

Current childhood vaccine programs: An overview with emphasis on the Measles-Mumps-Rubella (MMR) vaccine and of its compromising of the mucosal immune system

Harold E. Buttram, MD

Email: hbuttram1304@comcast.net

Abstract

Both common observation and official statistics confirm that there have been dramatic increases in chronic physical and mental illnesses in American children, such as autism, asthma, and allergies since the introduction of the MMR vaccine in 1978. Government health officials have denied a relationship with vaccines, but U.S. Congressional hearings on vaccine safety (1999 to Dec. 2004) revealed a total absence of vaccine safety tests that would meet current scientific standards, so that it can be assumed that many vaccine reactions are taking place unrecognized. Prior to the introduction of vaccines, the *Th1 cellular immune system* of the gastrointestinal and respiratory systems served as the primary defense systems with the *Th2 humoral immune system* in the bone marrow, serving a secondary role.

There is a school of thought that the "minor childhood diseases" of earlier times, including measles, mumps, chicken pox, and rubella, which involved the epithelial tissues of skin, respiratory, and/or gastrointestinal tracts, served a necessary purpose in challenging, strengthening, and establishing the dominance of Th1 cellular immune system during early childhood. Current vaccines against these diseases, in contrast, being directed at stimulating antibody production in the bone marrow, are bypassing the cellular immune system and thereby tending to reverse the roles of the cellular and humoral systems, with the former suffering from a lack of challenge. In addition, the cellular immune system is being further compromised by the powerfully immunosuppressive effects of the MMR vaccine. The time is overdue to totally rethink and redirect our current childhood vaccine program.

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1. Concerns about increasing incidence of childhood autism and related disorders

Many years ago in our medical practice we began asking teachers if, during their teaching careers, they had observed a change in children. Without exception, they replied that there had been a dramatic change, most notably since the early 1980s. Steadily increasing numbers of children, they reported, were showing autistic-like behaviors, were restless, impulsive, less focused, less able to concentrate, and therefore less able to learn.

It has been documented that a sharp and persisting rise in the incidence of childhood autism commenced following the 1978 introduction of the MMR vaccine in the U.S.A. [1-2], a time when mercury-laced Hepatitis B and Hemophilus influenza type b vaccines were also introduced. For a number of years previously the live measles, mumps, and rubella vaccines had been administered separately with negligible increases in autism. It was only after they were combined that the incidence of autism began soaring with 1 in 150 children up to eight years age, according to U.S. multisite study in 2000 [3], as compared with 1 in 10,000 several generations ago. According to more recent information, the incidence of autism may be even higher, with 1 in 88 military children in U.S.A. having autism [4], and according to the Vaccine Autoimmune Project (VAP), one in 67 in U.S.A. and 1 in 86 in the United Kingdom having autism [5]. Considering that the incidence of autism in boys is approximately four times greater than in girls, the relative incidence of autism in boys would be even greater. Finally, as estimated by VAP, the average lifetime cost of caring for autistic children will be about \$3.2 million dollars per child.

In addition to the autism epidemic, in 2004 almost five million children were classified as learning disabled [6], which represents a three-fold increase since 1976-7 according to the *Digest of Education Statistics* [7]. Comparable increases have taken place in attention deficit hyperactive disorder (ADHD), with four and one half million children between ages 3 and 17 being diagnosed with this condition in 2004 [8].

In a bulletin sponsored by the American Academy of Pediatrics, January, 2004, entitled "AUTISM A.L.A.R.M.", in addition to an announcement of the increasing prevalence of autism at that time, it was announced that *1 in 6 American children were diagnosed with a developmental disorder and/or behavioral disorder*.

In a similar fashion the incidence of asthma has increased from roughly two and a half million children, ages 0-17 years in 1979 [8] to nine million children 0-17 years in 2004 [8], (roughly 12% of that age group), a time period in which this age-group population increased 114% compared to a 360% increase in asthma.

