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### The Controversial Nature of Vaccination

In the last few years, the practice of vaccination has earned itself a questionable reputation. More and more people refuse to vaccinate, be it for religious or personal reasons, causing the creation of a whole movement, commonly known as “anti-vax” or anti-vaccination movement. There has been an ongoing heated debate between doctors and supporters of the movement about whether vaccines cause more harm than good to our health. Autism, allergies, sudden infant death syndrome, schizophrenia – these are just some of the illnesses that, according to anti-vaccinationists, vaccines cause as a side-effect of the use. Unfortunately, anti-vaccine supporters make these allegations without any credible evidence and deny benefits of vaccination, presented by the medical community, such as its positive impact on the public health and complete eradication of diseases. Although vaccination has its risks, the refusal to vaccinate presents risks far greater, putting in danger not just one individual but the society as a whole.

Even though the practice of vaccination is viewed as a completely individual choice that influences only a person in question, it has a massive effect on the health of the whole community of people. When one person is unvaccinated due to medical reasons, for example, having lost their immunity after cancer, HIV, or other severe illnesses, the immunity of those who are vaccinated protects the unvaccinated individual from getting infected. In the

scientific world, this phenomenon is called “herd immunity” - an indirect form of disease prevention developed by a large group of people that stops the spread of infection altogether (Fine et al. 911). Some individuals, unfortunately, can not be vaccinated because of immunodeficiency or immunosuppression, both of which make the use of vaccines ineffective. However, for the population immunity to appear, there needs to be a large number of vaccinated people, at least 70 % to 90 % of the general population (D’Souza and Dowdy). Thus, “herd immunity” is one of the only ways for the unvaccinated to battle with infection.

A direct corollary of herd effect is a total disease eradication. If most people are vaccinated, and the number of infected cases decreases, there is a chance that the virus can be controlled or completely wiped out. Such instances have already been documented, for example, the eradication of smallpox. In the 20th century, thirty thousand deaths were registered as smallpox related in the US, but the 21st century saw a positive change - the number of cases dropped to zero (Roush et al. 2156). The underlying reason was the vaccine, developed in 1980, that had a 100 % protective efficacy (Metzger et al. 473). The complete eradication is the goal that modern medicine strives for when developing new vaccines, but this goal won’t be achieved without public awareness and commitment to the issue. Complete refusal to vaccinate not only disrupts the process of eradication, but it also creates new outbreaks of the infection, endangering even more people. In 2019, there has been a sharp increase in the number of those infected by measles, the disease that prior to 2006 was almost eradicated, with 690,000 cases worldwide (Selim). This happened for several reasons, and one of them was vaccine hesitancy.

On the contrary, anti-vaccination supporters argue that vaccines cause autism and other illnesses, such as schizophrenia or epileptic seizures. The claim about the connection of

autism to vaccination has been sparked by Andrew Wakefield, a British physician, who together with his colleagues published a study on the topic in *The Lancet*, a well-known medical journal. Wakefield stated that the MMR vaccine (a triple vaccine against measles, mumps, and rubella) causes autism and other behavioural disorders in children (637). This led to the public uproar against vaccination and a series of other studies with similar allegations to Wakefield's. However, all of these claims are completely false and scientifically misleading. Vaccination is not the cause of autism and, as a matter of fact, any other alleged illnesses as has been proved numerous times. Cochrane Collaborative compiled a review of 138 vaccine-related studies and found no evidence of vaccines being the cause of autism (Di Pietrantonj et al. 2). Wakefield's report has been disproved by the article from *National Health Service (NHS)*, and consequently, he lost his doctoral license. As of right now, there has not been any credible evidence that proves the danger or harm of vaccinating.

To sum up, vaccination can improve the public health of the whole society and decrease the risk of getting a disease, even for unvaccinated. With the help of the vaccines, the population develops immunity to some diseases that, with a large percentage of people vaccinated, can be completely eradicated. The allegations about the dangers of vaccination, spread by anti-vaccinationists, were proved to be false due to the lack of credible evidence. The promotion of vaccination will raise awareness of the practice and help create a healthier society.

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