



Should Vaccines Be Mandatory?

By Matt Welch, Ronald Bailey, Jeffrey A. Singer & Sandy Reider

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Few issues divide libertarians so emphatically as government-mandated vaccinations against communicable diseases, as **reason** discovered after including anti-vaccine activist Jenny McCarthy in our "[45 Enemies of Freedom](#)" list (August/September 2013). That selection brought forth a deluge of mail, such as this succinct riposte from reader Christopher Kent: "Freedom doesn't get much more personal than the right of individuals to choose what is put into their bodies, and to accept or reject medical procedures."

But what happens when one person's individual choice leads to the otherwise preventable infection of another person who chooses differently? How do you assign property rights and responsibilities to an airborne virus? And how far can or should the state intrude into family decisions that affect the safety and health of children? The issue seems almost tailor-made to produce philosophical conflict among those who otherwise share a heightened skepticism of government power.

This is no mere debate-society chum. Over the last 15 years, spurred on by McCarthy and other high-profile advocates who claim that vaccinations may cause such damaging side effects as autism, more parents are opting out of vaccinations for highly contagious diseases for their children. A 2011 survey by the Associated Press reported that exemption levels in eight states now exceed 5 percent.

At the same time, incidence and morbidity of diseases such as whooping cough are back on the rise. **reason** Science Correspondent Ronald Bailey, who contributes to our forum below, has argued forcefully that the popularization of junk anti-vaccine science, and the resulting increase in opt-outs, has led to scores of needless deaths, thousands of hospitalizations, and tens of thousands of cases of preventable illnesses.

Yet neither vaccines nor the diseases they combat are 100 percent predictable or controllable. Pathogens adapt, hosts develop resistance, unforeseen consequences arise. As Jeffrey Singer, a general surgeon and longtime libertarian activist, points out below, "Not everyone who is vaccinated against a microbe develops immunity to that microbe. Conversely, some unvaccinated people never become infected."

That uncertainty does not stay the government's hand. Currently, all 50 states and the District of Columbia include at least some form of state-mandated vaccinations for young children who are entering school (including all public and most private institutions). The usual diseases targeted include the mumps, measles, rubella, polio, diphtheria, tetanus, pertussis, and varicella (chickenpox). Typically, parents can only opt out after demonstrating a philosophical or religious objection. One of the last official acts of the famously paternalistic former New York City Mayor Michael Bloomberg (who also made our "45 Enemies of Freedom" list) was to make flu shots mandatory for all children under 5 who are enrolled in city-licensed schools or daycare facilities. As clinical physician Sandy Reider makes clear below, government keeps expanding the list of mandatory vaccines. It now often includes diseases, such as hepatitis B, that rarely affect children.

So what is the proper role for government, and the citizenry, in the vaccination of children? The lines are hard to draw; all the more reason to have a **reason** debate. Below, Bailey, Singer, and Reider take the scalpel to each others' arguments, in the hope of bringing more practical and philosophical clarity to a divisive topic.

—*Matt Welch*

Refusing Vaccination Puts Others at Risk

Ronald Bailey

Millions of Americans believe it is perfectly all right to put other people at risk of death and misery. These people are your friends, neighbors, and fellow citizens who refuse to have themselves or their children vaccinated against preventable infectious diseases.

Aside from the issue of child neglect, there would be no argument against allowing people to refuse government-required vaccination if they and their families were the only ones who suffered the consequences of their foolhardiness. But that is not the case in the real world. Let's first take a look at how vaccines have improved health, then consider the role of the state in promoting immunization.

Vaccines are among the most effective health care innovations ever devised. A November 2013 *New England Journal of Medicine* article, drawing on the University of Pittsburgh's Project Tycho database of infectious disease statistics since 1888, concluded that vaccinations since 1924 have prevented 103 million cases of polio, measles, rubella, mumps, hepatitis A, diphtheria, and pertussis. They have played a substantial role in greatly reducing death and hospitalization rates, as well as the sheer unpleasantness of being hobbled by disease.