Autoimmune diseases are also increasing, including juvenile diabetes, multiple sclerosis, Guillain-Barre Syndrome, and Crohn's inflammatory bowel disease. Based on the work of Vijendra Singh, who demonstrated marked elevations of brain antibodies in the form of myelin basic protein antibodies in autistic children [9-10], autism itself can be considered an autoimmune disorder.

2. The nature and necessity for vaccine safety tests

By way of explanation, a vaccine safety test is one in which before-and-after vaccine tests are performed, specifically designed to test for possible adverse effects on the neurological, immunological, hematologic, genetic, and other systems of the body, in sufficient numbers of test subjects and controls to be statistically significant. As an example, in a little noted study from Germany by Eibl *et al.* [11], a significant, though temporary, drop of T-Helper lymphocytes was found in 11 healthy adults following routine tetanus booster vaccinations. Special concern rests in the fact that, in four of the subjects, T-helper lymphocytes fell to levels seen in active AIDS patients. If this was the result of a single vaccine in healthy adults, one must wonder what the results would be with today's multiple infant/childhood vaccines (over 36 vaccines before school age).

The preceding study was far too small to be statistically significant, but otherwise it could well serve as a prototype of vaccine safety tests that should be taking place. Although preliminary in nature, it did provide an important immune-system clue which should have had meaningful follow up. Yet, to the best of my knowledge, it has never been repeated.

Government health agencies have widely vouched for the safety of vaccine programs, but the only so-called safety tests they have provided to support their claims of safety have been epidemiological studies, generally considered to be the least reliable because of the ease with which they can be manipulated. Tellingly, in a series of U.S. Congressional Hearings dealing with issues of vaccine safety that took place from 1999 to December, 2004, neither the FDA, CDC, nor other government health agency was able to produce a single vaccine safety test, like the small-scale immune-system evaluation described above, which would meet current scientific standards [12].

3. Unique vulnerability of the infant brain to inflammatory peroxidative damage and vaccine injury

One of the tragedies in today's childhood vaccine programs is that pro-vaccination authorities have failed to take into account the nature of the infant brain and its unique vulnerabilities. Although constituting only 6% of body weight in an infant [13], it receives about 15% of cardiac output and consumes about 25% of the body's oxygen supply [14]. In addition, both brain and retina contain a relatively high percentage of polyunsaturated Omega-3 fatty acids, including docosahexaenoic acid (DHEA) and arachidonic acid, which are highly fragile and susceptible to inflammatory peroxidative damage (rancidity).

Such a situation might be compared with that of dry brush on the plains. Any fire prevention manual will warn against elevated oxygen levels as posing a fire hazard. In principle, the brain is no exception to this rule with its highly inflammable lipids. In the natural scheme of things, a diet of fresh whole foods would provide antioxidants which might correspond with "fire hoses" to suppress peroxidative inflammation, including vitamins C, D and E, glutathione, selenium, and other protective nutrients. However, with today's prevalence of highly processed foods, these nutrients are commonly deficient.

In addition, the infant's immature brain and nervous system tissues are going through an extended period of rapid growth

and development, which also bring heightened vulnerability to cellular damage. As reported by R. L. Haynes *et al.* [15], cerebral axons (lengthy extensions of brain cells) achieve approximately one-fourth of adult level from 24th to 34th weeks of pregnancy, with rapid axonal growth and elongation taking place between 21 weeks of pregnancy and 24 weeks following birth. Onset of myelin development (fatty coating which protects nerve cells and provide nerve impulse insulation), does not commence until 14 weeks following birth with gradual progression to adult-like staining at 32 to 52 weeks. It is during this period of furious brain growth and limited myelin protection that infants inoculated according to today's recommended schedule receive over 21 vaccines.

4. Current studies implicating vaccines as primary causal agents of autism and related disorders

In what may be the most comprehensive publication to date on the pathophysiology of adverse vaccine reactions, Russell Blaylock has compiled a mass of evidence that repeated stimulation of the systemic immune system results in first priming of microglia of the developing brain, following by intense microglial reaction with each successive series of vaccinations [16]

In explanation, microglia and astrocytes are first-line-immunological responder cells located in the brain which defend against foreign infectious invaders. Normally this response, such as to a viral infection, is of limited duration and harmless to the brain. However, when the microcytes and astrocytes are overstimulated for prolonged periods, which vaccines are designed to bring about, this extended activation can be very destructive to the brain.

