Am. J. Trop. Med. Hyg., 87(6), 2012, p. 1153
doi:10.4269/ajtmh.2012.12-0309b

In Response

Dear Sir:

We would like to thank Hsu and others for their sincere response[1] to our short review on geographical information systems (GIS) for dengue surveillance[2]; they raised a number of important points that we would like to address.

First, we disagree with the statement by Hsu and others that we support using GIS in isolation to improve dengue surveillance. Dengue control is a complex problem requiring a multifaceted solution, including the use of open access GIS technology for surveillance and response, particularly in developing countries where resources are limited. Although GIS is often viewed as a "mirage of technology,"[3] it offers practical solutions that may assist countries with surveillance challenges.[4] For example, developing local level spatial decision support systems (SDSSs) enables targeting of control programs in specific areas. In Vanuatu in 2009, a SDSS was developed to guide indoor residual spraying for malaria elimination at the household level[5]. At national and regional scales SDSSs can facilitate data collection and reporting standardization for coordinated control strategies. Critically, SDSSs provide constant feedback within the system to ensure that maps are available to support resource allocation decisions. They are also flexible and may be adapted to the changing needs of decision makers.[6]

We agree that decentralizing health systems can confuse institutional responsibilities, resulting in untimely and inaccurate disease surveillance.[7] During our recent field work in the Philippines, for example, we noted that local governments were responsible for weekly collection of dengue case data from hospitals and clinics. The data was then transmitted to the National Epidemiology Center (NEC), where it was analyzed and returned to local governments for action. However, NEC was severely under-resourced and the turn-around time was beyond effective intervention at the local level. These challenges are not unique to the Philippines and despite calls for worldwide disease surveillance to be overhauled,[3] there has been minimal progress towards the development of integrated sub-national surveillance systems.

Finally, we acknowledge the difficulties in sustaining effective international collaboration over time. Political disputes, economic inequalities, and the division of the Asia-Pacific region into two World Health Organization offices (Western Pacific Regional Office and South East Asia Regional Office) has hindered cooperation between dengue-affected countries in the past.[8] However, as dengue emerges as a global public health threat, sharing knowledge and information between neighboring countries to develop solutions for improved surveillance and response is paramount.[9,10]

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