



Scientific Evidence on Common Vaccine Misconceptions

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Objectives

- Understand the effects of the media and social media on vaccination in the United States
- Recognize common vaccine misconceptions encountered online or through social media
- Provide scientific evidence to equip patients and their families to make informed decisions on vaccination

If you know the enemy and know yourself, you need not fear the result of a hundred battles. If you know yourself but not the enemy, for every victory gained you will also suffer a defeat. If you know neither the enemy nor yourself, you will succumb in every battle.

Sun Tzu

 quote fancy

What's there to fear?



1955

200,000 children in the Western U.S. were given polio vaccines that contained alive, active virus

Roughly 40,000 developed polio, 200 were permanently paralyzed to some degree, and 10 children died



1982 *DPT: Vaccine Roulette*

- Documentary called *DPT: Vaccine Roulette*, aired by a Washington, D.C.-based NBC affiliate, hosted by Lea Thompson.
- DPT was a vaccine for diphtheria, pertussis, and tetanus, and the documentary attempted to link the pertussis portion to horrifying health effects in children.
 - Featured heart-breaking interviews with parents who described how their children had been left in near-comatose states after receiving a vaccine that was mandatory for public-school children in the vast majority of states.
 - Inaccurate statistics, cherry-picked quotes, and risible falsehoods about some of the “experts”.
 - Presented parents’ recollections as fact—and, as we know from countless studies, memory is imminently fallible. Those doctors and public health officials who disagreed with Thompson, on the other hand, were subjected to hours of grilling.



1986

National Childhood Vaccine Injury Act

- Litigation almost destroyed the vaccine industry which would have prevented future production
- Public health officials were fearful the U.S. might return to a pre-vaccine era, when preventable but potentially lethal illnesses like measles and polio could once again spread unchecked.
- Congress passed the National Childhood Vaccine Injury Act in 1986, which allowed children to be compensated for damages caused by vaccines but protected vaccine makers from legal action.





1998 Andrew Wakefield

publishes
now-discredited
claim that MMR
vaccine linked to
autism.

- Evidence emerged that Wakefield had been paid by attorneys for parents who were suing MMR manufacturers and that Wakefield's data were fraudulent. The Lancet retracted his study in February 2010. That year, Wakefield was found guilty of professional misconduct by Britain's General Medical Council and his license was revoked.

THE LANCET

The Lancet, Volume 375, Issue 9757, Pages 437 - 441, 28 February 1998
doi:10.1016/S0140-6736(97)11096-0

This article was retracted

RETRACTED: Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children

Dr [AJ Wakefield](#) FRCS FEF, [SH Murch](#) MB B, [A Anthony](#) MB B, [J J Keech](#) PhD F, [DM Casson](#) MRCP B, [M Malik](#) MRCP B, [M Brookes](#) FRCPsych S, [AP MRCPath](#) F, [MA Thornton](#) FRCP B, [P Harvey](#) FRCP S, [A Valentine](#) FRCP S, [SE Davies](#) MRCPath F, [JA Walker-Smith](#) FRCP F

Summary

Background

We investigated a consecutive series of children with chronic enterocolitis and regressive developmental disorder.

Methods

12 children (mean age 5 years [range 3–10], 11 boys) were referred to a paediatric gastroenterology unit with a history of normal development followed by loss of acquired skills, including language, together with diarrhoea and abdominal pain. Children underwent gastroenterological, neurological, and developmental assessment and review of developmental records. Rectocolonoscopy and biopsy sampling, magnetic resonance imaging (MRI), electroencephalography (EEG), and lumbar puncture were done under sedation. Barium follow-through radiography was done where possible. Bifurcated haematinin and immunohistological profiles were examined.

RETRACTED

The image shows the front page of The Sunday Times newspaper. The masthead at the top reads 'THE SUNDAY TIMES'. Below it, there are three main article teasers: 'Whining Jacko' with a photo of Michael Jackson, 'Mighty Penn' with a photo of a man, and 'Cut it out' with a photo of a woman. The largest headline on the page is 'Revealed: MMR research scandal'. Below this headline, there is a sub-headline: 'ST investigation exposes scientist's "fatal" conflict of interest'. The page contains several columns of text, including a large red 'RETRACTED' watermark overlaid on the left side.