Because of the critical dependence of the developing brain on a timed sequence of cytokine and excitatory amino acid fluctuation, according to Blaylock, sequential vaccinations can result in alterations of this critical process that will not only result in synaptic and dendritic loss, but abnormal (nerve) pathway development. When microglia are excessively activated by vaccines, especially chronically, they secrete a number of inflammatory cytokines, free radicals, lipid peroxidation products, and the two excitotoxins, glutamate and quinolenic acid, which may become highly destructive to the brain when these cells are excessively stimulated for prolonged periods. This process was suggested as the central mechanism resulting in the pathological as well as clinical features of autism [16].

Since the U.S. Congressional Hearings on issues of vaccine safety ended in December, 2004, credible and statistically significant studies have begun appearing that: a) meet the established criteria for effective safety tests and b) without exception in my opinion, have implicated vaccines as central causal factors in today's epidemic of autism and related disorders. Several are listed below:

- As published in the *Annals of Neurology* [17], Diana Vargas and colleagues examined the brains from autopsies of 11 autistic patients, ranging in ages from 5 to 44 years, in which they found the presence of extensively activated microglia and astrocytes along with elevations of cytokines and chemokines, which are immune system proteins involved in inflammatory processes. As the first study of its

kind, it tends to support Blaylock's theory that overstimulation of the brain's microglia and astrocytes for excessively prolonged periods resulting from current vaccine programs plays a central causal role in today's epidemic of childhood autism.

- Surveys from four widely separated geographic areas have shown higher rates of asthma in fully vaccinated children as compared with those with limited or no vaccines [18-21].
- A study on primary immunization of 239 premature infants with gestational ages of less than 35 weeks was conducted by M. Pourcyrous *et al.* (*Journal of Pediatrics* [22]), to determine the incidence of cardiorespiratory events and abnormal C-reactive protein (CRP) levels associated with administration of a single vaccine or multiple vaccines simultaneously at or about two months age. (CRP is a standard blood test to measure body inflammation.) CRP levels and cardiorespiratory events were monitored for three days following immunizations in a neonatal intensive care unit sponsored by the University of Tennessee. Elevations of CRP levels occurred in 70% of infants administered single vaccines and in 85% of those given multiple vaccines, 43% of which reached abnormal levels. Overall, 16% of infants had vaccine-associated cardiorespiratory events with episodes of apnea (cessation of breathing) and bradycardia. *Most important, 17% of those receiving single vaccines had intraventricular brain hemorrhages, with an incidence of 24% of those receiving multiple vaccines. (This is the first study of its kind, showing that brain hemorrhages can commonly take place in vulnerable infants, now being misdiagnosed as Shaken Baby Syndrome in hospital emergency rooms.)* It should be noted that each and every one of the preceding adverse manifestations could be attributed to vaccine-induced brain inflammation.
- Though long denied by health officials, the action of mercury in causing brain inflammation in autistic children tends to be confirmed by Sajdel, Sulkowska, *et al.* [23]. Also the first of its kind, this study compared the cerebellar levels of the oxidative stress marker, 3-nitrotyrosine (3-NT), mercury (Hg), and the antioxidant, selenium (Se) between autistic and normal children. Average cerebellar 3-NT levels were statistically elevated by 68% in autistic children, cerebellar Hg by 68%, and mercury levels relative to protective selenium by 75% in autistic cases in comparison to controls.
- In a study along similar lines to the S. Sulkowska study above, X. Ming *et al.* [24] reviewed their animal model of autism, showing that oxidative stress from methylmercury or valproic acid exposures in early postnatal life of mice resulted in aberrant social, cognitive, and motor behavior. They also found that Trolox, a water-soluble vitamin E derivative, was capable of attenuating a number of these adverse neurobehavioral side effects.
- A telephone survey commissioned by the nonprofit group, *Generation Rescue*, compared vaccinated with unvaccinated boys in nine counties of Oregon and California [25]. The survey included nearly 12,000 households with children ranging in age from 4 to 17 years, including more than 17,000 boys among whom 991 were described as being completely unvaccinated. The survey found that, compared

