Toxins in High Fructose Corn Syrup

- **Not So Sweet: Missing Mercury and High Fructose Corn Syrup Report** by David Wallinga, M.D., Janelle Sorensen, Pooja Mottl, Brian Yablon, M.D. Pub. January 2009 (The Institute for Agriculture and Trade Policy) *Environmental Health* (<http://www.ehjournal.net/home/>)
  - mercury was found in 9 of 20 samples of commercial HFCS from 3 different manufacturers.
  - HFCS has been made using mercury-grade caustic soda





# Study 2008: Lead Removal Issues

- 450 ASD and 251 non disabled children tested
- A significant increase in frequency of ALAD2 allele (gene variant) was observed in ASD
- Why is this important? ALAD (delta aminolevulinic acid dehydratase) gene encodes for enzyme that affects the accumulation and toxicity of lead in the body. ALAD2 linked to higher lead levels.
  - Rose, et al. American Journal of Biochemistry & Biotechnology, Vol. 4, No. 2; 2008

# Study 2009: Thimerosal

- Published in *NeuroToxicology*. “research showed that newborn monkeys experienced **developmental delays in critical survival reflexes** after they were **injected** with a weight-adjusted Hepatitis B vaccine containing the mercury-based preservative **thimerosal**. “ Dr. Laura Hewitson of the University of Pittsburgh & Dr. Andrew Wakefield
- Study above continued on abbreviated vaccine schedule and preliminary results presented at Autism Research Institute Conference 2010

# Study 2009: Lead & Mental Do

- Exposure to lead levels considered to be safe may result in increased major depression (2X) and panic disorders (5X)
- **Blood lead levels and major depressive disorder, panic disorder, and generalized anxiety disorder in US young adults.** Maryse Bouchard, et al., Archives of General Psychiatry, Vol 66 No 12, December 2009.



# Study 2009: Toxin Metabolism

- “Children with autism may metabolize toxins such as mercury differently than other children do”
- Details: 33 two to five year old boys with autism and 51 nondisabled controls; of the “26 genes that correlated with mercury levels” in boys, 11 were different between the two groups
- **Correlations between gene expression and mercury levels in blood of boys with and without autism.** Boryana Stamova, et al., Neurotoxicity Research, November 24, 2009

# Study 2010: Aluminum

- Aluminum vaccine adjuvant for 90 yrs
- FDA Aluminum safety limit for child 5mcg/kg/day
- Newborn gets 110 mcg/kg/visit or 20x FDA safety limit
- 2 month old gets 270 mcg/kg/visit or 50x FDA safety limit
- Immune activation may extend for 2 years
- Tomljenovic L, Shaw C. In press 2010

# Multiple Studies on Aluminum

- Animal who have received aluminum have shown adverse effects on the brain
  - Low concentrations increase GABA release and high concentrations-reduce GABA levels at synapse
  - Accumulates in mitochondria and interferes with energy production
  - Activates microglia
  - Accumulates in nucleus--binds to DNA
  - Increases release of brain glutamate
  - **Abberant behaviors such as inability to focus, attention, Perserverative activity**



# Chemicals: Mattress



- Federal Law (16 CFR 1633 as of July 2007)
  - All new mattresses except bare waterbeds, contain flame proofing ingredients so they can withstand a 2 foot wide blowtorch open flame for 70 seconds.
  - Chemicals used: antimony, boric acid, formaldehyde, glass fibers, silicon glass, decabromodiphenyl oxide (DBDPO), zirconium, ammonium polyphosphate

- Examples of Patient Testing









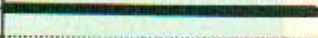

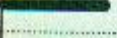

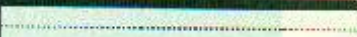




# Baseline Urine

POTENTIALLY TOXIC METALS					
METALS	RESULT µg/g CREAT	REFERENCE RANGE	WITHIN REFERENCE RANGE	ELEVATED	VERY ELEVATED
Aluminum	14	< 60			
Antimony	0.2	< 1.5			
Arsenic	45	< 130			
Beryllium	< dl	< 0.6			
Bismuth	< dl	< 20			
Cadmium	0.2	< 2			
Lead	1.6	< 5			
Mercury	0.3	< 5			
Nickel	4.7	< 15			
Platinum	< dl	< 1			
Thallium	0.5	< 1.1			
Thorium	< dl	< 0.5			
Tin	1	< 15			
Tungsten	0.1	< 1.5			
Uranium	< dl	< 0.2			



