

Vaccines tell a success story that Robert F. Kennedy Jr. and Trump forget—here are some key reminders

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Vaccinations have provided [significant protection for the public](#) against infectious diseases. However, there was a [modest decrease in support](#) in 2023 nationwide for vaccine requirements for children to attend public schools.

In addition, the presidential candidacy of Robert F. Kennedy Jr., a [leading critic of childhood vaccination](#), has given him a prominent platform in which to amplify his views. This includes an [extensive interview](#) on the "Joe Rogan Experience," a podcast with [over 14 million subscribers](#). Notably, former President Donald Trump has said he is [opposed to mandatory school COVID-19 vaccinations](#), and in a phone call Trump apparently wasn't aware was being recorded, he [appeared to endorse](#) Kennedy's views toward vaccines.

I am a [biochemist](#) and [molecular biologist](#) studying the roles microbes play in health and [disease](#). I also teach medical students and am interested in how the public understands science.

Here are some facts about vaccines that skeptics like Kennedy get wrong:

Vaccines are effective and safe

Public health data from 1974 to the present conclude that vaccines have saved [at least 154 million lives worldwide](#) over the past 50 years. Vaccines are also [constantly monitored for safety](#) in the U.S.

Nevertheless, the false claim that vaccines cause autism persists [despite study after study](#) of large populations throughout the world showing no causal link between them.

Claims about the dangers of vaccines often come from misrepresenting scientific research papers. Kennedy [cites a 2005 report](#) allegedly showing massive brain inflammation in monkeys in response to vaccination, when in fact the authors of that study state that there were no serious medical complications. [A separate 2003 study](#) that Kennedy claimed showed a 1,135% increase in autism in vaccinated versus unvaccinated children actually found no consistent significant

association between vaccines and neurodevelopmental outcomes.

Kennedy also claims that a [2002 vaccine study](#) included a control group of children 6 months of age and younger who were fed mercury-contaminated tuna sandwiches. This claim is false.

Aluminum adjuvants help boost immunity

Kennedy is co-counsel with a law firm that is [suing the pharmaceutical company Merck](#) based in part on the unfounded assertion that the aluminum in one of its vaccines causes neurological disease. Aluminum is added to many vaccines [as an adjuvant](#) to strengthen the body's immune response to the vaccine, thereby enhancing the body's defense against the targeted microbe.

The law firm's claim is [based on a 2020 report](#) showing that [brain tissue](#) from some patients with Alzheimer's disease, autism and multiple sclerosis have elevated levels of aluminum. The authors of that study do not assert that vaccines are the source of the aluminum, and vaccines are unlikely to be the culprit.

Notably, the brain samples analyzed in that study were from 47- to 105-year-old patients. Most people are exposed to aluminum primarily through their diets, and aluminum is [eliminated from the body within days](#). Therefore, aluminum exposure from childhood vaccines is not expected to persist in those patients.

Vaccines undergo the same approval process as other drugs

[Clinical trials](#) for vaccines and other drugs are blinded, randomized and placebo-controlled studies. For a vaccine trial, this means that

participants are randomly divided into one group that receives the vaccine and a second group that receives a placebo saline solution. The researchers carrying out the study, and sometimes the participants, do not know who has received the vaccine or the placebo until the study has finished. This eliminates bias.

Results are published in the public domain. For example, vaccine trial data for [COVID-19](#), [human papilloma virus](#) and [rotavirus](#) is available for anyone to access.

Vaccine manufacturers are liable for injury or death

Kennedy's lawsuit against Merck contradicts his insistence that vaccine manufacturers are fully immune from litigation.

His claim is based on an incorrect interpretation of the [National Vaccine Injury Compensation Program, or VICP](#). VICP is a no-fault federal program created to reduce frivolous lawsuits against vaccine manufacturers, which threaten to cause vaccine shortages and a resurgence of vaccine-preventable disease.

A person claiming injury from a vaccine can petition the U.S. Court of Federal Claims through the VICP for monetary compensation. If the VICP petition is denied, the claimant can then sue the vaccine manufacturer.

The [majority of cases](#) resolved under the VICP end in a negotiated settlement between parties without establishing that a vaccine was the cause of the claimed injury. Kennedy and his law firm have incorrectly used the payouts under the VICP to [assert that vaccines are unsafe](#).

The VICP gets the vaccine manufacturer off the hook [only if it has complied](#) with all requirements of the Federal Food, Drug and Cosmetic

Act and exercised due care. It does not protect the vaccine maker from claims of fraud or withholding information regarding the safety or efficacy of the [vaccine](#) during its development or after approval.

Good nutrition and sanitation are not substitutes for vaccination

[Kennedy asserts that](#) populations with adequate nutrition do not need vaccines to avoid [infectious diseases](#). While it is clear that improvements in nutrition, sanitation, water treatment, food safety and public health measures have [played important roles in reducing](#) deaths and severe complications from infectious diseases, these factors do not eliminate the need for vaccines.

After World War II, the U.S. was a wealthy nation with substantial health-related infrastructure. Yet, Americans reported an average of [1 million cases per year](#) of now-preventable infectious diseases.

Vaccines introduced or expanded in the 1950s and 1960s against diseases like diphtheria, pertussis, tetanus, measles, polio, mumps, rubella and Haemophilus influenza type B have resulted in the [near or complete eradication](#) of those diseases.

It's easy to forget why many infectious diseases are rarely encountered today. The success of vaccines does not always tell its own story. It must be retold again and again to counter misinformation.

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