A 2007 article in the *Journal of the American Medical Association* compared the annual average number of cases and resulting deaths of various diseases before the advent of vaccines to those occurring in 2006. Before an effective diphtheria vaccine was developed in the 1930s, for example, the disease infected about 21,000 people in the United States each year, killing 1,800. By 2006 both numbers were zero. Polio, too, went from deadly (16,000 cases, 1,900 deaths) to non-existent after vaccines were rolled out in the 1950s and 1960s. Chickenpox used to infect 4 million kids a year, hospitalize 11,000, and kill 105; within a decade of a vaccine being rolled out in the mid-1990s, infections had dropped to 600,000, resulting in 1,276 hospitalizations and 19 deaths. Similar dramatic results can be found with whooping cough, measles, rubella, and more.

And deaths don't tell the whole story. In the case of rubella, which went from infecting 48,000 people and killing 17 per year, to infecting just 17 and killing zero, there were damaging pass-on effects that no longer exist. Some 2,160 infants born to mothers infected by others were afflicted with congenital rubella syndrome-causing deafness, cloudy corneas, damaged hearts, and stunted intellects-as late as 1965. In 2006 that number was one.

It is certainly true that much of the decline in infectious disease mortality has occurred as a result of improved sanitation and water chlorination. A 2004 study by the Harvard University economist David Cutler and the National Bureau of Economic Research economist Grant Miller estimated that the provision of 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." Providing clean water and pasteurized milk resulted in a steep decline in deadly waterborne infectious diseases. Improved nutrition also reduced mortality rates, enabling infants, children, and adults to fight off diseases that would have more likely killed their malnourished ancestors. But it is a simple fact that vaccines are the most effective tool yet devised for preventing contagious airborne diseases.

Vaccines do not always produce immunity, so a percentage of those who took the responsibility to be vaccinated remain vulnerable. Other defenseless people include infants who are too young to be vaccinated and individuals whose immune systems are compromised. In America today, it is estimated that about 10 million people are immuno-compromised through no fault of their own.

This brings us to the important issue of "herd immunity." Herd immunity works when most people in a community are immunized against an illness, greatly reducing the chances that an infected person can pass his microbes along to other susceptible people.

People who refuse vaccination for themselves and their children are free riding off of herd immunity. Even while receiving this benefit, the unvaccinated inflict the negative externality of being possible vectors of disease, threatening those 10 million most vulnerable to contagion.

Vaccines are like fences. Fences keep your neighbor's livestock out of your pastures and yours out of his. Similarly, vaccines separate people's microbes. Anti-vaccination folks are taking advantage of the fact that most people around them have chosen differently, thus acting as a

firewall protecting them from disease. But if enough people refuse, that firewall comes down, and innocent people get hurt.

Oliver Wendell Holmes articulated a good libertarian principle when he said, "The right to swing my fist ends where the other man's nose begins." Holmes' observation is particularly salient in the case of whooping cough shots.

Infants cannot be vaccinated against whooping cough (pertussis), so their protection against this dangerous disease depends upon the fact that most of the rest of us are immunized. Unfortunately, as immunization refusals have increased in recent years, so have whooping cough infections. The annual number of pertussis cases fell from 200,000 pre-vaccine to a low of 1,010 in 1976. Last year, the number of reported cases rose to 48,277, the highest since 1955. Eighteen infants died of the disease in 2012, up from just four in 1976.

The trend is affecting other diseases as well. In 2005, an intentionally unvaccinated 17-year-old Indiana girl brought measles back with her from a visit to Romania, and ended up infecting 34 people. Most of them were also intentionally unvaccinated, but a medical technician who had been vaccinated caught the disease as well, and was hospitalized.

Another intentionally unvaccinated 7-year-old boy in San Diego sparked an outbreak of measles in 2008. The kid, who caught the disease in Switzerland, ended up spreading his illness to 11 other children, all of whom were also unvaccinated, putting one infant in the hospital. Forty-eight other children younger than vaccination age had to be quarantined.

Some people object to applying Holmes' aphorism by arguing that aggression can only occur when someone *intends* to hit someone else; microbes just happen. However, being intentionally unvaccinated against highly contagious airborne diseases is, to extend the metaphor, like walking down a street randomly swinging your fists without warning. You may not hit an innocent bystander, but you've substantially increased the chances. Those harmed by the irresponsibility of the unvaccinated are not being accorded the inherent equal dignity and rights every individual possesses. The autonomy of the unvaccinated is trumping the autonomy of those they put at risk.

