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Blood test predicts kids at risk for dengue shock syndrome

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The most serious, life-threatening complication of dengue infection is dengue shock syndrome (DSS), seen primarily in children. Daily platelet counts in children in the early stages of dengue can predict those most at risk for DSS, researchers report in *PLOS Neglected Tropical Diseases*.

More than a third of the world's population lives in areas at risk for dengue virus infection, a mosquito-borne illness caused by any of four related viruses. Most of the hundreds of millions of people a year who catch the virus recover after a few days of aching and fever, but in some cases, the disease can cause more severe complications. In children particularly, dengue can progress to dangerous DSS when plasma leaks out of small blood vessels.

In the new work, Phung Khanh Lam, of the Oxford University Clinical Research Unit, Vietnam, and colleagues followed 2,301 children aged 5 through 15 admitted to the Hospital for Tropical Diseases in Ho Chi Minh City for suspected dengue between 2001 and 2009. Daily blood counts, together with vital signs, symptoms, and physical exam information at presentation, were available for each child, all of whom were enrolled in the first four days of the onset of symptoms. The researchers analyzed which factors were associated with a greater risk of developing DSS.

Among the children in the study, 143 (6 percent) progressed to DSS. Risk factors present at enrollment that boosted a child's risk of later developing DSS included a history of vomiting, higher temperature,

palpable liver, and a lower platelet count. Moreover, daily platelet counts, as well as changes in platelet counts over time, helped discriminate patients who went on to develop DSS. However, the model created based on these results has only moderate predictive value in identifying all patients who go on to get DSS and more research is needed to determine other factors that may be integrated into a more clinically useful prediction model.

"Although the study was performed among hospitalized children... the findings may be applicable to the population of children now managed as outpatients during the early phase of their illness in many large cities across southeast Asia," the researchers say. "The findings reinforce the view that in the early febrile phase dengue is typically a rather non-specific illness, but also provide strong support for the WHO recommendation to perform daily full blood counts in order to monitor the platelet count closely in these patients."

More information: Lam PK, Ngoc TV, Thu Thuy TT, Hong Van NT, Nhu Thuy TT, Hoai Tam DT, et al. (2017) The value of daily platelet counts for predicting dengue shock syndrome: Results from a prospective observational study of 2301 Vietnamese children with dengue. *PLoS Negl Trop Dis* 11(4): e0005498. DOI: 10.1371/journal.pntd.0005498