AUTISM – PIECES of the PUZZLE

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NOT TO BE CONSTRUED AS MEDICAL ADVICE

A group of Disorders: Autism, Asperger's, PDD-NOS, Rett's, Disintegrative Childhood Disorder

From NIH.gov
Autism is a complex biological disorder of development that lasts throughout a person's life. People with autism have problems with social interaction and communication, so they may have trouble having a conversation with you, or they may not look you in the eye. They sometimes have behaviors that they have to do or that they do over and over, like not being able to listen until their pencils are lined up or saying the same sentence again and again. They may flap their arms to tell you they are happy, or they might hurt themselves to tell you they are not.
One person with autism may have different symptoms, show different behaviors, and come from different environments than others with autism. Because of these differences, doctors now think of autism as a "spectrum" disorder, or a group of disorders with a range of similar features. Doctors classify people with autism spectrum disorder (ASD) based on their autistic symptoms. A person with mild autistic symptoms is at one end of the spectrum. A person with more serious symptoms of autism is at the other end of the spectrum. But they both have a form of ASD.

Autism (From Epocrates Essentials):

- High concordance in monozygotic twins
- Increased risk in subsequent siblings (3-7%)
- Onset prior to age of 3yo
- Male:Female is 4:1
- Estimated at 1:160
- Risk factors: Fragile X, Tuberous sclerosis, congenital rubella syndrome, untreated PKU (phenylketonuria)

Description:

- Pervasive developmental disorder of early childhood
- Severe impairment in normal communication skills
- Absent or impaired social skills
- Repetitive and/or stereotypical interests and activities

Possible complications:

- Seizure disorders in up to 1 in 4 autistic children
- Increased risk of physical and sexual abuse

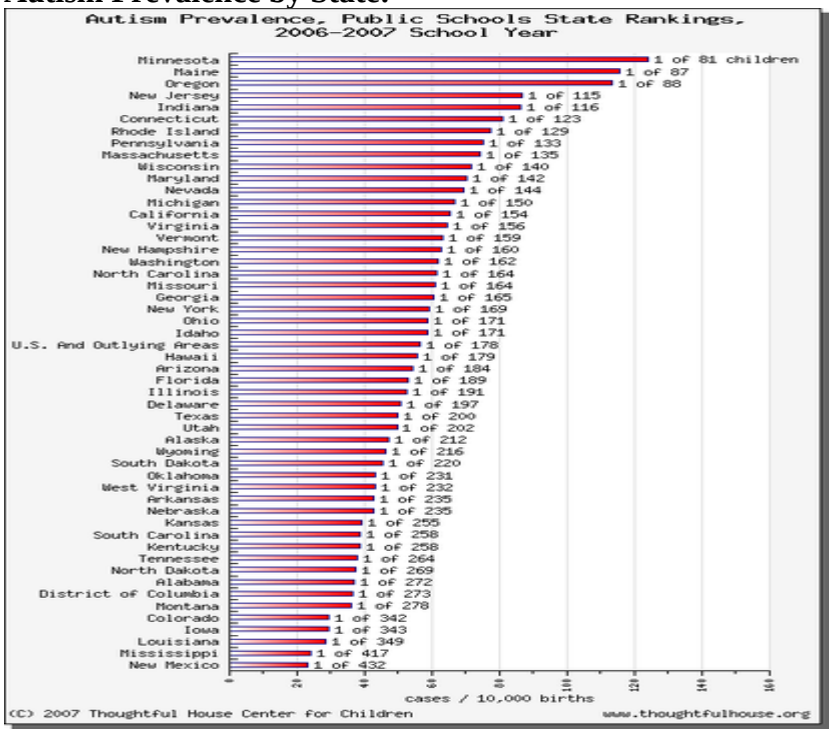
Prognosis/ Expected course:

- Treatment at an early age has significantly better outcome
- Prognosis closely related to initial intellectual ability with only 20% functioning above mentally retarded level
- Communicative language development before 5yo associated with a better outcome
- General expected [allopathic] course is a life-long need for supervised structured care.

