VACCINATIONS, ALLERGIES, AUTISM, AND INFLAMMATION

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Abstract

This article examines the link between the increase in three series vaccines given to infants by the age of six months and the increase in Autism and childhood food allergies. This hypothesis is based upon prior research on classical conditioning of the immune system demonstrating that a neutral substance can elicit the same response of another substance if the two are paired together multiple times. Classical conditioning of the immune system has been demonstrated in scientific research for over 35 years.

A vaccine pairs food, food preservatives, or other usually harmless substances (haptens) with a bacteria or antigen in a vaccine. Considering series shots are typically given prior to the oral introduction of food, the food is both a novel and neutral substance to the body.

Three series vaccines include live vaccines, subunit vaccines, and conjugates vaccines. Prior to conjugates vaccines, the immature immune system of an infant was not able to recognize bacteria in the Prevnar and Hib vaccines. The conjugate vaccine links the bacteria to food and other substances in order to form a new molecule that an immature immune system can recognize. The infant creates antibodies to this new molecule. The body may subsequently react in a variety of ways to any part of that molecule, including the food particles.

One reaction is an allergic or hypersensitive reaction. Many foods utilized in vaccines are the same foods which are causing an increasing number of allergies in children. An inflammatory response is the second reaction. Chronic inflammation is found in those children who have Autism. These authors hypothesize that this inflammation occurs either because of the constant re-introduction of the conditioned food in a normal diet or through a condition described by Ware (2005) in which an antigen doesn't cause the actual disease; however, it does cause chronic, low level inflammation.

This article reviews the research on three series vaccinations and examines why these authors believe that current vaccination protocols are linked to the rise of allergies and chronic inflammation, which may be responsible for the rise of Autism. It calls for the development of a new protocol and further research, based upon classical conditioning research, to protect our infants.

Introduction

Since the early 1990's, childhood diseases such as Autism, ADD/ADHD, asthma and allergies have been on the rise (Bock & Stauth, 2007). At this point one out of every 150 children is diagnosed with Autism (Center for Disease Control, n.d., Autism Information Center); moreover, one out of every four children has either Autism, ADHD, allergies or asthma (Bock and Stauth, 2007).

For almost two decades, scientists and parents have debated whether or not vaccines cause Autism. Parents cannot seem to convince their doctors that they witnessed a decline in their child's behavior, mental acuity and overall health after having them vaccinated and doctors have not convinced parents that these vaccines are safe. Previous claims that vaccines are harmful typically point to findings that children afflicted by Autism often have heavy metal poisoning caused by thimerosal, a mercury derivative in some vaccines. There is a significant body of research that indicates that mercury poisoning causes symptoms similar to those seen in an individual with Autism.

Since 2001, Mercury has been taken out al all vaccines except for the flu vaccine (CDC, n.d., Vaccine Safety); however, the number of children diagnosed with Autism continues to increase. Schechter and Grether (2008) reported the prevalence of Autism Spectrum Disorders (ASD), at ages 3 to 5 years, increased for each birth year since 1999 when thimerosal was reduced or removed from vaccines.

The purpose of this article is to establish a possible connection between three series vaccines and the increase in certain medical conditions such as food allergies, and Autism. According to Pavlov's Theory of classical conditioning, a neutral substance (conditioned stimuli) is paired with another substance (unconditioned stimuli) that elicits an automatic or natural response. After multiple pairings, the previously neutral substance may begin to elicit the same response even when introduced separately.

The three series vaccines pair bacterial antigens with other bacterial toxins (i.e.diptheria) with other usually harmless substances, such as food and food preservatives. This pairing causes a classical conditioning scenario in which the body learns to react to the food in the same way that it would react to the bacteria antigen or bacteria toxin.

This paper will discuss the infant's immune system, immune system variations and how vaccinations work to influence the immune system. Also discussed will be how allergies occur and the definition of Autism. Finally, current and past literature will be reviewed to make clear a possible connection between three-series vaccines and allergies and Autism

The Infant's Immune System

An infant can have both passive and active immunity. Passive immunity comes from breast milk or some short lasting immunity from the placenta. (National Institute of Allergy and Infectious Disease (NIAID, n.d., Passive Immunity)). Active Immunity

comes from being exposed to the disease itself, either by getting the disease or receiving a vaccine for the disease. Passive immunity usually lasts only weeks or months while active immunity tends to last longer (NIAID, n.d., Passive Immunity). It is also known that an infant's immune system is not sufficiently mature and cannot develop antibodies to some foreign substances in the first months of life (NIAID, n.d.,Vaccines). While a baby is able to develop immunity to some substances (i.e. tetanus) in the first months of life, the infant cannot develop adequate immunity to others (i.e. Pertuses, Hib) before seven months of age (Coulter & Fischer,1985 and Allen, 2007).

