The Science and Politics of Eradicating Measles

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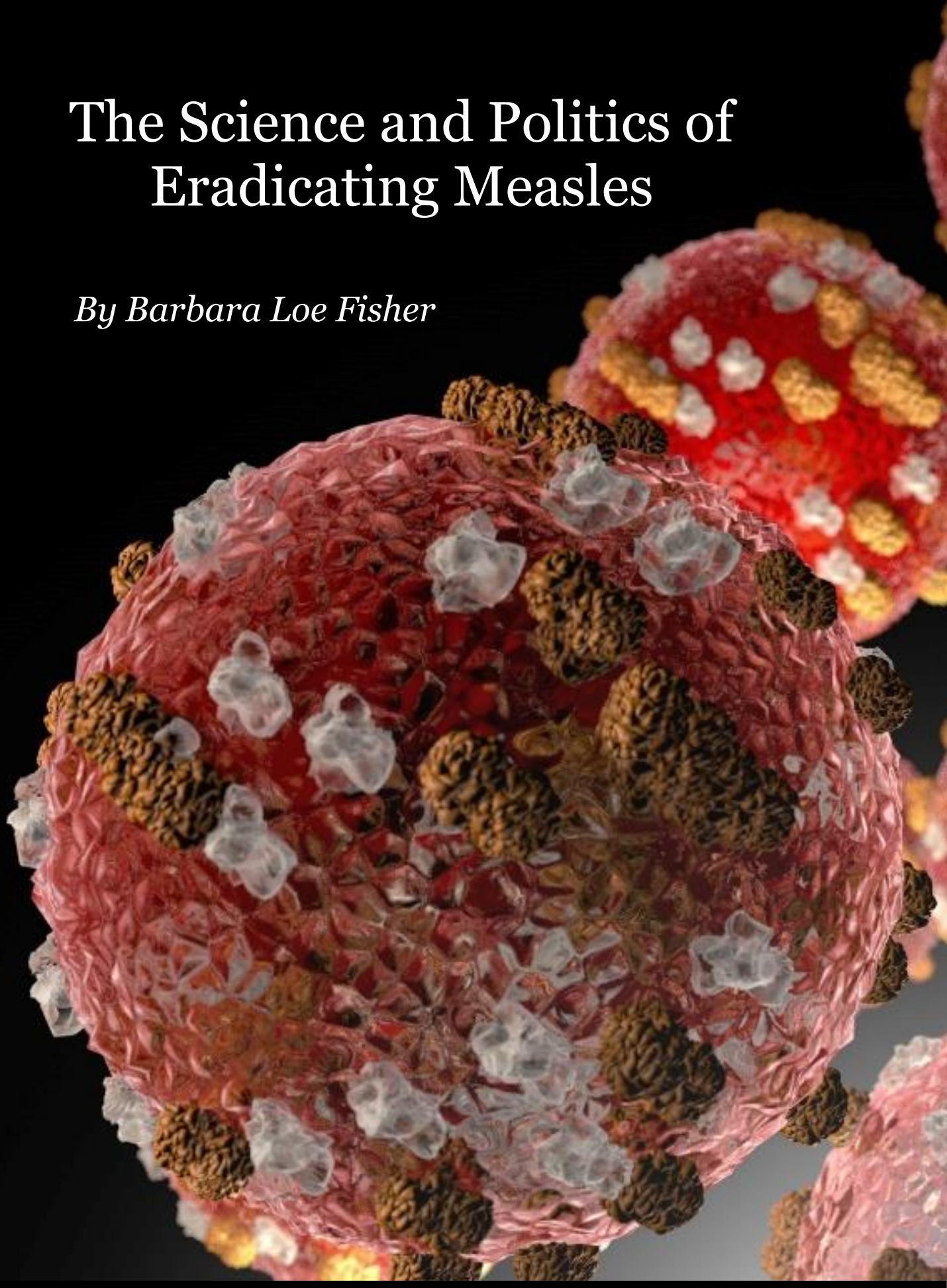

National Vaccine Information Center
Spring 2019 Special Report

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Introduction

In 2019, the fear mongering about measles has reached epidemic proportions in America. A day doesn't go by without media outlets publishing angry articles and editorials spewing hatred toward a tiny minority of parents with unvaccinated children, who are being blamed for measles outbreaks. [1] [2] [3] The remedy is always a call to track down, persecute and punish any parent whose child is not vaccinated. [4] [5] [6]

Some state and federal lawmakers are reacting to the relentless fear mongering by proposing to severely restrict the medical vaccine exemption and eliminate all religious and conscientious belief exemptions in state vaccine laws. [7] [8] [9] [10] These exemptions, which help prevent vaccine injuries and deaths, also protect parental rights, civil liberties and the ethical principle of informed consent to medical risk taking. [11]

History of Measles in the U.S.