# Challenge Urine

POTENTIALLY TOXIC METALS					
METALS	RESULT µg/g CREAT	REFERENCE RANGE	WITHIN REFERENCE RANGE	ELEVATED	VERY ELEVATED
Aluminum	220	< 60			
Antimony	0.4	< 1.5			
Arsenic	430	< 130			
Beryllium	< dl	< 0.6			
Bismuth	< dl	< 20			
Cadmium	0.8	< 2			
Lead	63	< 5			
Mercury	2.6	< 5			
Nickel	22	< 15			
Platinum	< dl	< 1			
Thallium	0.4	< 1.1			
Thorium	0.04	< 0.5			
Tin	31	< 15			
Tungsten	0.1	< 1.5			
Uranium	< dl	< 0.2			



# Challenge Test for Fecal Metals

POTENTIALLY TOXIC METALS				
METALS	RESULT mg/kg	REFERENCE RANGE	PERCENTILE	
			68 <sup>th</sup>	95 <sup>th</sup>
Mercury	< dl	<.05 w/o amalgams*		
Mercury	< dl	< .5 with amalgams*		
Antimony	32.10	< 0.080		
Arsenic	0.35	< 0.30		
Beryllium	0.007	< 0.009		
Bismuth	0.012	< 0.050		
Cadmium	0.59	< 0.50		
Copper	20	< 60		
Lead	0.59	< 0.50		
Nickel	3.4	< 8.0		
Platinum	< dl	< 0.003		
Thallium	0.029	< 0.020		
Tungsten	0.040	< 0.090		
Uranium	0.073	< 0.120		

# Toxins

- Genetic predisposition
- Different ability to handle TOXINS due to when exposure occurred
- Toxin pot overload





# The Cycle



- 2<sup>nd</sup> step: Immune system dysfunction & body's biochemistry affected
- 3<sup>rd</sup> step: Autoimmune antibodies developed (ex. against digestive enzymes such as DPPIV)



# The Cycle



- 4<sup>th</sup> step: Multiple infections
  - Gut flora changed with antibiotic use and chemical exposures to let yeast, bad bacteria, and parasites flourish
  - Lyme disease

# Study 2010: GI problems

- Two Papers published in Pediatrics in January 2010:
  - Evaluation, Diagnosis, and Treatment of Gastrointestinal Disorders in Individuals with ASDs: A Consensus Report
  - Recommendations for Evaluation and Treatment of Common Gastrointestinal Problems in Children with ASDs



# Autism: A Gut Gone Wrong



# Candida





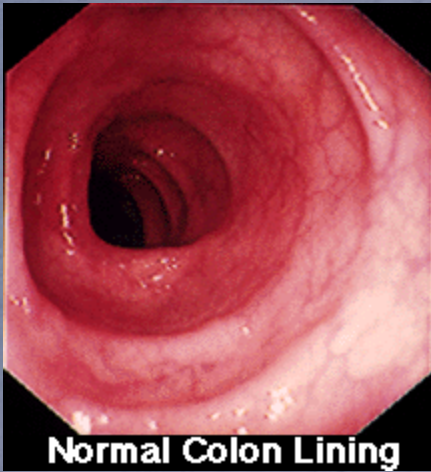
# Infection Markers

## Organic Acid Profile

Compound	Reference Range		Patient Value		Reference Interval		
	mmol/mol creatinine				Low	Normal	High
<b>Yeast/Fungal</b>							
citramalic	0.0	2.0	2.55	H			
5-hydroxymethyl-2-furoic	0.0	80.0	39.98				
3-oxoglutaric	0.0	0.5	4.31	H			
furan-2,5-dicarboxylic	0.0	50.0	8.68				
furancarboxylglycine	0.0	60.0	2.32				
tartaric	0.0	16.0	30.22	H			
arabinose	0.0	47.0	568.42	H			
carboxycitric	0.0	46.0	9.33				
<b>Bacterial</b>							
2-hydroxyphenylacetic	0.0	10.0	1.12				
4-hydroxyphenylacetic	0.0	50.0	24.09				
HPPHA	0.0	150.0	839.28	H			
VMA analog	0.0	31.0	3.44				