Louis Sauer, a vaccine pioneer recommended that vaccination begin no earlier than seven months because most infants were not able to develop adequate immunity until this time. (Coulter & Fisher, 1985). The immature immune system is the reason conjugate vaccines were created. Prior to the Hib conjugate, the Hib vaccine was not able to be given until 18 months of age because the infant's immune system was too immature to build lasting immunity (Allen, 2007).

The immune system is a system of memory. The various cells of the immune system seek out, detect, examine, destroy or neutralize foreign substances while committing to memory the recognition of these foreign substances. These foreign substances are called antigens (Merck, n.d.). Antigens can be a bacteria, bacteria toxin or virus. An antigen consists of proteins or a string of short sugar molecules or oligosaccharides which are connected to a protein. When an antigen arrives in the body through a breach of the first level of defenses such as skin, the mucous membranes of the respiratory system, or the gastrointestinal (GI) system, the lymphocytes (a type of white blood cell or WBC) detect the antigen (Granger, 2002). These lymphocytes stimulate the immune system to respond to the antigens. An antibody is formed. Antibodies defend the body in various ways to stop the foreign cell from causing disease (Merck, n.d).

Antibodies (also called Immunoglobins or Ig) are made of proteins, and are created by the B cells of the lymphocytes. The B cells make antibodies for specific antigens of foreign organisms that it detects in the body. Once the B cells make these antibodies the antibody begins to attack the bacteria by adhering to the antigen and killing it or rendering it harmless (Granger, 2002). When the foreign body dies or becomes harmless this prevents the disease from occurring or limits the life of the disease.

Part of the immune response is the inflammatory response. Acute inflammation is the body's response to cell injury (Ware, 2005). The lymphocytes start a process in which chemicals are released to surround and limit the damage (Ware, 2005). Inflammation is the body's response to insult, not the insult itself. Inflammation is not infection, and infection does not always need to be present for inflammation to occur.

An example of acute inflammation is what happens if one gets a sore or lesion and it heals. Sometimes there is redness, swelling around the sore and maybe even a slight fever. These are all common ways that the body works to heal the sore. There are a great number of chemical processes that occur in or cause the inflammation, including histamines and the complement system. The complement system is a cascade of

chemical processes that either assist the WBC's to increase the phagocytosis of the foreign object or get rid of the debris from the sore (Janeway, Travers,Walport, Schlomchik, 2001). These chemicals can also cause inflammation (Janeway et.al., 2001).

Abnormal Variations in the Immune Response: Allergies and Chronic Inflammation

Allergies are a hypersensitivity of the immune system. When an allergy occurs the body responds to normally harmless substances (haptens) as if those substances were bacteria or viruses or something else harmful to the body. (Bock & Stauth, 2007). Bock and Stauth (2007) state that the immune system fights these harmless substances as if it were at war-causing extra fluid, heat and mucous to be formed. Asthma is the result of these extra substances occurring in the bronchial system (Bock & Stauth, 2007).

Chronic inflammation is when an immune/inflammatory response lasts more than a few days or weeks. The body is continually trying to fix something. It is a "'frustrated repair' repair that is thwarted because of the presence of an irritant that cannot be eliminated, such as a persistent antigen that continues to trigger a low-level immune response." (Ware, 2005). Ware (2005) as well as Bock and Stauth (2007) both agree that this constant state of inflammation can be very damaging.

There are two ways in which chronic inflammation can develop (Ware, 2005). The first way chronic inflammation develops is when the agent that is responsible for the immune response (such as a virus) is not able to be eliminated by the body (Ware, 2005). Bock and Stauth (2007) explain that this is what occurs when Autistic children are unable to rid their bodies of metals and other poisons. The second cause of chronic inflammation is when no acute phase of the disease ever develops as the stimulus has a low toxicity, so no acute inflammatory reaction occurs; however, a constant low level of inflammation does occur (Ware, 2005). This last cause is precisely what happens when some persons receive a vaccine.

How Vaccines Work

The immune system is a "trained" or conditioned system which is the very reason why immunizations are effective. We condition the immune system to develop antibodies to attack an antigen. Vaccines are foreign organisms such as bacteria (Streptococcus pneumonia – causes meningitis) or viruses (herpes varicella – causes chicken pox) that are placed into a solution and injected into the body. These viruses and bacteria are either live but weakened or dead; therefore, the actual disease does not occur. The body will still make antibodies to that weakened or dead organism. The next time that a person is exposed to that organism, the body recognizes the antigen of the bacteria or virus and make antibodies more quickly to attack the organism than the first time the antigen was detected in the body. This quick response to the second exposure prevents the person from getting the disease caused by the bacteria or virus. This is why a non vaccinated person who gets the chicken pox or measles gets the disease only one time in their life.

