Fourteen Studies...

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Our Studies

You never hear about the science that has been published that helps support a connection between vaccines and autism and other disorders, and yet the list grows every day. Below we provide examples of some of that research. Please note that we feel very strongly that more work needs to be done, but the studies below are helping to support a foundation of understanding about autism and its relationship to the environment in general and vaccines in particular.

What this recent science appears to be telling us:

1. **Children who receive the entire 3-shot series of Hepatitis B Vaccine have a 9x higher rate of developmental disabilities than unvaccinated children.**

   Hepatitis B triple series vaccine and developmental disability in US children aged 1-9 years
   Toxicological and Environmental Chemistry, September 2008
   Carolyn Gallagher* and Melody Goodman

   Excerpt:

   "The odds of receiving EIS [special education services] were approximately nine times as great for vaccinated boys (n¼46) as for unvaccinated boys (n¼7), after adjustment for confounders. This study found statistically significant evidence to suggest that boys in United States who were vaccinated with the triple series Hepatitis B vaccine, during the time period in which vaccines were manufactured with thimerosal, were more susceptible to developmental disability than were unvaccinated boys."

   Note: This is the only published study we know of in the world that compares vaccinated children to unvaccinated children.

2. **Vaccinated children have higher rates of autism and ADHD than unvaccinated children.**

   Generation Rescue: Unvaccinated children phone survey
   Survey USA Phone Survey

   Excerpt:

   All vaccinated boys, compared to unvaccinated boys:

   - Vaccinated boys were 155% more likely to have a neurological disorder (RR 2.55)
   - Vaccinated boys were 224% more likely to have ADHD (RR 3.24)
   - Vaccinated boys were 61% more likely to have autism (RR 1.61)

   Older vaccinated boys, ages 11-17 (about half the boys surveyed), compared to older unvaccinated boys:

   - Vaccinated boys were 158% more likely to have a neurological disorder (RR 2.58)
   - Vaccinated boys were 317% more likely to have ADHD (RR 4.17)
   - Vaccinated boys were 112% more likely to have autism (RR 2.12)

   (Note: older children may be a more reliable indicator because many children are not diagnosed until they are 6-8 years old, and we captured data beginning at age 4.)

   Note: This is not a published study, it's a phone survey.

3. **A delay in the timing of DPT vaccine lowers the rate of asthma.**

   Delay in diphtheria, pertussis, tetanus vaccination is associated with a reduced risk of childhood asthma
   Journal of Allergy and Clinical Immunology 2008
   Kara L. McDonald, MS, Shamima I. Huq, BS, Lisa M. Lix, PhD, Allan B. Becker, MD, FRCPC, and Anita L. Kozyrskyj, PhD

   Excerpt:

   "Among 11, 531 children who received at least 4 doses of DPT, the risk of asthma was reduced to ½ in children whose first dose of DPT was delayed by more than 2 months."

   Note: This study doesn't consider autism. We are providing it here because it supports the idea that a safer vaccine schedule may reduce immune system disregulation, a common problem for children with autism.

4. **The prevalence of neurological disorders amongst children is growing, which means the environment must be playing a role (because genetic conditions can only grow at the rate of population growth).**

   We cite four published studies that support this position:

   Report to the Legislature on the Principle Findings from The Epidemiology of Autism in California: A Comprehensive Pilot Study
   MIND Institute, UC Davis, Oct 2002.
   Robert Byrd

   Using data from California, the state perceived to maintain the best data on autism, this report demonstrates clearly that the rise in autism is not due to improved diagnosis and expanded diagnostic criteria, but is rather a REAL rise for which some external factor must be playing a role. Excerpt:

   "There is no evidence that a loosening in the diagnostic criteria has contributed to increased number of autism clients...we conclude that some, if not all, of the observed increase represents a true increase in cases of autism

in California...a purely genetic basis for autism does not fully explain the increasing autism prevalence. Other theories that attempt to better explain the observed increase in autism cases include environmental exposures to substances such as mercury; viral exposures; autoimmune disorders; and childhood vaccinations."

National Autism Prevalence Trends From United States Special Education Data.
Pediatrics, March 2005.
Craig J. Newschaffer, PhD [Johns Hopkins University].

