



The Danger in Vaccines

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If the title of this has drawn you to reading, hoping to find a physician who will stand up to “expose” a purported widespread vaccine conspiracy that is based on pseudoscience and threatens the well-being of innocent children in this and other countries, save your time and stop reading this now.

The first active vaccine endeavor dates back over two hundred years and owes a great deal of its genesis to a clever English country doctor who had a curiosity about the beautiful complexion of British milk maidens and a well-earned respect for the ravages of smallpox. With a great deal of intellectual fortitude, this physician did a careful analysis of two seemingly unrelated issues: smallpox and the complexion of milk maidens. He set his feet on a path of vaccine development. Despite its novelty and the furor it caused among those less well-educated than him, Dr. Jenner was not dissuaded. If you have an intellectual curiosity about the genesis of modern vaccine technology, go read about smallpox, the milk maidens and the English country doctor, Edward Jenner. It's likely no single man or woman has, by scientific discovery, saved as many lives as Dr. Jenner.

Had Dr. Jenner lived in an earlier time, perhaps he'd have been one to poke holes in the “flat earth” theory that “died” so slowly despite the overwhelming scientific evidence to the contrary.

Fifty years before Dr. Jenner's revelation, Benjamin Franklin, the American patriot, scientist and inventor suffered the death of his oldest child to smallpox in an age where “variolation” was an accepted therapy to stem the scourge of this common illness that in that time carried a significant risk of death. Read his comments of the subject written in his memoirs many years after the death of his son:

“In 1736 I lost one of my sons, a fine boy of four years old, by the small-pox, taken in the common way. I long regretted bitterly and still regret that I had not given it to him by inoculation. This I mention for the sake of parents who omit that operation, on the supposition that they should never forgive themselves if a child died under it; my example showing that the regret may be the same either way, and that, therefore, the safer should be chosen.”



Mr. Franklin's genius is undeniable. His regret is palpable as a parent judging himself as complicit in the death of one of his children. The English of that era makes reading this an extra time or two necessary to fully grasp the sorrow he is feeling.

Fifty years after Dr. Jenner, another scientist and physician, Ignaz Semmelweis used his intellectual gifts to investigate and understand the causes of puerperal fever and became the father of the antiseptic era. The discovery for which he is responsible seems so simple examined from the "light" of science one hundred sixty years later. We have the privilege of hindsight. His vigilance in those years would cost him scientific reputation, professional standing, eventually his mental health and end his life. Again, examine the history of his discovery and realize that despite the breadth of science, his contemporaries were doubtful. Their scientific snobbery prevented an honest examination of his science, delayed its implementation and cost an untold number of lives as those less gifted about him lived peacefully in the smug intellectual bigotry that protected their beliefs.

Had Dr. Jenner lived in the early twentieth century in the United States, perhaps he'd have been the science teacher represented by Clarence Darrow in the "John Thomas Scopes monkey trials" of evolutionary science. William Jennings Bryan prosecuted this trial for what history would suggest was a personal agenda of prestige, influence and money. These motives are not extinct and their tentacles are carefully intertwined in the "vaccine polemic" of the current day.

The current vaccination conversation owes its genesis to some extent to misinformation published in the prestigious UK medical journal, The Lancet. In retrospect, the editorial board of The Lancet, perhaps in trying to provide "cutting edge" information, over-looked the scientific expectation that information be reproducible by other experts before it is regarded as medical fact. In this moment of compromised judgment, The Lancet editors published an article suggesting a relationship between the administration of MMR (measles, mumps & rubella) vaccine and the evolution of autism. As time has passed, the science was questioned and in retrospect was found to be false. Worse than bad science, the science was fraudulent and perpetrated for the usual motives of money, prestige and influence. All of this (the bad science and the fraud) has come to light and has been confirmed and reconfirmed. The fraud and its motives were so despicable that the doctor/scientist who sought to deceive us all has been stripped of his titles, his license to practice medicine, and the option to conduct medical research. The editorial board of The Lancet has had the humiliating task of



renouncing the originally published article as fraudulent. The editors carry the additional burden of knowledge that by ignoring good scientific doctrine and proper editorial surveillance, they've helped terrorize a generation of parents and diminished the health of their children. I'd encourage you to read a much more thorough discussion of the errors of The Lancet's editors in "Autism's False Prophets" by Paul Offit, M.D. If your time is limited, read the investigative reporting of Brian Deer or the synopsis in the ubiquitous Wikipedia.