Correlation Causation

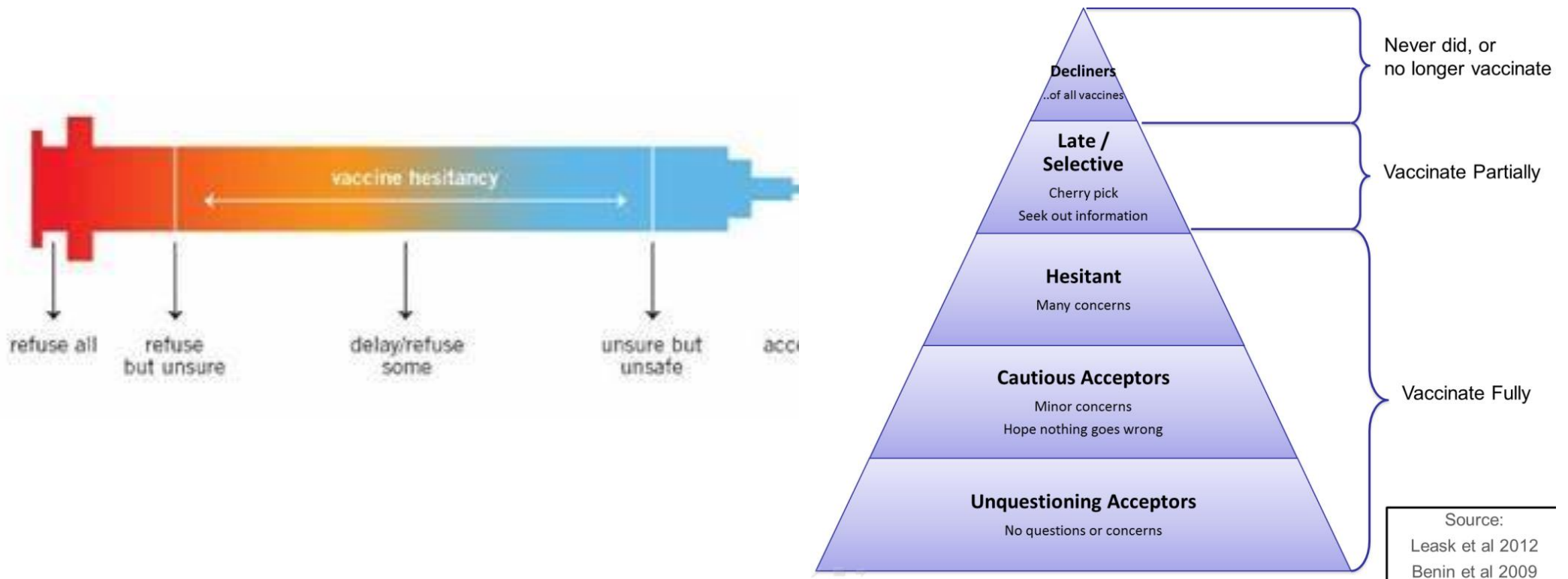
- Dravet syndrome was first described by Dr. Charlotte Dravet in 1978.
- Children with Dravet syndrome develop severe, fever-related seizures before their first birthday. In addition to other, hard to control seizures, children with Dravet syndrome typically have developmental delays and autism-like characteristics.
- Later, in 2006, Dr. Samuel Berkovic used mutation screening of the SCN1A gene and found that many adults had Dravet syndrome.
- *Reyes et al* 2011 case report: Alleged Cases of Vaccine Encephalopathy Rediagnosed Years Later as Dravet Syndrome, replicated Berkovic's discovery.

So what?

- Informational reliance on all social media platforms was positively correlated with vaccine hesitancy; this correlation was strongest concerning Facebook and YouTube. Coronavirus conspiracy suspicions and general vaccine attitudes appear uniquely predictive, jointly explaining 35% of variance.
- Mainstream media (e.g., TV, newspaper) and social media both negatively influence a subject's vaccine intent.
- Social media platforms that are more entertainment and social-based, such as Whatsapp, Instagram, and YouTube, have a negative and significant influence on vaccine intent ($P = 0.061$), compared to other more information-based social media platforms (e.g., Twitter, LinkedIn).
- Medical decisions more likely to be swayed by scientific-sounding information.
- Significant relationship between organization on social media and public doubts of vaccine safety.
- Substantial relationship between foreign disinformation campaigns and declining vaccination coverage.

