Vaccination Viewed From a Holistic Perspective

Do Your Own Thinking, But First Inform Yourself

> "The study of error is not only in the highest degree prophylactic, but it also serves as a stimulating introduction to the study of truth." *Public Opinion*, Walter Lippmann

> "After all, how could a society that cared too little for truth make sufficiently well-informed judgments and decisions concerning the most suitable disposition of its public business? How could it possibly flourish, or even survive, without knowing enough about relevant facts to pursue its ambitions successfully and to cope prudently and effectively with its problems? It seems to me that higher levels of civilization must depend even more heavily on a conscientious respect for the importance of honesty and clarity in reporting the facts, and on a stubborn concern for accuracy in determining what the facts are." *On Truth,* Harry G. Frankfurt

Abstract: This essay attempts to answer the question: do the benefits of vaccines outweigh the risks? And the conclusion is that neither people who clearly state that the benefits of vaccines far outweigh the risks nor vaccine promoters know in what they are getting into in terms of safety, and, unfortunately, the public is rarely told its full story despite the fact that there exists sufficiently well documented literature on the subject. Further the public is not informed that there exits very safe and efficacious alternatives.

Introduction

Vaccination has been lauded as being a great scientific advance for the prevention of a number of infectious diseases. Infectious diseases can wipe out great proportions of a susceptible population. For instance, the 1918-1920 influenza pandemic (NIP) had the highest mortality worldwide ever reported for any epidemic, and ranks as the single greatest recorded mortality event in human history.[1] Revised calculations of the NIP estimate that at least 40-50 million and possibly as many as 100 million persons[1] died worldwide in lest than two years.[2] Many countries lost 2-6% of their population. However, more susceptible populations lost significant proportions of their people, such as 24% in Western Samoa and 45% in Cameroon.[3,4] Among the Inuit, the death toll was terrible, as some villages lost their entire adult population.[5]

Therefore, there is a great need to use the most effective and safe means to prevent infectious diseases, which vaccines have been lauded to fill up this role. However, like all prescribed drugs, vaccines are not free from short and long-term adverse effects. If vaccines were 100%

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[1]"The recorded statistics of influenza morbidity and mortality are likely to be a significant understatement. … A recurring feature of the work on the pandemic in the last couple of decades has been the consistent upward revision of mortality figures. … In almost every instance where a researcher has reexamined the pandemic with a view to determining the true level of mortality, this has led to a significant upward revision. … Global mortality from the influenza pandemic appears to have been of the order of 50 million. However, even this vast figure may be substantially lower than the real toll, perhaps as much as 100 percent understated." (Niall Johnson and Juergen Mueller. Updating the accounts: global mortality of the 1918-1920 "Spanish" influenza pandemic. *Bulletin of the History of Medicin*e 2002; 76: 105-115.)

safe and beneficial, it would be a no brainer. However this is not case and therefore a critical analysis of risks and benefits is now required.

The justification to eradicate infectious diseases can be such a blinding factor that many in the scientific community will simply not discuss the subject of potential adverse events associated with vaccination, and, unfortunately, anyone who would question the risk and benefit considerations of vaccination is quickly considered a crank. This blinding factor has also lead to inadequate evaluations of the real risks of short and long-term harm from vaccination.

The subject of the dangers associated with vaccination is taboo in medical and scientific circles, and is therefore rarely discussed openly by authorities, perhaps from the belief that it would alert increasing segments of the population against its use. Such an uncritical and paternalistic attitude has no place in a free society. People in general and parents in particular have the fundamental right to informed consent, which is based on the moral and legal premise of patients' need to complete information and autonomy to make the ultimate decisions about their health and their choice of health care.

Risks and benefits of vaccination is a very complex subject and it is only after an analysis of the great majority of facts associated with vaccination can people make enlighten and informed decisions. To the academic, bureaucratic and political realms, the risks and benefits ratio is numbers on a page. But for the parents of a child who has suffered a serious adverse event from a vaccine these risks become a reality that they will have to face for the rest of their lives. It is an important task ahead of us as the health of our loved ones and society is at stake.

Sworn testimonies before US Congress

To illustrate the two sides of the coin, the dangers of infectious diseases and the adverse effects of vaccination, on which parents must inform themselves in order to make the best decision for the well being of their children, here are the testimony of parents who have experienced one or the other.

The first testimony is from Ms. Carola Zitzmann, whose baby was infected in the womb, and who testified under oath representing Voice of the Retarded before a congressional hearing in 1999,

"Mr. Chairman and members of the committee, I would like to thank you for allowing me as a mother to come here today and testify before you. My story will probably be a little different from what you have heard just now.

"When two people marry, they have dreams of life together and having a family. One day this becomes true, but something suddenly goes wrong. You are told that your child has problems but they don't know what because they need to do testing. Much later you discover that while travelling to work on the transit system, a bus and two trains into Manhattan, someone infected you with the rubella virus. You find out later it went directly into the developing fetus in the early stages of your pregnancy, causing the disabilities your son now experiences. But you only find this out after your baby is born, because the virus does not show signs of infection on you. The

rubella virus does damage while the infant is developing, and now there are vaccines to prevent this.

“The guilt you experience when you learn your child is not normal and will never be is very difficult and hard on the family, and you begin to ask yourself, what did I do wrong to have this happen? Thankfully, I have had a very supportive husband in these last numbers of years.

“My story is that Robert, who is now 34 years old, was born with mental retardation and disabilities because of the lack of the vaccination. I was born and raised in Brooklyn and lived in Queens after I got married, but traveled to Manhattan every work day. Perhaps you recall it was mentioned earlier the 1964 New York rubella outbreak that had happened.

“Soon after our son was born in 1964, we knew something was wrong. He couldn't nurse, his sucking reflexes were poor. To this day, he cannot suck on a straw, blow out a candle or blow his nose. He was delayed in holding objects in his hands, sitting, walking, and he didn't know how to hold onto you when you picked him up. He had many bouts of respiratory infections and pneumonia. His eyes were also affected and he has been wearing glasses since he was 3, and they continue to deteriorate, and I am being told he will develop cataracts.

“He has no speech, therefore, no language skills. He needs to be dressed, undressed, bathed, shaved, toileted, many times because he soils himself still. His foods need to be prepared and carefully selected. He has certain food intolerances. He can feed himself when his food is cut up, most of the time with a spoon, a lot of the times with his hands.

“His motor skills and coordination are also poor. Bob will wander off if not watched, and we have had to put bolt locks on our front doors to prevent him from leaving, and we have had to call the police to try to find him. We now have an ID bracelet on him.

“All through Bob's growing years, I have met many families who share my experiences due to the rubella exposure and have always been a strong proponent for parents to immunize their children against such viruses, recognizing, however, that the decision remains one of family choice, but also knowing that since the vaccine has been developed, many individuals have been prevented from becoming disabled.

“Bob lived at home with us for 21 years, when we made a critical decision in his life and placed him in a private, intermediate care facility for the mentally retarded [ICFMR], which is a Medicaid funded and federally certified residential program. He thoroughly enjoys his home in Wide Horizons. When he comes to visit us, within a few days he signs he wants to go back because he is bored.

“Before he moved to Wide Horizons, though, and was living with us, we were not able to go out to dinner together, attend church together, picnics, movies, or vacations. I was changing diapers and pants daily on this young man. Sometimes I had to change and strip him twice during the night, which meant little sleep for both of us.

“Bob and others like him need more supervision, more structure, and do well with routine and not so well with changes in their daily life. Because his home is an ICFMR, it means that his medical, dental, therapeutic, and recreational needs are also arranged by the facility through community providers.

“As a parent, I needed a guarantee of safety and oversight, because he is so vulnerable. He is happy and doing well, even with all his disabilities. We as a family appreciate having the ICFMR available to us to choose from.

“As a citizen, we select Members of Congress to serve as our proxy when it comes to matters of public policy, and I thank you for your time today, and trust that you will keep preservation of family choice foremost in your mind as policies impacting people with regard to vaccines is decided, and I truly hope that this committee will consider looking into why there are reactions to these vaccines when it is supposed to be helping people, not hurting them. I always wonder, if we had had this vaccine back then, what would my son be like today?”[6]

The second testimony before the same congressional hearing presented here is the one of Ms. Rebecca Cole of Parents of Kids with Infectious Diseases, which illustrates how the life of a susceptible host can be quickly taken away, and the explosive mix of the use of immunosuppressive medication and an infectious agent that tends to be benign but now turns into a malignant infectious condition, “Christopher was 12 when he passed away. Mr. Chairman, members of the committee, thank you for letting me speak to you today.

“My name is Rebecca Cole and I am from Chapel Hill, NC. I am the mother of five children. I am here today because I faced the worst nightmare any parent can possibly face. There is no experience on Earth that compares to the horror and devastation of losing a child. It is shattered dreams, crushed wishes, and a future that suddenly vanishes before our eyes. It cannot be wished away, slept away, prayed away, or screamed away. It is darkness, agony and shock. It leaves our hearts broken, bleeding and bursting with pain and it changes us forever.

“My life changed forever on June 30, 1988 when I had to stand by helplessly as an infectious disease claimed the life of my oldest child, Christopher Aaron Chinnes, at the age of 12.

“Christopher was a beautiful little boy who had light blond hair and deep brown eyes. He was full of compassion, joy and energy. He loved baseball and every living creature on the Earth. He wanted to be a scientist or doctor. I can honestly say that my son was one of the most beautiful human beings I have ever known, and I am proud to have been his mother.

“Christopher was born a very healthy child but at the age of 8 he developed asthma. It was never a problem for him and it never kept him from doing the things he loved. But, on June 16, 1988, 4 years after he was diagnosed, he suffered his first and only severe asthma attack. He had to be hospitalized and was treated with all of the normally prescribed drugs including a corticosteroid. For those who don't know, corticosteroids are anti-inflammatory drugs. They are

used routinely in asthma, arthritis, and allergies. Oral surgeons also prescribe them for swelling in the gums.

“Well, Christopher was released from the hospital 4 days later with several medications to finish at home, and he was well on his way to recovery. On June 23rd, exactly 1 week after the asthma attack, he broke out with the chicken pox. ‘Don't worry, you will get over it,’ I told him. What I didn't know was that the corticosteroid had lowered his body's immune response and he could not fight the disease.

“The chicken pox began to rampage wildly through his young body. As I drove him to the emergency room on June 27th my four younger children watched silently in shock and horror as their brother went into seizures, went blind, turned gray, and collapsed due to hemorrhaging in his brain. That afternoon Christopher was flown from Camp Lejeune’s Naval Hospital to East Carolina University School of Medicine's Medical Center, but the chicken pox was uncontrollably sweeping through him like a wildfire, and there was nothing anyone could do.

“The next day he suffered cardiac arrest and slipped into a coma. As my beautiful little boy lay swollen beyond recognition and hemorrhaging from every area imaginable including out into the blisters on his skin, I learned that a vaccine existed but was not yet licenced by the FDA. A vaccine that could have prevented the unimaginable suffering of my child and all who knew him.

“On June 30, 1988, exactly 1 week after breaking out with chicken pox, Christopher passed away. He died. He was not injured. He did not act differently. He was not crippled. He died. My priceless little boy lay on a cold, steel table swollen beyond recognition, cold and dead, gone from me, gone from life itself.

“I cannot hold him, kiss him, see him smile or listen to his laughter as he chases a ball or bullfrog. The chicken pox virus destroyed every organ in his body and it cut pieces from the hearts of everyone who witnessed its devastation.

“Vaccines prevent countless deaths each year. Without them the number of valuable human beings we would lose would be staggering. Yes, sadly, some injuries and deaths occur as a result of vaccines, but unfortunately there are risks with every single drug we use. We have and will not ever reach perfection. We must remember that the benefits of our vaccines far outweigh the risks. Especially for those who are ill or immunosuppressed like Christopher was. There are innocent children and adults who come in contact with the public every day who would die if they were exposed to the diseases we can prevent.

“If everyone around them is vaccinated, they are also protected. We owe it to them and to ourselves as a Nation to achieve the highest level of safety and protection possible. We must win the war against infectious disease, and vaccines are our most powerful weapons. We cannot win, however, if we do not use them. Leaving any of our population unprotected is like surrendering to a defeatable foe, and we must never surrender.[7]

The second set of testimonies is from the other side of the coin, which illustrates the “hidden“ dangers of immunization and the divergence of interests that exists between parents’ ultimate responsibility for the well-being of their child versus the one of the state whose first interest is to protect the group and which is represented by politicians and bureaucrats who are quick to deny any harm from vaccines or sees victims of vaccines as “collateral damage,” or the sacrifices that society has to accept to protect the group.

Tonya and Gerald Nelson of Indianapolis, Indiana, the parents of Abigail Nelson, came to Washington and also testify under oath before a the same 1999 congressional hearing with the hope that their story may “help save just one child's life,” which will have been worth it, if it did.

Ms. Nelson: “I am grateful to be here today to share with you our story regarding vaccines. I am the mother of four children. Abigail was my third. Abigail was born at 11:27 p.m., on March 22, 1994. She was a very healthy baby. We stayed 2 days in the hospital. Prior to our release from the hospital, she was given the hepatitis B vaccine.

“I asked questions about the injection and was given a booklet to read that stated to expect no side effects except soreness in the area of the injection.

“We came home after receiving the vaccine. She was very cranky and her cry was very disturbing. It was more of a scream than crying. She began to spit up a lot.

“I called the doctor and was told to give her some water between feedings and to call back in a week. I did as the doctor suggested, but I began to get scared because her stool became loose and greenish-yellow. So I called back in a week and was told that was normal and to keep an eye on her and call if I needed to.

“The second week was worse. Her cry was just as bad and stool seemed loose. She became cold to the touch and shivered a lot. I called the doctor again. She told me to put her in her infant hat [sic: bath?] and to check her temperature four times a day and to call back the following week.

“I did this. Her temperature stayed at 96 degrees. Then her third week she began to turn purple in her hands and feet and around her lips. I called the doctor and was told to watch her breathing and they would see the baby the next week for her 1-month check-up and to keep her wrapped tightly in blankets.

“I was becoming scared. I asked him to get her in before her check-up and was told they had no appointments. I hung up from that call and called my son's old doctor. She told me that she could not help without seeing the child, and since Abby was on Medicaid and she was not a Medicaid provider, she was restricted from seeing Abby. I offered to pay cash, but she said she could not take the money from a Medicaid patient. At this point Abby is still crying and vomiting and having loose stools and very cold.

“The night before she died she screamed for 6 hours straight, plus she had a lot of bowel movements. She finally fell asleep at 11:30 p.m. We woke up to find her dead at 6 a.m.

“I placed my 9-1-1 call and started CPR. The firemen and paramedics showed up. They pronounced her dead shortly after they arrived. The coroner said it would be 2 weeks before the cause of death could be determined.

“About 2 months later we received a telephone call from Dr. Thomas Gill of the Marion County Coroner's Office. He told us the cause of death was the hepatitis B virus, which she could only have gotten from the vaccine. He told me that he would get the death certificate out to me soon.

“Sixteen weeks later we received the death certificate in the mail, and the cause of death was natural causes, otherwise known as SIDS, Sudden Infant Death Syndrome.

“I was shocked to say the least. I called the coroner's office and spoke to a Dr. Manders, the coroner of Marion County, and was told that Dr. Gill had been asked to resign.

“Dr. Manders stated he had signed the death certificate. I asked how he could sign the death certificate if he did not perform the autopsy. He told me that he had done so since Dr. Gill was no longer there. We had not been able to determine how he came to the cause of death, since he did not perform the autopsy, and that Dr. Gill told us something very, very different. He told me that if I had questions to call a Dr. Pless, a pathologist at Indiana University.

“I did call and made an appointment to speak to Dr. Pless. He was a man without compassion, and the most cold-hearted I have ever met. He told me to stop trying to place the blame on my child's death and to go on with my life. He also stated that if the vaccine did kill my daughter, it was saving more lives than it was taking.

“I contacted a lawyer and he said to get all the information together and to call him back. I contacted the Infectious Disease Center at Riley Children's Hospital and spoke to a registered nurse. She was very helpful. She told me the vaccine has been known to take infants' lives and also to make them very sick. She could not help me other than that. She was scared she would lose her job. She also told me that the infant does not develop its own immune system till 3 to 4 months of age. I confirmed this with other doctors, who said they are very uncomfortable giving the injection at such an early age.

“I tried to contact the Center for Disease Control and Prevention and the vaccine company. I left messages that were never returned.

“To retain my own emotional well-being and to care for my two older children I had to take a break from this, thinking I had plenty of time to pursue this with the Government. I had to return to work because we were already behind the 8-ball financially. Having to pay for a funeral and headstone for Abby only made that worse.

“I was not the only member of the family who needed to heal from this trauma. My husband Gerald will share his experiences shortly. My older child needed counselling we could not afford, and the school told us she was young enough, she would soon forget.

“Finally I was able to call the attorney back and was told that it was too late. He said I only had 2 years to get compensated for our loss unless she had lived. Then I would have had 7 years.

“We had a lot of bills and misfortunes due to this one vaccine. We had lost the most important things in our lives, and nobody cared. They were too busy or too afraid of losing their jobs or paying too much malpractice insurance.

“I also know that my child was not a priority of getting an appointment with the doctor because she was on Medicaid. The doctors do not get enough compensation to encourage them to make Medicaid patients a priority.

“Since we were in such financial distress already, I tried to get State funding for her funeral, and was told it would take a few weeks to get approved for this, and that I would have to fill out paperwork. I didn't feel that I could hold off for weeks to bury my child while paperwork was being filled out and reviewed.

“I gave up hope and contacted Beth Clay on the committee staff. This has been like an open wound that has been trying to heal for 5 years but has not. I feel like coming and telling our story will be worth it if I can help save just one child's life. I hope through my own experience I will be able to help other parents also.

“Of course none of this will make up for the loss we encountered 5 years ago. By testifying today my husband and I may finally be able to bring closure to our grieving. So far we have been so busy trying to survive that we have not done so. Our Abby would have been in school now learning to read and writing songs. Instead we have a baby book that has never been filled out.”[8]

Her husband, Mr. Nelson, followed with his own testimony, “Tonya and I are like many other Americans, ordinary Americans, hard-working, struggling to survive. Tonya came into our marriage with two beautiful children, Sabrina and Kegan, whom I love dearly. Abby was a beautiful and healthy child. She was my first child. I was the proudest of fathers.

“This tragedy compounded with other family losses really tore me apart emotionally. I ended up losing my job. We have struggled to recover from this tragedy and to further understand how it is appropriate for babies whose immune systems are not even fully developed are being vaccinated. We also want to see more information be provided to parents prior to vaccination and that they be informed that there are medical and religious exemptions.

“Physicians also have to be educated about these exemptions and be comfortable giving them. We were told that the worst that would happen to our little Abby was that she would have a sore leg. *That was certainly not accurate information*.

“By coming today we hope that the Government will move forward with more research in the safety of vaccines in infants and the combination of vaccines. We also want medical freedom to be a consideration in finding the balance between public health and each individual's health and safety.”[9]

Representative Burton asked Ms. Nelson to clarify “what initial analysis was that was made of the death of the child, and what they told you?”

To which, Ms. Nelson answered, “In the beginning they told us it would take 2 weeks to get the cause of death back. It was approximately 2 months later we heard from the coroner's office, Dr. Thomas Gill, who told us our daughter died of hepatitis B due to the vaccine. Sixteen weeks later we received the death certificate in the mail stating that she died of natural causes, SIDS. I called to find out how they determined that. … Then recently I have contacted the coroner's office. They refuse to give me her records. They refuse to give me any notes of Dr. Gill's, and they continue to tell me it was SIDS. … And they refused to tell me Dr. Gill's location, where he was or anything like that.”[10]

View from a holistic perspective

In view of these testimonies, risks and benefits of vaccination must be evaluated objectively, critically and scientifically without any a priori bias or dogma and without coercion or any interference by vaccines developers and its industry that hold vested interests in its greater use.

Views on the risks and benefits of vaccination have been polarized since its introduction. One camp rejects vaccination because of its dangers, whouth necessarily offering a viable alternative for the prevention of infectious diseases and the treatment of the sick one, and the other camps see the importance of vaccination to protect the herd from infectious diseases, as they know nothing better.

I would like to present a new approach that is based on an objective study of the benefits and dangers of vaccination, but viewed from the perspective of a holistic health care that can offer many effective prophylactic and therapeutic measures to deal with infectious diseases.

Individualization is central from the point of view of holistic health care, and therefore the risks and benefits of vaccination should be considered on an individual basis, while, at the same time, the overall health of the group must be taken into account. Each infectious disease must be studied according to the context of each individual: age, risk of exposure, susceptibility, nutritional and health status, environment, potential complications of the infection, etc. Later in this essay, I will look specifically at measles with an overview of the risks and benefits of measles vaccination, which has recently been a central point of controversy in developed countries regarding the issue of vaccination.

In order to make enlighten and intelligent decisions on the subject of vaccination, we will first try to develop an understanding of the bigger context of vaccination and will first briefly overview the different paradigms in medicine in the last 250 years, the unacceptable mortality associated with the dominant system of medicine, the fundamental principles of alternative medicine and the results obtained from a principle-based practice.

We will then look at the success of vaccination followed by the dangers associated with vaccinations , which is the only way to make . The dangerousness of vaccination must then also be looked within the context of iatrogenic diseases and the accessibility to more effective alternative approaches of prevention of infectious diseases and restoration of health.

A very brief overview of the evolution of the different paradigms in medicine

A very brief overview of the evolution of the different paradigms in medicine in the last 250 years would be helpful to better understand the general context and underlying grounds of this essay regarding holistic health care. From the later part of eighteenth until about the middle of the nineteenth century, conventional medicine was dominated with the idea that diseases had to be purged out of the body. It was the age of “heroic medicine,” as you had to be strong to survive treatments, such as repeated bleeding combined with mercurilization, cauterization, purging, vomiting, leeching, sweating, etc.

Perhaps, President Washington’s last illness best illustrates this paradigm in practice. In mid-December 1799, George Washington had spent a rainy afternoon on his horse overseeing some work in his property. Since he was late for supper, he sat down for the meal with clothes still wet.

He woke up that night at 2 in the morning with great difficulty breathing. By 6 that morning he presented an elevated temperature. His throat was inflamed and had even greater breathing difficulty.

At 7.30 a.m. on his demand, he was bled of 8 ounces by the overseer of his domain. At 9:00 am his personal physician arrived and cauterized the outside of his throat with cantharide poultices, and bled him twice of 20 ounces each time. As the President didn’t show signs of recovery another venesection was done with the removal of 40 ounces of blood this time. When a second physician arrived at 3 p.m. another 32 ounces of blood was removed. Shortly afterward, a third physician arrived and all three decided on the administration of mercury with tartar rectally. The President expressed then that he was dying. By 8:00 p.m., the three physicians decided to provoke some blisters on his legs. A 10 p.m., the President lifted his hands to check his own pulse and expired peacefully.[11]

That is to say that in about 7.5 hours the presidential physicians had removed 120 ounces or 3.55 liters or closed to 2/3 of the president’s blood,[2] which would likely kill anyone, as

[2] As President Washington was 6’2” in height (https://en.wikipedia.org/wiki/Heights_of_presidents_and_presidential_candidates_of_the_United_States) and 195lbs

exsanguination is defined as “the loss of blood to a degree sufficient to cause death. Depending upon the age, health, and fitness level of the individual, people can die from losing half to two-thirds of their blood; a loss of roughly one-third of the blood volume is considered very serious.”[3]

Heroic medicine was slowly phased out in the middle of the 19th century, but the paradigm of using of toxic chemicals for the treatment of disease has continued until now, which is nonetheless inherently plagued by an alarming and ever growing amount of iatrogenicity,[4] which has been depicted of being totally unacceptable by independent investigators for more than 60 years, but has continued with impunity.

Mortality associated with iatrogenic diseases

The entire approach to vaccination and all its accompanying dangers can be better understood by squarely looking at the realms of iatrogenic diseases associated with drugs in general and then some vaccines in particular, as they are considered to be drugs. The extent of iatrogenic diseases reflex the dysfunctional system of medicine that can engenders such abomination and has remained complacent about it despite a great numbers of warning flags.

Let’s first look at Barr, who, in 1955, was the first to rise in recent times a major red flag about the dangers and extent of iatrogenic diseases in an article entitled *Hazards of Modern Diagnosis and Therapy—the Price to Pay*.

He wrote, “Therapeutic preparations are confusingly numerous and varied. In the lists of 1953, more than 140,000 medicaments were available to practitioners, and 14,000 new preparations were added during the year. Accretion is still far greater than deletion, although it has been estimated that perhaps 90% of drugs now in common use have been introduced within the last 25 years. … In a medical service of a great hospital, over a period when approximately 1,000 patients were admitted, more than 50 major toxic reactions and accidents [greater than 5%] consequent to diagnostic or therapeutic measures were encountered.”[12]

In 1964, Schimmel raised the second major red flag of modern times in a paper entitled *The Hazards of Hospitalization*, in which he confirmed Barr’s startling statistics. He wrote, “During the 8-month study, 1,014 patients were admitted one or more times to the medical service, for a total of 1,252 admissions. The house staff recorded 240 episodes occurring in 198 different patients.” Thus, 20% of patients admitted to a university hospital medical service suffered one or more iatrogenic injuries, and that 20% of those injuries were serious or fatal.[13]

In 1981, Steel et al. likely sounded the most disturbing alarm call. In a thorough five-month *prospective* study, they reported, “We found that 36% of 815 consecutive patients on a general

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in weight (https://www.potus.com/presidential-facts/presidential-weight/), his body contained approximately 5.6 liters of blood. (Blood Volume Calculator. http://www.easysurf.cc/cnver22.htm)

[3] Exsanguination. https://en.wikipedia.org/wiki/Exsanguination

[4] Iatrogenicity is derived from the Greek “iatros” (physician) and “geny” (caused by) and refers to illnesses resulting from interactions with physicians and the entire supporting medical system.

medical service of a university hospital had an iatrogenic illness. In 9% of all persons admitted, the incident was considered major in that it threatened life or produced considerable disability. In 2% [15 patients] of the 815 patients, the iatrogenic illness was believed to contribute to the death of the patient." "Major toxic reactions" greater than the 5% previously reported by Barr was now found to be 9%. The authors pointed out the inertia of the system with a total lack of progress since Barr and Schimmel had reported the same problem respectively 28 and 17 years earlier.[14]

Ten years later, the Harvard study came to confirm that the situation had not changed. Over 30 thousands randomly selected records from 51 non-psychiatric acute care hospitals in New York State in 1984 were reviewed. Acute care hospital is defined as a short-term hospital that has facilities, medical staff and all necessary personnel to provide diagnosis, care and treatment of a wide range of acute conditions, including injuries. Adverse events occurred in 3.7% of the hospitalizations. Although 70.5% of the adverse events gave rise to disability lasting less than 6 months, 2.6% caused permanently disabling injuries and 13.6% led to death, or 0.5% of every hospitalized patient in such acute care unit.[15]

Harvard Professor Lucian Leape pointed it out in *Error in Medicine,* "When errors have been specifically looked for, however, the rates reported have been distressingly high."[16] For instance in one study, errors in an intensive care unit revealed an average of 1.7 errors per day per patient, of which 29% had the potential for serious or fatal injury.[17]

In 1998, Lazarou et al. published a meta-analysis that estimated the incidence of serious and fatal adverse drug reactions (ADR) from *properly prescribed and administered drugs* in hospitalized patients. They selected 39 prospective studies from U.S. hospitals. They found that the overall incidence of serious and fatal ADR in U.S. hospitals to be extremely high, namely 6.7% for serious ADR and 0.32% for fatal ADR. They wrote, "We estimated that in 1994 overall 2,216,000 (1,721,000-2,711,000) hospitalized patients had serious ADR and 106,000 (76,000-137,000) had fatal ADR, making these reactions between the fourth and sixth leading cause of death."[18]

In 1999, a team from Boston University and Stanford estimated conservatively that 16,500 deaths occurred among patients with rheumatoid arthritis or osteoarthritis every year in the United States just from the use of nonsteroidal antiinflammatory drugs (NSAID).[19] If these deaths from gastrointestinal toxic effects caused by NSAID were tabulated separately in the National Vital Statistics reports, it would constitute the 15th most common cause of death in the United States. Yet these toxic effects remain largely a "silent epidemic," with many physicians prescribing and most patients using these drugs totally unaware of the magnitude of the problem.

The same year, the Institute of Medicine, a division of the National Academy of Sciences, published a monograph in which it stated, "Health care in the United States is not as safe as it should be—and can be."[20]

When this report was argued as exaggerated,[21] Lucian Leape, the leading researcher of the

Harvard Study responded, “Three reasons suggest that the IOM report did not exaggerate the extent of medical injury and death. First, despite the limits of record reviews, it is unlikely the reviewers found adverse events that did not exist. However, they undoubtedly missed some that did occur because many adverse events and errors are never recorded in the medical record, either because they are concealed or not recognized. Other errors are discovered after the patient is discharged. In fact, in the MPS [Medical Practice Study also known as Harvard Medical Practice Study], an additional 6% of hospital-caused adverse events were discovered after discharge, but were excluded from the analyses because they were an unknown fraction of all such events. Therefore, any record-review study produces at best a ‘lower bound.’

“Second, neither of the large studies examined the extent of injuries that occur outside of the hospital. More than half of surgical procedures (numbering now in the tens of millions) take place outside of a hospital setting, and the adverse event rates for these procedures have not been studied. Even if complication and death rates are much lower than in-hospital care, the absolute numbers must be substantial, as suggested by the recent report of deaths associated with liposuction.

“Third, when prospective detailed studies are performed, error and injury rates are almost invariably much higher than indicated by the large record-review studies. In a large study of patients who died from acute myocardial infarction, pneumonia, or cerebrovascular accident (conditions that account for 36% of all hospital deaths), DuBois and Brook found that 14% to 27% of deaths were preventable. Andrews et al. found that 17% of intensive care unit patients had preventable serious or fatal adverse events. The Centers for Disease Control and Prevention estimates that 500,000 surgical-site infections occur each year. One large controlled study found the excess mortality rate of surgical-site infections to be 4.3%, suggesting 20,000 deaths annually from this cause alone. These data are strong evidence that record-review studies seriously underestimate the extent of medical injury.”[22]

In 2000, a team of researchers used a similar methodology as the one of the Harvard Medical Practice Study and tried to estimate the incidence and types of adverse events and negligent adverse events in Utah and Colorado in 1992. They selected a representative sample of hospitals from Utah and Colorado and then randomly sampled 15,000 non-psychiatric 1992 discharges. Adverse events occurred in 2.9% of hospitalizations in each state, 9.7% of adverse events caused permanent disability and another 6.6% caused death. They concluded, “The incidence and types of adverse events in Utah and Colorado in 1992 were similar to those in New York State in 1984. Iatrogenic injury continues to be a significant public health problem.”[23]

In another publication in 2007, the Institute of Medicine reported that 400,000 preventable drug-related injuries occurred each year *in hospitals*. Another 800,000 occurred in long-term care settings, and roughly 530,000 occurred just among Medicare patients in outpatient clinics. The committee noted that these statistics were likely underestimates compared to other studies that “involve direct contact with patients, which yields much higher rates.” The expression “preventable drug-related injuries” typically excluded side effects of “*properly*” prescribed medications, for which no numbers were given in this report.[24]

In 2009, hospital mortality associated with complications from inpatient surgery was measured from 84,730 patients who had undergone inpatient general and vascular surgery from 2005 through 2007, using data from the American College of Surgeons National Surgical Quality Improvement Program. It was found that the rate of death from major complications following surgery was about 17% with an overall mortality in those to be between 12.5 and 21.4%.[25]

All these reports about mortality and morbidity from adverse drug effects don't actually describe the entire realm of effects of drugs on living organism, such as their long-term effects. Analgesic nephropathy and increased risk of end-stage renal disease (ESRD) in people taking analgesic drugs has been first described in the 1950s. A 1994 study entitled *Risk of Kidney Failure Associated with the Use of Acetaminophen, Aspirin, and Nonsteroidal Antiinflammatory Drugs*, reported, "Approximately 8 to 10 percent of the overall incidence of ESRD was attributable to acetaminophen use. A cumulative dose of 5,000 or more pills containing NSAIDs was also associated with an increased odds of ESRD (odds ratio, 8.8)."[26]

In 2012, a team of researchers in Boston conducted a retrospective study to determine how often serious or life-threatening medication administration errors actually cause harm in a hospital setting. They found out that 10 out of 133 or 7.5% of serious or life-threatening medication administration errors resulted in an ADR, of which 6 resulted in significant, three in serious, and one life threatening injury. 14,041 medication administrations were directly observed, 1,271 medication administration errors or in 9% of the prescriptions were discovered, of which 133 had the potential to cause serious or life-threatening harm and were considered serious or life-threatening potential ADR.[27]

"There was one error (i.e., resulting in a potential or actual, preventable adverse drug event) for every five doses of medication administered, adverse drug events occurred in the 77% prescribing and 23% administration stages. Using a direct observation approach, we found a higher incidence of potential and actual, preventable adverse drug events … compared with studies that used chart reviews and solicited incident reporting."[28]

More recent studies on adverse events due *only* to *medical errors* concluded that they actually occur in about one-third of hospital admissions in the US,[29] which translates into 1.13% deaths or an estimate of 400,000 deaths in 2013.[30]

A 1997 study estimated that about 199,000 Americans die every year due to the side effects of "*well-prescribed"* drugs in *non-hospitalized* patients.[31]

A 1992 study estimated that they were about 12,000 deaths following unnecessary surgery.[32]

Another study published in 1999 in JAMA found that there were 90,000 reported deaths due to infection contracted in hospitals.[33]

The actual number of deaths attributed to “well-prescribed” drugs, this is according to the standard of practice, must certainly exceed 199,000, as Peter Gøtzsche, a co-founder of the Cochrane Collaboration, recently estimated that in 2010 there were 209,000 Americans 65 and older who died solely related to the side effects of prescribed psychotropic drugs.[34]

The combination of these studies grossly estimates that the number of deaths in the US related to iatrogenic causes approximate 817,000 a year (without counting the estimated 199,000 deaths of the 1997 study), making it by far the first leading cause of death, as the CDC estimated that the number of deaths in the US in 2010 was 597,689 from heart diseases and 574,743 from cancer.[35]

It is interesting to note that neither the International Classification of Disease nor the US Centers for Disease Control, the institution responsible for vital statistics, account for iatrogenic diseases.[36]

This mortality report from iatrogenic diseases does not include death related to *medical errors in non-hospitalized* patients, over-the-counter medications, suicides induced by medications and accidents related-deaths, as no numbers seem to be available. This cannot be negligible, as over-the-counter drug-related overdoses comprise about 40 percent of all medication overdoses.[37]

The Fundamental Principles of Alternative Medicine

As the heroic medical paradigm of the 18th and 19th centuries was considered by many as being barbaric, several reformers began exploring in Europe and America alternative approaches to conventional medicine. It is in this context and while searching for certainty in medicine that Hahnemann developed homeopathy over many decades after having published in 1796 the results of his first experiments and observations on the application of the principles of similar.[38] This alternative to conventional medicine was followed by the development of botanical medicine as a system of medicine in the 1820s,[5] which was followed by hydropathy[6] and orthopathy in the 1840s,[7] osteopathy in 1892,[8] chiropractic in 1895[9] and finally naturopathy in 1896.[10]

These approaches of alternative medical practice offer viable care for the entire family, who adapted them. Their practice is based on the fundamental principles of classical medicine, which

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[5] See Samuel Thomson, *New Guide to Health, or Botanic Family Physician*, 1822. https://archive.org/details/newguidetohealth00thom/page/n6

[6] See R. T. Claridge, *Hydropathy; Or The Cold Water Cure, as Practised by Vincent Priessnitz.* 1842 https://archive.org/details/39002086176733.med.yale.edu/page/n8

[7] See Isaac Jennings, *Medical Reform: A Treatise on Man's Physical Being and Disorders, Embracing an Outline of a Theory of Human Life, and a Theory of Disease—Its Nature, Cause, and Remedy*, 1847. https://collections.nlm.nih.gov/catalog/nlm:nlmuid-63430330R-bk

[8] E. D. Barber, *Osteopathy: The New Science of Healing*, 1896. https://archive.org/details/osteopathynewsci00barbiala/page/n8

[9] See History of Chiropractic, https://en.wikipedia.org/wiki/History_of_chiropractic

[10] See Friedhelm Kirchfeld, Wade Boyle. *Nature Doctors: Pioneers in Naturopathic Medicine*. Medicina Biologica, 1994; and History of Naturopathic Medicine, http://www.ndhealthfacts.org/wiki/History_of_Naturopathic_Medicine

were pointed out in class by a medical student at McGill University, “These are old [obsolete] principles, and none of these principles are taught here,” which is true.

“Classical” refers to, of the highest standards and traditionally authoritative. I would argue that the set of principles below is indisputable, universal and impeccably sound.

1. *Praeventum*: Prevention is better than cure. Since health results mainly from healthful living, the highest mission of the physician is to guide people to choose ways of living and environments that are conducive to good health.

2. *Primum non nocere*: First, physician, do no harm. In spite of the best prevention, people will be affected by numerous influences and will fall sick. Any prophylactic, diagnostic or therapeutic intervention by the physician should not further harm the patient.

3. *Cito, lenis, jucunde, toto, durabile, certo, simplex et tuto curare*: The highest ideal of therapy is the rapid, gentle, pleasant, complete and permanent restoration of health in the surest, simplest and least harmful way.

4. *Tolle causam, cessat effectus*: Remove the cause and the effect will cease. There are causes of sickness and above all, physician, address them.

5. *Vis medicatrix naturae*: The healing power of nature. It is neither the physician nor the treatment that heals but only the living organism. Therefore, the physician must seek to encourage this innate process by first ensuring that the conditions for life are met and, if necessary, by using the help of the various outer influences and forces of nature to enhance the recovery of health.

6. *Nunquam pars, pro toto*: Never the part but always the whole. The physician must consider the patient as a unique indivisible whole and must therefore take into consideration all the conditions of life and pertinent aspects of each individual, including the physical, emotional, mental, spiritual, energetic, hereditary, sociological, lifestyle and environmental aspects.

7. *Aude sapere*: Physician, dare to know, and become a true philosopher and scientist but, above all, a true artist. Constant inquiry is the road to knowledge.

The traditional view on vaccination by the core of the homeopathic school of medicine

Summary: Throughout history, homeopaths since Hahnemann have recognized the benefits of the prophylactic value of vaccination. However, they found that the adverse effects of vaccination were unacceptable, even more so that they had access to a safer and surest preventative and curative methods.

Essentially homeopaths were not against vaccination, but the adverse effects associated with vaccination. Without making an exhaustive review of the literature on the view on vaccination in

homeopathy, I will briefly review the main points that have been made by Hahnemann, Hering, Fincke and Wilkinson.

In 1843 Hahnemann wrote in a footnote to paragraph 46 of his the sixth edition of the *Organon*, “This seems to be the reason for the remarkable salutary result of the widespread use of Jenner's cow-pox vaccination. The smallpox has not since then appeared among us with such widespread virulence. Forty or fifty years ago, when a city was stricken, it lost at least half, often three-quarters of its children.”[39]

Hahnemann was conscious of some dangers associated with vaccination as he recommended Schreter, one of his students, to inoculate his child not with the cowpox, but the lymph coming from another person that was inoculate and then treated with homeopathy, as “children are also made more ill by it [lymph from the cow].”[40]

Hahnemann pointed out that the use of the pus of the cowpox to protect against smallpox was a clear example of the homeopathic principle, *similia similbus curantur*. He stated in a footnote to paragraph 56, “Those who first introduced this so-called isopathy probably had in mind the good that had been done to humanity by vaccination: those who were vaccinated remained free from all future smallpox contagion and were cured of the disease in advance, as it were. Cowpox and smallpox are only very similar, however, and not the same disease at all; they differ in many respects, especially in the quicker development and the mildness of cowpox, but above all in the fact that it is never contracted by man through proximity. The widespread use of vaccination has so effectively put an end to all epidemics of the terribly deadly smallpox that the present generation no longer has any clear idea of this hideous bygone scourge. Other diseases peculiar to animals can of course also be used as medicines to cure *very similar* and important human diseases, happily increasing the number of homoeopathic remedies available.”[41]

However, Hering, the father of homeopathy in America, pointed out in 1831 that the “collateral damage” associated with vaccination were unacceptable, “I am aware that we have Jenner's preventive, but it should be regarded as merely an expedient to be used for want of a better. I have more than once plainly seen and often heard of cases where children remained ailing from the time of vaccination, who were previously in robust health. If this occurred with but one-tenth the number of cases, or even less, it were sufficient to call up the wish for a better preventive.”[42]

After examining the case where a secondary infectious microorganism was transmitted in arm-to-arm vaccination, Hering exclaimed, “It is, no doubt, an intolerable tyranny to compel vaccination by law.”[43]

Similarly, Fincke wrote in 1890 about the impurity of arm-to-arm vaccination, which can be accompanied by the transmission of other microorganisms, such as the spirochete of syphilis, “Here the homeopathic idea is gone altogether and nothing remains an arbitrary, unprincipled, empirical measure, which profits legally by the sanction of the old Jennerian method, and forces

upon an intelligent people the submission to wholesale poisoning of the present and future generation, an outrage upon common sense and personal liberty, not to be endured."[44]

Like Hering, he remarked that the dangers associated with vaccination were unacceptable in view of the possibility to use homeopathy for both prophylactic and therapeutic purposes in cases with epidemic diseases, "There is an immense volume of evidence and undeniable proof, backed up by scientific research, philosophical investigation and clinical experience, to show the vast amount of injury resulting from this proceeding. ... Those who desire to examine the entire question without bias, and scientifically, will quickly see that the above assertion is absolutely and unqualifiedly true. Therefore there remains not the remotest excuse for continuing this odious, loathsome and dangerous practice; and particularly now, that scientific research has revealed another method which is safe, sure, simple, and which has been proved not only prophylactic but curative. … Hahnemann, through the discovery of the laws of homeopathy, has shown the dangers and errors of vaccination, and has likewise pointed out the means of quelling this dread disease; and his disciples, following in his footsteps, have given to the world the safe, sure and scientific prophylaxis."[45]
Fincke discussed instead the use of nosodes as prophylactic agents against infectious diseases, "Effective prophylaxis may be claimed for these isopathic remedies in as much as they cover the type of the prevailing epidemic diseases, such as *e.g*., smallpox, to which the persons susceptible to its infection are always subject. This would form a suitable substitute for the common vaccination which after all is only a sample of the crude inadmissible kind of homeopathy spoken of before."[46]

Hering had already written in 1878 about a more safe and efficacious approach to vaccination, "While the progress of our school has led us to a much more certain preventive, and also to an easy and certain and safe cure."[47]

Similarly, Fincke reported through observation that the potency of Variolinum was more efficacious that conventional vaccination, and could be used instead of conventional vaccination in the general population to develop immunity from infancy onward and could also be used to prevent the spread of any upcoming epidemic, " [Variolinum] could be spread everywhere, and placed in the hands of everyone who has any responsibility for the health of children, and other relatives and friends. Infants could be variolated easily at any time during their first year, and anybody could, whenever any epidemic arises or is feared, provide himself again and again with the protection which Variolininum upon homeopathic principles would offer."[48]

Fincke further emphasized the safety associated with homeoprophylaxis, as an alternative to the conventional way of inoculating the crude dose of the vaccine through a scratch of the skin, "This mode of protection is perfectly harmless and safe at the same time, and every homeopathician ought to avail himself of its advantage, and on his part heip to prevent the outrageous proceeding of vaccinating the children in the public schools without the consent of their parents, and excluding those children from them if they do not bring a certificate of vaccination from a physician, or if they do not have a cowpox-mark."[49]

Fincke wished that health authorities would test homeoprophylaxis side by side with conventional vaccination, “Nay, it would be desirable in new of the baleful effects of vaccination as practiced now upon the growing generation, that a test-case should be made, in order to prove before the judiciary the procedure of inoculating purulent matter is unjustifiable assault and battery upon the innocents, on the plea of a misunderstood care for the public based upon the inadmissible crude homeopathy mentioned above. This subject deserves a serious consideration, and should be submitted to repeated experiments so that the public will acquire that confidence in regard to homeopathic variolation as it now gives to alloeopathic vaccination.”[50]

Because of the great propensity for contagion, Hering proposed the application of sanitary measures of isolation of the ones infected, “Statesmen say it is their duty to enforce vaccination, in order to prevent others of their dear subjects from being reached by the contagion. We know that every case of smallpox has great power to infect others; even the clothing of patients who have had smallpox may spread it in districts perfectly free from it before. This being certain, there can be no doubt about the right. Nay, more than this, the duty of every Government is to separate such sources of disease—to cut them off from all communication with such as are not sick. The very strictest measures are not only allowable, but justifiable, in case of smallpox, since there is no doubt at all about the diagnosis, and no doubt about the danger of contagion, and no doubt about the practicability of separation.”[51]

Smallpox vaccine was the only vaccine that existed in his time, and regarding the use of homeopathic remedies from the prevention of smallpox, he said, “In the whole range of epidemics there is none whose spread can be arrested with more certainty than smallpox.”[52]

After discussing some of these remedies, he added, “Hereafter there will be no necessity for any vaccination, as we have now a good preventive and a certain cure.”[53]

Regarding the legality of compulsory vaccination, Fincke wrote, “The Declaration of In-dependence grants to every citizen "life, liberty and pursuit of happiness," while the Constitution expressly states that " No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States." And here in the face of the expressed declaration of the liberty and freedom of the individual, innocent of all crime, a set of more or less well educated politicians deprive us of our inalienable rights. … There is no law, which is intended to compel any one, not even criminals, to undergo the slightest mutilation of the person, or the exposure through unnatural or artificial processes to the liability of disease and death therefrom, that would stand for a single moment before any tribunal. … Therefore any law which may be passed to compel vaccination is unconstitutional, and any law to prevent the individual from enjoying his full rights and privileges of citizenship in consequence of not complying with the requirements expressed by such unconstitutional provisions, is likewise unconstitutional.”[54]

Hering also addressed the subject of compulsory vaccination, “Referring to the exclusive rights awarded by law to physicians as a class belonging to what is called ‘the Regular School,’ Count Zedtwitz says: ‘Only by the most resolute resistance will legislators be brought to realize into what frightful injustice and inhumanity they have suffered themselves to be betrayed by a domineering trades' union, which, though it lives upon the diseases of mankind, has yet, with comical simplicity, been constituted guardian of the public health; ‘the goat,’ to use a German proverb, being thus appointed head gardener.’ ”

“Count of Zedtwitz, who writes in a popular journal on homeopathy: “Whether vaccination be useful or injurious, the subject of contention between men of science has very little to do with the question of compulsion. This can only be determined by the convictions of the individual, which should be as inviolable in the domain of medicine as in that of religion or politics; and coercion in this direction, which amounts to producing an artificial disease by bodily injury, can indeed be called nothing less than tyranny.’ ”[55]

In England, W. J. Garth Wilkinson was in favor of vaccination, which he practiced during the first years of his medical practice. After having been asked to specifically study whether it was really beneficial or harmful, Wilkinson changed his mind to the point that he called vaccination, “The universal pollution master.” He wrote, “After-studies extending over eighteen years have convinced me that I was wrong in my estimate of the smallness of the vaccination question compared with other evils. As forced upon every British Cradle, I see it is a monster instead of as a poisonous midge; a devourer of nations. As a destroyer of the honesty and humanity of medicine, which is through it a deeply degraded profession. As a tyrant which is the parent of a brood of tyrants, and through Pasteur and his like a universal pollution master. As a ghoul which sits upon parliament, and enforces contamination by law, and prepares the way for endless violations of personal liberty and sound sense at the bidding of cruel experts. Not denying other forms of social wickedness, I now, after careful study, regard vaccination as one of the greatest and deepest forms, abolishing the last hope and resort of races, the new-born soundness of the human body. … There is, I hear, no truth in what the paper says about government and the vaccination laws. A storm is brewing such as they little expect. The cases of dire injury from vaccination are multiplying, and the cases of *violated parents,* who, rightly or wrongly it matters not, are agonized about their little ones. Yesterday, Mrs—got Miss—to ask me my opinion about vaccination. They insist upon doing her children, not yet out of whooping cough, or lining her! The thing is too inconceivably abominable to last. Let whoso will be protected (?) by vaccination be vaccinated: but is it in this day that others, against their hearts blood and their often terrible experiences and their convictions, should be compelled? Mrs — was moved to ask me by hearing such sad results from vaccination in her own circle. I advised her not to have her child vaccinated.”[56]

Dr. Wilkinson gives a few case histories in his essay on *Compulsory Vaccination,* which helps to explain his conviction of the dangers of vaccination. The first of these appears to have occurred around 1863, “Miss Edith Hutchinson, of Kensington, was vaccinated by the late eminent Dr Joseph Laurie. The arm swelled enormously, and was hard like wood. After a month it subsided, and then a putrid thrush occurred, which disappeared after some weeks. The disease was next

transferred to the abdomen and its lymphatic system; and she died of great purulent collections in its cellular tissues, the matter, putrescent, voided by the bowels. I attended the later stages of the case with Dr L. Vaccination, careful conscientious vaccination, did it, as plainly as fire burns. … Another case. My coachman's child was vaccinated, and took it with erysipelas, which overspread the body. The mother, who was nursing it, took the erysipelas, and both nearly died of it. I assert that this result of two long and all but fatal illnesses was, in a poor man's house, due to vaccination, and consequently due to Parliament."[57]

The above points of view towards vaccination was quite unanimous within the Hahnemannian faction of the homeopathic profession, that is the one that practiced genuine homeopathy. As for the non-Hahnemannians, their position was quite mixed. However, Fincke pointed out regarding the practice of conventional vaccination by some of the non-Hahnemannian homeopaths didn't represent the view of true homeopathy, "Dr. J. P. Dake advocates compulsory vaccination. This is the most positive evidence we have seen, that the doctor is not a homeopath, and does not understand anything of the laws governing that practice. It also shows his utter disregard of the rights of the individual as above noted. Compulsory vaccination is simply legalized assault and battery, and sometimes murder."[58]

The homeopathic community has been using homeoprophylaxis since 1799 as a mean of protection during epidemics. The same remedies that have been found to treat efficaciously patients affected with infectious diseases can also be used to protect the unaffected population against the same epidemic diseases.

