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August: National Immunization Awareness Month [1]

Submitted by Patricia Irizarry [2] on 20 August 2016 - 3:37pm

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Since the moment we are born, we are exposed to a variety of infectious diseases caused by viruses and other microorganisms that live around us. The common cold and the feared flu are all part of our daily lives. However, we have recently seen emerging diseases that are alarming, for example the 2014 Ebola outbreak in Africa and the 2015 Zika outbreak in Brazil that is now a threat to the rest of the Americas. This begs the question: If there were vaccines against these

diseases, would you receive them? Although scientists work hard to develop these vaccines, it is not a reality at the moment. The good news is that there are many other infections that can be prevented if you get vaccinated against them.

But, what is a vaccine?

A vaccine exposes your body to a substance, known as an antigen, that can start a reaction in your body to defend it and protect you from future infections caused by those antigens. This process is know as an immunological reaction, and when you are exposed to the antigen in a vaccine, this reaction tends to be mild. This reaction is possible because the immune system cells in your body are capable of recognizing the antigen and fighting the infection. With assistance of T cells and B cells, two kinds of white blood cells that travel through out your blood and are responsible for generating the immunological memory, your body can respond faster the second time you are exposed to the antigen. More specifically, B cells are responsible for producing molecules (or proteins) known as antibodies. These antibodies are the ones that inactive invading antigens, thus protecting your body from infection.

Who should get vaccinated?

It is important that you get vaccinated for your own safety and the safety of your loved ones. The development of vaccines and other technological advances has allowed us to control the catastrophic consequences of many infectious diseases. Thanks to a global vaccination campaign, the World Health Organization (WHO) declared the eradication of smallpox in 1980. In addition, there has been a reduction in the number of cases of polio, diphtheria and whooping cough, among others.

However, the newer generations have forgotten the devastating effect of these diseases. For example, one of the most important effects that come with vaccination is the development of herd immunity. To maintain a healthy population, most individuals must be vaccinated. This practice also protects those that due to health issues or age restrictions can’t get vaccinated. In the figure below, the people in red represent sick individuals and the people in blue are healthy, but not vaccinated. As the number of vaccinated individuals (yellow) increase, the number of people infected with the disease decrease, reducing the likelihood of an epidemic.

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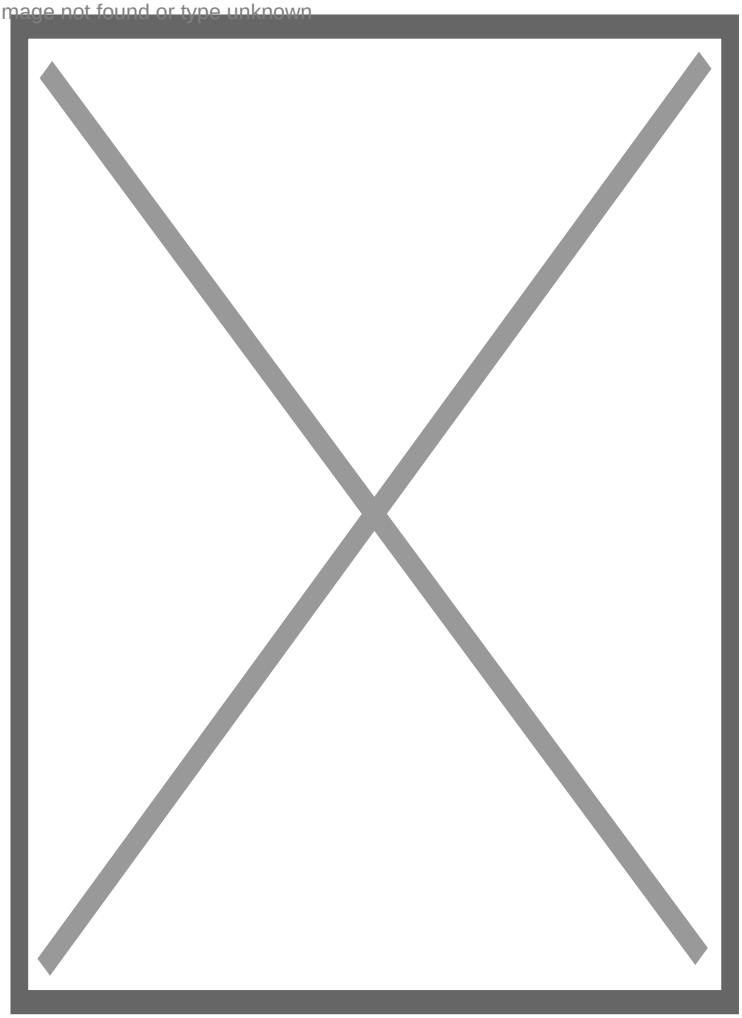

This diagram was taken from the National Institute of Allergy and Infectious Diseases (NIAID)

are not only for children; we should all get vaccinated as indicated by the schedules [3] established by the Center for Disease Control and Prevention.

Who are the “Anti-Vaxxers”?

There are groups that think that natural immunity, meaning getting the disease by natural causes instead of exposing yourself to the antigen via the vaccines, is best. Other groups are concerned with the secondary effects that may result from vaccination. Given the various sources of information out there, I would like to describe, from my perspective, the most common misconceptions about vaccines:

1. Vaccines cause autism

In 1998 Dr. Andrew Wakefield, a British researcher and gastroenterologist, published an article [4] establishing a direct relationship between the MMR (Measles, Mump and Rubella) vaccine and autism. In 2010, this publication was retracted since the published results were not reproducible. This is an example of the damage that unethical people can make to the advancement of Science

in our society. Generalized fear and lack of information has perpetuated this debate to this date. It is common to find publications of doubtful origins; meaning articles without an author those without reproducible data, and/or those that have not gone through a strict peer-review process before publication, in which an article is reviewed by experts in the field. Unfortunately these publications go viral on social media, and negatively affect the general perception of vaccines.

2. Vaccines ingredients are toxic to humans

Although it can be alarming to read the ingredient table in vaccine package inserts, we can say the same thing about other products and foods. For example, bananas are considered healthy and nutritious for our diet, but they are also high in potassium, therefore containing low doses of radiation. In a similar way, substances such as mercury, formaldehyde and monosodium glutamate (MSG) are required to prepare vaccines. However, the doses used are low and not considered harmful to human health.

3. With good hygiene and the new technological advances, we don't need vaccines

Millions of people travel across the planet daily, facilitating the transport and exposure of microorganisms from one region to the next. Although is true that knowledge about transmission patterns of disease, the development of water treatment plants and the use of disinfectants greatly contribute to control the spread of the diseases, these practices don't eradicate the microorganisms that cause them. It is important that you keep up to date with the vaccination programs according to your age and region of residency. For more information about the vaccination schedule recommended for individuals between 0-18 years and adults visit the CDC [5] webpage.

Now is your opportunity to contribute in the National Vaccine awareness month. Educate yourself and help us keep our population healthy. Get Your Shot Today!

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7. The Five Deadliest Outbreaks and Pandemics in History: http://www.rwjf.org/en/culture-of-health/2013/12/the_five_deadliesto.html [12]

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