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A Vaccine a Day to Keep the Doctor Away: A Research Essay on Vaccinations

by Alyssa Gentile

(English 1101)

Vaccinations can be considered one of the most significant and successful medical advancements in modern civilization. However, a recent United States epidemic has emerged consisting of parents who are against vaccinating their children. Those parents often question the degree of vaccine safety and effectiveness, and the extent of how researched they are. The epidemic has had an impact on vaccination rates, therefore weakening the nation's herd immunity. Parents want to protect their child from harm, but may unknowingly be inflicting more harm by deciding not to vaccinate. Despite many concerns parents have, the benefits of vaccinating significantly outweigh the risks.

Vaccinations are a medical procedure that are intended to positively impact the body's immune system. It is considered "preventative medicine," as vaccinations are defined as the "process of rendering people immune, or resistant, to an infectious disease" ("Immunization"). Specifically, they function through the process of "exposing individuals safely to a germ, such as from a particular virus, so their immune system can produce antibodies to fend off a particular virus" (Lemons). Essentially, our bodies are safely introduced to a low amount of germs from a specific illness for our immune system to fight. Therefore, in the future our bodies become resistant to the illness when it is naturally introduced to our body. Vaccines allow our body to be able to quickly respond to disease pathogens because it has learned how to properly fight it. This prevents the disease from progressively defeating our bodies if we were to ever naturally be introduced to it. However, there is still much criticism in regards to the effectiveness of vaccines.

One of the many concerns parents have with vaccines is the possibility of adverse effects on their child's body. Vaccines have the potential to "produce side effects. However, these effects are generally minor, such as a mild fever or a sore arm. Allergic reactions can occur in susceptible individuals, but extreme reactions are by and large rare" ("Immunization"). Vaccines only have a very small potential to create a significant, debilitating lifelong impact. It is difficult to distinguish the cause of adverse effects, so "to be on the safe side and to avoid any possible complications, it is advised that each person undergoes a medical examination and/or counseling prior to being vaccinated" (Hukic 2). With a clinical evaluation prior to being vaccinated, the patient is ensured to have a strong enough immune system for a vaccine. This allows for the patient to remain safe and the vaccine to be as effective as possible. Thus, significantly reducing the risk of adverse effects. The small, temporary uncomfortable symptoms post injection are significantly better than the miserable agony, discomfort, and possibly permanent effects of a disease. It is better to vaccinate and risk a small chance of having a reaction than to chance contracting a depleting disease.

One of the concerns many parents have for not vaccinating their child is the belief that vaccines have a potential adverse effect of causing the mental condition, autism. This concern is rooted back to "1998 with a now-discredited report in the British weekly medical journal *Lancet* that cited the measles-mumps-rubella (MMR) vaccine as a potential cause of autism. The journal retracted the study in February 2010, and the lead author, Andrew Wakefield, lost his medical license" (Lemons). This medical journal fabricated and misrepresented information to deliberately mislead the public into a state of panic and distrust. It is responsible for twelve years of public concern spread around the world. Dr. Fiona Godlee in reference to *Lancet's* now retracted journal states that it, "was based not on bad science but on a deliberate fraud... clear evidence of falsification

of data should now close the door on this damaging vaccine scare” (qtd in Lemons). Despite there being no other information to support Wakefield’s falsified journal, parents are still afraid of vaccinating their child and inflicting the risk of autism. The autism debate is not only invalid for its falsified medical evidence, but also because even if it did cause autism, it is better to have a child with autism than severely ill.

Another doubt parents have is how intensely researched and regulated vaccines are. Often, parents think that the process may not be thorough enough. Parents are not provided the insight of how heavily vaccines are regulated and tested prior to being released for public use. In fact, “Before vaccines can be used in the U.S., they must be licensed by the FDA, which requires that they undergo rigorous testing. Once licensed, vaccines continue to be monitored for safety under FDA supervision” (“Immunization”). Since they are intensely tested, it significantly increases the safety of a vaccine. It must be ensured that they are safe to be used in the human body before being licensed for public use. Vaccination companies have the responsibility of maintaining safety of the recipients of their product. This sustains the public’s trust in the companies, preserving vaccination rates. The work is never complete for companies because they must surveil the vaccine’s safety even after they receive their license. Many people also do not think twice about taking other medications, despite that “Vaccines face a tougher safety standard than most pharmaceutical products because they are given to healthy people, often children” (Kwok 436). Vaccines have to be intensely tested and researched since they are preventative medicine as opposed to curative medicine. The process for approving a vaccine is rigorous and very effective at maintaining public safety.