Associated conditions

- Mental retardation (Common)
- ADD/ADHD
- PKU, tuberous sclerosis, fragile X (rare)
- Anxiety
- Depression
- Obsessional behavior
- Seizures (common)

Autism Prevalence by State:

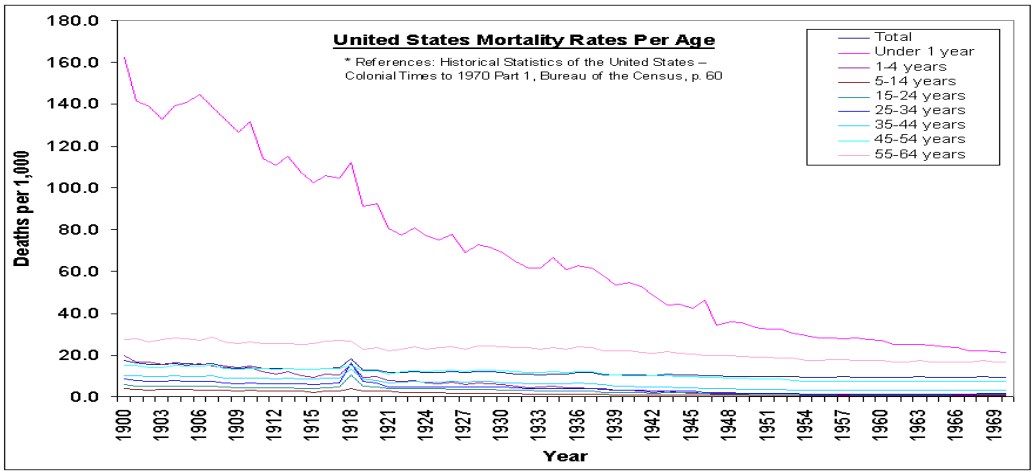


Facts and Statistics from Autism Society of America:

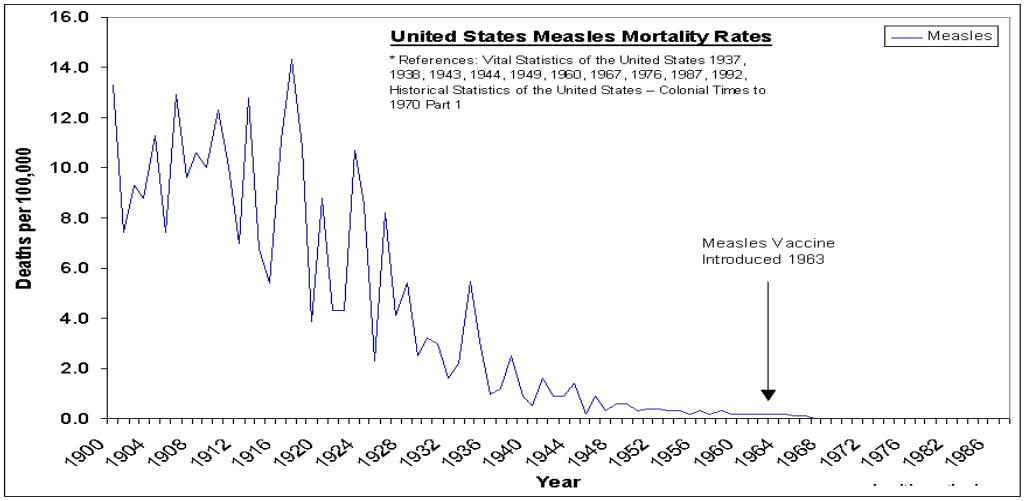
- 1 in 150 births
- 1 to 1.5 million Americans
- Fastest growing developmental disability
- $90 billion cost annually
- Cost of lifelong care can be reduced by 2/3 with early diagnosis and intervention
- In 10 years, annual cost of $200-400 billion

Vaccination Information:

Mortality Rates:



Diptheria vaccine introduced 1920, Whooping cough late 1940's, Measles 1963



Benard Rimland PhD and DPT vaccine:

His book *Infantile Autism* lead him to suspect the DPT shot as inducing autism. Parents were reporting that their children were normal until after the vaccination.

Edward Grant – Assistant Secretary of Health May 3rd, 1985 on DPT vaccine

Before a US Senate committee he said that 35,000 children/year suffer neurological damage due to the DPT vaccine

Dr Charles Manclark FDA scientist said that DPT had one of the worst failure rates

MMR vaccine and Andrew Wakefield:

In 1998, he and his colleagues in London reported an inflammatory bowel disease in twelve children with developmental disorders such as autism. The condition later became known as autistic enterocolitis. He encountered great pressure to stop his

research on the possible links between childhood immunizations, intestinal inflammation and autism. Ten of the original thirteen authors retracted their position. Currently, his investigations center on the immunologic, metabolic, and pathologic changes occurring in inflammatory bowel diseases such as autistic enterocolitis, links between intestinal disease and neurologic injury in children, and the possible relationship of these conditions to environmental causes, such as childhood vaccines
Since this study was published in 1998, a number of other studies have also been published that suggested a link between the MMR vaccine and autism (Singh et al 1998; Horvath et al 1999; O'Leary et al 2000; Wakefield et al 2000; Kawashima et al 2000), but none of these provide scientific proof of such a link.