There is a variety of methods for making vaccinations including those with a live attenuated virus, an inactive or dead virus, or partial antigen or chemically changed vaccines such as a toxoid, a subunit vaccine, and a type of subunit called a conjugate

The first type of vaccination is a live attenuated vaccine, which contains a weak but live microbe to cause an immune response but not the disease itself (NIAID, n.d., Vaccines). The chicken pox vaccine is a live attenuated virus. An inactive or dead microbe is the second type of vaccine (NIAID, n.d., Vaccines). Polio and Hepatitis A are examples of inactivated viruses (Sears, 2007).

A toxoid vaccine uses a toxin that is chemically changed using a type of formaldehyde to create a vaccine that will not give the actual disease. The NIAID (n.d., Vaccines) also describes a subunit vaccine as a vaccine that uses only some of the antigens instead of the entire microbe to elicit an immune response without giving the disease.

A conjugate vaccine is a type of subunit vaccine. These vaccines were developed to outsmart the bacteria that hide it's toxins in a polysaccharide as a defense mechanism. "When making a conjugate vaccine, scientists link antigens or toxoids from a microbe that an infant's immune system can recognize to the polysaccharides. According to the NAIAD (n.d., Vaccines), "the linkage helps the immature immune system react to polysaccharide coatings and defend against the disease-causing bacterium." An example of a conjugate vaccine is the Prevnar vaccine for Streptococcus pneumonia. It is linked or conjugated with a nontoxic variant of Diphtheria that is grown in casamino acids and yeast. (U.S. Food and Drug Administration, n.d.)

Other vaccines types such as DNA and recombinant vector vaccines are presently being studied (NIAID, n.d., Adjuvants and other Vaccine Ingredients).

Adjuvants and Haptens:

Adjuvants and haptens are also included in vaccines. Both adjuvants and haptens are linked to the antigen (virus or bacteria) in some fashion. Adjuvants are the carrier of the antigen in the vaccine. According to an adjuvant manufacturer, Thermo Scientific (n.d.), adjuvants are nonspecific stimulators of the immune response. According to the NIAID (2009), "Adjuvants do a variety of things: they can bind to the immune-inducing antigens in the vaccine, help keep antigens at the site of injection, and help deliver antigens to the lymph nodes, where immune responses to the antigens are initiated. The slowed release of antigens to tissue around the injection site and the improved delivery of antigens to the lymph nodes can produce a stronger antibody response than the antigen alone." The antigen, then carries it to the correct place in the body, and finally releases the antigen to the body in the way that will initiate the most effective immune response Adjuvants can be minerals such as aluminum or mercury; or an oil and water based emulsion.

Haptens are particles that are linked with the antigen. A hapten is a substance that is by itself harmless, i.e. dust or dander, but when paired with another antigenic substance, such as a virus or bacteria, can elicit an immune response (Tabers Online, n.d., Hapten). Sears (2007) details more than a dozen different foods and food products in vaccines. See Chart A. Any of the substances noted in Chart A can become haptens. Many of the substances in Chart A are the substances to which many children have allergies. According to NIAID (2009) 'The most common causes of food allergies are milk, eggs, shellfish, peanuts, tree nuts, wheat and soy.'

Food & Common Food Preservatives given before and at the six month infant check-up. Many other ingredients especially in adjuvants are not clearly listed.

	Hep B	Prevnar	DTaP	HIB	Polio	Rota Virus
Amino Acids						X
Cow Serum		X				X
Chicken Parts	X					
Calcium Carbonate						X
Egg	X					
Gelatin			X			
MSG					X	
Phosphates						X
Polysorbate 80			X			X
Salt)Saline solution			X	X	X	
Sugar				X		X
Soy		X				
Sodium Citrate						X
Xanthum Gum						X
Vitamins					X	
Yeast	X	X				

So me substances that are not listed in the above chart but still cause allergic reactions may be very closely related to substances in the chart. For example, soybean allergens are "homologous" to known peanut allergens and are recognized by 44% of peanut-allergic patients. Soy was reengineered in 1996 to withstand industrial pesticides; its changed amino acid structure is similar to peanut and shellfish (AllergyKids, 2007).

In addition to the foods above, other food particles are used in the creation of vaccines. A thorough search of the World International Patent site (found at http://www.wipo.int/portal/index.html.en) can find patents for many immunizations or adjuvants that contain peanut. It is in a variety of forms: peanut, its Latin form as Arachis hypogaea, Arachis oil, ground nut and even nut lectin. Merck's adjuvant 65 also

contains peanut oil (Fischetti, Vincent, & Scott, 1988). This is one example that demonstrates that food, including peanuts, utilized in the creation of vaccines and adjuvants can become part of what a child's immune system is conditioned to attack.