Homeoprophylaxis has a long record of being safe and effective. The subject of homeoprophylaxis has been partially addressed in a written exchange with skeptic Steven Novella regarding the homeopathic outcome of the treatment of patients with pneumonia. The conclusion of this review of the literature in this exchange was that homeopathy offers the safest and best outcomes ever demonstrated by any system of medicine for patients with pneumonia and therefore would receive the highest possible recommendation of any intervention for these patients (1A/strong recommendation with high-quality evidence).[59]

Results obtained from a principle-based practice

My forty years of practice as a second generation physician in the practice of alternative medicine, my father having practice for 61 years, amply confirm the Hippocrates' experience that an empirical approach in medicine, as in other natural sciences, can lead to *certain* and *real* knowledge,[11] and I can clearly state that naturopathic medicine is a most wise approach to health care, because it is rational, scientific, safe, effective and cost-effective.

[11] "It is impossible to acquire any certain knowledge of Nature from any other source whatever than from medicine itself; that only when the investigator of Nature has correctly comprehended (and adopted) medicine and its method will the investigation (*historie*) of Nature result in knowledge that is certain and real. … The method of medicine is basically empirical, exact, and accurate. … Medicine, that is to say, investigates Nature (even if only a restricted portion) on the phenomenal level and with a purely empirical method, so that knowledge of Nature deriving from the method of medicine is real and certain." (Harold W. Miller. Dynamis and Physis in On Ancient Medicine. *Transactions and Proceedings of the American Philological Association* 1952; 83: 184-197.)

Even though the body of knowledge of naturopathic medicine is essentially empirical, which means that it is essentially based on observation and experimentation with individual patients, rather than by the acquirement of knowledge through experimentation of one parameter at a time or a limited outcome through randomized controlled trials of groups of patients, as it is viewed as the gold standard in today's science-based medicine, it has proved to be very safe, extremely effective and enormously cost-effective.

This means that, from this perspective, observational and experimental evidence that has been reported during decades and centuries by dozens, hundreds and thousands of practitioners should, as a rule, be considered high level of evidence, until proven otherwise.

To best illustrate this point, if we look at the meta-analysis of observational studies on the outcomes in mixed populations of ambulatory and hospitalized pneumonia patients with expectation[12] and five different therapeutic interventions, namely pre-antibiotic allopathy (PAA), contemporary conventional care (CCC), unqualified[13] homeopathy, Hahnemannian homeopathy and hydrotherapy. As pneumonia is today divided into two main categories, namely community-acquired pneumonia (CAP) and health-care-acquired pneumonia (HCAP), and the morbidity and mortality are much higher in HCAP than in CAP, I limited the mortality comparison of CCC to CAP.

The data shows that hydrotherapy, homeopathy in general and more specifically Hahnemannian homeopathy unequivocally offer the safest and best outcomes for patients with pneumonia and therefore, from the perspective of evidence-based medicine, would receive the highest possible recommendation of any intervention for these patients (1A/strong recommendation with high-quality evidence). The results of this mortality comparison are shown in the following table[60,61]:

Mortality from Pneumonia under Different Medical Approaches

Treatment	Number of Patients	Number of Recoveries	Survival Rate (%)	Number of Deaths	Mortality Rate (%)
Unqualified Homeopathy	25,216	24,350	96.6	866	3.4
Hahnemannian Homeopathy	960	956	99.6	4	0.4
Hydrotherapy	568	559	98.4	9	1.6

[12] Expectation in medicine was used in the nineteen century to a group of patients that would serve as control to compare treatment efficacy by providing to this group only good nursing care, food and drinks and a healthy environment, but without medical treatment. Patients in the treatment would receive the same good nursing care, food and drinks in the same environment as the control group, to which was added medical treatment.

[13] By "unqualified" is meant that it included genuine homeopathy as well as other practices considered to be homeopathic by their practitioners, such as pathological prescribing and polypharmacy.

Expectation	379	299	78.8	80	21.1
PAA	148,345	112,272	75.7	36,073	24.3
CCC	33,148	28,607	86.3	4,541	13.7

The results obtained by hydrotherapy are not too far behind the ones of genuine Hahnemannian homeopathy. However, the genius of naturopathic medicine is its capacity to combine different approaches to create a synergetic effect. Associated with water-only fasting during crises, not only no one should ever die from pneumonia under the combined application of hydrotherapy and homeopathy regardless of the degree of severity, but also the speed of recovery should be remarkably quick.

The above statistics show that:
a) The odds of *surviving* CAP are 28 to 1 with homeopathy, were 3 to 1 with PAA, and are today 6 to 1 with CCC.
b) The relative risk of *dying* from CAP was 7.1 (95% CI 6.7 to 7.6), or 7 times greater with PAA than with homeopathy ($P < 0.0001$).
c) The relative risk of dying from CAP is today 4.03 (95% CI 3.75 to 4.32), or 4 times greater with CCC than with homeopathy ($P < 0.0001$).
d) The odds ratios of surviving pneumonia with homeopathy were 9.1 (95% CI 8.48 to 9.73), as compared with PAA ($P < 0.0001$), and would today be 4.5 (95% CI 4.2 to 4.9), as compared with CCC ($P < 0.0001$).

Moreover, all evidence gathered from the history of epidemics and the application of alternative medicine has yielded the same discrepancy of results. How has the dominant school of medicine remained dominant into the 20th century with such difference in records? It is as closely as we can come to Abraham Lincoln's idea, when he stated, "You can fool all the people some of the time, and some of the people all the time, but you cannot fool all the people all the time."

In a free market economy, in which no medical system would benefit from exclusive political patronage, as it has always been the case for allopathic medicine, alternative medical practices when practiced wisely and scientifically would prevent disease and help in the restoration of health both optimally by supporting the natural healing powers of the individual, which would stop the bleeding of the world economies from the ever increasing health care expenses and the poisoning our waterways and its wildlife, as most of the consumed drugs ends up there. The alternative health care has much brighter picture to present to the public.

Benefits associated with vaccination
This is not meant to be an exhaustive review of the benefits obtained by vaccination. However, a summary is presented as it was presented before the 1999 US congressional hearing by Samuel L. Katz, a pediatrician who has been involved in immunization research, development, patient

care, teaching, and policy for over 40 years and who was representing the American Academy of Pediatrics, or Academy, and the Infectious Disease Society of America,“I have served and continue to serve on a number of national and international committees that study, review, and formulate vaccine research and immunization recommendations.

“Also, I am a father and grandfather whose eight grandchildren have all received their recommended childhood immunizations. The deliberations and recommendations that come from committees such as this will eventually affect every child and grandchild in the United States, including my own. …

“I want to emphasize and restate three points.

“First, our vaccines are highly effective and safe, but the diseases they prevent are still spreading through many other parts of the world.

“Second, the system of research and development, of clinical testing, of licensing, of recommendation and monitoring of vaccine use, that system is in place and working well.

“Third, there is a need to continue the education of parents and clinicians about diseases they no longer see because these serious diseases have been prevented so effectively by our immunization policies, but they are only a jet plane ride away from our shores.

“Immunization is the single intervention that has most dramatically reduced childhood morbidity and mortality in the United States. Immunizations have reduced by almost 99 percent the vaccine-preventable infectious diseases in this country, although once again the causative germs continue to circulate widely elsewhere.

“Most young parents cannot appreciate, fortunately, as I do, the horror of polio with iron lungs and crutches; measles with encephalitis; meningitis due to haemophilus influenza B, with death or with crippling or with mental retardation; the deafness, blindness and brain injury that you heard about from Ms. Zitzmann, caused by congenital rubella; tetanus of newborn infants with overwhelming mortality; and a number of the other infectious diseases that we fortunately do not see.

“It is true that despite all that vaccines have done to improve the health of individuals and communities in the United States and throughout the world, they are not perfect. However, one simple fact cannot reasonably be disputed—the benefits of immunizations far outweigh any possible risks.

“Dr. Satcher pointed out a number of features which I won't reemphasize, but how susceptible unimmunized individuals in a community threaten not just their own well-being, but that of their contacts, whether they are in day care, in school, in various settings where people crowd and gather.

“I would just like to remind you of a few anecdotal events. Where were the last big measles outbreaks in older youngsters in this country? In a school for Christian Science college students where there were deaths[14] due to measles because they don't follow immunization. I respect their religious point of view. I only use it as an example.

“The last epidemics of polio in this country, where were they? In a boys school in Greenwich, CT, for a religious group who do not practice immunization; among an Amish population in Pennsylvania and several other States because they do not practice immunization.

“These are only examples, and there could be many quoted to you. You heard about diphtheria. We've only had one case of diphtheria in this country in the last year. There were over 100,000 in the countries of the former Soviet Union within the last several years. The bacillus of diphtheria hasn't disappeared; we've just protected our population well.

“You heard about haemophilus influenza B disease. Over 20,000 cases a year in children under the age of 5, causing meningitis, pneumonia with empyema or other invasive disease. Do you know how many cases there were last year in just the 10- years since we've had that vaccine? 125 cases in contrast to 20,000. Our results are striking and remarkable.

“You heard about deaths from varicella. There have been an increasing number of deaths from varicella among children who are not immunized because of the interaction of what you have read about in the newspapers of the ‘flesh eating’ streptococci, the group-A streptococci which superinfect youngsters with varicella and can cause death.

“The fact that States have inaugurated requirements for school entry are based on trying to prevent these episodes occurring within their own venues. A recent article, which again I believe Dr. Satcher quoted, in the Journal of the American Medical Association pointed out the 35-fold greater risk of contracting measles among unimmunized individuals as compared to those who had been immunized, and that paper also demonstrated that the disease that occurs more commonly in these exemptors has the ability to initiate and propagate an epidemic in the community at large.

“Should we allow our community immunity to wane, we will negate all the progress we have made and allow our communities to be at risk from threats that are easily prevented.

“Immunization has a clear community benefit in addition to its benefit to the individual patient. An individual's freedom to ignore a stop sign while driving, to pollute the environment, to drive with his child without a car seat or a seat belt, or to spread disease do not serve the public good ultimately. We do place certain restraints on individual freedom because of our belief in the greater social well-being and the community well-being of certain responsibilities.

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[14] All three deaths were due to pneumonia, of which two were among students who refused medical treatment. (Novotny, Thomas, et al. Measles outbreaks in religious groups exempt from immunization laws. *Public Health Reports* 1988; 103 (1): 49.)

“Ongoing vaccine safety efforts and continuous monitoring of adverse events, be they alleged, potential, or real, are crucial to our Nation's childhood immunization program. As science and resources allow, we are obligated to continue to improve the effectiveness of these safety-monitoring measures.

“The Academy and the IDSA have seen allegations that a variety of illnesses may be caused by various vaccines. It's easy to understand how a family with a tragedy can believe that a vaccine caused the sudden unexpected death of a child or the appearance of autism or another illness of unknown cause.

“We give these vaccines in the first 2 years of life when all of these disorders have their common onset, so that guilt by temporal association is very difficult to separate from guilt by causality. The available scientific data have shown, for example, that with increasing use of hepatitis B vaccine there has been a marked diminution in Sudden Infant Death Syndrome [SIDS] in this country.[15] I don't think the two are related. Don't misunderstand me. Why are we seeing less SIDS? Because we are placing babies on their backs instead of their stomach. The same thing has been observed in the United Kingdom, a remarkable reduction in SIDS, but having nothing to do with more or fewer vaccines.

“A robust system of checks and balances exists to monitor the safety and effectiveness of our vaccines, a system that we strive continuously to perfect. These efforts are designed to ensure that our recommendations about immunization and procedures reflect the best available science. There can be no doubt the public and private sectors and academia continue to be alert and responsive to vaccine safety needs.

“The identification of potential safety issues, rapid review, and broad dissemination of interim guidelines demonstrate that we have an early warning system in place that has the ability to detect and rapidly respond to new information. We must pay attention to this system to assure that it performs to the best of its ability. When any concern about vaccine safety arises, we have the capacity to evaluate the issue scientifically, to act both rapidly and prudently in the interest of what is best for our children, which is our overriding concern.

“The role of parents as well as physicians in vaccine safety is paramount. Physicians must regularly update their knowledge about specific vaccines and their use. Information about the safety and efficacy of vaccines and recommendations relative to their administration continue to develop even after a vaccine is licensed.

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[15] The diminution in SIDS Dr. Katz is referring to, may just be a question of classification of the cases of sudden death in infants. (Task Force on Sudden Infant Death Syndrome. "SIDS and other sleep-related infant deaths: expansion of recommendations for a safe infant sleeping environment." (2011): e1341-e1367.) For instance, in 2018, there were 3,600 sudden deaths in infants in the US, which are now classified under sudden unexpected infant death (SUID), of which SIDS is a subcategory with 1,300 cases. (Data and Statistics for SIDS and SUID | CDC. https://www.cdc.gov/sids/data.htm) Incidentally, between 1999, the year of this congressional hearing, and 2016 the rates of sudden death in infants (which include SIDS) had tripled in the US. (Drowos, Joanna, et al. Accidental infant suffocation and strangulation in bed: disparities and opportunities. *Maternal and child health journal* 23.12 (2019): 1670-1678.

“As pediatricians we know that families are more likely to have their child immunized if they understand the risks and the benefits of immunizations and the consequence of the diseases they prevent. To ensure that parents and other caregivers take advantage of the benefit of immunizations, particularly for preschool children, the AAP and the IDSA recommend public education efforts on the importance of immunization, and that these continue. The Academy provides a variety of easily read patient educational materials for parents, for guardians, for physicians, for nurses, for whomever is involved in the setting.”[62]

The following table illustrates well the point of Dr. Katz regarding the benefits of vaccination in the US in the reduction of morbidity and mortality of the target diseases before the introduction of vaccines and 2004/2006:[63]

Disease	Estimated prevaccine annual average of cases	Estimated annual average number of deaths	Number of cases in 2006	Deaths in 2004	% reduction of cases/deaths
Diphtheria	21,053 (1936-1945)	1,822 (1936-1945)	0	0	100%/100%
Measles	530,2017 (1953-1962)	440	55	0	99.9%/100%
Mumps	162,344 (1963-1968)	39	6,584	0	95.9%/100%
Pertussis	200,752 (1934-1943)	4,034	15,632	27	92.2%/99.3%
Polio (paralytic)	16,316 (1951-1954)	1,879 (1951-1954)	0	0	100%/100%
Rubella	47,745 (1966-1968)	17 (1966-1968)	11	0	99.9%/100%
Congenital rubella syndrome	152 (1966-1968)	Not available	1	0	99.3%/Not available
Tetanus	580 (1947-1949)	472 (1947-1949)	41	4	92.9%/99.2%

There was an exchange after Dr. Katz testimony between Representative Dan Burton and other scientists testifying before the congressional hearing, which illustrates the divergence of interests between parents who have the ultimate responsibility for the well-being of their children and the state whose responsibility is to protect as many as possible, even though some may have to be sacrificed as “collateral damage” to the “hidden“ dangers of immunization.

An important point that came down in the exchange between Representative Burton and Dr. Katz was that parents have the right to say to vaccination if they believe it can be harmful to their child.

“Mr. Burton. The question that I would like to ask is the pertussis vaccine that they were talking about a while ago. If you thought that it caused autism in some children, would you give it to your grandchildren?

“Dr. Katz. I think that if I believed it caused autism, I would have severe reservations. I agree with you.

“Mr. Burton. That's all I want to know, because there are a lot of people that believe that it does, and I'm one of them. Do you think that people that feel there is a real risk to their loved ones should give that kind of a vaccination or be required to do it?

“Dr. Katz. I don't believe that you should labor under the burden of saying I really believe this and I don't want my child to be immunized. I think you have to accept the fact, however, that if your child goes to school or to day care, for example, and there is a case of whooping cough in the school, your child would be banned from school because they are not immunized.

“Mr. Burton. Let me ask Dr. Kennedy a question. What did you say was the percentage of reactions to the pertussis vaccine within the first 48 hours?

“Dr. Kennedy. It was within the first 72 hours. Approaching 50 percent.

“Mr. Burton. Fifty percent. Just a second. Fifty percent would have an adverse reaction within the first 72 hours?

“Dr. Kennedy. I will provide you with the documentation that quotes that.

“Mr. Burton. In many cases that is not of long duration.

“Dr. Kennedy. Right. Correct.

“Mr. Burton. It is something that comes and goes. Do you have any percentages that show the adverse reaction that is of long duration?

“Dr. Kennedy. No, I don’t.

“Mr. Burton. So we really don't know. You know that there is an adverse reaction that is pretty substantial within the first 72 hours in half of the cases where they give those shots.

“Dr. Katz. We haven't used that vaccine for several years, Mr. Burton. I think one of the things that I would love to point out to you is that we do improve. We use the acellular vaccine in this

country. The British continue to use the vaccine that Dr. Kennedy has described. We haven't used it for several years in this country.

“Mr. Burton. Is the DTP vaccine rather than the DTaP vaccine still being used?

“Dr. Katz. The DTaP vaccine is being used, which has an infinitesimal degree of reactivity compared to the DTP.

“Mr. Burton. The Department is behind you. Is the DTP vaccine still being used in this country?

“Mr. Egan [FDA]. Yes.

“Mr. Burton. It's still being used in this country. So, Dr. Katz, you are incorrect. It is being used in this country.

“Dr. Katz. If it is, it's in a very small percentage.

“Mr. Burton. It doesn't matter if it's your kid or your grandchild. If they get a DTP vaccine and there is this adverse reaction that Dr. Kennedy is talking about, it's of great concern to people, and we don't know whether it leads to autism or not, but I have an autistic grandchild, and we've had a number of other people that have seen tremendous problems with autism, and they are still using that vaccine. You said you didn't think they were.

“Dr. Katz. I said they are still using it in the United Kingdom. They don't use acellular pertussis vaccine.

“Mr. Burton. That's the United Kingdom. It's not the United States of America.

“Dr. Katz. The World Health Organization is using it throughout the world. We are the only country with the exception of Japan that made the switch.

“Mr. Burton. I know, but if it's causing adverse reactions that are so severe that they affect people in the first 72 hours, 50 percent of them, it should be something that is clearly looked into, and if there is any indication it may cause autism, it should be really scrutinized.

“Let me yield to the doctor here, and I will come back for some more questions in a moment.

“Mr. Weldon [a physician and Congressman from Florida]. Maybe our friends in the back can answer. I thought we withdrew all the DPT, the cellular pertussis in the United States. It is still licensed and it is still sold in the United States; is that correct?

“Mr. Egan [FDA]. Yes.

“Mr. Weldon. The FDA has never ordered that to be withdrawn? Why was it not ordered to be withdrawn considering the higher incidence of side effects? They felt that the side effects were not sufficiently life-threatening to warrant its withdrawal? Is that the rationale? For the record, Mr. Chairman, this pertussis issue is something that I followed through the years, and I thought it was completely off the market. That may be something that we may need to address. If I may just go a little bit further. Dr. Kinsbourne, I really enjoyed your testimony. [Part of Dr. Kinsbourne can be found later in this text under *Viewpoint from a neurologist specialized in learning disability*]
You seem to get at a lot of the problems. Some of the issues that you brought up I've had conversations with other scientists and some of the folks that have already testified. The real bottom line issue is that there would have to be very significant funding to get at these issues, because it would require some very large studies that would have to be extended over many, many years, correct?

“Dr. Kinsbourne. Yes, sir.

“Mr. Weldon. Unless those studies [long-term effects of vaccination] are done, the questions that you were posing are very difficult for us to answer, correct?

“Dr. Kinsbourne. Could not be answered until they are done. So the sooner they are started the sooner they will be answered.

“Mr. Weldon. The only other point I would like to make, Mr. Chairman, is that if these studies are done, they may show that the vaccines are much safer than is being alleged by some of the people who have provided testimony. Until they are done, the public discontent that exists among some element in our country is not going to go away, and it would be a mistake for us to just take the face value of some who have testified alluding to the fact that all is well. All may not be well, and the responsibility ultimately is going to fall to political leaders in this country to make sure that the proper research is done.[64]

Representative Dan Burton was not satisfied and came back on why was the DPT vaccine still being used, if it was known to be associated with greater adverse effects,
“Mr. Burton. I just can't for the life of me fathom why that one vaccine is still on the market and being manufactured and sold here and used in the United States. I just don't understand that. Can you explain that, Dr. Kennedy?

“Dr. Kennedy. I can maybe address the situation relative to the issue of combination vaccines and why it may still be there. There were studies done where they were combining the DTaP vaccine with the haemophilus influenza type B glyco-conjugate vaccine, and a number of studies, both in non-human primate models and in children, suggested that by combining and then giving it at a single site that you would interfere with the ability to respond to the haemophilus influenza type B [HIB] component, and the interference appeared to be as a result of the acellular components.

“They do not know the mechanism. They knew if they took out the acellular component and did a DT/HIB combination, it went fine. If they did the DTaP at one site and then the HIB at the other site, the response was fine. If they did the DTP/HIB, it appeared to be fine from a standpoint of responding to all four of the components.

“That could be one of the potential reasons, because some of the first licensed combination vaccines are DTP/HIB, et cetera. It doesn't make sense, but that's----”[65]

Again Representative Burton was not satisfied and asked again why would a vaccine that is associated with a 50% adverse rate of effects in the first 72 hours of its administration was still on the market. The answer came and it was down to money: “… *you can make quite a bit of money*. What it comes down to the vaccine manufacturers, it's money if the vaccine has already been produced ...” There it is in plain view: “Mr. Burton. I'm not sure I comprehend if there is that kind of a reaction in 50 percent of the cases in the first 72 hours why it's on the market. I just do not understand that.

“Do you have any reason why that would be the case, why they would keep that on the market and continue to use it?

“Dr. Kennedy. Yes. If people are not complaining, *you can make quite a bit of money*. What it comes down to the vaccine manufacturers, it's money if the vaccine has already been produced; it’s already licensed.

“Mr. Burton. I know, but the people sitting behind you are not influenced by these pharmaceutical companies. I'm sure of that. So why would they not insist that it be taken off the market?

“Dr. Katz. This vaccine has been used for 40 years in this country and its record of achievement has been a very successful one. What he is describing as 50 percent is sore arms, sore legs, redness, fever. It's not life-threatening reactions. It is more reactive than the acellular vaccine, which is why most people have switched to the acellular vaccine, but these are not life-threatening reactions that have been shown with the whole cell pertussis to be any more than with any other acellular pertussis.

“Mr. Burton. These are FDA serious events in 1999. How many are in here, 1,500 or more?

“Dr. Kennedy, of these 50 percent of the reactions, were any of them pretty severe?

“Dr. Kennedy. Yes. Quite a few were more severe, such as the high-pitched screaming, the crying, the fever, the shock-like syndrome.

“Mr. Burton. Running around and waving their arms and that sort of thing?

“Dr. Kennedy. Yes, but the percentage I could not find.

“Mr. Burton. I will tell you that is exactly what happened to my grandson. Exactly. He ran around waving his arms, a high-pitched scream, waving his arms up and down, and everything else, and he's autistic now. I'm getting a little emotional about this. I think we will conclude this hearing. But I want to tell you, this isn't the end of it.”[66]

It is somewhat surprising to hear from Dr. Katz that vaccines have the capacity to improve the health of the individual. Does he really propose to equate gained immunity with improved health? Or the more one gets vaccinated, the healthier one becomes?

Essentially Dr. Katz said vaccines works well to prevent morbidity and mortality from a great number of contagious diseases, *but there are not perfect*, and doesn’t talk about short and long-term adverse effects, which he can’t tabulate in his risks and benefits balance, as it was mentioned that the studies have never been done.

In 2004 Project Tycho that studied contagious diseases in the US since 1888 estimated that 103 million cases of childhood diseases (95% of those that would otherwise have occurred) have been prevented by vaccines since 1924, at which date the diphtheria toxoid inoculation was introduced.[67]

However, public health, better nutrition and sanitation have played a great role in the diminution of childhood morbidity and mortality from epidemic diseases. A study from the National Bureau of Economic Research and Harvard University reported, “Mortality rates in the US fell more rapidly during the late 19th and early 20th Centuries than any other period in American history. This decline coincided with an epidemiological transition and the disappearance of a mortality “penalty” associated with living in urban areas. … We find that clean water was responsible for nearly half of the total mortality reduction in major cities, three-quarters of the infant mortality reduction, and nearly two-thirds of the child mortality reduction.”[68]

Sandy Reider, a physician practicing since 1971, believe the science on the benefit of vaccine is not settled. He wrote, “Diphtheria mortality had fallen 60 percent by the time vaccination was introduced in the 1920s, deaths from pertussis/whooping cough had declined by 98 percent before vaccination was introduced in the late 1940s, measles mortality had dropped 98 percent from its peak in the U.S. by the time measles inoculation was introduced in 1963-and by an impressive 99.96 percent in England when measles vaccination was introduced in 1968. In 1960 there were 380 deaths from measles among a U.S. population of 180,671,000, a rate of 0.24 deaths per 100,000. The takeaway here is that vaccination played a very minor role in the steep decline in mortality due to infectious disease during the late 19th century and early to mid-20th century. Improved living standards, better nutrition, sanitary sewage disposal, clean water, and less crowded living conditions all played crucial roles.”[69]

We are now about where we were in the nineteen century when Hahnemann had recognized the benefits of vaccination, but Hering said that because *it is not perfect, there is a need to find a more safe and effective way of prevention*.

Dangers associated with smallpox vaccination

As one of the most fundamental principles of medicine is *primum non nocere*, physician, first do no harm, practitioners of alternative medicine who abide firmly to this principle, have pointed out the dangers associated with vaccination since its introduction, with the same ardor as they have done for the iatrogenesis associated with prescribed drugs. Since the nineteenth century, the alternative medical community has risen as one voice that it was not against vaccination and recognized its protective effects, but was against its adverse effects.

Another fundamental principles of medicine is *praeventum*, which means that prevention is better that a cure. To best achieve this goal physicians are required to guide people to choose ways of living and environments that are conducive to good health. Causes of diseases must be identified and avoided. Since Hippocrates physicians have a covenant trust to educate people about the best ways they can optimize their health and prevent disease and to teach them about the causes of diseases and to help them recover their health optimally when they fall sick. It is in this perspective of prevention that the dangers associated with vaccination will be briefly reviewed by mainly looking at the first vaccine used in modern times and one of the last ones that have been introduced to the public, which are the smallpox and human papillomavirus vaccines, respectively.

Soon after the introduction of smallpox vaccination by Jenner in 1796, reports about its deadly consequences started to pour in. For instance, William Rowley, who was author of the four-volume textbook of medicine of his time, *The Rational Practice of Physic*, wrote in 1805: “Out of 504 persons vaccinated, 75 died from the consequences. There is no question here of supposition, or calculation of probability—*it is truth*. It is evidence which seems to speak, and leaves no doubt. Now, if in the space of seven or eight years (from 1798 to 1805) vaccination has shown itself so grievous to society, what may we not fear for the future?”[70]

Further, arm-to-arm vaccination lead to the transmission of other pathogens that were followed by debilitating and life-threatening infectious diseases, such as erysipelas and syphilis. As early as 1814, vaccinial syphilis was reported in many countries, including Italy, Germany, France and Russia. “In one episode at Rivalta, Italy, for example, sixty-three children were vaccinated with material taken from the vaccinial pustule of an apparently healthy infant who had an unapparent syphilis infection. Forty-four of the vaccinated infants developed overt syphilis, several died of it, and some infected their mothers and nurses.”[71]

The original use of cowpox to prevent smallpox is still used today in the US first intervener personnel in case of bioterrorism. However, despite the great advances in biotechnology since the early days of vaccination, great health risks are still associated with smallpox vaccination. We will first focus our attention specifically on the risks posed in our modern times by smallpox vaccination to illustrate the potential dangers associated with vaccination in general despite more than *two-centuries of reassurance by authorities on their tested safety*.

In the 1960s, the risk of “accidental” infections after smallpox vaccination, such as streptococcal and staphylococcal infection, was reported to occur in 2 to 6 cases per 1,000 vaccinees,

notwithstanding the other potentially fatal adverse events, such as central nervous diseases that include encephalitis, encephalomyelitis, encephalopathy, transverse myelitis and Guillain-Barré syndrome, vaccinia necrosum (progressive vaccinia), eczema vaccinatum, Stevens-Johnson syndrome, generalized vaccinia, melanoma and fetal vaccinia, and some less fatal but still greatly debilitating adverse events, such as congenital/neonatal vaccinia, autoinoculation in the eyes, mouth and genitals, myopericarditis and other cardiac lesions, hemolytic anemia, arthritis, congenital/neonatal diseases, osteomyelitis and thrombocytopenia.[72,73,74,75]

Furthermore, the CDC reports that 2 women are now known to have developed dilated cardiomyopathy following smallpox vaccination. The total number of serious adverse events among civilians from January 24 through June 20, 2003, is 71, or a rate of 1 in 500 smallpox vaccinations. These events included 5 myocardial infarctions and 1 stroke. [76]

Estimates of the rate of post-smallpox vaccinial encephalitis vary according to studies, decades, countries, and vaccine strains. In the United States, it was reported in the 1960s to occur in between 9 to 59 times for every 1 million vaccinations,[77] with a case-fatality rate of 44% in infants younger than 1-year old and 29% for all age groups, while another 25% was permanently damaged with central nervous system sequels.[78,79] Even the more benign eczema vaccinatum that was developed among *non-vaccinees* after contact transmission from a recent vaccinee was associated with a 2.3% mortality rate.[80]

Even though only a small minority of vaccinees develops serious adverse events after smallpox vaccination, close to 90% develops a viral infection at the site of inoculation, and the majority feel sick. It was reported in the 1960s that the majority of persons who received smallpox vaccination experienced mild fever, regional lymphadenopathy and “considerable inflammation” occurring within about one week after vaccination, and up to 16% experienced more severe reactions that included “a fever of 101°F or higher, local swelling and edema, lymphangitis, painful lymphadenitis, satellite pustules, and considerable discomfort.”[81]

The vaccinia virus is shed from about the third to the 19th post-vaccinial day, and can be transferred by direct contact to other people during this time.[82] Therefore susceptible individuals could be made very sick, which explains the long list of exclusion criteria for smallpox vaccination, which include prior history of cardiac disease, atopic dermatitis, active acute, chronic or exfoliative skin conditions that disrupt the epidermis, diabetes, pregnant women or women who desire to become pregnant within the first 28 days after vaccination, persons who are immunocompromised as a result of human immunodeficiency virus or acquired immunodeficiency syndrome, autoimmune conditions, cancer, radiation treatment, immunosuppressive medications, or other immunodeficiencies, uncontrolled hypertension, specific medical exclusion for immunization, or “any chronic illness potentially increasing the risk of vaccinia complications as assessed by clinical screening, persons with smallpox vaccine-component allergies, women who are breastfeeding, those taking topical ocular steroid medications, those with moderate-to-severe intercurrent illness, and persons aged younger than 18 years, and a history of Darier disease and a contraindication if a household contact has an active disease.[83,84,85]

In 1971, the US stopped routine smallpox vaccinations after it had been eradicated in the US, but prior to global smallpox eradication due to the burden of vaccine-associated encephalopathy.[86] However, to counter the possibility of smallpox being used as a biological weapon, the US government restarted a smallpox vaccination campaign in 2002, particularly for first intervener personnel. Many reports of notable adverse events of this vaccination campaign began to appear in vaccinees and *their contacts* to the point that authorities became reluctant to recommend vaccination to the civilian population in the absence of an actual smallpox reemergence.[87]

It was the right decision, as in the thirty-year lapse between 1972 and 2002 surveillance and diagnostic methods became more accurate in order to obtain a more realistic picture of adverse effects associated with smallpox vaccination.

There are three methods to assess complications following vaccination: 1) general or passive surveillance, 2) surveys of physicians, 3) prospective studies of vaccines, which would include general and long-term health outcome of vaccinees versus a corresponding unvaccinated population. The most commonly used of these three methods is passive surveillance, which is known to greatly underestimate the real risks associated with vaccines. It is very difficult to understand why health authorities that have the mandate to protect the public should not choose the most accurate method for the investigation of the adverse events of vaccination.

To illustrate the disparity between passive surveillance versus more accurate methods of assessment, with passive surveillance, no case of cardiomyopathy associated with vaccination had ever been reported in the US during the 2002 smallpox vaccination campaign. One of the investigators who had documented the adverse events of this vaccination in the 1960s stated in 2003, “It is premature to guarantee that the rates of adverse effects found in the 1968 studies will be identical to those found now.”[88] As cases of myocarditis associated with vaccination started to be reported in European and Australian vaccinees, surveillance of case definitions for myocarditis, pericarditis, and dilated cardiomyopathy was instigated in US vaccinees. 5.5 cases of cardiomyopathy and pericarditis following vaccination per 10,000 vaccinees were then identified, or 0.05%.[89]

However in a later study, the incidence rate of clinically diagnosed myocarditis and pericarditis in healthy cohorts of service personnel was found to be nearly *7.5 fold higher* in vaccinees than the expected background rate among comparable unvaccinated service members.[90]

In a survey of physicians, the rate of post-vaccinial encephalitis and generalized vaccinia, two potentially fatal complications from smallpox vaccination, was found to be 4 and 21 times, respectively, greater than the rates from national passive surveillance data,[91] and in a review of surveys of physicians, the rate of post-vaccinial encephalitis jumped to 26 times greater than the one of general surveillance reports.[92]

When direct surveys of physicians were conducted complication rates for primary vaccinees with generalized vaccinia, accidental implantation, and “other” less severe complications were 10-22 times higher in the direct surveys than in the national surveillance network, which ended up that 12,591 per million vaccinees or 1.3% of the vaccinees experienced adverse effects, which included seven deaths, fifteen post-vaccinial encephalitis, ten progressive vaccinia, 123 eczema vaccinatum, 10,390 generalized rashes and 2,061 accidental implantations.[93]

Now with today’s more refined diagnostic approaches, adverse events from vaccination can be further investigated in the active safety surveillance setting. For instance, the incidence of post-vaccinial myocarditis/pericarditis associated with smallpox vaccination had never been examined until recently, and its true incidence had been significantly underestimated by general surveillance method.[94] The first prospective study on the onset of cardiac events following smallpox vaccination was conducted only in 2015. 1,081 healthy military personal with no prior history of cardiac diseases, diabetes, uncontrolled hypertension or specific medical exclusion for immunization were followed prospectively following smallpox vaccination. It was found out that 10.6% of vaccinees experienced new onset of chest pain, dyspnea, and/or palpitations. Five of these 1,081 vaccinees were eventually diagnosed with probable post-vaccinial myocarditis/pericarditis, and 31 vaccinees without specific cardiac symptoms were found to have over 2 fold increases in cardiac specific troponin-T from baseline during the window of risk for clinical myocarditis/pericarditis that met the proposed case definition for possible subclinical myocarditis, which is an incidence rate that is 10 times greater than the one from the physician surveys and *240-times greater than with passive surveillance*.[95]

Fetal vaccinia is another complication of smallpox vaccination. The case of a young primagravida was reported, who had received a primary smallpox vaccination in the first month of an unsuspected pregnancy, and gave birth at 5 months to a premature baby weighing slightly under 3 pounds, and who was marked with pock-like scaring of the skin over the entire body.[96]

Another side effect from smallpox vaccination is eczema vaccinatum, which is characterized by widespread vaccinial lesions in patients with atopic eczema or a history of eczema. Fatalities often occurred in patients who were not vaccinated but were close household contacts of recently vaccinated siblings or other family members.[97] A true Stevens-Johnson-like rash can also occur, which could also be life threatening.[98] A great part of the population would be at high risk of developing eczema vaccinatum, as it is estimated that nearly 20% of the population has or has a history of atopic dermatitis.[99]

Another problem caused by vaccination is as an immune system disruptor, which can only be detected through active investigation. For instance, of very few cases that were reported to have experienced post-vaccinial central nervous system affections were found to have live virus in their brain or cerebrospinal fluid, which suggested that most of these reactions were likely to be autoimmune.[100]

Some experts estimated that in today’s population death rates from smallpox vaccination would be greater because of the greater prevalence of immune deficiency and atopic dermatitis.[101]

They were right, as in a study of 38,885 smallpox vaccinations that had been administered to federal, state, and local volunteers who might be first responders during a bioterrorism event, one hundred adverse events (12%) were designated as serious, resulting in 85 hospitalizations, 2 permanent disabilities, 10 life-threatening illnesses, and 3 deaths. The mortality rate was 77-times greater than it had been reported following vaccination in the 1960s.[102]

Further, no studies have been conducted on the long-term effects of smallpox vaccination, or any other vaccination for that purpose, on the major organs and systems of the body, including the central nervous, immune and hematopoietic systems. As the complications of vaccination are not considered as officially reportable diseases, and statistics on incidence are not gathered systematically most of the patients with less severe post-vaccinial disease go undetected.[103]

In summary, the real short and long-term adverse effects of smallpox vaccination are not fully known, *but escalade quite quickly the more they are investigated*. Further, the public is rarely told the full story as the reporting of these adverse events is dependent on the totally inadequate passive surveillance system, such as the Vaccine Adverse Event Reporting System (VAERS), as its reported rate of adverse events can be hundreds of folds lower than the more realistic prospective studies of vaccinees.

VAERS receives about 30,000 reports per year of adverse reactions to vaccinations in general, of which 10 to 15% are “serious”—resulting in “permanent disability, hospitalization, life-threatening illness, or death.” Actually there are on average 40 deaths related to vaccination that are reported every year in the US.[104]

From such statistics, it is difficult to know the percentage of adverse events per vaccinees, as it is difficult to find the number of persons receiving at least one vaccine per year. However, it is known that in an 11 year period, that is between 2006 and 2017, US citizens received over 3.2 billions doses of vaccines, or an average of one vaccines per year per citizen, which would make the reported adverse effects to occur in about 1 per 10,000 administered vaccines, a number that appears to be a gross underestimation.

A study was conducted by Harvard Pilgrim Health Care between June 2006 and October 2009 in which every vaccinee was automatically identified in an electronic database and followed for 30 days in the database. Within that 30 days the individual’s diagnostic health codes, lab tests, and prescriptions were evaluated to recognize any potential adverse event. During this time, there were 376,452 individuals who were vaccinated and 35,570 or 9.5% of the vaccinees were identified to have experience an adverse event. “Adverse events from drugs and vaccines are common, but underreported. Although 25% of ambulatory patients experience an adverse drug event, less than 0.3% of all adverse drug events and 1-13% of serious events are reported to the Food and Drug Administration (FDA). Likewise, fewer than 1% of vaccine adverse events are reported.”[105]

Researchers of the Harvard Pilgrim study stated, “Unfortunately, there was never an opportunity to perform system performance assessments because the necessary CDC contacts were no

longer available and the CDC consultants responsible for receiving data were no longer responsive to our multiple requests to proceed with testing and evaluation."[106] It is not difficult to see why trust in these public health institutions and organized medicine quickly disappears for the informed individual.

