

Eng 121 Student – Risks of Vaccination

Thesis: Vaccinating children is safe, and it has health and economic benefits.

- I. The risks of vaccinations are outweighed by the benefits.
 - A. Most vaccination risks are minor.
 1. Many risks are dependent on the vaccine, but most include soreness or pain around the vaccination site.
 2. Other common side effects include nausea, vomiting, fevers, and headaches.
 3. These side effects do not last more than a couple of days.
 - B. Serious side effects are very rare.
 1. Less than one child in every one million given the DTaP vaccination has long term seizures.
 - a. DTaP is Diphtheria, Tetanus, and Pertussis.
 2. One in one million children who receive the MMR vaccination go deaf.
 - a. MMR is Measles, Mumps, and Rubella.
 - C. Many possible side effects are so rare, they could be coincidences.
 1. One or less than one side effect for every one million vaccinations is difficult to prove.
 2. It is possible that a side effect such as the onset of seizures is a coincidence.
- II. There are many misconceptions about the risks of vaccinations.
 - A. Over time, people have believed that autism is caused by vaccinations; however scientists have not been able to prove the correlation.
 1. Autistic signs usually appear in the first two years of life, and children are vaccinated a lot during this time.
 - a. This does not prove vaccinations cause autism.
 - b. The timing is a coincidence.
 - B. Scientists do not know the cause of autism; however the evidence they have does not point to vaccinations.
 1. Studies have shown that children that had vaccinations, such as MMR, are no more likely to have autism than those who have not had vaccinations.
 - C. The polio vaccine was believed to cause polio in children.
 1. There are two types of polio vaccinations; one causes polio in one of every one to two million children.
 2. The other uses an inactive strain of polio, and is unable to cause polio in children.
 - a. This is the only vaccination used in the United States today.
- III. Vaccinations reduce illness and death.
 - A. Pneumonia is a leading cause of death for children worldwide.

1. The WHO (World Health Organization) estimates that if pneumonia vaccinations were given to every child, 1 million child deaths would be avoided each year.
 2. This assumption is only for two strains of pneumonia.
 - a. If children were vaccinated for all strains, millions of children across the world would be able to live longer.
 - b. Childhood mortality rates would decrease drastically if children were vaccinated for every disease possible.
- B. Without the use of vaccinations, diseases would appear again.
1. According to the Center for Disease Control (CDC) polio and diphtheria are very rare in the United States because of vaccinations, however the disease still exists.
 2. If people stop vaccinating, these diseases will affect more children.
 3. The measles outbreak in 2014 infected 667 children.
 - a. Almost every child did not receive the MMR.
 - b. This was the largest outbreak since the 1950s.
 - c. Outbreaks can be prevented through vaccinations.

IV. Vaccines are cost effective.

- A. The Human Papillomavirus (HPV) vaccination and treatment was compared in Indonesia in 2013.
1. HPV causes cervical cancer in women.
 2. The initial treatment for cervical cancer costs a woman about \$4,000.
 3. The total cost of recurrent treatments is about \$3,000.
 4. Each vaccine costs \$44.27.
- B. All long term treatments are expensive.
1. Doctor's appointments, medications, and hospital visits can be expensive for any illness.
 2. Vaccinations will cost less than the medical expenses of the illness that vaccinations prevent.
- C. Many illnesses that vaccinations prevent cause death, and final expenses are very expensive.
1. Paying medical bills, the cost of a funeral home, cremation, and headstones are all expenses associated with death.
 - a. Death can cost a family a lot of money in addition to the heartache.
 2. Vaccinations can save lives, and prolong the final costs.
- D. Illnesses that can be prevented by vaccinations can cause an adult to not work.
1. According to the National Foundation for Infectious Diseases (NFID), adults miss about six days of work from the influenza, which can be prevented with a vaccine.
 2. Not working can mean no income for certain people.
 3. Vaccine preventable illnesses cost about ten million dollars per year in the United States.

- E. Whooping cough and other illnesses cause children to miss school.
 - 1. Whooping cough is known as the 100 days cough.
 - a. Children miss at least one week of school.
 - 2. Missing school causes children to miss education and social opportunities.

