

PERSPECTIVE

Dengvaxia®: Prayers Answered or NOT?**Deepak Gupta**

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Dengvaxia is the first vaccine against dengue that has been developed after decades of toiling to tame the four-strain dengue virus. The questions have already been raised regarding its non-utility for the younger ones and the seronegative population due to ethical concern of non-maleficence (do-no-harm). It is not clear where this leaves the endemic populations suffering for decades from un-resolving morbidity and mortality burdens of dengue fever, and whether this worsens the dilemma of those populations' rattled-governments planning to ride the approaching bandwagons of mass vaccination programs against dengue. Irrespective, people and personnel living in dengue-endemic regions should welcome hands down this human endeavour to develop Dengvaxia, the first vaccine against dengue.

Keywords

Dengue Vaccines; Beneficence; Product Surveillance, Post-marketing; Government; Mosquito Vectors; Health Care Costs

MY PERSPECTIVE

Prayers (1) seem to have been answered. Dengvaxia (2-5) is here though not yet in Indian markets; and indigenous vaccine (6-7) is on the way though may take few years to get there. Anyhow, prayers (1) seem to have been answered.

Dengvaxia (2-5) is the first vaccine against dengue that has been developed by Sanofi Pasteur, a company from France, after decades of toiling to tame the four-strain dengue virus. Although it has been just few months since its recommendation by the World Health Organization in April 2016, the questions have already been raised (8-10) regarding its non-utility for the younger ones and for the seronegative population due to ethical concern of non-maleficence (do-no-harm). It is not clear where this leaves the endemic populations suffering for decades from un-resolving morbidity and mortality

burdens of dengue fever, and whether this worsens the dilemma of those populations' rattled-governments planning to ride the approaching bandwagons of mass vaccination programs against dengue. Anyhow in the times of calculative and comprehensive research methods, it would be only clearer in time during the phase IV (post-marketing) surveillance if Dengvaxia would turn into another trial-and-error scenario of the evolving armamentarium of human medicine. The key-point is post-marketing surveillance that means Dengvaxia would seem to be consumed by the endemic populations who all have been waiting for a ray of light in the dark whilst people around them including themselves have been suffering or dying due to un-restricted mosquito-rich environments and living conditions.

In a nutshell (2-5), Dengvaxia full-capacity production of 100 million doses per year (4) generating 1 billion per year in American dollars (USD) (5) seems to project a 30-USD burden for three doses over a period of one-year on behalf of each recipient of Dengvaxia. Although it will take a couple of years to recover the 1.7 billion USD investment of Sanofi Pasteur (5) into Dengvaxia seeing the light of day, it can be said with some certainty that for receiving Dengvaxia, each Indian recipient (or their government on their behalf) would seem to shell out around 2,000-3,000 Indian Rupees. Assuming the endemicity of Dengue encroaching into all Indian states since 2010-2012 period (11) shaping the supposed plans of Indian government to vaccinate 18-45 years age group (12), over 374 million at risk (20-44 years age group per 2011 census of India (13)) would seem to need over 1 billion Dengvaxia doses over a period of one-year costing about 10 billion USD to the collective group of purchasers in India. Assuming that Dengvaxia full capacity production for the world (100-million doses annually at 1-billion USD costs) is diverted to India, this 10-billion USD payout would seem to be spread across 10-year period that is much less than the annual global burden of 9-billion USD (4, 14) secondary to dengue and its complications.

Overall, everything will boil down to the balance of ethical principles (15): beneficence of using much-awaited vaccination against dengue and the dilemma to ensure justice when deciding to shell out billions of USD to achieve that beneficence. Irrespective, people and personnel living in dengue-endemic regions should welcome hands down this human endeavour to develop Dengvaxia, the first vaccine against dengue.

Authors Contribution

Deepak Gupta have contributed to (a) the conceptualization of this viewpoint, (b) drafting the article or resizing it critically for important intellectual content; and on (c) final approval of the version to be published.

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