The U.S. government, the World Health Organization, medical trade associations, the pharmaceutical industry and multi-national communications corporations all agree that the measles virus is extremely dangerous, the MMR vaccine is very safe and effective, and all children must get two doses of MMR vaccine to meet the goal of eradicating measles from the world by 2020. [12] [13] [14] [15]

While most of the public conversation in the past two decades has been focused on children, who have suffered convulsions, encephalitis and encephalopathy after MMR vaccine reactions and become chronically ill and disabled, [16] [17] [18] [19] [20] [21] [22] there hasn't been much discussion about measles vaccine effectiveness or what measles was like before and after the vaccine was licensed in the mid-20th century.

This is a special report on measles vaccine failures based on evidence published in the scientific and medical literature that is not being discussed in public conversations about measles vaccine policies and mandatory vaccination laws.

Measles in U.S. in 1950s: Mild and 90 Percent Not Reported

I had measles in the 1950s, along with my sister and half the kids in my class. I remember staying home from school, wearing dark glasses in the house and eating chicken noodle soup and orange popsicles, while waiting impatiently for the spots to disappear so I could go back to school and see my friends again. The same thing happened with chickenpox but that was way more uncomfortable because, even with calamine lotion, I kept itching when I shouldn't have.

There were 555,000 reported cases of measles in 1955 with 345 associated deaths in a US population of 165 million people that year. [23] [24] Actually, though, an estimated three to five million Americans every year got wild type measles,

usually before age 15. [25] [26] [27] If 3.5 million Americans got measles in 1955 and 345 died, the measles death rate was about 1 in 10,000.

Most cases like mine were mild with a fever, sore throat and rash that went away in a week. Back then, few mothers called a doctor for a common childhood infection every child got, and 90 percent of cases were not reported to the government.[28] In fact, if you look at vital statistics data from the early 20th century, although measles can cause complications like pneumonia, ear infections, and brain inflammation, measles infections have never been a leading cause of death or disability in this country. [29] By the mid-20th century there were antibiotics to address many complications and measles was not considered a big problem by most parents and clinicians in the U.S. or Europe, especially in healthy children.[30]

1962: "Moderate Severity and Low Fatality" But Let's Eradicate It

In 1962, famous microbe hunters Drs. Alexander Langmuir and DA Henderson, who designed smallpox eradication campaigns, contemporaneously described measles as a "self-limiting infection of short duration, moderate severity and low fatality" that has "maintained a remarkably stable biological balance over the centuries. " [31]

Dr. Langmuir calmly observed that, "the decline in [measles] mortality demonstrates the degree to which we have adapted to this balance and have learned to live with this parasite." But then, boldly, proudly and with absolute confidence, he proclaimed:

"To those who ask me, "Why do you wish to eradicate measles, I reply with the same answer that Hillary used when asked why he wished to climb Mt. Everest. He said, "Because it is there." To this may be added, "…. and it can be done."

Drs. Langmuir and Henderson were giving a heads up to the medical community that a measles vaccine was coming out soon and that public health officials were going to use it to not just control measles, but to eradicate the virus from the earth.

The "because we can" eradication action plan would apply the same search and destroy strategies used against the smallpox virus to wipe out the much less deadly but far more contagious measles virus. Like with smallpox, that action plan hinged on using the bodies of infants and children injected with a vaccine to try to drive the virus into extinction. Public health officials, pharmaceutical companies and politicians were well aware that for a century they had convinced parents to offer their children for conscription in a war on smallpox and polio, and it was logical to assume they could wage the same kind of war on the measles virus, too.

In 1962, Congress passed and President John F. Kennedy signed the Vaccination Assistance Act (PL 87-868), known today as the Section 317 grant program. The Act, which was part of a broader federal government initiative to

provide health care to underserved communities, gave money to the states to wage intensive polio and DPT vaccination campaigns targeting young children. The Act was amended in 1965 under President Lyndon B. Johnson to include money for measles vaccine campaigns. [32] [33]

History of Measles Vaccine in the U.S.

In March 1963, the U.S. Surgeon General announced two measles vaccines had been approved for licensure, an inactivated measles vaccine developed by Pfizer and a live virus vaccine developed by Merck. [34] In that statement, the Surgeon General once again admitted there was a low death rate for measles in the US. compared to underdeveloped countries. He reassured the nation that "rarely would there appear to be a need in the United States for mass community immunization programs." He urged doctors to simply offer the new measles vaccines at well baby visits.