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Vaccinations are mandatory for many children throughout the United States of America. However, the dangers and benefits of vaccinations have been debated for a long time. The positive effects of vaccinations outweigh the possible negative side effects. Vaccinating children is safe, and it has health and economic benefits.

Vaccinations can have many risks; however most of them are minor. If a vaccination is an injection, it may cause slight pain, soreness, or irritation around the sight of the injection. In addition, some vaccinations may cause nausea, vomiting, headaches, or low grade fevers. These side effects do not last more than a few days and are not life threatening. The vaccination is often preventing a life threatening illness, or an illness that has symptoms far worse than the side effects. Symptoms of vaccine preventable illnesses include severe respiratory problems, paralysis, swollen glands, and severe muscle stiffness such as lock jaw. Minor side effects are common; however they are not a serious risk of the vaccinations.

Certain vaccinations can cause serious side effects. However, the dangerous side effects are infrequent. According to the Centers for Disease Control and Prevention (CDC) the diphtheria, tetanus, and pertussis vaccination, also known as DTaP, can cause seizures in every one or less than one child for every one million vaccinations. In addition, the measles, mumps, and rubella vaccination, MMR, causes deafness in every one in one million children who receive the vaccination ("Possible Side-effects"). Although these risks are serious, they are uncommon. In addition, it is difficult to prove that a vaccination such as DTaP causes seizures for only one in one million doses. It is possible that a child begins to suffer from seizures after the vaccination because of coincidence. The seizures could have been caused by an unrelated outside influence, or a previously dormant seizure disorder such as epilepsy. Serious side effects are very rare, and some may not be side effects at all.

There are many misconceptions about vaccination risks. Some people believe that autism is caused by vaccinations, such as MMR. However, scientists have not been able to prove this correlation. Signs of autism often appear in the first two years of life and children receive many vaccinations during this time. Although the timing is similar, it does not prove that vaccinations cause autism. Scientists and doctors have not been able to determine the exact cause of autism, however; the evidence that they do have suggests autism is caused by genetic traits and not vaccinations. Multiple studies have shown that a child who received the measles, mumps, and rubella vaccination is no more likely to have autism than a child who did not receive the vaccination (Merino 51). Vaccinations do not pose a threat of autism to children, while measles, mumps, and rubella do threaten all unvaccinated children. All children should be vaccinated to prevent these diseases. The risk of being autistic is not proven to be influenced by vaccinations.

Another common fallacy is that the poliomyelitis vaccination, commonly known as the polio vaccine, causes poliomyelitis (polio). According to vaccination specialist, Dr. Paul A. Offit, there are two types of polio vaccinations, one of which can cause one child in every one or two million vaccinated to contract polio (189). This side effect is very rare, and could be a coincidence. Offit also mentions that the only polio vaccination used in the United States is an inactive strain of polio (189). Inactive strains of a disease are incapable of causing that disease. It is possible that at one time the polio vaccination did cause polio, however it is now not possible. Children receiving the polio vaccination are no longer at risk for developing polio, in the United States.

Scientists can prove that vaccinations reduce illness and death. Pneumonia is a leading cause of child deaths around the world. The World Health Organization (WHO) estimates that if every child was vaccinated for *Haemophilus influenza* type-b (Hib) and *Streptococcus pneumonia* than one million child deaths could be avoided each year (Oliwa). There are also many other strains of pneumonia that can kill children. Various pneumonia strains are responsible for fifteen percent of child deaths each year (Oliwa). Other illnesses such as mumps, tetanus, and whooping cough, which is caused by the pertussis bacteria, can also cause children to die. All of these potentially deadly diseases can be prevented by vaccinations. If only two vaccinations for pneumonia could save one million children each year, then more vaccinations would be more beneficial for the lives of children around the world. More vaccinations can only prevent more children from becoming sick and dying every year.