148 with Autism were looked at and 90% had gut inflammation vs 30% of controls. (Why were the controls so high?!)

Also, Rimland and the Autistic Research Institute found that prior to early 1980's, children born autistic outnumbered 18 month old onset by 2:1. After the introduction of MMR in early 1980's autism onset at 18 months outnumbers onset at birth by 2

Autism rates are declining. Reduction of thimerosal vaccines in 2000 and 2001
Dr. Mark Geier MD, PhD: His research showed child 27 times more likely to be autistic after 3 thimerosal vaccines as opposed to thimerosal free preparations.

The following is partially taken from Dr. Matthew Baral's work at SCNM
Measles Vaccine:

- Rubeola and Rubella (German measles) Living vaccine measles captured from autistic bowels – not the wild type measles
  Sequellae of Rubeola: deafness 1:1,000
  Pneumonia accounts for 60% of deaths from measles
  Bacterial superinfections 5-15% of the time
  Encephalitis: days after rash disappears. 0.1-0.2% of the cases. Complications: deafness, seizures, and mental disorders. Subacute sclerosing panencephalitis 1:1,000,000 1-10 yrs later
- Treatment: Vit A
  "Measles infections found to benefit greatly from supplementation"
  Coutsoudis A. Int J Vitam Res 1991
  50% of measles pts Vit A deficient
  Arriet AC et al. J Pediatr. 1992
  No asthma in group of 38 children who had measles
  Zejda JE Cent Eur J Public Health 2003
- Rubella: 30-60% develop clinical disease
  encephalitis 1:1,1000
  Congenital worse in 1st than in 2nd or 3rd trimesters. Do not get vaccine during pregnancy

Mumps

- Hearing affected 1:2,000
- Orchitis as older male child 10-20% but sterility is rare

Varicella (Chicken Pox)

- 25: 1,000,000 mortality rates

- Deafness with Ramsey Hunt as adult (CN Vll) (really bad shingles)
- Breakthrough infections after vaccination
- Congenital 4 days prepartum to 4 days postpartum

DPT (Diptheria, Petussis, Tetanus)

Diptheria is considered eradicated by CDC. In USA less than 10 cases per year are reported.

Tetanus: Soil borne or contaminated foreign objects. NW has high soil levels. Risk is from older child starting to go outside.

Pertussis: From 1900 to 1935 mortality rate declined 79%

Infants < 1 yr old 55.2 cases per 100,000 Most serious/ highest mortality in infants >6 mos old with mortality rate between 1-3%

Azithromycin drug of choice

"Those most at risk report a family history of at least one parent with a pre-existing G-alpha protein defect, including night blindness, pseudohypoparathyroidism or adenoma of the thyroid or pituitary gland."

- Those most at risk report FHX ≥1 parent:
- night blindness
- pseudohypoparathyroidism
- thyroid / pituitary adenoma

Megson MN. Is autism a G-alpha protein defect reversible with natural Vit A? Med Hypotheses. 2000 Jun;54(6):979-83.

Flu vaccine still has thimerosal. Caution to pregnant females.

Boyd Haley's research:

Haley: biochemist, head of chemistry dept @ U of Kentucky

Added DTaP to brain cells in petri dish—DTaP didn't seem to do much harm by itself until adding thimerosal and aluminum

Hayley: "I think I know why they didn't demand animal studies on these vaccines. They would end up with very few lab animals left."

"Mercury free" vaccines are not always so. Labeled so but still detectable!

Pneumococcus vaccine: The insert states:

"Contains aluminum—not evaluated for any carcinogenic or mutagenic potential" (No authors listed) Aluminum toxicity in infants and children. AmericanAcademy of Pediatrics, Committee on Nutrition. Pediatrics. 1996 Mar;97(3):413-6.

Rhogam:

53% of ASD moms had rhogam. After 2002, the PDR did not list Thimerosal in ingredients, but --read all inserts and don't take rhogam with thimerosal. One dose could have 4x the thimerosal that DTaP had.

