## **Comments on "Dengue management in triage using** ultrasound in children from Cambodia: A prospective cohort study"

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## Dear Editor,

Some of us, coping with severe dengue (SD) on a daily basis, have questions concerning the report, "Dengue Management in Triage using Ultrasound in children from Cambodia: a prospective cohort study."1 During 2018–19, at the Siem Reap hospital out-patient department, the authors identified 252 children with acute dengue who were given thoracic and abdominal ultrasound examinations by trained sonographers. Ultrasound results were withheld from physicians who subsequently admitted 37 and discharged 215 patients. Of children initially admitted to hospital, (62.2%) had ultrasound abnormalities compared with 2.0% (42 of 215) in children sent home. During the next 7 days, 42 discharged patients revisited the clinic or were admitted to hospital with dengue. On initial visit, 12 of 42 (30%) had a thickened gallbladder wall (> 3.0 mm) compared with 17% (30/173) of those with no revisit (P < 0.01). The authors concluded that point-of-care ultrasound findings, particularly gallbladder wall thickening, in children with early dengue can help predict disease progression in ambulatory patients. Do they?

Ultrasound is in long use searching for evidence of dengue vascular leakage. However, a recent review of 12 studies found only one provided a well-balanced accuracy of ultrasound detection of SD.<sup>2,3</sup> The positive predictive value of ultrasound detection of SD corresponded to that of WHO 2009 warning signs with a <25% predictive value. Also, SD is notoriously affected by epidemiological variables. A review of 177 dengue studies observed that positive findings were usually obtained on hospitalized patients with an already established clinical diagnosis.<sup>4</sup> They noted the clinically relevant pathology in dengue is not pulmonary edema but vascular permeability detected

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as serous effusions, gall bladder wall thickening and/or a thin rim of pericystic fluid. Ultrasound could have early prognostic value in dengue. But, its utility is challenged by limited data describing how findings have influenced management decisions. Less than one-third of published studies described patient outcomes. Studies also failed to characterize ultrasound as an independent predictor of morbidity or mortality. No standard protocol for ultrasound examination of dengue cases has been proposed. In our practice in Sri Lanka an ultrasound examination of pleural and peritoneal spaces is routine in haemodynamically unstable patients with positive dengue NS1 and those with falling platelet counts or with counts below  $100 \times 10^9$ /liter. An international effort is needed to determine the usefulness of ultrasound in different settings by evaluating standardized ultrasound examinations in the context of the patient's pathophysiological status.

## Declaration of interests

All authors disclose no financial and personal relationships with other people or organizations that could inappropriately influence their work.

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