This study shows that the rise in the incidence of autism is real and that the greatest increase took place between 1987 and 1992, which matches the timing of the near-tripling of vaccines given to our children and the tripling of mercury within those vaccines.

The Changing Prevalence of Autism In California
Journal of Autism and Developmental Disorders, April 2003
Mark Blaxill, MBA

This study helps to refute the supposition made by some researchers that autism's epidemic may only be due to "diagnostic substitution". Excerpt:

"They have suggested that 'diagnostic substitution' accounts for an apparent increase in the incidence of autism in California that is not real. This hypothesized substitution is not supported by proper and detailed analyses of the California data."

What's Going On? The Question of Time Trends in Autism.
Public Health Reports, Nov-Dec 2004.
Mark F. Blaxill, MBA.

This detailed analysis of reported rates of autism in the United States and United Kingdom serves to further refute the assertion made by some that the "epidemic" of autism is nothing more than better diagnosis.

5. **When environmental toxicity in children with neurological disorders like autism is measured, it is meaningfully higher than neurotypical (normal) children.**

We cite five published studies that support this position:

Porphyrinuria in Childhood Autistic Disorder: Implications for Environmental Toxicity
Toxicology and Applied Pharmacology, 2006.
Robert Nataf, Corinne Skorupka, Lorene Amet

This new study from France utilizes a new and sophisticated measurement for environmental toxicity by assessing porphyrin levels in autistic children. It provides clear and unequivocal evidence that children with autism spectrum disorders are more toxic than their neurotypical peers. Excerpt:

"Coproporphyrin levels were elevated in children with autistic disorder relative to control groups...the elevation was significant. These data implicate environmental toxicity in childhood autistic disorder."

A Case Control Study of Mercury Burden in Children with Autism Spectrum Disorder.
Journal of American Physicians and Surgeon, 2003.
James Adams, PhD [Arizona State University].

This recent study shows, through active chelation with DMSA, that autistic children excrete significantly higher levels of mercury than their neurotypical peers, leading to the conclusion that autistic children bear a much higher load of mercury in their bodies and that chelation may be an effective treatment for removing the mercury. Excerpt:

"The data from this study, along with emerging epidemiological data showing a link between increasing mercury doses from childhood vaccines and childhood neurodevelopmental disorders, increases the likelihood that mercury is one of the main factors leading to the large increase in the rate of autism and other neurodevelopmental disorders. It is hoped that removing thimerosal from all childhood vaccines will contribute to a decline in the numbers of new cases of autistic spectrum disorders."

A Case Series of Children with Apparent Mercury Toxic Encephalopathies Manifesting with Clinical Symptoms of Regressive Autistic Disorder
Journal of Toxicology and Environmental Health, 2007
David A. Geier, Mark R. Geier

This study reviewed the case histories and medical profiles of nine autistic children and concluded that eight of the nine children were mercury toxic and this toxicity manifested itself in a manner consistent with Autism Spectrum Disorders. Excerpt:

"...these previously normally developing children suffered mercury toxic encephalopathies that manifested with clinical symptoms consistent with regressive ASDs. Evidence for mercury intoxication should be considered in the differential diagnosis as contributing to some regressive ASDs."

Attention-deficit hyperactivity disorder and blood mercury level: a case-control study in chinese children
Neuropediatrics, August 2006
P.R. Kong [Department of Pediatrics and Adolescent Medicine, The University of Hong Kong].

This study demonstrates that blood mercury levels are higher for children with ADHD. Excerpt:

"There was significant difference in blood mercury levels between cases and controls, which persists after adjustment for age, gender and parental occupational status. The geometric mean blood mercury level was also significantly higher in children with inattentive and combined subtypes of ADHD. CONCLUSION: High blood mercury level was associated with ADHD. Whether the relationship is causal requires further studies."