This is not limited to medicine and the adverse effects of vaccination. The public has been lied to with open faces on the underlying reasons regarding huge issues such as the Vietnam War, Watergate, Iraq's weapons of mass destruction, etc.[107] This is a complete reversal of the original foundation of the US government, which has been used as an example to for spreadring democracy to 165 other countries in the world and of "the government of the people, for the people and by the people."[16]

When during 2016 presidential campaign, former Green Party presidential candidate Jill Stein (an internist with 17 years of field experience) was asked, "What is your campaign's official stance on vaccines and homeopathic medicine?" She answered, "I don't know if we have an 'official' stance, but I can tell you my personal stance at this point. According to the most recent review of vaccination policies across the globe, mandatory vaccination that doesn't allow for medical exemptions is practically unheard of. In most countries, people trust their regulatory agencies and have very high rates of vaccination through voluntary programs. In the US, however, regulatory agencies are routinely packed with corporate lobbyists and CEOs. So the foxes are guarding the chicken coop as usual in the US. So who wouldn't be skeptical? I think dropping vaccinations rates that can and must be fixed in order to get at the vaccination issue: the widespread distrust of the medical-industrial complex. Vaccines in general have made a huge contribution to public health. Reducing or eliminating devastating diseases like smallpox and polio. In Canada, where I happen to have some numbers, hundreds of annual death from measles and whooping cough were eliminated after vaccines were introduced. Still, vaccines should be treated like any medical procedure—each one needs to be tested and regulated by parties that do not have a financial interest in them. In an age when industry lobbyists and CEOs are routinely appointed to key regulatory positions through the notorious revolving door, its no wonder many Americans don't trust the FDA to be an unbiased source of sound advice. Monsanto lobbyists and CEOs like Michael Taylor, former high-ranking DEA official, should not decide what food is safe for you to eat. Same goes for vaccines and pharmaceuticals. We need to take the corporate influence out of government so people will trust our health authorities, and the rest of the government for that matter. End the revolving door. Appoint qualified professionals without a financial interest in the product being regulated. Create public funding of elections to stop the buying of elections by corporations and the super-rich."[108]

To understand the full impact of vaccination on the health of a population, prospective studies of vaccine recipienys versus a corresponding unvaccinated population would have to be conducted over two or three successive generations.

[16] Abraham Lincoln. Gettysburg Address. November 19, 1863. https://en.wikipedia.org/wiki/Gettysburg_Address

Even the full spectrum of short-term morbidity following vaccination can be difficult to detect and its association difficult to prove. To give an example on how elusive side effects from vaccination can be, it was reported that a child exhibited an isolated sixth nerve palsy that occurred three weeks after an annual influenza vaccination during two consecutive years for which imaging studies failed to reveal any abnormality and without any evidence of underlying disease. It was concluded that this boy's recurrent right sixth nerve palsy was either cryptogenic or was precipitated by influenza vaccination.[109] Other investigators reported that 12.8% of children with recurrent sixth nerve paresis had had recent vaccination before the initial episode, and this especially after MMR and DTP vaccinations. It is also important to point out that recurrent sixth nerve palsy in children in the absence of structural or other neurological abnormality is a rare occurrence,[110] and that *all children* who *presented with a first episode following recent vaccination would later develop recurrence*.[111]

It is clear that for over two hundred years, governmental and health agencies and medical authorities have reassured the public on the safety of vaccination and encourage its population to be vaccinated without knowing the full ramifications associated with vaccination. However, some may think that by focusing on the oldest of all vaccines, that is the smallpox vaccine, may not provide a realistic picture of the overall dangers associated with vaccination in general, particularly in view of the great advances in biotechnology since Jenner first experimentation in 1796.

Dangers associated with HPV vaccination

Let's then look at one of the most recent vaccines that have been introduced to the public, namely the human papillomavirus (HPV) vaccine. It is interesting to note that the controversy that has followed its introduction illustrates well the divergence of paradigms between the proponents and adversaries of compulsive vaccination.

The Japanese government promoted among its population the HPV vaccine from optional in 2009 to recommended in 2010 after a lobbying campaign by the industry, following which the vaccination rate increased exponentially. Soon after the introduction of the HPV vaccine in Japan, many clusters of averse effects were reported, including postural orthostatic tachycardia syndrome, complex regional pain syndrome, chronic fatigue syndrome,[112] "complex, multi-system symptoms, such as seizures; disturbance of consciousness; systemic pain, including headache, myalgia, arthralgia, back pain and other pain; motor dysfunction, such as paralysis, muscular weakness, exhaustion and involuntary movements; numbness and sensory disturbances; autonomic symptoms, including dizziness, hypotension, tachycardia, nausea, vomiting and diarrhea; respiratory dysfunction, including dyspnea and asthma; endocrine disorders, such as menstrual disorder and hypermenorrhea; hypersensitivity to light and sound; psychological symptoms, such as anxiety, frustration, hallucinations and overeating; higher brain dysfunction and cognitive impairments, including memory impairment, disorientation and loss of concentration; and sleep disorders, including hypersomnia and sudden sleep attacks. In some cases, these symptoms impaired learning and resulted in extreme fatigue and decreased motivation, having a negative impact on everyday life. The situation in Japan was similar to that

in other countries which have also reported a specific cluster of serious and complex symptoms that develop across multiple body systems over an extended period of time."[113]

In response to the negative press surrounding HPV vaccination, the Japanese Ministry of Health withdrew its active recommendation in June 2013 on the grounds of "an undeniable causal relationship between persistent pain and the vaccination."[114] As a result, the inoculation rate for the vaccine decreased rapidly from 80% at its peak to less than 1%. In return, proponents of the HPV vaccine initiated a pushback campaign and began to actively lobby the government.

In January 2014, the expert advisory committee established by the government presented the view that the diverse pain and motor dysfunctions experienced by many individuals after HPV vaccination comprised "psychosomatic reactions to anxiety or stimulatory pain caused by needle injection, and were not due to any components of the vaccine itself."[115]

However, clinicians who had examined the patients presenting with the post-vaccination symptoms arrived at a completely different conclusion, pointing out that both the characteristic symptoms and the course of these syndromes couldn't simply be explained as being psychosomatic reactions. This created a strong distrust not only in the Japanese public, but also around the world. To the potentially negative influence of these events on public opinion in other countries, the pharmaceutical industry initiated a counter-intervention strategy through public and private organizations, such as the World Health Organization (WHO). The Global Advisory Committee on Vaccine Safety (GACVS), one of the WHO advisory committees, claimed it had "not found any safety issue that would alter its recommendations for the use of the [HPV] vaccine" and criticized the Japanese government's decision to have withdrawn its active recommendation.[116]

Despite the existence of independently clustered reports of two dysautonomic syndromes, namely complex regional pain syndrome and postural orthostatic tachycardia syndrome, following HPV vaccine, the committee concluded that there was no evidence of an association between the HPV vaccines and these syndromes and approved the vaccines for use in the European Union.[117]

Further, in May 2018, a team of the Cochrane collaboration published a review of the HPV vaccine, which clearly re-emphasized its safety, "We did not find an increased risk of serious adverse effects. Although the number of deaths is low overall, there were more deaths among women older than 25 years who received the vaccine."[118]

However, some months later, another team of the Cochrane collaboration reviewed the above review and reported:
- "The Cochrane human papillomavirus (HPV) vaccine review missed nearly half of the eligible trials.
- "No included trial in the Cochrane review used a placebo comparator.
- "The Cochrane review incompletely assessed serious and systemic adverse events.
- "The Cochrane review did not assess HPV vaccine-related safety signals.

- “All included trials were funded by the HPV vaccine manufacturers.
- “Most of the 14 Cochrane authors on the first published protocol for the Cochrane review had major conflicts of interest related to the HPV vaccine manufacturers.
- “The Cochrane review only has four authors; three of whom had such conflicts of interest a decade ago. The review’s first author currently leads EMA’s ‘post-marketing surveillance of HPV vaccination effects in non-Nordic member states of the European Union’, which is funded by Sanofi-Pasteur-MSD that was the co-manufacturer of Gardasil.
- “Part of the Cochrane Collaboration’s motto is ‘Trusted evidence’. We do not find the Cochrane HPV vaccine review to be ‘Trusted evidence’, as it was influenced by reporting bias and biased trial.”[119]

It is noteworthy that members of the European Medicines Agency (EMA) whose duty were to assess risk assessment of the HPV vaccine were bound to “life-long duty confidentiality,” and review process was carried out in close collaboration with the HPV vaccines’ three manufacturers and was kept confidential. The legitimate question that most should be asking is, since when science is discussed in secrecy and is bound by confidentiality on public health issues? A formal complaint was therefore made about the culture of secrecy of the EMA by a number of independent scientists, and the European Ombudsman made similar observations about EMA regulations.[120]

Further, the Japanese investigators pointed out that the effectiveness of the HPV vaccine was quite limited, as the preventive effect on cervical cancer itself had not yet been established. They reported that *only 0.15%* of individuals infected with high-risk HPV develop (invasive) cancer, while the proponents of the HPV vaccines claim that they are 98–100% effective in preventing cervical cancer. In reality, “the absolute risk reduction provided by HPV vaccines is, at most, 0.1%–0.7%, on the basis of calculations using the existing data.”[121]

Moreover, the claim that the occurrence of HPV-induced ano-genital lesions decreased significantly after a post-vaccination period of a few years was scientifically unsound.[122]

Interestingly, the promotion of the HPV vaccine during Japan–US trade negotiations has also created pressure on Japan to promote the use of the vaccine. It is reported that for many years, the promotion of vaccination has been one of the most pressing requirements in trade negotiations with the US, Japan’s most important trading partner. The Center for Strategic and International Studies, a civilian think tank that is part of the US military–industrial complex, criticized the decision of the Japanese government, reflecting the irritation of US industries.[123]

Moreover, it is worth noting that it was found out under the *Transparency Guideline for the Relation Between Corporate Activities and Medical Institutions* of the Japan Pharmaceutical Manufacturers Association, the funds received by the expert board from vaccine manufacturers amounted to close to $700,000 (US) in 2012 and 2013. In addition, it was found out that the secretary of the expert board had been the Director of Marketing for vaccines at GlaxoSmithKline Co. up to eight months prior to the launch of Cervarix. “These facts strongly

suggest that the activity of the Expert Board was not altruistic, but was actually disguised promotion."[124]

The authors of the paper *Lessons Learnt in Japan From Adverse Reactions to the HPV Vaccine: A Medical Ethics Perspective* pointed out, "Science is now misused to protect the interests of the pharmaceutical industry, and has been used to deny the causal relationship between the drug and its adverse reactions. As described in section III, the introduction of HPV vaccination in Japan was promoted with an emphasis on commercial interests rather than as a public health need. In the USA, Merck & Co. Inc. promoted legislation to mandate HPV vaccination for school attendance by serving as an information resource, lobbying legislators, drafting legislation, mobilizing female legislators and physicians' organizations, conducting consumer marketing campaigns, and filling gaps in access to the vaccine. Legislators relied heavily on Merck for scientific information."[125]

Again the research with this vaccine focuses on the prevention of cervical cancer, but what happens to the persons who have received the HPV vaccine. In a cross-sectional study, the incidence of reported asthma was found to be significantly increased following HPV vaccine exposure in the US with a 9.7 adjusted odds ratio. "The results suggest that human papillomavirus vaccination resulted in an excess of 261,475 asthma cases with an estimated direct excess lifetime cost of such persons being US$42 billion."[126]

Many studies have also reported a greater incidence of autoimmune diseases associated with certain vaccines, including the influenza and HPV vaccines. There was a 2 to 8 times greater rate of incidence of arthritis, systemic lupus erythematosus, neurological conditions, gastroenteritis, and alopecia in vaccinees than in the non-vaccinated population. The most frequently reported autoimmune manifestations for the various vaccinations were rheumatoid arthritis, reactive arthritis, vasculitis, encephalitis, neuropathy, thrombocytopenia with the hepatitis B virus; acute arthritis or arthralgia, chronic arthritis, thrombocytopenia with the measles, mumps and rubella vaccine; Guillain–Barre syndrome with the polio vaccine; Guillain–Barre syndrome and vasculitis with the influenza vaccine; and mainly neurological syndromes with the varicella.[127]

Madeline Miller, a naturopathic medical student, described her story about how her life turned around after receiving the HPV vaccine in a 2020 article worth reading, *The Truth About the HPV Vaccines*.[128]

In chapter 29, *The Emperor Has No Clothes*, of the 2018 book, *The HPV Vaccine On Trial: Seeking Justice For A Generation Betrayed*, Holland et al. wrote, "[Children and families now suffering HPV vaccine injury] have been neglected and mistreated simply because their pleas for help discredit the dominant narrative of a flawless vaccine. The medical community's impulse to disregard HPV vaccine injury or to discount it as psychogenic is deeply disheartening. Yet we are encouraged by the work of a growing number of doctors and scientists to help these victims of iatrogenic harm.

"We also call for civility. We are dismayed that families who report HPV vaccine injuries are branded 'antivaccine' and 'antiscience' by media and government agencies alike. This marginalization and bullying destroys civil public discourse and discourages scientific inquiry, when we urgently need both. All media, including social media, should be a place where civil information sharing occurs.

"As with Merck's Vioxx, the truth will come out. The HPV vaccine is on trial, both in the courts of law and public opinion. The evidence is mounting, as we've made clear. The future of the vaccine is uncertain. But in the meantime, how many children will suffer because of a pharmaceutical *nonbinding promise* that in 20 to 30 years, the vaccine will prevent some HPV-related cancer. As the vaccine enters its second decade, it continues to be the object of high praise. But accounts of scandal, lawsuits, severe injuries, and deaths grow, challenging the prevailing narrative."[129]

In a recent speech on *Monsanto and Democracy*, environmental lawyer Robert F. Kennedy Jr. pointed out that the industry has to bear the responsibility for damage that it causes to people or the common goods, which is the note case for the vaccine manufacturers "In a true free market, if you're an actor in the marketplace, you pay the cost to bring your product to market. That includes the cost of cleaning up after yourself, which was a lesson we were all supposed to learn in kindergarten."[130]

The lack of interest of public health agencies to study the adverse events associated with vaccination

As the short and long-term adverse effects of vaccines are not well studied, the US Centers for Disease Control (CDC) asked the Institute of Medicine (IOM) in 1990 to look at reported evidence on whether there was a causal relation between the diphtheria-tetanus-pertussis (DTP) vaccine and 22 of the most common conditions reported in the medical literature following the DTP vaccine. The IOM reported that it couldn't find any causal relation between DTP vaccine and four conditions, namely, infantile spasms, hypsarrhythmia,[17] Reye syndrome and sudden infant death syndrome (SIDS); there was a causal relation with six conditions, namely, anaphylaxis, acute and chronic arthritis, protracted inconsolable crying, acute encephalopathy and shock and unusual shock-like state; and 12 or more than half of the reported conditions there was insufficient evidence, including aseptic meningitis, chronic neurologic damage, erythema multiforme, Guillain-Barre syndrome, hemolytic anemia, juvenile diabetes, learning disabilities, attention-deficit disorder, peripheral mononeuropathy and thrombocytopenia.[131]

The authors of the above review concluded, "Clearly, if research capacity and accomplishment in these areas are not improved, future reviews of vaccine safety will be similarly handicapped."[132]

Four years later in 1994, the IOM was again asked to pursue another vaccine review, but this time for diphtheria, tetanus, mumps, measles, polio, hepatitis-B and haemophilus influenzae B

[17] Hypsarrhythmia is very chaotic and disorganized brain electrical activity with no recognizable pattern.

vaccines, and to review the possibility of causal relation with, this time, not 22, but 54 conditions reported to be associated with these seven vaccines.

Their review stipulated that they couldn't find any causal relation with four of the conditions; in twelve conditions they found a causal relation, including anaphylaxis, Guillain-Barré syndrome, brachial neuritis, thrombocytopenia and death from vaccine-strain viral infections; and they reported having insufficient evidence whether there was presence or absence of a causal relation in 38 of the 54 conditions, including aseptic meningitis, arthritis, death from SIDS, encephalopathy, subacute sclerosing panencephalitis, residual seizure disorder, sensorineural deafness, optic neuritis, transverse myelitis, and insulin-dependent diabetes mellitus.[133]

Robert T. Chen of the CDC Vaccine Safety and Development Branch, National Immunization Program summarized the limitations of the IOM investigation, "Two-third of the 76 vaccine adverse events evaluated by the IOM were found to have either no or inadequate evidence to assess for or against a vaccine cause. Specifically, the Committee identified the following limitations: (1) inadequate understanding of bio- logic mechanisms underlying adverse events; (2) insufficient or inconsistent information from case reports and case series; (3) inadequate size or length of follow-up of many population-based epidemiologic studies; (4) limitations of existing surveillance systems to provide persuasive evidence of causation; (5) few experimental studies published relative to the total number of epidemiologic studies published."[134]

In its turn, the Institute of Medicine has repeatedly asked the Centers for Disease Control to investigate the key question for most parties interested to know the true risk associated with vaccination, that is child health outcomes compared between fully vaccinated and unvaccinated children.

Similarly, despite multiple Congressional requests to undertake vaccine studies comparing the long-term health outcomes of vaccinated versus unvaccinated children, the FDA and CDC have steadfastly refused.[135]

History of the incidence of autism in children

Autism in children was first described in 1943 by Leo Kanner in a seminal paper, *Autistic Disturbances of Affective Contact*, in which he described in great details the history and behavior of 11 children that he had seen in his practice in the preceding five years at the Johns Hopkins Hospital. He wrote, "Since 1938, there have come to our attention a number of children whose condition differs so markedly and uniquely from anything reported so far, that each case merits—and, I hope, will eventually receive—a detailed consideration of its fascinating peculiarities. ... the emergence of a number of essential common characteristics appear inevitable. These characteristics form a unique 'syndrome,' not heretofore reported."[136]

All of these 11 children presented a unique syndrome of an "inability to relate themselves in the ordinary way to people and to situations from the beginning of life;" "failure to use language for the purpose of communication;" "an anxiously obsessive desire for the maintenance of sameness," and "the poor or absent relation to people."[137]

Kanner further remarked, "There is one other very interesting common denominator in the backgrounds of these children. *They all come of highly intelligent families.* Four fathers are psychiatrists, one is a brilliant lawyer, one a chemist and law school graduate employed in the government Patent Office, one a plant pathologist, one a professor of forestry, one an advertising copy writer who has a degree in law and has studied in three universities, one is a mining engineer, and one a successful business man. Nine of the eleven mothers are college graduates. Of the two who have only high-school education, one was secretary in a pathology laboratory, and the other ran a theatrical booking office in New York City before marriage. ... It is not easy to evaluate the fact that all of our patients have come of highly intelligent parents."[138]

It is important to clearly reiterate that Kanner specifically stated that the first case of autism in children he saw was in 1938 and that it was a novelty in the world of psychiatry, "[This first case] made me aware of a behavior pattern not known to me or anyone else theretofore."[139] This was a remarkable statement as Kanner is known as the father of child psychiatry and had written in 1934 the first textbook in English on the subject, *Child Psychiatry*, which of course doesn't make any mention of the existence of autism in children.

It is interesting to note that one year after Kanner's publication of his paper on autism in 1943, Hans Asperger, an Austrian pediatrician, reported four children with autism, a first in Europe.[140] It took another eighteen years, that is in 1961, before other cases of autism were reported in Europe, and this time it was by D. Arn Van Krevelen in Holland.[141]

From 1943 until 1955, 120 more children[18] were diagnosed with autism at the Children's Psychiatric Services of the Johns Hopkins Hospital and two aspects of these children was retained, namely "extreme self-isolation and the obsessive insistence on the preservation of sameness," and "is manifest within the first two years of life." This paper ends, "It remains for future investigation to uncover the precise mode of operation of the pathogenic factors as a basis for rational treatment."[142] We are assuming that by "future investigation" Kanner was not thinking as more than a half of a century later.

It is noteworthy that all the eleven children first reported by Kanner were born after 1931 when the highly toxic ethyl mercury (thimerosal) was added to vaccines and after 1933 when aluminum adjuvants started to be generally used in vaccines.

Toxicity of thimerosal

Thimerosal is a compound that contains the highly toxic ethyl mercury. Sigma, one of the pharmaceutical companies that produce thimerosal, indicates in its hazard statement of this product that it is fatal if ingested, in contact with the skin or inhaled, and can cause damage to organs.[143] Further on the Sigma bottle of thimerosal, its label indicates that it can cause damage

[18] The rate of the diagnosis of autism in children at the Johns Hopkins Hospital was 2.2 cases per year between 1938 and 1943, and had more than doubled at 5.5 cases per year between 1943 and 1955.

to the kidney and respiratory and *nervous systems*, and can cause reproductive and developmental toxicity.[144]

The CDC clearly states on its website that it is safe to use thimerosal in small doses in vaccines:

"Mercury is a naturally occurring element found in the earth's crust, air, soil, and water. Two types of mercury to which people may be exposed—methylmercury and ethylmercury—are very different. Methylmercury is the type of mercury found in certain kinds of fish. At high exposure levels methylmercury can be toxic to people. In the United States, federal guidelines keep as much methylmercury as possible out of the environment and food, but over a lifetime, everyone is exposed to some methylmercury.

- "Thimerosal contains ethylmercury, which is cleared from the human body more quickly than methylmercury, and is therefore less likely to cause any harm.

- "Thimerosal has been shown to be safe when used in vaccines.

- "Thimerosal use in medical products has a record of being very safe. Data from many studies show no evidence of harm caused by the low doses of thimerosal in vaccines."[145]

"It's safe to use ethylmercury in vaccines because it's processed differently in the body and it's less likely to build up in the body—and because it's used in tiny amounts."[146]

The WHO holds also the same discourse as the CDC by considering small doses of thimerosal to be safe regardless of repetitive exposures to multiple vaccines that are predominantly taken during pregnancy or infancy in many countries of the world[147] states, "The Global Advisory Committee on Vaccine Safety concludes that there is no evidence of toxicity in infants, children or adults exposed to thiomerosal (containing ethyl mercury) in vaccines."[148]

However, the FDA shoots itself in the foot as it states on its website, "Prior to introduction of thimerosal in the 1930's, data were available in several animal species and humans providing evidence for its safety and effectiveness as a preservative (Powell and Jamieson 1931)"[149]

In this 1931 study, the nervous tissues of the animals that died from thimerosal poisoning were not reported to have been examined. Further, thimerosal was injected in 22 persons who were observed by only one clinician, and many and especially a number of children *were observed for only the day* of the thimerosal injection.[150]

It is clearly unscientific, misleading and totally inexcusable for the FDA to base its stance on the safety of thimerosal on this flawed 1931 Powell and Jamieson study.[151]

Today we know that thimerosal has a pronounced and greater immunotoxicity and nephrotoxicity than methylmercury.[152] A study on neurotoxicity of thimerosal and methylmercury in human cells was published for the first time in 2015, which found that thimerosal clearly exerted stronger

cytotoxic effects on brain neurons compared to methylmercury. It was found that thimerosal induced neuronal cell deaths at low-level exposure.[153] Thimerosal at concentrations relevant for infants' exposure in vaccines was found toxic to cultured human-brain cells and to laboratory animals.[154]

These results indicate that methylmercury is not a suitable reference for risk assessment from exposure to thimerosal-derived mercury, as suggested by the CDC.

Also it is known that a simultaneous environmental exposure to methylmercury principally from eating fish and the injection of thimerosal-containing vaccines can have unpredictable additive and synergistic effects on developing and mature humans. A higher percentage of the total mercury was found in the brain of monkeys who had been injected intramuscularly with thimerosal to simulate vaccines than in the brain of monkeys who had ingested the same amount of methylmercury monkeys (34% vs. 7%). A mean level of 70% of inorganic mercury was found in the brain of thimerosal-exposed monkeys versus 8% in the brain of methylmercury-exposed monkeys.[155]

A 2008 study reported that 12 hours after administration of thimerosal-containing vaccines in newborn infants, there was a rise in blood mercury concentrations above the safe values of 5 ng/ml.[156]

Within the first two years after the introduction of the hepatitis B vaccine at birth, a vaccine containing thimerosal, midwifes in Australia observed an increase in the incidence of irritable babies and breastfeeding difficulties. "The literature from the drug companies and other promoters (Immunise Australia Program; Queensland Health Hepatitis B Information) of the universal hepatitis B program suggest that these side effects are transient and therefore insignificant (though the mother with a baby who screams inconsolably for three days may not agree that this is an insignificant occurrence)."[157]

In China, thimerosal-containing vaccines continued to be administered after the US had removed them from the regular childhood vaccines schedule, and almost all neonates are given a dose of hepatitis-B vaccine within 24 hours of their birth, which also contains aluminum. The exposure of mixed metal exposures, including thimerosal (mercury) and aluminum, was found to lead to *important* neuronal insults in human fetus and infants.[158]

An editorial reviewer of the above study stated, "There is enough experimental evidence and observational studies to base a reasonable concern that thimerosal and aluminum in vaccines can affect young (susceptible) children."[159]

It is in fact astonishing to find out that the neurotoxic effect of thimerosal has never been studied with another heavy metal, aluminum, that is also present in a great number of vaccines.[160]

Beyond these two heavy metals, the general inflammatory response following vaccines has never been properly investigated. For instance, a 2011 study found an increase in two

inflammatory markers, C-reactive protein (CRP) and tumor necrosis factor-alpha, in pregnant women who were given a seasonal flu vaccine that didn't contain thimerosal or aluminum.[161]

Increases in these inflammatory markers indicate a significant level of inflammation, which, in the study, was identified during the first two days following vaccination. There is good reason to be alarmed by these findings, as a 2014 study of more than 1.2 million pregnant women found that elevations in CRP were associated with a 43% greater risk of having a child with autism.[162]

Changes to the vaccine schedule initiated in 2004, the CDC began to strongly promote annual to bi-annual influenza vaccines, of which the multi-dose vials still contain thimerosal, for pregnant women,[163] as well as pushing flu shots for all children over six months of age,[164] because the risk of flu complications far outweighs any possible risk from thimerosal in the vaccine.[165] Incidentally, almost 100% of children who dies from the flu die from pneumonia, which conventional medicine present with an overall mortality of 13.7 for CAP.[166]

Accumulating research indicates that influenza vaccines administered during pregnancy can induce an inflammatory response in the mother that can cross the placenta and potentially cause harm to the fetal brain during critical windows of neurodevelopment, including harm associated with autism.

A 2017 study then tied the above two sets of results together, showing an elevated risk of birth defects and autism in the offspring of mothers who received influenza vaccines during pregnancy.[167]

Beyond the 2004 CDC recommendation for pregnant women to get the influenza vaccine, in 2011 it additionally recommended that they also get the aluminum-containing tetanus-diphtheria-acellular pertussis vaccine.[168]

Some concerned researchers issued warnings about such recommendation because of both the short and long-term risks of toxin-induced developmental disruption: "Many of these toxins have immediate and recognizable deleterious effects on the embryo, fetus or neonate, but a few are insidious and leave a legacy of health issues that may emerge in later life."[169]

Thimerosal and autism

From mounting public and political pressure, the CDC began evaluating the possibility of a link between thimerosal and autism. The CDC eventually conducted its own investigation, *which they never published*. However, attorney Robert F. Kennedy Jr. was able to obtain through the Freedom Information Act this unpublished CDC study which reported a dramatic link between thimerosal[19]-containing hepatitis-B vaccines, which was recommended by the CDC to be given within 24 hours of an infant's birth, and several neurological injuries, such as a 7.6 times greater

[19] Thimerosal is a compound that contains the highly toxic ethyl mercury that has been used as a preservative in vaccines since 1931.

risk of developing autism, 5.0 times greater risk for nonorganic sleep disorders and 2.1 greater risk for speech disorders.[170]

Another study prior to 1999 reported that boys vaccinated as neonates had 3 fold greater odds of being diagnosed with autism compared to boys never vaccinated or vaccinated after the first month of life.[171]

At about the same time, the CDC began phasing out thimerosal-containing hepatitis B vaccines that was given to newborn infant without ever coming close to admit that it could have damaged vaccines. However, the CDC maintained the use of thimerosal in adolescents and adults.

The CDC holds an inconsistent discourse. On the one hand, it still pretend that thimerosal is safe, "*There is no evidence of harm caused by the low doses of thimerosal in vaccines, except for minor reactions like redness and swelling at the injection site;"*[172]"there is no link between vaccines and autism," "there is no relationship between thimerosal-containing vaccines and autism rates in children," and "research shows that thimerosal does not cause autism spectrum disorder."[173]

On the other hand, in 1999 it began phasing thimerosal out of many childhood vaccines. By 2001, all the vaccines recommended for children under age 7 were available without thimerosal or with only trace amounts.

It is interesting to note that the idea of removing thimerosal from vaccines was not initiated by industry or health authorities that have the mandate to protect the public, but it came from US Congress which required the FDA to compile within two years "a list of drugs and foods that contain intentionally introduced mercury compounds and [to] provide a quantitative and qualitative analysis of the mercury compounds in the list."[174]

"Eighteen months later, in May 1999, the FDA found that by 6 months of age, infants could receive as much as 75 µg of mercury from three doses of the diphtheria–tetanus–pertussis vaccine, 75 µg from three doses of the *Haemophilus influenzae* type b vaccine, and 37.5 µg from three doses of the hepatitis B vaccine—a total of 187.5 µg of mercury. … On July 9, 1999, after much wrangling, the CDC and AAP decided to exercise the precautionary principle. They asked pharmaceutical companies to remove thimerosal from vaccines as quickly as possible [from pediatric vaccines]."[175]

The association between hepatitis-B triple series vaccines, which contained thimerosal prior to 2000 in the US, and developmental disability in children aged 1–9 years was investigated in a later study, which reported statistically significant evidence to suggest that American boys who were vaccinated with the triple series hepatitis-B vaccine had an approximately *9 times greater odds* of developing developmental disability than the unvaccinated boys, during the time period in which vaccines were manufactured with thimerosal.[176]

This was further confirmed in a case-control study that evaluated the relationship between exposures to thimerosal-containing hepatitis B vaccines administered at specific intervals in the first 6 months among cases diagnosed with specific developmental delays. It was found that an association between increasing exposure to thimerosal-containing childhood vaccines and the subsequent risk of specific developmental delays.[177]

In fact, boys with a higher exposure to thimerosal from vaccines received during infancy had a 2 fold greater odds of developing motor tics and 2.4 fold greater odds of developing phonic tics.[178]

In 2011, the IOM was asked this time to look at four more vaccines, namely, varicella, tetanus, hepatitis-B and measles-mumps-rubella vaccines for the existence of causal relation with 155 conditions reported in the medical literature. The reviewers concluded this time that there were no causal relation to seven conditions, including autism, but that had found causal relation to 14 specific vaccine–adverse event relationships, including anaphylaxis, inclusion body encephalitis, febrile seizures, syncope and deltoid bursitis, transient arthralgia and oculorespiratory syndrome. In the 134 other conditions, they could not determine one way or the other if there was a causal relation, as there had not been studied sufficiently.[179]

Here is a table of these three IOM studies of causal link between certain vaccines and conditions reported in the medical literature:

The three Institute of Medicine studies on possible causal relationship between certain vaccines and certain conditions					
Year of the study	Number of vaccines investigated	Number of conditions investigated	Absence of causal relationships	Causal relationships found	Insufficient evidence for causal relationships
1990	1 (DPT)	22	4 (18%)	6 (27%)	12 (55%)
1994	7	54	4 (7%)	12 (22%)	38 (70%)
2011	4	155	7 (5%)	14 (9%)	134 (87%)

The level of insufficient evidence has increased in time.

It is important to point out that absence of evidence of a causal relation doesn't mean there are none, and that the best way to find is to rely on randomized controlled trials, which *the CDC refuses to conduct*.

This 2011 IOM study didn't find a causal relationship between vaccines and autism.

However, a 2013 study found not only that there was a significant 2 fold increased risk ratio for the incidence of an autism spectrum disorder diagnosis following the thimerosal-containing DTP vaccine in comparison to the thimerosal-free DTP vaccine, but that there was a significant

increase risk if the child had received thimerosal-containing hepatitis B vaccine administered within the first, second, and sixth months of life.[180]

Further, there are over 165 studies that found thimerosal to be harmful. Of these, 16 were conducted to specifically examine the effects of thimerosal on human infants or children with reported outcomes of death, acrodynia,[20] poisoning, allergic reaction, malformations, auto-immune reaction, Well's syndrome, developmental delay and neurodevelopmental disorders, including tics, speech delay, language delay, attention deficit disorder and autism.[181]

Vaccination, autism and health issues in a vaccinated versus unvaccinated population

Let's now examine the CDC current categorical denial about the existence of *any* link between vaccination and autism, as it mentioned on its website, "There is no link between vaccines and autism."[182]

The cause and effects of single event can often be as clear as A causes B, the finger is broken and bleeding after being hit by a hammer. This cause and effects has been clear to millions of parents who had a normally developing child prior to vaccination and within an hour or so following vaccination the child develop a fever and cries through for days and then slumps into absentia. This is the story narrated under oath before a Congressional hearing by the Rick Rollens, "I currently reside in Granite Bay, CA, which is located 30 miles east of Sacramento, with my wife of 23 years, Janna, and my two sons, Matthew, 13, and Russell, 8.

"Thank you for inviting me today to testify. For me this is somewhat of a homecoming, for in 1973 I had the privilege of serving on the Washington staff of former Representative Jerome Waldie of California.

"Following my service in the House, I embarked upon a 23- year career of public service with the California State Senate. Working through the ranks, I was elected by the Members of the Senate to serve as their Secretary of the Senate, until I chose to resign my position in 1996 in order to dedicate myself to the pursuit of effective treatments and a cure for my beloved son, Russell.

"I am here today to share with you the story of my son's case of vaccine-induced autism and to report on the growing autism epidemic in California and the pandemic of autism throughout this country. Russell began his life as a normal, healthy, and robust child, meeting all his age-appropriate milestones. At 7 months old, within 72 hours after receiving his third DPT and first hep B vaccination, Russell developed a high fever and shrieked with a high, wailing scream for days. After these vaccinations, he started losing eye contact, smiling less, losing interest in people, developed constant croup, and was chronically sick. At 7 months old, Russell's life had begun to change along with the lives of all who know and love him.

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[20] Acrodynia is a condition of pain and dusky pink discoloration in the hands and feet most often seen in children chronically exposed to heavy metals, especially mercury

“Within days after his first MMR vaccination, at 18 months, Russell began his final journey into the abyss of what my wife and I now know is autism, losing most of his remaining skills, developing severe sleep irregularities, chronic gastrointestinal problems, and expressing constant pain exhibited by harrowing days of endless crying. Russell was officially diagnosed at 2\1/2\ years old with autism.

“After many months of medical investigation of Russell's condition, including state-of-the-art brain scans, immunological and neurological and genetic workups, we consulted a noted pediatric neurologist who thoroughly examined Russell and reviewed all of Russell's medical history. He advised us that in part Russell's brain dysfunction had very likely occurred as a result of some form of encephalitis resulting in bilateral damage to the temporal lobes of his brain.

“Based on the facts that we have absolutely no family history of autism or any other type of brain disorder in our family, that he was born a normal, healthy child, that there exists a strong temporal relationship between the timing of the DPT vaccination he received at 7 months old and the onset of his autistic condition, his classic DPT vaccine reactions, coupled with the 18-month-old hit from the MMR and subsequent deterioration of his condition, as well as the scientific evidence that one of the many serious adverse effects of DPT vaccine is encephalitis and brain damage, I believe that Russell is a victim of vaccine-induced autism.

“My story is far from unique. Mr. Chairman and members, next week when you return home to your district, talk to your constituents, many of whom are among the growing number of parents who have children with autism. I can assure you that you will hear firsthand accounts from those parents about their normally developing children and the introduction and reaction to a vaccine or multiple vaccines, the timing of their children's regression and vaccination, and the onset of a multitude of other medical conditions and complications that accompany this acquired autistic condition.

“The first rule of medicine is to listen to the patient. A child born today in California will have received his first vaccination between 6 to 8 hours old. By the time that child is 6 months old, he will have received 15 doses of vaccines, and by the age of 5 years old, 33 doses of vaccines.

“Vaccines contain numerous active agents such as live viruses, killed bacteria, and toxic chemicals, including aluminum, mercury, and formaldehyde. Where are the safety studies on the short- or long-term effects of the interaction of these numerous multiple vaccines and their agents on the developing brain and immune systems of our children? Where is the science?

“Many safety studies of individual vaccines only include a few days of follow-up periods for reactions, but the CDC tells parents and the news media that the onset of autism after vaccination could only be ‘an unrelated chance occurrence.’ Dr. Satcher, show me the studies. Show me the science. Is it appropriate to continue to entrust the CDC and the indemnified vaccine manufacturers with the responsibility of guaranteeing parents of this country that these vaccines do not cause autism or other serious brain disorders when these same groups are the most aggressive promoters of vaccine use?

"The situation can easily be likened to charging the tobacco industry to undertake independent scientific studies to find out if there is any relationship between lung cancer and smoking. The science on the safety of vaccines and their relationship to the development of autism is not there. Not there because the pleas of parents have been ignored. I suffered the ultimate betrayal of trust by blindly allowing my child to be injected with a multitude of vaccines, trusting my Government had made sure that my child would not become autistic after his vaccinations.

"Responding to the outcry of parents such as myself, professionals, and educators over the concern of the rapidly increasing number of children with autism and autism spectrum disorders, the California legislature and two Governors of different political parties have responded within the past 12 months by requiring a study on whether autism was increasing in the State, and after finding that there was a huge unexpected increase, appropriated several million dollars for independent research as well as an independent follow-up study into the real factors causing the increase.

"Under the leadership of State Senator, now U.S. Representative Mike Thompson, last year the legislature required the Department of Developmental Services to report on the increase of autism from 1987 through 1998. The report was released earlier this year, and documents a very conservative 273-percent increase in the number of children with autism entering the developmental services system, 1,685 new children last year alone, when incidence projections for that population would have predicted between 105 and 263 new children. The report led the *Los Angeles Times* to declare that the State has an epidemic of autistic children. An epidemic of autistic children? Isn't that an oxymoron? We all know there is no such thing as a genetic disease epidemic. So clearly other factors are involved.

"According to the department, this year from January 6 to July 7, 1,027 new children with autism were added to the system, which means that California alone on average is adding 6 new autistic children a day, 7 days a week, 1 new child every 4 hours. Besides the unmeasurable human costs on the child and the family, the thousands of autistic children already in our system, along with these 1,027 new children, are according to the Department of Developmental Services going to cost the taxpayers of California and the country a minimum of $2 million each for the lifetime of their care.

"Surely any intelligent, thoughtful person with a straight face could not suggest that this huge increase in one of the most easily recognizable of all childhood disorders is all due to genetics, better recognition, or to minor changes in the diagnostic criteria that occurred 10 years after the massive increase in autism had already begun over two decades ago.

"Earlier this year the local and national news media extensively covered the story of the observations by parents in Brick Township, NJ, that there were a lot of kids with autism in their community. In fact, the CDC publicly announced that they had discovered a cluster of autism in Brick. What the CDC found was that the prevalence of autism in Brick was 1 in 150 children; 1 in 150 children represents a prevalence rate 12 times higher than the published prevalence rate.

My family and I live in a community approximately 3,000 miles away from Brick Township, a community that is almost in every way as different from Brick as two communities in America can be. Where we live, our children are served by a single public elementary school district. The prevalence of autism in our elementary school district is 1 in 132 children.

“Mr. Chairman and members, Brick Township, NJ, and Granite Bay, CA, are not clusters of autism, but snapshots of what is occurring everywhere. Numerous parent organizations around the world, including the Autism Research Institute, the National Vaccine Information Center, Families for Early Autism Treatment, Autoimmunity Research Project, Cure Autism Now, and Allergy-Induced Autism are all constantly hearing from scores of parents reporting vaccine-related autism. You will find these children throughout the neighborhoods of your own districts.

“Vaccine policy has always been a cost-benefit proposition. I am here to tell you today that the once numerically rare sacrificial lambs that society has been willing to tolerate for the good of the whole could now very likely before our eyes be turning into herds of casualties of the most precious resource we have, our children and our grandchildren. We must act quickly by investing in good, independent research and science to pursue the truth about the link between vaccines and autism. If we don't discover all the causes, we will never find a cure.[183]

To this presentation by Mr. Rollens Representative Dan Burton added,
“Mr. Rollens, that was a very eloquent statement, and I will just pledge to you personally that we will do everything we possibly can as a committee to find out everything we can. We will ask people from the Surgeon General's office and the Departments of Health to stay. They heard your statement as well, and I will just say to them that this isn't the only hearing we are going to have on this. We are going to be beating on this issue as long as I am chairman of this committee, which hopefully will be for a while.

“So I hope that you folks will do everything you possibly can to help us find a solution to this problem, because not only does Mr. Rollens have an autistic child, I have an autistic grandchild. I also have a granddaughter that almost died from the hepatitis B shot, I believe. So, you know, we have people that have had that problem with hepatitis B and autism, and the chairman of this committee has had both with two grandchildren. So I don't think it is just a coincidence.”[184]

It is factual that no link between vaccination and autism was found in many studies, particularly in the ones that compared *two highly vaccinated groups,* as the potential effect of vaccines in general was thus obscured. However, researchers pointed out that comparisons should obviously be between fully vaccinated and completely unvaccinated children.[185]

Dan Olmsted, an investigative journalist for the *Washington Times*, tried to answer this question on whether the rate of autism was different in an unvaccinated versus a vaccinated US population. He therefore went in 2005 to the Dutch County in Pennsylvania to find out what was the rate of autistic children among the Amish population, which was at the time less vaccinated than the rest of the American population. He found out to his astonishment from the local health

and social service agency personnel in Lancaster that they didn't know of any autistic Amish child.

Olmsted continued his investigation by questioning a local pediatrician who was treating a great proportion of the children in the local Amish community. He directed Olmsted toward a family who had an autistic child. The mother of this child said to the journalist during his visit, "Unfortunately our autistic daughter [Julia]— who's doing very well, she's been diagnosed with very, very severe autism—is adopted from China, and so she would have had all her vaccines in China before we got her, and then she had most of her vaccines given to her in the United States before we got her. So we're probably not the pure case you're looking for."

The mother explained that even though Amish have a religious exemption to vaccinate their children and would not have given it much thought, but, in fact, knew of two other autistic children in the Amish community. She added, "A minority of Amish families do, in fact, vaccinate their children these days, partly at the urging of public health officials. Almost every Amish family I know has had somebody from the health department knock on our door and try to convince us to get vaccines for our children. The younger Amish more and more are getting vaccines. It's a minority of children who vaccinate, but that is changing now. ... One of them, we're very certain it was a vaccine reaction, even though the government would not agree with that. The other one I'm not sure if this child was vaccinated or not."

Olmsted asked the mother why she attributed the above case to vaccines, of which she answered, "There's one family that we know, their daughter had a vaccine reaction and is now autistic. She was walking and functioning and a happy bright child, and 24 hours after she had her vaccine, her legs went limp and she had a typical high-pitched scream. They called the doctor and the doctor said it was fine—a lot of high-pitched screaming goes along with it. She completely quit speaking. She completely quit making eye contact with people. She went in her own world."

She explained that it happened around the age of 15 months and she is now about 8. Similarly, her daughter was given all her vaccines in one day when she was about 15 months old. The mother reported that pictures of her adopted daughter Julia "before she was vaccinated showed a smiling alert child looking squarely at the camera." The mother pointed out that autism "is so much more rare among our people. My husband just said last week that so far we've never met a family that lives a healthy lifestyle and does not vaccinate their children that has an autistic child. We haven't come across one yet. ... Everywhere I go (outside the Amish community) I find children who are autistic, just because I have an autistic daughter—in the grocery store, in the park, wherever I go. In the Amish community, I simply don't find that."[186]

Olmsted pursued his investigation by questioning Frank Noonan who had been practicing as a family doctor in Lancaster County for nearly 25 years and whose practice consisted about of one third Amish, which was one of the largest practices serving the Amish population in the county. Noonan reported not having seen a single Amish with autism. Olmsted added, "From 2000 to 2003, Noonan also saw patients at the Wellness Center, which is operated by the Amish and

Mennonites. About 90 percent of those patients are Amish, Noonan said, and he saw thousands of them. But still he saw no autism: 'Absolutely none, in the almost three years I was there. We would have seen it. It's not something they would hide. They're not like that.' "[187]

Olmsted tried various ways to find gaps in Noonan's account, "Perhaps autistic Amish children were seeing pediatricians or specialists as opposed to family doctors," to which Noonan responded, "The Amish don't go to specialists like we do. The Amish go to family docs for all their pediatric care. So at least in Lancaster County, where I practice, almost all pediatrics among the Amish is done by family docs. You'll find all the other stuff, but we don't find the autism. We're right in the heart of Amish country and seeing none. And that's just the way it is."

