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To Vaccinate or Not

Neither vaccines nor the controversy as to whether vaccines should be used is new issues. The first to use vaccines were the ancient Chinese in the 10th century when they injected healthy people with material from the scabs of patients suffering from smallpox. We do not know how effective or dangerous this practice was, but the modern history of scientific vaccination begins with Edward Jenner, a British physician who, on May 14, 1796, injected cowpox for the first time and proved that it could be used to protect us from smallpox. This technique evolved through the centuries and was so successful that it managed to completely eradicate smallpox, a disease that previously annihilated a third of the people who acquired it.

Therefore, effective was the smallpox vaccine that in the nineteenth century several US states legislated to make smallpox vaccination mandatory. The first to oppose vaccines was the American Anti-Vaccination Society founded in 1879. Their opposition was since it was unworthy to force citizens to get vaccinated and that "the effectiveness of vaccination was a matter of individual opinion". In 1905 the US Supreme Court decided in favor of the mandatory vaccination process and nowadays vaccination is mandatory to be able to enroll in public and private schools.

Thereby, it is highly necessary that vaccination must be done for preventing the prevented diseases as everyone wants to be healthy. The proper vaccination process and the adequate awareness among the masses can be fruitful in convincing the people to get vaccination timely. The children are future and the future of the world must be ensured to protect from the prevented diseases. Hence, the healthy people can formulate the healthy and sound policies for ensuring the progress and prosperity of the country. Therefore, the main concern lies with finding out the core reason for the opposition.

**Current opposition to vaccines**

However, the opposition to vaccines continues with as much vigor and tenacity as in 1879. The purpose of this article is to dispassionately review the subject. An indisputable fact is that vaccines, in general terms, have managed in many cases to eradicate diseases as fearsome as polio and smallpox. The last case of polio reported in the American continent was in 1994 (Faasse et al.). The vaccines have helped to prevent or mitigate a number of diseases such as tetanus, diphtheria, German measles, measles, mumps, chicken pox, whooping cough, shingles, hepatitis B, influenza, pneumococcal pneumonia, and more recently the human papillomavirus (HPV) associated with cancer of the cervix and with cancer of the base of the tongue (Bubbins).

**Efficacy of Vaccines**

Among the opponents of vaccines, only a few challenges their effectiveness, since it is obvious that many diseases have been able to stop completely. Not all vaccines, however, are equally effective. Those of polio, tetanus, smallpox, diphtheria, whooping cough, German measles, chicken pox, rubella, mumps and hepatitis B have been the most effective. Others, such as Influenza, are more problematic because the virus mutates every year (Basanakova and Maria). Some people would say “I got vaccinated against influenza, however, with everything and that gave me a really bad cold”. Now, we can explain that the cold and the flu are two diseases that, although they share some symptoms, are totally different and the virus that causes them is not the same. The influenza vaccine does not protect at all from a common cold. But influenza is a much more serious disease. In people with chronic and debilitating diseases and in those older than 65 years, mortality is much higher than in others (Edwards, et al; Bubbins). The effectiveness of the influenza vaccine varies between 50-60%. In those that the vaccine does not protect completely, at least it manages to mitigate the severity of the infection.

**Why the opposition to vaccines?**

If efficiency is not the problem, what is the opposition to vaccines? There are at least two issues that concern opponents of vaccines. First, there is the problem of side effects. There is no treatment free of side effects, but the vast majority of the time, with very few exceptions, the benefits are dramatically higher than the side effects. Take the case of autism which has often been adjudicated to vaccines. According to the research by Kang, the 12 children had been vaccinated against measles, rubella, and mumps shortly before developing autism. According to the authors of the article, they found evidence that vaccines could have caused autism in 8 of the 12 children (Kang).