Reduced Levels of Mercury in First Baby Haircuts of Autistic Children
International Journal of Toxicology
Dr. Amy S. Holmes, Mark F. Blaxill, Boyd E. Haley, Ph.D.
March 14, 2003

This recent study demonstrates that the levels of mercury in the birth hair of autistic children were significantly lower than their control peers. While this may at first appear contradictory, it highlights one of the critical insights to understanding mercury poisoning and autistic children: many autistic children are non-excretors of mercury. This means their capacity to excrete mercury is significantly lower than their neurotypical peers and contributes to their condition.

6. **The brains of children with neurological disorders are experiencing severe oxidative stress and inflammation, suggesting an environmental cause.**

We cite four published studies that support this position:

Large Brains in Autism: The Challenge of Pervasive Abnormality.
The Neuroscientist, Volume 11, Number 5, 2005.
Martha Herbert, MD, PhD [Harvard University].

This study helps refute the notion that the brains of autistic children are simply wired differently and notes, "neuroinflammation appears to be present in autistic brain tissue from childhood through adulthood." Dr. Herbert suggests that chronic disease or an external environmental source (like heavy metals) may be causing the inflammation. Excerpt:

"Oxidative stress, brain inflammation, and microgliosis have been much documented in association with toxic exposures including various heavy metals...the awareness that the brain as well as medical conditions of children with autism may be conditioned by chronic biomedical abnormalities such as inflammation opens the possibility that meaningful biomedical interventions may be possible well past the window of maximal neuroplasticity in early childhood because the basis for assuming that all deficits can be attributed to fixed early developmental alterations in neural architecture has now been undermined."

Neuroglial Activation and Neuroinflammation in the Brain of Patients with Autism.
Annals of Neurology, Feb 2005.
Diana L. Vargas, MD [Johns Hopkins University].

This study, performed independently and using a different methodology than Dr. Herbert (see above) reached the same conclusion: the brains of autistic children are suffering from inflammation. Excerpt:

"Because this neuroinflammatory process appears to be associated with an ongoing and chronic mechanism of CNS dysfunction, potential therapeutic interventions should focus on the control of its detrimental effects and thereby eventually modify the clinical course of autism."

Evidence of Toxicity, Oxidative Stress, and Neuronal Insult in Autism
Journal of Toxicology and Environmental Health, Nov-Dec 2006.
Janet Kern, Anne Jones

"This article discusses the evidence for the case that some children with autism may become autistic from neuronal cell death or brain damage sometime after birth as result of insult; and addresses the hypotheses that toxicity and oxidative stress may be a cause of neuronal insult in autism..the article discusses what may be happening over the course of development and the multiple factors that may interplay and make these children more vulnerable to toxicity, oxidative stress, and neuronal insult."

Oxidative Stress in Autism
Pathophysiology, 2006.
Abha Chauhan, Ved Chauhan

This study provides a helpful overview of the growing evidence supporting the link between oxidative stress and autism. Excerpt:

"Upon completion of this article, participants should be able to: 1. Be aware of laboratory and clinical evidence of greater oxidative stress in autism. 2. Understand how gut, brain, nutritional, and toxic status in autism are consistent with greater oxidative stress. 3. Describe how anti-oxidant nutrients are used in the contemporary treatment of autism."

7. **Children with neurological disorders are often suffering from severe gastrointestinal distress and inflammation. A trigger of this inflammation and the resultant behaviors is the MMR vaccine.**

We cite four published studies that support this position:

Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children
Lancet 1998 Feb 28
Wakefield AJ, Murch SH, Anthony A, Linnell J, Casson DM, [University Department of Medicine, Royal Free Hospital and School of Medicine, London, UK]

This study demonstrates that the MMR vaccine triggered autistic behaviors and inflammatory bowel disease in autistic children. Excerpt:

"Onset of behavioral symptoms was associated, by the parents, with measles, mumps, and rubella vaccination [MMR] in eight of the 12 children, with measles infection in one child, and otitis media in another...We identified associated gastrointestinal disease and developmental regression in a group of previously normal children, which was generally associated in time with possible environmental triggers."

The Significance of Ileo-Colonic Lymphoid Nodular Hyperplasia in Children With Autism Spectrum Disorder.
European Journal of Gastroenterology & Hepatology, August 2005.
Andrew J. Wakefield, MD [Royal Free & University College Medical School, London].

