



Perspective

Zika virus epidemic in Puerto Rico: Health justice too long delayed



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ABSTRACT

Over the course of 16 months, more than 35 400 cases of Zika virus infection have been confirmed in Puerto Rico. This represents 85% of all cases reported in the USA and its territories. The Zika epidemic is exposing the profound failure of socioeconomic policies, as well as the failure to protect sexual and reproductive health rights in Puerto Rico. Considering the high poverty rates, high levels of sexuality-related stigma, poor quality sex education, limited access to contraception, and limited participation in the allocation of resources for prevention, it is unreasonable to focus public health efforts to prevent Zika virus infection on vector control. The allocation and equitable management of resources for research and intervention are required in order to understand and address the barriers to and facilitators of prevention at the individual, social, and structural levels. Further, the impact of efforts to tackle the social determinants of the Zika virus epidemic on the island should be assessed.

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On December 31, 2015, the first case of Zika infection was reported in Puerto Rico – an organized but unincorporated territory of the USA. Puerto Rico encompasses an archipelago in the Caribbean basin that became part of the USA in 1898, following the Spanish–American War. Since at least 1917, Puerto Ricans have been US citizens by birth. However, as an unincorporated territory of the USA, Puerto Rico lacks self-determination, and Puerto Ricans on the islands do not have full representation in Congress and cannot vote for the President. Further, due to Puerto Rico's territorial status, US federal mandates take precedence over local legislation and policies in all areas of governance. As of April 19, 2017, a total 41 807 cases of Zika virus infection had been reported to the Centers for Disease Control and Prevention (CDC) in the USA (including 50 states, DC, and the territories of American Samoa, Puerto Rico, and US Virgin Island). Of these, 5238 had occurred in the USA (excluding US territories) and 35 418 (85% of all cases in the USA and territories) had occurred in Puerto Rico alone. While most (94%) of the cases reported within the

continental USA have been travel-related, the majority (99%) of cases reported in Puerto Rico have been acquired through local transmission (Centers for Disease Control and Prevention, 2017).

Zika virus, an arthropod-borne flavivirus, generally causes a mild infection in humans, but it is associated with severe neurological complications and adverse fetal outcomes (D'Ortenzio et al., 2016). Sexual transmission of Zika from both male and female partners can occur (Davidson et al., 2016; Deckard et al., 2016; Fréour et al., 2016). The virus can remain viable in semen for months (Mansuy et al., 2016), and transmission via sweat or tears has been suggested (Swaminathan et al., 2016). Puerto Rico has witnessed the most negative known outcomes of Zika virus infection, with the first birth of a child with Zika-related microcephaly reported in the USA, 29 cases of birth defects, 71 cases of Guillain–Barré syndrome, and at least five deaths related to infection with the virus (Puerto Rico Department of Health, 2017).

Vector control has been a major area of attention for preventing Zika virus infections in Puerto Rico, as in most places affected by the epidemic. These measures center on mosquito reduction through source elimination (removal and modification of breeding sites) and avoiding contact with mosquitoes. In order to control the vector and prevent mosquito bites, the CDC recommend installing or repairing window screens and using mosquito nets, air

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conditioning, outdoor flying insect spray, specific insect repellents, and wearing particular kinds of clothing (Frieden et al., 2016; Centers for Disease Control and Prevention, 2017).

In order to prevent sexual transmission of the virus, the World Health Organization (WHO) recommends that “all patients (male and female) with Zika virus infection and their sexual partners (particularly pregnant women) should receive information about sexual transmission of the Zika virus, contraceptive measures and safer sexual practices, and should be provided with condoms when feasible” (World Health Organization, 2016). Access to emergency contraceptive and safe abortion services should also be available to women who have had unprotected sex and do not wish to become pregnant because of concern over Zika virus infection. Similarly, free-of-charge or affordable care and support must be provided to pregnant women and their families who have or will experience Zika infection. As most Zika virus infections are asymptomatic, the WHO also recommends that men and women living in areas where local transmission of Zika virus is known to occur should consider adopting safer sexual practices or abstaining from sexual activity (World Health Organization, 2016).

International, national, and local agencies have certainly been responsive in terms of issuing public recommendations for vector control, preventing the sexual transmission of the Zika virus, and postponing pregnancy. Nevertheless, these recommendations should be considered in context. In Puerto Rico, high levels of sexuality-related stigma (Varas-Díaz et al., 2014; Marzán-Rodríguez et al., 2013; Ortiz-Sánchez et al., 2017), poor quality sex education (Otero-Rivera and Rodríguez-Díaz, 2008), limited access to contraception (Norman et al., 2011; Rodríguez-Díaz et al., 2014), and limited participation in the allocation of resources for prevention (Garriga-López, 2016) make the prevention of new Zika infections in accordance with these recommendations challenging, if not downright onerous. For example, researchers in Puerto Rico have evidenced that there is poor quality sex education available (Otero-Rivera and Rodríguez-Díaz, 2008; Rivera et al., 2016), limited access to contraception (Norman et al., 2011; Rodríguez-Díaz et al., 2014), low levels of reproductive planning (Colón et al., 2014), high levels of gender-based violence (Puerto Rico Police Department, 2016), and low rates of condom use among women (Rodríguez-Díaz et al., 2014). Further, two-thirds (65%) of pregnancies are unintended (Tepper et al., 2016), sexual abstinence is rarely practiced among sexually active adults (Rodríguez-Díaz et al., 2014), and abstinence-based sexual education (on which public policies are mostly focused) has proven to be ineffective and morally problematic, as it threatens fundamental human rights to health, information, life, and reproductive freedom (Santelli et al., 2006).