to unvaccinated boys, vaccinated boys were 155% more likely to have a neurological disorder, 224% more likely to have ADHD, and 61% more likely to have autism. For older vaccinated boys in the 11-17 age bracket, the results were even more pronounced, with 158% more likely to have neurological disorders, 317% more likely to have ADHD, and 112% more likely to have autism.

- In October, 1998 the French government abandoned its mandatory hepatitis B vaccine program for school children after more than 15,000 law suits were filed for brain damage and autoimmune reactions including arthritis, multiple sclerosis, and lupus.

5. Vaccine adjuvants—their role in inducing prolonged immune response to vaccines, and their potentially adverse consequences.

As reviewed by Blaylock [16], adjuvants are substances added to vaccine formulations during manufacturing that are designed to boost the overall immune system response when the vaccine is injected. These substances include albumin, several forms of aluminum, formaldehyde, various amino acids, DNA residues, egg protein, gelatin, surfactants, monosodium glutamate (MSG), Thimerosal (50% ethyl mercury), and various antibiotics.

Contrary to public avowals as to the removal of mercury from vaccines, at time of this writing it is still present in the USA as a preservative in the multi-dose vials of tetanus-toxoid booster vaccines, the Menomune vaccine, the JE-Vax, and the inactivated influenza vaccines, including the "bird-flu" vaccine. Also it used in the manufacturing process of many vaccines to remove contaminants, which currently leaves trace residues of mercury in seven other vaccine formulations. Even these trace amounts are potentially toxic because of the universally recognized principle of toxicology, that combinations of toxins will increase toxicity exponentially; that is, two heavy metals will increase toxicity 10-fold, or three heavy metals increase toxicity 100-fold. In vaccines, the combinations would be mercury and aluminum. The same principle applies in other forms of toxic chemicals [26-28].

A study that was conducted in Lima, Peru by J. Laurente and colleagues [29] should remove all doubts about the potential dangers of mercury-containing thimerosal as a vaccine additive: To determine if thimerosal administration in amounts equivalent to vaccine content produces neurotoxic effects on the encephalon in postnatal hamsters and on the experimentation animals' development, three serial thimerosal injections were given on birth days 7, 9, and 11, with controls receiving only saline injection. Test animals subsequently showed statistically significant reduction in both weight and stature compared with controls. Neurotoxic effects were also produced at encephalic (brain) level at the hippocampus, cerebral cortex, and cerebellum. On tissue slides there was decrease in neuronal density, neuronal necrosis, and axonal demyelination in test animals.

In vaccines, virtually insoluble polymeric aluminum hydroxy compounds serve to dramatically boost and prolong the immune reaction to the vaccination by prolonged activation of the macrophagic immune sub-system in some people [30-35].

A study involving muscle biopsies from vaccine injection sites in the thighs of eight children ages seven months to six years demonstrated localized macrophagic (inflammatory) myofasciitis in injection sites. Characteristic aluminum hydroxide crystals were identified by electron microscopy in two cases. Associated disorders included spinal muscle atrophy (two patients), myoglobinuria (one patient), and hypotonia with motor delay (one patient) [30].

Because vaccine adjuvants are designed to produce prolonged immune stimulation, they pose a particular hazard for the nervous system. Studies have shown that immune activation following vaccination can last up to two years, which means that destructive overstimulation of microglia may also be primed for this length of time or even longer. In addition, it is known that aluminum accumulates in the brain and that this accumulation is associated with Alzheimer's disease and Parkinson's disease [36-38].