# Clostridium Overgrowth



# Infections Cultured

## Comprehensive Stool Analysis

### MICROBIOLOGY

#### Bacteriology Culture

Beneficial flora		Imbalances		Dysbiotic flora	
Bifidobacter	4+	Bacillus sp.	2+	Klebsiella species	4+
E. coli	4+	Gamma strep	3+	NLF E. coli	2+
Lactobacillus	1+	Staph aureus	2+		

#### Mycology (Yeast) Culture

Normal flora	Dysbiotic flora
No yeast isolated	



# The Cycle



- 5<sup>th</sup> step: Leaky gut occurred allowing absorption of large proteins from gut and lack of proper nutrient absorption
- 6<sup>th</sup> step: became allergic or intolerant to foods

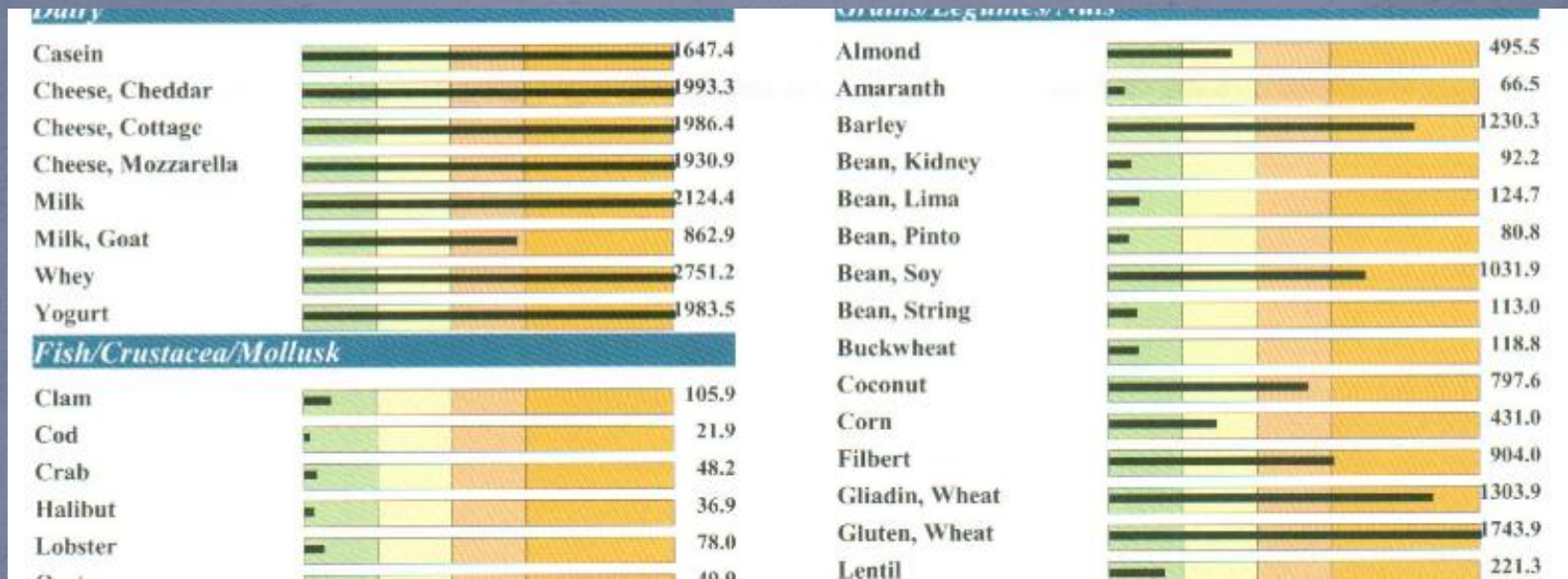


# Food Issues



- Definition: An immune system reaction after ingesting a food which results in:
  - Food allergies: hives, swelling, trouble breathing, and/or itching
  - Food intolerances: bloated, abdominal pain, diarrhea, constipation, brain fog, headaches, acne, staring, head banging, unintelligible speech, sensitivity to loud noises, poor concentration, stimming, constantly sick, eczema, biting, chewing, hitting, etc

# IgG Food Antibodies





# The Cycle



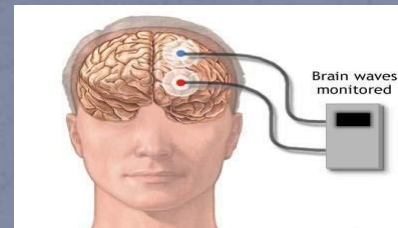
- 7<sup>th</sup> step: proteins converted to opiates
- 8<sup>th</sup> step: people “crave foods” (just like drug addicts)
- 9<sup>th</sup> step: significant behavior, sensory, speech, social, motor changes; bloating, headaches, constipation, diarrhea, rashes,...