Of course, this caused a stir and the international press was in charge of spreading the news. As a result, the public developed a huge distrust, not only towards the measles and mumps vaccine but towards all types of vaccines in general (Bossanova and Maria). In the United Kingdom the vaccination rate of the infant population was more than 90% but quickly fell to less than 70% (Kang). As a result, outbreaks of these easily preventable diseases began to appear. Even in 2006, a teenager died of measles, apart from the problem of congenital malformations due to pregnant women who had measles during the first trimester of pregnancy (Macintosh et al.).

Six years passed, and by 2004 several articles had already appeared in the medical press proving that there was no link between that vaccine and autism. However, they were later disapproved. There was evidence that the lead author of the article had received a huge sum of money from a lawyer to conduct the study. Not only that, but the parents of the 12 children who reported in his study were clients of that lawyer, whose intention was to sue the vaccine manufacturing companies. But according to a court of the General Medical Council of the United Kingdom that investigated him for fraud, Dr. Wakefield not only allegedly sinned for not revealing his relationship with the lawyer but also lied and falsified almost all the published data (McClure et al; Pena and Adriana). The court found him guilty of misconduct and dishonesty.

**Other objections**

The other main reason for objecting to vaccines is that supposedly infectious diseases have been eradicated to a large extent by the best hygiene existing today. This idea has been proven to be incorrect because by decreasing the vaccination rate for several diseases, a resurgence of infectious diseases has been experienced. A good example is the aforementioned case of the United Kingdom, but there are also many other examples of epidemics of polio, whooping cough, chickenpox, cholera and diphtheria in other parts of the world.

Due to the fear infused by the anti-vaccination movement, in the US only 83% of children are vaccinated against a whooping cough. In order to eradicate a contagious disease in a country, it is assumed that the vaccination rate against this disease exceeds 95%. The number of whooping cough cases is increasing every year and in 2015 there were 11,000 cases in the USA (Moser; “Vaccine Hesitant Parents”).

Another prevalent idea is that diseases such as polio and smallpox have been totally eradicated and that they will never cause epidemics again. This notion is also incorrect. In 2013, for example, 416 cases of polio were recorded in the world (Pena). It is only necessary that the vaccination rate against polio goes down so that outbreaks begin to appear. It is worrisome that in Pakistan and Afghanistan the Taliban government issued a "fatwa" (edict) against the personnel who vaccinated for polio in those countries, claiming that what they were doing was injecting a drug that produced sterility. This resulted in the killing of much of the foreign personnel involved in the vaccination. If this practice continues, a resurgence of the disease may occur (“Progress Towards the Global Elimination of Neonatal Tetanus, 1990-1998”). In fact, 20 cases of polio were registered in Afghanistan in 2015 and 54 cases in Pakistan.

Considering the analysis of the data, it can be said that vaccination is inevitable for reproducing and nurturing the healthy child. However, the resistance from the people should be proactively countered to make sure that nobody is lacking the proper vaccination around the world. Also, it has been observed that the disability among the children emerges even if one session of vaccination got missed in the process of vaccination. The awareness among the masses is indispensable for motivating the people to vaccinate their children. The door-to-door inoculation of vaccination can also help in vaccinating the children. The temporary camping in the small towns can help the parents to vaccinate their children. In this way, the lack of access to hospitals can be bridged successfully. However, the proper education among the parents regarding the perils of avoiding vaccination, which may occur if they missed the vaccination is highly necessary.

**What are the serious risks of vaccines?**

The vast majority of vaccines carry very little risk. For example, the polio vaccine has very few side effects, but in the 1950s the vaccine was contaminated with the SV-40 virus, capable of producing cancer in the apes. Epidemiological studies of people who received the vaccine at that time have not definitively shown that their risk of developing cancer has been higher, but in any case, there is that concern. After 1963 the vaccine has already been purified and does not contain that or any other virus.