Effectiveness:

Hib---"the antibody contribution to clinical protection is unknown." (package insert)

Varicella---the relative contribution to protection from chickenpox is unknown.":

In General the pediatric population has seen:

- Increase in autoimmune diseases
- Increase in autism spectrum
- Increase in chronic illnesses

Mercury Levels in Vaccinations and Agency Limits per Body Weight

EPA	**0.1 microgram/kg/day**
ATSDR	**0.3**
FDA	**0.1**
WHO	**3.3 microgram/kg/wk**
DTaP, HIb, Hep B	**62.5 microgram**

Vaccine schedule:

In the last three decades three decades the number of vaccines the American Academy of Pediatrics recommends has tripled to 69 doses of 16 vaccines, with 48 doses of 14 vaccines aimed at children under six years old.

Alternatives: Homeopathic Immunization Schedule:

Disease	**Immunization**
Diptheria	Diptherinum
Pertussis	Pertussin
Rubella	Rubeola
Mumps	Parotidinum
Influenza	Influenzinum
Measles	Morbillinum
Tetanus	Ledum
Pneumonia	Pneumococcinum

Random thoughts on vaccinations:

- Literature states no proof vaccines cause autism. There is no scientific proof that it does not cause autism. (No animal studies were done.) Bernadine Healy, former director of NIH, says government, FDA, and CDC have avoided studies. that theorize that vaccines cause autism. Univ. Pittsburg May 2008 study on Rhesus monkeys had vaccines causing autism like symptoms.
- If vaccines provide immunity then why is the vaccinated crowd so afraid of the unvaccinated? Do their vaccines work?
- Thimerosal is not just preservative but an adjuvant (immune stimulant). B. Haley
- Thimerosal is not in animal vaccines
- Aborted fetal lines: Chickenpox, rubella, and Hep A. (Autoimmune component?)
- Dr. Paul Offit, the vaccine inventor whose Rotateq royalty interests recently sold for a reported $182 million, has written a novel of perceived good and evil called “Autism’s False Prophets" in which he defends vaccines and attacks detractors.
- Babies on recommended vaccine schedule will be injected with 5 mg of aluminum by 1 ½ years old. FDA considers levels up to 0.85 mg to be safe.
- Why was Eli Lilly exempted from thimerosal damage in Homeland Security Bill?
- The USA has twice the average number of mandatory vaccines and ranks #34 in under 5year old mortality – right behind Croatia and Slovenia
- USA with 36 vaccines has 1/150 autism rate vs France with 17 vaccines and 1/613 autism rate. Other countries with reduced mandatory vaccines have similar rates.

As a Naturopathic medical clinic, we respect that parents and guardians have both the responsibility and freedom to decide within the range of options provided for by Arizona state law whether or not their children should receive vaccinations.

Genetic Component:

Autism has a wide range of symptoms and the corresponding severity. Given this spectrum of change then it is reasonable to assume that there is more than a single cause that affects all individuals. Even within families there are genetic polymorphisms that can greatly alter an individual's response to either toxins or a greater need for various nutritional support with vitamins, minerals, and other cofactors. Autism in one child can raise the probability of having a second autistic child by 3-5%. Identical twin studies have a heritability factor of 63-98% and fraternal twins of 0-10%.

Because purely genetic diseases do not rise precipitously, the flip side to the increase is an increasingly toxic environment. **Autism is can be defined as an environmental disease brought on by genetic susceptibilities**.

Defective Functioning of Metallothionein Protein (MT): defective functioning of metallothionein protein (MT) is a distinctive feature of autism. It is often unnoticed in infancy and early childhood until aggravated by a serious environmental insult. Genetics may be the gun but toxins pull the trigger. Patient are victimized by heavy metal insult. Dysfunction leads to:

1. abnormal Cu& Zn in hippocampus resulting in incomplete maturation of GI tract and brain.
2. Loss of MT protection against heavy metals
3. Impaired immune function
4. Immature GI tract

Autism: A Body Disorder that Affects the Brain?

Dr. Martha Herbert, assistant professor of neurology at Harvard, does not ignore the almost universal physical complaints of autism. She asks why do 95-100% have GI dysfunction and 70% have immune function abnormalities? Having a name for a problem does not give a cause or a cure. She concludes that autism is not a brain disorder but a systemic disorder that affects the brain – a metabolic encephalopathy.

Ear Infections and Autism

Studies have shown most children with autism have an immune dysfunction. There is also a high correlation between the number and date of ear infections with the severity of autism with the earlier the ear infection the greater the severity of autism. Frequent antibiotic use can lead to greater Candidal overgrowth although immune deficiency has Candidal problems also. The Candida metabolites has been postulated to be a factor in autistic symptoms with alleviation of overgrowth resulting in a lessening of symptoms as reported by Childhood Autism Rating Scale (CARS).