## Partial cryptogenetic epilepsy and food allergy or intolerance.

Reflections on three clinical cases. Pelliccia A et al Minerva Pediatr 1999

May;51(5):153-7



Children with partial epilepsy, diagnosed by means of electroencephalography with behavioral disorders (hyperactivity, sleep disorders and writing difficulties).

Elimination of cow's milk caused behavioral improvement and normal EEG

Reintroduction of milk caused abnormal behavior and abnormal EEG

Several days lag between milk use and abnormal behavior and EEG

Critical analysis of the diets of chronic juvenile offenders. Schauss AG  
.J. Orthomol Psych.8:149-157,1979.

- Chronic juvenile offenders drank much more milk than controls.
- In juvenile prisons in USA, the incidence of unacceptable behavior dropped greatly after substitution of orange juice for milk as a drink.
- When milk returned, unacceptable and violent behavior increased.





# Steps You Can Take to Help Your Child





# Rule Out Celiac Disease



- Testing
  - **Standard:** Anti-tissue transglutaminase IgA antibody test (if normal IgA levels are present)
  - If already diagnosed with IgA deficiency: intestinal biopsy may be required.

# Obtain Baseline Bloodwork

- CBC with differential
- Chemistry Panel
- TSH, T4, T3
- Iron
- Ferritin
- Vitamin D 25 OH level
- Urine analysis
- Cholesterol Profile
- Free and total carnitine levels



# Clean Up the Diet





# Remove Provoking Foods

- Four major categories most common:
  - gluten, casein, soy, corn



Question: Can you still have these?



# Dairy (casein) Removal



- Dairy Products: milk, cheese, yogurt, whey, casein, butter
- Remove all dairy for 30 days.
- Rechallenge on day #31 with lots of milk and cheese.
- Monitor for 48 hours for: change in behaviors, language issues, sleep problems, diarrhea, pain, constipation, rashes



# Wheat (gluten) Removal



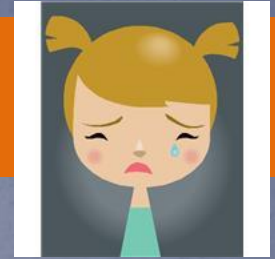
- Wheat Products: bread, crackers, cakes, chips, cup cakes, pancakes, waffles, french toast, toast, some cereals, cookies
- Remove all wheat for 4 months.
- Rechallenge at the end of 4 months with lots of bread.
- Monitor over a 1-2 week period for: change in behaviors, language issues, sleep problems, diarrhea, pain, constipation, rashes

# Soy Removal



- Soy Products: soy lethicin, soya flour, tofu, soybean oil, soy milk
- Remove all soy for 6 weeks.
- Rechallenge at the end of 6 weeks with soybean oil in cooking , soy yogurt, or soy milk.
- Monitor for 48 hours for: change in behaviors, language issues, sleep problems, diarrhea, pain, constipation, rashes

# Case One: Lilly



- 3 year old girl dx with autism
  - Constipation (one BM every 5-7 days)
  - Up every night crying for 2 years
  - No eye contact, in a “fog”
  - 3 words (mama, dada, bye)
  - Does not interact with other children
  - Flaps hands when excited
  - Eats very limited diet: macaroni and cheese, Gold fish crackers, and McDonald’s chicken nuggets



# Case One: Lilly

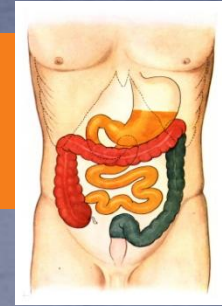


- Parents removed wheat, dairy, soy products. She was also placed on recommended multivitamin, zinc, etc.
- She was initially resistant and refused to eat the first day. On the fifth day of her elimination diet, she became wild and climbed on the top of the refrigerator looking for hidden crackers. She went through the trash looking for wheat and dairy products. By the 2<sup>nd</sup> week the fog started to clear and by week 4 she had eye contact, occasional constipation only, slept through the night 6 out of 7 nights, and 50 new words.