Our Role

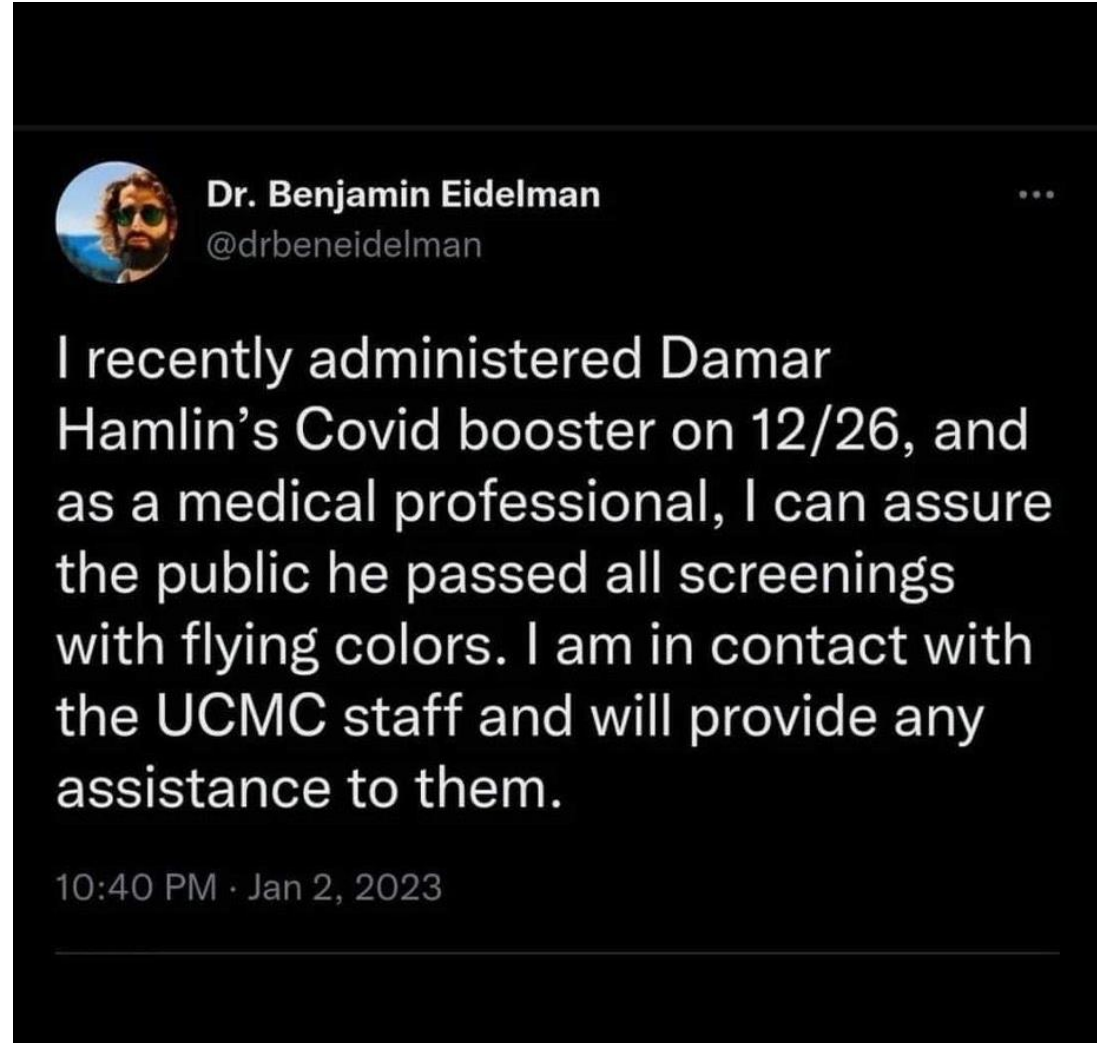
- Misinformation= inadvertently drawing conclusions based upon wrong or incomplete facts
- Disinformation= deliberate spread of falsehoods to promote an agenda



What We May Face: Current Events

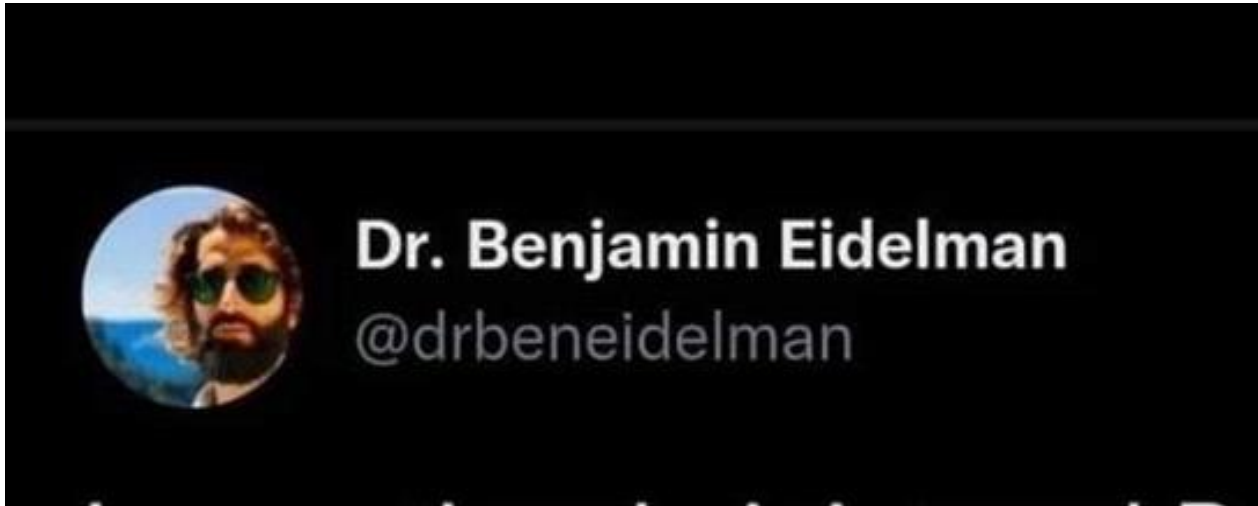


Within minutes of his collapse/cardiac arrest on the field, the following was posted about NFL player, Damar Hamlin:



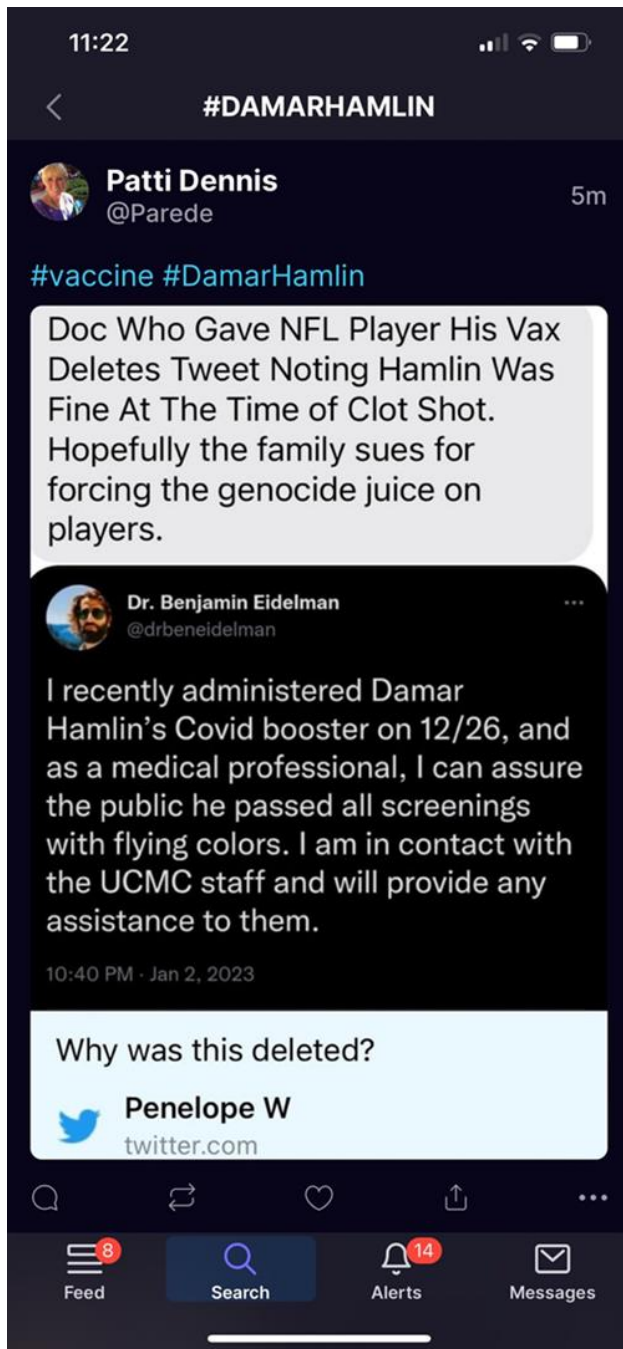
Facts:

- Dr. Benjamin Eidelman is a neurologist in Jacksonville, Florida whose appearance does not match the picture from the fake Twitter account



- Highly unlikely that a NFL team from Buffalo, NY would travel to FL for a covid vaccine.





"If Damar Hamlin actually just had a COVID booster, it is certainly something to look at. Not as a conspiracy theory but as a way of following the science. A portion of the population may have problems with the mRNA technology. It should be investigated,"

"Can anybody tell me how/why Damar Hamlin, a professional athlete and seemingly healthy 24 year old man would have a heart attack on the field? Was he vaccinated for Covid 19? Did he recently get a Covid booster?"

#DamarHamlin @HamlinIsland got his booster just days before cardiac arrest. Coincidence? Maybe. pic.twitter.com/V1CgKQy999

"I am not in the loop of information but, seems Damar Hamlin received a COVID booster on 12/26/22 and I am waiting for the Doctors to say if this contributed to his coronary attack ? And help me to understand why a young man enjoying excellent health would even takes these shots,"

Damar Hamlin was injected with a COVID booster shot on 12/26. His Doctor posted this on Twitter then deleted it. Anyone here who is denying that the vaccine booster should not be investigated as the potential problem is themselves part of the problem. #hamlin #damarhamlin pic.twitter.com/t6wbfa12aD

Facts:

- Extra two (95% confidence interval (CI) 0, 3), one (95% CI 0, 2) and six (95% CI 2, 8) myocarditis events per 1 million people vaccinated with ChAdOx1, BNT162b2 and mRNA-1273, respectively, in the 28 days following a first dose and an extra ten (95% CI 7, 11) myocarditis events per 1 million vaccinated in the 28 days after a second dose of mRNA-1273.
- VS
- Extra 40 (95% CI 38, 41) myocarditis events per 1 million patients in the 28 days following a SARS-CoV-2 positive test.
- Also observed increased risks of pericarditis and cardiac arrhythmias following a positive SARS-CoV-2 test. Similar associations were **not** observed with any of the COVID-19 vaccines, apart from an increased risk of arrhythmia following a second dose of mRNA-1273.

