

Student X

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Final Paper

Part 1:

Today's generation is recognized for the development of new technologies, the progression of medical research, and the discovery of new medicines. However, not everyone can agree that these developments have all been positive ones. Vaccines have been around for decades, but the controversy of whether or not one should vaccinate their child has increased in our modern society. This semester, we focused specifically on the question: "Should school children be vaccinated?" Throughout these few weeks, my classmates and I have done some further research to fully understand, and locate, the central concerns associated with vaccination. With all the research collaborated, we found that there are several issues that are of concern to parents. Specifically; people were concerned with whether or not the CDC is trustworthy, the concept of herd immunity, the link between autism and the MMR vaccine, and the impact of social media on parents' choice to vaccinate. In addition to these issues, there are also many commonplaces found between the groups who choose to vaccinate their children, and those who do not.

As a society, we like to believe that our governments, industries, and agencies can be trusted, and that we are safe putting our children's health in their hands. The concern of whether or not the CDC can be trusted has arose for some people because there has been some evidence that suggests that the CDC willingly holds information from the public and covers up certain evidence. More specifically, the CDC covered up some information which suggested a link between autism, and

African American boys. (HealthImpactNews.com "Whistleblower-CDC Covered Up MMR Vaccine...")

In addition, it is believed that the CDC and the government gain many profits off of vaccination by working with larger companies who distribute vaccines; not considering the harm that vaccines cause to people. This then leads to more vaccines being given to children for profit rather than for the child's benefit. (www.mercola.com "Blood on Their Hands: The World's Slickest Con Job...") On the other hand, some people dismiss the doubts and skepticism associated with the CDC because the CDC wants what is best for all people. The CDC addresses all public concerns and questions on their website, including information about vaccine ingredients, and any possible side effects. (Cdc.gov "Why Immunize.")

The health of a child is crucial to parents; especially in public places such as schools, where parents do not have control over other children their child might encounter. As a result, herd immunity has become a subject of importance. Herd immunity has been believed to both exist, and to be a myth. For those who choose to vaccinate their children, herd immunity is the idea that if enough individuals are vaccinated within a population, the spread of disease is decreased and there cannot be an outbreak. Such activity then benefits those who cannot be vaccinated due to health issues, age, or weaker immune systems, including the elderly and infants. (ovg.ox.ac.uk "Vaccine Knowledge Project") On the other hand, herd immunity is believed to be a myth for those who do not vaccinate, because it is confused with what is really known as *acquired immunity*. For these people, acquired immunity is when a person contracts a disease and naturally fights it off, making them immune and less susceptible to the disease in the future. (www.niaid.nih.gov *National Institute of Allergy and Infectious Diseases.*)

Autism has become an exceedingly fearsome disease that occurs in about 1 in 68 children in the US. To this day, there has not been a definitive answer as to what causes autism. As a result, there

is increasing skepticism regarding a link between the ingredients used in vaccines, and autism; specifically, thimerosal. Thimerosal has been used in the MMR vaccine which is a combination shot for mumps, measles, and rubella. However, as a result of the growing concern, the CDC has removed thimerosal from all vaccines, and claims that it is now only found in trace amounts in certain vaccines. (*Cdc.gov* "Concerns about Autism.") Because of the lack of evidence found for the causes of autism and the link to vaccines, many parents are still choosing not to vaccinate their children.

Social Media and the internet have become a part of many people's daily lives and have also become convenient means of access to information. One of the issues that came up in our fishbowl group, was the impact that social media has on parent's decision to vaccinate. Specifically, we were interested in how much parents are being influenced by what they see on television and the internet. Often, people create websites about experiences that they have had, and of adverse reactions to vaccines. This is beneficial in some cases, but overtime, the information begins to change, resulting in many misinformed parents and concerns of vaccine safety to rise. (www.immunizationinfo.org "Vaccine Misinformation.")

Despite the various controversies associated with vaccines, we were also able to find that there are some commonplaces between those who choose to vaccinate their children, and those who do not. Both parties can agree that all vaccines carry risks. Whether or not the overall effects and risks of vaccines outweigh the benefits, is a matter of personal choice. Both parties also want to ensure that their child receive the best life and health. Lastly, it is agreed upon that the US needs to do more research on vaccines in order to decrease safety concerns associated with vaccines.

Part 2:

The health of our loved ones, of our community, and of the world is the main objective when

we discuss medicine and vaccination. Although there are various concerns that many parents and people have with regards to vaccines, it is important to acknowledge that the overall benefits outweigh the minor risks. For this reason, **people and children should be vaccinated.** The main concerns that should be evaluated more closely are herd immunity, the trustworthiness of the CDC, and the link between autism and vaccines.

Herd immunity and acquired immunity are both concepts which have been discussed widely when the subject of vaccines arises. For many who choose not to vaccinate, the effects of contracting a deadly disease and naturally fighting it off through the immune system outweighs getting a vaccine for that same curable disease. This is known as acquired immunity. However, according to merckmanuals.com, "Acquired immunity takes time to develop after first exposure to a new antigen." With this information, it is evident that a new born baby, who is first building immunity, is at a higher risk for contracting a disease that it cannot fight off yet. An example of this is seen in one of the videos we watched in class, *Vaccines: Calling the Shots*. A new born baby with a newly developing immune system contracted pertussis, or the whooping cough, by another child. The new born baby was scheduled for her pertussis shot in a few days, but unfortunately contracted the disease before. In this case, her immunity was too weak to fight off the disease, resulting in severe consequences and critical medical attention. Herd immunity would have been the solution in this case. Herd immunity refers to a large number of vaccinated people in a population, who help decrease disease outbreaks, and the overall spread of diseases. In this case, if more children around her were vaccinated against pertussis, the likelihood of her contracting the disease would have been significantly lower. Herd immunity is believed to be beneficial to everyone, especially those individuals who are vulnerable. Furthermore, herd immunity only works if about 19 out of 20 people are vaccinated. The reason for this is because if there is an area in which vaccination rates are low, and someone contracts a disease,

another person who is also unvaccinated will have increased chances of acquiring that same disease, making it more likely that the disease will spread within that same unvaccinated population. This is what occurred in the measles outbreak in Wales, in 2013. (www.ovg.ox.ac. "Vaccine Knowledge Project.") Additionally, it is beneficial for the overall population to be vaccinated in order to protect the community as a whole and for herd immunity to be effective.