# Opiate Withdraw From Diet



# Treatment: Enzymes



- Digestive Enzymes
  - Mercury inhibits some enzymes
  - Supplement due to maldigestion & malabsorption
  - Often there is worsened behavior when first starting
  - Needs to contain sucrase, maltase, lactase, isomaltase, DPPIV (dipeptidylpeptidase IV), lipase, protease, etc...
  - Enzymes DO NOT Substitute for a diet



# Start Omega 3's



# Study 2009: Sensory Overload

- Omega 3's protect against sensory overload
- Details: mice put on specific diets and exposed to loud noises; mice with high omega 3 diet had appropriate responses
- **Deficit in prepulse inhibition in mice caused by dietary n-3fatty acid deficiency.** Irina Fedorova, et al., Behavioral Neuroscience, Vol. 123, No. 6, December 2009.

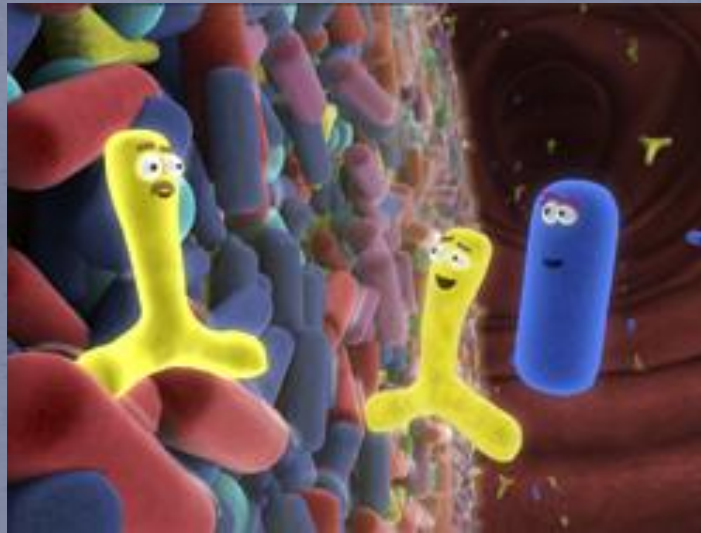
## Case Two: Jeremy



- 10 year old boy with extreme sensitivity (hold his ears and scream then run) to noise (vacuum, toilet flushing, hair dryer), and crowds
  - On GFCF diet
  - On MVI and probiotics
  - Started on Omega 3's (EPA and DHA at 1000mg a day)
  - Three weeks later (without any other change in therapies) he no longer would hide when the vacuum was running, he could be in the same room with a hair dryer, and he tolerated going out to restaurants and malls



# Start working on the gut: Probiotics & Prebiotics



# Probiotics



- Important Functions of Gut Bacteria
  - Mucous production
  - Short chain fatty acids metabolism
  - Primary bile acid deconjugation
  - Vitamin absorption
  - Fats, TG, cholesterol regulation
  - Undigested dietary fiber breakdown
  - Gas production & fermentation
  - Breakdown of oligo-saccharides
  - Detoxification

# Improve Sleep



- Melatonin effects on body:
  - Aids in immune system regulation
  - Antioxidant
  - Decreases elevated cortisol levels
  - Helps balance stress response
  - Improves mood
  - Improves sleep quality
  - Stimulates growth hormone production



# Improve Sleep



- Melatonin 1mg to 3mg (or higher in some cases) right before bed
- Make bedroom completely dark at night
- Unplug all electronic gadgets in room & consider turning off circuit breaker to room; keep bed 3 feet from any wiring in walls due to electromagnetic fields
- GABA 250mg to 1000mg at bedtime (helps mind racing)
- L-Taurine 325mg to 1000mg at bedtime
- Remove allergic foods
- Treat gut infections