6. Ongoing mass (herd) immunizations – are they necessary?

Vaccine proponents would have us believe that mass vaccine programs have been largely responsible for controlling virtually all of the former epidemics of killer childhood diseases in industrialized nations. In my opinion, with the exception of smallpox and the possible exception of the polio vaccine, the facts do not bear this out. According to the Metropolitan Life Insurance Company, from 1911 to 1935 the four leading causes of childhood deaths from infectious diseases in the USA were diphtheria, pertussis (whooping cough), scarlet fever, and measles. Yet, by 1945 the combined death rates from these causes had declined by 95%, *before implementation of mass vaccine programs* [39]. Other sources provided much the same pattern of information [40-41]. Furthermore, according to a report in *Morbidity and Mortality Weekly Report*, July 30, 1999, improvements in sanitation, water quality, hygiene, and the introduction of antibiotics have been the most important factors in control of infectious disease in the past century. Although vaccines were mentioned, they were not included among the major factors [42].

7. The MMR vaccine and childhood autism: a hypothetical model

As mentioned earlier, it was only after the combination of the measles, mumps, and rubella live viruses into a single vaccine in the USA in 1978 that the incidence of childhood autism showed a sharp and dramatic increase [1-2]. Prior to that time the three viral vaccines had been in use a number of years, but given separately without significant increases in autism.

In addition to the Blaylock model of microglial overstimulation, also undoubtedly playing a major role [16], there are two plausible explanations for increases in autism following the MMR vaccine: First, protein sequences in the measles virus have been found to have similarities to those in brain tissues [43], so that by process of mimicry, the formation of antibodies against the measles virus would tend to cross react adversely with the brain. Second, and probably *far more important*, viruses are inherently immunosuppressive, in contrast to bacterial infections which stimulate the immune system, as reflected in

the fact that viral infections generally lower white blood counts in contrast to bacterial infections, which raise white counts. The measles virus is exceptionally potent in this regard, being powerfully suppressive to cellular immunity [44-46], with the suppressive action of measles largely attributed to its suppression of interleukin 12, on which cellular immunity is dependent [45]. Consequently the combining of three viral vaccines into a single combination may substantially increase the immunosuppressive vital effect, bringing about, in varying degrees, an immune paralysis in the infant. Under these circumstances the measles virus may spread into various tissues of the body. As with combinations of toxic chemicals that bring exponential increases in toxicities [26-28], combinations in viral vaccines may bring exponential increases in their toxic, immunosuppressive effects.

In support of this hypothesis, Wakefield *et al.* have demonstrated live measles virus in the small intestinal lymph nodes in children with the autistic-colitis syndrome, with the only possible source being from the live virus in the MMR vaccine [47].

In his various lectures in this country, Wakefield stressed that it was only following the introduction of the MMR vaccine in the United Kingdom in 1987 that the rapid increase in childhood the colitis/autistic syndrome began to be seen. This pattern was further confirmed by checking back into the records of public health departments of the United Kingdom and finding reports of autism occurring among children contracting two such childhood diseases simultaneously, such as chicken pox and measles, or mumps and measles.

As reviewed by Blaylock [16], a number of studies have shown that live viruses used in vaccines can enter the brain and reside there for a lifetime. One study, in which autopsied tissues from the elderly were examined for the presence of the measles virus, found that 20% of brains had live measles virus and that 45% of other organs were infested as well [48].

As another study suggesting that active brain invasion by the measles virus in autistic children from the MMR vaccination, Bradstreet *et al.* [49] examined cerebrospinal fluid from three autistic children, which revealed the presence of measles virus genomic RNA.

As to other viral vaccines, as reported by Bernard Rimland, *the chicken pox* vaccine is also playing a role in these cases.

“The federal government's Vaccine Adverse Event Reporting System (VAERS), which supposedly documents adverse reactions to vaccines, received nearly 10,000 reports involving the *chickenpox vaccine* between March, 1995 and December, 1999. Some of these reactions included brain inflammation, neurological damage, immune system abnormalities, seizures, and death. It is important to note, by the way, that since reporting adverse events is not mandatory, only an estimated 1 to 10% of adverse events are reported to VAERS.”[50]

In addition, articles by Gary Goldman seriously question the efficacy and advisability of universal varicella vaccination [51,52].

