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Puerto Rico : Zika Virus

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Background on Puerto Rico

Puerto Rico is a Caribbean island nation, 950 miles Southeast from Florida, with a population of approximately 3.5 million people. The majority of the citizens are white Hispanics and the country's dominant religion is Christian Catholicism. Since 1917, Puerto Rico has been a U.S. territory--meaning that Puerto Ricans obtain dual citizenship, and the United States federal government has some discretion over Puerto Rico's financial matters and governing style. There is a governor that rules over the land, but the overall government is overseen by the United States. Of recent, Puerto Rico has been involved in a financial crisis and is receiving little aid from the United States government.

2016 Zika Outbreak

One major public health issue concerning Puerto Rico, currently, is the recent explosion of Zika virus. In 2016, Puerto Rico was declared as having an emergency Zika outbreak; a year later and the epidemic has been officially declared over. Yet, there are still cases circulating in Puerto Rico that cause major effects on those infected and pose a threat to the entire nation. The emergence of Zika virus appeared in Puerto Rico in 2015. Since then, several thousands cases have been recorded. In 2016 alone, 10,690 cases were recorded, 1,035 of these cases were in infected pregnant women.

Effects of Zika and Target Groups

The virus is spread by vector mosquitoes, specifically the sub-species *Aedes aegypti* and is sexually transmissible (Matysiak & Roess, 2017). It is classified as an arbovirus; this class of virus also includes other tropical viruses such as dengue fever, yellow fever, and chikungunya. Symptoms of Zika virus include rash, arthralgia, fever, and conjunctivitis (Lozier et al., 2016). The major effect that is most well-known of this virus is microcephaly. Microcephaly is the shrinkage of the head; an infected mother could transmit the virus to her unborn baby, and the baby could be born with a noticeably smaller head, which causes greatly underdeveloped motor and developmental skills due to an underdeveloped brain. Due to this occurrence, pregnant women are a group that are highly vulnerable to this virus. According to a study of Zika cases in age and gender groups specifically in Puerto Rico, "incidence was higher among women (936 per 100,000 population) than men (576 per 100,000) for all age groups ≥ 20 years;" the majority of all cases occurred in women, too (Lozier et. al., 2016). Figure 1 shows the the age group, sex, and incidence levels of positive Zika cases.

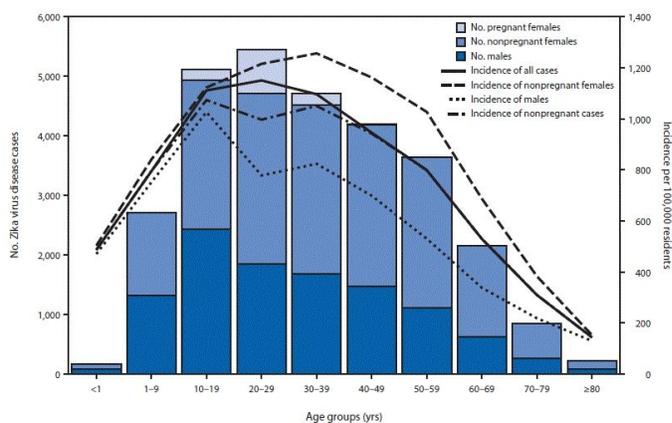


FIGURE 1. Age group, sex, and incidence of laboratory-positive Zika virus disease cases (n = 29,345)* — Puerto Rico, November 1, 2015–October 20, 2016 (Lozier et. al., 2016)

Solutions

Solutions to stop the spread of this virus are still being put into action. For women, there are contraceptive kits available. These "toolkits" also provide families with an option for

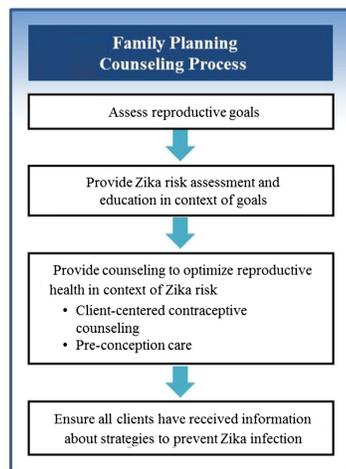


FIGURE 2. Counseling for non-pregnant women of reproductive age. (Dehlendorf, Gavin, & Moskosky, 2016)

counseling to learn more about the virus and gain knowledge on how one can stay protected (Dehlendorf, Gavin, & Moskosky, 2016). Another option that is still in the works, is the development of a potential vaccine. In Brazil, a pharmaceutical company called Sanofi Pasteur, has been developing a vaccine to put through to a study. The problem with this vaccine correlates with the decision on whom shall receive it; ideas for target patients include children, to prevent transmission and congenital infections, or travelers who are venturing into Zika-infected nations (The Lancet Infectious Diseases, 2017). This process has since halted, yet the idea of an acquired immunity to Zika remains hopeful. Another trial being looked into and awaiting a study involves the genetic modification of *Aedes aegypti*. Genes can be changed in the male mosquitoes that, after mating with the females, will result in the death of the offspring, thereby reducing the population of the mosquitoes and the risk of Zika infection (Kaye, 2016). This concept can reduce the mosquito population by about 90%. In today's technologically-advanced world, it is certainly plausible for humans to eliminate specific mosquito species all together, and if that day comes, several diseases will decrease rapidly in incidence rate. Although ethically questioned, that would be one of the few true solutions to eradicating vector-borne diseases like Zika.

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