

OPTIMAL VACCINATION AGE FOR DENGUE IN BRAZIL WITH A TETRAVALENT DENGUE VACCINE

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With the first vaccine against Dengue being licensed in several endemic countries an important aspect that needs to be considered is the age at which it should be administered. If the vaccine is given at young ages when individuals may still be protected by maternal antibodies it is ineffective, but if it is done later the infection may spread in the younger age groups. Additionally the risk of requiring hospitalisation due to an infection changes with the age of infection [1], which is influenced by vaccination. Finding the optimal vaccination age is further complicated by the possible coexistence of up to four distinct Dengue serotypes and the cross-reactions between these serotypes and Dengue antibodies.

We adapt a method due to Hethcote [2] previously applied to other infectious diseases and define the lifetime expected risk due to Dengue with respect to the risk of requiring hospital treatment which we then seek to minimize for a given three-dose vaccination strategy. Our results show that the optimal vaccination age highly depends on the number and combination of serotypes in circulation, as well as on underlying assumptions about cross-immunity and antibody dependent enhancement (ADE).

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References

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