Evaluating the Neutralizing Antibody Responses to a Dengue Vaccine in Seropositive & Seronegative Children from Cebu, Philippines

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Dengue virus, a tropical mosquito-borne Flavivirus, presents global health concerns that require an effective vaccine. The tetravalent nature of dengue virus due to antibody-dependent enhancement (ADE) makes developing a vaccine challenging and leads to more dangerous symptoms (Izmirly et al., 2020). Dengvaxia, the only commercially available tetravalent vaccine against dengue, has had a complicated past and has called into question its power to produce neutralizing antibodies. In a unique approach, 10 paired samples were taken from a cohort of children in Cebu, Philippines both before vaccination and a year after vaccination with a single dose. This paired approach attempts to fill in areas overlooked by the Phase III trials through the use of neutralization assays. By mixing the human sera samples with pure virus and VERO-81 cells, staining with primary and secondary antibodies, and the use of TrueBlue, the antibody response can be visualized. The results produced seemingly random responses, with naive, primary, and multitypic baseline serotypes producing and not producing neutralizing antibody responses. The use of IQCs point toward the inherent variability of biological assays. A larger sample and more reproducible protocols & techniques must be used to make more conclusive statements about Dengvaxia’s power to produce neutralizing antibodies.