Immunosuppressive effects have also been reported from *the rubella vaccine*. In a study of eighteen school girls, ages 11 to 13 years by Pukhalsky *et al.*, profound depression of interferon gamma (a key mediator of cellular immunity) was found 30 days following rubella vaccine [53].

Returning to the MMR vaccine, F. Imani and K. Kehoe found a previously unrecognized side effect by incubating the MMR vaccine with a line of human plasma cells, which resulted in increase in the expression of allergy-related IgE antibodies, and secondarily a decrease in protective IgG antibodies. Based on these findings, the authors concluded that viral vaccines may be playing a role in the increasing incidence of asthma and other allergic diseases [54].

8. Basics of the human immune system prior to introduction of vaccines

The human newborn comes into the world with residual antibodies from the maternal blood stream, which, in the absence of breastfeeding, provide general immunologic protection for about six months and, for measles, up to 12 months. Otherwise the newborn immune system is largely rudimentary, *requiring a series of microbe challenges to become fully functional*, a process requiring two or three years. Without these challenges, the immune system of a child would remain vestigial.

The immune system is divided into two major classes: *Cellular immunity*, located in the mucous membranes of the respiratory and gastrointestinal tracts and their respective lymph nodes, and *humoral immunity*, with production of antigen-specific antibodies by plasma cells in the bone marrow. For eons of time the mucous membranes of the gastrointestinal and respiratory tracts have been the primary sites of infectious microbe entry into the body so that, of necessity, mucosal immunity has evolved as the primary immune defense system of the body with *humoral immunity* serving a secondary role.

Both classes are governed by TH lymphocytes, the “T” referring to the thymus gland, from which they are derived, and the “H” referring to a “helper” activity. Early in life these “naïve” or uncommitted TH lymphocytes are differentiated into either armed Th1 cells, which governs in cellular immunity, or armed Th2 cells, which govern in humoral immunity. It has been found that this differentiation has been profoundly affected by cytokines, which are produced by lymphocytes and which serve as chemical messengers. The two cytokines, interleukin 12 and interferon gamma, promote and govern Th1 cells, while interleukins 4, 5, 6, and 10 promote and govern Th2 cells [55]. Once one subset becomes dominant, it is difficult to shift the response to the other subset, as the cytokines from one tend to dominate the other [56].

The differing functions of the Th1 cellular and Th2 humoral immunity systems were summarized in a review article by P. Kidd:

“The Th1 cells are hypothesized to lead the attack against intracellular pathogens such as viruses, raise the classic delayed-type to viral and bacterial antigens, and fight cancer cells. The Th2 cells are believed to emphasize protection against extracellular pathogens...On the negative side, the Th1 pathway is often portrayed as being the more aggressive of the two, and when it is overreactive, can generate organ-specific autoimmune disease (e.g. arthritis, multiple sclerosis, type 1 diabetes). The Th2 pathway is seen as underlying allergy and related IgE-based disease.”[57]

9. John B. Classen, M.D., and epidemiologic studies concerning a suspected causal relationship between vaccines and the rising incidence of Insulin-Dependent Diabetes mellitus (IDDM)

In 1998 John Classen, M.D. gave a presentation at a conference held by the American College of Medicine in which he reviewed 32 published articles, five authored by himself, indicating a causal relationship between vaccines and the rising incidence of IDDM. Nations represented in the papers included New Zealand, Canada, the United Kingdom, Denmark, Finland, Sweden, the U.S., and Holland. Single vaccines were used including haemophilus, hepatitis B, pertussis, BCG, and smallpox.

A prototype was one conducted in Finland by Classen and reported in the *British Medical Journal* [58]. In this study, from all children born in Finland between October 1, 1985 and August 31, 1987, approximately 116,000 were randomized as test subjects to receive four doses of haemophilus vaccine starting at three months of age, or one dose starting at 24 months. 125,500 unvaccinated children served as controls. Each group was followed until age 10 years for development of IDDM. The incidence at seven years for those receiving four doses, those receiving one dose, and those receiving none was 261, 237, and 207 respectively with relative risks of 1.2, 1.14, and 1 for those receiving no vaccine.