As central to libertarian thinking as the non-aggression principle is, there are other tenets that also inform the philosophy. One such is the harm principle, as outlined by John Stuart Mill. In *On Liberty*, Mill argued that "the only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others." Vaccination clearly prevents harm to others.

So what are the best methods for increasing vaccination? Education and the incentives of the market have encouraged many Americans to get themselves and their children immunized, and surely those avenues of persuasion can and should be used more. Perhaps schools and daycare centers and pediatric clinics could attract clients by advertising their refusal to admit unvaccinated kids. Or social pressure might be exercised by parents who insist on assurances from other parents that their children are vaccinated before agreeing to playdates.

But it would be naive not to acknowledge the central role of government mandates in spreading immunization. By requiring that children entering school be vaccinated against many highly contagious diseases, states have greatly benefited the vast majority of Americans.

For the sake of social peace, vaccine opt-out loopholes based on religious and philosophical objections should be maintained. States should, however, amend their vaccine exemption laws to require that people who take advantage of them acknowledge in writing that they know their actions are considered by the medical community to be putting others at risk. This could potentially expose vaccine objectors to legal liability, should their decisions lead to infections that could have been prevented.

In terms of net human freedom, the trade-off is clear: In exchange for punishment-free government requirements that contain opt-out loopholes, humans have freed themselves from hundreds of millions of infections from diseases that maimed and often killed people in recent memory. People who refuse vaccination are asserting that they have a right to "swing" their microbes at other people. That is wrong.

Vaccination and Free Will

Jeffrey Singer

In Steven Spielberg's 2002 sci-fi film *Minority Report*, a special police agency called PreCrime nabs suspects before they ever commit an offense. No trial is necessary because the crime is seen as an infallible prediction of the future and thus a matter of fact. The movie challenges viewers to consider the tension between technological determinism and free will, between the rights of an individual and the health of a community. It's a useful metaphor for the argument against coercive vaccination.

Some argue that mandatory mass vaccination is an act of communal self-defense, and thus completely compatible with the principles underpinning a free society. Unless people are forcibly immunized, they will endanger the life and health of innocent bystanders, goes the argument. But such a position requires a level of precognition we haven't yet attained.

Not everyone who is vaccinated against a microbe develops immunity to that microbe. Conversely, some unvaccinated people never become infected. Some people have inborn "natural" immunity against certain viruses and other microorganisms. Central Africans born with the sickle-cell trait provide a classic example of such inborn immunity: Their sickle-shaped red blood cells are inhospitable to the mosquito-borne parasite that causes malaria. Other people are just lucky and never get exposed to a contagious microbe.

Just like not every pregnant woman who drinks alcohol or smokes tobacco passes on a malady or disability to her newborn baby, not every pregnant woman infected with a virus or other microbe passes on the infection to her fetus-nor are all such babies born with birth defects.

A free society demands adherence to the non-aggression principle. No person should initiate force against another, and should only use force in retaliation or self-defense. Forcibly injecting substances-attenuated microbes or otherwise-into someone else's body cannot be justified as an

act of self-defense, because there is no way to determine with certainty that the person will ever be responsible for disease transmission.

Ronald Bailey suggests that the choice to remain unvaccinated is analogous to "walking down a street randomly swinging your fists without warning." But this is a poor analogy. Such a person is engaging in a deliberate action, as opposed to choosing inaction. And, unlike those prevented from opting out of vaccination, the fist-swinger incurs no threat to life or limb when prohibited from throwing his punches.

If someone chooses the inaction of non-vaccination based upon the belief-right or wrong-that the vaccination is harmful or even life threatening, then coercive vaccination in this context is clearly a case of aggression. For it to be otherwise requires certainty that those beliefs are wrong. 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?

Then there is the matter of "herd immunity." The phenomenon of herd immunity allows many unvaccinated people to avoid disease because they free ride off the significant portion of the population that is immunized. Economists point out that free riding is an unavoidable fact of life: People free ride when they purchase a new, improved, and cheaper product that was "pre-tested" on more affluent people who wanted to be the first to own it; people free ride when they use word-of-mouth reviews to decide whether to buy goods or services, or to see a film; those who choose not to carry concealed weapons free ride a degree of personal safety off the small percentage of the public that does.