Vaccines are created to elicit the most heightened immune memory response possible to protect us from the disease for many years and possibly a lifetime (Ellis, 1999). Immunizations are given in series of three or four to increase their effectiveness. A Schering Corporation patent in 1994 describes the reasoning for series shots as "Specificity and memory, the two key elements of the adaptive immune system, are exploited in vaccination, since the adaptive immune system mounts a much stronger response on second encounter with an antigen. This secondary immune response is both faster to appear and more effective than the primary response." (Bonnem, Chaudry, Stupak, 1994).

The increase in three or four series vaccines sets up a classic Pavlovian scenario. Considering most infants have the third shot in the series by six months of age as food is just beginning to be introduced, the foods in the vaccines are likely to be neutral substances and candidates for a classical conditioning.

Classical Conditioning

Ivan Pavlov was a 19th century psychologist who demonstrated that after pairing food (unconditioned stimulus)to the sound of a ringing bell (conditioned stimulus), his dog would eventually salivate at the sound of the bell even when the food was not present. Pavlov's theory is termed Pavlovian Conditioning or classical conditioning, a learning process that occurs through association when two different stimuli are paired together. The unconditioned stimulus is one that automatically triggers a response. The conditioned stimulus is a previously neutral stimulus that, after becoming associated with the unconditioned stimulus, eventually comes to trigger a conditioned response.

A conditioned response that many can relate to is "The Garcia Effect". Garcia discovered that substances that lead to vomiting (food poisoning, etc.) are readily developed as conditioned stimuli and with just one pairing, may lead to the avoidance of the food for a lifetime. When the unconditioned stimulus evokes an extremely strong response (i.e. vomiting), it may only take one pairing of the stimuli to create a conditioned response. However, typically introducing two different substances (stimuli) together, only one time, does not evoke a conditioned response (Physiology and Behavior, 2005).

Classical Conditioning in Medicine

Classical conditioning in medicine is being studied to help cancer patients as well as to treat chronic pain (Exton, von Auer , Buske-Kircschbaumb, Stockhorst, Gobel, Schedlowski, 2000). For this article we will focus on studies specific to the immune

system. These studies have been able to demonstrate a Pavlovian response in the immune system with substances that usually have no immune response.

Some immune responses have been detected as early as the 1800's when Mackenzie noted that people with a "rose cold" would respond with "cold" symptoms when a plastic rose was shown to them (Exton et al 2000). In 1953, Strutsovskaya demonstrated a classical immune response. He injected children with Gamma Globulin on four consecutive days then on the fifth day with saline only. The injection on the fifth day showed an increase in phagocytosis in those children (Exton et al., 2000)

Since the early 1970's scientists have been studying classical conditioning of the immune system. In 1975 (Ader & Cohen, 1975), a groundbreaking study gave rats a sweet tasting saccharin paired to a drug that caused nausea and suppressed their immune system. After given together on three different occasions, the drug was removed and saccharin alone was fed to the rats. The rats began to react to the saccharin-alone with a suppressed immune response. For a period of time, the rats avoided the saccharin, but eventually tried it again. Even once they were no longer behaviorally conditioned to avoid the saccharin, their immune system reacted again and they became sick.

Ader (n.d., Conditioned Immunodulation)) described an experiment where mice were bred to be genetically vulnerable to an autoimmune disease. The mice were given a flavored solution containing a drug that delayed the onset of the disease. When the flavor was given without the drug, the rats continued to resist the disease.

Another significant study paired a unique tasting sherbet to an injection of epinephrine. The sherbet and epinephrine were paired together four times. At the next introduction of the sherbet alone, it created the same adrenal response (Exton, et al, 2000). The study concluded that conditioned changes in immune function might modulate health status in a clinical realm.

A practical use of the classical conditioning paradigm was demonstrated by Olness & Ader (1992) in the treatment of an 11-year old girl with severe lupus. The standard treatment is cyclophosphamide (an immunosuppressant drug) caused severe side effects. To avoid the negative impact of the drug, researchers gave the girl compound conditioned stimuli (taste of cod liver oil & smell of rose) with Cyclophosphamide. The conditioned stimuli produced the same results as the cyclophosphamide. (Olness & Alder, 1992)

One study from Japan (Sakaguchi and Inouye, 2000) indicates a strong causal relationship between children with an anaphylactic reaction to gelatin and a prior history of immunizations containing gelatin. Japan offers two DTaP vaccines – one with gelatin and the other without. Researchers discovered that by the fourth DTaP vaccine with gelatin, children were sensitized to the gelatin. Fifty-four (54) of the 55 children who were documented as having a positive IgE sensitivity test as well as an anaphylactic reaction to gelatin after receiving the live vaccine had the DTaP vaccine with gelatin.