The terror is ongoing and owes its life to the internet privilege of freely expressing all sorts of information or misinformation to be published in chats, blogs and articles with no knowledge of, or regard for, the doctrine of "the scientific method". It's additionally complex because any self-proclaimed expert can, with a bit of artistic design creativity, create a web presence that legitimizes the same misinformation The Lancet's board of editors' struggle to erase as a terrible mistake in science and judgment.

The internet is filled with opinions that masquerade as science and the parent consumer is left with the unenviable task of separating a huge amount of opinion from the tiny amount of scientific research. Much of the public is ill-prepared to examine information and critically judge it for the quality of its science. Confidence intervals, P values, scientific design, and control groups are not part of common jargon and thought process. This and more, however, are part of the careful analyses that need to be part of the interpretation of scientific information. As a consequence, opinions and science on the internet are often regarded equally by the reading public. Since one clearly outnumbers the other, opinion rather than science is most often the "message" of the internet.

Many would say that the public should put faith in the advice of the physician who knows the child and family best. Most do and this model works well. The more the internet is explored by a family searching for reliable science in vaccine technology, the greater the danger that the seeds of doubt will have been planted by the opinion-dominated web. Once that seed of doubt is planted, a time-consuming and potentially contentious conversation with the child's physician may follow. Recent research in behavioral responses of families inclined to not vaccinate their children demonstrate that the tool least likely to change that decision to not vaccinate is a conversation with the child's physician. The explanation for that response is not yet known. It makes me wonder if the physicians are uncomfortable with a contentious conversation and so conduct this conversation poorly. It may



be that the physician is viewed as financially invested in a decision to administer vaccines. Perhaps pediatricians are regarded as part of the establishment culture and subject to conspiracy theory distrust. Hopefully, future behavioral science will shed light on this subject so that positive changes for families and pediatricians can be made.

Many pediatricians are aware of this tendency of families to not be persuaded. That knowledge, coupled with the probable time investment needed to explore this conversation dissuades many pediatricians from the effort to try to persuade. Many families would likely view the absence of persuasive effort as tacit validation by the pediatric community of their decision not to vaccinate. That is untrue and tragic because a child goes unvaccinated and the message to the family and friends of the family is unintended medical concession, even approval!

The recent media frenzy surrounding measles and Disneyland has had a measureable impact on the daily practice of pediatrics. This issue points out the power of the national media. Until the media weighed in on this issue, most families in the "silent majority" who vaccinate held a belief that by doing so, they did their part and their child would be safe. This has been generally true, but measles is a "lightning rod" among vaccine preventable illnesses. Measles has an "R nought" (infectivity constant) of 12 —18 making it and whooping cough (pertussis) the most contagious of the vaccine preventable illnesses. Measles is so contagious, that in a susceptible population 12 to 18 new cases of measles would be generated through contagious exposure by a single case of measles. To control a disease this contagious, (measles) 90 to 95 percent of the population must be vaccinated (and immune) to stop the risk of spread. The vaccine produces 95 percent protection after the first dose is given at age one and nearly 100 percent protection after the second dose at age four as is the conventional time for administration in the United States. Until age four years, when the second dose of measles vaccine is given, if only 95 percent of the vaccinated are immune to measles, you can see the barrier of protection for these youngest children is quite vulnerable. Add to that the current practice of "opting out of vaccinating" that is vogue among a following of patients and you can see that as this practice continues and perhaps spreads, the youngest children live in a state of increasing vulnerability. As long as the option to not vaccinate is chosen by families and that choice does not isolate the family and child from group participation (day care, school, church nursery, etc.), this choice is likely to continue.