Before Vaccine, Mothers Transferred Measles Antibodies to Fetus

At the time, doctors knew that women, who had recovered from wild type measles as children, passively transferred measles antibodies to a developing fetus when they were pregnant so newborns were protected from measles during the first year or more of life. [35] [36] Back then, most children did not get measles until they were between three and 10 years old and that gave them durable, long lasting immunity to the disease. [37] [38]

The immune systems of infants do not function the same way as for older children and adults. [39] From the very beginning, vaccine makers could not get the measles vaccine to override infants' natural maternal measles antibodies that block the acquisition of vaccine strain antibodies. [40] Today, because most women have been vaccinated as children, they don't have the same kind of robust maternal measles antibodies to pass on to their newborns like mothers in past generations.

Today, most newborns are susceptible to measles infections from birth, when complications can be more severe. [41] [42] And adults, including pregnant women, today can also be more susceptible to measles infections if their vaccine acquired antibodies have waned and they are no longer protected. [43]

This taking away of measles maternal immunity from newborns was the first major alteration in the "remarkably stable biological balance" between the measles virus and humans that Dr. Langmuir and his colleagues described a year before measles vaccines were licensed and given to babies as young as nine months old.

The recommendation for the first dose of measles vaccine was raised to 12 months old in 1965. In 1976, the age had to be raised again to 15 months because the younger the infant, the less likely the measles vaccine will be effective.[44]

First Inactivated Measles Vaccine Lethal, Ineffective

The first inactivated measles virus vaccine turned out to be pretty lethal, as well as marginally effective. [45] [46] Three doses of that vaccine set children up for a more severe type of atypical measles, which increased the risk of chronic illness and death if, years later, they got infected with wild-type measles.[47] [48] The inactivated measles vaccine was taken off the market in 1967.

First Attenuated Live Measles Vaccine Very Reactive

Merck's first attenuated live measles virus vaccine was given in one dose that was supposed to confer lifelong immunity. [49] It was described by the Surgeon General in 1963 as producing a "mild or inapparent, non-communicable measles infection." [50] It was pretty reactive too: 30 to 60 percent of children experienced high fevers or a modified measles rash along with cough and cold symptoms, similar to wild type measles.

Attenuated live vaccines contain lab altered, weakened viruses that infect and replicate in the body to stimulate artificial immunity without causing the wild type viral disease. However, there is always a possibility that vaccine viruses may revert to a more pathogenic form, which is why just the right amount of attenuation is so important. [51] To make the live measles vaccine less reactive, it had to be further attenuated in 1965 and, then again, in 1968. [52] [53]

Herd Immunity and Eradicating Measles

In March 1967 Dr. Langmuir and other CDC officials published a paper in the medical literature, once again describing measles virus as one that "has maintained a remarkably stable ecological relationship with man." [54] Measles "complications are infrequent," they said, and "with adequate medical care, fatality is rare" and "immunity following recovery is solid and lifelong in duration." They said a 55 percent herd immunity threshold or more may be needed to prevent measles epidemics that cycle in communities every two to three years but that, "there is no reason to question that…the immune threshold is considerably less than 100 percent."

These disease control experts ended their article by stating confidently that if a good number of children – but clearly not *all* children – were vaccinated during the winter and spring that year, then "the eradication of measles from the United States in 1967" would be accomplished.

1973: Vaccinated Children Can Still Get Measles

In 1973, Dr. Stanley Plotkin warned that vaccinated children could still get measles and that "a history of previous vaccination cannot be assumed to exclude measles as the cause of an exanthum [rash], whether typical or atypical." He said that, "about 5 percent of vacinees do not respond and presumably remain susceptible," which he described as "primary vaccine

failures." Dr. Plotkin also said there was evidence that some previously vaccinated children exposed to wild type measles could "develop modified illness and a secondary type of antibody response," which he described as "secondary vaccine failures." [55]

In other words, vaccine makers and public health officials knew in 1973 that getting a dose of the live virus measles vaccine does not guarantee that a vaccinated person won't get infected with wild type measles and they also were not sure about whether some vaccinated children could still transmit wild type measles to others.

1 Death in 1,000 REPORTED Measles Cases?

Between 1971 and 1975, an average of 35 measles-related deaths were recorded each year in the U.S., which CDC officials said equaled a measles mortality rate of 1 death in 1,000 reported cases, [56] although in Great Britain the estimate was 1 death in 5,000 reported measles cases. [57] Relying on reported cases to make the measles mortality estimate for the U.S. was not entirely accurate because the majority of measles cases were mild and not reported to the government.

