

Letter to the Editor

Vaccines: friends or foes?

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Vaccines have been declared important to public health safety, protecting generations from infectious diseases. Today, however, some parents seem more likely to hear about vaccines in a completely different context: apathy, distrust, and fear. Vaccines have been linked several times to health problems and developmental disorders such as AIDS and autism¹. Sometimes immunizations also seem unnecessary because the diseases they protect against have become very rare, such as the recent outbreak of yellow fever (2016-2017) in which one of the main affected states was Minas Gerais, due to the low vaccination coverage². Another example of decreased vaccination coverage still occurring this year was a measles outbreak in Brazil, with an 18% increase in the number of cases. So far 4 deaths have been recorded, 3 of children under one year. Demonstrating the need for vaccination coverage mainly in this age group. For suspected cases, the Ministry of Health recommends two doses of vitamin A for children under six months. In order to control measles, the Ministry also advises states and municipalities to perform vaccine blockade, that is, to vaccinate all people in the locality who have not been vaccinated³. So, what do parents need to know to make the right vaccination decisions?

The benefit of vaccination, one of the most economical public health interventions, has not yet fully reached the population, especially in underdeveloped countries, in addition to the religious fundamentalism that became one of those responsible for anti-vaccine campaigns. Although the field of vaccine research has received much attention since its discovery of smallpox by Edward Jenner (1749-1823) in 1798, more than two centuries later, about 20% of deaths among children under the age of five are due to diseases preventable by currently licensed vaccines^{4,5}. There are currently licensed vaccines against nearly 27 agents and research for nearly 130 antigens⁶.

Concept of a vaccine

A vaccine is a dead or attenuated microbe that, when administered to the host, stimulates a protective

response of cells in the immune system. The process of vaccine administration is called vaccination. The goal of vaccination is to protect individuals from getting a disease, such as children, the elderly, immunocompromised individuals, people living with chronic diseases, and people living in endemic areas that are the most commonly at risk. Vaccination is a common strategy to control, eliminate, eradicate or contain disease. In addition, the immunization schedule is developed based on the immunological capacity of children, since the immunity passed from mother to child is temporary and does not include polio, hepatitis B, among others. Thus, vaccines help to develop protective antibodies in the body of the individual to whom they are administered, and protection is available after a latency period of a few weeks to several months⁷.

One of the benefits of vaccination is the herd immunity. This concept is defined as the influence of the indirect mode of vaccination, ie those who do not receive a dose. However, the higher the level of vaccine coverage in a specific community, the higher the average age of first contact with the infectious agent. This favors disease control, or postponing infections causes them to appear more in adults, at a time when there is a greater capacity for immune response. On the other hand, it can cause an increase in epidemics in this age group⁸.

Doubts and Myths

Until 2016, Brazil was considered one of the countries with the highest vaccine coverage rates, 99.7% of the target population immunized⁹. Despite an increasingly knowledge about vaccination every year, there are still some doubts and myths in the vaccine context that we will try to elucidate in this text. It is true that vaccines are not 100% effective, however most of them achieve 95% vaccine efficacy. Another question that may be asked is about the vaccine immune response. Is natural immunity better than vaccine immunity? If an individual becomes infected with mumps, the chances of having encephalitis are 1 in 1000, and the risk of death is 2 in 1000. However, if we consider the chances of an

individual having a severe allergic reaction to vaccines is one in a million vaccinated by the MMR vaccine (mumps, measles and rubella), we can determine that the safest way is vaccination. Another important question is about the influenza virus. Each year the strains of the virus change naturally, so each year the individual needs to be vaccinated for a different strain, leading the individual to greater protection⁷.

Finally, rumors arose in the 1990s that the polio vaccine transmitted the AIDS virus in Africa in the late 1950s. However, this hypothesis was refuted, testing on samples of the vaccine, stored for over 40 years, that showed no trace of HIV or its primate antecedent, SIV. The latest unsubstantiated rumor was related to vaccines and autism¹. The article published in 1998 by Andrew Wakefield was rejected after an investigation of falsified data and Andrew Wakefield had his license revoked by the British Medical Council in 2010.

Another recent source of questions about vaccines is the internet and its fake news. Bre Payton, known for her anti-vaccine reputation and one of those responsible for the news, died of swine flu in 2019. If a brief search with the #antivax or #antivaxer keywords is performed on social media sites, we will find several comments leading us to believing the population needs more information about vaccines in general. The antivacin movement in Brazil has increased in recent years leading to the possibility of the resurgence of diseases already controlled by vaccination programs such as polio, diphtheria, measles, among others. On the other hand, a satisfactory example of the elimination of a disease through vaccine control was rubella in the 1980s¹⁰.

Thus, before making such a serious decision about non-vaccination we must take into consideration not

only ourselves but also the people around us that we can transmit a serious disease.

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