Olmsted pointed out, "This interview [with Noonan] was a tipping point between absence-of-evidence (not finding many autistic Amish) and evidence-of-absence (finding there might not be many). The case is still open, but does anyone disagree that Dr. Noonan makes a compelling witness?"

As the prevalence of autism among children was in 2005 considered to be 1 in every 166 children born in the United States, and by applying this model to the 22,000 Amish community of Lancaster County, Olmsted should have found closed to 130 Amish persons with autism spectrum disorder. Olmsted wrote that if he would eliminate from his calculations all the milder cases that could have possibly escaped scrutiny, he should at the very least have found upward of 50 Amish people of all ages living in Lancaster County with full-syndrome autism, but this was negative.[188]

Olmsted went on to investigate another large group of unvaccinated American children that were cared for by Homefirst Health Services in the Chicago metropolitan area. He found out that the several thousand children from this community had at least two things in common with thousands of Amish children in rural Lancaster: "They have never been vaccinated. And they don't have autism."

Mayer Eisenstein, the medical director of Homefirst Health Services that he founded in 1973, said, "We have a fairly large practice. We have about 30,000 or 35,000 children that we've taken care of over the years, and I don't think we have a single case of autism in children delivered by us who never received vaccines. Homefirst doctors have helped to deliver more than 15,000 babies at home, and thousands of them have never been vaccinated."

"The few autistic children that Homefirst recognized having among its clientele had been vaccinated before their families join their services. Eisenstein added that the only autistic children he has seen had come to their practice had been vaccinated prior to joining their services."[189]

Olmsted remarked, "[Homefirst families] tend to be better educated, follow healthier diets and breastfeed their children much longer than the norm—half of Homefirst's mothers are still breastfeeding at two years. Also, because Homefirst relies less on prescription drugs including

antibiotics as a first line of treatment, these children have less exposure to other medicines, not just vaccines."[190]

Paul Schattauer, who had been a physician with Homefirst for 20 years and had treated "at least" 100 children a week, reported that Homefirst's children had significantly less asthma and juvenile diabetes compared to national rates. Schattauer said, "Sometimes you feel frustrated because you feel like you've got a pretty big secret." He suggested that research should be conducted on all these disorders, independent of political or business pressures.

The asthma rate among Homefirst patients was so low that it was noticed by the Blue Cross group with which Homefirst was affiliated, according to Eisenstein. He said, "In the alternative-medicine network which Homefirst is part of, there are virtually no cases of childhood asthma, in contrast to the overall Blue Cross rate of childhood asthma which is approximately 10 percent. At first I thought it was because they (Homefirst's children) were breast-fed, but even among the breast-fed we've had asthma. We have virtually no asthma if you're breast-fed and not vaccinated."

Because asthma diagnosis can be traced on emergency-room visits and hospital admissions, Eisenstein said, "Homefirst's low rate is hard to dispute. It's quantifiable—the definition is not reliant on the doctor's perception of asthma."

Olmsted reported the clinical experience of another pediatrician who served a home-school community, "Earlier this year Florida pediatrician Dr. Jeff Bradstreet said there is virtually no autism in home-schooling families who decline to vaccinate for religious reasons—lending credence to Eisenstein's observations. But where is the simple, straightforward study of autism in never-vaccinated U.S. children? Based on our admittedly anecdotal and limited reporting among the Amish, the home-schooled and now Chicago's Homefirst, that may prove to be a significant omission."[191]

Olmstead had not uncovered what was unknown to science, as there are actually a substantial number of studies comparing vaccinated versus unvaccinated children, and one which took account of breastfeeding history.

In 1992 the Immunisation Awareness Society of New Zealand (IAS) conducted a survey on the health and vaccination status of New Zealand children. The questionnaires were distributed through IAS members and member's friends and associates. "Respondents were asked to provide the year of birth, gender, vaccinations received, whether or not the child suffered from a range of chronic conditions (asthma, eczema, ear infections/glue ear, recurring tonsillitis, hyperactivity, diabetes and epilepsy) whether or not he or she had needed grommets [ear tubes], had had a tonsillectomy, or were slow to develop motor skills (walking, crawling, sitting-up, etc.). Parents also provided information on breastfeeding and bottle-feeding and when the child was weaned if breastfed. … Eighty-one families had both vaccinated and unvaccinated children. The vast majority of these were two child families in which the elder child was vaccinated and the younger unvaccinated. There were also a large number of three and four

child families in which the youngest child was unvaccinated and the older siblings were vaccinated."

It is interesting to note that in this 1992 survey there were no specific questions about autism or neurodevelopment disorders. A total of 245 surveys were returned, representing 245 families, with a total of 495 children surveyed. There were 226 vaccinated children and 269 unvaccinated children.

There was only a marginal difference in terms of breastfeeding history in vaccinated versus unvaccinated children. However, "the survey results showed that there was a significant difference in the incidence of asthma, eczema, and ear infections in vaccinated and unvaccinated children. While overall the incidence of grommets, tonsillitis, tonsillectomies, apnea and hyperactivity were lower the trend is similar. Note the ten-fold increase in tonsillitis in vaccinated children and the complete lack of tonsillectomies in unvaccinated children."

The difference of incidence of the following illness was remarkable in the vaccinated versus the unvaccinated children: asthma 15.04 vs. 2.97%, eczema 27.88 vs. 12.64%, otitis media 24.78 vs. 5.95%, ear tubes 6.19 vs. 0.74%, tonsillitis 11.50 vs. 1.12%, tonsillectomy 5.31 vs. 0% and hyperactivity 5.75 vs. 1.49%.

In the vaccinated, 73% of the cases of tonsillitis and 92% of the tonsillectomies were in children who had received the measles vaccines, while only 52% of the total vaccinated children received the measles vaccine. "The higher rate of tonsillitis and tonsillectomy in recipients of the measles vaccine suggests that the vaccine made some children more susceptible to tonsillitis."[192]

This data corresponds to the one of two recent studies that compared the health status of vaccinated versus unvaccinated children in the US. Preterm babies receive the same doses of the recommended vaccines and on the same schedule as term babies. It is known that about 8% to 27% of extremely preterm infants develop symptoms of autism spectrum disorder, but the reason for such an extremely high rate is not well understood. In two studies, whose outcome greatly questioned the safety of established vaccination practices for preterm infants, the birth history and health outcomes of vaccinated and unvaccinated homeschooled children 6 to 12 years of age was compared.

No association was found between preterm birth and neurodevelopmental disorders (NDD), which include learning disabilities, attention deficit hyperactivity disorders and autism spectrum disorders in the absence of vaccination, *but vaccination was significantly associated with NDD in children born at term*, that is 3.7 greater odds. Further, vaccination coupled with preterm birth was associated with increasing odds of NDD, ranging from 5.4 compared to vaccinated but non-preterm children, to 14.5 for children who were neither preterm nor vaccinated.[193]

The vaccinated children were less likely than the unvaccinated ones to have been diagnosed with chickenpox and pertussis, but were more likely to be diagnosed with many co-morbid

features, such as allergic rhinitis (OR[21]: 30.1), other allergies (OR: 3.9), eczema (OR: 2.9), learning disability (OR: 5.2), ADHD (OR: 4.2), autism spectrum disorders (OR: 4.3), pneumonia (OR: 5.9), otitis media (OR: 3.8) and myringotomy with tube placement (OR: 8.1). Further, vaccinated children had a 2.4 fold greater odds of having been diagnosed with a chronic illness compared to unvaccinated children. The vaccinated children also were significantly more likely to use medications, to have visited a doctor when sick, had higher rates of outpatient visits and emergency department encounters and hospital stay than age-appropriately "undervaccinated" children. It is interesting to note that the partially vaccinated children had an intermediate position in terms of allergic rhinitis, ADHD, eczema, and learning disability.[194,195]

Anthony Mawson, one of the authors of these studies, concluded, "Although measles is generally a mild and short-lived disease, autism is chronic and seriously disabling. Considering that rates of autism among boys are currently 3.63% compared with 0.0005% (that is, 1 in 2000) only 50 years ago, the importance of continuing to investigate the association between the MMR vaccine (and other vaccines) and autism cannot be overemphasized—not just as a public health problem but as a national emergency."[196]

Measles vaccine was introduced in the US in 1963 in part to prevent subacute sclerosing panencephalitis (SSPE) that can occur as a very slow viral re-infection weeks and months after measles infection. It was estimated that the risk of developing SSPE was in the pre-vaccination era was 8.5 per million cases of measles,[197] but it is known that some cases of SSPE begin within months after measles vaccination and without ever contracting measles or having had any contact with someone with measles[198] and now we have 1 in 33 children with autism that has been demonstrated to be a form of encephalitis.[199]

The ubiquitous use and dangers of acetaminophen

Many questions are left unanswered regarding the short and long-term adverse effects of vaccination, including epigenetics, oncogenesis and their effects on the offspring of vaccinees.[200] To give an idea on how careful society has to be in introducing vaccination because of its potential long-term detrimental effect on health of succeeding generations, recent researches have showed that mothers who have taken acetaminophen or ibuprofen during pregnancy, even for just one day, can lead to infertility in their offspring.[201,202]

The use of acetaminophen during pregnancy is also associated with teratogenic defects in testicular function and the gastrointestinal tract, and there is increased incidence of asthma in maternally exposed and postnatally exposed children.[203]

Acetaminophen ranks at the top of the list of medications taken prenatally, as pregnant women have easy access to this over-the-counter medication, which in any case is generally recommended by physicians to treat fever and pain in and out of pregnancy. "Insights on an increased risk for pregnancy complications such as miscarriage, stillbirth, preterm birth or fetal

[21] An OR or odds ratio of 30 means that the probability for having allergic rhinitis is thirty times more likely to occur in the vaccinated than in the unvaccinated group.

malformations upon acetaminophen exposure are rather ambiguous. However, emerging evidence arising from human trials clearly reveals a significant correlation between acetaminophen use during pregnancy and an increased risk for the development of asthma in children later in life."[204]

In a Spanish study, prenatal acetaminophen exposure was associated with a greater number of autism spectrum symptoms in males and showed adverse effects on attention-related outcomes for both genders. "These associations seem to be dependent on the frequency of exposure."[205] Similarly, maternal use of acetaminophen in pregnancy was associated with ASD with hyperkinetic symptoms only, suggesting that acetaminophen exposure during the early phase of fetal life may specifically impact this hyperactive behavioral phenotype.[206]

The wide range of factors associated with the induction of autism is invariably linked with either inflammation or oxidative stress. "The use of acetaminophen in babies and young children may be much more strongly associated with autism than its use during pregnancy, perhaps because of well-known deficiencies in the metabolic breakdown of pharmaceuticals during early development. Thus, one explanation for the increased prevalence of autism is that increased exposure to acetaminophen, exacerbated by inflammation and oxidative stress, is neurotoxic in babies and small children. This view mandates extreme urgency in probing the long-term effects of acetaminophen use in babies and the possibility that many cases of infantile autism may actually be induced by acetaminophen exposure shortly after birth."[207]

Acetaminophen use after measles-mumps-rubella vaccination was significantly associated with autistic disorder when considering children 5 years of age or less (OR 6.11) and when considering only children who had post-vaccination sequelae (OR 8.23). Children who used acetaminophen at age 12 to 18 months were more than eight times as likely to be in the autism disorder group when all children were considered.[208]

Activation of liver macrophages by acetaminophen metabolites have been shown to activate cytokines and alter innate immunity in liver injury.[209]

Acetaminophen and the potential consequences of fever suppression

Acetaminophen has become one of the most popular OTC non-narcotic analgesic agents, which is used to treat pain and fever. For example, this compound has been taken at least once by more than 85% of children under the age of 91 months in the UK. In the US, approximately 79% of the general population *regularly* takes acetaminophen, including more than 35% of pregnant women.[210]

Unlike thalidomide, which was once promoted for its extreme safety prior to the discovery of its teratogenicity, acetaminophen has a long history of having serious side effects associated with its use, including immunosuppressive effects, neurotoxicity, hepatotoxicity and teratogenic effects.[211]

Acetominophen is converted to the very toxic metabolite *N*-acetyl-*p*- benzoquinone imine, which can cause oxidative damage to proteins, nucleic acids, amino acids, and lipids, in addition to increased mitochondrial and cellular damage and death.[212]

Acetaminophen replaced aspirin after its ban in 1986 in children with viral infection. With a capture-recapture method, researchers found that 39 children developed SSPE between 2003-2009 in Germany with a calculated risk for children who contracted measles infection below 5 years of age to develop SSPE was between 1:1700 to 1:3300, 303 to 588 cases per million cases of measles in the post-vaccinal era, which is 36 to 69 times greater than in the pre-vaccinal era.[213]

In a more recent study, it was reported that among measles cases reported to health authorities in California in the post-vaccinal era, that is between 1988 and 1991, the incidence of SSPE was 1:2700 for children younger than 5 years, and 1:1200 for children younger than 12 months at the time of the measles infection, which represent 370-833 cases per million cases of measles, as if there was an immunosuppressive component that favors the persistence of the measles infection. This increase of 100 times greater incidence of SSPE in the post-vaccinal era indicates that children who develop measles today are more susceptible to SSPE. All the children who developed SSPE were known to have developed a measles-like illness before 15 months old (the age for recommended measles vaccine is after 12 months-old.[214]

In the above studies, treatment received by these children at the time of the measles infection is not reported. About 90% of cases of children who developed Reye's syndrome, which is another type of encephalopathy, had been treated with aspirin during a viral infection. After the prohibition of aspirin in children with viral infection the rate of the syndrome decreased by 90%.[215]

Retrospective reevaluation of patients with a diagnosis of Reye's syndrome who survived has revealed that many, if not most, had an underlying inborn error of metabolism, which may have them be more susceptible to antipyretics.[216]

No record could be found how many children who developed SSPE had taken acetaminophen to suppress their fever, as there is a relation between encephalopathy and acetaminophen as children given acetaminophen after the MMR vaccine were significantly more likely to become autistic than children given ibuprofen.[217] "Compared to controls, children ages 1-5 years with autism were eight times more likely to have gotten sick after the MMR vaccine, and were six times more likely to have taken acetaminophen. Children with autism who regressed in development were four times more likely to have taken acetaminophen after the vaccine. Illnesses concurrent with the MMR vaccine were nine times more likely in autistic children when all cases were considered, and 17 times more likely after limiting cases to children who regressed."[218]

A point of interest is that SSPE virus differs from the wild measles virus, as the intact measles virus doesn't have the ability to spread within the brain.[219] Researchers of SSPE stated, "The

exact factors and influences that allow the measles infection to persist are unclear, but may include several immunological factors," and pointing out defects in components of innate immunity, including Toll- like receptors[22] and cytokines.[220]

It is interesting to note that Toll-like receptors are implicated in acetaminophen-mediated hepatotoxicity.[221] Acetaminophen is also associated with the activation of the innate immune response in the liver during APAP toxicity with the induction of collateral tissue damage versus repair mechanisms associated with pro- as well as anti-inflammatory cytokines and chemokines at different stages during inflammation and resolution of inflammation.[222]

Further research is needed to study of the full effect of the suppression of fever and the complications reported following infection in children, as fever is known to be a beneficial adaptive mechanism during all types of infection and all evidence points that its suppression tends to be detrimental.[223]

The dangers associated with the use of antipyretic drugs

Despite the large body of evidence suggesting a beneficial role of fever in the host response, antipyretic therapy is commonly employed for febrile critically ill patients.

More recently, evidence suggesting a beneficial effect of fever and detrimental effect of antipyretics in various infectious diseases has been described.

In support of the potential detrimental effect of lowering temperature, a laboratory study involving 432 strains of bacteria and 17 antimicrobials demonstrated that virtually all bacterial strains exhibited increasing antimicrobial susceptibility with increasing temperature within the physiological febrile range. Some strains of bacteria reduce their replication rate as temperature rises and even die at temperatures within the physiological febrile range.[224]

In animals the suppression of fever with antipyretics has been shown to increase mortality in viral,[225] bacterial,[226] and parasitic infections[227] and in humans.[228]

Antipyretic drugs have been shown to increase the duration of chickenpox illness[229] and malarial parasitemia[230] and augment rhinovirus shedding,[231,232] as well as inhibit antibody responses.[233,234] Furthermore, a recent randomized controlled trial demonstrated a trend towards increased mortality in critically ill patients assigned to the 'aggressive' treatment of fever with paracetamol.[235]

Overall, fever suppression increases the expected number of influenza cases and deaths in the US: for pandemic influenza with reproduction number R 1:8, the estimated increase is 1% (95% CI: 0.0–2.7%), whereas for seasonal influenza with R 1:2, the estimated increase is 5% (95% CI: 0.2–12.1%).

[22] Toll-like receptors are a class of proteins that play a key role in the innate immune system and are involved in the inflammatory response to endotoxin.

Approximately 41,400 (95% CI: 27,100-55,700) deaths per year are attributed to seasonal influenza epidemics in the United States. It has been *conservatively* estimated that at least 700 deaths per year and many more serious illnesses could be prevented in the US alone by avoiding antipyretic medication for the treatment of influenza.[236]

Routine antipyretic therapy in children with infectious diseases has long been a source of controversy. Each year, in addition to antimalarial medication, millions of children with Plasmodium falciparum malaria receive paracetamol to reduce fever. However, the usefulness of this practice has never been proven.[237]

It was experimentally found that sheep with septic shock that are let to develop a high fever had higher levels of heat shock protein, lower blood lactate and better respiratory function and lived longer. Antipyretic interventions, including acetaminophen and external cooling, were associated with lower circulating heat shock protein levels.[238]

Acetaminophen has a direct neurotoxic effect both in vivo and in vitro in rats at doses below those required to produce hepatotoxicity.[239]

Chickens given antipyretic treatment had an increased hematogenous spread of the influenza virus to the CNS. The chicks inoculated with the virus without antipyretic treatment developed no lesions and showed no antigen in the CNS.[240]

There was a twofold increase risk of mortality with aspirin treatment in animal models infected with Streptococcus pneumoniae.[241]

A systematic review and meta-analysis have shown that there is an increased mortality rate of between 1.5 and 1.8-fold in animals treated with antipyretics during infection with influenza A or B.[242]

In vitro studies were also undertaken which demonstrated that both aspirin and acetaminophen caused a dose-dependent reduction in interferon-induced antiviral responses, and when exposing young mice to these antipyretics results in transient increases in viral virulence with increases in mortality.[243]

Temperature elevation is also associated with a wide range of immunological effects relevant to the host defense against viral infections. These include a greater proliferative response of lymphocytes, and increased production and activity of cytokines such as interferon. Most naturally occurring influenza A strains that infect humans are temperature-sensitive, with inhibition of replication at high temperatures within the physiological range of 38– 41°C.[244]

Research suggests that the most virulent strains of virus are those that are most liable to thrive with antipyretic use, as the high shut-off temperature may not be reached or sustained when antipyretics are used and thus the virus can replicate without temperature-induced inhibition.[245]

Observational studies in humans have shown a positive correlation between febrile temperature during bacteraemia and survival, and hypothermia as a manifestation of sepsis is a negative predictor of outcome.[246]

Treatment with NSAIDs or acetaminophen significantly increased 28-day mortality for septic patients (adjusted odds ratio: NSAIDs: 2.61, P = 0.028, acetaminophen: 2.05, P = 0.01), but application of physical cooling was not associate with mortality in either group.[247]

In a RCT, the use of aspirin and acetaminophen was found to be associated with a significant suppression of serum neutralizing antibody response, and longer duration of virus shedding and increased turbinate edema, nasal obstruction and nasal symptoms and signs.[248]

This reduction in antibody response was also found in children with or without fever who had taken acetaminophen after vaccination. [249]

The use of antipyretic treatment in influenza patients has been suspected to enhance the risk of developing encephalitis, especially in Reye's syndrome. By limiting the use of aspirin in influenza patients resulted in a sharp decline of Reye's syndrome in the US.

In studies involving experimental infections in humans with both influenza A and Shigella sonnei, subjects treated with antipyretic agents were ill significantly longer than those not receiving antipyretics. There was a highly statistically significant positive correlation between the number of doses of antipyretic agents received and the duration of the illness ($p<0.001$). Influenza A-infected subjects who received antipyretic agents during their illness were sick, on average, 3.5 days longer than those not receiving antipyretic agents. Shigella sonnei-infected subjects also exhibited a striking prolongation of illness in association with antipyretic therapy of 2.7 days.[250]

The 1997 to 2001 influenza A epidemics in Japan were markedly neurovirulent, and many children died of influenza-associated encephalitis. 16 of the 20 patients with influenza-associated encephalitis had used antipyretic drugs before the onset of encephalopathy. All five who died and 6 of the eight who had neurological sequelae had been treated with antipyretics.[251]

The use of NSAID in critically ill patients during the 2009 H1N1 influenza epidemic was associated at a 95% confidence level with an increased mortality risk of 2-folds in adults and 4-folds in children.[252]

In a RCT with critically ill patients in ICU, there were seven deaths out of 44 patients in the group treated aggressively to lower febrile temperature with antipyretic drugs and only one death out of 38 patients in the group that were allowed to remain febrile (p 0.06). The study was stopped after the first interim analysis due to the mortality difference. The authors of this study surprisingly wrote, “There was a seemingly paradoxical decrease in systemic inflammatory response syndrome score in the permissive group. This may indicate the body’s ability to respond to an inflammatory state while being stimulated by the febrile response.”[253]

In a RCT with 50 children with malaria were treated with intravenous quinine and either mechanical antipyresis alone, or in combination with acetaminophen. Parasite clearance time was significantly prolonged in patients who received acetaminophen with a difference of 16 h (8–24 h; p=0·004).[254]

The use of acetaminophen was found not to alleviate the symptoms of chicken pox in children, but in fact it prolonged viral shredding and illness time.[255]

Respected physicians consider that the connection of acetaminophen with asthma has been proven beyond a reasonable doubt. McBride, a professor of pediatrics, wrote, “There remains a possibility that confounding variables might explain some or all of the association between acetaminophen and asthma. For this reason we need further studies. At present, however, I need further studies not to prove that acetaminophen is dangerous but, rather, to prove that it is safe. Until such evidence is forthcoming, I will recommend avoidance of acetaminophen by all children with asthma or those at risk for asthma and will work to make patients, parents, and primary care providers aware of the possibility that acetaminophen is detrimental to children with asthma.”[256]

In a New Zealand birth cohort study with prospective follow up, children of mothers who used acetaminophen during pregnancy had a 2 fold increased risk of having symptoms of ADHD.[257]

One study showed that the use of the analgesic and antipyretic ibuprofen in febrile children younger than 2 years is associated with a risk of gastrointestinal bleeding requiring hospitalization of about 221 per 100,000 users of ibuprophen, which is 22/10,000 per year.[258]

A causal relationship was found in a case series analysis between maternal acetaminophen intake and fetal ductus arteriosus constriction or closure.[259]

Could the use of antipyretic drugs in conjunction with vaccines be a cause of autism?
A topic that is rarely addressed in association with autism is the therapies that are given *in conjunction with vaccines*.

Neonatal exposure to acetaminophen was found to be a developmental neurotoxic agent, which can induce long-lasting effects on cognitive function and alter the adult response to acetaminophen in mice.[260]

Acetaminophen has been postulated to cause a diverse range of embryo–fetal and neonatal adverse effects, dependent on dose, duration of treatment and the trimester of exposure.[261]

Mice exposed to acetaminophen prenatally corresponding to the beginning of the third trimester of pregnancy and the time around birth in humans, were found to have abnormal adult behavior and cognitive function problems.[262]

Similarly, children exposed prenatally to acetaminophen in the second and third trimesters are at increased risk of multiple behavioral difficulties, including hyperactivity and conduct problems.[263]

Maternal acetaminophen use during pregnancy was to be associated with a higher risk of receiving a hospital diagnosis for ADHD behaviors in their children.[264]

Children exposed to long-term use of paracetamol during pregnancy had substantially adverse developmental outcomes at 3 years of age.[265]

An analysis of nine other studies pointed to an increased risk of adverse neurodevelopmental outcomes following prenatal acetaminophen exposure. [266]

A recent systematic review also suggested an association between prenatal exposure to acetaminophen and an increased risk of neurodevelopmental disorders. [267]

Autism and acetaminophen

Prenatal use of acetaminophen was strongly correlated with autism prevalence using all available US country and state-level data for the period 1984 to 2005. “Like all ecological analyses, these data cannot provide strong evidence of causality.” However, biologic plausibility is provided by a growing body of experimental and clinical evidence linking acetaminophen metabolism to pathways shown to be important in autism and related developmental abnormalities. The author concluded, “Taken together, these ecological findings and mechanistic evidence suggest the need for formal study of the role of acetaminophen in autism.”[268]

Compared with controls, children aged 1–5 years with autism were eight times more likely to have become unwell after the MMR vaccine, and were six times more likely to have taken acetaminophen.[269]

Compared to controls, acetaminophen use after MMR vaccination in children with autism was more than six times as likely for children 5 years old or less, nearly four times as likely in children who had a regression in development and more than eight times as likely when looking only at children who had post-vaccination sequelae.[270]

The highest estimate of the total incidence of autism in Cuba in 2012 was 185 cases out of a total population of 11 million or 0.00168%, compared with an estimate of as high as 1.5 million cases for a US population of 300 million (0.50%). The percentage of the population with autism in the United States is thus 298 times higher in the than in Cuba. The standards of living may approximately be eight times lower in Cuba than that in the US, basic healthcare is readily available throughout Cuba.

Unlike the United States, where vaccines are optional in many states, vaccines are compulsory in Cuba and Cuba has one of the most highly vaccinated populations in the world against a wide variety of infectious agents.8 For example, the vaccination rate for measles was reported to be 99.7%.

However in Cuba, acetaminophen is not approved as an over-the-counter product (OCT), while it has been available as an OTC product since 1959 in the United States.

The practice of prescribing acetaminophen as a prophylactic fever preventative is widespread in the United States but is very uncommon in Cuba. Some physicians even advise parents to begin to take acetaminophen prophylactically daily 5 days prior to childhood vaccines. “Some children on such prophylactic treatment had an autistic regression that began prior to vaccination.”[271]

More recently, prenatal acetaminophen use was reported to be associated with asthma, lower performance IQ, shorter male infant anogenital distance (predicting poor male reproductive potential), autism spectrum disorder, neurodevelopmental problems (gross motor development, communication), attention-deficit/hyperactivity disorder, poorer attention and executive function, and behavioral problems in childhood.[272]

NIH researchers pointed out that both asthma and autism had a similar rise in the number of cases since approximately 1980 and in both disorders these have been repeatedly referred to as “epidemics.[273]

In disease prevalence curves of both autism and asthma in the US, the sharp rise in cases began in approximately 1980. In the period from 1980 to 1990 there were two slight downturns in the slope of the curves, after 1982 and after 1986. Both curves continue markedly upward after 1988 into the 1990s.[274]

In addition, there are similar slight downturns in slopes of the curves at the same times from independent and geographically disparate studies in both asthma and autism including; hospitalizations, autism cases in Minnesota, autism in north-east London, and autism in an urban area in Sweden.[275]

Four significant events related to acetaminophen use occurred between 1980 and 1990. The first was the CDC caution in 1980 concerning the relationship of aspirin to the risk of Reyes Syndrome which was followed by a public and professional warning by the US Surgeon General regarding a possible Reyes Syndrome-aspirin association. These cautions against the use of aspirin as a fever reducer in children were largely responsible for the replacement of aspirin by acetaminophen as a pediatric antipyretic.[276]

In 1982 and again in 1986 there were product tampering cases where acetaminophen tablets were laced with cyanide resulting in eight deaths. Acetaminophen sales collapsed after each tampering event, but recovered in less than a year in each case. These dates roughly correspond to the slight downturns in asthma and autism cases mentioned above.[277]

In a large multinational study, acetaminophen use in the first year of life has been strongly associated with an increased risk of asthma, rhinoconjuctivitis, and ezcema in children aged 6-7 years and was found to be dose dependent.[278]

Moreover, increased risk of asthma due to acetaminophen use in late pregnancy has also been show.[279]

The strong epidemiological evidence that acetaminophen use in late pregnancy and/or in the first year of life increases the risk of subsequently acquiring childhood asthma. Autism and related allergic disorders may be due to direct effects on immunological pathways or secondary effects such as through alterations in blood serotonin, glutathione, or transsulfuration. Fever has been shown to have a modifying effect on behaviors in autism, and acetaminophen is widely used to treat childhood fever as well as symptoms associated with childhood infections and childhood vaccines.[280]

Researchers suggested that the associative increased risk for asthma and autism in acetaminophen users may be expression of the same genetic susceptibility.[281]

A more recent review questioned the use of acetaminophen during pregnancy because the greater risk of autism, asthma and allergies in the offspring.[282]

Importantly, acetaminophen use after MMR vaccination has recently been associated with autism in a small case controlled study.[283]

Acetaminophen use at age 12–18 months increased the odds of autism in a sample studied by more than eight times, and by more than 20 times when considering only children who experienced normal development followed by a regression in development.[284]

In conclusion, it “appears that the marked increase in the rate of autism, asthma, and attention deficit with hyperactivity throughout much of the world may be largely caused by the marked increase in the use of acetaminophen in genetically and/or metabolically susceptible children, and the use of acetaminophen by pregnant women.[285]

Ingredients found in vaccines

Many components of vaccines can potentially act as immune disruptors, depending of course of the susceptibility of the host. Vaccines are made up of long list of ingredients to the point that a physician who had administered vaccines for decades admitted that he knew and doubted that any one of his colleagues would know what they were injecting in their patients,[286] which only a fraction will be mentioned here, as there are so many, such as live attenuated or inactivated microorganisms or their antigenic components; aluminum-based adjuvants, oil-in-water emulsions, propriety MF59 and squalene-based adjuvants; preservatives and inactivating ingredients, such as thimerosal, formaldehyde, glutaraldehyde, acetone, phenol, 2-phenoxyethanol; antibiotics, such as neomycin, polymyxin B, streptomycin, kanamycin, gentamicin, chlortetracycline, amphotericin B; stabilizers such as monosodium glutamate, egg or yeast proteins glycerol, hydrolyzed casein, lactose, chick protein, bovine serum albumin, fetal bovine serum, porcine gelatin, human fetal tissues, human albumin, polygeline; recombinant

proteins, such as baculovirus and *Spodoptera frugiperda* cell proteins; emulsifiers, such as octoxynol-10; DNA, including fragments from porcine circoviruses 1 and 2; tissue culture media, such as Dulbecco's Modified Eagle Medium; haptens and toxoid carrier proteins to increase immunogenicity, such as CMR197; buffers, such trometamol; emulsifiers and surfactants, such as castor oil, mannide-mono-oleate, polysorbate 20 and 80; dyes, such as FD&C Yellow #6 aluminum lake dye, erythrosine FD+C red 3; solid-dispersion formulations to enhance the solubility such as plasdone C; and the list goes on.[287,288]

Further, when vaccines were recently examined with electron-microscopy many undeclared inorganic contaminants were found, including titanium, lead, stainless steel, tungsten, gold, silver, zirconium, strontium, hafnium, bismuth, cerium and nickel, which were present in single particles, clusters of particles or aggregates of organic-inorganic compounds. Investigators pointed out that the unduly presence of these contaminants was “inexplicable,” and that the link between some of these aggregates “can generate an unfolding of the proteins that can induce an autoimmune effect once those proteins are injected into humans. … Similar aggregates were already described by other scientists who identified them in the blood, e.g. in leukemic patients and in subjects affected by cryoglobulinemia.”[289]

Moreover, contaminants could include unwanted microorganisms or their parts and organic compounds of animal or human origin, since vaccine preparation involves the use of materials of biological origin, including monkey and human fetal tissues. The fact that viral vaccines are produced in biological systems makes them vulnerable to microbial contamination. The extremely high number of known and unknown viruses and their constant evolution represents a challenge to make vaccine free of unwanted virus or their parts.[290]

For instance, 29 vaccines intended for human use were tested for the presence of pestiviruses[23] or their RNA. In 5 or 13.1% of these tested samples were positive for pestivirus RNA.[291]

Furthermore, those unwanted microbial agents and their remnants that can be present in vaccines present a major difficulty, as they can only be detected as extraneous agents in vaccines if one was precisely searching for them as in the above study. The number of known bacterial species is nowadays estimated at roughly 5,000, but the real number could exceed 50,000, thus making the percentage of known bacterial species less than 10%. The number of identified viral species reaches approximately 2,300, but the real number could well exceed 150,000, aside from considering the fact that viruses are constantly evolving. Vaccines can therefore carry a large deal of unknowns in terms of microbial contamination. The number of virus strains that may contaminate materials of animal origin is very high. As a matter of fact, the development of new molecular techniques for virus testing has resulted in the discovery of new or known contaminants in vaccines that had been marketed for considerable periods of time.[292]

For instance, there have been at least four licensed vaccines, in which adventitious agents of viral origin were discovered, which mandated their removal from the market: in 1961, it was

[23] Pestiviruses are viruses that infect and debilitate livestock animals like pigs, cattle and sheep.

discovered that both the attenuated and inactivated poliomyelitis vaccines had been contaminated with simian virus 40, a polyomavirus,[24] from monkeys; in 1973, live bacterial viruses (bacteriophages) were found in four live-virus vaccines on the market, namely the measles, mumps, rubella and polio vaccines;[293] in 1995, reverse transcriptase activity from avian virus was found in the marketed measles-mumps-rubella vaccine; and in 2010, a porcine circovirus and its DNA sequences were found in rotavirus vaccines (to prevent diarrhea in babies).[294] Similar types of microbial contamination are also found in animal vaccines, like the presence of the bluetongue virus in commercial vaccines for cattle and sheep.[295]

Further most vaccines made to protect against viral diseases use human fetal tissues for the propagation of viruses such as the adenovirus, chickenpox, hepatitis A and B, measles, mumps, rubella, smallpox and polio viruses, and are also use in the making of diphtheria-pertussis-tetanus, haemophilus influenzae type B, shingles and rabies vaccines,[296] which raises ethical questions.

However, each and every of the above-mentioned vaccine ingredients could potentially cause harm and most of their combinations have never been investigated. Adjuvants added to vaccines are thought to be one of the main potential culprits to harm recipients. Adjuvants have been used in human vaccines for close to 90 years and are added to vaccines to enhance their immunogenicity by inducing an inflammatory response and by potentiating the immune responses to antigens.[297] It is likely that these adjuvants induce unwanted immune processes in the recipient and thus triggering the onset of immune-mediated disease in susceptible individuals.[298]

Aluminum toxicity

Aluminum adjuvants are added to vaccine to create a strong immune response, which in fact turns out to be an acute exposure to aluminum[299] that is viewed as concerning by Christopher Exley, one of the world specialists on the effect of aluminum in biological systems.[300] Aluminum is the most commonly used vaccine adjuvant and until recently the only one licensed in the US. In its absence, antigenic components of most vaccines (with the exception of live attenuated vaccines) would fail to launch an adequate immune response.[301]

Soon after the National Institute of Health approved aluminum as an adjuvant in the spring of 1933, numerous health departments throughout the US began using it as their standard method in vaccines used in children from 6 to 18 months of age, as well as in children of school age. From the very beginning of the use of aluminum in vaccines, sterile abscesses began to be observed in vaccinees.[302]

In a 1934 study, 112 individuals were given the new vaccines with the aluminum adjuvant, of which 12 or 11% developed non-septic abscesses that required a surgical intervention.

[24] Polyomaviruses are small, non-enveloped DNA viruses, which are widespread in nature. In immunocompetent hosts, the viruses remain latent after primary infection, but with few exceptions, illnesses associated with these viruses occur in times of immune compromise. (Nasimul Ahsan, Keerti V. Shah. Polyomaviruses and human diseases. Polyomaviruses and Human Diseases. Springer, New York, NY, 2006. 1-18.)

However, it was concluded, “Reactions following the administration of alum precipitated toxoid are not of sufficient severity to limit its use.”[303]

In 2019, the CDC was recommending that American children receive 72 doses of 16 pediatric vaccines, which meant that that from the day they are born they would be injected with a barrage of potential very detrimental toxicants, including 33 containing aluminum for a total of 12.83 mg of injected aluminum by the age of 18.[25][304]

Aluminum hydroxide, a common vaccine adjuvant, has been associated with the higher incidence of autoimmunity in vaccinees, as these conditions were reproduced in animal models,[305] which led to the ASIA acronym that stands for Autoimmune/inflammatory Syndrome Induced by Adjuvants.[306] For instance, it has been demonstrated that aluminum associated with antigens present in the HPV vaccine injections has the ability to trigger neuroinflammation and autoimmune reactions in mice, which resulted in behavioral abnormalities.[307] In a review on ASIA, 4,479 cases had been reported in the literature from 2011 to 2016, of which 305 fulfilled arbitrary criteria of severe ASIA including 11 deaths.[308]

It was estimated that the mean duration of time latency between adjuvant stimuli and the development of an autoimmune condition was 16.8 months, ranging between 3 days to 5 years.[309]

Four groups of individuals were identified as being susceptible to develop vaccination-induced ASIA: patients with prior post-vaccination autoimmune phenomena, patients with a medical history of autoimmunity, patients with a history of allergic reactions, and individuals who are prone to develop autoimmunity (having a family history of autoimmune diseases; asymptomatic carriers of autoantibodies; carrying certain genetic profiles, etc.).[310]

Despite being the third most common element in the earth’s crust after oxygen and silicon, aluminum has never been part of biology even though it is biologically “active.”

The evolution of life and human beings began in the absence of biologically available aluminum. Aluminum is essentially toxic to all forms of life.[311] Any amount of aluminum found in living organisms should be considered abnormal and toxic.[312]

Aluminum is known to be a pro-oxidant, excitotoxin, inflammagen, immunogen and mutagen.[313] The potency of aluminum as an immunogen is the basis for the use of aluminum salts as adjuvants in vaccines. But perhaps above all, aluminum is highly biologically reactive and uniquely equipped to damage essential cellular neuronal biochemistry.[314]

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[25] Three hepatitis B vaccines at 0.5 mg per dose (1.5 mg); six DTP vaccines at 0.625 mg per dose (3.75 mg); six haemophilus influenzae type b vaccines at 0.225 mg per dose (1.35 mg);
three polio vaccines at 0.33 mg per dose (1.65); four meningococcal vaccines at 0.52 mg per dose (2.08); four pneumococcal conjugate vaccines at 0.125 mg per dose (0.5 mg); two hepatitis A at 0.25 mg per dose (0.5 mg); and three HPV vaccines at 0.5 mg per dose (1.5 mg) for a total of 12.83 mg of aluminum. (Vaccine Ingredients—Aluminum | Children's Hospital of Philadelphia. https://www.chop.edu/centers-programs/vaccine-education-center/vaccine-ingredients)

Aluminum is therefore particularly neurotoxic and tends to accumulate in the brain and any amount of it in these tissues should be considered abnormal.[315] An example of the neurotoxicity from an acute exposure to aluminum contained in vaccines is an ASIA syndrome that was observed in sheep after an intense compulsory bluetongue vaccine campaign in Spain in 2008.[316]

In fact, this ovine ASIA syndrome can be used as a model for other similar diseases affecting both human and animals. It appeared in two phases, the acute phase with early manifestations of acute nervous signs, and the chronic phase, characterized by, among other things, the thickening of periphery nerves, necrosis, neuronal loss in the spinal cord, coma and death.[317]

The acute phase is observed within 2-6 days in about one out of a thousand sheep, and is characterized by an array of acute nervous clinical signs that include lethargy, reluctance to movement, bruxism, transient blindness, nystagmus, stupor, abnormal behavior, disorientation and a low response to external stimuli. In the most severely affected cases, animals show prostration and seizures involving extremities and head, followed by death.[318]

The chronic phase of this ovine ASIA syndrome is more obvious and alarming as it can affect 50–70% of flocks in a specific area and the number of affected animals in a given flock can reach almost 100%. The chronic phase begins with an excitatory period where affected animals show constant movement, abnormal behavior, restlessness and compulsive wool biting, resulting in animals with a very poor wool coat, a diffuse redness of the skin and thinning of the affected sheep, which is followed by generalized weakness, light but constant head tilt, muscle tremors and weight loss leading to extreme cachexia. Finally, the animals enter into a terminal phase with a lack of response to stimuli, ataxia and tetraplegia and the sheep being unable to stand up. This is followed by stupor, coma and death, but no seizures are observed in this phase.

Further, the affected flocks have also increased rates of spontaneous abortion. Remarkably, most animals showed a marked thickening of the peripheral nerves, a lesion easy to see on the subcutaneous tissue covering the abdomen and thoracic cavity. Detection of aluminum in the blood of the sheep was studied by mass spectroscopy in a group of five chronic-phase, severely affected sheep and two control animals, which showed levels of aluminum ranging between 266.75 and 289.76 ng/ml, while controls showed only traces of aluminum.

Additionally, the mean level of aluminum in the spinal cord of vaccinated animals was 8.45% of dry weight versus 3.83% for controls.[319]

A single dose of the ovine vaccine contains 4 mg of aluminum (the limit of aluminum for humans in a single vaccine is 0.85 mg in the US and 1.25 mg in Europe).[320] However as a two-month old baby can receive as many as 6 aluminum-containing vaccines in a single visit, which would clearly exceed the toxic doses of aluminum per weight by many folds as compared to sheep.

Those sheep got 14 immunizations in 198 days, which in total provided 56 mg of aluminum to every vaccinated sheep. As the average weight of those sheep was 47 kg they received 0.006 mg/kg/d of aluminum. By the time an infant reaches 6 months of age, he or she would have received 26 vaccines by following the recommended CDC vaccination schedule,[321] of which twelve contained aluminum for an approximate total dose of 6.385 mg[26] of aluminum or 0.0057 mg/kg/d,[27] which is comparable to the doses of aluminum received by the sheep. As gut absorption of aluminum is estimated to be approximately 0.1% of the amount ingested, this 0.0057 mg/kg/d of injected aluminum would be the equivalent to 5.7 mg/kg/d of ingested aluminum, which *exceed by 20 times* the provisional tolerable weekly intake[28] of aluminum that was established by the WHO at 2 mg/kg.[322]

Any aluminum presence in the cerebral spinal fluid (CSF) is abnormal and potentially hazardous to every person regardless of their diagnosis and health status and the threshold for developing a neurodegenerative disease was empirically estimated at above 12 mcg/l of aluminum in the CSF.[323]

As a neurotoxin, aluminum is therefore no joke, as only small amount, such as 63 mcg/l in a person's cerebrospinal fluid, causes unconsciousness. Like many toxic metals, aluminum accumulates over the course of a lifetime.[324] Throughout the world, alum (aluminum sulfate) is used in municipal water treatment plants to clarify water. It was found that when simulated amount of such municipal water was fed only once to laboratory animals the radioactive soluble aluminum was traced right to their brain.[325]

In another experiment, aluminum was added to the drinking water of laboratory animals for a period of six months at a "very low non-toxic" dose. One group received 5 mg/kg/d of aluminum (slightly inferior to the equivalent amount of aluminum injected in a baby up to six-months old) while a second group received 20 mg/kg/d. The results showed distinct dose-dependent changes in kidney and brain. In the brain, the most pronounced changes were observed in the hippocampus, which "include spongioform changes in pyramidal layer, nuclear deformity and presence of vaculoes in the nuclei. Neurofibrillary degeneration, similar to neurofibrillary tangles in Alzheimer's disease, was also observed."[326]

An average lifetime exposure to aluminum will result in accumulation of 1 mcg per gram of dry weight of brain tissue, which is approximately 300 mcg of aluminum in an average 70-year-old human brain. Levels at two times that average can cause memory loss and Alzheimer's disease.[327]

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[26] Three hepatitis B vaccines at 0.5 mg per dose (1.5 mg); three DTP vaccines at 0.625 mg per dose (1.875 mg); five haemophilus influenzae type b vaccines at 0.225 mg per dose (1.125 mg); three polio vaccines at 0.33 mg per dose (0.99); one meningococcal vaccines at 0.52 mg per dose; three pneumococcal conjugate vaccines at 0.125 mg per dose (0.375 mg) for a total of 6.385 mg of aluminum. (Vaccine Ingredients—Aluminum | Children's Hospital of Philadelphia. https://www.chop.edu/centers-programs/vaccine-education-center/vaccine-ingredients

[27] The average weight for a 3-month old infant is estimated to be 6.1 kg. https://www.who.int/childgrowth/training/boys_growth_record.pdf

[28] The provisional tolerable weekly intake of aluminium was established by the WHO at 2 mg/kg.

Aluminum is omnipresent in our environment, as it is added to many chemicals, and aside to municipal waters, it is commonly found in cosmetics, aerosols, foods (e.g., infant formulas, processed cheese for grilled cheese, baking powder, most processed foods, food coloring, i.e., candies), drugs (e.g., antacids, in immunotherapy as an immunogen, for its color in Aricept, or as a buffering agent in buffered medications such as buffered aspirin), antiperspirants (as much as 2 g of aluminum are applied to the skin with every application), aftershaves, hair spray and vaccines, and is found in tobacco, cannabis and as a common pollutant of the air.