Today, CDC officials still use the 1 death in 1,000 figure to reinforce the need to eradicate the virus using every means possible, including by excluding all unvaccinated children from schools. [58]

Measles Vaccine Herd Immunity Raised To Above 90 Percent Level

By 1971, about 72 percent of children had gotten a dose of measles vaccine and government health officials published a paper blaming the continuing failure to eradicate measles on the failure to get every child vaccinated at age one and the failure of more than half the states to require measles vaccine for children entering school. [59] They raised the measles vaccine acquired 'herd immunity' threshold from more than 55 percent to "somewhere above the 90 percent level," but added the interesting caveat – " if it exists at all." They said many unanswered questions remained, including the role that vaccinated persons may play "in the transmission of wild-type measles virus to susceptibles."

1973 MMR Eradication Campaign Fails

Regardless, in 1973, Merck was given a license to combine the live measles vaccine with live mumps and rubella vaccines in the attenuated MMR vaccine. Two years later, CDC officials tried to use MMR to eradicate measles by employing surveillance and containment strategies that worked to eradicate smallpox, even though they knew the highly contagious measles virus was quite different from the less contagious smallpox virus. The MMR eradication campaign in 1973 was a miserable failure. [60]

Three years later, there was an unexplained resurgence of measles in the U.S. in children 10 to 19 years old. [61] Public health officials in the City of Los Angeles

responded by declaring an emergency and, rather than quarantining sick children until they were well, 50,000 unvaccinated healthy children were excluded from schools until they got vaccinated.

This set the stage for state governments to institute "no shots, no school" laws [62] that, today, are the subject of much debate in state legislatures. [63] [64] [65]

By 1978, CDC officials announced that 96 percent of children entering schools in America had gotten a dose of measles vaccine, and said it was likely that measles would be eliminated from the U.S. by 1982.[66]

Measles Epidemics Among Highly Vaccinated Children

In 1983, there were only about 1500 reported cases of measles, [67] but there was a red flag: infants vaccinated in the first year of life were not protected from measles, even when they got more doses of the vaccine. [68] From 1985 to 1988, there were between 55 and 110 measles outbreaks every year in the U.S., primarily in highly vaccinated school-aged populations. [69] Measles swept through a middle school in Texas, where 99 percent of the students were vaccinated, and in a Massachusetts high school with a 98 percent vaccination rate. [70] [71]

The CDC did not get the science right in 1967 or 1978 and neither did Merck. The vaccine they said would eradicate measles by 1967 was not getting the job done. Twenty years later, vaccination rates among children in many schools were approaching 100 percent and vaccinated children were still getting and transmitting measles.

1989-1990 - Measles Cases Explode in North and Central America with Vaccinated and Unvaccinated Children Hit Hard in U.S.

Then, in 1989-1990, measles cases exploded in North and Central America, including in the U.S. and were associated with unusually high morbidity and mortality. The CDC said they didn't know why there were increases in measles but insisted that "measles vaccines appear to be as effective today as in the past," while quietly admitting that "analysis of contemporary strains of measles virus suggest that circulating viruses may have changed somewhat from past strains. " [72]

There were more than 45,000 measles cases reported in the U.S. during 1989 and 1990, and over 100 deaths. Vaccinated school children were hit hard. A large number of cases also occurred in babies less than 15 months old and in unvaccinated toddlers, as well as in college students. [73]

CDC: All Children Must Get TWO Doses of MMR Vaccine

By the end of 1989, the CDC recommended that children should get their first dose of MMR vaccine at age 15 months and all children should get a booster dose before entering kindergarten. "When fully implemented," CDC officials said,

"this schedule should lead to the elimination of measles among school aged children and college students." They reassured physicians, parents and politicians that:

> *"Although the titers of vaccine-induced antibodies are lower than those following natural disease, both serologic and epidemiologic evidence indicate that vaccine-induced protection appears to be long lasting in most individuals."* [74]

Why Was Measles Suddenly More Virulent?

I was a consumer member of the National Vaccine Advisory Committee (NVAC) during the 1989-1990 measles outbreak, when a high number of vaccinated school children were getting measles and so were unvaccinated pre-school age children living in minority communities in inner city Los Angeles, New York, Chicago, Dallas and other urban areas. [75] An FDA scientist made a presentation to the committee revealing that the type of measles circulating appeared to be unusually virulent and associated with unexpected morbidity and mortality for unvaccinated infants under age one and also in vaccinated and unvaccinated children under age five. I thought that fact was worth exploring further, along with a need to analyze the biological mechanisms for vaccine failure before any conclusions were drawn or recommendations were made.

