Dengue: a hidden threat in blood transfusions amidst Brazil's largest outbreak?

The Newsdesk piece "Global upsurge in dengue in 2024"[1] highlights the alarming rise in dengue cases globally, with Brazil, the world's hardest-hit country, reporting the largest dengue epidemic in recorded history, with more than 6·5 million confirmed cases and over 5600 deaths as of early October, 2024.[2] Historically, dengue has been known primarily as a vector-borne illness transmitted through the bite of infected *Aedes aegypti* mosquitoes. However, emerging evidence suggests a neglected, but potentially concerning route of transmission: transfusion-transmitted dengue virus (TT-DENV), which poses a critical threat during outbreaks, especially in endemic countries like Brazil.[3]

We report six cases of dengue from two paediatric cardiovascular intensive care units (CICUs) in São Paulo (appendix). All patients were children who were transfused multiple times following cardiac surgeries for complex congenital heart diseases, during the peak of Brazil's current outbreak. Most patients developed fever and thrombocytopenia, and dengue infection was confirmed by NS1 antigen test and serology (IgM positive). There were four deaths, two of which were complicated by severe hepatitis and two by bacterial sepsis. Donors were not screened for dengue, although given the strict control measures in place against mosquito exposure in these CICUs, TT-DENV was the most likely source of infection.

These cases raise considerable concerns about transfusion safety during dengue outbreaks. TT-DENV has already been documented in previous epidemics, where dengue RNA-positive blood donations led to confirmed transmissions.[1] Studies have shown that asymptomatic blood donors with DENV viraemia represent a potential source of TT-DENV transmission.[3-5] Asymptomatic infections account for a substantial proportion of cases during large outbreaks, making them difficult to detect through routine screening.

Nucleic acid testing (NAT) has proven to be a more reliable method for detecting early-stage infections when viral load is present, yet widespread implementation of NAT remains limited in dengue-endemic regions.[3] With DENV viraemia rates reported in up to 5·5% of donors during outbreaks, it is imperative that we re-evaluate current blood safety protocols.[3] Given Brazil's status as a hotspot for dengue, we urge health authorities to prioritise the introduction of more rigorous blood screening measures during outbreaks, such as targeted NAT, to safeguard transfusion recipients. Failure to address this risk could result in a hidden epidemic of TT-DENV during dengue outbreaks in patients receiving blood products, particularly those who are more susceptible to severe disease.

We call for increased investment in blood safety protocols in dengue-endemic regions and further research to quantify the true incidence of TT-DENV. Proactive surveillance and enhanced screening methods are essential to protect vulnerable transfusion recipients during future dengue epidemics.

We declare no competing interests. Consent for publication of these data was waived by the ethics committees of both hospitals (Santa Casa de São Paulo Hospital and Beneficência Portuguesa de São Paulo Hospital).

*Flávia Jacqueline Almeida, Juliana Torres Pacheco, Camila Giuliana Almeida Farias, Samantha Faria de Matos, Camila Ohomoto de Morais, Giovanna Guazzelli Guerra, Anna Carolinne Corrêa dos Santos, Daniel Jarovsky, Rodrigo Freire Bezerra, Beatriz Helena Sanches Furlanetto, Danielle Bruna Leal Oliveira, Marco Aurélio Palazzi Sáfadi
flaviaja@gmail.com

Department of Pediatrics, Santa Casa de São Paulo School of Medical Sciences, 01221-020 São Paulo, Brazil (FJA, SFdM, COdM, ACCdS, DJ, MAPS); Department of Infectious Diseases and Pediatric Cardiovascular Intensive Care Units, Beneficência Portuguesa de São Paulo Hospital, São Paulo, Brazil (FJA, JTP, CGAF, SFdM, COdM, GGG, RFB, BHSF); Laboratory of Molecular and Clinical Virology, Institute of Biomedical Sciences, University of São Paulo, São Paulo, Brazil (DBLdO)

1 Venkatesan P. Global upsurge in dengue in 2024. *Lancet Infect Dis* 2024; **24:** e620.
2 Brazilian Ministry of Health. Arboviral infections. https://www.gov.br/saude/pt-br/assuntos/saude-de-a-a-z/a/aedes-aegypti/monitoramento-das-arboviroses (accessed Oct 31, 2024).
3 Limothai U, Tachaboon S, Dinhuzen J, et al. Dengue virus transmission risk in blood donation: evidence from Thailand. *J Med Virol* 2024; **96:** e29689.
4 Sabino EC, Loureiro P, Lopes ME, et al. Transfusion-transmitted dengue and associated clinical symptoms during the 2012 epidemic in Brazil. *J Infect Dis* 2016; **213:** 694–702.
5 Kulkarni R, Tiraki D, Wani D, Mishra AC, Arankalle VA. Risk of transfusion-associated dengue: screening of blood donors from Pune, western India. *Transfusion* 2019; **59:** 458–62.

Published **Online** November 29, 2024 https://doi.org/10.1016/S1473-3099(24)00795-3

See **Online** for appendix