Research has shown that the tolerable intake of aluminum is exceeded for a significant part of the world population, especially in children who are more vulnerable as a rule to the toxic effects of pollutants than adults.[328]

It was found that the rate of amyotrophic lateral sclerosis among deployed Gulf war veterans was 3.6 per 100,000 per year,[329] while it was 1.89 for the general population per year in the 1990s.[330] In an attempt to model the Gulf War Illness and the associated neurological deficits, aluminum adjuvants was injected into young male mice, which was followed by an amyotrophic lateral sclerosis phenotype.[331]

Aluminum and autism

Scientists have looked into the possibility of a cause-effect relation between aluminum and autism. In young children, a highly significant correlation exists between the number of pediatric aluminum-adjuvanted vaccines administered and the rate of autism spectrum disorders.[332]

It was found out that the aluminum content of the brain tissue of autistic persons was consistently high. Aluminum contents of brain tissues considered to be pathologically-concerning would be equal or greater than 2.00 mcg/g of dry weight. The mean aluminum content across the brain of all five individuals aged 15–50 years old who had autism and whose brain tissues were analyzed for their aluminum content were *some of the highest values for brain aluminum content ever measured in healthy or diseased tissues*, including values of 17.10, 18.57 and 22.11 mcg/g of dry weight. One of the scientists who conducted this research asked, why would the aluminum content of parts of the brain of a 15-year old boy be as high as 8.74 mcg/g of dry weight?[333]

The highest contents of aluminum in human brain tissues ever recorded were in people who had died of aluminum-related encephalopathies, which were at up to 47.4 mcg/g dry weight.[334] A recent meta-analysis suggested that chronic aluminum exposure was associated with increased risk of Alzheimer disease.[335]

Incidentally, the concentrations of aluminum in the brain of autistic persons are similar to the ones found in the brains of persons who died from familial Alzheimer's disease (AD), are unlikely to be benign and indeed are highly likely to have contributed to both the onset and the aggressive nature of any ongoing AD in these individuals. These data lend support to the recent

conclusion that brain aluminum will contribute towards all forms of AD under certain conditions.[336]

It was reported that some children with renal disease who had been exposed to higher quantities of aluminum than average developed progressive encephalopathy similar to dialysis encephalopathy and severe osteomalacia and massive deposition of aluminum in their bone.[337]

Despite the facts that vaccines contains dangerous substances, Brett P. Giroir, the assistant secretary for Health and Human Services, Robert R. Redfield, the director of the Centers for Disease Control and Prevention and Jerome M. Adams, the surgeon general states in March 2019, “But misinformation about vaccines is still widely reported, so we feel it is crucial to state clearly and unambiguously: Vaccines do not cause autism and they do not contain toxic chemicals.”[338]

From the studies mentioned above, how can discerning physicians and concerned citizens and parents be satisfied with such a blanket unscientific statement? It is as if they have forgotten what had been presented before a US congressional hearing in 1999 by representative Dan Burton from Indiana, “The autism, vaccine linked, is very controversial. But, we have verified with current and former NIH neurologists that any injury to the brain can cause autism, including the shock to the neurological system by a vaccine. They will testify today. … We, as the government, can no longer keep our heads buried in the sand like an ostrich, pretending that there is no problem.”[339]

Americans may be more trusting or credulous in their public institutions than citizens of other countries, as when they are asked whether vaccines are safe, a survey found French people disagreed the most at 33%, three times more than Americans at 11%.[340]

Vaccine toxicity burden can’t be isolated from other burdens to the immune system

What role vaccines plays in the development of autism is unclear, as pointed out by Mawson, but the vaccine toxicity burden can’t be isolated from other forms of intoxication, including chemicals, such as pesticides,[341] drugs[342] and other environmental factors.[343]

An example of the difficulty to isolate the burden of vaccine toxicity is the case of the Gulf War Illness (GWI) experienced by veterans of the 1990-1991 Persian Gulf War. It is estimated that 25–32% of the Gulf War veterans continue to experience multiple unexplained health problems, which include chronic pain, musculoskeletal weakness, headache, fatigue, cognitive deficits, alterations in mood, and numerous multi-system complaints. “Most potential exposures implicated in GWI were not well documented but included varying levels of several neurotoxicants as well as the anticholinergic drug pyridostigmine bromide (PB), which was routinely taken as prophylaxis against the nerve agent soman. It has been proposed that multiple vaccinations, with concurrent or subsequent exposure to PB or additional chemical insults of a liver-damaging nature, plausibly explain the pathogenesis and the observed chronicity of GWI.”[344]

Many other factors can increase the risk of autism, such as late prenatal and early postnatal exposure to air pollution,[345] lack of breastfeeding,[346] hypertension in mothers during pregnancy,[347] higher mothers' body weight before and during pregnancy,[348] preconception use of opioid[349] and maternal history of eczema/psoriasis and asthma (a 20%–40% increased odds of autism and development disorders).[350]

Vaccines negative outcomes, including increased children mortality

Surprisingly few studies examined the introduction of vaccines and their impact on child mortality until 2004 when Aaby et al. reported that DTP was associated *with a 2 fold higher mortality after the first dose of DTP and 5 fold after the second and third dose* in children of Guinea-Bissau. Prior to the introduction of vaccines, children who were absent at a village examination had the same mortality as children who were present.[351]

All eight studies from this group of researchers who documented vaccination status by following children prospectively have since shown negative effects of DTP; a meta-analysis of eight studies conducted before 2016 found 2 fold higher mortality for DTP-vaccinated compared with DTP-unvaccinated children.[352]

Girls with a lower birth weight had a *5.68 adjusted death rate ratio* for DTP vaccinated versus DTP unvaccinated children.[353]

Mortality in older children aged 6–35 months with better nutritional status who received DTP vaccination was also 2 fold greater than the ones who had not received DTP.[354]

However, a 2017 study reported that the negative effect in most previous studies on increased mortality in children who had received DTP vaccines had probably been *underestimated*. This was presumably due to the unvaccinated control children in previous studies having been a subgroup too frail to get vaccinated.

In this most recent study, 3–5-month-old children who had received DTP vaccinations early were compared with children who had not yet received these vaccinations. When unvaccinated controls were normal children who had not yet been eligible for vaccination, *mortality was found to be actually 10 times higher for DTP-vaccinated children*.[355]

Aaby et al., the authors of these studies, concluded, "All currently available evidence suggests that DTP vaccine may kill more children from other causes than it saves from diphtheria, tetanus or pertussis. Though a vaccine protects children against the target disease it may simultaneously increase susceptibility to unrelated infections."[356]

Following similar reports the WHO's Strategic Advisory Group of Experts on Immunization (SAGE) recommended randomized trials of the DTP vaccine.[357] However, at the same time the Immunization and Vaccines Related Implementation Research Advisory Committee (IVIR-AC) to which SAGE delegated the follow-up studies of the nonspecific effects of vaccines has indicated that it will not be possible to examine the effect of DTP in an unbiased way. Aaby et al.

concluded, “If that decision by IVIR-AC remains unchallenged, the present study may remain the closest we will ever come to a RCT of the non-specific effects of DTP.”[358]

It has been reported by many investigators that vaccines, not limited to DTP, increase the susceptibility to unrelated infections and other serious health problems and immune related diseases.

In a rare double blind study with vaccines conducted in Japan for an influenza vaccine it was found that the outcome of children who received the trivalent inactivated influenza vaccine (TIV) were compared with children who had received a placebo. Over the following 9 months, TIV recipients had a 4.4 increase risk of virologically-confirmed non-influenza infections. The authors concluded, “Being protected against influenza, TIV recipients may lack temporary non-specific immunity that protected against other respiratory viruses.”[359]

Children in Guinea-Bissau who received the H1N1-vaccine became more susceptible to unrelated infections.[360]

Influenza vaccinees have a significantly higher ($p<0.01$) susceptibility to coronaviruses when compared to unvaccinated individuals.[361]

The Vaccine Adverse Event Reporting System (VAERS) database was examined for the rate of spontaneous abortion and stillbirth in women who received one versus two flu vaccines during a season. The ones who were vaccinated twice during an influenza season had 11.4 more fetal loss compared to the women who were only vaccinated once during a flu season. The author of this study concluded, “Thus, a synergistic fetal toxicity likely resulted from the administration of both the pandemic (A-H1N1) and seasonal influenza vaccines during the 2009/2010 season.”[362]

A case-control study was conducted over two influenza seasons (2010–2011 and 2011–2012) to determine if receipt of vaccine containing pH1N1 antigen was associated with spontaneous abortion. The overall adjusted odds ratio in the 1–28 days was 1.3 among not vaccinated women. Among the vaccinated women the overall adjusted odds ratio was 7.7. This effect was observed during these two successive influenza seasons.[363]

Many other possible adverse events can follow influenza vaccination. For instance, Pandemrix, an influenza vaccine, has been known to be a precipitating factor for narcolepsy. The incidence of narcolepsy was 25 times higher compared with the time period prior to its introduction after the clinical and laboratory features of the recipient versus non-recipient children had been reviewed.[364]

There are distinct rises in the incidence of type-1 diabetes in vaccinated versus unvaccinated cohorts of children starting 36 months after the introduction of haemophilus influenzae B, pertussis, MMR and hepatitis B vaccines.[365] To confirm this tendency for increase type-1 diabetes, a drop in the incidence of type-1 diabetes was detected between 3-4 years following the discontinuation of the pertussis and BCG vaccines.[366]

In a case–control study, researchers found a 5.8 increase risk for infants to develop intussusception 1 to 7 days after receiving a rotavirus vaccine.[367] Intussusception, aside from being extremely painful, can be life threatening.

The expected rate of non-polio acute flaccid paralysis went in India from 1–2 per 100,000 to 13.35 per 100,000 after the introduction of the oral polio vaccine.[368] Defective oral polio vaccine is not new, as in 1955, more than 200 000 American children received a polio vaccine in which the process of inactivating the live virus had been defective. This led to 40,000 cases of polio, leaving 200 children with varying degrees of paralysis and 10 deaths.[369]

Science shows that vaccines can not only disrupt the immune system by increasing the susceptibility to other infectious agents, but also by increasing the odds to chronic diseases or even death itself. For instance compared with their birth cohort, measles vaccinated children had a 3 fold relative risk of developing Crohn's disease and a 2.53 fold of developing ulcerative colitis versus the unvaccinated children.[370]

Children are getting sicker with each passing decade

The prevalence of ADHD in American schoolchildren was 1% in the 1970s, 3–5% in the 1980s, and 4–5% in the mid-to-late 1990s. A study of hospital discharge rates for ADHD between 1989 and 2000 found a 381% increase over the study period. The incidence of attention deficit with hyperactivity, autism and asthma over the last 50 years follows similar patterns. Between 1980 and 2007, there was an almost 8-fold increase of ADHD prevalence in the US. [371]

Lawrence Palevsky, a New York pediatrician, who has carefully examined the question of the potential side effects of vaccination, said in a February 2017 interview, "No control study comparing the outcome of vaccinated versus unvaccinated persons. … There is not one study that examines the true safety of the ingredients that are in the vaccines. If you look at individual ingredients, some of them are prohibited by toxicological guidelines to never be injected into the human body. There are others that have never been tested in single injection into the body. How can you say that a product injected into the body is safe, when individual ingredients have not been tested on their own, singularly to be injected into human beings with a proper control group, and then doing two of the chemicals together, three of the chemicals together, or even four of the chemicals together."[372]

Palevsky pointed out that in the last decades there has been a clear rise in brain and immune diseases in children. Epidemiological data provide evidence of a steady rise in autoimmune disease throughout developed societies over the last decades. Rheumatic, endocrine, gastrointestinal and neurological autoimmune diseases revealed the following annual percentage increases per year, namely 7.1, 6.3, 6.2 and 3.7, respectively. There was no statistically significant difference between children and adults in the increase of autoimmune incidence. These observations point to an influence of environmental factors as opposed to genetic factors on the increase of autoimmune disease development.[373]

Why are there so many people and especially children with brain and immune problems? Palevsky pointed out, “If you look at the ingredients in vaccines and look at chemical profiles, they enter the brain. Anything that enters the brain that doesn’t belong in the brain will cause inflammation.”[374] It is interesting to note that manufacturers increased the proportion of aluminum and polysorbate 80 (emulsifier) in HPV vaccines, which are bound tightly to HPV virus particles and are known to cross the brain blood barrier, which could explain the greater incidence of adverse events related to the CNS.

A wide variety of inflammatory diseases temporally associated with the administration of various vaccines, has been reported in the literature. CNS demyelinating diseases were reported after influenza, human papillomavirus, hepatitis A or B, rabies, measles, rubella, yellow fever, anthrax, meningococcus and tetanus vaccines.[375]

A 2008 survey revealed that one in six children suffered from neurodevelopmental disorders, which are disabilities associated primarily with the functioning of the brain.[376] “Examples of neurodevelopmental disorders in children include attention-deficit/hyperactivity disorder (ADHD), autism, learning disabilities, intellectual disability (also known as mental retardation), conduct disorders, cerebral palsy, and impairments in vision and hearing. Children with neurodevelopmental disorders can experience difficulties with language and speech, motor skills, behavior, memory, learning, or other neurological functions.”[377] No follow-up study has since been conducted to examine the current state of disabilities in American children.

The rate of autism keeps climbing every year. Across the 3-year reporting period, the US National Health Interview Survey reported that the prevalence of autism spectrum disorder in American children and adolescents was 2.24% in 2014, 2.41% in 2015, a 8% annual increase, and 2.76% in 2016, a 15% annual increase.[378] In 2019, the CDC reported that autism spectrum disorder was now affecting up to 3% of children in the United States, and its prevalence had increased by 27% between 2010 and 2014 in children aged 4 years.[379]

The proportion of children suffering from autism may actually be higher. The CDC’s autism and developmental disabilities monitoring program in New Jersey is the nation’s longest-running and most comprehensive autism surveillance site reported highest autism prevalence as of 2014—one in 34 eight-year-olds (3%) and one in 22 boys (4.5%), and 28% of the children had intellectual disability, which is defined as IQ score of 70 or lower.[380] The head researcher of this survey said that New Jersey may still be underestimating the rate of autism in its state and that it may represent a more accurate picture of what is going on in the metropolitan U.S. He further said, as a whole autism had become an “urgent public health concern,” citing “a true increase of approximately 150% to 200% in the period since 2000.”[381]

Children are no doubt getting sicker as time is passing. From 2009 to 2011 and 2015 to 2017, there were overall significant increases in the prevalence of any developmental disability, 16.2 and 17.8%, attention-deficit/ hyperactivity disorder, 8.5 and 9.5%, autism spectrum disorder, 1.1 and 2.5%, and intellectual disability, 0.9 and 1.2%.[382]

Children with developmental disability suffer from many co-morbidities than the rest of the population. For instance, 26% of autistic adolescent suffers from epilepsy.[383] Prevalence of self-injurious behavior is as high as 50% among autistic children.[384] Further, these children with developmental disability had a nearly three times higher risk of asthma (OR: 2.77), namely 16 versus 6%, versus children without a disability.[385]

In 2007, forty-three percent of US children has one of 20 chronic illnesses,[386] and 23.5 to 50 millions Americans have autoimmune diseases.[387] Autoimmune phenomena such as arthralgia, myalgia, myocarditis, pericarditis, as well as diseases of unclear etiology such as fibromyalgia and chronic fatigue syndrome, occur in higher frequencies after vaccine administration. Additionally, well-defined autoimmune diseases, for instance immune-mediated myopathies, SLE, RA, Sjögren's syndrome, multiple sclerosis, acute disseminated encephalomyelitis, transverse myelitis, inflammatory bowel diseases, have all been linked to various vaccines exposure. The most common vaccines to be related to ASIA syndrome are those directed to influenza virus, HPV, HBV, diphtheria-tetanus-pertussis, MMR and BCG.[388]

About 75% of Americans ages 17–24 would not be able to join the military, of which 32% would be for health problems.[389] "Put another way: Over 24 million of the 34 million people of that age group cannot join the armed forces—even if they wanted to."
Another 25% wouldn't meet the minimum level of education [high school or equivalent], a basic understanding of written and cognitive skills, and enough "stick-to-itiveness'" to complete an organized program.[390]

Testimony of a neurologist specialized in learning disability
Be the 1999 US congressional hearing on vaccination, Marcel Kinsbourne, a neurologist with a special interest in children, and particularly in learning disability, attention deficit, and in developmental disability such as autism, shared his experience in this domain in relation to vaccination,

"I have not had the good fortune of Dr. Katz to have any grandchildren, but all four of my children have been vaccinated. One is healthily present with us in this room today.

"I would like to talk to you briefly about serious adverse effects of vaccination. Many are known. In some cases we don't know quite whether there are any, and some we have not yet identified.

"Briefly, there are three types of vaccines that may cause three types of adverse reactions.

"There are those that cause toxic or poisonous reactions. The whole cell pertussis vaccine is the best example of that. That poison may attack a child's brain within hours or a few days of the vaccination. That one issue has been subjected to adequate epidemiological study, unlike almost all the other issues that I will be mentioning.

“A second way of being damaged by vaccine is when the vaccine is a live virus, attenuated virus particles made harmless, except not always so harmless, and occasionally the infection that is protected against in fact happens. Polio is an example of that.

“Both bacterial and virus vaccines are apt in susceptible people to generate autoimmune disorders. These are disorders where the immune system of the person defends not only against the vaccine itself, but also, as it were, mistakenly against some crucial component of the person's own body, say the nervous system, causing damage which can be severe.

“Incidentally, if there is a relation between the MMR vaccine and autism, this may be a mechanism for it to happen, and I totally agree with Mr. Rollens. There has been no approachingly adequate study of this possibility in this country to my knowledge, and I am unaware of any going on now.

“It is easy to say do studies; studies are not easy, not at all straightforward. I would like to mention some reasons why that is.

“One reason is that every disorder that a vaccine can cause other causes can also cause. So one has to distinguish the vaccine causation from coincidence. To do that, one has to study epidemiologically. These studies are expensive; they take a long time. Many have not been done. A report of the Institute of Medicine has stressed how often they could not draw conclusions about whether a particular alleged side effect was due to vaccine or not because the epidemiology has not yet been done.

“The second point I would like to stress is that indeed some of these are rare complications. To study those, you have to have large populations. Most studies that have been done don't have adequately sized populations to investigate one way or the other whether a rare complication was due to the vaccine or not. That needs to be done.

“The third point is that not all vaccine reactions happen immediately, as in pertussis. In the case of viruses and autoimmune disorders they may take weeks; they may take months to emerge. And most safety studies don't last for weeks and months. What we are left with is passive monitoring which has major weaknesses, which had been alluded to and which we could discuss further.

“Yet another problem is that you may have an acute reaction to a vaccine which, however, appears to get better, and the child appears to become normal again. Yet months or years or several years later the child shows cerebral palsy, a learning disability, attention deficit, autism, and the studies have not yet been done to determine whether these were late consequences of those early vaccine reactions or not, and they should be done.

“Finally, in my list, and that has been mentioned already by, I think, Dr. Kennedy, vaccine safety tends to be established for individual vaccines, but they are nowadays increasingly often given in combination. That's a new administration, needs new safety studies all on their own, because

there is no guarantee that the combined vaccine will only show the adverse effects that each individual constituent shows.

“It's my opinion that if studies of the kind I've indicated were done and known to be done and perceived to have been done that this difficulty of balancing the public health against personal choice would be much mitigated.

“I would like to briefly add to a point Dr. Kennedy made about informed consent. It is very difficult in a busy pediatric practice for the patient to get access to the doctor or the nurse, to ask proper questions, read the materials, understand them. I would suggest that the information be given to the families well ahead, maybe even when the baby is discharged from the hospital at birth, so they have time to study the materials and ask their questions before they bring the children to the vaccination.

“A brief point, sir, has to do with the compensation program. As you very well know, the Congress meant this program to be expeditious, to be generous, and to be non-adversarial. I have extensive experience as a witness in these programs, and I find them not to be any of those things. I have to say that the special masters who are in charge of adjudicating these matters are, in my opinion, highly competent, compassionate, and courteous.

“Nonetheless, it is a lucky person who actually gets their case resolved in 2 years, as was mentioned before. I have many cases in my files that have been around for many more years than that, and to my mind the proceedings are nowadays much more like civil litigation in their rigor than they are in any sense not nonadversarial.

“It has also been mentioned that in 1995 there was a change in the regulations relative to the most important, often complained of, vaccine, the pertussis vaccine, making compensation for alleged injury by that vaccine virtually impossible to secure. I think that deserves reviewing.

“A final point, sir, is I heard mention of what is called a surplus in the moneys available to compensate victims. I am perplexed at this, because I know that there are many children whose cases are still being adjudicated and many more whose petitions have not yet been filed. They will be filed. And I don't know how anybody could tell that the available moneys are too great relative to the needs of those children.”[391]

Public health agencies and the industry use deceptive approaches

The industry has been deceptive about the dangers of aluminum. For instance, in a HPV vaccine safety study, aluminum hydroxide was used as the placebo preparation for the control group, which invalidates the results of the trial on the basis of the use of an inappropriate placebo.[392] It had previously been pointed out that an aluminum adjuvant couldn’t be considered a placebo because of the unequivocal toxicity of aluminum in biochemical systems and its role in human disease.[393]

Very few vaccines, if any, given to children have been tested against a placebo, even though it is often cited to be an established fact. For instance, it was reported in a 2013 Cochrane review that the safety of MMR vaccine had been tested in five randomized controlled trials against a placebo.[394] In fact none of the five studies used a placebo, which is defined by the FDA as being an inert substance.[395] What was considered to be placebos in each of the five cited trials were either another vaccine or the vaccine without the viral component, as it was reported: 1) "The placebo used in the study was identical to the vaccine in all respects except it did not contain virus."[396] 2) "Ideally one would use a placebo control group but we felt it unethical to do so in an invasive study, and opted to compare the new vaccine (MMR) with the one it has replaced (measles)."[397] 3) "The placebo consisted of vaccine diluent."[398] 4) "Placebo (the same product including neomycin and phenol-red indicator but without the viral antigens)."[399] And 5) "Placebo was prepared in a similar manner, but without the addition of any virus.[400]

Recently a study in a nationwide Danish cohort study, Hviid et al. estimated the risk for developing autism with the MMR vaccination status by comparing two highly vaccinated groups, *thus obscuring the potential effect of vaccines in general*. Despite this evident confounding factor, the authors concluded, "The study strongly supports that MMR vaccination does not increase the risk for autism, does not trigger autism in susceptible children, and is not associated with clustering of autism cases after vaccination."[401]

Mawson pointed out, "Comparisons in terms of autism should instead be between fully vaccinated and completely unvaccinated children or between children who only received the MMR vaccine and their completely unvaccinated counterparts."[402]

Further, it has justifiably been asked why deaths,[403] severely disabling conditions of macrophagic myofasciitis[404] and chronic fatigue syndrome[405,406] that occurred following a HPV vaccine in control and treatment groups were not included as serious adverse events.

Dangers associated with aluminum adjuvants is strangely missing from vaccine safety information websites, such as the one hosted by the CDC, which makes these very questionable claims: "Adjuvants have been used safely in vaccines for decades." … "In all cases, vaccines containing adjuvants are tested for safety and effectiveness in clinical trials before they are licensed for use in the United States, and they are continuously monitored by CDC and FDA once they are approved;"[407] "Aluminum is one of the most common metals found in nature and is present in air, food, and water. Scientific research has shown the amount of aluminum exposure in people who follow the recommended vaccine schedule is low and is not readily absorbed by the body;" and "CDC and FDA closely monitor the safety of all vaccines."[408]

Contrary to this set of claims, Professor Christopher Exley pointed out in a paper published in the peer-reviewed journal *Vaccine*, "There have not been any clinical trials designed and carried out to test the safety of aluminium adjuvants. Not a single clinical safety trial for any vaccine that includes an aluminium adjuvant. Vaccine manufacturers are not obliged to demonstrate the safety of aluminium adjuvants. Indeed vaccine manufacturers invariably use aluminium adjuvants as placebos in vaccine efficacy trials."[409]

Exley clarified the issue related to the myth that only very small quantities of aluminum are added to vaccines, “The myth that the aluminium content of a vaccine is miniscule has now been comprehensively refuted in the peer-reviewed scientific literature[410] and this misleading information needs to be removed from all advice given to paediatricians and parents alike. Similarly, the patient information leaflet provided with every vaccine lists all of the known harmful effects recorded for that vaccine. Those responsible for administering vaccines are required by law to ask the recipient or recipient’s guardian to read the patient information leaflet so that they are aware of the possible harmful effects. It is outrageous and wrong for NHS advice to be so misleading to those they are charged with protecting.”[411]

Exley further pointed out, “The aluminium adjuvant initiates an inflammatory response in the immediate vicinity of the injection site. Myriad infiltrating cells flood the damaged area and responding to the inflammation take up adjuvant and antigen into their cytoplasm[412] though not necessarily as an adjuvant-antigen complex. Adjuvant is transported to lymph glands[413] and may also be carried in macrophages[414] and other histiocytes throughout the body including into the brain.[415] It is clear that vaccines that include an aluminium adjuvant are a source of aluminium to the rest of the body and this should be a concern. The advice given by the NHS is at best incorrect and at worst misinformation.”[416]

Exley further commented, “I have spent all of my academic career trying to understand how human exposure to aluminium impacts upon our health. Everything that I have learned about aluminium points towards it being a major health issue, today and if we carry on being complacent about our exposure, in the future. We need to ensure that the information made available about the possible toxicity of aluminium in humans is wholly science based and as up to date as is possible. We live in the Aluminium Age and the modern world would be a lesser place without aluminium. However, it is time that we accept that aluminium is inimical to living processes and that we must only continue to use it when it has been proven to be both effective and safe. This must include its complacent and misunderstood use in vaccines.”[417]

In a blog, Exley discussed the fact that humanity entered the aluminum age in the nineteen century without ever having explored the extent of its toxicity to life on earth in what he calls The Aluminium Question, “While there are thousands of scientific publications over many decades demonstrating the toxicity of aluminium in all living things the larger questions concerning aluminium and common human diseases such as Alzheimer’s disease or diabetes remain unanswered or at best equivocal. These questions remain unanswered primarily because neither the global aluminium industry nor governments which have allowed the unfettered growth of the use of aluminium products are prepared for an answer. Try to imagine the immediate and short term economic consequences of human exposure to aluminium being directly linked as causal or even contributory in just one disease, for example Alzheimer’s disease.”

“The ensuing chaos and stock market crashes would be unpalatable but they would just be the beginning of a world which would now have to change to address and accommodate such knowledge. Now that the tip of the iceberg has become visible the remainder would have to be

investigated and the inevitable consequences of human exposure to aluminium would be revealed, piece by piece, and a new jigsaw of life on Earth would slowly be pieced together. Of course, if the aluminium industry were not so determined to prevent The Aluminium Question from being answered then the outcome might be so different with human exposure to aluminium being shown to be largely benign."

"The Aluminium Question will, of course, be answered; it is simply a matter of time. However, in the meantime, new research while continuing to implicate aluminium in human disease is at the same time also offering solutions to living safely in The Aluminium Age without the need to suffer the consequences of biologically available aluminium. If I can take you back to aluminium killing fish in acid waters, one of the consequences of Acid Rain, it has been shown that these deaths can be prevented by introducing soluble silicon to their environments. Silicon is the Earth's answer to the toxicity of aluminium and it can also be as effective an answer to aluminium toxicity in humans. Of course the proviso to this is that we must all, scientists, governments and the global aluminium industry, first acknowledge the potential toxicity of living in The Aluminium Age!"[418]

Two researchers from the University of British Columbia blankly asked the question on whether aluminum vaccine adjuvants were actually safe to use. The abstract of their paper summarized well the subject: "Aluminum is an experimentally demonstrated neurotoxin and the most commonly used vaccine adjuvant. Despite almost 90 years of widespread use of aluminum adjuvants, medical science's understanding about their mechanisms of action is still remarkably poor. There is also a concerning scarcity of data on toxicology and pharmacokinetics of these compounds. In spite of this, the notion that aluminum in vaccines is safe appears to be widely accepted. Experimental research, however, clearly shows that aluminum adjuvants have a potential to induce serious immunological disorders in humans. In particular, aluminum in adjuvant form carries a risk for autoimmunity, long-term brain inflammation and associated neurological complications and may thus have profound and widespread adverse health consequences. In our opinion, the possibility that vaccine benefits may have been overrated and the risk of potential adverse effects underestimated, has not been rigorously evaluated in the medical and scientific community. We hope that the present paper will provide a framework for a much needed and long overdue assessment of this highly contentious medical issue."[419]

It is interesting to note that among a survey of Canadian pediatricians, it was reported, "In our survey, despite the fact that almost three out of four respondents perceived rotavirus vaccines to be safe, more than half of respondents indicated that the risk of adverse events could prevent them from recommending the rotavirus vaccines to their patients."[420] In a recent study of physicians, many physicians appeared ambivalent about the certainty of vaccine safety and their role as "workers of the state, despite the fact that they were cognizant pharmaceutical companies' financial motivations, and their influence on government policy."[421]

It is beyond comprehension how the CDC still states on their website, "There is no link between vaccines and autism,"[422] when so many studies have showed potential links and risks.

Conflicting interests between individual rights and what is perceived as public good
Opinions on whether to vaccinate or not to vaccinate tends to be very polarizing and divisive, even within the same family. Sociologists have summarized this issue in these three “grid-groups”: “Hierarchs are in support of mandatory vaccination, oppose religious and philosophical exemption, and believe the government should preside over vaccination- related decisions. Fatalists strike a bold contrast in their opposition to mandatory vaccination policy and support for religious and philosophical exemptions and the role of parents in deciding on vaccinations. Falling between hierarchs and fatalists, egalitarian support for vaccinations is stronger than individualists.”[423]

Many feels that mandatory vaccination recommended by government infringes on fundamental rights and liberties and creates a lot of animosity in part of the public when these recommendations are dictated by medical politics and vested interests of the pharmaceutical industry rather than by science. Coercion, and a contemptuous attitude toward people’s need for simple but scientific information and full transparency, further erodes people’s trust. Individual rights and informed consent versus what is thought to be as public good are being challenged in Australia where a policy of “no jab, no pay” was introduced in 2016.[424] Further, foreigners can be banned from visiting Australia based on their views on vaccination.[425]

Universally acknowledged as the cornerstone of ethical medicine, the 1947 Nuremberg Code, authored in large part by three American judges in the wake of Germany’s World War II medical abuses, was the first clear articulation of medical ethics asserting the need to protect individuals from medical harm by guaranteeing every individual’s right to informed consent to any medical treatment, without coercion.

There has received international and most recently by American Medical Association in 2018, which recommends vaccination, rightly recognizes that its physician members retain their right to informed consent to vaccination, without mandates.

Opinions 2.1 of the American Medical Association code of medical ethics, which is widely recognized as the most comprehensive ethics guide for physicians, stipulates, “Informed consent to medical treatment is fundamental in both ethics and law. Patients have the right to receive information and ask questions about recommended treatments so that they can make well-considered decisions about care.[426]

But what happens when one person's individual choice leads to the otherwise preventable infection of another person who chooses differently?

Because of the great propensity for contagion, Constantine Hering answered that questioned by proposing the application of sanitary measures of isolation of the ones infected, “Statesmen say it is their duty to enforce vaccination, in order to prevent others of their dear subjects from being reached by the contagion. We know that every case of smallpox has great power to infect others; even the clothing of patients who have had smallpox may spread it in districts perfectly free from it before. This being certain, there can be no doubt about the right. Nay, more than

this, the duty of every Government is to separate such sources of disease—to cut them off from all communication with such as are not sick. The very strictest measures are not only allowable, but justifiable, in case of smallpox, since there is no doubt at all about the diagnosis, and no doubt about the danger of contagion, and no doubt about the practicability of separation."[427]

By making vaccination mandatory or by forcibly injecting foreign substances into someone's body cannot be justified as an act of self-defense, because there is no way to determine with certainty that any particular person will ever be responsible for disease transmission.

In someone who believes that vaccination can be dangerous and refuses vaccination, mandatory vaccination would then be seen as an aggression, as it would otherwise requires certainty that those beliefs are wrong. Surgeon Jeffrey Singer who supports free choice added his thoughts to this debate "And certainty in this case is not possible. How can you be sure, for example, that a child won't have an adverse or even fatal reaction to a vaccine? And how can defending forced immunization as self-defense be justified when it can never be shown with certainty that the non-vaccinated person would have been responsible for another person's harm?"[428]

We live in a free society, in which people make bad choices for their health, where pregnant women smoke or drinks alcohol and in which three quarter of the population will die from diseases that were preventable. "To live in a free society, one must be willing to tolerate people who make bad decisions and bad choices."[429]

Singers added, "Any mass immunization program that uses compulsion rather than persuasion will, on balance, do more harm to the well being of a free people than any good it was intended to convey."[430]

This conflict between individual rights and public health came to a head in Texas in 2007 when the Governor signed an executive order that mandated all female children to received the HPV vaccine prior to admission to the sixth grade. Fortunately the Texas Legislature vetoed the mandate, which the Governor later called a "mistake."[431]

Law professor Mary Holland recently stated, "Compulsory childhood vaccination is the most salient deviation from the ethical and professional standard of informed consent in civilian medicine," as children and their parents are deprived of three ordinary tort law protections: "free and informed consent to an invasive medical procedure; accurate and complete information about vaccine ingredients and possible side effects; and the right to sue manufacturers and medical practitioners directly in the event of injury. The absence of these legal protections is striking compared to almost all other medical interventions."[432]

She added, "The legal framework for compulsory childhood vaccination is similar in some ways to the legal regimes for housing finance, banking and oil drilling which have recently experienced severe crises. Like those sectors, the vaccine industry has largely 'captured' its regulators; the sector is deemed 'too important to fail;' credible experts recognize serious safety concerns; and

designated corporate and governmental funds are almost certain to be insufficient if vaccines are definitively linked to disorders with which they have been associated, including developmental disabilities and asthma."[433]

Further, Holland argues that the absence of ordinary tort law protection is associated with troubling facts. "These facts include conflicts of interest; inadequate safety; inadequate compensation to vaccine-injured children; inadequate vaccine warnings; and problems in children's health."[434]

In a case of vaccination mandate in 1919, the Supreme Court of North Dakota struck down a school mandate to exclude unvaccinated children when there was no imminent threat and focused on the responsibility of courts to protect civil liberties from abuses of state power. "The judge noted the central roles of better sanitation, clean water and nutrition in public health and the self-interest of the medical profession and manufacturers in vaccination mandates," and noted the potential for conflicts of interest, which rings the same bell today, even though the sound is much more loader today: "Of course a different story [than the story about vaccine risks] is told by the class that reap a golden harvest from vaccination and the diseases caused by it. Yet, because of their self-interest, their doctrine must be received with the greatest care and scrutiny. Every person of common sense and observation must know that it is not the welfare of the children that causes the vaccinators to preach their doctrines and to incur the expense of lobbying for vaccination statutes. ... And if anyone says to the contrary, he either does not know the facts, or he has no regard for the truth."[435]

In 1905, the US Supreme addressed the question of forced vaccination, which it did not justify for adults or children, as it is in a "sphere within which the individual may assert the supremacy of his own will, and rightfully dispute the authority of any human government, especially of any free government existing under a written constitution, to interfere with the exercise of that will."[436]

The Court ruled that authorities can justify mandatory but not forced vaccination in case of emergency and imminent harm to society, as in times of smallpox epidemics. However in non-emergency situations, as it is today, children and adults should have the right to informed consent and the right to sue manufacturers for vaccine injury.[437]

Today's vaccine mandates are guided by financial returns on low prevalence diseases, not protection of the entire population against imminent harm.

For UCLA School of Law Professor Julie Cantor, "For competent adults, forcible vaccination should represent an unconstitutional intrusion on liberty. State-sanctioned forced vaccination of adults seems extreme—evocative of a police state and a sharp departure from the principle that the government may not invade our bodies to benefit others."[438]

"Public health programs that are based on force are a relic of the 19th century; 21st century public health depends on good science, good communication, and trust in public health officials

to tell the truth. Preserving the public's health in the 21st century requires preserving respect for personal liberty."[439]

The right to refuse compulsory vaccination on a philosophical basis existed by statute in 22 states in 2010, but it was down to only 16 states in 2017. However, such "a right has existed by statute in the United Kingdom since 1898 and exists under constitutional law in Canada, Australia, Scandinavia, Germany and several other developed countries."[440]

"Today's childhood vaccination mandates against non-fatal, non-contagious and low prevalence diseases do not comport with *Jacobson*.[29]"[441]

There is no evidence that countries or jurisdictions that rely on voluntary rather than on mandatory vaccination have higher burdens of infectious disease or less favorable overall health outcomes, as in the United Kingdom, Germany, Scandinavia, parts of Canada and Japan, where vaccination is not mandatory.[442]

Holland asked a pertinent question as to whether it is ethical "to compel non-emergency, preventive measures on children for school attendance when Congress has acknowledged that these measures are likely to cause injury and death to some."[443]

This two-century old controversy about the dangers of vaccination has created a lot of hardship to the movement of alternative medicine, as Voltaire pointed out, "It is dangerous to be right in matters on which the established authorities are wrong."

Because vaccines are given to relatively healthy individuals many believe that risk of serious adverse reactions, including encephalitis and death are not acceptable. This concerned public is often very frustrated in its demands for an objective disclosure of the known and foreseeable benefits and risks, which are often not available.

Governments and health authorities' response to the potential adverse events of vaccination is that it is done for the greater good. Barbara Loe Fisher, co-founder and president of the National Vaccine Information Center, asked the question no one wants to answer, "How many is too many to sacrifice? Is it 500, 5,000, 500,000? How many do you say, it is OK to write off in the name of the greater good in order to protect the public from diseases?"[444]

A concerned physician asked a similar question: "How much of a risk of loss of language, paralysis, unmanageable behavior problems, seizures, or autoimmune disorders can a child be mandated to take to protect the herd or hypothetical other children from the risk of a 'preventable' disease in the event of an outbreak? This question must be addressed. … There are many vexing questions. What is an acceptable risk to the patient or parent? How high a risk can society require a person to take for the greater good?"[445]

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[29] The 1905 US Supreme Court Decision on mandatory vaccination.

Are we not stepping into tyranny when informed consent has been overridden in order to protect the herd and a blinded eye culture is preventing or at the very least not interested for the public to know the real and full implications regarding the “sacrificial rites” of vaccination?

Sandy Reider who is a Harvard trained physician and who has practiced homeopathy for over 30 years in Vermont clearly expressed a lots of the sentiment held by the his colleagues in the homeopathic community, “My role as a practicing physician is, first, to do no harm,” and to which he added, “and to support informed consent to all medical procedures, as outlined in the Nuremberg Code and subsequently similar codes of ethics, most recently including The Declaration on Bioethics and Human Rights at the UNESCO Convention in 2005. … The State of Vermont, with the explicit support of medical trade organizations like the American Academy of Pediatrics, clearly has thrown this human right under the bus with its vaccine mandates. … There is a considerable difference between giving a seriously ill child a proven life-saving medicine versus subjecting a completely healthy child to a drug that is known to cause severe, or even potentially fatal, adverse effects, however small the chance,” he said. “This is an ethical issue that goes to the heart of our basic human right to informed consent to any drug treatment or medical intervention.”[446]

In another article, Reider said, “As physicians, we can acknowledge the fact that there is little reason to fear a few cases of measles, but we should all, physicians and patients alike, fear the denial of unfettered access to scientific information coupled with the loss of our right to consent, or not, to vaccination. Censorship of legitimate peer-reviewed vaccine science and perspectives (already a fact in mainstream media) is perhaps the best possible argument for a law, such as that proposed by H.310, that formalizes and guarantees to all Vermont citizens, and parents on behalf of their children, the right to full informed consent. The alternative is distressing to contemplate: a growing distrust between doctor and patient, progressive loss of confidence in our government and its health agencies, and ongoing denial of the reality and extent of vaccine injury. ”[447]

However, those who have looked into the scientific literature with an unbiased and critical mind have found that vaccines are far from being safe, despite all the governments and agencies rhetoric, and that they have never been fully tested for safety. Like drugs, there is no safe drug and there is no safe vaccine. The risk-benefit assessment of vaccination has never been clearly presented to the public, first, because it is not known, and second, there seems that there is no interest of finding it out. Authorities have not been transparent about the dangers of vaccination, at best negligent, and have no right to impose such bad science to a free society.

It is well known fact that vaccination will triggers immunity, which will give some protection during epidemics. However, in order to obtain herd immunity, individuals are sacrificed. As a medical tenet, it can be readily left to the medical authorities to deal with it, but when the ingenuity of the law is invoked to make it mandatory, then the public has a right to know what they are “getting for their money”.[448]

For many years in the 1980s, a woman held on a daily basis a sign before Queens Park, the Ontario Government Legislative Building, which said, “No one told me it was going to be my child. Informed consent, gives us the real numbers.” Her son reacted badly to the DTPP vaccine, which led to severe brain damage associated with blindness and complete physical disability. The parents spent over a million dollar in legal fees in their attempt to sue the government and the vaccine manufacturer, alleging they had not been warned that vaccines might cause brain damage. The parents didn’t win in court, but in 1990 the Ontario Government passed a law mandating vaccinators to tell vaccine recipients to watch for and report adverse events.

The respective arguments of the two opposite camps for and against compulsory vaccination have remained the same despite two centuries of great scientific progress. The first camp view vaccines as being a human right,[449] and blindly claims its safety with the intent of protecting the herd, while the second camp keep waiving red flags about the short and long-term adverse effects, which scares the hell out of the ones in the first camp. For many parents, the main reason to refuse vaccination is that they feel that their children are being experimented on, which they are right, as it ends up robbing the health of a great proportion of them. Parents have the supreme duty of protecting their children against potential harm, even if it means to break the law.

Similarly, personnel of the US Armed Forces were asked to get the very controversial anthrax vaccines. However, as it was revealed in a congressional hearing that superior officers and supervisors working in the same office and doing the same duties were not required to get them. Ms. Antonia Spaith of Falls Church, Virginia who after serving 25 years in the Armed Forces lost her health after a series of mandatory vaccination, including the controversial anthrax vaccines, despite the facts that this anthrax vaccine was fraught with errors; that it was tainted; that its production facility was not visited for quality control for 20 years; that it didn’t protect against the strain of anthrax that would most likely be used; and that it was given to 300,000 service personnel before it production facility was finally closed. When asked by Representative Burton, “And they didn't get the shots?” Spaith answered, “No, sir, they did not. They said they didn't have time,” to which Burton replied with another question, “So you were the only one and you ended up being the guinea pig?” Ms. Spaith answered, “Yes, sir.”[450]

In the same 1999 congressional hearing, Ronald C. Kennedy, a microbiologist and immunologist who had been working in vaccinology for close to 20 years, pointed out some of the dangers inherent to vaccination,

“As a number of these infectious diseases cause diseases in newborns and infants, I have become aware of the difference between how newborns respond to vaccination when compared to an adult.

“I consider myself pro-vaccine. However, growing up in the field of vaccinology as I have, I am aware of a number of issues and considerations that should be brought forth when it comes to vaccines, public safety, and personal choice.

“I would like to briefly mention three issues as it relates to the subject of this hearing.

“The first is a lack of a mechanism to study the basis for adverse reactions to vaccines.

“The second is, how can we improve vaccine safety, particularly when immunizing infants?

“The final issue is that certain vaccines are just not appropriate and have not been tested well enough to mandate mass vaccination of infants, and this deals with informed consent and the parents' right to personal choice.

“Regarding the lack of a mechanism to study the basis for adverse reactions to vaccines, I along with several colleagues have submitted grant applications to the National Institutes of Health to study the basis and mechanism of adverse reactions seen as a result of the hepatitis B vaccine. We made three attempts.

“In each attempt the grant application was not considered for funding. The reasons of the peer review panel were the application was descriptive and a fishing expedition. We had compelling evidence but no direct cause and effect, and limited preliminary data.

“As someone who has been funded continuously from the National Institutes of Health since 1984 and who has served on grant review panels for the National Institutes of Health since 1987, I was aware that such comments were a kiss of death. More importantly, I did not disagree with the panel's perception of the grant application. However, it was the nature of the subject matter. Since everyone has a perception that vaccines are completely safe, why would they want to study adverse reactions?

“If the National Institutes for Health or Centers for Disease Control and Prevention will not support research by investigators outside their institutions into the basic mechanisms of adverse reactions of vaccines that are presently being used to immunize infants, perhaps the pharmaceutical companies who make the vaccines would fund such work by outside investigators. Honestly, I do not think that the vaccine manufacturers would be interested in supporting efforts that might show that their product is harmful.