In 1991, I refused to sign a highly political white paper the committee published that stated, "The principal cause for the measles epidemic is failure to provide vaccine to children at the recommended age." It rubber-stamped the CDC's knee-jerk response to a long-standing problem with MMR vaccine failures, which was a new recommendation to give every child in America two doses of MMR vaccine. [76]

1993: CDC Says Measles Is Deadly, Unvaccinated Children Cause Outbreaks

In 1993, President Clinton announced the Children's Immunization Initiative to ensure that all children, especially those under age two, would be vaccinated according to the CDC's recommended childhood vaccine schedule. [77] CDC officials published a paper pointing to the costs associated with the measles epidemic of 1989-1991 as a reason that more aggressive efforts were needed to give all children two doses of MMR vaccine. They also announced a plan to create a national vaccine tracking system to electronically monitor the vaccination status of all children from birth. They reminded everyone of the danger of measles and "the full magnitude of the harm that can be done by a so-called "mild" children's disease," which they said was mistakenly regarded for a long time by the public and many health professionals as "an unpleasant but not very dangerous part of life."

The government's message to the public in 1993 was: measles is deadly, outbreaks are caused by a failure to vaccinate enough children on time, and the

solution is to spend more money to give more children more vaccine. One part of the 1993 children's vaccine initiative – the federal Vaccines for Children program – today spends 4 billion dollars to buy vaccines for the states to administer to children. [78]

Nobody wanted to talk about studies published in the medical literature investigating what Dr. Plotkin had described in 1973 as "secondary vaccine failures."

MMR Vaccine Failures and Asymptomatic Infections

One U.S. study of a prolonged school-based outbreak of measles found that secondary vaccine failure and vaccine modified measles "may lead to underreporting of measles cases and result in overestimation of vaccine efficacy in highly vaccinated populations." [79]

In 1992, Canadian researchers had discovered that, "…contact with wild measles virus may act as a booster to the immune system in vaccinated subjects without causing any symptoms," and that "secondary vaccine failure (SVF) might play a role in vaccinated populations during measles outbreaks." [80]

In 1993, there was enough evidence that vitamin A deficiency plays a big role in measles morbidity and mortality for the World Health Organization to issue a recommendation that vitamin A supplements should be given to children diagnosed with measles in developing countries. [81]

In 1994, researchers analyzed school-based measles outbreaks in the U.S. and Canada and devised a hypothetical model to calculate vaccine failure rates and the percentage of measles cases occurring in vaccinated students if more than 95 percent of school children are vaccinated. They concluded:

> *"The apparent paradox is that as measles immunization rates rise to high levels in a population, measles becomes a disease of immunized persons. Because of the failure rate of the vaccine and the unique transmissibility of measles virus, the currently available measles vaccine, used in a single dose strategy, is unlikely to completely eliminate measles. The long term success of a two-dose strategy to eliminate measles remains to be determined."* [82]

PCR Testing Reveals Mild and Subclinical Measles After MMR Vaccination

In 1995, new reverse transcriptase PCR (RT-PCR) lab test technology was used to detect and differentiate between the presence of wild type and vaccine strain measles virus in children with symptoms of measles. Japanese scientists isolated measles virus from children, who developed clinical signs of fever and rash three to nine days after they were given measles vaccine, and found that "one strain was of the vaccine type and the remaining six were the wild-type." [83]

That same year, CDC virologists used PCR technology to identify measles virus RNA in the urine of 15-month old children and young adults between one and 14 days after vaccination. They said;

> *"The changing epidemiology of measles in the form of mild measles cases in previously vaccinated individuals suggests that more asymptomatic or subclinical cases might be occurring. The frequency of such infections, which would not meet the standard case definition of the Centers for Disease Control and Prevention, is not known."* [84]

New CDC Goal for Measles Elimination in U.S. – Year 2000

Even as measles outbreaks among infants, vaccinated school children and college students were raising serious questions about MMR vaccine failures, in 1998 CDC officials declared, "interruption of indigenous measles transmission appears to have occurred for the first time throughout the United States in 1993." They set yet another goal to declare measles eliminated in the U.S., this time by the year 2000. [85]

But 1998 was also the year that CDC officials confirmed that the 1989-1990 measles outbreak, which caused a higher number of hospitalizations and deaths, was associated with circulation of Group 2 measles viruses, particularly D3, that were "genetically distinct from vaccine strains." [86] [87]

Newborn Infants More Susceptible to Measles, Lack Maternal Antibodies

In the meantime, a group of researchers at Stanford University found that "humoral immunity was deficient in 6-month old infants given measles vaccine…" They admitted that, "little is known about the maturation of the virus-specific immune responses in healthy infants following infection or immunization." [88]