Another Japanese study in 1999 studied children who had allergic reactions after the MMR (Nakayama, T., Aizaw, C., & Kuno-sakai, H.). These children had also received a set of three series vaccines of DTaP with gelatin, and the MMR was also stabilized in gelatin (Nakayama, T., et.al., 1999). Most of the children who had a generalized reaction ranging from eruptions on the skin to anaphylaxis had a positive IgE for gelatin. This suggests that any hapten or adjuvant from one series of vaccines might cause an abnormal reaction to another vaccine. As such, the abnormal reactions to the MMR and other 12 month shots may stem, not from the virus it contains, but from the materials in the vaccine via mechanisms of classical conditioning in previous vaccinations.

Just this year, 2009, a relevant article: Impairing oral tolerance promotes allergy and anaphylaxis: a new murine food allergy model, (Ganeshan, Neilsen, Hadsaitong, Schleimer, Xunrong, Bryce, 2009) states that the researchers solved a problem associated with doing studies on food allergies in mice. Previously it was difficult to use mice or other animals to study allergies as animals are not usually allergic to foods (National Institute of Allergy and Infectious Disease, 2009) Ganeshan et al. (2009) were successful in giving peanut allergies to mice. The method for giving allergies to mice consisted of "feeding mice a mixture of whole peanut extract (WPE) and a toxin from the bacteria *Staphylococcus aureus*, called staphylococcal enterotoxin B (SEB) to simulate the human anaphylactic reaction to peanuts in mice." (NAIAD, 2009).

The above researchers are glad to have found this process which makes mice allergic to peanuts. These current authors believe that the feeding of these mice a food linked with a bacterium over and over again (classical conditioning) demonstrates our theory, that linking foods with bacteria over time as is done in vaccines can cause certain people to react to the food as if it is an antigen. This will either cause a hypersensitive reaction, as in the case of allergies, or a chronic inflammatory response, like that found in Autism or other inflammatory diseases.

Hypothesis

If an infant receives one or more sets of three series vaccines, his or her's immune system can respond abnormally. The first abnormal response is an allergic or hypersensitive reaction. The second abnormal response is a chronic inflammatory reaction which can cause regressive Autism or other increasingly prevalent inflammatory diseases.

A Classical Conditioning Scenario and Three Series Shots:

A vaccine is made by "growing" bacteria such as Streptococcus Pneumonia in a soy based medium. The bacteria are the intended antigen, but soy is linked to the antigen. Considering, the infant is unable to recognize and develop immunity to the antigen alone; it is also conjugated or combined with diphtheria. The body will recognize and form antigens then to the diphtheria and the streptococcus Pneumonia. Soy becomes a hapten and antibodies to soy may also develop.

The antigenic molecule must then be inserted into some kind of solution to stabilize the bacteria and also get the bacteria to the proper site in the immune system in order to elicit the largest immune response possible without causing the disease itself. This stabilizer is the adjuvant.

The vaccine is then given to a child. According to the 2009 Vaccination Schedule, this child receives this vaccine three times by six months of age (CDC, 2009), when its immune system is still not fully developed. A classical conditioning scenario is set up. The infant then detects the entire molecule as an antigenic substance and makes antibodies that will cause an immune response against one or all of the substances.

The immune system can respond in one of three ways. First the immune response may be the intended response and the person becomes immune to the disease. The second response is that all or some additional ingredients in the vaccines become antigens and a hypersensitive or allergic reaction occurs. The third response seen is a chronic inflammatory response. The probability of abnormal responses, as seen in previous classical conditioning research, are more likely to occur with the addition of each vaccine in the series.

When an allergy occurs, a child's body perceives the hapten as something to fight and makes Immunoglobin E (IgE) antibodies. IgE antibodies stimulate a hypersensitive response from the immune system. Classic allergy symptoms appear. According to the NIAID (n.d. food allergy),"Symptoms of food allergy can include coughing; tingling in the mouth; skin reactions like hives and itching; and nausea, vomiting, stomach pain or diarrhea. Food allergies can also cause a sudden and severe allergic reaction called anaphylaxis. Anaphylaxis brings life-threatening symptoms, which can include difficulty breathing, a drop in blood pressure and narrowing of the airways and wheezing." A basic skin test or RAST test will indicate that there are IgE antibodies to the foods that are causing these symptoms. A child then has an allergy.