Treatment: Right thing in the right order.

Infections, Allergens, Stress, Poor diet, and finally Toxins.

Gut Dysbiosis:

Consider rifaximin as an antibiotic to start afresh. Many natural products can be slower and not as effective. Replace with probiotics. Lactobacillus GG, a proprietary probiotic sold under the trade name Culturelle™, may normalize gut flora and minimize the growth of bacteria that produce dihydroxyphenylpropioic acid-like compound (DHPPA-like compound), a tyrosine derivative. Also seen are tartrate and citramalate. These metabolites are picked up in an OAT urine testing. The porphyrins can also be determined from a urinalysis.

Remove Food Allergies:

Sensitizing foods elevate mediators of inflammation such as histamine, PGE2, etc The vasoactive result is changed vascular function. The effect may range from migraines to even some seizure disorders. Sometimes foods that do not show on a food allergy blood test, if they are removed will have positive benefits. This is not allergic food but a food sensitivity which is a different classification than an allergic food. **Exogenous opioids from cow's milk and wheat can have a dramatic effect on brain function**. Endogenous opiods may also be released from sensitizing foods. The blood brain barrier may be compromised during gut inflammation such as a wheat sensitivity or a Candida overgrowth. There are no pain sensory mechanisms in the gut mucosa or in the brain proper and this is why exploratory brain surgeries can be accomplished without anesthesia. So certain neuroactive or neurotoxic substances can have detrimental affect on brain function without necessarily causing intestinal pain. Healing Pathways Medical Clinic uses Electrodermal Screening (EDS) to identify and alleviate allergens.

Often a **gluten free/casein free diet** (GF/CF) will tremendously help. Cross-contamination is a big difficulty in adherence.

Elaine Gottschall has a book *Breaking the Vicious Cycle* about her special carbohydrate diet which avoids glutens, sucrose, and grains. This stops the food sources that dysbiotic bacteria need to survive. Then the gut will heal and absorb nutrients.

Heal the Gut:

Inflamed gut mucosa leads to poor nutrition and inflammatory molecules passing through the mucosa along with large sensitizing molecules. Not only does this lead to the inflammatory condition but also to a chronic nutritional deficiency.
Elimination diet to give gut time to heal. (Off glutens, dairy, citrus, eggs, specific food sensitivities as determined by Electrodermal Screening).
Products like glutamine, GI Revive, colostrum, digestive enzymes, Cal-Mag butyrate

Support the Liver:

Also, from Edelson's studies, 98% of the children had significantly high levels of xenobiotics as determined from functional liver detoxification profile (caffeine, acetaminophen, aspirin clearance). He went on to propose that autism is primarily a neurotoxicologic phenomena from the xenobiotic exposure both in utero and as infant with protective mechanisms such as the blood brain barrier not being fully formed. This is in conjunction with a genetic polymorphism that has poor liver detoxification abilities.

Support the Blood-Brain Barrier (from Apex Energetics)

- Methylation
- Antioxidants:
- Alpha-Lipoic acid ("R" form is best)

- HPA Axis regulation
- Modulate stress and other glycemic dysregulation modifiers
- Prostaglandin balance (increased omega-3 fatty acids, decrease arachidonic acid)
- Decrease oxidative stress (Decrease inflammation, gliadin, other allergies)

Phase ll detoxification:

Methylation. Up to 25 mg (milligram) of IM methylcobalamin 3x/wk. TMG, DMG (both are tasteless) and folinic acid. Important in cognitive disorders.

Increase amino acids (increases glutathione) with whey protein.

Sulfation: l-Cysteine is used to make thiol water soluble biotransformation products. NAC is used in acetaminophen overdoses for the intermediate glutathione. Oral MSM, Epsom salt baths, and DMSO may all increase sulfation. Consider whole eggs for the yolk content.

Remove Heavy Metals:

Edelson looked at 56 autistic children from a toxicological standpoint. A chelating agent was given and urine sample taken postprovocation. It was found that *100% of the children* had an elevated body burden of heavy metals.

Oral DMPS every other week. (3x better than DMSA or transdermal DMPS) Inorganic Hg and As > Pb. Autistic children may have reduced ability to excrete Hg.

DMSA for lead in soft tissue. Lead > Hg and As. Boyd Haley considers a neurotoxin.