An additional aspect of vaccines many parents are troubled with is the increase in suggested vaccines for young children. “Today, the CDC recommends that children receive vaccines for 10 diseases — plus the flu vaccine — by age 6, which can mean up to 37 separate shots. That compares to five vaccines for the same age group in 1995” (Lemons). Surprisingly, a young child’s immune system is stronger than many people may think. It can seem overwhelming to a child’s body to give that many vaccines in such a small time frame, so parents are concerned over the potential of adverse effects. However, the current CDC suggested schedule actually “results in fewer illnesses, deaths and hospital stays, and that new vaccines are evaluated before the federal Advisory Committee for Immunization Practices adds them to the schedule” (Lemons). The current CDC recommended schedule does not allow for children to remain susceptible to diseases for an extended amount of time, thus significantly increasing the likelihood of not contracting them. Parents have nothing to worry about in regards to the modern suggested vaccination schedule.

Furthermore, one option many parents are considering to ease their worries is a divided vaccine schedule. A divided vaccine schedule is simply the spreading out of vaccines instead of receiving them at their recommended rate. Pediatrician Dr. Bob Sears states, “I created my alternative vaccine schedule that allows parents to go ahead and vaccinate, simply in a more gradual manner, and I find a lot of worried parents who otherwise would refuse vaccines altogether are very happy to go ahead and vaccinate if they’re doing it in a way that they feel safer about” (qtd in Lemons). Although it is safer to spread out vaccinations as opposed to not vaccinating at all, it is not the safest option. Prolonging the process is only leaving a child increasingly susceptible to diseases for an extended period of time. The CDC recommended rate has been tested, proving to be safe and effective. The safest option is to follow the CDC vaccine schedule rather than the alternative, gradual schedule.

Another concern parents often have is the toxicity of ingredients within vaccinations. However, the ingredients used in vaccines are certified the welfare of the recipient. The FDA ensures the public’s safety in regards to receiving vaccines because “Prior to licensure, as part of FDA’s evaluation, FDA takes all of the ingredients of a vaccine into account, including the active ingredients as well as other substances. After FDA approves a vaccine, FDA continuously monitors its safety” (“Common Ingredients in U.S. Licensed Vaccines”). So, the FDA takes precautionary

measures to ensure that each of their ingredients is safe. One of the ingredients used in vaccines many are commonly concerned about is Formaldehyde, which is utilized for its ability to “inactivate viruses so that they don’t cause disease” (“Common Ingredients in U.S. Licensed Vaccines”). Therefore, it is an important ingredient that is significantly protecting our body. It helps a vaccine do its purpose, depleting a disease so that our body becomes immune to it. Formaldehyde in vaccines do not present a threat because such a minimal amount is used in the vaccine in comparison to the amount that naturally occurs within our bodies (“Common Ingredients in U.S. Licensed Vaccines”). The ingredients in vaccines present important and crucial abilities that benefit our bodies greatly in the fight against disease. Ingredients used in vaccines are proven safe and effective, benefiting our bodies and causing little to no harm.

Another concern parents have is the amount of adverse stories they find online. For example, a mother trying to determine whether or not to vaccinate her infant states, “people telling their personal stories influence me more. I feel like the data could be flawed for one reason or another, but I feel like someone's story, because they've gone through something, and they don't want other people to go through it, I feel like I trust that more” (qtd in Lemons). The problem with this logic is that every story is merely a part of a statistic, it does not represent a community as a whole. Each person that is a part of a negative statistic has a story. With the age of the internet all those stories are posted publically, therefore making those dangers seem more likely to occur than they actually are. It is unfortunate that parents feel more influenced by the stories they find online, as well as the research and data they discover through unverified sources. These parents are becoming misinformed on the risks and general information on vaccines, jeopardizing the lives of their children. Verified data is more reliable to base a decision upon rather than a few sob stories online that only represent a small statistic of an entirety.

The fairly recent epidemic of parents not vaccinating their children has had a significant hand in the spread of diseases. Despite majority of parents still believing in vaccinations, “studies have found that as many as 1 in 10 parents are delaying or forgoing some or all recommended vaccines for their children” (Lemons). It may seem negligible that only ten percent of parents do not vaccinate, but it has had a miserable impact. It was recorded that “In 2014, 23 measles outbreaks occurred in 27 states, according to the federal Centers for Disease Control and Prevention (CDC) — causing the highest number of cases since the disease had supposedly been eliminated in 2000” (Lemons). With the increase in parents opting to not vaccinate their children, the documented cases of nearly irradiated diseases has also increased. With vaccines having a significant hand in the prevention of diseases, it is clear that not vaccinating would create a spread of them. Every person who is vaccinated makes a difference, as well as those who are not vaccinated. Ten percent of children not being vaccinated is creating a miserable outcome of spreading diseases, infecting many other children and impacting their lives.