Naturally and Vaccine Acquired Immunity

A year later, CDC officials confirmed that, "infants whose mothers were born after 1963 are more susceptible to measles than are infants of older mothers." Rather than reflect upon the ecological imbalance the measles vaccine campaign had created, they pressed forward with their "because we can" action plan and said, "this potential increase in infant mortality should provide additional impetus to strengthen efforts toward global eradication of measles disease" with intensive campaigns to vaccinate older children. [89]

Subclinical Infections, Exposure to Wild Type Virus Boosts Immunity

At the same time, more scientific evidence was mounting that vaccinated persons could be asymptomatically infected with wild type measles and that an unknown number of people were experiencing subclinical measles infections that were not being identified or reported to the government. In published papers, CDC officials acknowledged that:

> *"Mild or asymptomatic measles infections are probably very common among measles-immune persons exposed to measles cases and may be the most common manifestation of measles during outbreaks in highly immune populations."* [90]

German virologists agreed that:

> *"…measles virus (MV) could circulate in seropositive fully protected populations. Among individuals fully protected against disease, those prone to asymptomatic secondary immune response are the most likely to support subclinical MV transmission."* [91]

In 1999, European researchers observed that:

> *"…a substantial proportion of individuals who respond to measles vaccine display an antibody boost accompanied by mild or no symptoms on exposure to wild virus."*

In addition, they said that in highly vaccinated populations, "neutralizing antibodies are decaying significantly in absence of circulating virus." They estimated "the mean duration of vaccine induced protection in absence of re-exposure to be 25 years," warning that, "there is a need to establish the intensity and duration of infectiousness in vaccinated individuals." [92]

So the question that was hanging in the air at the turn of the 21st century is one that is still relevant today:

If an unknown number of people with natural or vaccine acquired immunity are experiencing subclinical measles infections that are not being identified or reported to the government, has a certain level of herd immunity been maintained in the past because human populations are asymptomatically boosted through periodic exposure to the wild-type measles virus?

CDC Declares Measles Eliminated from U.S. in 2000

By the year 2000, more than 90 percent of 19 to 35 month old children and 98 percent of children entering school had received at least one dose of MMR vaccine. That year, the World Health Organization also reported that 80 percent of the world's infants had gotten a dose of measles vaccine. [93]

In the spring of 2000, the CDC held a meeting with 12 consultants and 10 resource specialists to talk about measles in the U.S. [94] Estimating that "at least 92 to 93 percent of the US population is immune to measles," at the end of the meeting, participants concluded that "measles is not endemic in the United States at present." This meeting is the source of the statements made by CDC officials today that, "Measles was declared eliminated (absence of continuous disease transmission for greater than 12 months) from the United States in 2000." [95]

In 2001, the World Health Organization launched a global measles and rubella elimination plan, which was renewed in 2010 and again in 2012. Currently, 2020 is the target date for global eradication of measles through mass vaccination campaigns that will deliver two doses of MMR to every child in the world. [96]

Measles Can Infect Previously Immune People and Cause Typical, Mild and Asymptomatic Infections

In 2002, more scientific evidence was published, this time out of Japan, to confirm that "measles virus can infect previously immune individuals," both those who are naturally immune and those who have been vaccinated, and that the reinfection can produce "a wide range of illnesses: typical measles, mild modified measles and asymptomatic infection." Researchers concluded that, "…the number of cases of measles among previously immunized individuals has increased, probably caused by waning of vaccine-induced immunity" and they suggested that: [97]

> *"…asymptomatic measles infections occur even in the adult population with unexpectedly high frequency and this supports the preservation of measles immunity."*

Between 2000 and 2005, it appeared measles had all but disappeared from the U.S. with historically low numbers of reported cases - only 37 cases in 2004 - the lowest for any year on record. The CDC said most measles cases were imported from outside the country. [98]

Measles Cases Steadily Increase in 21st Century

Then, between 2008 [99] and 2018, [100] measles cases in the US started to increase. Even though less than two percent of children were attending school with a vaccine exemption, the explanation coming from public health officials was that measles outbreaks were caused by unvaccinated children. [101]

In 2015, there was a highly publicized outbreak of measles in the U.S. that the CDC said began in California's Disneyland and unvaccinated children were to blame. [102] [103] Later it was revealed that that 30 percent of measles cases in California with vaccine records had been vaccinated, over half the cases were in adults, only 18 percent were school children, and a large number of suspected cases were not wild type measles but vaccine strain measles infections. [104] [105]

By that time, more than a decade of articles had been published in the medical literature calling for an end to religious and conscientious belief exemptions and restriction of the medical vaccine exemption for children. [106] [107] [108] [109] [110] [111] [112] [113]