In the California legislature this year, Senate Bill 277 has been introduced and passed by a comfortable majority of 25 to 10. Governor Jerry Brown signed this bill into law in early July 2015. California now joins 32 other states that do not allow "personal belief exemptions" to "opt-out" of vaccination requirements. California now also joins a more elite group that includes only Mississippi and West Virginia as states that do not allow "opting-out" of vaccinations based on religious beliefs. Texas is still one of the seventeen states that allow "opting-out" of vaccinations based on a "personal beliefs exemption". This sort of push back in arguably one of the more liberal states in the union may have been unanticipated, but it hints at the changing tolerance of the California electorate. California children who are not in compliance at kindergarten and seventh grade will not be allowed to attend public or private school. Homeschool will be required of those who do not meet the vaccination criteria for public or private school attendance. In some of the "well-healed" communities of California, in private schools, those who choose to "opt-out" approach sixty percent of the school attendees. It should be an interesting process to see how this evolves and changes attendance and economics in both public and private schools as the start of the upcoming scholastic year is nearly upon us. It will be equally interesting to see if California will in time join Mississippi as one of the states that traditionally leads the country in vaccination rates of its school children.

As the politics of vaccine avoidance and the impact on "herd immunity" continue to evolve, the pediatric medical community will also continue to evolve. In Austin in the summer of 2015, provoked by their responsibility to the medically vulnerable who by age (infants are not fully vaccinated) or by medical fragility (cancer, compromised immune systems, leukemia, atopic dermatitis, etc.) cannot be protected fully by vaccination, the Austin Regional Clinic made a decision to no longer provide medical care to the segment of the 400,000 patients they provide care to who choose not to be vaccinated within the CDC guidelines. The recent outbreak of measles, with its epicenter at Disneyland and spread to many states in the country, involved more than one hundred fifty people, and likely resulted in the death of one adult due to measles pneumonia. Knowing that and the fact that the Texas school population's under or unvaccinated student enrollment has increased four hundred percent from 2007 to 2015, Austin Regional Clinic has chosen to side with the medically fragile and vulnerable who look to the clinic pediatricians to provide a medical safe haven within which to receive their medical care. The [article](#) detailing the decision is published in *Texas Medicine* in the September 2015 edition and I invite you to read the details.



At Southwest Children's Center, the silent majority of families who vaccinate and want the protection of "herd immunity" for their vaccinated children are starting to have interests not previously expressed. Some families are asking for early vaccination for measles to be more fully vaccinated in travel or other unexpected exposure. Some families are expressing interest or even concern about unvaccinated or under-vaccinated children sharing the office with their children. The American Academy of Pediatrics continues to recommend medical access not be restricted for children whose families chose not to vaccinate. There are advocates who have suggested clustering under or unvaccinated children into a certain part of the day or week to reduce exposure risk to families who vaccinate. It will be interesting to see where this dialogue leads as families, cultures and politicians evaluate the evolving drama of vaccinations and outbreaks of vaccine preventable diseases.

We Americans have a notoriously short attention span and as the CDC works to control the health threat of the recent measles outbreak, one unintended consequence of that success (control of measles outbreak) may be that the recent interest families have in vaccines and herd immunity will fade. If this occurs, hopefully we can find some way other than sickening our youngsters to provoke dialogue and education about this subject. If we lose this current impetus, then danger in vaccines will persist. The danger is not and has not been in the biologicals that are in the vaccines. Rather the danger lies in the reality that a few people spreading misinformation, acting upon that misinformation and influencing others can diminish the health benefits of the science of vaccines. The danger lies in our vaccine successes; that we've been so successful that generations of American have forgotten the scourge of these diseases we can prevent through vaccination. Clean water, fresh air, and a safe food supply are all public health concerns as is disease prevention through immunization. It is a curious anomaly that the small minorities who choose not to vaccinate typically have an intense interest in health subjects unfettered by science and the expression of that interest is the common link not recognized.

Many in the medical community would agree that the health benefits of vaccines are, in medicine, the single most revolutionary accomplishments of our time. Certainly if measured by the number of lives impacted, vaccines are unique in medicine because medical intervention with one patient can impact on a much larger group of people in the "herd". It's ironic that the very people who decry the use of vaccines are themselves protected by the "herd" around them. Vigilance in education,



outreach and vaccination of the "herd" is essential or the bountiful health success we enjoy will begin to slip through our collective fingers.

The quote, "Those who cannot remember the past are condemned to repeat it" is likely the insight of George Santayana and is apropos in so much of human endeavor. This could hardly be more representative of our uniquely American experience regarding the value of vaccination. In each of the past few years, we've had a taste of vaccine preventable diseases for all the reasons discussed. Measles gets the press, but the holes in our collective vaccine umbrella are numerous. So be assured, there is a danger in vaccines, but the danger is in those of us who've listened to the lies.....