The anti-vaccination epidemic has not only spread diseases, but also has jeopardized the lives of many children globally. With the increase in diseases, there has also been an increase in death. In fact, the “Number of children under age 5 worldwide who die each year from vaccinepreventable diseases” is counted at “1.5 million” (“Vaccines”). To not give your child a potentially lifesaving vaccine could arguably be seen as reckless. The deaths of 1.5 million children under the age of five is inexcusable considering all of them could have potentially of been prevented. There are an abundance of vaccines that aid in the prevention of specific diseases that are proven safe and effective. If you could protect your baby from death due to a vaccine preventable disease, why not do it? Personally, I would rather nurse my child for temporary adverse effects than mourn the loss of their life.

A concern many parents have is the safety of their own child, but do not recognize that their disregard of vaccines is sacrificing the wellbeing of many others. As a member of society, we are an individual within a herd. Being within a herd has created the immunization process called herd

immunity. Herd immunity is the idea that “When a high enough percentage of people are immunized, the chain of infection for contagious diseases is broken and the spread of disease within the community is contained” (“Understanding Community Immunity” 4). This allows for the people who are unable to be vaccinated to still remain immune due to lack of exposure to disease. This specific process of immunization helps in the reduction of diseases within a region as well as protecting those who are unable to receive vaccinations. One example of herd immunity is within hospitals. This was exemplified when “In 2010, Children's Hospital of Philadelphia began requiring all employees to get the flu vaccine after two young patients on chemotherapy died after becoming infected with influenza from health care workers” (Lemons). If the healthcare workers were vaccinated, then that would have significantly reduced the risk of an outbreak. Therefore, those unhealthy children would have been protected by the reduced exposure to diseases. As a member of society, we should desire to help those who are unable to get the same privileges we can, especially when it is in regards to their health. We should protect the members of our herd.

A prime example of how herd immunity could have prevented an outbreak is provided in the famous Disneyland measles outbreak. Measles is “a highly infectious disease with symptoms including high fever and severe rash. In rare cases, complications can lead to encephalitis, a brain inflammation that causes seizures. Ninety percent of people exposed to someone with the virus will become infected unless they've been immunized or had measles before” (Novak). Measles is a miserable disease that has severe symptoms that have the potential to have a permanent impact on quality of life. This uncomfortable disease was spread around Disneyland, a place full of children. A “Pew poll was conducted shortly after a measles outbreak began in December 2014, caused by a single visitor to Disneyland in Anaheim, Calif., whose infection led to 141 cases in seven states plus Canada and Mexico — an outbreak fueled by immunization rates as low as 50 percent in some areas” (Lemons). With Disneyland being one of the most famous amusement parks, it attracts people from all over the world. The large foot traffic through Disneyland allowed for many people to contract measles and it spread through multiple countries. Unfortunately, diseases do not simply stop at the borders to other nations. This case jeopardized the life of a particular child, “6-year-old Rhett Krawitt, who has leukemia and, as a result, can't be vaccinated for measles” (Lemons). Krawitt has a weakened immune system, therefore disabling him from receiving vaccines. He went to Disneyland expecting to have a magical time, but then was nearly introduced to a disease that could have been potentially fatal. The entire outbreak could have been prevented if visitors were up to date on their vaccines, then would have allowed for herd immunity.

Another mindset many parents have is that vaccines are unnecessary because many diseases have already been eradicated. However, those diseases are still a threat. “Just keeping up those immunization rates, even though we don't see the diseases, is important because the diseases are still out there,” Pisani says. “We're just doing such a great job vaccinating that they're not circulating as much as they used to be. So we have to just stay diligent” (qtd in Lemons). We are fortunate enough to never of seen the tragic and misfortune of many diseases that are now nearly eradicated from our lives. In fact, “Many infectious diseases, including smallpox, polio, diphtheria, and rubella are extremely uncommon today, at least in part because of widespread uptake of vaccines” (Holland 417). However, just because these diseases have just been become uncommon does not mean they are completely eradicated. We are still vulnerable to these diseases if we were to unknowingly come in contact with them. Diseases that have the potential to be eradicated, should be vaccinated against to eradicate them. It is clear that with our decrease in diseases and increase in vaccines that vaccines are creating a significant impact on eradicating diseases. However, with the decrease in vaccinations, we may be seeing a grim, illness stricken future.

Vaccinations are arguably one of the most remarkable medical advancements yet. There is a substantial amount of controversy in regards to the degree of vaccines' safety and effectiveness, and the extent of how researched they are. The epidemic has had an impact on vaccination rates,

weakening the nation's herd immunity. Despite the amount of scientific studies proving their effectiveness at preventing serious illnesses, parents in the United States still opt to neglect recommended vaccinations for their children. If you can prevent contracting a miserable, uncomfortable disease, then why not do it? Despite many concerns parents have, the benefits significantly outweigh the risks.

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