In virtually all of the reports from other countries the results were very similar, indicating a slight but consistent increase in IDDM following each of the single vaccines listed above. Classen interpreted these results as indicating that it was not the type of vaccination that mattered so much as the immunologic impact of vaccination itself. Typically there was a delay of 3 to 5 years between vaccines and onset of IDDM.

Quotations by Classen during the 1998 conference included:

“Vaccinating every child against every disease is fundamentally unsound.”

“There is a 3.78-fold increased risk of insulin-dependent diabetes mellitus in children from today’s vaccines.”

“All autoimmune diseases are increasing in incidence. General immune (over) stimulation from vaccines is a cause of autoimmunity.”

10. The dual role of the MMR and other viral vaccines in capturing and perverting immune functions in children

Prior to the initiation of mass vaccine programs in the 1940s and 1950s, it can be assumed that dominance of cellular or mucosal immunity would have been firmly established by what in those days was referred to as minor childhood diseases (chicken pox, mumps, rubella, and measles) with the establishment of permanent Th1 cellular immunity to these diseases in almost all instances. A study of autistic children by S. Gupta comparing Th1 and Th2 cytokines, and showing a dominance of the Th2 humoral cytokines [59], provides preliminary evidence that large-scale switching to Th2 humoral dominance may be taking place from current vaccine programs.

There is a school of thought that these diseases (measles, mumps, chicken pox, rubella) served a necessary function in challenging and bringing the Th1 cellular immunity to a fully functional state [60-61]. *Having eliminated these diseases with injectable vaccines directed at stimulating antibody production by the humoral system of the bone marrow, and consequently bypassing the cellular immune system of the mucous membranes, almost certainly leaves the latter stunted in growth and function from lack of challenge.*

Consequently it can be assumed that the cellular immune system is being progressively crippled and stunted by current childhood vaccines in two ways: First, by having removed the former challenges of minor childhood diseases by their respective vaccines, and second, by the powerfully suppressive effects of the MMR vaccine [44-46] and other viral vaccines.

The irony of this is that the TH1 (cellular) immune system is inherently far more effective in dealing with viral infections than the TH2 humoral system [57], with the T-helper lymphocytes of the mucous membranes quickly switching to the TH1 phase, allowing the lymphocytes to secrete a group of cytokines that kill viruses and bacteria. This undoubtedly is the reason that vaccine-induced immunities to measles, mumps, chicken pox, and rubella are transient, requiring repeated vaccines, while immunity conferred by the cellular immune system before vaccines was almost always permanent. For these reasons we are getting misdirection of both the cellular and humoral immune systems, resulting in far more chronic childhood illness than in earlier times.

11. Summary and conclusions

Over eons of time nature has evolved two major branches of the immune system, the Th1 cellular system located in the mucous membranes of the gastrointestinal and respiratory systems, and the Th2 humoral system, which involves the production of antigen-specific antibodies by plasma cells in bone marrow. Both systems are incredibly complex both in the timing of their developments and their functions. Since a large majority of infectious microorganisms enter the body through the mucous membranes, the cellular immune system has evolved as the primary immune defense system of the body, with the humoral system serving as a secondary or backup role. For these reasons, evolutionary challenges have required the cellular immune system to become more effective in dealing with infectious microorganisms, especially intracellular viral infections [57]. This is

undoubtedly the reason that vaccine-induced immunities to measles, mumps, chicken pox, and rubella, which bypass the cellular immune system, are of limited duration requiring repeated vaccinations. The natural diseases of former times, in contrast, were dealt with much more effectively by the cellular immune system, almost always conferring permanent immunity.

The reader may well question that we have innumerable viruses passing around in the population today. Would they not serve the same purposes as measles, chicken pox, mumps, and rubella? Perhaps, except that chicken pox, mumps, rubella, and especially measles affect and challenge the epithelial tissues of the skin, respiratory (rubella), and gastrointestinal tracts (measles, chicken pox, and mumps) in ways that few if any other viruses do.