“I would urge you to provide research funds that are currently unavailable to study serious adverse reactions to vaccination such as those seen with hepatitis B.

“My second issue is how can we make vaccines safer, particularly in infants? In my opinion, this requires more substantial testing, a requirement that each lot of vaccine be tested in non-human primate models for safety and comparative potency. Many of the present vaccine products have bypassed non-human primate studies and gone directly from rodent studies into human clinical trials. This was based on cost and comparability issues.

“Additionally, other vaccines have shown problems in non-human primate models, and these were ignored and the product went into human clinical trials anyway.

“It is important to test vaccines in immunologically similar animals and in an outbred population like us, particularly when addressing issues like long-term safety and comparable potency of a given vaccine lot.

“My final issue relates to whether certain vaccines are appropriate for infant immunization and whether parents should be informed about the risk versus benefit of vaccination. More importantly, the physician who administers that vaccine is probably not aware there are any risks.

“Two specific vaccines come to mind, hepatitis A and hepatitis B. I will not go into a long-winded scientific process and simply state that the chance of an infant or child getting either hepatitis A or hepatitis B is close to none or nonexistent. When the potential for exposure does exist, those risk factors are easily identified. Even more disturbing is that hepatitis A causes a self-limiting infection and does not cause chronic disease. It is my opinion that parents should be made aware of the risks and benefits of each vaccine where the chance for infection during infancy is minimal to nonexistent.

“Certain vaccines, such as the enhanced and inactivated polio, diphtheria, tetanus, acellular pertussis, and the haemophilus influenza type B conjugate vaccines have significantly reduced infant mortality and morbidity and should be considered for infant immunization. However, other vaccines such as hepatitis B may be more effective when given at a later age rather than at birth. Informed consent for vaccines such as hepatitis A and hepatitis B should be considered and parents allowed to choose based on their perceived risk to benefit from vaccinating their infant.

“To further illustrate my points, I would like to discuss adverse reactions and the need to support funding activities. The example I am going to pick is the whole cell pertussis vaccine.

“This vaccine started for universal immunization of infants in developing nations in the 1940s. The whole cell pertussis vaccine causes frequent systemic symptoms such as irritability, lethargy, loss of appetite, and fever in 72 hours following immunization in up to 50 percent of subjects. More severe reactions include prolonged inconsolable crying, high pitched fever, screaming, fever above 104.9 degrees Fahrenheit, febrile and afebrile seizures, and shock-like states that can last up to 36 hours. In comparable trials, these adverse effects were more common in DTP recipients than in DT vaccinees. This suggested that the pertussis vaccine caused these reactions.[30]

“The public believes that the whole cell pertussis vaccine causes brain swelling and permanent neurologic damage and is widespread. However, scientific epidemiologic data to support a casual relationship are said to be inadequate, and this is simply not true.

[30] Incidentally, the acellular pertussis vaccine is less effective, and thus health agencies began using again the cellular and more dangerous pertussis vaccine.

“Why is this the perception? First, there is no support for basic research into adverse reactions. The data on the casual relationship and inadequate nature to show a cause and effect, a lot of the data comes from the vaccine manufacturers. New and improved vaccines should decrease the adverse reactions, and the acellular vaccine is certainly associated with the lower incidence of these reactions.

“Will we ever understand the mechanism of how the whole cell vaccine produced these side effects, and is there any association with neurologic problems? This is unlikely, because this has been going on for 50 years, and what research really has been done? My question is, why then is the whole cell vaccine still being used?

“Regarding the area of informed consent, I would like to quote from Chapter 17 in a textbook entitled *Pediatric Infectious Disease, Principle and Practices*. The editors are two pediatric infectious disease specialists. The textbook was published in 1995 and it is one that I use to teach medical students. In the area of informed consent, I am quoting directly from the book:

“ ‘Vaccines should be administered only after consent has been obtained from the parent, guardian, or in some cases the vaccine recipient. In the United States informed consent should be in writing and include an explanation of the disease to be prevented, the benefits and risks of immunization and the side effects that parents should look for following immunization.’

“Relative to requirements, again I am quoting from this chapter:

“ ‘Every time a public or private health care provider in the United States administers a particular vaccine, it is required to provide a legal representative of a child or any other adult or individual receiving a vaccine a copy of the vaccine informed statement prepared by the CDC. In addition, the names of the patient and parent, the date, site of immunization, dose, manufacturing vaccine lot number, name of person who administers the vaccine, and the place where the vaccine is administered should be recorded. This information is absolutely important if an adverse reaction occurs following immunization.’

“I think this is part of the problem with the adverse vaccine effects reporting system. Health care providers are not required to obtain the signature of the patient, parent or child's legal representative to acknowledge receipt of the vaccine information statement. This is an absolute must.”[451]

Conflicts of interests in vaccine safety

The vaccine industry and government agencies keep repeating that the benefits of vaccines far outweigh the risks. Yet conflicts of interest cloud research of the safety and adverse effects of vaccines.[452]

It was reported earlier that Leo Kanner had observed that parents of the first autistic children ever recorded in the history of psychiatry had a common denominator: they were all highly

educated. Is it just a coincidence that the US is by far the country in the world with the largest gross domestic product,[453] has the highest number of children with autism per capita,[454] and has "the highest first-day death rate in the industrialized world? An estimated 11,300 newborn babies die each year in the United States on the day they are born. This is 50 percent more first-day deaths than all other industrialized countries combined."[455]

Adverse events from drugs and vaccines are common, but underreported. Although 25% of ambulatory patients experience an adverse drug event, less than 0.3% of all adverse drug events and 1-13% of serious events are reported to the Food and Drug Administration. Likewise, fewer than 1% of vaccine adverse events are reported. Low reporting rates preclude or slow the identification of "problem" drugs and vaccines that is endangering public health. When patient data collected from June 2006 through October 2009 was electronically surveyed, it was found that 10% of the vaccines had reported an adverse event.[456]

On one hand, the official US government website vaccines.gov states, "Vaccines are safe and effective," and on the other hand Surgeon General David Satcher said before a US congressional hearing in 1999, "We are concerned about vaccine safety. As gratifying and as efficacious as the benefits of immunizations are, we still have serious concerns. Vaccines are not 100 percent safe. They have risk. A small percentage of children still suffer adverse consequences, as a result of vaccines. And as long as there is a risk of injury or illness in even one child, we should not, we will not be satisfied. Our concern for children injured because of vaccines is not without tangible expression. We've developed a compensation system to provide families with financial restitution for vaccine related injuries."[457]

This vaccine court was set up in 1988 by US Congress in consultation with the industry to allow those who have been injured by vaccines to receive compensation. The Act of Congress actually *acknowledged for the first time publicly* in 1986 that vaccination can cause permanent injury and death to some infants and children.

The US Congress passed a series of laws in 1986 under the *National Childhood Vaccine Injury Compensation Act,* which were *"*meant to ensure access to necessary, safe vaccines; meaningful information to parents about vaccines; improvements in overall vaccine safety; and generous and swift compensation in the event of injury. They intended to ensure a framework for rational, unbiased decisions at the federal and state levels for the public health and safety, and especially for children. But these are not the results in fact. The laws that apply to childhood vaccination mandates in practice permit conflicts of interest; inadequate safety science and surveillance; under-compensation of vaccine-injured children; insufficient warnings about the risks of vaccines; and severe sanctions for non-compliance with vaccination mandates. They also may have inadvertently contributed to the poor state of childhood health."[458]

The intention of Congress was according to Henry Waxman, of one of the authors of the program, to be something different than it turned to be 23 years later, when he said in Congressional hearing 1999, "The Vaccine Compensation System was set up to try to make

sure that people didn't have to go to court and go through all the expense of litigation in order to be compensated when they had an adverse reaction from vaccines."[459]

In the first 13 years of the program, according to Surgeon General David Satcher, "1,400 families who have received a little over $1 billion from the system."[460]

Vaccines are a big business, and in this vaccine issue, profits are clearly prioritized over lives. Due in part to the absence of ordinary tort law protections, the vaccine marketplace is uniquely favorable to industry. Logically, demonstrably predatory corporations selling compulsory products to a vulnerable population should lead to a high level of government scrutiny and skepticism. But this is not apparent. On the contrary, governments appear to ally their interests with the industry in the arena of vaccines. It is thus not surprising that citizens feel betrayed by their governments.[461]

From the 1980s through the early 2000s, "the pharmaceutical industry, which produces vaccines, was the most profitable industry in the US. In 2002, the combined profits of the ten largest drug companies in the Fortune 500 had higher net profits, of $35.9 billion, than all the other 490 companies combined, which had net profits of $33.7 billion. Also in 2002, the pharmaceutical industry employed 675 full-time lobbyists in Washington, more than the number of people in both Houses of Congress. It spent $91 million annually for lobbying."[462]

In 2010, the vaccine business experienced a spectacular growth rate of 10 to 15% per year versus 5-7 % for the rest of the pharmaceuticals. Its value rose from 5 billion in 2000 to almost 24 billion in 2013. The global vaccine market is projected to reach 100 billion by 2025. More than 120 new products are in the development pipeline. The influenza vaccine market was estimated at $2.9 billion in 2011 and was $3.8 billion in 2018. In some ways, vaccines have become the driving engine of the pharmaceutical industry. Newer and more expensive vaccines are predicted to come into the market faster than ever before.[463]

Today only four corporations produce almost the entire U.S. vaccine supply: Pfizer, Merck, GlaxoSmithKline and Sanofi Pasteur.[464]

"It is particularly troubling that the primary childhood vaccine manufacturers, Pfizer, Merck and GlaxoSmithKline, have records of fraud and criminal or ethical misconduct in marketing other drugs where they face ordinary tort liability that they do not face by law in the vaccine market."[465]

"In 2009, Pfizer entered into the largest criminal settlement in U.S. history. It paid a $1.2 billion as a criminal penalty, plus additional fines of over $1 billion. The corporation acknowledged having made false and misleading claims about the safety and effectiveness of its drugs and promoting off-label, illegal uses. It was a repeat offender, having been charged with four such violations since 2002."[466]

In an industry memo allegedly given by a whistleblower to a reporter showed that executives at Wyeth, which was recently acquired by Pfizer, instructed vaccine lots to be sold around the

country, and not in any concentrated area, to avoid any appearance that vaccines might cause Sudden Infant Death Syndrome.[467]

“Merck voluntarily withdrew its anti-inflammatory drug Vioxx from the market in 2004. Congressional hearings at that time suggested that up to 55,600 people probably died as a result of heart attacks and strokes directly linked to Vioxx’s failure to alert users to contraindications and possible adverse events. The Congressional hearings suggested that Merck knew of the likelihood of these side effects in 1998, before the FDA approved the drug in 1999. The approval process suggested conflicts of interest. To compensate victims, Merck entered into a settlement to pay $4.85 billion to nearly 50,000 eligible claimants.”[468]

“The failure of the FDA approval system to uncover these undisclosed adverse events prompted Dr. Jerome Kassirer, former Editor in Chief of the *New England Journal of Medicine*, to ask ‘whether the entire system is corrupt.’ ”[469]

Conflicts of interest in vaccine mandates have been identified as a problem since at least 1911.[470]

In congressional hearing in 1999, Rick Rollens the father of a child who is said to have become autistic after vaccination touched on the conflict of interest in manufacturing and promotion of vaccines, “What we are asking, and what I am asking particularly from you is that before we deal with bringing new vaccines onto the market, and before we decide to mix such potent chemicals and potent viral and bacterial agents together, that independent safety studies be done about their effects.

“And when I say independent, I mean devoid of the public health community's involvement. It is a conflict of interest to have the CDC, the NIH or anyone else who is involved with the promotion of vaccines to be telling us if they are safe or not. Like I said before, it is like asking the oil [tobacco?] industry to come in and tell you that there is no relationship between smoking and lung cancer. It is ludicrous to have these people who are in charge of promoting this policy to be telling you if they are safe or not.

“We have able immunologists, virologists, and neurologists around this country and around this world who are very able to look at the science of the interactions and the effects that these vaccines have on a certain percentage of the population.

“I would also say that when I keep hearing that it is a rare chance occurrence, or this is a rare effect, I am telling you, as honestly as I can, that I have witnessed in the last 6 years alone, since my son was diagnosed, an explosion of autism, and parents are reporting objective reports, nothing besides the parent's observation of what happened to their children, of this strong temporal relationship between the vaccinations that they received, primarily the DPT, hepatitis B, and MMR, to the onset of their child's autism. The numbers are there. The California Department of Developmental Services has reported two reports within the last year on this epidemic of autism in California.

“I challenge you again, when you go home next week to your districts, walk the neighborhoods, talk to the parents, they will tell you what is going on.”[471]

To Rollens’ testimony, Representative Burton enquired further from his witness about the insinuation of conflict of interest, “We have some people from the health agencies here, you implied that there might be a vested interest in them not giving information to the Congress and to the country regarding various vaccines. That is a pretty serious allegation. You said we ought to have independent studies from outside. What makes you say that? I mean do you think they are being influenced by pharmaceutical companies or what is it?” To which, Rick Rollens answered, “The lack of responsiveness to the call that we have made for years now about this growing problem between the relationship between our children being damaged by vaccines and becoming autistic, and no response, or being literally blown off, that it is a rare chance occurrence that your child has become autistic right around the same time as the vaccine, with absolutely no safety studies to back it up. I want to see from Dr. Satcher and others where the CDC's safety studies are that tell me as a parent, and as a taxpayer, and as a good person, a father who loves his child, that these vaccines will not cause autism or that my child, most importantly, did not become autistic because of the vaccines that he received.”[472]

Representative Henry Waxman from California dismissed Mr. Rollens assertions, “But they are people who are scientists, and they are not making any money out of having vaccines out there, and they are certainly not doing a service to anyone if they are not monitoring whether these vaccines are safe.”[473]

However, the longstanding conflicts of interest that hold CDC Advisory Committee on Immunization Practices (ACIP) members captive to pharmaceutical industry interests are well known and well documented. In the 2003, United Press International conducted a four-month investigation, which identified “a web of close ties” and financial entanglements between ACIP members and vaccine companies, including sharing vaccine patents, owning vaccine company stock, getting research funding or money to monitor vaccine testing, receiving funding for academic departments or appointments.[474]

Elizabeth M. Hart, who is an independent Australian citizen investigating conflicts of interest in vaccination policy and the over-use of vaccine products wrote a letter the editor of the BMJ that had published an article authored by Elisabeth Mahase on Stanley Plotkin,[475] who is known as “the Godfather of Vaccines,” and holds eight vaccines patents,[476] pointed it out, “Stanley Plotkin has been hugely influential on global vaccination practice and policy during his long vaccine industry-funded career. As this article notes, Plotkin ‘... consults for many pharmaceutical and biotech companies, as well as non-profits ... .’ There must be more transparency for the conflicts of interest of vaccine industry-associated people such as Stanley Plotkin. More detailed information should have been included in this BMJ feature authored by Elisabeth Mahase, which provides Plotkin with a platform to espouse his views on 'vaccine hesitancy', and his endorsement of mandatory vaccination to counter scepticism about safety, i.e. ‘I have to say that it works—even though there's a lot of opposition—because the US maintains high coverage’. ”[477]

Stanley Plotkin's conflicts of interest were discussed when he was questioned by US lawyer Aaron Siri during a deposition for a vaccine court case in January 2018. Details of the extent of his industry conflicts of interest were elicited from him by Mr Siri, e.g. Plotkin's consultancy work for Sanofi, Merck, Glaxo and Pfizer, and his association with Dynavax Technologies, MyMetics, Inovio, CureVac AG, SynVaccine, GeoVax Labs, GlycoVaxyn AG, Adjuvance Technologies, BioNet-Asia, Abcombi Biosciences, and Hookipa Biotech.[478]

Subsequently, Plotkin himself briefly summarized his conflicts of interest in an article he had published describing his experience during this deposition, i.e. 'How to Prepare for Expert Testimony on the Safety of Vaccination', published in the journal *Pediatrics* in April 2019.[479]

In the interests of providing some transparency for Stanley Plotkin's conflicts of interest, here is the Financial Disclosure and Potential Conflict of Interest information provided in his *Pediatrics* article, i.e. 'Dr Plotkin is a paid consultant to Sanofi Pasteur, GlaxoSmithKline, Merck, Pfizer, Inovio Pharmaceuticals, Variations Bio, Takeda Pharmaceutical Company, Dynavax Technologies, Serum Institute of India, CureVac, Valneva SE, Hookipa Pharma, and NTxBio. Vaxconsult gives advice to vaccine developers.' I suggest this brief information still does not do justice to Stanley Plotkin's lengthy history of conflicts of interest.

In her BMJ article quote abve, Elizabeth Mahase's wrote "There is growing awareness that conflicts of interest are undermining trust in healthcare professionals."[480] For further information on Stanley Plotkin's conflicts of interest and other vaccine related matters, interested readers should seek out the transcript of Stanley Plotkin's deposition,[481] or view his 9-hour long deposition.[482]

This pervasive conflicts of interest has been revisited by Congress in 2000, which identified pervasive conflicts of interest in the FDA and CDC advisory bodies that make national vaccine policy, such as "advisers' financial ties to vaccine manufacturers; little unbiased public participation; insufficient use of conflict of interest waivers; advisers' permitted stock ownership in companies affected by their decisions; advisers' lack of disclosure of partisan expert witness work; advisers who held vaccine patents approving vaccines for the same disease; excessively long terms for committee members; and liaison members' undisclosed ties to vaccine manufacturers."[483]

In 2008, eight years later, an Office of Inspector General found that 97% of Special Government Advisers on committees at the CDC failed to disclose necessary information about conflicts of interest, prompting criminal investigation of some.[484]

Holland points on this subject, "Illustrative of the culture of conflicts of interest is the former Director of the CDC, Dr. Julie Gerberding. One year after she left the CDC as Director, she joined Merck as the President of its Vaccine Group. During her tenure at the CDC approved Merck's Gardasil vaccine for human papilloma virus against cervical cancer. Gardasil is the most expensive vaccine for the least prevalent disease that the Advisory Committee on Immunization

Practices (ACIP) has ever approved and recommended for universal use. There were well-documented conflicts of interest in the Gardasil approval process. Since ACIP's approval in 2007, there have been allegations of severe injury and death from the vaccine."[485] It is thus very concerning that many ACIP advisors had ties to the industry and their views and judgments may therefore be motivated more by financial and professional self-interest than by protecting the public health. In such an aoligarchic system, 'corruption is a concern.' "[486]

The National Vaccine Advisory Committee (NVAC) that was set up in 1987 to implement the 1986 Act with the purpose "to achieve optimal prevention of human infectious diseases through immunization and to achieve optimal prevention against adverse reactions to vaccines."[487] However the meaning and implications of the above sentence has been drastically changed on the NVAC website into, "… to achieve optimal prevention of human infectious diseases through vaccine development, and provides direction to prevent adverse reactions to vaccines."[488]

Optimal prevention against the adverse reactions to vaccines has not been done, as the short and long-term effects of vaccination remain greatly unknown which would implied the comparison of fully vaccinated versus and unvaccinated population over a three generations in order to be able to fully evaluate for "carcinogenic, mutagenic potential or impairment of fertility."[489]

Holland pointed out, "There have been almost no scientific studies assessing the safety of the federally-recommended childhood vaccination schedule as a whole, so its overall cost-benefit ratio is unknown. The FDA and CDC test and approve vaccines individually, not as part of the overall vaccination schedule. For example, the federal government recommends that at a baby's two-month doctor visit, the baby receive the Hepatitis B, rotavirus, diphtheria, tetanus, pertussis, Haemophilus influenzae type B, pneumococcal and inactivated poliovirus vaccines simultaneously. In other words, the baby is recommended to receive eight vaccines at once containing a wide array of chemical and biological agents. While a baby receives these vaccines together, the vaccines have not been tested together."[490]

How can vaccine safety be made optimal when as vaccine safety research was in 1995 of about $2 million per year, or 0.2% of the total vaccine budget of about $1 billion, which was just enough to cover the basic operation of the Vaccine Adverse Event Reporting System, "period, and nothing else. Everything else has been begged, borrowed and stolen."[491] Little would change in the next 13 years as in 2008, it was lamented by the former President of the American Academy of Pediatrics that the vaccine safety science was only $20 million per year or O.5% of the total vaccine budget of $4 billion.[492]

As Congress considered vaccines "unavoidably unsafe," it created a program which was supposed to compensate a injured vaccinees the same way that "it is taking care of war veterans—the society is providing for those who suffered for the collective good."[493] However the system failed to compensate injured vaccines generously and swiftly, which suggests that legitimization of the victims would undermine the public message that 'vaccines are safe and

effective.' "Acknowledging injury is potentially dangerous, undermining the public narrative of overwhelming vaccine safety."[494]

The compensation program became thus "a highly adversarial, lengthy, expensive, traumatic and unfair imitation of a court trial for vaccine victims and their attorneys."[495] And subsequently over 80% of claims have gone uncompensated.[496]
Take for instance, the case of Hannah Bruesewitz, an infant who within hours of receiving DPT vaccine in 1995 had life-threatening seizures. "She continues to suffer severe seizures and multiple impairments. Her parents timely filed a claim in the Vaccine Injury Compensation Program (VICP) but they were denied compensation for failure to prove causation."[497]

The source of VICP compensation is the Vaccine Injury Trust Fund, a fund now containing $3.2 billion collected from an excise tax of $0.75 imposed on the sale of every vaccine.[498]

Further, Holland added, "Liability protection for industry and insufficient safety science funding have not served the interests of children's safety."[499]

However, in this vaccine court the US government is the defendant and continues to deny harm caused by vaccines. Most people don't even know it exists; admitting that enough people are injured by vaccines to warrant such a court would understandably cause more people to hesitate before blindly vaccinating themselves and their children.

In Canada, citizen can sue vaccine manufacturers. However, not a single civil lawsuit for injury related to vaccination has been won against the industry and health agencies. Only the province of Quebec offers indemnizations to victims of vaccination.

It is interesting to note that the vaccine industry doesn't need to defend their products, like any other industry in existence; instead, the federal government does it for them by using lawyers of the US Justice Department. Bizarre as it may seem, hearings are all close to the public. One then wonders what happened to the government of the people, for the people and by the people.

Further, compensation money comes from the government (the people) and not the industry. Many thousand parents of autistic children lost in this federal claim court and lots did so on the testimony of Andrew Zimmerman, the government top vaccine expert. This world-renowned pediatric neurologist testified in 2007 that vaccines don't cause autism and the debate was declared over.

During these 2007 hearings in an omnibus trial for about 5,000 families of autistic children that claimed that their child had precipitately become autistic after vaccinations, Zimmerman was dismissed by the lawyers of the Justice Department during the hearings before finishing his testimony.

It was very convenient not to recognize a link between vaccines and autism, as there were nearly 5,000 other vaccine injury claims that sat in limbo "because they represent children, who

suffered brain and immune system dysfunction after vaccination but have been diagnosed with regressive autism, which is not recognized by the program as a compensable event."[500]

Environmental attorney Robert F. Kennedy Jr. convinced Zimmerman to document what happened during the hearings. In a sworn affidavit dated September 2018, Zimmerman stated that during the hearings he had privately told government lawyers that vaccines can, and did cause autism in a certain subset of children. However, the Department of Justice, and therefore the government of the people by the people, for the people didn't want to hear this from their top expert in this omnibus autism trial and suppressed his opinion.[501]

In this affidavit Zimmerman stated, "I explained that I was of the opinion that there were exceptions in which vaccinations could cause autism. More specifically, I explained that in a subset of children with an underlying mitochondrial dysfunction, vaccine induced fever and immune stimulation that exceeded metabolic energy reserves could, and in at least one of my patients, did cause regressive encephalopathy with features of autism spectrum disorder. …

"Shortly after I clarified my opinions with the DOJ [Department of Justice] attorneys, I was contacted by one of the junior DOJ attorneys and informed that I would no longer be needed as an expert witness on behalf of H.H.S. The telephone call in which I was informed that the DOJ would no longer need me as a witness on behalf of H.H.S. occurred after the above referenced conversation on Friday, June 15, 2007, and before Monday, June 18, 2007. To the best of my recollection, I was scheduled to testify on behalf of H.H.S. on Monday, June 18, 2007. …

"In my opinion, the statement by Mr. Matanoski during his closing argument regarding my expert opinion was highly misleading and not an accurate reflection of my opinion for two reasons. First, Mr. M. took portions of my opinion out of context. … Second, as explained above, I specifically explained to Mr. Matanoski and the other DOJ attorneys who were present that there were exceptions in which vaccinations could cause autism."[502]

It is interesting to note that mainstream media has chosen to completely ignore this important turn of events.

In the document, *The Sickest Generation: The Facts Behind the Children's Health Crisis and Why It Needs to End*, released in September 2018 by the Children's Health Defense that was launched by Robert F. Kennedy Jr. to address the great crisis facing our society, it is pointed out, "American children have never been sicker. Over half (54%) are suffering from one or more chronic illnesses, with the late 1980s and early 1990s viewed as the gateway period that launched the decline. Many chronic illnesses have doubled since that time. The "4-A" disorders— autism, attention deficit hyperactivity disorder, asthma and allergies—have experienced meteoric growth, affecting children's quality of life and contributing to premature mortality. … The proportion of public school children using special education services is skyrocketing, with estimates ranging from 13% to 25% of school populations." However, "mystifyingly, there is almost no outcry in medical, public health or government circles to find answers and solutions," despite the "social and economic fallout from these health challenges is

hitting home hard—with adverse impacts on intelligence, fertility, household and government finances, employment, productivity, military recruitment and more. The disproportionately high level of neurodevelopmental disability in males versus females is also reshaping society."[503]

What is wrong with our public health agencies? In some traditional cultures, elders gather to discuss where the village went wrong when a child falls sick, which is such a contrast in societal sensitivity and values to a society that acts dogmatically with deception and lack of transparency to protect private interests and agendas.

Richard Horton, the editor of the *Lancet,* was severely criticized for having published in the journal an article that pointed to potential link between the MMR vaccine and autism. He wrote, "The *Lancet* published an extraordinary study linking the widely used measles, mumps and rubella (MMR) vaccine with a previously undescribed syndrome of autism and bowel disease. The acrimonious debate that has raged in the UK ever since has cost governments millions of pounds to shore up damaged vaccination campaigns, harmed the reputations and careers of several highly respected physicians and scientists, pitted anxious parents against their confused doctors, and provoked a backlash of vicious opprobrium against a few individuals deemed culpable for their reckless endangerment of the public's health. … Today vaccines are largely an untouchable subject, their benefits too obvious to be questioned. Any hint of dissent concerning their clinical effectiveness and all-around social value is met with bitter rebuttal and resentment. A former President of the UK Academy of Medical Science actually threatened to get me sacked for publishing work that raised questions about the MMR vaccine, while at a dinner party years later, the partner of a government vaccine specialist asked, "Will you *ever* be forgiven?" Forgiven for *what,* I wondered?"[504]

Over a century ago in 1886, American homeopath George Winterburn wrote in a book that attempted to objectively analyze the arguments for and against vaccination, "The subject of vaccination has engaged the attention of a multitude of minds, both great and small, and its literature is as varied, in quality and complexion, as one need wish to find. It is one of those unfortunate topics, which seem to exasperate the most equably-tempered men, and to produce ebullitions of unreasonableness whenever and wherever broached. Conceived in ignorance of the real nature of disease, and born of fanaticism which brooked no questioning, fostered in the beginning by feminine conceit and courtly prerogative, and later by governmental patronage and the conservatism of habit, it seems to have been so imbued with the spirit of intolerance and arrogance, that, even now in these modern days, when we pride ourselves on the impartiality with which we discuss scientific topics, every one who believes in vaccination looks with a sort of pitying scorn upon any one who does not. To doubt or discuss is, to their minds, convincing, nay irrefutable evidence of an impairment of that mental balance which we all pride ourselves in possessing. … The Legislatures of our various States are besieged annually by men whose aim is to establish by enactment a medical priesthood, under the plea that the people are too ignorant to judge for themselves. … It is not singular, therefore, to find the densest ignorance on this subject among those who ought to know its origin and history; ignorance and prejudice being the twin handmaids of tyranny."[505]

Independent journalist Jeremy R. Hammond recently pointed out that the greatest purveyors of misinformation about vaccines are not the ones questioning the risks and benefits or opposing vaccines but the government and mainstream media.[506] We are here reminded of what President Ronald Reagan said in 1981 in his inaugural address, “Government is not the solution to our problem; government *is* the problem.”

As mentioned earlier, the homeopathic community has been using homeoprophylaxis since 1799 as a mean of protection during epidemics. Homeoprophylaxis has a long record of being safe and effective.[507]

As well, the proper management of febrile diseases should be highly considered in this dilemma and this without the use of febrifuges, which are universally used in conventional medicine despite the fact that fever has finally been recognized by conventional medicine to be a friend rather than a foe,[508] and that its suppression can lead to serious consequences.[509] Further, health-promoting lifestyle and environmental choices offer families and communities with enhance protections against the morbidity of infectious diseases.

To settle the long debate about the real value to society about what alternative health care has to offer versus the conventional medical model, two sets of populations of population could be studied over decades for the prevention of disease and the restoration of health. The short and long-term health status of individuals in these populations could be part of ongoing investigation similar to the Framingham heart study, which started in 1948 and is now studying its fourth generation.

It is the convictions of the author who has been in practice for over 40 years as a second-generation alternative care practitioner that in a free market economy alternative medicine would compete very well and even supplant conventional medicine in many aspects of practice, aside of course from emergency medicine, surgical and complex diagnostic procedures, by offering the best approaches of individualized health optimization, and optimal disease prevention and health recovery.

Individualizing the vaccine recipients

Alternative medical approaches, such as naturopathic medicine, offer individualized care. Each individual is considered as a unique whole, and therefore prevention and health optimizing and health recovery approaches are individualized to the each person and its circumstances. In an ideal world, all should have access to such care instead of the one-size fits all of the current conventional model of health care.

In this perspective, the benefits and risks of each vaccine can thus be analyzed in order to find out who will likely benefit or risk the most from each vaccine.

The issue of who should receive a particular vaccine is thus very complex and requires great expertise. To illustrate this point, we will look at measles, which was a hot topic in 2019 in the US, by analyzing its factsheet and who have more to loose or gain from being vaccinated.

An overview of measles

Worldwide, the epidemiology of measles can be divided into two polar situations. On the one hand, we have developed countries like in North America and Europe in which measles cases are more rare, and complications are even more rare,[510] and in which measles is "widely considered a benign disease with a negligible mortality."[511]

On the other hand, measles is a big problem in developing countries, where it can be endemic, nutritional deficiencies are very common, there is poor access to adequate health care[512] and measles vaccination coverage is insufficient to prevent epidemics.[513] More than 95% of measles deaths worldwide occur in developing countries. Measles outbreaks can be particularly deadly in countries experiencing or recovering from a natural disaster or conflict.[514]

Up to 10% of measles cases can result in death in areas of the world where people suffer from poor nutrition, weakened immunity due to HIV/AIDS, malaria or other diseases.[515]

In 1980, before widespread vaccination in developing countries, measles caused an estimated 2.6 million deaths each year and mostly in children under the age of 5.[516]

In 2000, there were an estimated 28,219,100 cases of measles, causing some 535,600 deaths, a mortality rate of 1.9%.[517]

The WHO estimated that in 2017, there were 7,585,900 estimated cases and 124,000 estimated deaths, a mortality rate of 1.6%. In 2018 there were 9,769,400 measles cases and 142,300 related deaths, a mortality rate of 1.5%. By region in 2018, WHO estimates that in the African region, there were 1,759,000 total cases and 52,600 deaths, a mortality rate of 3.0%; in the Region of the Americas, 83,500 cases; in the Eastern Mediterranean Region, 2,852,700 cases and 49,000 deaths, a mortality rate of 1.7%; in the European region, 861,800 cases and 200 deaths, a mortality rate of 0.02%; in Southeast Asia, 3,803,800 cases and 39,100 deaths, a mortality rate of 1.0%; and in the Western Pacific, 408,400 cases and 1300 deaths, a mortality rate of 0.3%.[518]

Global measles deaths have since decreased dramatically, that is 75% from an estimated 535,600 in 2000 to 134,200 in 2015, which accounts for about 367 deaths every day or 15 deaths per hour. The WHO estimates that "measles vaccination resulted in a 79% drop in measles deaths between 2000 and 2015 worldwide. In 2015, about 85% of the world's children received one dose of measles vaccine by their first birthday through routine health services—up from 73% in 2000. During 2000-2015, measles vaccination prevented an estimated 20.3 million deaths making measles vaccine one of the best buys in public health."[519]

Infants and young children aged 6 to 14 months are at highest risk for complications, as they are losing their passive acquired immunity from the antibodies against measles they received from their mother placentally and with breastfeeding and too young to be vaccinated because of the

decreased efficacy of vaccination in children under 12 months of age. The greater is the passive acquired immunity in the child the less the vaccination takes.[520]

Mortality in this 6-14 month aged group children tends to therefore be the highest than all other age groups, as it is around these times where children are the least capable to defend themselves.

This is the reason why the minimum age for recommending MMR vaccination varied overt time and countries between 6 and 15 months for routine vaccination or during an epidemic.

This is where the concept of herd immunity is discussed for the protection of infants from exposure to the measles virus. Surgeon General David Satcher explained herd immunity before a US congressional hearing in 1999, “Those programs provide what we call community or herd immunity, which helps to indirectly protect those individuals who cannot be vaccinated, such as those who may be too young for certain vaccinations or who have other health problems that prevent them from being immunized; yet, they're still susceptible to the disease. For example, babies that are under 1 year of age are too young to receive the measles vaccine, but receive some protection from the vaccination of other individuals. Also protected are children and adults, who cannot be vaccinated with some vaccines for medical reasons, such as children with leukaemia. So, the entire community benefits from the reduction of the spread of infectious agents, and healthier communities mean a healthier Nation.”[521]

However, the picture is completely different in high-income countries, where average annual measles mortality rates have declined dramatically prior to introduction of vaccination. In fact, the role of vaccines for the protection of the population may have been overstated in developed countries, as the mortality rates from many infectious diseases including measles dropped precipitously in the twentieth century before almost any vaccines came into effect. These dramatic declines were likely due in general to better sanitation and cleaner water, but especially better overall nutrition for the decreasing rates of the measles mortality.[522]

For instance, in the US mortality rates dropped 43 folds from the early 1900s until 1963 when measles vaccination was first introduced. In the early 1900s, there were on average of 10 deaths from measles per 100,000 persons per year. During the six-year period prior to the introduction of measles, that is from 1958-1963, mortality was down to 0.23 per 100,000, despite the fact that the “reported measles cases remained relatively constant before the introduction of vaccine in 1963,” and following vaccine licensure in 1963, “the average annual mortality rate dropped to 0.065 deaths per 100,000 population in 1965-1970.”[523]

In other words, the mortality from measles before vaccination was 230 per 100 million persons and after vaccination it dropped 65 per 100 million persons.

In England, public health authorities considered to not introduce measles immunization in 1963 when it became available, as the mortality was so low, “In recent years the death rate from

measles in England and Wales has been so low that active immunization against the disease has been considered to be unnecessary."[524]

Twelve years after the introduction of measles vaccination in the US, it was concluded that, "Vaccine should be accessible to all populations, but intensive efforts need to be directed toward groups at high risk of dying from measles who are suffering from a myriad of other health, social, and economic problems."[525]

In England, the scenario was similar, as in 1940 there were 857 reported deaths out of 409,521 "notified"[31] cases, which represents 21 deaths per 10,000 notified cases. In 1957, there was 94 deaths among 633,678 notifications or 1.5 deaths per 10,000 notified cases.[526]

It was estimated that the average mortality from measles between 1958 and 1970 in the US, therefore from the six years before and seven years after the introduction of vaccination was 1.0 death per 10,000 cases, which shows a 1/3 decrease in mortality.[527]

These numbers are actually gross estimation, as the number of reported cases is only "6-8 per cent of the number of cases actually occurring."[528]

Prior to vaccination, 95% of adults had natural immunity to measles.[529]

Complications from measles

Complications from measles can be mild to very severe and include keratoconjunctivitis (which can lead to blindness, especially in malnourished children), otitis media, stomatitis, hepatitis, pancreatitis, diarrhea/dysentery, dehydration, pneumonia, respiratory insufficiency, myocarditis, thrombocytopenia, myelitis, encephalitis and death.

The rate, type and gravity of complications from measles vary greatly from one region of the world to another, greatly depending on the age and vaccination and nutritional status of the population affected, underlying health issues, access to health care, on whether measles is endemic or occurs sporadically and the virus genotype.

As an instance of this disparity in measles outcome, the mortality from measles has been reported to have varied by a quotient of 150 times in 2018 from the lowest to the highest mortality rate per region, namely 0.02%, 0.3%, 1.0%, 1.7% and 3.0% for Europe, Western Pacific, Southeast Asia, Eastern Mediterranean Region and Africa, respectively.[530]

However in any single epidemic, the exact percentage of people who experience a complication from measles is not always easy to obtain, as there exist two great variables, which are the percentage of reported versus unreported cases and the quality of the surveillance system.

[31] Depending of the country, the number of cases of measles that are reported or notified is between 6-8% of the actual number of cases of measles during a measles epidemic.

Complications in developed countries

The rate of complications from measles in developed countries has varied between 5-17% of the *reported* or *notified* cases.[531,532,**533**,534]

For instance, for a period of 3 ½ months at the beginning of 1963, which is just before the introduction of measles vaccination in England, 341,961 cases of measles were *notified* to the health authorities. Of these 52,992 were analyzed in a survey conducted among physicians, who reported 3,532 cases with complications, or 6.67% of the *surveyed* cases.[535]

In the US in 1989, almost three decades after the introduction of vaccination, measles seemed to have become a bit more virulent, as there was a greater ratio of complications at 17.4% of the reported cases.[536]

However, in a 2019 measles epidemic in the US, the rate of complication was reported to be 5% rate in 1,282 *reported* cases, of which 60% were cases with pneumonia.[537,538]

The above numbers can therefore be quite misleading, because measles is considered benign in developed countries and the great majority of the cases is not seen by a health care professional and is therefore not reported to health authorities.

The real case ratio of complications from measles can therefore only be known when all the cases, including unreported cases are included in the tabulation.

Researchers have estimated that *only* about 6-9% of the measles cases tend to be reported in developed countries.[539,540]

We can therefore consider that the ratios of complications per number of cases of measles that were reported above in developed countries are about 11-17 times greater than the real case ratio of complications, unless the researchers clearly state that the number of unreported cases are included in the calculation.

Complications from measles must also be viewed on the long term, as there can be some post-infectious complications, such as subacute sclerosing panencephalitis (SSPE).

From 1970 to 1983, there were in England a total of 270 deaths from measles. Of these 270 deaths, 175 or 65% were related to SSPE. As during this period, there were 1,814,000 *reported* cases of measles, which would make the mortality from measles, including SSPE, at 1.5 per 10,000 per *reported* cases.

However, as reported cases are only 6-9% of the actual number of cases during a measles epidemic in developed countries, the absolute mortality from measles should be closer to 0.09-0.135 per 10,000 cases of measles and the incidence of SSPE to be close to 0.06-09 per 10,000 cases of measles.[541,542,543]

These numbers correspond to other estimates of the risk of developing SSPE to have been 8.5 per million cases of measles in the pre-vaccination era,[544] but it is known that some cases of SSPE begin within months after measles vaccination and without ever contracting measles or having had any contact with someone with measles[545] and now we have 1 in 33 children with autism that has been demonstrated to be a form of encephalitis.[546]

There are a few recent epidemics in developed countries in which the rate of complications and the percentages of reported and unreported cases have been estimated and these were used to compile the true rate of complications in developed countries.

There were two measles epidemics in the Netherlands, one in 1999-2000 and the second one in 2013-2014, in which the researchers tried to establish in both epidemics the number of unreported cases of measles by using the capture-recapture methods.

The estimated *total* number of individuals, reported and unreported, who had measles in these two epidemics was 54,400-68,400. There were 918 individuals who experienced one or more complications, namely 301 with pneumonia, 300 with otitis media, 29 with otitis media and pneumonia, 30 with diarrhea/dehydration, 157 hospitalized patients with unspecified conditions except that most had a upper and lower respiratory tract complication, 95 others (unspecified except for 1 case with bilateral striatal necrosis, 1 case with hepatitis, 1 case with keratitis, 1 with stomatitis, 2 with tonsillitis, and one with transverse myelitis), 2 with encephalitis and 4 deaths.[**547**,548]

As it was estimated in the both epidemics that only about 9% of the actual number of measles cases were reported, the real percentage of cases who experienced one or more complications was thus 1.3-1.7-% or 130 to 170 per 10,000 cases of measles, and mortality was 0.0074% or 0.74 per 10,000 cases of measles, which comes down to about 50 cases of pneumonia per 10,000 cases of measles. [**549**]

Therefore in developed countries, the most common complications of measles are diarrhea (0.04-0.05%), otitis media (0.4–0.6%), pneumonia (0.4–0.6%), encephalitis (0.003-0.004%) and deaths (0.006-0.007%), which include deaths from SSPE.[550,551,552,553,554,**555**,556,557]

In a 2008-2011 measles epidemic in France, there were 10 deaths among 22,178 *reported* cases. Of these, seven had congenital or acquired immunodeficiency and therefore could not be protected by vaccination. About 20% of the cases occurred in vaccinated persons.[558,559,560]

Complications in developing countries

The frequency of complications in developing countries may be even more evasive because surveillance systems tend to be less effective. Regardless, the rate and gravity of complications can be astonishingly high in developing countries.

However, a house-to-house survey would actually be one of the most accurate ways to obtain the true picture of an epidemic by obtaining very realistic infectious, complication and mortality rates. This is exactly what was done during a 1986 measles epidemic in an unvaccinated population in 24 out of the 192 villages scattered in a remote, isolated and relatively inaccessible high mountainous communities of India. Children younger than 11 years were particularly susceptible, as it was the first real epidemic of measles in the region in ten years. A house-to-house survey was conducted in 13 of the 24 affected villages and more than 90% of the households were covered.[561]

The age of the cases ranged from 5 months to 19 years. The overall attack rate was 16.9%, with the rate highest in 1-4 years age group (54.4%) followed by those between 5-9 years (46.2%) and between 10-14 years (45.3%). In infants 6-11 months, the attack rate was 3.1%, while among adults (older than 15 years), the rate was only 1.1%. The youngest child with measles was a five-month old infant.

The high case fatality observed during this epidemic underlines how severe measles can be in developing countries. During the survey of 1,041 households in these 13 villages, 771 measles cases were identified with 54 deaths, a mortality rate of 7%, compared to 1-2% in the nearby regions where measles is endemic.

76% of the children developed complications. The most common was pneumonia (39%), followed by diarrhea (32%) and dysentery (20%). It is noteworthy that they were no case of encephalitis. 46% of the ones with pneumonia died, which contributed to 56% of the deaths. In four villages, 80% or more children under ten developed measles.[562]

In 1977-1978, an epidemic of measles broke out in a region of India, in which there was a village without any health care supervision, 3 villages with health care supervision but without measles immunization, and in 2 villages covered with measles vaccine as part of the health care. In the first village, the rate of infection among preschool children was 26% and the overall case fatality rate was 14%. In the second group of villages, the infection rate was 20% and the case fatality rate 3.7%. In the vaccinated villages, the attack rate was 4% with no death; measles was confined to the unvaccinated children in these villages. No measles occurred among 121 vaccinated children. Measles complications were predominantly gastrointestinal (35-52%) and respiratory (37-58%).[563]

Another important complication of measles in developing countries is weight loss, which would predispose children to other infections, such as tuberculoisis and malaria and would indirectly increase mortality from measles.[564]

Before vaccination was introduced in India, it was estimated that measles caused the death of about 3% of rural and 1% of urban under-five children, for which reason the highest priority was recommended for measles prevention.[565] In one epidemic, measles killed 9% of all the children under 2 in a village.[566]

Before the introduction of a national measles vaccination program in India in 1985, and in 1990 before it reached all districts, it was estimated that about 16 million preschool children would have the measles annually and another 5 million would acquire the virus with subclinical infection. Mortality was between 1-16%, *depending upon the availability of health care and the nutritional status.* About 200,000 children would die annually from measles.[567]

Even in the post-vaccinal era of the mid-1990s, complications from measles remained quite high in India. Hospital-based surveys have shown that the three major complications that are associated with significant morbidity and mortality from measles were pneumonia, diarrhea (dehydration) and croup, occurring in up to 75%, 80% and 25% of hospitalized cases, respectively. Measles was estimated to account for 6-21% of all cases of pneumonia in children in India and for 8-93% of deaths from pneumonia.[568]

Measles can carry even a greater morbidity and mortality. A house-to-house survey was conducted in a 1991-1992 epidemic in the tribal population of two Vavar hamlets, in which no record of vaccination existed.