"You can shove it! We've watched athletes from around the world in various sports drop like flies on the field after they were forced to take a bioweapons Covid jab. Damar Hamlin had a bioweapons booster just days before he suffered Cardiac Arrest~a proven side effect of the jab,"

Expert Opinion:

- “Could it (the vaccine) be a rare cause of a rare event? Sure. It could but probabilistically that's just less likely,” Dr. Michael Ayers, a sports cardiologist at the University of Virginia Health told USA TODAY.
- **Fact:** Cardiomyopathy accounts for nearly half of the sudden cardiac arrest and death cases in college and professional athletes.
- “Sudden cardiac arrest can be caused by underlying cardiac problems such as abnormalities of the heart’s muscle or electrical system, acquired factors such as myocarditis, which is the inflammation of the heart, or a phenomenon in which someone is struck very hard in the chest,” Dr. Rachel Lampert, a sports cardiologist at Yale University, told USA TODAY.
- “Among the causes that I have given you, knowing that this type of phenomenon long precedes the COVID vaccines, I think the thought that this is related to the vaccine would be pretty much at the bottom of the list,” Lampert said.

- A **2006** study found more than 1,000 examples of athletes who had experienced sudden cardiac death.
- Other reported examples:
- 22-year-old Spanish soccer player Antonio Puerta collapsed mid-game in 2007. He died three days later from complications due to "prolonged cardiac arrest."
(Reuters)
- Canadian ice hockey player Christopher Robert Pronger collapsed mid-game in 1998 after getting hit in the chest, causing commotio cordis. (KSDK-TV)
- English soccer player Fabrice Muamba suffered a cardiac arrest on the field in 2012. (The Guardian)

What else is out there...

HRR

SITUATION UPDATE AUG 18TH, 2021

HEALTH CARE COLLAPSE:
VACCINE SPIKE PROTEIN WILL UNLEASH
MASS NEUROLOGICAL DAMAGE THAT
OVERWHELMS WORLD'S MEDICAL SYSTEMS

Brighteon.com



“I chose to vaccinate because I didn't know any better.”

“I chose to vaccinate because I didn't know that the first vaccine my newborn received was for a sexually transmitted disease”

Facts:

- Children and babies are less likely to clear HBV and more likely to develop chronic infection
 - >5 years old= fewer than 5% develop chronic hepatitis B.
 - <5 but >1 year old= around 30%.
 - <1 year old= approximately 90%
- Those with chronic HBV have significantly higher risk of hepatocellular carcinoma and HBV thought to cause 50-80% of liver cancer.
- Up to 30% of those exposed to HBV become infected as opposed to HIV which is 0.03%
- Bizarre spread: barber, daycare, accidents. Not so bizarre: childbirth
- Many adults asymptomatic

But prenatal labs?

- Estimated that up to 50% of + prenatal cases are missed
- Potential for infection after prenatal testing
- Vaccine still helps prevent most (95%) cases of transmission when given at birth

Failed US Strategies

- Test high risk during pregnancy
- Test all pregnant patients, only immunize babies in high risk families
- Between 1981, when first hepatitis B vaccine was licensed for use in the US, and 1991, when first comprehensive strategy to eliminate hepatitis B advocated for the use of hepatitis B vaccine in all newborns, various strategies targeting high risk groups were tried. Though some of the high risk groups showed improvements, there was not much impact on the overall rates of hepatitis B.

Success

- Since adoption of the WHO strategy to vaccinate all at birth, US reported cases of acute hepatitis B have been reduced by 94% in the cohorts that received the vaccines as babies and kids.

“I chose to vaccinate because I didn't know that the diseases we are taught to fear--like polio and the measles--were already on the decline **BEFORE** the vaccines were ever introduced.”

Science:

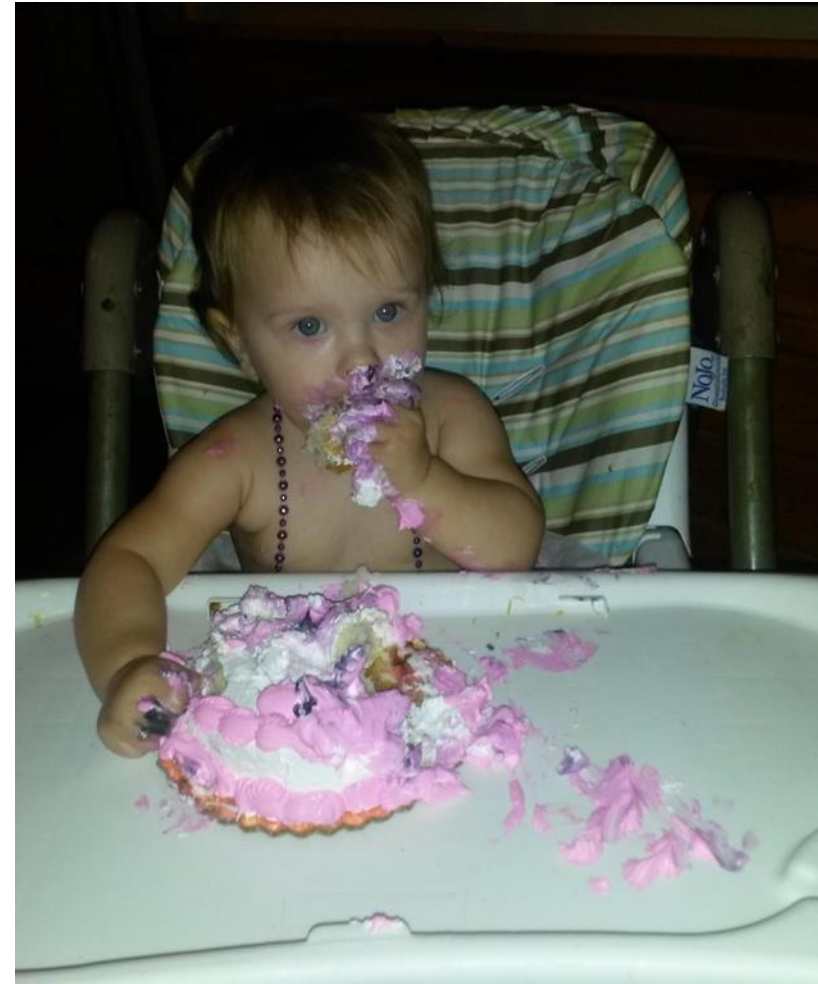
- Improved socioeconomic conditions- indirect impact
- Antibiotics, improved nutrition, treatments- improved survival rates among sick
- Less crowded conditions- reduced transmission

- Looking at patterns of incidence, cannot dispute vaccine impact
 - Example: since 1990, little change in sanitation; however, near disappearance of Hib in countries with routine vaccination
 - From estimated 20,000 cases/yr → 1419 cases in 1993 and dropping
 - Eradication of smallpox in 1979 after global vaccine program
 - Despite some periodic peaks and valleys, permanent drop in measles incidence coincided with licensure and wide use of vaccine in 1963

“I chose to vaccinate because I didn't know that my baby received 8 vaccines at her two-month "well visit" and that there were NO safety studies ever completed to show all those vaccines to be safe in combination with each other.”

Facts:

- The currently CDC recommended schedule— calls for 5 live or weakened organisms and 21 different antigens by age 6, few more added from ages 7-18.
- The goal is to protect children as early as possible from diseases that are very dangerous to young children.
- The capacity of the immune system to respond to antigens is vast and far greater than most people realize.
- Experts estimate that humans can generate about 10 billion different antibodies



Facts:

- Due to natural exposures, people make between 1 million and 100 million different antibodies during our lifetime.
- The vaccine schedule produces a total of about 30 antibodies. It is also estimated that
 - (a) each infant has the theoretical capacity to respond to about 10,000 vaccines at any one time
 - (b) if the 11 routinely recommended vaccines were administered together, the immune system would need to use only about 0.1% of its capacity to process them
- A number of studies and reviews have examined effects of giving of vaccines simultaneously and have shown that the recommended vaccines are as safe and effective in combination as they are individually.



Science:

- *Pediatrics* (2010) published a study that compared more than 40 variables related to mental and neurological function among a large group of children to see whether delaying vaccination provided any benefit.
- No statistically significant differences favored the less-vaccinated children.
- Concluded: “Timely vaccination during infancy has no adverse effect on neuropsychological outcomes 7 to 10 years later. These data may reassure parents who are concerned that children receive too many vaccines too soon.”

“I chose to vaccinate because I didn't know that vaccines contain cells, cellular debris, protein, and DNA from aborted babies.”

Facts:

- Elective terminations in 1960s (HEK) and 1985 (PER.C6)
- Same cells (clones) have grown in the lab; new sources not needed.
- Viruses that infect humans need cells to grow and tend to grow better in cells from humans than animals.
- In the case of PER.C6, a specific gene was present allowing large quantities of the virus to grow
- When studied, viruses grew best in these cells; therefore, scientists continued to use same as original studies

So it's true? There are cells, debris, protein, and DNA?

- Even though fetal cells are used to grow vaccine viruses, vaccines do not contain these cells or pieces of DNA that are recognizable as human DNA.
- People can be reassured by the following:
 - When viruses grow in cells, the cells are killed because in most cases the new viruses burst the cells to be released.
 - Once the vaccine virus is grown, it is purified, so that cellular debris and growth reagents are removed.
 - During this process of purification, any remaining cellular DNA is also broken down.
- Even though not present in vaccines, cells used are clones grown in the lab, not the “original” tissue.