The CDC's overall concern is public health. However, because the CDC is a vast agency, concerns with trustworthiness often arise. Recently, there has been a report that stated that the CDC covered up valuable information from the public, regarding possible links between vaccines and autism in African American boys. (HealthImpactNews.com "Whistleblower-CDC Covered Up MMR Vaccine...") Nonetheless, the CDC does a lot to ensure that public safety concerns are addressed. This is done primarily through their website cdc.gov. Common questions regarding vaccination amounts and doses, the ages and safety associated with vaccines, infant's immune systems, and possible side effects, are all addressed and are of access to the public. (cdc.gov "Vaccine Safety.") In addition, their website also has what is called a "Pink Book." The Pink Book is a list of all vaccines, and all ingredients used in vaccines. Both the CDC and the FDA play a role in addressing questions regarding ingredient usage. For instance, on fda.gov, there is a list that was published on May 2014 which talks about why certain ingredients are used, and the amount that is used in each vaccine. Some of these include aluminum, and formaldehyde. They state that aluminum is added to enhance the immune response, and that all vaccines containing aluminum have a demonstrated safety profile. Formaldehyde is used to inactivate viruses so that they cannot cause disease. For example, the polio vaccine was made with the polio virus. If formaldehyde is a concern to parents, the CDC states that that the amount present is so small, it does not pose safety concerns. In fact, formaldehyde is also produced naturally in the body to produce energy, and build materials needed for life processes. (fda.gov "Vaccines, Blood &

Biologics.”) The CDC also plays a role in tracking side effects associated with vaccines. They have what is known as VAERS, or Vaccine Adverse Event Reporting System. Through this system, individuals can report and send in any side effects they have experienced after receiving vaccination, including minimal ones. Through VAERS, the CDC can monitor vaccine safety more efficiently and take preventative measures for any possible severe side effects. (*Vaers.hhs.gov* “Report an Adverse Event.”) Being concerned with the overall trustworthiness of the CDC and larger industries associated with vaccines is comprehensible; however, it is evident that the CDC has done their part in making sure various questions and safety concerns are addressed.” The CDC is committed to protecting the health of all Americans-including infants, children, and adolescents.” (*Cdc.gov* “Concerns about Autism.”)

“Autism is a range of complex neurodevelopment disorders, characterized by social impairments, communication difficulties, and restricted, repetitive, and stereotyped patterns of behavior.” (www.ninds.nih.gov *Autism Fact Sheet*.) Since 1999, there have been growing concerns about the preservative thimerosal, which was previously used in the MMR vaccine, and its link to autism. According the CDC website, “in 2001, thimerosal was removed or reduced to trace amounts in vaccines.” They have also provided alternative vaccines that are thimerosal free. In addition; there were several studies which examined the trends in vaccine use and changes in autism, and no links between thimerosal and autism were found. The Institute of Medicine also states that “the evidence favors rejection of a causal relationship between thimerosal-containing vaccines and autism.” In fact, there have been no correlations between any vaccine ingredients and autism. (*Cdc.gov* “Concerns about Autism.”) Another concern that has emerged is the schedule of certain vaccines. The fear is that children might be receiving too many vaccinations at once, damaging the immune and neurological systems. The Journal of Pediatrics conducted a study looking at possible links between autism and

vaccine schedules. This study analyzed the vaccination and medical records of more than a thousand children, and “totaled each child’s exposure to the immune-stimulating compounds, or antigens, in vaccines up to age 2, and totaling the maximum exposure to vaccine antigens that each child received in any single day.” They then tracked the children’s development through at least age 6. The results “found no link between increased risk of autism spectrum disorder (ASD) and higher exposures to vaccine antigens in the first two years of life, and no association with increased early exposure to the immune-stimulating compounds in vaccines.” (*autismspeaks.org* “Too Many Too Soon..,” *Vaccine Concerns.*)

For many people, the risks associated with vaccines overrule the benefits. For others; choosing to vaccinate their children is not a question of matter, but an obligation. It is evident that many diseases throughout history have been eradicated, decreased, and prevented because of the use of vaccines. To this day, there are 16 vaccine-preventable diseases that are treated through vaccination. These include polio, measles, and chicken pox. The concern pertaining to the CDC’s trustworthiness is addressed because the CDC and FDA are actively engaged in maintaining vaccines safe for public use. In addition, herd immunity is beneficial for individuals who are vaccinated, as well as for the community as a whole. Next, although autism continues to be a deadly disease with inexplicable cause, there has been no evidence suggesting that vaccines and autism are linked in any way. Lastly, social media is very beneficial in today’s world; however it cannot be relied on completely to decide whether or not vaccination is right for your child. Overall, vaccines are innovations that have gradually improved human health, and overall lifespan. “The increase in life expectancy during the 20th century is largely due to improvements in child survival; this increase is associated with reductions in infectious disease mortality, due largely to immunization.” (*healthypeople.gov* “Immunization and Infectious Diseases.”)

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