Often, instead, a mother will notice that her child is experiencing some symptoms, after a vaccine, that are not classic allergy symptoms. Some of these symptoms may be horrible abdominal pain, diarrhea, eczema, and even neurologic changes or developmental regression (Bock & Stauth, 2005). Theoretically, these symptoms are caused because the antigen in the body that was strong enough to elicit an antibody response but not the disease (Ware, 2005). A low level chronic inflammatory response may begin. As stated in Ware (2005) this inflammation may not have any symptoms for years (Juvenile Rheumatoid Arthritis) or this inflammation could cause more immediate symptoms (Regressive Autism).

Recently, it has been discovered that children with Autism have brain and GI inflammation (Bock and Stauth, 2005). A groundbreaking study that compared corpses of those with Autism and those without identified an usual and chronic type of inflammation in the brains of autistic individuals (Vargas, Nascimbene, Krishnan, Zimmerman & Pardo, 2004).

A vaccine which causes inflammation combined with a conditioned response causing the inflammation to be chronic, potentially causing Autism. This chronic inflammation could result from the constant introduction of food, food preservatives or any other substances that were used in producing three or four series vaccines. The other possibility is that the "frustrated repair" causes chronic inflammatory response that causes the child to have symptoms of Autism. Some autistic children may have a secondary sensitivity to food and will test negative for the IgE antibodies. Autistic children have a significantly higher IgG, IgA and IgM antibodies for food than a healthy child (Vojdani & Pangborn,2003). This is likely why parents and researchers report that autistic children have significant improvement, demonstrating fewer autistic behaviors, when food allergens are removed from their diet.

Having these undetected, classically conditioned allergies (IgG, IgA, IgM) can lead to chronic inflammation that can constrict the development of myelin connections between the brain and the central nervous system **(**Vojdani & Pangborn, 2003**)**. These classically conditioned symptoms could also lead to over antibiotic usage when allergies are misdiagnosed as a bacterial infection, causing difficulty in eliminating heavy metals, and creating other chronic issues that biomedical practitioners are treating in their autistic patients.

In sum, this article proposes a theory that some children's bodies are unable to detect a difference between an antigen and the other, usually harmless ingredients, that are food or food related, with which the antigen is linked. These children then respond to food as if it were an antigen to be fought and or destroyed. In the case of the chronic inflammation the child's body is continuously fighting a disease that is not really there. Many typical individuals can relate to symptoms of having the flu as feeling sick, overall irritability, GI issues, having trouble concentrating, increased sensitivity to bright lights, loud sounds or touch. In the case of allergy, a child/parent must spend the rest of their life making sure certain ingredients are not in the food they eat; moreover, children with severe food allergies have a sense of impending doom that impacts that a food may thrust them into anaphylaxis.

A Call for Protocol and Future Research:

This article is not intended to be an anti vaccine article, but it is a call for safer vaccinations, vaccination procedures and education.

Current vaccination protocol does not take into account that vaccines contain food and that the American Academy of Pediatrics recommends that food should not be introduced until a child is four to six months old. The recommendation also states that new foods should be introduced slowly, with a two to three day break in between each new food. A new protocol examining the risk of early introduction of foods through vaccinations should be established.

According to the Center for Disease Control (CDC, 2009), six 3-series shots are scheduled to be received in the first six months of life. Specific risk factors should be studied. Children with food allergies in their family, who are sick, or on antibiotics may not be able to tolerate the number of vaccines given in the 2009 recommended vaccine schedule. .Utilizing classical conditioning as a basis, establishing protocol may call for studies surrounding the sympathetic nervous system (SNS). Exton et al.(2000) demonstrates that the sympathetic nervous system is responsible for mediating conditioning and it is understood that SNS is impaired by stress. This may provide insight as to why some children may develop allergies and inflammation while others do not.

A protocol for giving vaccines that is more individually oriented should be researched. Certain blood tests or titers may indicate if and when a child should be vaccinated and help to determine whether the third shot in a vaccine is necessary. Some example of these may be IgG, IgA and IgE antibodies for various substances as well as a blood test for a potential marker for low grade inflammation such as the C-Reactive Protein (CRP). In the past, the CRP has been used to predict risk of cardiac disease (Western Washington University, n.d.) but it does indicate inflammation and may be a tool in the future to predict other inflammatory diseases.

Research should be undertaken to determine if delaying part, or in some cases the entire vaccination series until food has been orally introduced would allow the child to recognize food as food and not as a conditioned disease antigen. Research also should be completed to help non-breastfeeding parents determine when a vaccine is truly safe for their child. Breastfeeding is one way to give a child passive immunity (http://www3.niaid.nih.gov/topics/immuneSystem/immunity.htm) and may provide additional protection while certain vaccines are delayed.