2019: Measles Outbreaks in U.S. and World

In January 2019, the World Health Organization announced that "vaccine hesitancy" is one of the top ten global health threats. [114] By March 2019, about

2,000 cases of measles had been reported in a European Union population of 512 million people.[115] By mid-April, the World Health Organization reported a worldwide resurgence of measles with 112,000 cases reported in 170 countries, which WHO officials said reflected about 10 percent of all cases. [116] [117]

By May 13, 2019, the CDC had confirmed 839 cases of measles in 23 states in a U.S. population of 328 million people. [118]

Unprecedented Response by Public Health Officials and Media

The government and media response to measles outbreaks has been both unprecedented and uniform. [119] In Rockland County, New York instead of quarantining people infected with measles, government officials threatened parents of healthy unvaccinated children with fines and imprisonment if their children appeared in public spaces – the first time that has been done in American history. [120] [121] [122] It wasn't done for smallpox or polio. But it has been done for measles.

Unvaccinated children and adults living, working or visiting in neighborhoods with certain zip codes in Brooklyn have been threatened with steep fines if they are found to have been in contact with someone with measles. [123] [124] An entire cruise ship was quarantined for weeks because passengers had been exposed to a crewmember, who tested positive for measles. [125]

The response to measles outbreaks by public health officials and the media this year is so over-the-top, you would think the human race is hovering on the brink of extinction. [126] [127] [128] [129] A friend of a certain age who also had measles as a child, said the hysteria reminds her of an old government propaganda film from the 1940's, "Reefer Madness," where every person who smokes marijuana turns into a raving lunatic. [130]

But for post-baby boomer generations who cut their teeth on Zombie Apocalypse movies, the propaganda message of choice appears to be one that teaches people to be afraid, be very afraid of the unvaccinated, who are going to turn our planet into the Night of the Living Dead, [131] [132] [133] [134] and should be publicly identified, shamed, hunted down and – what?

Taking a look at the science is useful to get a grip on an over-publicized fear campaign that is turning Americans against each other: parents against parents, doctors against patients, sons against mothers, friends against friends. [135] [136] [137] [138] [139] [140] [141] [142] It is a shameful display of ignorance, prejudice and discrimination being promoted by individuals in academia, the medical community, public health and journalism and it should not be happening in a society that has historically valued equality and freedom of thought, speech, and conscience. [143] [144] [145] [146] [147]

Measles and MMR Vaccine Failures: What the Science Says

Here is what scientists have been saying recently about what they do and don't know about measles and measles vaccine failures:

Waning Immunity, Genetic & Epigenetic Variations, Gaps in Science

From the Vaccine Research Group at Minnesota's Mayo Clinic:

- "While the current vaccine used in the USA and many other countries is safe and effective, paradoxically in the unique case of measles, it appears to **insufficiently induce herd immunity** in the population;" [148]
- Even with two doses of MMR vaccine, an individual can fail to either mount or sustain a protective immune response. **Up to 10 percent of those given two doses "fail to develop protective humoral immunity and those antibody levels wane over time**, which can result in infection;" [149]
- Individuals respond differently to vaccination and **each individual's genes play a role in controlling measles vaccine-induced immune responses**. Scientists still do not completely understand "how the immune response is generated" or "how host genetic and epigenetic variations change and impact vaccine immune responses," or "how pathogens interact with the immune system." [150]
- "**The importance of cellular immunity to vaccine-induced protection is not completely understood."** Some children with no detectible measles antibodies may still be protected against measles, which supports the "involvement of cellular immunity." [151]
- Scientists do not have "a detailed understanding of the pathogenesis of the measles virus" or of vaccine-induced innate and adaptive (humoral) immunity. Better correlates of protection "that go beyond measuring antibody titers" are needed. There is **not enough information about what drives a vaccine response, a vaccine non-response, adverse events** following vaccination and the many complex interactions between immune function-related components. [152]
- **Genetic ancestry is a significant determinant of vaccine responses**. In one cohort study, Caucasians and most Hispanics, ethnic groups, which represent nearly 80 percent of the U.S. population, showed significantly lower humoral and cellular responses to MMR vaccination than African Americans. [153]

From microbiologists at the College Medical Sciences in India:

- "The measles virus (MeV) is serologically monotypic but genotyping confirms eight clades (A-H). The clades are further subdivided into 23 genotypes….Although sera from vaccinated individuals neutralize all the clades, the efficacy varies from clade to clade. It may be said that the

level of protection offered by this vaccine varies from genotype to genotype. **"** [154]