Regarding access to contraceptives, recently reported data from the CDC acknowledge that in Puerto Rico, “access to contraception is constrained by limited availability, especially of highly effective long-acting reversible contraceptives, high-cost, incomplete insurance coverage, and lack of trained providers” (Tepper et al., 2016). This is worsened by the large number of health professionals who have recently emigrated from the island (Allen, 2016). Lastly, abortion, as a constitutionally protected right, needs to be considered within the highly patriarchal social norms in Puerto Rico, wherein religious institutions have historically stigmatized sexuality and condemned it (Garriga-López et al., 2013). Such norms are imbricated transversally, from the individual decision-making level, to the health services delivery arena, and all the way to the design and enforcement of state policies. For instance, the local Catholic Church through their current Archbishop has condemned the use of condoms, encouraging followers to ignore the CDC’s recommendation to use protection during sexual intercourse. All of these factors are disproportionately affecting young adults (21–25 years of age) who are the most sexually active

group (Rodríguez-Díaz et al., 2014), among whom most of the unintended pregnancies are reported (Colón et al., 2014; Puerto Rico Department of Health, 2012). Furthermore, these young adults are known to have exacerbated economic constraints (Puerto Rico Statistics Institute, 2015) and are more socially vulnerable in general (Bearinger et al., 2007).

The political context in Puerto Rico is probably the main constraint for local authorities and communities who seek to identify resources for comprehensive and culturally appropriate prevention programs. Puerto Rico is already in a state of political-economic emergency, while also burdened with a preexisting chikungunya epidemic, as well as endemic dengue virus (Centers for Disease Control and Prevention, 2016; Villanueva, 2015; Roman, 2015). The implications of a Zika virus epidemic are potentially severe for public health, considering that Puerto Rico is structurally under-resourced due to the existing cap on congressional spending for health services on the island (Garriga-López, 2016; Portela and Sommers, 2015). This issue has been part of public discussions and congressional hearings on the fiscal crisis on the island and the establishment of the Puerto Rico Oversight, Management, and Economic Stability Act or PROMESA (Congress of the United States of America—House of Representatives, 2016). However, no action has been taken to ameliorate the negative consequences of the situation with regards to public health care, which has rightfully been called a humanitarian crisis (Garriga-López et al., 2013). The implementation of austerity measures on Puerto Rico’s government budget, particularly related to funds allocated for public services already proposed by PROMESA’s board members, raises more concerns about the prospective availability of local resources to address the health care challenges posed by the Zika epidemic.

Increasing rates of inequality and poverty are having a major impact on the island’s population. Data evince that the poverty level in Puerto Rico is 46.2% – nearly double the poverty rate in Mississippi, the most impoverished of the 50 states in the USA (in Puerto Rico, the median salary is approximately \$19 500, compared to \$51 400 in the USA) (United States Census Bureau, 2014). Similarly, the unemployment rate is over 12%, and high levels of bankruptcy and population loss have been reported (Puerto Rico Statistics Institute, 2016). Under these circumstances, it is unreasonable to focus public health efforts to prevent Zika virus infection at the individual level to control the vector (e.g., purchasing screens, air conditioners, clothes, or repellents). The existence of structural barriers, as previously discussed, highlights the urgent need to conduct further research on local conditions and develop autonomous responses that help communities in Puerto Rico mitigate the impact of Zika. Accounting for the structural inequalities in health care that exist on the island requires that we move confidently towards remediating not only the viral exposure, but crucially, that we address the extensive health vulnerabilities now present, for Zika is neither the first nor the last epidemic Puerto Ricans will experience (Garriga-López et al., 2013).

Thus, it is not surprising that Dr Tom Frieden, former Director of the CDC, stated, “there is the potential for hundreds of thousands of Zika cases in Puerto Rico” (McCarthy, 2016). Moreover, he recently acknowledged that “effective action in Puerto Rico has been complicated by lingering suspicions related to historical activities, competing priorities, and the speed needed to bring integrated vector management to scale. Misinformation has clouded understanding of the best ways to protect individuals and communities” (Frieden et al., 2016). The opposition by local environmental activists and some segments of the general public to the CDC’s response addressing the Zika outbreak, including on the use of organophosphate insecticides, particularly Naled (dimethyl 1,2-dibromo-2,2-dichloroethylphosphate), should be understood

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