Preventing abnormal inflammation sometimes caused by vaccines is another avenue that needs research. There are many anti-inflammatory substances that can be studied including Ibuprofen, Zinc, Vitamin E, Vitamin A, Omega – 3's as well as others (Bock & Stauth, 2007). Can these substances prevent as well as help in the treatment of allergies and Autism?

Nutritional programs that build up the immune system prevent the disease from actually becoming epidemic in the first place should be studied. Can general immune system building, through natural means provide a better, safer way to prevent diseases in society?

For those with Allergies and Autism:

Elimination or rotating diets may provide relief for some individuals that are sensitive to only one or two foods; however, it is difficult for many parents to determine which substances are causing the reaction.

NAET (Nambrupad's Allergy Elimination Technique) may also be a successful way to eliminate allergies through the use of acupressure and kinesiology. More research is needed in the area of NAET and acupuncture and its ability to relieve allergies and inflammation.

Parents pioneering the cure of Autism and Allergies should utilize Generation Rescue at generationrescue.org to access other parents who have treated their children for these childhood epidemics.

It is the hope of these authors that all practitioners, including those in traditional medicine, could benefit by researching classical conditioning of the immune system in the creation of new and innovative treatments for Autism.

Ader, R.& Cohen, N. Behaviorally Conditioned Immunosuppression. *Psychosomatic Medicine* 1975;37:333–40.

Ader, R.(n.d.) *Conditioned Immunomodulation: Research Needs and Directions*. Retrieved on April 11, 2009 from (http://cancercontrol.cancer.gov/bimped/ader_present.html).

Allen, Arthur (2007) *Vaccine: The Controversial Story of Medicines Greatest Lifsaver.* W.W. Norton and Company, Inc., New York, NY.

Allergy Kids (2007). *Soy's Role in the Peanut Allergy: What European Mothers Already Know.* Retrieved April 11, 2009 from http://allergykids.wordpress.com/2007/10/29/soys-role-in-the-peanut-allergy-what-european-mothers-already-know/#comments%20F

Bock K. & Stauth C. (2008). *Healing the New Childhood Epidemics: Autism, ADHD, Asthma and Allergies.* Ballantine Books, New York, NY.

Bonnem, E. M., Chaudry, I. A., Stupak, E. (1994). Publication Number: WO/1994/001133: *Use of GM-CSF as a Vaccine Adjuvant.* Retrieved April 11, 2009 from http://www.wipo.int/pctdb/en/wo.jsp?IA=US1993006298&DISPLAY=DESC

Coulter, H., & Fisher, B.L. (1985). *DPT: A Shot In the Dark.* Harcourt Brace Jovanovich. Orlando, Florida.

Center For Disease Control. (n.d.) *Autism Information Center. Frequently Asked Questions: Prevalence.* Retrieved April 11, 2009, *from* http://www.cdc.gov/ncbddd/autism/faq_prevalence.htm

Center for Disease Control (n.d.) *Vaccine Safety – Mercury and Vaccines (thimerosal).* Retrieved April 11, 2009 from *http://cdc.gov/vaccinesafety/concerns/thimerosal.htm*

Center for Disease Control (2009) *Infant immunization Schedule.* Retrieved April 11, 2009 from http://www.cdc.gov/vaccines/recs/schedules/downloads/child/2009/09_0-6yrs_schedule_pr.pdf

Ellis, R. (1999) *Combination Vaccines: Development Clinical Research and Approval.* Humana Press

Exton, M.S., von Auer b, A.K., Buske-Kircschbaumb, A., Stockhorst, U., Gobel U., Schedlowski, M. (2000). Pavlovian Conditioning of Immune Function: Animal Investigation and the Challenge of Human Application. *Behavioural Brain Research* 110, 129–141

Fischetti; Vincent A. & Scott; June R. (1988). Patent Number 4784948. Production of streptococcal m protein immunogens and molecular probes. Retrieved April 11, 2009 from http://www.patentgenius.com/patent/4784948.html

Ganeshan, K., Neilsen, C., Hadsaitong, A., Schleimer,R.P., Xunrong, L. and Bryce, P.J. (2009).*Impairing oral tolerance promotes allergy and anaphylaxis: A new murine food allergy model* v.123: 1, 231-8.