As reviewed above, a newborn infant comes into the world with a rudimentary immune system which requires a series of challenges to bring it to full functional capacity, a process requiring approximately three years. In earlier times these challenges were largely in the forms of the “minor childhood diseases” listed above. With time and experience it is becoming evident that, in addition to those already mentioned, another flaw in today’s vaccine programs is that the injectable vaccines, directed at stimulating antibody production in the bone marrow, are bypassing the cellular immune system, leaving it relatively unchallenged and therefore relatively weak and stunted during the critical infant/childhood period. In addition, there are the powerfully immunosuppressive effects of the MMR vaccine and other viral vaccines, to which the cellular immune system is uniquely vulnerable. These processes appear to be progressively undermining and eroding the cellular immune system, and unless discontinued or changed, may lead to an immunological collapse. Perhaps it already has for some children.

It is or should be manifestly apparent that the humoral antibody-producing system of the bone marrow can never functionally replace the far more efficient cellular immune system.

For this reason, in my opinion, any children’s vaccine program which does not allow the cellular (mucosal) immune system to develop unhampered in a natural way from natural challenges will be self-defeating. This would necessarily require a delay of childhood vaccines until two or three years of age. With this delay, the minor childhood viral diseases might well return, but would this be a bad thing? The dangers of chicken pox and mumps have been greatly exaggerated. Because of concerns for congenital rubella, the rubella vaccine could be delayed to later years, as the infection itself is very mild. Historically, measles did have some serious consequences including encephalitis, blindness or death in about 1 in 150 cases. However, there are other answers. Nutrition has been one of the missing links all along. In third world countries where measles has resulted in high mortality, this has usually been associated with malnutrition. One example of nutritional intervention is vitamin A therapy, authorized by the World Health Organization in developing nations, which has significantly reduced both mortality and morbidity from measles.

A study in Afghanistan which showed significantly greater morbidity and mortality from measles in children administered aspirin and Tylenol than those not given these medications [62], so that these should be avoided with measles.

Then too, we now have antibiotics for secondary infections associated with measles, which they did not have in the days when measles carried a small but significant rate of morbidities and mortality, much of which was from secondary infections.

All of the above lies in the future. For today's parents the Autism Research Institute with headquarters in San Diego, California (www.AutismResearchInstitute.com) has made the following safety recommendations in childhood vaccines:

- Never vaccinate a sick child, even if he or she just has a runny nose.
- Never give more than two vaccines simultaneously.
- Rather than the MMR vaccine, request that these viral vaccines be given separately, preferably six months apart; give measles last; and do not give any other vaccines for at least 1 year after measles. Some compounding pharmacies do provide these individual vaccines.
- Administer vitamins A, D and C before and after vaccines.
- Never allow a vaccine containing any level of the mercurial compound, Thimerosal. At time of this writing in late 2008, 50 micrograms of Thimerosal is still present in each 0.5-mL dose of vaccine from multi-dose vials of influenza vaccines and multi-dose vials of tetanus booster vaccines, but not in single dose vials of these vaccines. A total of 17 vaccines formulations are still approved and available for use that contain some level of Thimerosal; 10 of these 17 vaccine formulations contain a preservative level of Thimerosal.

Any overview on vaccines would be incomplete without mention of the work of the highly published immunologist, H. H. Fudenberg, and his work in developing clinical applications of transfer factor, which is a low molecular weight extract of lymphocytes, capable of enhancing or inducing cell-mediated immunity de novo (without immunizations) in an antigen specific fashion [63-64].

Finally, in view of gross deficiencies of vaccine safety testings, as documented by the U.S. Congressional Hearings on issues of vaccine safety (1999-December, 2004), the time is long overdue for a total rethinking and redirecting of current childhood vaccine programs. Until the safety of such programs can be assured by thorough and dependable safety testing, any further mandating of childhood vaccines will remain morally and ethically untenable.

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