So here is a way of thinking about it: As long as the person who is *being* free-ridden is still getting desired value for an acceptable price, and is not being harmed by the free riding, it really shouldn't matter. Achieving a society without free riders is not only unnecessary, it is impossible.

Perhaps allowing a certain number of free riders could mitigate the disruption to liberty caused by mandatory vaccination programs. But then, how many free riders should be allowed? I don't think that question can be answered with any degree of certainty. And what criteria would be used to decide who gets to ride free? An objective answer to this question appears equally elusive. Finally, how can the population be monitored to make sure the proportion of free riders is maintained at the right level without unreasonably infringing on civil liberties and privacy rights? The task would be titanic. I think the only practical solution-and the solution that is in the best interest of liberty-is to just accept the free riding of the current regime as a fact of reality, and focus instead on persuading people about the benefits of vaccination.

Most states coax, but don't coerce, vaccination of children in the public school system. Two of the 50 states, Mississippi and West Virginia, are indeed coercive. But the remaining 48 allow parents to opt out for religious reasons, and 19 allow for some kind of philosophical objection. Some states require parents to read about the risks of opting out before exempting their children. Some require them to acknowledge in writing that, in the event of a major school outbreak of a

contagious disease for which their child has not received immunization, he or she will be held out of school until the outbreak clears.

Private schools requiring vaccination of children as a precondition for admission is not coercive, since private education is a voluntary transaction. But even with the government school monopoly in existence today, immunization policy in at least 19 states is compatible with the non-aggression principle.

As a medical doctor I am a strong advocate of vaccination against communicable and infectious diseases. I am irritated by the hysteria and pseudo-science behind much of the anti-vaccination literature and rhetoric. In my perfect world, everyone would agree with me and voluntarily get vaccinated against the gamut of nasty diseases for which we have vaccines. (In my perfect world, pregnant women also wouldn't smoke tobacco or drink alcohol until after delivery.)

But free societies are sometimes messy. To live in a free society, one must be willing to tolerate people who make bad decisions and bad choices, as long as they don't directly infringe on the rights of others.

A strong argument can be made that it is self-defense to quarantine people who are infected with a disease-producing organism and are objectively threatening the contamination of others. But in such a case, the use of force against the disease carrier is based upon evidence that the carrier is contagious and may infect others.

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.

The Science Is Not Settled

Sandy Reider

As a practicing primary care physician for the last 43 years, and as a parent since 1981, I have followed the evolution of vaccination policy and science with interest, and not a little dismay.

The number of vaccines given to children has increased significantly over the last 70 years, from four antigens in about five or six injections in 1949 to as many as 71 vaccine antigens in 53 injections by age 18 today (the number varies slightly from state to state). This includes four vaccines given in two shots to pregnant women (and thus the developing fetus) and 48 vaccine antigens given in 34 injections from birth to age six.

Each vaccine preparation, in addition to the antigen or live virus, contains many other substances, including preservatives (mercury, formaldehyde), adjuvants to hyperstimulate the immune response (aluminum), gelatin, aborted fetal DNA, viral DNA, genetically modified DNA, antibiotics, and so on. We know that the young child's nervous and immune systems are actively developing and uniquely vulnerable, but I wonder how many thinking adults would themselves voluntarily submit to such an invasive drug regimen?

In 1986 the National Vaccine Injury Act was passed, prohibiting individuals who feel they have been harmed by a vaccine from taking vaccine manufacturers, health agencies, or health care workers to court. At the time, vaccine producers were threatening to curtail or discontinue production because of the mounting number of lawsuits claiming injury to children, mostly relating to immunization against diphtheria. Once relieved of all liability, pharmaceutical corporations began rapidly increasing the number of vaccinations brought to market.

Pharmaceutical companies are now actively targeting both adolescents and adults for cradle-to-grave vaccination against shingles, pneumonia, human papilloma virus, influenza, whooping cough, and meningitis. There are many more vaccines in the pipeline. Who wouldn't love a business model with a captive market, no liability concerns, free advertising and promotion by government agencies, and a free enforcement mechanism from local schools? It is, truly, a drug company's dream come true.