Granger,J.I. (2002) Immune System Health Article, *Gale Encyclopedia of Nursing and Allied Health*. Retrieved on April 14, 2009 from http://www.healthline.com/galecontent/immune-system-1

Janeway C.A., Travers P.,Walport, M., Schlomchik, M.(2001*) The complement system and innate immunity*. Retrieved on April 14, 2009 from *http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=imm.section.161*

Merck (n.d.) *Acquired Immunity*.par. Retrieved on August 15,2009 from *http*://www.merck.com/mmhe/sec16/ch183/ch183c.html

National Institute of Allergy and Infectious Disease (n.d.) *Adjuvants and other Vaccine Ingredients.* Retrieved April 11, 2009 from http://www3.niaid.nih.gov/topics/vaccines/understanding/adjuvants.htm

National Institute of Allergy and Infectious Disease (n.d.) *Immunity Natural and Acquired.* Retrieved April 11, 2009 from http://www3.niaid.nih.gov/topics/immuneSystem/immunity.htm

National Institute of Allergy and Infectious Disease (n.d.) *Vaccines: Types of Vaccines.* Retrieved April 11, 2009 from http://www3.niaid.nih.gov/topics/vaccines/understanding/typesVaccines.htm

National Institute of Allergy and Infectious Disease (n.d.) *Of Mice and Peanuts.* Retrieved April 11, 2009 from http://www3.niaid.nih.gov/news/newsreleases/2009/mouse_peanut_allergy.htm

National Institute of Allergy and Infectious Disease (n.d.) *Food Allergy: Living with Food Allergies.* Retrieved April 11, 2009 from http://www3.niaid.nih.gov/topics/foodAllergy/living.htm

Physiology & Behavior [Physiol Behav] 2005 Apr 13; Vol. 84 (5), pp. 807-14. *Date of Electronic Publication:* 2005 Apr 26.

Nakayama, T., Aizawa, C., Kuno-Sakai, H. (1999) A clinical analysis of gelatin allergy and determination of its causal relationship to the previous administration of gelatin-containing acellular pertussis vaccine combined with diphtheria and tetanus toxoids. *Journal of Allergy and Clinical Immunology*. February,103:200-02.

Olness, K., & Ader, R. (1992). Conditioning as an adjunct in the pharmacotherapy of lupus erythematosus: A case report. *Journal of Developmental and Behavioral Pediatrics*, 13, 124-125. Physiology & Behavior [Physiol Behav] 2005 Apr 13; Vol. 84 (5), pp. 807-14. *Date of Electronic Publication:* 2005 Apr 26.

Sakaguchi, M. & Inouye, S. (2000). IgE sensitization to gelatin: the probable role of gelatin-containing diphtheria-tetanus-acellular pertussis (DTaP) vaccines. *Vaccine.* Apr 3;18(19):2055-8

Schechter, R., and Grether J.K. (2008). Continuing increases in autism reported to California's Developmental Services System: Mercury in retrograde**.** Retrieved April 14, 2009 fromt http://www.immunizationinfo.org/immunization_science_detail.cfv?id=134.

Sears, R.W. (2007). *The Vaccine Book: Making the Right Decision for Your Child.* Hachette Book Group. New York, NY.

Tabers Online (n.d.) *Hapten.* Retrieved April 13, 2009 http://www.tabers.com/tabersonline/ub/view/Tabers/143429/22/hapten?q=hapten

Thermo Scientific (n.d.) Adjuvants: Enhance the Response to Immunogens with Inject Adjuvants. Retrieved April 11, 2009 from http://www.piercenet.com/products/browse.cfm?fldID=01010101&WT.mc_id=go_AbProd_Alum_brj

U.S. Food and Drug Administration (n.d.) *Pneumococcal 7-valent Conjugate Vaccine, (Diphtheria CRM197 Protein), Prevnar.* Retrieved April 11, 2009 from www.fda.gov/cber/label/prevnarLB.pdf).

Vargas, D. L., Nascimbene, C., Krishnan, C., Zimmerman A., & Pardo C.A., 2004. Neurological Activation and Neuro inflammation in the Brain of Patients with Autism, *Annals of Neurology;* Published Online: November 15, 2004 (DOI: 10.1002/ana.20315).

Vojdani, A., Pangborn, J., (2003) Binding of Infectious Agents, Toxic Chemicals, and Dietary Peptides to Tissue Enzymes and Lymphocyte Receptors and Consequent Immune Response in Autism. Retrieved April 11, 2009 from **http://www.autism.com/medical/research/vojdani.htm**

U.S. Food and Drug Administration (n.d.) *Pneumococcal 7-valent Conjugate Vaccine, (Diphtheria CRM197 Protein), Prevnar.* Retrieved April 11, 2009 from www.fda.gov/cber/label/prevnarLB.pdf).

Ware W.R.(n.d.) *Inflammation - A Double-edged Sword*. Retrieved on April 11, 2009 at http://www.yourhealthbase.com/inflammation.htm

Western Washington University (n.d.) *Inflammation Retrieved on April 14, 2009 at http://www.wwu.edu/depts/healthyliving/PE511info/infection/description.html*