The CDC also states that polio and diphtheria have become rare in the United States because of vaccinations ("Why Immunize"). However, the viruses and bacteria that cause illnesses such as polio and diphtheria have not been eradicated. Children that are not vaccinated are at risk to develop illnesses that could affect them for their entire lives. For example, polio causes fatigue and possible paralysis. In addition, diphtheria causes various severe respiratory problems and possible death. The polio and diphtheria vaccinations can prevent children from suffering if they were to contract these diseases. Vaccinations are the only reliable defense children have against many illnesses. Diseases will become more prevalent if people stop vaccinating their children.

According to Kids Health, which is an organization partnered with many children's hospitals and The American Academy of Family Physicians, in 2000 measles was declared eliminated from the United States ("Frequently"). The truth is that most illnesses such as measles have not been truly eliminated from the country. In 2014, 383 of the 667 children that were diagnosed with measles in the United States were in Ohio. Almost every child did not receive the MMR vaccination. This was also the largest outbreak seen since the 1950s ("Frequently"). Measles is a potentially deadly disease that causes a rash and respiratory problems. Most of the children infected during the 2014 outbreak were not given the MMR vaccine, and as a result had to suffer through the symptoms of measles. Outbreaks such as this can be prevented with vaccines.

One benefit of vaccinations is that they are cost effective. For example, the human papillomavirus (HPV) causes cervical cancer in women, and it is dormant in men. Scientists and doctors determined that the initial cost for treating HPV in Indonesia is about \$4,000, and recurrent treatments are about \$3,000. However, the vaccination only costs \$44. 27 for each woman (Setiawan). Many people

in Indonesia do not have the ability to pay upwards of seven thousand dollars for the treatment of cervical cancer. However, the forty four dollar vaccination is more manageable for a family. There is no definitive test for HPV, so it is beneficial for all women to receive the vaccination. The vaccine is most effective before a woman has reached puberty. Therefore, all girls should be vaccinated for HPV as young children. Vaccinating girls is more economically beneficial than women contracting the disease.

Similar to the treatment for HPV and cervical cancer, all long term illnesses have the potential to be expensive. Frequent visits to doctors and hospitals can be costly. In addition, medications can cost a lot, and in some cases families may not be able to afford the necessary medications for their children. Vaccinations can prevent many long term illnesses, and therefore eliminate the cost of treatment.

The cost of dying from an illness can also be expensive for a family. Medical bills, funeral homes, cremations, and headstones are all expenses associated with dying. A family can be overwhelmed with final costs as well as the heartache of losing a loved family member. The WHO estimates that 1.5 million children die from vaccine-preventable illnesses every year (Oliwa). Over one million families would not have to worry about burying their child, if the child was vaccinated. Vaccinations cannot prevent eventual death, however; they can allow children to grow up and live a productive life instead of dying or living with a complication such as paralysis from polio.

Vaccinations can also prevent adults from missing work. Adults can be vaccinated from the influenza each year. In addition, children who are not vaccinated are at risk for diseases their entire lives. The National Foundation for Infectious Diseases (NFID) reports that adults miss about six days of work each year due to the influenza, and ten million dollars are spent on vaccine preventable illnesses each year ("Top Reasons"). Many Americans have careers that require them to work each day to be paid. Other jobs only allow a certain number of paid sick days each year. If a person is sick for an extended amount of time, he or she may not be able to make money. The loss of income associated with the influenza, and other illnesses can be prevented by various vaccinations. In addition, approximately ten million dollars could be saved by Americans each year if people were vaccinated as children.

In addition to adults missing work, children can miss school because of various illnesses. Vaccine preventable illnesses cause children to miss school for extended amounts of time. For example, a child who is diagnosed with whooping cough must not leave his or her home for one week. Whooping cough is known as the one hundred days cough. Because the illness lasts such a long time, children will often miss more school than just one week. In addition, young children or children who have weak immune systems are often hospitalized for extended amounts of time. Missing school causes children to lose valuable education as well as the opportunity to socialize and make friends. Vaccinations will allow fewer children to miss school.

Vaccinations have many more benefits than risks. Although vaccinations may cause some discomfort, their ability to save children's lives is worth the minimal irritation. All vaccines may not be completely harmless however, they provide a better alternative than a child suffering their entire life, or

dying at a young age. Children deserve to live long happy and healthy lives and vaccinations can help them achieve that.

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