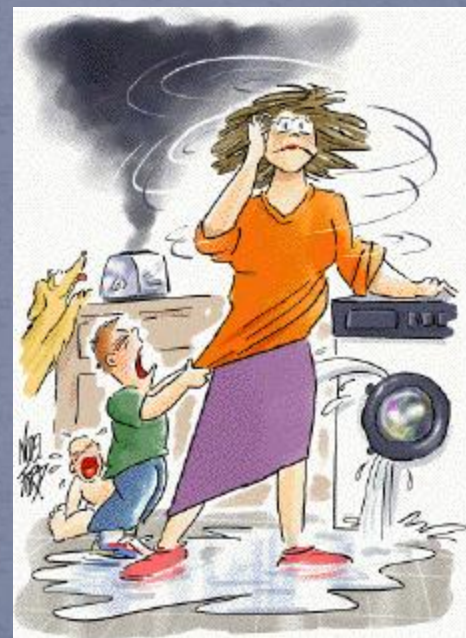
# Remove Environmental Toxins



- Eat organic food
- Use organic mattress/mattress pad/sheets/blankets
- Use natural remedies for insect problems (no pesticides)
- Use natural cleaning products (white vinegar works)
- Read ingredients for everything! Don't use anything you can't pronounce.
- If you vaccinate, preservative free only.
- Avoid plastic water bottles.
- Never cook in plastic.



# Not Taking Care of Yourself





# Study 2009: Mothers Stressed

- “Mothers of teens or adults with autism show biochemical similarities to combat soldiers”
- Details: mother’s salivary cortisol levels measured and were found to be lower than normal (chronically stressed people have lower cortisol)
  - **Maternal cortisol levels and behavior problems in adolescents and adults with ASD.** Marsha Seltzer, et al., *Journal of Autism and Developmental Disorders*, November 5, 2009.



Seem a little overwhelming?





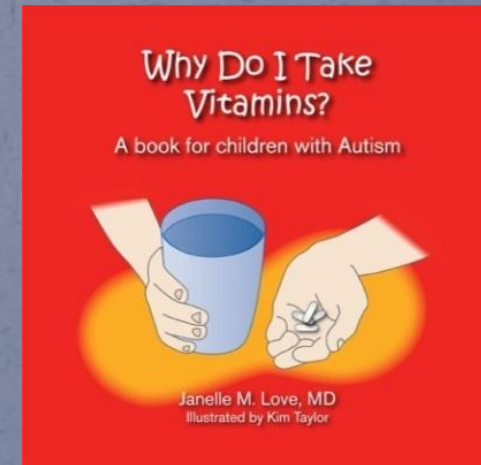
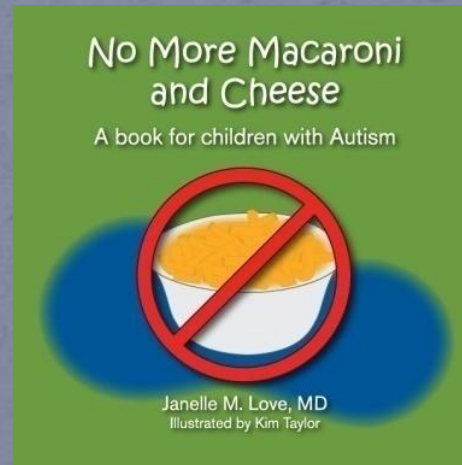
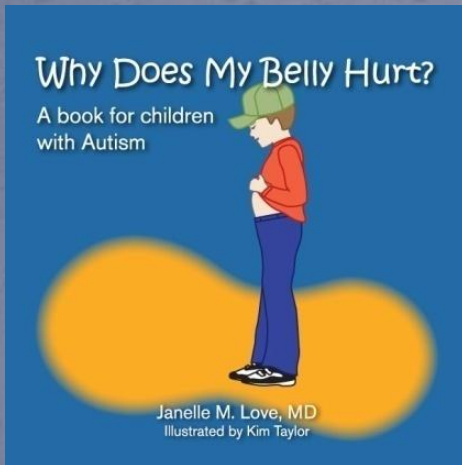
# Summary

- Look outside the box to help your child. You are the best advocate they can have.
- Investigate the underlying medical issues that can affect speech, social issues, behaviors, etc.
- Consider diet changes
- Start Omega 3's and probiotics
- Find a doctor who understands how to help your child and will work with you



# Helpful Resources

- Autism Relief Foundation (non profit 501 c 3)- provides grants to children with autism to pay for therapies
- Children's book series for Autism (AutismBustersStore.com)



- AutismBusters.com (410) 544-8141