Guillain-Barré syndrome is a serious neurological disorder that produces a paralysis that starts with the feet and gradually ascends towards the upper torso. This disorder occurs mostly because of some infections. One study showed that after the 1976 influenza vaccine, more cases than expected of this syndrome occurred. The calculations indicated that, in that year, the risk of acquiring this syndrome reached 1 of every 100,000-people vaccinated. After 1976, the Guillain-Barré risk attributed to the vaccine has declined significantly to the point that it only occurs in 1 out of every 1 million people vaccinated (Pena; Voinson et al; Yarnell et al). In fact, Guillain-Barré, as a result of being infected with influenza is 17 times more common than Guillain-Barré caused by the vaccine. Another side effect is that of severe allergic reactions that can also occur as with any other medication, but these are not very common.

**Who should not be vaccinated.**

In general terms, we must all get vaccinated, but there are some contraindications in both adults and children. The biggest contraindication is in relation to the use of some vaccines with the live or attenuated virus, which should be avoided in immunosuppressed people such as those with organ transplants and those who are receiving cancer chemotherapy, as well as those suffering from malignant hematological disorders. as are lymphomas and leukemias. If there is an allergy to any of the components of the vaccine, then it should not be used (Yang and Dorit). As a precaution, they are also avoided in pregnant women. However, most vaccines do not have live viruses. Some exceptions are the oral polio vaccine, shingles, measles, mumps, varicella, rotavirus, tuberculosis and yellow fever.

Usually not; in the outbreaks of measles that occurred long ago in Holland and Barcelona, almost all those affected were unvaccinated. However, in some cases, it could happen that an important part, including most of the patients in an epidemic, were vaccinated. It is very easy to use that data as if it were the "proof" that the vaccine is useless, even dangerous. But simple calculations show that it is not like that, far from it. Suppose that, in a certain country, 97% of the children are vaccinated, and suppose that the thing is evenly distributed. In any town, in any neighborhood, in any school, 97% of children are vaccinated.

Let's suppose that the vaccine is completely useless. There is an epidemic. Thousands of children are sick How many of them will be vaccinated? Well, 97%, of course! For every 3 unvaccinated patients, we found 97 vaccinated patients. If instead of 97% we find 91% of patients vaccinated, it means that the vaccine has been effective. And we must not think that it is "a small reduction of 6%", it is not calculated that way. The 9 unvaccinated patients, maintaining the 97: 3 ratios, would correspond to 291 vaccinated patients. Since instead of 291 there are only 91, 200 cases have been avoided, and the reduction (the effectiveness of the vaccine) is almost 69%. Such a reduction would already be sufficient reason to vaccinate children, but, in fact, the effectiveness of vaccines is much higher.

What if in the epidemic 52% of the patients are vaccinated? For 48 cases without vaccination we would have expected 1,552 vaccinated patients; 1,500 cases have been avoided, and the effectiveness of the vaccine exceeds 96%. Very many, but there will still be someone who says, “The vaccine does not do anything: total, most of the patients were vaccinated!”; it constitutes the dilemma that ignorance is bold.

Therefore, the risks of vaccines are negligible compared to the benefits and therefore many children and adults, with few exceptions, should be vaccinated. Adults should be up to date with influenza, tetanus and chickenpox vaccines. Vaccines do not cause autism. The risk of Guillain-Barré is lower with the influenza vaccine than with the influenza infection. People older than 60 years, without contraindications, should be vaccinated against pneumococcus (bacteria that causes a type of pneumonia) and those over 65 against shingles. Shingles, although with not very high mortality, can be associated with severe pain that lasts in many cases throughout life, as well as adults younger than 26 years should be vaccinated against the HPV virus.

In conclusion, vaccination is highly necessary for ensuring the world free of prevented diseases. Verily, every individual wants to be healthy and want to live a long life. And it can only be possible if they take care of themselves and their children health beforehand. The vaccination help in preventing the occurrence of diseases, it triggers the immune system of an individual to remain proactive from the attack of the intruder causing the disability. Since the children immune system is weak in their early life of childhood, so the infant vaccination helps them to fight against the foreign intruders like bacteria and viruses. However, there are some exceptional cases in which vaccines have some cons as well, yet it does not occur frequently. In a nutshell, I state that the opposition causes should be proactively handled to ensure the safety of the children in the long-run.

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