This study demonstrates that, to a much higher degree, children with an autism spectrum disorder suffer from Ileo-Colonic Lymphoid Nodular Hyperplasia (LNH) a serious disorder of the intestinal tract. Excerpt:

"Both ileal and colonic LNH are significantly more prevalent, and of greater severity, in ASD children compared with developmentally normal controls."

Detection and Sequencing of Measles Virus from Peripheral Mononuclear Cells from Patients with Inflammatory

Bowel Disease and Autism
Digestive Diseases and Sciences, 2000
Hisashi Kawashima, Takayuki Mori, Yasuyo Kashiwagi, Kouji Takekuma

This study shows that the measles in the bowels of autistic children is from the MMR vaccine. Excerpt:

"Additionally, a new syndrome has been reported in children with autism who exhibited developmental regression and gastrointestinal symptoms (autistic enterocolitis), in some cases soon after MMR vaccine. It is not known whether the virus, if confirmed to be present in these patients, derives from either wild strains or vaccine strains. ...The sequences obtained from the patients with ulcerative colitis and children with autism were consistent with being vaccine strains. The results were concordant with the exposure history of the patients. Persistence of measles virus was confirmed in PBMC in some patients with chronic intestinal inflammation."

Dysregulated Innate Immune Responses in Young Children with Autism Spectrum Disorders: Their Relationship to Gastrointestinal Symptoms and Dietary Intervention.
Neuropsychobiology, 2005.
Harumi Jyonouchi, MD [New Jersey Medical School].

This study examines the link between autistic behaviors and gastrointestinal disorders and notes a possible link "between GI and behavioral symptoms mediated by innate immune abnormalities."

8. **One preservative used in vaccines, Thimerosal (mercury), enters the bloodstream of the child and ends up in the brain after being administered.**

   We cite two published studies that support this position:

   Iatrogenic Exposure to Mercury After Hepatitis B Vaccination in Preterm Infants.
   Journal of Pediatrics, May 2000.
   Gregory V. Stajich, PharmD [Mercer University].

   This study measured mercury levels in infants before and after the administration of a Hepatitis B vaccine containing Thimerosal and found that a "comparison of pre and post-vaccination mercury levels showed a significant increase in both preterm and term infants after vaccination."

   Comparison of Blood and Brain Mercury Levels in Infant Monkeys Exposed to Methylmercury or Vaccines Containing Thimerosal.
   Environmental Health Perspectives, Aug 2005.
   Thomas Burbacher, PhD [University of Washington].

   This study demonstrates clearly and unequivocally that ethyl mercury, the kind of mercury found in vaccines, not only ends up in the brain, but leaves double the amount of inorganic mercury as methyl mercury, the kind of mercury found in fish. This work is groundbreaking because little is known about ethyl mercury, and many health authorities have asserted that the mercury found in vaccines is the "safe kind." This study also delivers a strong rebuke of the Institute of Medicine's recommendation in 2004 to no longer pursue the mercury-autism connection. Excerpt:

   "A recently published IOM review (IOM 2004) appears to have abandoned the earlier recommendation [of studying mercury and autism] as well as back away from the American Academy of Pediatrics goal [of removing mercury from vaccines]. This approach is difficult to understand, given our current limited knowledge of the toxicokinetics and developmental neurotoxicity of thimerosal, a compound that has been (and will continue to be) injected in millions of newborns and infants."

9. **Higher levels of environmental mercury has been shown to produce higher rates of autism.**

   We cite one published study that supports this position:

   Environmental mercury release, special education rates, and autism disorder: an ecological study of Texas.
   Health & Place, 2006
   Raymond F. Palmer, University of Texas Health Science Center

   This study demonstrated the correlation between environmental mercury and autism rates in Texas. Excerpt:

   "On average, for each 1,000 lb of environmentally released mercury, there was a 43% increase in the rate of special education services and a 61% increase in the rate of autism. The association between environmentally released mercury and special education rates were fully mediated by increased autism rates. This ecological study suggests the need for further research regarding the association between environmentally released mercury and developmental disorders such as autism."