“I chose to vaccinate because I didn't know that the amount of aluminum allowed in vaccines FAR exceeds the amount that the FDA allows in other medications and pharmaceutical products.”

Aluminum Facts:

- It's an adjuvant= lesser quantity and fewer doses needed
- The quantities of aluminum present in vaccines are low, regulated by the Center for Biologics Evaluation and Research (CBER).
- 4.4 milligrams* of aluminum in the first six months of life from vaccines
- Breast-fed infants ingest about 7 milligrams (first 6 months)
- Formula-fed infants ingest about 38 milligrams (first 6 months)
- Infants who are fed soy formula ingest almost 117 milligrams of aluminum during the first six months of life.

Quantities of Aluminum in Vaccines

- Pneumococcal vaccine
 - 0.125 milligram per dose (mg/dose)
- Diphtheria-tetanus-acellular pertussis (DTaP) vaccine
 - < 0.33 to < 0.625 mg/dose
- Haemophilus influenzae type b (Hib) vaccine
 - 0.225 mg/dose
- Hepatitis A vaccine (Hep A)
 - 0.225 to 0.25 mg/dose (pediatrics)
 - 0.45 to 0.5 mg/dose (adults)
- Hepatitis B vaccine (Hep B)
 - 0.225 to 0.5 mg/dose (pediatrics)
 - 0.5 mg/dose (adults)
- Hep A/Hep B vaccine
 - 0.45 mg/dose
- DTaP/inactivated polio/Hep B vaccine
 - < 0.85 mg/dose
- DTaP/inactivated polio/Hib vaccine
 - 0.33 mg/dose
- Human Papillomavirus (HPV) vaccine
 - 0.5 mg/dose
- Japanese Encephalitis (JE) vaccine
 - 0.25 mg/dose
- Meningococcal B vaccine
 - 0.25 – 0.52 mg/dose
- Td vaccine
 - < 0.53 – 1.5 mg/dose
- Tdap vaccine
 - 0.33 – 0.39 mg/dose

Aluminum in Other Substances

- Breast milk
 - 0.04 milligrams per liter (mg/L)
- Ponds, lakes, streams
 - 0.1 mg/L
- Infant formula
 - 0.225 mg/L
- Soy-based formula
 - 0.46 to 0.93 mg/L
- Buffered aspirin
 - 10 to 20 mg/tablet
- Antacid
 - 104-208 mg/tablet

Ingestion vs Injection?

- 1 billion vaccines given, studied, no evidence to support need for change in vaccine recommendations
- Aluminum in bloodstream introduced as a salt, dissociates then associates with transferrin or citrate.
- $\frac{1}{2}$ is renally excreted in 24 hours.
- Harmful effects seen in blood, bone, brain of those on dialysis due to IVF or aluminum containing medications prior to improvements in dialysis, rarely other exposures to aluminum.
- Alzheimer's?- no consistent findings of elevated aluminum therefore thought to accumulate due to tissue damage of Alzheimer's rather than inverse.

“I chose to vaccinate because I didn't know about the host of research that exists to show vaccines are responsible for autoimmune disorders, diabetes, epilepsy, depression, anxiety, SIDS, learning disabilities, and a host of neuropsychiatric disorders.”

Science

- DTP → SIDS?

- Moderate proportion of children who die of SIDS have been recently vaccinated with DTP
- Eating bread causes car crashes? Many drivers who crash their cars have probably eaten bread within the past 24 hours
- Correlation does not equal causation
- Since most SIDS deaths occur during the age range when three shots of DTP are given, you would expect DTP shots to precede a fair number of SIDS deaths simply by chance.
- Well-controlled studies conducted during the 1980s found, nearly unanimously, that the number of SIDS deaths temporally associated with DTP vaccination was within the range expected to occur by chance.
- In fact, in several of the studies, children who had recently received a DTP shot were less likely to get SIDS.
- Institute of Medicine reported, "all controlled studies that have compared immunized versus non-immunized children have found either no association . . . or a decreased risk . . . of SIDS among immunized children," and concluded, "the evidence does not indicate a causal relation between [DTP] vaccine and SIDS."

HPV Vaccine:

- Not well studied?
 - Clinical trials of tens of thousands of participants before they were approved for use in the US.
 - Since 2006, when HPV vaccine was licensed and recommended, there have been many large studies, ranging from hundreds of thousands to over 3 million people evaluated, that continue to confirm the safety of HPV vaccination.
- Can lead to death?
 - While there have been deaths reported to the CDC after HPV vaccination, these have been investigated and there is no evidence that the vaccine led to any of these deaths.
 - In a large study of over 2 million adolescents and young adults who died within a year of receiving any vaccine, there was no consistent pattern of deaths after vaccination, and there was only one adolescent who died within a month of receiving HPV vaccine.