In both hamlets, measles cases were confined to children below 10 years and 96% of the cases occurred in children below 6 years. Attack rates were 52.7% and 51.4% and case fatality rates were 31.2% in one hamlet and 15.6% in the other. The precise cause of death in fatal cases could not be ascertained; however, based on the history given by the parents, 63% among them had diarrhea/dysentery and 60% died from respiratory complications.[569]

By 2007, measles had been endemic in sub-Saharan Africa and the case fatality ratio from measles often ranged between 5% and 10%.[570,571]

It is clear that measles is a major childhood problem in developing countries with a high level of mortality and long-term disability, such as blindness. There are about 40 million cases of measles annually in developing countries, which results in nearly 1 million deaths. Measles accounts for 44% of total deaths among children that are less than 15 years of age.[572]

In 2004, it was estimated that there 15,000 to 60,000 cases of blindness per year due to measles infections, which is the single leading cause of blindness among children in low income countries.[573]

Incidentally, the WHO recommends that children diagnosed with measles should receive two doses of vitamin A supplements, given with 24 hours. This treatment restores low vitamin A levels, which can help prevent eye damage and blindness. Vitamin A supplements have also been shown to reduce the number of measles deaths.[574]

Encephalopathy

Encephalopathy associated with measles infections seems to have increased considerably in the US after 1923. In a 1947 article, it was reported, “Although sporadic reports of measles

encephalitis are found in the literature prior to the year 1923, it is only in the last two decades that encephalitis as a complication of measles has seemed to occur in epidemic proportions. In a Detroit epidemic in 1937-1938 there were 2 cases out of an estimated 30,000 cases of measles, or 1:15,000. In an epidemic in New York in 1941, there were 60 cases of encephalitis out of 79,637 cases of measles, or 1: 1,300. In a 1946 epidemic in Chicago, there were 20 cases of encephalitis out of 12,846 cases of measles, or 1:642. Of which 3 would died, and 16 made complete recovery."[575] Even though that African-American constituted more than one fourth of the total admissions, all instances of measles encephalitis were among white patients.[576]

Still today the rate of encephalitis has remained 1.2-1.8 per 10,000 of all the cases of measles in European countries, or 0.012-0.018%.[577]

What new factor(s) could be responsible for this sudden increase in encephalitis?

In the 1980s, it was discovered that the measles virus associated with SSPE required many mutations and not host factors to invade the brain.[578]

Most substances used in over-the-counter pain killer and anti-inflammatory which would be commonly used during fever have mutagenic properties.[579,580]

It is now well established that the measles virus from SSPE and measles inclusion-body encephalitis (MIBE) brains contain "characteristic" changes in their genomes. First, the M gene is highly mutated in almost all cases, which may help persisting the measles virus to evade neutralizing antibodies and are probably involved in MeV propagation in the brain. In one case of a case of MIBE was undoubtedly caused by a vaccine strain, as wild-type strains of MeV can hardly infect human neurons. The immunosuppressed state is a prerequisite for MIBE, and some host genetic factors are likely involved in the development of SSPE.[581]

The war on fever took a new life after the father of modern medicine William Osler began an article published in 1896 in JAMA with, "Humanity has but three great enemies: Fever, famine and war; of these by far the greatest, by far the most terrible, is fever.[582] As there is a lag time before an idea is implemented in medicine, seventeen years on average according to some research on the subject may explain this rise of encephalopathy associated with a more systematic suppression of fever.[583]

It is interesting to note that in 1947 it was noted that a boy with encephalitis developed a temperature of 107˚F and "made a remarkable recovery."[584]

In recent years, several clinical entities have reported an interaction of drug exposure and a viral infection. A well-known example is Reye's syndrome, in which viral illnesses, notably varicella-zoster and influenza B infection combined with salicylates act in the etiology of the disease.[585]

The records of 48 children, ages 10 to 49 months, who developed acute encephalopathy following measles immunization between 1970 and 1993 were studied. Eight children died, and

the remainder had mental regression and retardation, chronic seizures, motor and sensory deficits, and movement disorders. The onset of neurologic signs or symptoms occurred with a nonrandom, statistically significant distribution of cases on days 8 and 9. This clustering suggests that a causal relationship between measles vaccine and encephalopathy may exist as a rare complication of measles immunization. No cases were identified after the administration of monovalent mumps or rubella vaccine.[586]

Already measles virus had been isolated from patients with subacute sclerosing panencephalitis (SSPE) has established the association of this disease with a “suppressed measles virus infection,” and may be as well related to the suppression of fever following immunization as the cytopathology and plaque formation of SSPE from measles virus strains revealed greater resemblance between the vaccine strain of the virus than the wild virus.[587]

Measles virus infection in SSPE is usually characterized by an inability to produce viral progeny due to mutation.[588]

Encephalitis has been reported in developed countries to be about 1-2 cases per 1000 reported cases. However encephalitis appears to be rare in measles victims without access to health care in developing countries.[589,590,591]

In 2011 epidemic of measles in France, 15,000 notified cases in 2011. 80 patients were hospitalized in a Paris hospital. Half of the cases had at least one complication. Hepatitis was the most frequent, with 30 recorded cases (37.5%). None had liver failure. Pneumonia was the second most frequent complication, being recorded in 25 cases (31%). Nineteen cases (76%) were considered to be related to the virus alone. We considered that pneumonia was related to a bacterial infection in six cases (24%) although bacterial documentation was not available. Three of 25 patients (12%) had to be transferred to the intensive-care unit for severe hypoxaemia. None of these patients received antiviral treatment. Encephalitis was not observed in our study. Measles outcome was always favourable (100%).[592]

Liver toxicity

During a measles epidemic **in** Israel, an unselected group of 130 young military personnel with measles was studied and 56% showed impairment on liver function tests. Patients’ characteristics and the course of the disease was looked into in order to find what factors could be associated with such a hight rate of hepatic involvement. Impaired liver function was seen more frequently in those using paracetamol within the usual therapeutic range to suppress the fever. None reported receiving medication in the month prior to the present illness.[593]

This should not be surprising as, paracetamol in “therapeutic” doses has been known to potentiated liver toxicity in case of viral infections,[594] like in patients with mononucleosis.[595]

This report suggests that immunity resulting from natural disease in patients from an area where the disease is endemic is protective in the long term.[596]

MMR complications

Complications from measles vaccination or MMR are numerous and the most serious one include long-term immune suppression, thrombocytopenic purpura, seizures, encephalitis, meningitis and death.

Mortality from vaccine contamination has been reported in children within hours after receiving the measles vaccine.[597]

Many reports minimized morbidity and mortality following measles vaccination, in view of the life saving benefits.

True these side effects appears to be minimal, such as the incidence of the *reported* incidence of measles immunization encephalitis is about in 1 of **1,000,000** vaccine recipients.[598]

Serious adverse effects are incredibly rare from measles vaccination. These include a transient thrombocytopenia (low platelet count) in less than 1 per 30,000 cases and serious allergic reaction less than 1 per 1 million cases. [599]

Increased risk of developing thrombocytopenic purpura within six weeks after MMR is about 5-6. The risk of developing febrile seizures within six to eleven days of MMR is 4-6. The risk ratio of developing aseptic meningitis was observed within three week is from 14.28-22.5 depending the age of the vaccine recipient and the strains of virus used for the MMR.[600]

This way of analysis of the complications following measles immunization has a major flaw, which is there is no control group that is followed for many years.

In fact the long-term effects of vaccination are rarely assessed, however in a number of studies in Africa and Haiti it was demonstrated that mortality was diminished for the disease that vaccination tried to prevent but end up with higher mortality for other causes.[601]

In nine studies, four of which were randomized trials, investigators were surprised a higher mortality from other causes in high versus low titer vaccines in African countries and Haiti. Investigators hypothesized that high titer vaccine had caused immune suppression similar to that of measles infection.[602]

In one study, the long-term mortality ratio in vaccinated versus unvaccinated groups was 2.31 over a period of at least three years.[603] This means for each 10 children who died from all causes in the unvaccinated group, 23 died in the vaccinated group.

This unexpected finding had several surprising features. Firstly, the excess mortality did not occur until the second year of life or later— a considerable time after vaccination. Secondly, the excess was particularly pronounced in girls. Thirdly, the excess was non-specific, representing

the usual range of childhood death in the countries concerned. An independent combined analysis of the findings, commissioned by the WHO, estimated that mortality was significantly increased (averaging 20%).[604]

If trials had not been carried out with long-term mortality as an end point the effect would probably not have been detected as the reporting of vital events is notoriously incomplete in developing countries.[605]

Susceptibility to measles complications

"Measles is typically a benign childhood illness, but an attack carries the risks of complications and sequelae."[606] Complication rates vary greatly from one region of the world to another.

In Great Britain, it was found out through personal interview with physicians and relatives that 50% of the ones who died from measles had a preexisting conditions, and of "those with pre-existing conditions, most were grossly physically or mentally abnormal or both."[607]

In the US, by just looking at the available data it was out that 16.7% of the reported deaths had an underlying pathologic condition, such as physically or mentally "retardation" (8%), anemia (1.8%), congenital anomalies (1.5%), known cases of malnutrition (1.3%), leukemia (0.7%), cystic fibrosis (0.2%), or salicylate intoxication (0.2%).[608]

In the US, where clinical vitamin A deficiency is very rare, measles cases in children with low vitamin A levels have been associated with an increased risk of admission to hospital and severe disease. [609]

It has been estimated that in developing countries in which children younger than 2 years have pronounced vitamin A deficiency mortality from measles can reach 50% in the ones who fall sick to measles. "Vitamin A deficiency affects the body's immune system and the cells which protect the lining of the lungs and gut. The damage it causes results in an inability to control and prevent infections. Vitamin A deficiency is linked with a higher rate of measles complications and a higher death rate."[610] Breast milk is the only source of vitamin A for the nursing baby and the nutritional status of the mother will be reflected in her nursing infant.

In developing countries, about 10–20% of children with measles, or about 3 to 6 million, require hospitalization for complications.[611] The main complication in developed countries from measles is bronchopneumonia, as between 45 and 73% of the deaths that have been reported were due to bronchopneumonia.[612,613,614]

Another common complication of measles in developing countries is blindness, which ended up to 60,000 cases of blindness annually in the early 2000s.[615] In North America and Europe measles blindness is nearly unknown.[616]

Measles is the single leading cause of blindness among children in low-income countries and is highly associated with vitamin A deficiency.[617] In sub-Saharan Africa and Southeast Asia, measles accounted for about 20–30% of the cases of blindness found among children.[618] In certain parts of Africa, investigations of blindness among school children show that about 50% had a history of recent measles infection before going blind.[619]

While investigating a measles outbreak on the Faroe Islands in 1846, the Danish physician Peter Panum first noted the long-term protective immunity following measles: “It is quite remarkable that of the many aged people still living on the Faroes who had had measles in 1781, not one, as far as I could find out by careful inquiry, was attacked the second time” [1]. Although the immunologic basis for long- term memory responses to measles virus is not fully understood

Measles in adult tends to be milder in healthy adults. (Measles occurred in 3,220 Air Force recruits between January 1976 and July 1979 and was complicated by pneumonia in 106 cases (3.3 percent). Although no deaths occurred,)[620]

Protective antibody transfer from the mother

As women vaccinated against measles transfer low amounts of antibodies, an increasing number of infants lack early protection through maternal antibodies until being immunised themselves. Infants are susceptible to measles before receiving the first vac- cine dose, independent whether the mother was vaccinated or contracted natural infection. Titres of maternal antibodies will fur- ther decrease because in the future increasing numbers of women will have been vaccinated. Together with other factors like increasing maternal age at delivery, less natural boosting due to high vaccine coverage and less natural virus circulation, an increase in susceptibility gap of infants will occur.

Databases were searched from January 2001 to September 2011.

Fifty-three papers were included in the analysis. The percentage of all measles cases during out- breaks affecting young infants ranged from 0.25% to 83.0%. Infants younger than 12 months are often involved in measles outbreaks, and advancing the first vac- cine dose could reduce the burden of disease. However, immunization before 9 months of age is not systematically recommended because of dysmature humoral immune responses of infants. High cover- age and timely administration of the recommended series of vaccines are the most important measures to decrease measles incidence and measles circulation and protect vulnerable infants from infection.

In Europe infants were prone to measles over the last 10 years and have often been involved in measles outbreaks (median 10.5% of cases during outbreaks). They are not well protected by their mother’s passive antibodies. A susceptibility gap remains until the first dose of vaccine is administered, independent of whether the mother was vaccinated or naturally infected.

The WHO proposes to give a first dose of measles vaccine at 9 months in countries with high measles transmission followed by an early second dose in the second year of life. However, countries near to the measles elimination are advised to give a first dose at 12 months to take advantage of the higher measles seroconversion rates at this age, and to give a second dose at an age according to the national vaccination program.[621]

Factors affecting the susceptibility to measles and its complications

Protective antibody transfer from the mother

Pregnant mothers who have had measles or have been vaccinated against measles sometime in their lives will transfer across the placenta measles antibodies to the fetus and especially during the third trimester of gestation.[622] Preterm babies will therefore have received less antibodies transplacentally from their carrying mother and be more susceptible to contract measles.[623]

This level of protective antibodies is highest soon after birth from additional antibodies transfer from the colostrum. Protective antibodies will continue to be transmitted through breast milk, but in a declining manner. Breastfed babies will therefore have the highest levels of antibodies and benefit from optimal protection for the first six months of life.[624] The estimated duration of protection of this passive immunity to measles usually lasts for about a year.[625]

Exclusive breastfeeding (meaning no supplements or water for the first six months of life) has been promoted by WHO, as it has been associated with a 74% reduction in the risk of vitamin A deficiency extending to the third year of life and support the recommendation that mothers in developing countries should be advised to breastfeed their babies for as long as possible.[626]

In the USA, where clinical vitamin A deficiency is very rare, cases of measles in children with low vitamin A levels have been associated with an increased risk of admission to hospital and more severe disease.[627]

There is a dramatic difference in measles antibodies in mothers with naturally-acquired immunity versus vaccinated mother. Mothers who have had the measles will transfer much more antibodies, which protect their infants better and for a longer period. The odds for their infants do develop measles will be 3 times less than infants whose mothers were only vaccinated, 13% versus 42%.[628]

Among women born in the United States, mean titers of measles antibodies (MMA) decreased with increasing birth year. For those born before 1957, 1957 through 1963, and after 1963, the MMA were 4798, 2665, and 989, respectively. Therefore, children of younger women born in the United States were less likely than those of older women to be seropositive at 6, 9 or 12 months.[629]

This rapid decrease in measles vaccine-derived maternal immunity over this short period of time has been shown in full term infants to be correlated with increased susceptibility to disease. In fully vaccinated society, the percentages of infants and their mothers having positive measles antibody titers are lower than earlier reported values, reflecting the continuing trend in highly vaccinated societies to have lower maternal and, as a consequence, lower neonatal antibody levels.[630]

As infants gradually lose maternally derived antibodies, they go through a period when antibody levels are insufficient to protect them against measles, but will still interfere with immunization, as a to high level of passive immunity prevents a specific immune response to the vaccine.[631]

The nutritional status of a mother can play an even greater role in protecting her infant, as the transfer of antibodies through the placenta and breast milk increases with the increase of her nutritional status.[632] For instance, German newborns had twice the titers of antibodies as Nigerian newborns,[633] or that the percentage of Swiss children who were seropositive at age 6 months was high at 44% versus 6% in Brazzaville, Congo.[634]

However, mothers who have had the measles and breastfeed their babies despite a poorer nutritional status can still transfer sufficiently protective amounts of antibodies. For instance, in Bangladesh in the 1990s more than 90% of the two-month-old infants had protective levels of antibodies,[635]

However, this protective effect will last less long in babies from mothers with poorer nutritional status. The prevalence of protective levels of measles antibodies in Nigerian infants up to 9 months of age was 45% overall, but was only 32% at 3-month-old and 2% in the 6- to 9-month-old infants.[636]

The recommended age for measles immunization in Nigeria was thus changed from 12 to 9 months of age. This explains why only 21% of measles patients are younger than 9 months of age, but that the majority of deaths (52.9%) occur among the 6- to 12-month-old children.[637] In another study, the odds of contracting measles is 1.26 times greater in children aged 6–9 months than in children less than 6 months of age.[638]

Nutritional status

Less mothers and children being undernourished is likely the main reason for these declining death rates from contagious diseases in the 20th century and for measles in particular, as the mortality from measles was known to be higher in counties having a large percentage of the population with incomes below poverty level.[639]

A 10-State nutrition survey conducted in the United States between 1968-1970 indicated that evidence of malnutrition increased as income level decreased and that the death-to-case ratios from measles generally decrease with improving nutrition and health status of a population. “Income-specific mortality rates increased as the percentage of residents with incomes below poverty level increased. … The important role of dehydration and malnutrition in contributing to death rates has been stressed in many of these reports.”[640] When the records of 75 children who had died from measles between 1958 and 1967 were examined, it was found out that the majority of these were “both underweight and underheight.”[641]

Better nutrition has been confirmed to be a major factor to decrease the mortality rates from measles in developing countries, as it is now known that addition of two mega doses of vitamin

A in infected or susceptible children saves a good proportion of lives in undernourished children.[642]

In populations with high levels of malnutrition and a lack of adequate health care, up to 10% of measles cases may result in death. Women infected for the firs time during pregnancy are also at risk of severe complications and the pregnancy may end in miscarriage or preterm delivery.[643] However, mothers who have had measles are immune for the rest of their lives, and will thus be able to transfer high levels of antibodies to her babies.

Failure of immunization

Receiving less attention, however, is the issue of vaccine failure. While the current vaccine is acknowledged as a good vaccine, we and others have demonstrated that the immune response to measles vaccine varies substantially in actual field use. Multiple studies demonstrate that 2–10% of those immunized with two doses of measles vaccine fail to develop protective antibody levels, and that immunity can wane over time and result in infection (so-called secondary vaccine failure) when the individual is exposed to measles. For example, during the 1989–1991 U.S. measles outbreaks 20–40% of the individuals affected had been previously immunized with one to two doses of vaccine. In an October 2011 outbreak in Canada, over 50% of the 98 individuals had received two doses of measles vaccine. The Table shows that this phenomenon continues to play a role in measles outbreaks. Thus, measles outbreaks also occur even among highly vaccinated populations because of primary and secondary vaccine failure, which results in gradually larger pools of susceptible persons and outbreaks once measles is introduced [8]. This leads to a paradoxical situation whereby measles in highly immunized societies occurs primarily among those previously immunized.[644]

Data from this study show a slight trend toward increasing risk of infection with increasing time since vaccination, poten- tially compatible with waning immunity.

Between December 15, 1987, and March10, 1988, a total of 84 measles cases in five generations of measles transmission occurred among Fort Lewis College students Colorado. The overall attack rate among Fort Lewis College students was 2.4 percent. The estimates of vaccine effectiveness among students living in campus dormitories was 80 percent (95percentCI= 51-92percent) for vaccination at 12 to 14 months of age and 94 percent (95percent CI= 86-98 percent) for vaccination at 15 months or greater.

Overall, 70 (83 percent) cases had been vaccinated at >12 months of age. Students living in campus dormitories were at in- creased risk for measles compared to students living off-campus (RR = 3.0, 95% a *m* 2.0, 4.7). Students vacci- nated at 12-14 months of age were at increased risk compared to those vaccinated at > 15 months (RR = 3.1, 95% CI = 1.7, 5.7). Time since vac- cination was not a risk factor for vac- cine failure. Measles vaccine effec- tiveness was calculated to be 94% (95% CI = 86, 98) for vaccination at >15 months.

Conclusions. As in secondary schools, measles outbreaks can oc- cur among highly vaccinated college populations. Implementation of re- cent recommendations to require two doses of measles vaccine for college entrants should help reduce measles outbreaks in college populations.[645]

Although few measles cases were reported in France during 2006 and 2007, suggesting the country might have been close to eliminating the disease, a dramatic outbreak of >20,000 cases occurred during 2008–2011. Adolescents and young adults accounted for more than half of cases; median patient age increased from 12 to 16 years during the outbreak. The highest incidence rate was observed in children <1 year of age, reaching 135 cases/100,000 infants during the last epidemic wave. Almost 5,000 patients were hospitalized, including 1,023 for severe pneumonia and 27 for encephalitis/myelitis; 10 patients died. More than 80% of the cases during this period occurred in unvaccinated persons, reflecting heterogeneous vaccination coverage, where pockets of susceptible persons still remain.[646]

However, even with two documented doses of measles vaccine, our laboratory demonstrated that 8.9% of 763 healthy children immunized a mean of 7.4 years earlier, lacked protective levels of circulating measles-specific neutralizing antibodies.suggesting that even two doses of the current vaccine may be insufficient at the population level.[647]

At the same time, measles vaccine has a failure rate measured in a variety of studies at 2–10%, and modeling studies suggest that herd immunity to measles requires approximately 95% or better of the population to be immune.[648]

Whether elimination can, in fact, be sustained is unknown, as it has not been evident over sufficiently long periods of time (decades) across geographic regions.[649]

Practical limitations of the vaccine are that it cannot be administered to those who are immunocompromised, who have allergies to vaccine components, or who are pregnant. Thus, current measles vaccines can only be used to protect individuals without contraindications, and those willing to accept the vaccine, conditions that leave a large enough segment of the population susceptible and unprotected from measles such that cases will continue to occur.[650]

The ideal vaccine would require only one dose to be given at or soon after birth; it would lack contraindications and permit administration without highly trained health care personnel; it would be inexpensive, and heat stable.[651]

Although uptake has now recovered, many older children and young adults remain unprotected, and this partly explains the age distribution of current measles cases, with a large proportion in people older than 15 years.4 In England, 42% of cases reported between January and March 2018 occurred in the over 20s and rates of hospital admission were high, showing the severity of this infection in older age groups 14.[652]

In France, From January 2008 to April 2011, more than 18,000 cases were reported through the surveillance system, about 20% of the notified cases had been vaccinated. The proportions of vaccinated cases were 75% for 1 dose, 23% for 2 doses and 2% for an unknown number of doses.[653]

All confirmed measles cases reported to the California Department of Public Health from 1 January 2000 through 31 December 2015 were reviewed.
ere were 232 con rmed measles cases in whom vaccination status was veri ed; 80% were unvaccinated, 9% had had 1 dose of measles vaccine, and 11% had had ≥2 doses of measles vaccine.[654]

The younger the first dose of vaccines the less immunity there will be: The risk of measles in 2-dose recipients was sig- nificantly (3–4-fold) higher when vaccine was first administered at 12 months of age, compared with ≥15 months of age (P = .04).[655]

The earlier the child gets the first measles vaccines the less good is immunity and this persists even after the second dose (Among 5542 children given a first measles vaccine dose at 11, 12, 13–14, and 15–22 months of age, the proportion seronegative decreased from 8.5% to 3.2%, 2.4%, and 1.5%, respectively ($P < .001$), whereas geometric mean concentrations increased with older age measles vaccine initiation ($P < .001$).
As previously noted among infants born to mothers with history of wild-type measles, antibody responses among children born to vaccinated mothers were reduced based on earlier administration of their first measles vaccine dose at ≤12 vs ≥15 months of age. Negative effects of earlier age at first measles vaccine dose persisted after the second dose.)[656]

On May 15, 2014, CDC was notified of two laboratory- confirmed measles cases in the Federated States of Micronesia (FSM), after 20 years with no reported measles.
Two thirds of cases occurred among adults aged ≥20 years; of these, 49% had received ≥2 doses of measles-containing vaccine. Apart from infants aged <12 months who were too young for routine vaccination, measles incidence was lower among children than adults.[657]

From the 1st of January 2017 to the 31st of May 2017, we enrolled 139 patients who were conducted to the Emergency Department of Bambino Gesù Children's Hospital because of measles: 33 patients were discharged with the diagnosis of suspected measles by clinical manifestations; 33 discharged with the diagnosis of confirmed measles by laboratory tests and 73 were admitted to the Pediatric and Infectious Disease Unit. Seven patients, who were exposed to mothers with measles, were admitted to receive treatment with Measles Immune Globulin intravenously. Among the 66 patients admitted to the hospital with measles, 31 cases (47%) occurred in unvaccinated individuals who were age-eligible for measles vaccination; 29 (44%) were infants too young to be vaccinated; only five patients (8%) received one dose of measles-containing vaccine. For one patient, vaccination status was unknown. None were vaccinated with two doses.[658]

All patients suspected of measles in Osaka Prefecture between November and December 2018 were enrolled.[659]

This study first reported about measles transmission from an individual with SVF who received two vaccination doses.[660]

In this study, we examined the outbreak of 10 cases of measles in Osaka prefecture, which was started from a patient who received two doses of MCV. The index case met the definition for measles infection due to SVF reported by Sowers et al. [21] because he had the presence of both high-avidity anti-measles IgG and serum neutralizing antibody concentrations >40,000 mIU/mL at 12 days after the onset of rash. This study first provided evidence in which measles can be transmitted from a healthy young adult patient with secondary vaccine failure.[661]

In this outbreak, three unvaccinated secondary patients transmitted measles to six tertiary patients who were highly vaccinated, which was apparently more effective than the index case with secondary vaccine failure.[662]

Possible reasons for susceptibility to measles after 2 doses include not only a waning antibody level but also differences in virus genotype of the vaccine and that in the circulating strains [663]

There is no benefits to give the first dose of vaccination in measles endemic area.[664,665]

Out of total 566 patients hospitalized with complications of measles, 211(39%) were vaccinated and 345(61%) were unvaccinated [666]

In our study, 39% of measles patients were already vaccinated against measles. Almost similar findings were reported by Rahim et al. 19 and Husain et al20 from inside the country and Slater et al. 21 from Israel. However, Tariq, Khan et al. and Aurangzeb et al. reported measles in 50%, 51% and 57% of vaccinated cases in their studies respectively. [667]

In other local and international studies even higher figure i.e., 66.6%, 71.6% and 79.4% of measles cases in previously vaccinated children were reported. [668]

Reports of such a large number of measles cases among previously vaccinated children raise concern about vaccination failure. Vaccination failure may be due to immunization at less than one year of age or administration of nonviable, low potency vaccine that may have been improperly stored or handled [669]

This was an observational cross-sectional study conducted in Department of Paediatrics of Khyber Teaching Hospital Peshawar from November 2012 to October 2013.
Among 503 patients, 157 (31.2%) were fully vaccinated, 144 (28.6%) were partially vaccinated and 202 (40%) were unvaccinated. [670]

This cross-sectional study was conducted amongst patients admitted with measles in paediatric units of Rawalpindi Medical College Allied Hospitals, Rawalpindi. … A total of 55 patients (mean age-29.36 months) with measles were included in the study. 65.5% children were vaccinated while 34.5% were not vaccinated.[671]

Over the past year (February 2018 to January 2019), 324,277 measles cases were reported to WHO, compared with 172,939 cases in 2017.[672]

Latvia and Lithuania, with 71% and 91% contact-adjusted immunity levels, recorded 0.72 and 1.7 mean annual cases per million over the 10 years, respec- tively, whereas Spain and Israel, with 95% and 94% contact- adjusted immunity levels, presented 8.6 and 30 mean annual cases per million over 10 years, respectively. Additionally, the United Kingdom and Romania, both with 92% contact- adjusted immunity levels, documented 10 and 93 mean annual cases per million over the period, respectively. Such discrepancies are observable worldwide.[673]

To explain the next paragraph: Notably …) (We also reviewed coverage esti- mates for the second dose of measles containing vaccine (MCV2) at the nationally recommended age provided by the WHO/UNICEF Estimates of National Immunization Coverage (WUENIC) [674])

Notably, despite an MCV2 coverage rate of 97% in 2009, Mongolia had the highest mean annual incidence over the following decade (1732.6 per million). Indeed, after the virus was declared eliminated from the country in 2014, Mongolia experienced a severe measles outbreak with a strain imported from China in 2015–2016, a period during which MCV2 coverage was 96% [675]

from January 2017 to March 2019). Notably, the countries with MCV2 coverage above 95% experienced similar or even higher incidence rates than areas with MCV2 coverage below 50%.[676]

the incidence is very high in children less than 1 year old who are not eligible for vaccination in accordance with current schedules. For example, this age group represented 16% of cases in Bulgaria in 2009–2011 [15], 19% of cases during the massive 2015–2016 outbreak in Mongolia [10], and 25% of cases during an epidemic in Portugal in 2017 [16]. During an Italian outbreak in 2017, 44% of cases occurred in children less than 15 months of age.[677]

In 2018, 8% of all cases reported from the European region were in children younger than 1 year, which represented more than 6600 cases [18]. Likewise, in a Chinese province, the proportion of cases in children less than 1 year old has increased over time to almost 50%.[678]

Historically, measles live-attenuated vaccines were formulated with the idea that a single dose administered to an immunocompetent individual would induce similar immune responses as those of natural disease, providing the benefit of life-long protection without the disadvantages of primo- infection. However, to date, one injection of MCV is not considered protective enough (with a two-dose regimen recommended also in unvaccinated adults [36]), whereas measles infection at any age always provides long-term protection against all wild-type viruses.[679]

Although RNA viruses usually have a high mutation rate, [680] As of the 2015 update, 24 genotypes have been determined. Moreover, there are multiple distinct genetic lineages within genotypes that deserve to be more thoroughly characterized by expanding the size of the analysed genomic region.[681]

The global “effectiveness” of two-dose MCV administered at an appropriate age is usually cited as 95–97%.[682]

According the CDC/Advisory Committee on Immuniza- tion Practices (ACIP), vaccine administered on or after age 12 months is 95% effective in preventing measles and is 99% after a second dose.[683]

“MMR vaccine is highly effective in preventing measles with a 1-dose vaccine effectiveness of 95% when administered on or after age 12 months and a 2-dose vaccine effectiveness of 99%”.[684]

This review included 14 papers, but only case-control or retrospective cohort studies. Other case-control studies have provided divergent data from different world areas: MCV immunogenicity was 80% (95% CI [60–90%]) in Bangladesh [57], whereas it was 96.7% (95% CI [94.5–98%]) for one dose and 99.7% (95% CI [99.2–99.9%]) for two doses in Australia.[685]

Essentially, there have been no trials evaluating the clinical e cacy of MCV schedules in preventing measles disease or monitoring the long-term quality of the immune response.[686]

Irrespective of their past immunization status, the relative risk of measles in healthcare workers compared to the community adult population was reported as high as 18.6 (95%CI [7.4–45.8]) in a study conducted in 1996 in medical facilities in Washington.[687]

the documented administration of two-dose MCV cannot be considered as evidence of measles immunity, and a positive serology result cannot predict protec- tion against viral disease.[688]

In a retrospective review of WHO global surveillance data, Patel and Orenstein found that 9% of worldwide measles cases during 2013–2017 were two doses vaccine recipients.[689]

In a retrospective review of Californian measles cases from 2000 to 2015, Cherry and Zahn found that 11% of cases corresponded to vaccine failures after two doses of MCV, which occurred 15 years on average after the last vaccination.[690]

Importantly, 3 of the 13 individuals with measles who had received 2 or more vaccine doses were thought to have transmitted measles virus to susceptible contacts.[691]

During the 2014 outbreak in Micronesia, 40% of cases occurred in twice- vaccinated people

There are two mechanisms responsible for MCV failure. Primary failure arises when a vaccinated individual does not develop a humoral response. Secondary failure occurs when an individual develops speci c IgG antibodies after vaccina- tion but exhibits no protection against subsequent infection with a wild-type virus.[692]

On the other hand, individuals with low post-vaccination antibody titres might have an adequate response against the virus.[693]

Children vaccinated between 6 and 15 months of age exhibit a lower response to a dose of MCV due to the immaturity of their immune system and the presence of maternal antibodies. [694]

Passive antibodies have a shorter duration when they were acquired after mother vaccination than when they were induced by wild-type measles infection.[695]

however, in all age groups, there were mini- mal proportions of children who remained non-responders after two doses (≤ 2.6%), and no di erence in the antibod- ies was maintained with a remarkable decline over 3 years.[696]

However, the risk of failure after a two-dose vaccine was reported to be higher in Canadian students who had received the rst dose before rather than after 15 months of age.[697]

In a 2016 literature review on the humoral immunity to MCV, two to 10% of twice-vaccinated individuals were reported to lack protective titres of measles antibodies, which waned over time [698]

During January–April 2015, a total of 159 measles cases (of which 18% had received measles vaccine) were reported to the US Centers for Disease Control and Prevention.[699]

in countries with high measles vaccine coverage, outbreaks have revealed measles vaccine failure among individuals previously vaccinated with two doses of measles-containing vaccine.[700]

It was anticipated that a two-dose MMR vaccination program would lead to substantial reductions in measles morbidity and measles elimination (Box 1); however, various studies have approximated that 2–10% of individuals vaccinated with two MMR doses may not develop or sustain protective measles humoral immunity, allowing a gradual accumulation of individuals susceptible to infection and, subsequently, the occurrence of viral outbreaks.[701]

In a study of 763 healthy children living in a community with no circulating natural infection (and no immune response boosting from wild-type virus exposures), only 91% demonstrated protective humoral immunity, 7.4 years (median) after vaccination with two medical record-documented doses of MMR vaccine.[702]

In 2007–2008, Gomber et al. followed up 103 consecutive Indian children for over 1 year who were rst vaccinated with the measles, mumps, and rubella (MMR) vaccine at 12–15 months and

received a second injection at age 4–6 years at the time of inclusion. The pre-vaccination seroprevalence for measles (Demed- itec (Germany) ELISA IgG > 12 U/ml) was only 20.4% (but 87.4% for mumps and 75.7% for rubella arguing for the reality of the first dose administration) and raised only 65.2% after two doses.[703]

Compared with wild-type virus infection, the dura- tion of immunity following measles vaccination has been proven to be more variable and shorter [704]

In Japan, during an importation- related measles outbreak in 2017, 16/60 (26%) cases were secondary failures (mild disease without IgM) infected with a D8 variant.[705]

In the Netherlands, secondary vaccine failures during a measles nosocomial outbreak were documented in 8 out of 50 (16%) twice-vaccinated exposed health workers, and two of them were proven to have adequate pre- exposure neutralizing antibodies.[706]

Antibody concentrations do not necessarily correlate with functional immunity. Commercially available enzyme linked immunosorbent assay kits (EIA or ELISA) do not distinguish between protective and non-protective IgG anti- bodies, and they usually lack standardized thresholds that reliably predict protection against infection There is actually no good ways to evaluate if someone is protected, that is to measure humoral immunogenicity against the wild type virus and cellular response. In countries with high MCV2 coverage, such as Russia and Iran, outbreaks among highly vaccinated populations have been investigated. Atrasheuskaya et al. [5] documented cases with secondary vaccine failure who exhibited border- line levels of neutralizing antibodies towards the genotype A virus and no detectable levels towards the genotype D, which was circulating.[707]

“All these data give rise to the hypothesis that the outcome of measles virus infection in vaccinated patients may be genotype-dependent. ”[708]

As early as 1994, measles resurgence in the USA was attributed to imported viruses genetically distinct from vaccine strains, with the evidence that indigenous transmission of measles in the USA had stopped in 1993 [111]. Since 1990, 19 genotypes have been detected, A, B2, B3, C1, C2, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, G2, G3, H1, and H2 [48], while genotype A has not been endemic since 2008 when it was last detected in Maryland in the United States [112]. The global distribution of genotypes has been increasingly well documented [113]. During 2005–2015, 11 genotypes (B2, B3, D4, D5, D6, D7, D8, D9, D11, G3 and H1) were detected, and among them, B3, D4, D8, D9, and H1 are circulating to date [107]. Since 2009, genotype B3, which is endemic in most of the African continent, has merged in Europe, Americas, Russia, Yemen, Oman and Oceania [112, 113]. Genotype B3 was found to be significantly more transmissible than the others [114]. During the last 10 years, genotype D4 has been responsible for major outbreaks in the WHO Eastern Mediterranean Region, notably in Iran, Syria, Egypt and Iraq [112]. Several D4 variants have been identified [115], including a sequent-divergent sub genotype that presents mutations in the neutralizing antigenic site result- ing in resistance to human antibody neutralization.[709]

Vaccine failure
An outbreak of measles occurred among ado- lescents in Corpus Christi, Texas, in the spring of 1985, even though vaccination requirements for school attend- ance had been thoroughly enforced.
Fourteen of 74 seronegative students, all of whom had been vacci- nated, contracted measles. [710]

More than 99 percent of the students at both sur- veyed schools had"records of vaccination with live measles vaccine. [711]

Tests indicated that 4.1 per- cent of the students (74 of 1806) were seronegative. Seventy-three of the 74 seronegative students had doc- umentation of prior measles vaccination in school rec- ords. Forty-three seronegative students (58 percent), including 9 of 14 students (64 percent) who later con-
tracted measles, had two written records of having received a measles vaccination. [712]

In an epidemic out of 216 cases of measles with known vaccination status 182 had been vaccinated and 36 had nit been vaccinated. 108 cases of the vaccinated who had the measles were serologically tested of which 98 were due to primary vaccination failure. 10 were due to secondary failure.[713]

Despite generally high vaccination coverage rates measles outbreaks also continue to occur in developed countries
The neutralization capacity of sera from Luxembourgian adolescent vaccinees and from Nigerian women with measles-induced immunity to a number of measles virus strains was com- pared. Although both cohorts were matched for their hemagglutination inhibition and standard neutralization titers, 12 of the 22 late convales- cent sera, and only 6 of 24 vaccinees neutralized all viruses. Similarly, only 2 of 20 viruses were not neutralized by at least 75% of late convales- cent sera, in comparison to 10 of 20 viruses that resisted neutralization by at least 75% of the vaccinees.
These results suggest that qualitative differences in neutralizing antibodies may reduce further protection of infants by passively acquired immunity against wild-type viruses when vaccinated girls become mothers.
Most wild-type viruses were significantly more resistant to neutralization by sera of vaccinees than serologically matched sera of late convalescent donors. the older Nigerian women have had multiple contacts with endemic wild-type viruses.[714]

Sera of vaccinees neutralized most wild-type viruses significantly less efficiently than the standard virus (that would result in an overestimation of protection), but they neutralized vaccine strains equally well or even better than the standard virus. [715]

Up to 75% of the vaccinees were unable to neutralize some of the circulating wild-type viruses in vitro. Observations from individuals with antibody deficiencies indicate that such vaccinees may still be fully protected by cellular mechanisms. Infants, however, are protected solely by antibodies that are transferred passively to them from the mother.[716]

Vaccinated mothers are well known to transmit lower titers of specific antibodies to their newborn babies than mothers who had natural infection [Jenks et al., 1988]. The results strongly suggest that qualitative differences will reduce further protection by maternal antibodies, particularly if the mother was vacci- nated. Most of the vaccinees were girls between 11–14 years of age, whose immunity may further erode until they reach child-bearing age. This may cause their infants to be largely unprotected by maternal antibodies against some wild-type viruses. Using current live- attenuated vaccines, it remains difficult to vaccinate infants before the age of 6 months, even in the absence of maternal antibodies [Gans et al., 1998]. Therefore, the results of this study are of major concern to infants before they reach the age when they can be vaccinated. Age and serological characteristics of the 24 vaccinees matched those of a panel of more than 500 sera from adolescent vaccinees (see Materials and Methods) sug- gesting that our findings may be representative for Central European vaccinees at the age of 12–14 years.[717]

In West Africa, measles infections result in high mor- tality in young infants (unpublished data, Dr. Ikusika, Ibadan, Nigeria) and many of these develop disease before they can be vaccinated at the age of 9 months [Eghafona et al., 1987; Kiepiela et al., 1991; de Fran- cisco et al., 1998]. This study indicates that in Nigeria at present 30% of the mothers would pass antibodies to their children that are unable to neutralize viruses cur- rently circulating in their country and throughout West Africa [Hanses et al., 1999]. This may contribute to the high pre-vaccination measles morbidity and mor- tality rates reported commonly among Nigerian infants [Adu et al., 1997]. Because the Nigerian mothers can be assumed to be protected by natural immunity, it is likely that this percentage will increase considerably when vaccinated girls become mothers. [718]

Evaluation of immunogenicity before and 12 weeks
after measles vaccination, including measles neutralizing antibody titers, measles- specific T-cell proliferation, and cytokine profiles.
Results.—Measles neutralizing antibodies were present before vaccination in 52% (12/23), 35% (7/20), and 0% (0/22) of 6-, 9-, and 12-month-old infants, respectively. In the absence of detectable passive antibodies, geometric mean ti- ters after vaccination were significantly lower in 6-month-old infants compared with 9-month-old infants (27 vs 578, P = .01) and 12-month-old infants (27 vs 972, P= .001). The seroconversion rate, defined as a 4-fold rise in antibody titer, in these 6-month-old infants was only 67%, and only 36% of these infants achieved sero- protective neutralizing antibody titers of 120 or higher after vaccination compared with 100% of 9- and 12-month-old infants lacking detectable passive antibody prior to vaccination. T-cell proliferation and cytokine responses to measles did not differ with age.
Conclusions.—Humoral immunity was deficient in 6-month-old infants given measles vaccine, even in the absence of detectable passively acquired neutraliz- ing antibodies. Comparison of their responses with those of 9- and 12-month-old infants indicates that a developmental

maturation of the immune response to measles may occur during the first year of life, which affects the immunogenicity of measles vaccine.[719]

Maternal antibody interfered with immune response of the young infant. The choice of 9 months was to balance the tension between the need for early protection and the advantage of delaying it for best vaccine efficacy. The highest seroconversion rate and antibody titre were obtained when measles vaccine was given at or after 12 months of age
Vaccinated at 9 months 10-15 per cent infants will fail to seroconvert, whereas >95 per cent would seroconvert if vaccinated at 12 months and 98 per cent if vaccinated at 15 months.[720]

Gomber and colleagues20 measured the immunity prevalence in children in Delhi who had earlier received 2 doses of vaccine, first at 9 months and the second (as MMR) in the second year of life, as reported in this issue. Only 20 per cent of children had adequate antibody levels. This finding raises serious concerns regarding the adequacy of the currently used 2-dose schedule, when the first dose is given at 9 months [721]

MMR vaccine in a two dose schedule has successfully eliminated measles, mumps and rubella from many developed countries. In India, it is not a part of national immunization programme but is included in the State immunization programme of Delhi as a single dose between 15-18 months. This prospective study was carried out to assess the extent of seroprotection against these three diseases in immunized children and to study the immune response to a second dose of MMR. Consecutive children aged 4-6 yr, attending the immunization clinic of a tertiary care hospital in Delhi for routine DT vaccination, were enrolled. Second dose of MMR was given and pre- and post-vaccination antibody levels were compared. The pre-vaccination percentage seropositivity observed in the 103 children recruited, was 20.4 per cent for measles, 87.4 per cent for mumps and 75.7 per cent for rubella. Amongst the 84 children who were followed up after the second dose, the percentage seroprotection for measles rose from 21.4 (18/84) to 72.6 per cent (61/84) and 100 per cent became seroprotected to mumps and rubella. The percentage of children protected against measles was found to be alarmingly low which needs to be investigated. Though the observed protection against mumps and rubella was adequate, its durability was not known. The need for re-appraisal of the current MMR immunization policy is called for by carrying out longitudinal studies on a larger sample. [722]

To be considered which makes the subject even more complex and then there is the individual response: The second line is to detect and monitor geographic variations of immune responses, if any, to the first and second doses. For instnace, In one study, the antibody prevalence after one dose at 9 months was 50 per cent at Indore, 82 per cent at Pune and 93 per cent at Mumbai [723]

I think it will be an error to continue to vaccinate for all genotype. On the other hand it seems better to let people be exposed to measles virus.Two factors could affect the antibody prevalence in children who got only one dose of measles vaccine at 9 months. One is the height of maternal antibody in the local community; higher the level, lower will the seroconversion

frequency be. Secondly, if measles virus continued to circulate, then subclinical infection could have enhanced the antibody prevalence. [724]

The third line is to measure, in different geographic regions, the possible adverse effect of the 9-months measles dose on the response frequency to the second dose and even a third dose. The interactions between passive maternal antibody and measles virus, wild and vaccine, is complex [725]

It would be reasonable to assume that the higher the maternal antibody, the greater its influence on the immune response to the first dose of vaccine including the blunting of subsequent response to the second dose; the study by Gomber *et al*20 suggests that such interference continues even for a third dose given at 4-6 yr of life. However, this assumption must be investigated so that the Immunisation Division will know how to modify the measles vaccine schedule by geography, if found necessary. [726]

Gomber and colleagues attempted to cover the immunity gap remaining even after a second dose, by giving a third dose (as MMR), at the age of 4-6 yr. [727]

The Indian Academy of Pediatrics recommends a third dose, but apparently without evidence of its need or of its effect19. The expectation would be that at this age immune responses to measles vaccine would be 100 per cent. In the study by Gomber *et al*, in
Delhi, the dose-specific response rate was only 65 per cent, for an overall antibody prevalence of 72 per cent after 3 doses of measles vaccine [728]

In one study in Senegal, up to 50 per cent of vaccinated but seronegative children had sufficient immunity to prevent clinical disease during a measles outbreak.[729] It was very likely that low antibody levels, below the lowest dilution tested, were enough for protection in vaccinated children. Moreover other elements of immunity, such as memory B cells or immune T cells, have a role in protection in spite of waning antibody levels.[730]

The presence or absence of measles antibodies has been assumed to correlate with protection and susceptibility t o natural measles infection.
However, it should be noted that many seronegative vaccinated children are pro- tected against measles infection. [731]

However, there are now a number of reports4-’ of individuals who had measles antibodies after immunization and later developed measles infec- tion. [732]

However, children with congenital agammaglobulinemia contract measles and pursue a typical clinical course with rash and subsequent immunity despite the absence of detectable measles antibodies postinfection.[733] and it has been suggested that antibody production in measles is of minimal or no importance.[734]

In agamrnaglobulinaernia, where the gut-associated- lymphoid-tissue system is completely non-functional, measles follows its normal course and gives rise to normal subsequent immunity. No measles antibody was detectable in their serum.[735]

In cortisone-treated acute leukaemia where the thymus- dependent system is eliminated, measles takes on the form of a fatal giant-cell pneumonia without rash. [736]

Subacute sclerosing panencephalitis is a condition in which the T.-D. system has developed specific tolerance (non- responsiveness) to measles antigen while the antibody system remains specifically active. [737]

In SSPE, there are occasional remissions. [738]

The work has been well done, and it is now clear that in a very minute proportion of children who have measles something unusual happens. A slow infection begins in the brain and proceeds inexorably, the virus spreading from one cell into the next, provoking a neuroglial and plasma-cell response. Both glial and neuronal cells contain virus particles and tubules demonstrable in electron-micrographs and antigen recognisable by immunofluorescence. The brain is in fact saturated with virus and with antibody and antibody-making cells. Despite many attempts the virus has not been isolated, almost certainly because of the presence of antibody, yet the process goes on to death. The patients on record have had measles 4-17 years before the neurological symptoms appeared. [739]

For SSPE: Some acquired anomaly is needed which persistently prevents the recruitment of T.-D. irnmunocytes reactive against measles antigens. [740]

In 1847, Panum published a famous account of measles in the Faroe Islands in which the disease had been absent for 60 years. When the epidemic had been through the islands everyone was infected except those who had been children exposed to the previous epidemic 60 years before. This rather clearly makes two points: (1) that immunity against measles is life-long and specific; (2) that once a person has recovered from measles he never sheds virus into the environment. I would make the obvious deduction that the virus has been eliminated, but some workers still prefer to believe that, in one way or another, measles antigen continues to be produced in the body for the rest of life. [741]

Variability in measles virus sequences

There was another epidemic in the Netherlands from May 27, 2013 to March 12, 2014. There were this times 2,766 cases.[742]

In the Netherland, Overall, 2766 measles cases were reported between 27 May 2013 and 12 March 2014.
Two percent (n = 66) of the cases were excluded based on a different genotype (n = 11) or were imported (n = 25). Epidemiologically linked to these different genotypes and importations were

20 and 10 cases, respectively. Of the 11 different genotypes found, 10 were genotype B3 and one genotype H1. We included the remaining 2,700 cases in our analyses. [743]

Genetically, genotype H1 is close to B3, so that they are referred to as clusters [41]. However, as reported earlier with D4, within one genotype, genetic variations may result in signi cant antigenic drift. [744]

Hence, the question arises whether 60-year-old vaccines induce specific immunity efficiently against the whole spectrum of the current genotypes, which by definition differ in the genetic sequence of the proteins highly involved in the immune response against the virus. We suggest that variations in the immunodominant epitopes of wild-type strains have accumulated over time and might have been selected per geographical area when they helped to escape antibody neutralization. Therefore, when introduced in areas free of endemic transmission, viral mutants evading post-vaccination immunity could emerge, similar to influenza A virus.[745]

Measles vaccination may have altered viral ecology in the same way that the 7- and 13-valent vaccines against *Streptococcus pneumonia* have led to serotype replacement.[746]

It also enables the identification of vaccine-associated cases (check this reference in BC).[747]

Measles has been reported with the identification of the measles vaccines virus within 37 days after receiving the measles vaccine. [748]

Even if lab were able to genotype the virus through one of its sequence it would not monitor mutations in other sequences of the virus. [749]

According to Red Queen's hypothesis coined by Leigh van Valen in 1973 [141], every organism does the best it can adapt in the face of environmental pressures. The polyclonal nature of post-vaccine immunity has retained some e ciency but is less strong than immunity following natural infection. As vaccine-evading viral mutants are selected, vaccine failures due to imported genotypes in non-endemic areas are increasing. Disease extinction can only occur if all strains are as efficiently neutralized over a very long time interval. The Red Queen's theory should keep in mind that in the field of infectious diseases, adversaries are not stable but can change and improve, and no success is definitive. Hence, to meet the goal of measles eradication, all viral variants in their adaptative zone must be targeted, host determinants of vaccine response must be considered, and vaccine policies must be adapted to achieve sufficient level of high-quality and long- term immunity in all age groups.[750]

Measles vaccines are 60-year-old and contain viral strains belonging to the clade A, no more detected since 2008 [751]

Before the national measles vaccination program was implemented in 1963, almost every person acquired measles before adulthood . an estimated 3–4 million persons in the United States acquired measles each year. [752]

During 2010–2016 in Korea, 36.2% of individuals with con- firmed measles infection were unvaccinated, 46.8% were vaccinated previously (10.5% with 1-dose, 36.2% with 2-dose), and vaccination information was not available for 17% of infected individuals (data not shown). [753]

To report an outbreak of measles with epidemiological link between Hong Kong International Airport (HKIA) and a hospital between March and April 2019.