Judging from what one reads and hears in the popular media, it is easy to conclude that the science is settled, that the benefits of each vaccine clearly outweigh the risks, and that vaccinations have played the critical role in the decline of deaths due to infectious diseases such as measles, whooping cough, and diphtheria, all of which claimed many lives in the past.

However even a cursory look at the available data quickly reveals that the mortality from almost all infectious disease was in steep decline well before the introduction of vaccination or antibiotics. 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.

Current immunization policy relies on the oft-repeated assertion that vaccines are safe and effective. Yet the Centers for Disease Control and Prevention, the Institute of Medicine, and even the American Academy of Pediatrics have acknowledged that serious reactions, including seizures, progressive encephalopathy, and death, can and do occur. The federal vaccine injury court, which was established at the same time that vaccine manufacturers were exempted from liability, has to date paid \$2.6 billion dollars in compensation for vaccine injuries. And there is ample reason to believe that the incidence of vaccine injury is strongly underreported.

Ronald Bailey has made the colorful assertion that an individual choosing not to vaccinate themselves or their child is akin to a person walking down the street swinging their fists/microbes at others. Rather than indulging in broad generalizations about immunization, a close examination of data regarding the recent pertussis outbreaks may help illustrate the complexity inherent in immune function, individual susceptibility, and the spread of infectious illness.

In 2011, there were numerous outbreaks of pertussis around the United States, notably in California, Washington, and Vermont. The majority of whooping cough infections in each state were reported among well-vaccinated adolescents and young teens. There was also a slight increase in cases among infants younger than 1 year old.

In Vermont, 74 percent of individuals diagnosed with whooping cough had been "fully and appropriately vaccinated" against pertussis. Vermont Deputy Commissioner of Health Tracy Dolan stated: "We do not have any official explanation for the outbreak and have not linked it to the philosophical exemption." In a July 2012 interview, Ann Schuchat of the Centers for Disease Control's National Center for Immunization and Respiratory Disease stated that: "We know there are places around the country where large numbers of people are not vaccinated [against pertussis]. However, we do not think those exemptors are driving this current wave. We think it is a bad thing that people aren't getting vaccinated or exempting, but we cannot blame this wave on that phenomenon."

It's clear that the pertussis vaccine is not very protective against a disease that already has a very low mortality, likely because the pertussis bacterium has developed resistance, much like bacteria become resistant to antibiotics over time. In a September 2012 article, *The New England Journal of Medicine* concluded that "protection against pertussis waned during the 5 years after the 5th dose of DTaP [a type of combination vaccine]."

Recent studies suggest that immunized persons, once exposed to wild *Bordetella pertussis* bacteria, take longer to clear the pertussis bacterium from their respiratory tract than individuals who have had natural pertussis and thus gain natural immunity. These vaccinated individuals can then become asymptomatic carriers of the bacteria and vectors for transmission. So those who choose to opt *in* can also, as Bailey puts it, "swing their microbes."

Vaccine-induced immunity is not the same as naturally acquired immunity, and the much touted "herd immunity" resulting from mass vaccination is a far cry from natural herd immunity, the latter being much more protective, long-lasting, and transferrable to nursing infants who are then protected during their most vulnerable stage of development.

Understanding vaccine effects is complicated. The "fence" or "firewall" as Bailey puts it, is in fact a two-way street. Much has been said about all the "junk science" cited by anyone questioning vaccines (Jenny McCarthy, anyone?), but even a cursory peek over that fence will reveal some very good information and science-Mary Holland's *Vaccine Epidemic* and Suzanne Humphries' *Dissolving Illusions*, for example.

Lumping skeptical parents with the crazies is a way to avoid legitimate questions. Such as: Should tetanus vaccination be required for entrance to school, given that tetanus is not a communicable disease? Why should hepatitis B immunization be required for school entrance, when the disease is found primarily among adult drug users and sex workers? Do we need to keep immunizing against diseases, such as chickenpox, that are almost always mild?

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. 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.

Given the sheer volume of vaccine promotion and propaganda, coupled with the cozy relationship between government, industry, and media, there are sufficient grounds for a healthy skepticism. Individual parents have become the last line of defense (not offense, not a swinging fist), and their choices should be respected and preserved.