HPV Vaccine:

- Ovarian failure?
 - This concern came out of a few small case reports that did not actually show a connection between HPV vaccination and ovarian failure.
 - Early ovarian insufficiency affects about 1 in 10,000 young women.
 - In a study of almost 200,000 young women, 46 developed ovarian insufficiency, but none of those cases were associated with HPV or other routine adolescent vaccines.
- Autoimmune Disease?
 - Multiple studies, ranging from hundreds of thousands to over 3 million people that have failed to find any consistent relationship between HPV vaccination and autoimmune diseases.

Other Autoimmune Diseases?

- Type 1 DM
 - Study in JAMA found after the debut of the new rotavirus vaccine in Australia, the proportion of children four years old and younger diagnosed with type 1 diabetes dropped from 8.7 to 7.5 cases for every 100,000 kids.
 - Rotavirus has been associated with increased risk of celiac disease and type 1 diabetes.
 - Needs confirmation, but points in opposite direction: through prevention of disease, vaccines could reduce risk of autoimmune diseases
- Others
 - Very slight risk of autoimmune flare with some vaccines
 - Risk is lower than autoimmunity triggered by natural infection
 - Example: 1:1,000,000 GBS with flu vaccine 17:1,000,000 GBS with flu
- MS
 - Multiple studies confirm that vaccines against hepatitis B, HPV, tetanus, influenza, measles, mumps, rubella, variola, BCG, polio, and diphtheria do not appear to either cause or exacerbate symptoms of multiple sclerosis.

I chose to vaccinate because I didn't know any better...

I chose to vaccinate because my doctor took the time to educate me.

Sources

- <https://www.nytimes.com/1955/04/13/archives/salk-polio-vaccine-proves-success-millions-will-be-immunized-soon.html>
- <https://psmag.com/news/a-brief-history-of-vaccine-conspiracy-theories>
- Ilington D, McAndrew S, Moxham-Hall V, Duffy B. Coronavirus conspiracy suspicions, general vaccine attitudes, trust and coronavirus information source as predictors of vaccine hesitancy among UK residents during the COVID-19 pandemic. *Psychol Med*. 2021 Apr 12;:1–12. doi: 10.1017/S0033291721001434. <http://europepmc.org/abstract/MED/33843509> .S0033291721001434 [PMC free article] [PubMed] [CrossRef] [Google Scholar]
- *J Med Internet Res*. 2022 Aug; 24(8): e37367. Published online 2022 Aug 4. doi: 10.2196/37367
- Al-Hasan A, Khuntia J, Yim D. Does Seeing What Others Do Through Social Media Influence Vaccine Uptake and Help in the Herd Immunity Through Vaccination? A Cross-Sectional Analysis. *Front Public Health*. 2021 Nov 2;9:715931. doi: 10.3389/fpubh.2021.715931. PMID: 34796158; PMCID: PMC8592939.
- Wilson SL, Wiysonge C. Social media and vaccine hesitancy. *BMJ Glob Health*. 2020 Oct;5(10):e004206. doi: 10.1136/bmjgh-2020-004206. Epub 2020 Oct 23. PMID: 33097547; PMCID: PMC7590343.
- bit.ly/2AWDH04 JAMA Pediatrics, online January 22, 2019.

Sources:

- Offit PA and Moser CA. Vaccines and Your Child: Separating Fact from Fiction. 2011. Columbia University Press.
- https://www.chop.edu/centers-programs/vaccine-education-center/vaccine-ingredients/fetal-tissues?fbclid=IwAR236JmoAwnMpITB5_ZD75GzAMYISIIXbryaBCEQdJk9dHhXf_wZd2I-6Sc
- WHO | Hepatitis B [Internet]. WHO. Available from: <http://www.who.int/mediacentre/factsheets/fs204/en/>
- Pinkbook | Hepatitis B | Epidemiology of Vaccine Preventable Diseases | CDC [Internet]. Available from: <http://www.cdc.gov/vaccines/pubs/pinkbook/hepb.html#prevention>
- CDC – Bloodborne Pathogens – Occupational Exposure FAQs – Infection Control in Dental Settings – Oral Health [Internet]. 2013. Available from: http://www.cdc.gov/oralhealth/infectioncontrol/faq/bloodborne_exposures.htm
- Immunization Action Coalition. Unusual Cases of Hepatitis B Transmission (PDF).
- CDC. A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the United States. MMWR. 2005 Dec 23;54(RR16):1–23.
- Bednarczyk RA. Addressing HPV vaccine myths: practical information for healthcare providers. Hum Vaccin Immunother. 2019;15(7-8):1628-1638. doi: 10.1080/21645515.2019.1565267. Epub 2019 Feb 20. PMID: 30676241; PMCID: PMC6746482.