10. **The preservatives in vaccines, most notably Thimerosal (mercury) and aluminum, are highly toxic and damaging to the nervous system and immune system of a developing child, and reactions to these toxins may vary greatly by child.**

    We cite nine published studies that support this position:

    Thimerosal Neurotoxicity is Associated with Glutathione Depletion: Protection with Glutathione Precursors.
    Neurotoxicology, Jan 2005.
    S. Jill James, PhD [University of Arkansas].

    This recent study demonstrates that Thimerosal lowers or inhibits the body's ability to produce Glutathione, an antioxidant and the body's primary cellular-level defense against mercury. Excerpt:

    "Thimerosal-induced cytotoxicity was associated with depletion of intracellular Glutathione in both cell lines...The potential effect of Glutathione or N-acetylcysteine against mercury toxicity warrants further research as possible adjunct therapy to individuals still receiving Thimerosal-containing vaccines."

    Uncoupling of ATP-mediated Calcium Signaling and Dysregulated IL-6 Secretion in Dendritic Cells by Nanomolar Thimerosal
    Environmental Health Perspectives, July 2006.
    Samuel R. Goth, Ruth A. Chu Jeffrey P. Gregg

This study demonstrates that very low-levels of Thimerosal can contribute to immune system disregulation. Excerpt:

"Our findings that DCs primarily express the RyR1 channel complex and that this complex is uncoupled by very low levels of THI with dysregulated IL-6 secretion raise intriguing questions about a molecular basis for immune dyregulation and the possible role of the RyR1 complex in genetic susceptibility of the immune system to mercury."

Aluminum adjuvant linked to gulf war illness induces motor neuron death in mice
Neuromolecular Medicine, 2007
Christopher Shaw, Ph.D. [Department of Ophthalmology and Program in Neuroscience, University of British Columbia, Vancouver, British Columbia, Canada]

This study demonstrates the extreme toxicity of the aluminum adjuvant used as a preservative in vaccines. Excerpt:

"testing showed motor deficits in the aluminum treatment group that expressed as a progressive decrease in strength measured...Significant cognitive deficits in water-maze learning were observed in the combined aluminum and squalene group...Apoptotic neurons were identified in aluminum-injected animals that showed significantly increased activated caspase-3 labeling in lumbar spinal cord (255%) and primary motor cortex (192%) compared with the controls. Aluminum-treated groups also showed significant motor neuron loss (35%) and increased numbers of astrocytes (350%) in the lumbar spinal cord."

Activation of Methionine Synthase by Insulin-like Growth Factor-1 and Dopamine: a Target for Neurodevelopmental Toxins and Thimerosal.
Molecular Psychiatry, July 2004.
Richard C. Deth, PhD [Northeastern University].

This study demonstrates how Thimerosal inhibits methylation, a central driver of cellular communication and development. Excerpt:

"The potent inhibition of this pathway [methylation] by ethanol, lead, mercury, aluminum, and thimerosal suggests it may be an important target of neurodevelopmental toxins."

Neurotoxic Effects of Postnatal Thimerosal are Mouse Strain Dependent.
Molecular Psychiatry, Sep 2004.
Mady Hornig, MD [Columbia University].

This recent work by Columbia University Doctors explores whether genes are important in determining if mercury exposures akin to those in childhood immunizations can disrupt brain development and function. It is the first known scientific study done specifically on ethlymercury administered in a way similar to the vaccine schedule. Dr. Hornig discussed the study before Congress in September 2004. Excerpt:

"The premise of our research is that if mercury in vaccines creates risk for neurodevelopmental disorders such as autism, genetic differences are likely to contribute to that risk. Earlier studies, however, did not use the form of mercury present in vaccines, known as thimerosal, and did not consider whether intramuscular, repetitive administration during early postnatal development, when the brain and immune systems are still maturing, might intensify toxicity. Our predictions were confirmed. Using thimerosal dosages and timing that approximated the childhood immunization schedule, our model of postnatal thimerosal neurotoxicity demonstrated that the genes in mice that predict mercury-related immunotoxicity also predicted nuerodevelopmental damage. Features reminiscent of those observed in autism occurred in the mice of the genetically sensitive strain."