In total, 29 HKIA staff of diverse ranks and working locations were infected with measles within 1 month.

Despite good herd immunity with overall seroprevalence of >95% against measles, major outbreaks of measles occurred among . 38% had a history of having received two measles vaccines. The measles seropositive rates among all age groups from 2011 to 2017 in Hong Kong were >95%.[754]

Median vaccine effect- iveness following administration of a sin- gle dose of measles containing vaccine at 9–11 months was 84% (interquartile range [IQR], 72–95%) and increased to 92.5% (IQR, 84.8–97%) among children vacci- nated at 12 months or older.[755]

Primary vaccine failure can be addressed by increasing the age of the first dose of measles vaccine to 12–15 months in settings with a low risk of measles in infancy, and through administration of a second dose of measles-containing vac- cine. [756]

In China, children receive a measles-containing vaccine (MCV) at 8 months, 18– 24 months, and some urban areas offer a third dose at age 4–6 years. However, substantial measles cases in Tianjin, China, occur among individuals who have received multiple MCV doses. [757]

This analysis revealed that over a quarter of cases of measles in Tianjin, China had received one or more doses prior to contracting the disease. [758]

Our findings are similar to those of Durrheim et al., in which multiple countries approaching elimination found that a large proportion of cases were vaccinated [759]

26% in the case series contracted measles despite 2 or more doses of MCV is surprising. [760]

a programmatically non-preventable case is either in someone who has received all recommended doses of MCV but remained susceptible (ie, vaccine failure) or someone for whom two doses of measles vaccine were not recommended (eg, too young for two doses). : Between Jan 1, 2013, and Dec 31, 2017, 634 139 measles cases were reported; 7850 (1%) cases were excluded because they did not provide age at onset, so 626 289 were included in our analysis. 191 333 (31%) of these cases had unknown vaccination status. 275754 (63%) of the 434956 cases with available vaccination data were categorised as programmatically preventable, 213 461 (77%) of whom were aged 1 year to less than 15 years. 156 384 (36%)

cases were categorised as non-preventable, of whom 38 677 (25%) were two-dose vaccine recipients, 74 438 (48%) were too young to receive their first MCV dose, 11 914 (8%) received their first dose and were too young to receive their second dose, and 31 355 (20%), mostly in the Africa region, were non-preventable because they were only eligible for one dose on the basis of the national immunisation programme. [761]

Prevention and management of the complications of measles

Conventional medicine is quite helpless in the treatment of the measles from a phamaceutical point of view, as no specific antiviral treatment exists for measles virus.[762]

However, severe complications from measles can be avoided through supportive care that ensures good nutrition and rehydration.[763]

All children in developing countries diagnosed with measles should receive two doses of vitamin A supplements, given 24 hours apart. This treatment restores low vitamin A levels during measles that occur even in well-nourished children and can help prevent eye damage and blindness. Vitamin A supplements have been shown to reduce the number of deaths from measles by 50%.[764]

It has been estimated that about 13% of the current under five overall mortality rates could be averted by promoting the proper breastfeeding practices. For example, among children living in the 42 countries with 90% of child deaths, a group of effective nutrition interventions including breastfeeding (13%), complementary feeding (6%), vitamin A (2%), and zinc supplementation (5%) could save about 2.4 million children each year (25% of total deaths). Water, sanitation, hygiene would save another 3%.[765]

It is clear from the above data that mothers will transfer greater and longer-lasting passive immunity against measles with good nutrition and good breastfeeding practices. Good nutrition of younger children would also dramatically decrease mortality and complications from measles.

By proper management of cases of measles in well-nourished and non-handicapped children, kids could go through measles with all the immunological advantages it can provide, including immunity for life, and especially the transmission of antibody of the transplacentally to the unborn child and from the nursing mother to her nursling. One of these was spurt growth after measles, as observed by pediatricians prior to era of vaccination.

In view of the above data, mortality from measles is very low in well-nourished children above one year old, and who are not handicapped mentally or physically, perhaps 1 in 100,000. But this mortality rate is under allopathic care, which uses suppressive method as soon as there is fever, which is known in experimental animals to increase complications and decrease survival.[766] Despite the clear evidence of the advantages of fever, the WHO[767] and Mayo Clinic still recommend anti-febrile medications in patients affected with measles, “Fever reducers. You or your child may also take over-the-counter medications such as acetaminophen (Tylenol,

others), ibuprofen (Advil, Children's Motrin, others) or naproxen (Aleve) to help relieve the fever that accompanies measles."[768]

the effects of aspirin and paracetamol on mortality due to in- fluenza B infection were investigated in neonatal and weanling mice,
In vitro studies were also undertaken which demonstrated that both aspirin and paracetamol caused a dose- dependent reduction in interferon-induced anti- viral responses. [769]

Protection from chronic diseases
A case-control analysis of Parkinson's disease and infections in childhood was conducted in a cohort of 50,002 men who attended Harvard College (Cambridge, MA) or the University of Pennsylvania (Philadelphia, PA) between 1916 and 1950 and who were followed in adulthood for morbidity and mortality data. Cases of Parkinson's disease were identified from responses to mailed questionnaires and death certificates through 1978. Four controls from the same population were selected for each case. A reduced risk of Parkinson's disease was associated with most childhood viral infections. The negative association was statistically significant for a history of measles prior to college entrance (exposure odds ratio = 0.53; 95% confidence limits: 0.31, 0.93). The reduced risk of Parkinson's disease among subjects with a positive history of measles in childhood may reflect an adverse effect of measles in adulthood or of subclinical or atypical measles. Furthermore, a negative history of measles, especially if associated with a lack of other common diseases, could be a marker for negative Influenza history before 1918 and thus a higher risk of infection during the 1918 influenza epidemic, because of the lack of partial influenza immunity. These data may also suggest a truly protective effect of measles, compatible with some complex interaction between measles virus and the virus of the 1918 influenza epidemic.[770]

The only one of the above results with confidence limits (CL) that do not include the null value of 1.0 is the exposure odds ratio for measles. In these data, measles in childhood is associated with a reduced risk of Parkinson's disease. [771]

This prospective cohort study of middle-aged Japanese men and women found the following two things. First, both subjects with a history of measles and those with a history of mumps had a lower risk of mortality from CVD than those without a history of infections. Second, a higher number of infections was associated with a lower risk of mortality from CVD. To the best of our knowledge, this is the first population-based cohort study to prospectively investigate the positive impact of infections on CVD in both men and women. A history of infections decreased the risk of mortality from atherosclerotic CVD.[772]

Exposures to febrile infectious childhood diseases were associated with subsequently reduced risks for melanoma, ovary, and multiple cancers combined, significant in the latter two groups. Epidemiological studies on common acute infections in adults and subsequent cancer development found these infections to be associated with reduced risks for meningioma, glioma, melanoma and multiple cancers combined, significantly for the latter three groups. Overall, risk reduction increased with the frequency of infections, with febrile infections affording the greatest

protection. In contrast to acute infections, chronic infections can be viewed as resulting from a failed immune response and an increasing number have been associated with an elevated cancer risk. Conclusion: Infections may play a paradoxical role in cancer development with chronic infections often being tumorigenic and acute infections being antagonistic to cancer. [773]

Risks and benefits in perspective

Summary: All evidence shows that vaccination as a whole clearly protects populations against target diseases.

However, vaccinated populations tend to be spared from target diseases but are increasingly becoming sicker than non-vaccinated populations, as there is:

1- An increase morbidity and mortality in vaccinated populations from other causesm such as unrelated infections, heart disease, diabetes and asthma;

2-Several folds increase neurodevelpmental disorders in children.

- Preterm vaccinated children have 14.5 increased odds of developing a neurodevelopmental disorder than the unvaccinated preterm children.[774]
- The longest-running and most comprehensive autism surveillance CDC site, which is in New Jersey, reported that 28% of the children had intellectual disability, which is defined as IQ score of 70 or lower.
- In 2019, the CDC reported that autism spectrum disorder was now affecting up to 3% of children in the United States, and its prevalence had increased by 27% between 2010 and 2014 in children aged 4 years.
- Children with developmental disability suffer from many co-morbidities than the rest of the population, such as 26% of autistic adolescent suffers from epilepsy, 50% have self-injurious behavior; children with developmental disability had a nearly three times higher risk of asthma.

3- A 2.4 fold increase for children to develop other chronic illness.

- 43% of US children has one of 20 chronic illnesses.
- The incidence of reported asthma in American HPV vaccine recipients was increased by the 9.7 folds, as data showed that the HPV vaccination resulted in an excess of 261,475 asthma cases for the years 2015-2016 with an estimated direct excess lifetime cost of such persons being US$42 billion.[775]

4- About 75% of Americans ages 17–24 would not be able to join the military, of which 32% would be for health problems.

- “Put another way: Over 24 million of the 34 million people of that age group cannot join the armed forces—even if they wanted to.”

5- A several fold increase in fetal loss in mothers who received the influenza vaccine (6 fold increase greater with one vaccine and 11.4 fold increase with two vaccines in one flu season).

6- Increase susceptibility to chronic disease such as Parkinson, as a history of having had measles protects against the development of Parkinson's disease.[776]

6- Increased susceptibility of developing atherosclerotic and of dying from CVD, as a history of measles and mumps lower the risk of both conditions.[777]

7- Increased risks for melanoma, ovary, and multiple cancers combined, as exposures to febrile infectious childhood diseases lower the risk of developing one of these conditions. [778]

However, the burden of vaccination can't be isolated from the burden of drugs, especially antipyretics and opioids, maternal health, air pollution exposure and lifestyle factors, such as obesity, hypertension, breastfeeding and nutrition.

On the one hand, the benefits obtained from vaccination can easily be obtained as they are based on clear and precise statistics that measure changes in mortality from target diseases in a vaccinated population.

On the other hand, the risks associated with vaccination depend on surveillance systems that tend to be totally unreliable, as they rely mostly on the antiquated passive surveillance systems, which can underestimate adverse events by hundreds of folds.

Evaluation of risks becomes therefore much more elusive and requires more evidence for correlations to be recognized as causations.

The full spectrum of short- and long-term morbidity following vaccination can be difficult to detect and its association difficult to prove.

In the absence of such knowledge on each vaccine, how can public health assure the population that vaccines are safe and one make the right decision for themselves and their family if the risks of vaccination have not been sufficiently and correctly evaluated?

Of course the best way to obtain detailed evaluation of risks would be to closely study vaccinated versus unvaccinated population in RCT over a few generations.

This has never be done as the industry which has the mandate to make safe vaccines and health agencies which are mandated to monitor vaccination adverse events are either non-interested to conduct such research and refuse to do it supposedly for ethical reason.

Health agencies tend to rely on inadequate passive surveillance systems, which tend to lack accuracy by 100s of folds. For instance in a prospective study, the incidence of subclinical myocarditis in service personnel who had received smallpox vaccination was 10 times greater than the one from the physician surveys and *240-times greater than with passive surveillance*.[779]

Aaby et al. who found that 3–5-month-old children who had received DTP vaccinations early were compared with normal children who had not yet received these vaccinations, *mortality was found to be actually 10 times higher for DTP-vaccinated children*.[780]

When the WHO Immunization and Vaccines Related Implementation Research Advisory Committee refused to pursue RCT on the adverse effects of vaccination Aabt et al. concluded, "If that decision by IVIR-AC remains unchallenged, the present study [a non-randomized comparison of vaccinated and unvaccinated children] may remain the closest we will ever come to a RCT of the non-specific effects of DTP."[781]

In other non-controlled and randomized studies of vaccinated versus unvaccinated population, there was a marked difference in the better health of the unvaccinated population. In a 1992 survey NZ, mentioned earlier, the difference of incidence of the common children illness was remarkable in the vaccinated versus the unvaccinated children: asthma 15.04 vs. 2.97%, eczema 27.88 vs. 12.64%, otitis media 24.78 vs. 5.95%, ear tubes 6.19 vs. 0.74%, tonsillitis 11.50 vs. 1.12%, tonsillectomy 5.31 vs. 0% and hyperactivity 5.75 vs. 1.49%.[782]

The incidence rate of clinically diagnosed myocarditis and pericarditis in healthy cohorts of service personnel was found to be nearly *7.5 fold higher* in vaccinees than the expected background rate among comparable unvaccinated service members.[783]

The association between hepatitis-B triple series vaccines, which contained thimerosal prior to 2000 in the US, and developmental disability in children aged 1–9 years was investigated in a later study, which reported statistically significant evidence to suggest that American boys who were vaccinated with the triple series hepatitis-B vaccine had an approximately *9 times greater odds* of developing developmental disability than the unvaccinated boys, during the time period in which vaccines were manufactured with thimerosal.[784]

Dan Olmsted, an investigative journalist, reported of not having found any case of autism in the unvaccinated Amish population of Dutch County, Pennsylvania. He should have found between 50 and 130 persons with autism for this population, when the rate of autism in the American population was 1 per 166 children in 2005.

When Olmsted pursued his investigation among Homefirst Health Services in Chicago metropolitan area, which cared for a population of about 30,000-35,000 children of which 15,000 of these were delivered at home and were mostly unvaccinated. Interviewed physicians of Homefirst couldn't recall any child they delivered and was not vaccinated having developed autism.

These Homefirst physicians also remarked on the very low rate of asthma and diabetes in their children population. The Blue Cross rate of childhood asthma was at that time approximately 10 percent. On physician remarked that they had virtually no case with asthma in the breast-fed and not vaccinated population.[785]

This above data corresponds to the one of two studies that compared the health status of vaccinated versus homeschooled, unvaccinated children 6 to 12 years of age. ., the birth history and health outcomes of vaccinated and unvaccinated children of age was compared. The vaccinated children had 3.7 greater odds of having a *neurodevelopmental disorders* (NDD), which include learning disabilities, attention deficit hyperactivity disorders and autism spectrum disorders. The preterm children who were vaccinated had a 14.5 increased odds of developing a NDD than the unvaccinated and non preterm children.[786]

The vaccinated children were less likely than the unvaccinated ones to have been diagnosed with chickenpox and pertussis, but were more likely to be diagnosed with many co-morbid features, such as allergic rhinitis (OR[32]: 30.1), other allergies (OR: 3.9), eczema (OR: 2.9), learning disability (OR: 5.2), ADHD (OR: 4.2), autism spectrum disorders (OR: 4.3), pneumonia (OR: 5.9), otitis media (OR: 3.8) and myringotomy with tube placement (OR: 8.1). Further, vaccinated children had a 2.4 fold greater odds of having been diagnosed with a chronic illness compared to unvaccinated children. The vaccinated children also were significantly more likely to use medications, to have visited a doctor when sick, had higher rates of outpatient visits and emergency department encounters and hospital stay than age-appropriately “undervaccinated” children. It is interesting to note that the partially vaccinated children had an intermediate position in terms of allergic rhinitis, ADHD, eczema, and learning disability.[787,788]

Considering that rates of autism among boys are currently 3.63% compared with 0.0005% (that is, 1 in 2000) only 50 years ago, the importance of continuing to investigate the association between the MMR vaccine (and other vaccines) and autism cannot be overemphasized—not just as a public health problem but as a national emergency.”[789]

In a rare double blind study with vaccines conducted in Japan for an influenza vaccine it was found that the outcome of children who received the trivalent inactivated influenza vaccine (TIV) were compared with children who had received a placebo. Over the following 9 months, TIV recipients had a 4.4 increase risk of virologically-confirmed non-influenza infections. [790]

Children in Guinea-Bissau who received the H1N1-vaccine became more susceptible to unrelated infections.[791]

Influenza vaccinees have a significantly higher ($p<0.01$) susceptibility to coronaviruses when compared to unvaccinated individuals.[792]

The Vaccine Adverse Event Reporting System (VAERS) database was examined for the rate of spontaneous abortion and stillbirth in women who received one versus two flu vaccines during a season. The ones who were vaccinated twice during an influenza season had 11.4 more fetal loss compared to the women who were only vaccinated once during a flu season. The author of

[32] An OR or odds ratio of 30 means that the probability for having allergic rhinitis is thirty times more likely to occur in the vaccinated than in the unvaccinated group.

this study concluded, “Thus, a synergistic fetal toxicity likely resulted from the administration of both the pandemic (A-H1N1) and seasonal influenza vaccines during the 2009/2010 season.”[793]

A case-control study was conducted over two influenza seasons (2010–2011 and 2011–2012) to determine if receipt of vaccine containing pH1N1 antigen was associated with spontaneous abortion. The overall adjusted odds ratio in the 1–28 days was 1.3 among not vaccinated women. Among the vaccinated women the overall adjusted odds ratio was 7.7. This effect was observed during these two successive influenza seasons.[794]

A 2008 survey revealed that one in six children suffered from neurodevelopmental disorders, which are disabilities associated primarily with the functioning of the brain.[795]

The rate of autism keeps climbing every year. Across the 3-year reporting period, the US National Health Interview Survey reported that the prevalence of autism spectrum disorder in American children and adolescents was 2.24% in 2014, 2.41% in 2015, a 8% annual increase, and 2.76% in 2016, a 15% annual increase.[796] In 2019, the CDC reported that autism spectrum disorder was now affecting up to 3% of children in the United States, and its prevalence had increased by 27% between 2010 and 2014 in children aged 4 years.[797]

The proportion of children suffering from autism may actually be higher. The CDC’s autism and developmental disabilities monitoring program in New Jersey is the nation’s longest-running and most comprehensive autism surveillance site reported highest autism prevalence as of 2014—one in 34 eight-year-olds (3%) and one in 22 boys (4.5%), and 28% of the children had intellectual disability, which is defined as IQ score of 70 or lower.[798] The head researcher of this survey said that New Jersey may still be underestimating the rate of autism in its state and that it may represent a more accurate picture of what is going on in the metropolitan U.S. He further said, as a whole autism had become an “urgent public health concern,” citing “a true increase of approximately 150% to 200% in the period since 2000.”[799]

Children are no doubt getting sicker as time is passing. From 2009 to 2011 and 2015 to 2017, there were overall significant increases in the prevalence of any developmental disability, 16.2 and 17.8%, attention-deficit/ hyperactivity disorder, 8.5 and 9.5%, autism spectrum disorder, 1.1 and 2.5%, and intellectual disability, 0.9 and 1.2%.[800]

Children with developmental disability suffer from many co-morbidities than the rest of the population. For instance, 26% of autistic adolescent suffers from epilepsy.[801] Prevalence of self-injurious behavior is as high as 50% among autistic children.[802] Further, these children with developmental disability had a nearly three times higher risk of asthma (OR: 2.77), namely 16 versus 6%, versus children without a disability.[803]

In 2007, forty-three percent of US children has one of 20 chronic illnesses,[804] and 23.5 to 50 millions Americans have autoimmune diseases.[805] Autoimmune phenomena such as arthralgia, myalgia, myocarditis, pericarditis, as well as diseases of unclear etiology such as fibromyalgia and chronic fatigue syndrome, occur in higher frequencies after vaccine administration.

Additionally, well-defined autoimmune diseases, for instance immune-mediated myopathies, SLE, RA, Sjögren's syndrome, multiple sclerosis, acute disseminated encephalomyelitis, transverse myelitis, inflammatory bowel diseases, have all been linked to various vaccines exposure. The most common vaccines to be related to ASIA syndrome are those directed to influenza virus, HPV, HBV, diphtheria-tetanus-pertussis, MMR and BCG.[806]

About 75% of Americans ages 17–24 would not be able to join the military, of which 32% would be for health problems.[807] "Put another way: Over 24 million of the 34 million people of that age group cannot join the armed forces—even if they wanted to."
Another 25% wouldn't meet the "minimum level of education [high school or equivalent], a basic understanding of written and cognitive skills, and enough "stick-to-itiveness" to complete an organized program.[808]

The risks associated with vaccination are much less obvious and tend to be very elusive, as much is based on epidemiological evidence, which can point out correlations, which don't equate to proof of causation, and don't provide as a rule the value of evidence as prospective studies and RCT.

However, when correlations found in epidemiological evidence are strongly supported by physiological mechanisms, in vitro and vivo experimentations and clinical reports they inch closer to become proof of causation.

But the best evidence about the risks of vaccination would be obtained through prospective studies and RCT by closely monitoring all possible short- and long-term adverse effects of vaccination over a few generations.

Conclusion
The present essay was not meant to exhaustive, as only a peek at the literature that is related to the dangers associated mostly with two vaccines was conducted, namely the oldest vaccine in existence, the smallpox vaccine, which mainly given to first interveners, and one of the most recently introduced vaccines, the HPV vaccine. It is hoped that this partial review will bring more clarity to the issue of vaccination and enable readers to seek answers and clarity to many of their questions, which in turn will help them to make more informed and better decisions regarding vaccination.

Volumes can be written on the dangers of vaccination, as well as in many other important issues directly or indirectly related to vaccination, including but not limited to major safety concerns, such as the existence of insufficient incentives and funding for research on vaccine safety; inadequate testing of risks for each vaccine separately and for the cumulative risks associated with an entire vaccine schedule over a lifetime; insufficient attention to vaccine additives; the failure to screen out vulnerable subjects; the lack of openness by health authorities to discuss vaccine safety;[809] how scientists whose research have uncovered some potential danger inherent to vaccines have been personally criticized, instead of their research and were consequently penalized;[810] on the conflict of interest of expert on safety vaccine boards;[811]

manipulation of data by health agencies;[812] the marketing of vaccines through the marketing of diseases;[813] the collusion that exists between government, health agencies and the industry and their concerted deception of the public and lack of transparency;[814,815,816] tainted anthrax vaccine given to 300,000 military personnel;[817] viral shedding after live virus vaccination;[818] vaccine doses and infant mortality[819] and sudden infant death syndrome;[820] recent tragedies related to vaccination, such as the tragedy of the oral polio campaign in India with over 450,000 cases of paralysis and death[821] and the damage caused by the Dengue vaccine in the Philippines;[822] vaccine failure,[823] effectiveness, risks and benefits of conventional vaccination versus homeoprophylaxis;[824] increased mortality associated with other vaccines than the DTP vaccine;[825,826] morbidity and mortality due to increased susceptibility to unrelated pathogens;[827] the relation of vaccines to the incidence of atopic diseases;[828,829,830,831] the presence and dangers of contaminants in vaccines, such as glyphosate,[832] or animal DNA[833] or unwanted microorganisms;[834,835] brain impairment and deaths following the use of the new neonatal hepatitis B vaccine;[836] fertility issues;[837,838] epigenetic[839] and mutagenic effects of vaccines;[840] and the role of vaccines in chronic diseases.[841]

Purposely, for this review, I did not reread the excellent writings of my very esteemed senior colleague Richard Moskowitz *Hidden in Plain Sight: The Rôle of Vaccines in Chronic Disease* (2004), which can be freely downloaded from the internet in a PDF format.[842] I also did not read his most recent book on the subject, *Vaccines—A Reappraisal* (2020), in order to see the differences coming out from the investigation of two independent researchers.

However, both of the works of Dr. Moskowitz are highly recommended for anyone who is interested in this subject of vaccines as it related to our well-being, particularly if the reader is seeking to know more about particular vaccines.

Personally, I began this essay in order to be able to answer simple questions about vaccines from my patients. On the one hand, health authorities keep repeating that vaccines are safe, while on the other hand most knows someone who became very sick after receiving a vaccine.

I have found much more than I thought I would find. The subject is vast and carries many societal implications and can greatly affect one’s personal choice and destiny.

The prevention of diseases is a fundamental principle of medicine, and it is a good idea to find prophylaxis against serious infectious diseases.

However, prophylaxis should not impinge on another fundamental principle of medicine, *primum non nocere*, which stipulates that above all, physician, do no harm. Physicians who firmly abide to this principle have the mandate to seek out the most effective and safe methods of treatment and prophylaxis.

The one-size-fits-all model of conventional medicine which has extended from the uses of drugs to vaccination is contrary to another key principle that is dear to alternative care practitioners, which is that everyone is an individual, with unique needs and sensitivity.

It is unfortunate that the views on vaccines from a holistic perspective tend to be pouh pouhed by the establishment.

It is important to point out that vaccination is the outcome of a medical system for which adverse effects from their treatments has been commonplace for centuries.

Constantine Hering, the father of homeopathy in America, captured the general sentiment of the homeopathy community regarding vaccination in 1831 when he wrote, “If it [disability following vaccination] occurred with but one-tenth the number of cases, or even less, it were sufficient to call up the wish for a better preventive,” and which he repeated again in another essay on the subject of vaccination 47 years later in 1878.[843]

Before entering the subject of recommendations, I will briefly review the main points of the present investigation.

From the information so far gathered from the scientific literature, we can come to the following objective conclusions:

As a whole vaccines protect well populations against target diseases.

The dangers associated with vaccination have traditionally been poorly studied, greatly because there is a priori belief that benefits far outweigh the risks.

But how can risks be estimated versus benefits if they are not properly and thoroughly studied.

All evidence shows that unvaccinated populations are much healthier than vaccinated.

“The social and economic fallout of having a much sicker vaccinated population is hitting home hard—with adverse impacts on intelligence, fertility, household and government finances, employment, productivity, military recruitment and more. The disproportionately high level of neurodevelopmental disability in males versus females is also reshaping society.[844]

By searching the classic medical literature of the last 200 years, one quickly realizes that vaccines have never been safe.

The safety of vaccines is a medical dogma.

No government that is genuinely interested in the public health would rely on the totally inadequate passive surveillance systems for depicting adverse events associated with vaccination, as their reported rates of adverse events can be hundreds of folds lower than the more realistic prospective studies of vaccine recipients.

Manufacturers have the mandate to make vaccines safe and governments have the mandate to assure that manufacturers' vaccines are safe.

However, neither seems interested to be interested to investigate the entire realms of adverse effects of vaccination, as the Institute of Medicine reported in 2011 that there was a lack of knowledge about the existence of causal relation between four pediatric vaccines and 134 out 155 diseases.

The dangers associated with vaccination cannot be emphasized enough—not just as a public health problem but also as a national emergency.

The industry should bear the responsibility "to clean after themselves" for the harm caused to individuals by the adverse effects of vaccines. For instance, it should be made responsible for the 9.7 fold increase in the incidence of reported asthma in American HPV vaccine recipients, as data shows that HPV vaccination resulted in an excess of 261,475 asthma cases for the years 2015-2016 with an estimated direct excess lifetime cost of such persons being US$42 billion.[845]

Science has been misused in the interests of the pharmaceutical industry.

Some will say unthinkable abominations are being conducted with the stamp of "science." For instance, pregnant women are highly enticed today to receive the influenza vaccine despite the fact that it has been shown that fetal loss among vaccinated women has an overall adjusted odds ratio of 7.7 after one shot and 11.4 after two shots.[846]

Or that thimerosal-containing vaccines are still recommended by the WHO to be injected in newborn babies and pregnant women, despite the fact that over 165 studies have found it to be harmful.

Or a 6-month old baby who has received all the 26 vaccines recommended by health authorities has received 20 times the provisional tolerable weekly intake of aluminium during the first half year of his or her life.

Indeed, aluminum-adjuvated vaccines are still injected in newborn babies, despite its known neurotoxicity, its highly significant correlation with autism, that when injected and ingested aluminum can be traced to accumulate in the brain, and that brain of autistic persons contains an extraordinary amount of aluminum.

Or preterm vaccinated children have 14.5 increased odds of developing a neurodevelopmental disorder than the unvaccinated preterm children.

The US CDC has recommended for decades and is still recommending dangerous vaccination schedules for preterm and term infants and pregnant women.

When will health authorities wake up to the facts that:

- Child psychiatrists observed the appearance of autism in children shortly after the introduction of thimerosal and aluminum-containing vaccines.
- Autism has been associated with thimerosal-containing vaccines, such as 7.6 times greater risk found following the thimerosal-containing hepatitis-B vaccines.
- The rate of autism seems to be almost inexistent in unvaccinated populations.
- A vaccinated population is much sicker, more susceptible to other infections, develop more chronic diseases and live less long, which altogether would on the long-term put in peril the survival of the human race.

It is astonishing that the US CDC still states on its website that thimerosal is safe and there is “there is no link between vaccines and autism,” “there is no relationship between thimerosal-containing vaccines and autism rates in children,” and “research shows that thimerosal does not cause autism spectrum disorder.”

Such abominations of “science” are clearly unacceptable. Authorities have no right to impose such bad science to a free society.

Governments, health agencies, the industry and mainstream media hold a discourse that is discordant to the one of science and is misleading on the dangers and effectiveness of vaccines, and are constantly reassuring the public on the safety of vaccination and are putting much effort to encourage their population to be vaccinated, even though they don’t know the full short- and long-term risks associated with vaccination, as they are no in-depth prospective studies on the full-spectrum of risks for any single vaccine, which should be preferably conducted over a few generations in order to study any epigenetic or genetic effects.

Governments, health agencies and the industry have been in collusion and deceptive toward the public and have acted in secrecy and lack of transparency regarding the real dangers of vaccines, emphasizing commercial interests over public health.

Governments, health agencies and the industry have lost the trust about informing the population regarding the dangers of vaccination and have therefore lost the right to make vaccine mandatory.

Advisory and expert boards that are often assembled to examine the safety of vaccines and claims of reported harm have presented views that are contrary to the observation of clinicians, which has further exacerbated the distrust the public had developed toward public health agencies regarding vaccines.

Vaccination has been used as a tool of trade between countries, which is totally unethical by the industry and governments.

The situation is dire when the highest health officials of a country openly misinform the public with straight lies, and astonishingly without being rebutted by the scientific community.[33]

To simply and scientifically question as to whether vaccines are safe has become an anathema, an untouchable subject. Science cannot be limited and terrorized by a set of dogmas or beliefs, but must remain focused on being an openly, objective, precise and thorough investigation of our world.

Mainstream media has so far served governments and the industry by advocating public vaccine policy and “manufacturing consent” instead of pursing unbiased journalism that seeks truth and the defense of justice.

The well-kept secret that no one in authority should reveal is that the true short- and long-term adverse effects of vaccination are not well known, as they are poorly studied, but escalade quite quickly as soon as they begin to be investigated.

Though a vaccine protects children against the target disease it may simultaneously increase susceptibility to unrelated infections.

For instance, when the short- and long-term effects of vaccination have been investigate in prospective studies, astonishing data has been revealed, such as a single vaccine, the DTP vaccine, has been associated with a 10-times greater mortality in children from other causes in a country in development than it saves lives from diphtheria, tetanus or pertussis; or that subclinical myocarditis was discovered in first interveners after smallpox vaccination 10 times more frequent prospectively than in physician surveys and 240 times greater than with passive surveillance.

Less than 1% of vaccine adverse events are reported to passive surveillance systems, but when patient data was reviewed electronically it was found that about 10% of individuals who received a vaccine had reported an adverse event.

Vaccinated populations are becoming increasingly sicker and experience higher morbidity and mortality than non-vaccinated populations.

There is much at stake, including the discredited authority of a dysfunctional and corrupted medical system and of governments that have traditionally supported it.

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[33] Despite the facts that vaccines contains dangerous substances, Brett P. Giroir, the assistant secretary for Health and Human Services, Robert R. Redfield, the director of the Centers for Disease Control and Prevention and Jerome M. Adams, the surgeon general states in March 2019, “But misinformation about vaccines is still widely reported, so we feel it is crucial to state clearly and unambiguously: Vaccines do not cause autism and they do not contain toxic chemicals.” (Brett P. Giroir, Robert R. Redfield Jerome M. Adams. Opinion | This Is the Truth About Vaccines - The New York Times. https://www.nytimes.com/2019/03/06/opinion/vaccines-autism-flu.html)

The financial interest of the non-liable manufacturers and their share-holders is unfortunately at the heart in the issue of vaccine safety and in conflict of interest with the consumers, and it is particularly troubling that three of main manufacturers of children vaccines, namely Pfizer, Merck and GlaxoSmithKline, “have records of fraud and criminal or ethical misconduct in marketing other drugs where they face ordinary tort liability that they do not face by law in the vaccine market.”[847]

Public vaccine policy puts in peril people’s health and their liberty.

Mandatory vaccination recommended by governments infringes on fundamental rights and liberties and creates a lot of animosity in part of the public when these recommendations are dictated by medical politics and vested interests of the pharmaceutical industry rather than by science.

Coercion and a contemptuous attitude toward people’s need for simple but scientific information and full transparency further erode people’s trust in their institutions.

As Barbara Loe Fisher, co-founder and president of the National Vaccine Information Center and the mother of a child she said was injured by vaccines, stated in the PBS documentary *The Vaccine War*, “The days of paternalism in medical policies are over. People are taking control of their own health. They want to be more in charge in the way that they live and not simply rely on a doctor.”

Public health officials are looking at the good for all, while parents are looking at the good for their children, which it is their ultimate responsibility to keep their children safe.

Parents have the absolute responsibility to protect their children, even it is contrary to the trend of their society. Who would disagree with the words of Albert Einstein that have become pertinent in this societal debate, “Never do anything against conscience even if the state demands it”?

People should always have the right to be fully informed about the benefits and risks of any health intervention and have the freedom to choose what is best for them.

People in general and parents in particular need to exercise their right to informed consent, which is based on the moral and legal premise of patient autonomy to make decisions about their health and health care.

People need to be informed that there are very safe and effective alternative approaches to conventional vaccination.

“Homeopathic families” have used these approaches for generations and their right to have full access to them should never be repressed in any free society.

As up to 70% of the mortality from measles is due to bronchopneumonia, mortality would become minimal under alternative health care as no one should die of pneumonia when hydrotherapy and homeopathy are properly applied, even the most of moribund patients, as it was discussed in the beginning of this essay (see the table: Mortality from Pneumonia Under Different Medical Approaches). Patients between 95 and 101 years who were given up to die with pneumonia all survived under homeopathy. Another life threatening but less common complication of measles is encephalitis, which also no one should die under properly applied hydrotherapy and homeopathy. The author has successfully treated a number of patients in the very later stage of encephalitis, meningitis or pneumonia.[848]

Complications in febrile and infectious conditions are more likely to occur when drugs in general and suppressive measures, such as febrifuge are used.

Alternative medicine is extremely resourceful to help people mange febrile conditions and recover from infectious diseases, even in the most serious cases, and to help recover from long-term morbidity associated with infectious and to which conventional feels powerless.

For instance, a case of long standing blindness from measles was dealt very successfully in our clinic in one of our patients in a manner of days. In 2000, a 47-year old woman presented with Bell's palsy that she had had since 1972 and had been legally blind since the age of 2 following measles ("my retina were burnt from playing in the sun while I having measles"). After five bioccular transcerebral iontophoresis[34] treatments within a week and recovered her sight (225/10 to 50/20) and 90% of her facial function. She reported that for the first time in 28 years she was able to blow out candles on her birthday cake.

Here is a second example of the efficacy of the resource used in alternative medicine to deal with the long-term sequels of infections and is at the same time a good example of homeoprophylaxis on large segments of population in India where epidemics of Japanese encephalitis have been recurrent since 1970. From 1987 to 1989 there were 5,172 deaths among 16,871 cases of Japanese encephalitis, a mortality rate of 30 percent. In 1991, a single dose of Belladonna 200 C (the genius epidemicus) was given as a prophylaxis to 322,812 persons in 96 villages in four districts of India. Follow-ups with 39,250 persons were conducted

[34] Bioccular transcerebral iontophoresis (BTI) is a treatment that was developed around 1920 by Georges Bourguignon, M.D., D.Sc., who was a neurologist and neurophysiologist and a member of the French Academy of Medicine. It was first used to treat World War I soldiers who were suffering from sequelae of head injuries. BTI treatments have been successfully used with those who have affections of the brain not only following head trauma (such as epilepsy or paralysis), but also due to inflammation (such as multiple sclerosis), infection (encephalitis and Bell's palsy), stroke (hemiplegia) and hypoxia (cerebral palsy or due to respiratory arrest). Other conditions that have also been helped are sequelae from damage to the eyes (such as retinitis and optic neuritis) and spinal cord (such as following spinal cord injury, or inflammation, like transverse myelitis). The principle of the BTI consists of the transmission of a tiny, painless and barely perceptible direct electrical current from the eyes through the brain to the neck and back. This micro-electrical current carries different ions (i.e., calcium, magnesium, iodide, etc.) through the brain and spinal cord from one electrode to the other. The rehabilitation of neural tissue and restoration of function are likely achieved by decreasing scar tissues in the eyes, brain or spinal cord and improving circulation which helps to regulate function and repair neural tissue. Bio-medical researchers have also demonstrated that DC electrical fields can stimulate regeneration of nerve cells.

and it was found that none reported any signs or symptoms of Japanese encephalitis. The research team also treated homeopathically 223 patients with encephalitis in remote areas who had not received any treatment, as well as 14 other patients who had been discharged from hospitals and were suffering from some sequels of encephalitis, such as convulsions (7 cases), unconsciousness (6 cases) and opisthotonos (3 cases). All the 223 patients received symptomatic relief and improvement was seen to various degrees in almost all the symptoms in the second group of 14 patients. Four out these 14 experienced complete recoveries.[849]

By being treated naturally, without any suppressive and disruptive approaches, is a prophylactic in itself and better assurance of good health.

Regarding which homeoprophylactic I would at the moment recommend family to inact would be for the prevention of whooping cough in young children and rubella in young women.

Whooping cough homeoprophylaxis could be given routinely every year to children younger than 5 years old.

Women after the age of 16 should be tested for rubella antibodies and if negative should be protected from rubella homeopathically.

Citizens should demand from their government of the people, by the people and for the people to:

1- Prospectively follow vaccinated versus unvaccinated population for a few generations. Studies have to be done to see what changes occur in immune functions and in the main organs and especially in the brain function in vaccine recipients.

2- Support alternative medicine research, education and licensing in order that the full spectrum of benefits that can be obtained from alternative medicine be made available to the all the people in any commonwealth.

All evidence shows that homeopathy combined with hydrotherapy and effective management of febrile conditions should lead to close to zero death, even in cases with the most intractable infectious diseases, including complications of pneumonia and encephalitis.

People have the most to gain by following health promoting lifestyle and safe environement and choose a safe and efficacious health care.

An instance of lifestyle choice that can safeguard the well-being of a new born infant would be a mother who had measles as a child decides to adopt or has access to a health promoting diet tand breastfeds her baby for 12 months would provide optimal protection to her babies from measles, during the time of greater susceptibility to complications which 6-14 months of age.

There will always be new microorganisms that will threaten humanity through devastating epidemics. Like the African swine flu that is epidemic in China, which has gut out of control and may threatens the world wild and domesticated porcine species, or like the current COVID-19.

The use of homeopathy in cases of infectious disease is very safe and most efficacious, regardless of the infectious agents.

If any information mentioned above is incorrect, please contact the author of this review, André Saine at cah@homeopathy.ca.

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