- "The present vaccine does not offer complete protection assurance and the limitations are evident now. **Newer strains show epitopes that are not shared by vaccine strains.** Variations in the efficacy of neutralization in the vaccinated individuals against wild MeV has been reported.**"** [155]

Wild Type & Vaccine Strain Differences

From a virologist with Johns Hopkins Bloomberg School of Public Health:

- "The original Edmonston strain of MeV is not available and genotype A viruses are extinct, so it is not possible to directly compare attenuated vaccine viruses with the original WT virus from which they were derived….**sequences of vaccine strains compared with current WT strains reveal differences in most viral proteins**, any of which may contribute to attenuation and no one change or combination of changes has been identified as responsible for attenuation;**"** [156]
- "**Despite long use [of measles vaccine], neither the determinants of attenuation nor of protective immunity have been identified and deserve investigation.** The reasons for failures of the formalin-inactivated vaccine and the high titer live virus vaccine are only partially understood and provide cautionary tales for development of other vaccines." [157]

Waning Measles Vaccine Immunity, Subclinical Infections

Just out of Australia, scientists reported in May 2019 that there is evidence for "waning measles immunity among vaccinated individuals" that is "associated with secondary vaccine failure and modified clinical illness" with "transmission potential." [158]

This finding confirms the scientific evidence coming from Berlin, Germany in April that: [159]

> "*Although measles cases have gradually declined globally since the 1980s together with an increase in vaccination coverage, there has been a resurgence of measles in the European Union and European Economic Area starting in 2017 with adults aged over 20 years comprising more than a third of all cases."*
>
> *"***The impact of waning immunity to measles will likely become more apparent over the coming years** *and may increase in the future, as the vaccinated population (with hardly any exposure to measles) will grow older and the time since vaccination increases. It is worth noting that the median age of measles cases has been increasing over the past 15 years in Berlin and the extent of waning immunity may increase further. Vaccinated cases have a lower viraemia and have rarely been observed*

> *to contribute to transmission. However, with the vaccinated population turning older and titres possibly decreasing further, this observation has to be re-evaluated.*"

Unanswered Questions

There are unanswered questions that need to be answered, such as:

- **How many unvaccinated children are being diagnosed with measles because they are fully expressing symptoms and are more easily identified and reported, while vaccinated children and adults are being asymptomatically infected or are only experiencing mild symptoms that are never identified or reported?**
- And how will waning vaccine immunity and the emergence of new measles strains impact the lives of pregnant women and their newborn infants, who no longer have measles maternal antibodies, and the immune-compromised, who have been told that forcing everyone else to get vaccinated will create herd immunity and protect them?

1984 Prediction: More Measles After Vaccination Campaign

In 1984, an article was published in the *American Journal of Epidemiology.* The author made a prediction of what the impact of giving all children measles vaccine would have by the year 2050 in the U.S. [160] A computer model simulation revealed that during the prevaccine era, approximately 10.6 percent of the population was susceptible to measles, most being children under 10 years old. After the institution of the measles vaccine program, the proportion of susceptibles fell to 3.1 percent from 1978 to 1981 but then began to incrementally rise every year.

The prediction was that, by the year 2050, about 10.9 percent of the population would be susceptible to measles and, instead of measles primarily infecting children under age 10, the cases would be distributed evenly among all age groups. The conclusion was that measles elimination in the U.S. being achieved in the late 20th century was a combination of vaccinating young susceptibles combined with the presence of a highly immune adult population that had natural immunity. However, there was a prophetic warning about measles for those living in 21st century America:

> *"Despite short-term success in eliminating the disease, long range projections demonstrate that the proportion of susceptibles in the year 2050 may be greater than in the prevaccine era."* [161]

Paying the Price When Vaccine Policy Precedes the Science

As the 72 million adults of the baby boomer generation come to the end of their lives, [162] [163] the last generation with robust natural measles immunity from childhood, which has greatly contributed to herd immunity in this population - it is

long past time for public health officials to reevaluate what they are doing. Because, for more than 55 years, they have stubbornly ignored persistent signs that the hypothesis of the medical experiment they have been conducting was fundamentally flawed. Instead, their answer to measles outbreaks, always, has been to simplistically order children to get more MMR vaccine and to scapegoat parents of unvaccinated children for a problem parents did not create and do not own.[164] [165] [166] [167]

When vaccine policy and law precedes the science, we all pay the price. People should not be forced to use vaccines that not only cause harm but also, clearly, fail to work as advertised. [168] [169] [170] [171]

Go to NVIC.org and read this report. Look at the references documenting the information. Share it with others. Educate your legislators.

Knowledge is power. Be the one who never has to say that you did not do today what you could have done to change tomorrow.

It's your health, your family, your choice.

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