Regarding "Dengue—How Best to Classify It"

To the Editor—The 2009 World Health Organization (WHO) revised dengue classification has been welcomed by many and questioned by some [1]. Since the 1980s, a broad consensus has developed among the clinical dengue community that the dengue fever (DF)/dengue hemorrhagic fever (DHF)/dengue shock syndrome (DSS) classification was both essentially retrospective and overly complex, limiting its usefulness for patient management and global surveillance [2–8]. Following calls for revision of the system, evidence including data from a large prospective study enrolling >2000 patients across 7 endemic countries was reviewed at an expert meeting convened by WHO in 2008, after which the new, simpler classification was adopted. Since then, other studies have looked at the effectiveness of the revised classification in a number of hospitals in different countries [9–11].

A recent Viewpoints article published in this journal outlines the case for retention of the 1997 DF/DHF/DSS classification [12]. We agree with the authors on several points—in particular, that although dengue is a dynamic and multifaceted disease, altered capillary permeability is a critical feature of severe disease and must be identified promptly and managed appropriately—but feel that certain clarifications are warranted.

First, the inclusion of severe organ involvement as the third criterion for severe dengue does not shift attention away from plasma leakage. The term *dengue shock syndrome* is retained and listed first, focusing attention on altered capillary permeability, plasma leakage, and shock as the primary manifestations of severe disease. The inclusion of severe organ involvement gives clinicians the opportunity to report cases that were previously ignored and helps describe the full extent of severe syndromes associated with infection. This is particularly important as dengue spreads to new geographic areas and the clinical picture diversifies.

Second, the authors appear to use the terms *case classification* and *case definition* interchangeably. DHF is clearly a highly specific syndrome and in the past has often been used as a surrogate for dengue diagnosis in the absence of laboratory confirmation. However, it has been repeatedly shown that the DHF/DSS classification misses approximately 20% of confirmed dengue cases with shock [6, 13, 14], and when used as a case definition, the associated sensitivity was only 36% in a recent assessment by the same authors [14]. The authors also express concern that the presence of warning signs might be used alone as diagnostic criteria, thereby overloading local healthcare systems in endemic settings. However, the new system makes clear that when no signs of plasma leakage are present, laboratory confirmation of dengue is important [1]. Improvements in early diagnosis and risk prediction for severe disease are

undoubtedly needed and research efforts in this area are ongoing.

Clinicians have long since wanted a classification that reflects clinical severity in real time. We believe the revised case classification with its simplified structure will facilitate effective triage and patient management and also allow collection of improved comparative surveillance data. Change is often difficult, but with commitment to research focused on improving early diagnosis and risk prediction, it should be possible to harmonize the new scheme globally across all epidemiological settings. The requirements of clinicians and public health officials dealing directly with the global pandemic are clearly paramount, but efforts are also being directed toward development of tighter definitions of severe phenotypes for basic science research.

Notes

Financial support. This work was supported by the DENCO Project the (European Union 6th Framework Programme, grant 517088) and the IDAMS Project (European Union 7th Framework Programme, grant 281803).

Potential conflicts of interest. All authors: No reported conflicts.

All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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Clinical Infectious Diseases 2012;54(12):1820–1

DOI: 10.1093/cid/cis328