EDTA as oral DetoxMax Plus (with phopholipids) for lead toxicity in bone.

EDTA as Detoxamine suppositories - mainly for lead toxicities

Other protocols.

Hyperbaric Oxygen:

Some studies have shown promise with treatment at 1.3 atm and 24% oxygen for 40 one hour sessions. 1.5 atm achieved by hard chambers.

Nutritional Support:

Antifungals Many natural ones such as capryllic acid, undecyclenic acid, oregano oil, grapefruit seed extract. Saccharomyces boulardii. May need pharmaceuticals

Probiotics: Replace with good flora such as Baccillus sporogenes.

Zinc: Needed for heavy metal protection, protects epithelial cells, immune function, synthesis of proteins. Helps balance elevated copper levels! MT support

Omega-3 fatty acids. Very important to myelinate the brain and support cell membranes. Pharmaceutical/distilled quality is required for a low heavy metal content

Antioxidant support: Protects cell membranes – including nerve cells, prevents free radicals formed in metabolic processes. Vit C, Vit E, Se, CoQ10, and others.

Digestive enzymes: To help with breaking down food into usable and non-reactive molecules. Proteases may inflame gut wall so special types needed

Amino acids as a protein supplement especially a rice protein powder in a shake.

Fresh fruits and vegetables. Consider dried supplemental powders.

Fiber: Helps to relieve autointoxication resulting from slow bowel transit time.

Thyroid and thyroid cofactors. Thyroid supplementation and cofactors like iodine, Se, and Zn may all be necessary to distinguish between thrive and survive.

l-Carnosine (alanine and histidine) Improves frontal cortex functioning. Protects against DNA oxidation, blocks glycosylation and reduces Advanced Glycation Endproducts (AGEs), as well as acting as a cell membrane stabilizer. Increases in language comprehension based on CARS (Childhood Autism Rating Scale). Carnosine inhibits the formation of carbonyl groups, reducing the formation of abnormal proteins

Acetyl-L-Carnitine (ALCAR) potentially increase visual memory and attention, an amino acid. Increases cell permeability to glucose. Helps control amyloid plaque (as found in Alzheimer's) and increase memory function of hippocampus

Glutathione cream. Very poorly absorbed orally so a cream is preferred if not IV friendly. NAC supplementation will feed the pathway along with methyl donors.

Sulfation pathways. See Phase II notes

Meyer's cocktail if able to take IV. (Can end with glutathione push).

Melatonin, 5-HTP, Tryptophan as sleep aids. Time release may be beneficial.

Vit B1 – Thiamine: Dr. Harrel found children given thiamine gained 25% more in learning ability. IQ was proportional to dosage. Allithiamine (TTFD) ia a lipid soluble form. Low toxicity

Vit B3 – Niacin: Niacinamide as the preferred form. 1,000- 3,000 mg every day. Schizophrenia, pellagra, and ADHD are perhaps in the same continuum.

Vitamin B6 and Magnesium. Benard Rimland's research had 30% to 40% of the children showing significant improvement when given vitamin B6. 100-200 mg 3x/day Milk allergic children may need B6 and Zn. B6 has toxicity in excessive doses.

Vit C: Protective and a mobilizer against heavy metals.

Methyl groups: Hyper children may be helped with methylated forms of Vitamin B6, B12 and folic acid. Can inject. Methylated forms of these B vitamins are P5P (B6), Methylcobalamin (B12), and folinic acid (folic acid). Also used is TMG or DMG.

Formaldehyde excretion support: A normal metabolite in the body that may be elevated in some patients.

Drugs: Naltrexone: blocks the action of endogenous opioids at opiate receptors

May be beneficial for self-injurious behavior.

Seizure meds like Tegretol

Antipsychotics - haloperidol

Antifungals: Lamsil, ketoconazole, fluconazole, itraconazole, and Amphotercin B may show resistance. "Enhansa" (natural curcuma product) by Lee Silsby Compounding Pharmacy as an antimicrobial.

Secretin injections: Gastrointestinal peptide which has shown promise in some patients to help their intestinal issues. Web MD states that Jenifer Lightdale, MD a pediatric gastroenterologist found no language and behavior benefits of secretin treatment in 20 autistic children treated for five weeks. She worked on a study of secretin and autism published in the November 2001 issue of Pediatrics. Secretin to help:

- Pancreas to dump bicarbonate rich digestive fluid
- Stomach to secrete pepsin (protein digestion)
- Liver to produce bile