Thimerosal induces DNA breaks, Caspase-3 Activation, Membrane Damage, and Cell Death in Cultured Human Neurons and Fibroblasts.
Toxicological Science, 2003.
David S. Baskin, MD [Baylor College of Medicine].

This study demonstrates the potent toxicity of Thimerosal on brain cells.

Organic Mercury Compounds and Autoimmunity.
Autoimmunity Review, 2005.
Said Havarinasab, MD [Linkoping University].

This study demonstrates the clear link between ethylmercury [from Thimerosal] and autoimmune responses.

Mercury and autism: Accelerating Evidence?
Neuroendocrinology Letters, Oct 2005.
Joachim Mutter, M.D. [Freiburg University, Germany].

This recent study from Germany summarizes many of the recent scientific advances. Excerpt:

"The causes of autism and neurodevelopmental disorders are unknown. Genetic and environmental risk factors seem to be involved...Repetitive doses of thimerosal leads to neurobehavioral deteriorations in autoimmune susceptible mice, increased oxidative stress and decreased intracellular levels of glutathione in vitro. Subsequently, autistic children have significantly decreased level of reduced glutathione. Promising treatments of autism involve detoxification of mercury, and supplementation of deficient metabolites."

Retrograde Degeneration of Neurite Membrane Structural Integrity of Nerve Growth In Vitro Exposure to Mercury.
NeuroReport, 2001.
Christopher Leong, MD [University of Calgary].

This study shows how mercury damages brain cells.

11. **The symptoms of autism and the symptoms of mercury poisoning appear to be very similar.**

We cite one published study that support this position:

Autism: A Novel Form of Mercury Poisoning.
Medical Hypothesis, 2001.
Sallie Bernard, Albert Enyati, Lynn Redwood, RN, Teresa Binstock, PhD.

This simple but groundbreaking work spelled it out for the layperson by demonstrating that the symptoms of autism and the symptoms of mercury poisoning are identical. Excerpt:

"Due to the extensive parallels between autism and mercury poisoning, the likelihood of a causal relationship is great. Given that possibility, Thimerosal should be removed from all childhood vaccines and the mechanisms of mercury toxicity in autism should be thoroughly investigated."

12. **The Government Reform Committee of the U.S. Congress has published reports on the relationship between mercury and autism and on the conflicts in policy-making for the national immunization schedule.**

We cite two studies by the Committee on Government Reform of the U.S. Congress:

Mercury in Medicine - Taking Unnecessary Risks
Congressional Record - Extensions of Remarks
Congressman Dan Burton (R-IN), Committee on Government Reform
May 21, 2003

This extensive report was prepared by the staff of the Subcommittee on Human Rights and Wellness and was the result of a three-year investigation. The Committee on Government Reform, chaired by Congressman Dan Burton, initiated the investigation and compiled the testimony of hundreds of researchers and physicians, as well as representatives from the FDA and CDC, who presented to the committee. Excerpt:

"Mercury is hazardous to humans. Its use in medicinal products is undesirable, unnecessary and should be minimized or eliminated entirely. Manufacturers of vaccines and thimerosal, (an ethlymercury compound used in vaccines), have never conducted adequate testing on the safety of thimerosal. The FDA has never required manufacturers to conduct adequate safety testing on thimerosal and ethlymercury compounds...Thimerosal used as a preservative in vaccines is likely related to the autism epidemic. This epidemic in all probability may have been prevented or curtailed had the FDA not been asleep at the switch regarding injected thimerosal and the sharp rise of infant exposure to this known neurotoxin. Our public health agencies' failure to act is indicative of institutional malfeasance for self-protection and misplaced protectionism of the pharmaceutical industry."

Conflicts of Interest in Vaccine Policy Making
Majority Staff Report, Committee on Government Reform, U.S. House of Representatives
June 15, 2000

"Members of the advisory committees are required to disclose any financial conflicts of interest and recuse themselves from participating in decisions in which they have an interest. The Committee's investigation has determined that conflict of interest rules employed by the FDA and the CDC have been weak, enforcement has been lax, and committee members with substantial ties to pharmaceutical companies have been given waivers to participate in committee proceedings."