Utilising additional sources of information on microcephaly

When the Zika virus outbreak was declared a Public Health Emergency of International Concern on Feb 1, 2016, the WHO International Health Regulations Emergency Committee made several recommendations. One of them was for increased research into the aetiology of clusters of microcephaly and its link to Zika virus.[1] Quantification of microcephaly incidence is now a pressing requirement to estimate the proportion of cases that might be attributable to Zika virus infection. However, most countries that are at risk of Zika virus transmission because of the presence of *Aedes* mosquitoes have weak health-care systems and even weaker surveillance systems. In particular, they do not have detailed death registers for neonates or systematic reporting of head circumference for births. Therefore, it is important to piece together all available historical evidence to understand the current situation.

In this context, we commend the efforts of the Paediatric Cardiology and Perinatology Network from Paraíba in northeast Brazil. Their retrospective analysis of head circumference from 2012–15 data suggests that the incidence of microcephaly in Paraíba, even with conservative criteria, has exceeded 200 per 10 000 births since late 2012, well before the apparent onset of the Zika virus outbreak in 2015.[2] By contrast, a series of 360 births with microcephaly in Missouri, USA, in the 1990s amounted to a population incidence of 7 per 10 000 births.[3]

What other apparently unrelated data sources might also contain important information? As far back as 2007, WHO introduced into international verbal autopsy standards the question "did the baby have a very small head?",[4] which has since been used in many verbal autopsy interviews in countries with *Aedes* mosquitoes. Many of these symptom-level datasets are not in the public domain, but we analysed public data from the Population Health Metrics Research Consortium (PHMRC),[5] which were collected on a standardised multicentre basis at six tertiary facilities in Mexico, the Philippines, India, and Tanzania, almost entirely during 2009. Of 2506 neonatal deaths, nine cases of microcephaly were reported, corresponding to 35 per 10 000 births across all sites.[5] On closer examination, four of 310 deaths (130 per 10 000 births) were from the PHMRC centre in Mexico, whereas centres following the same study protocol in India, Tanzania, and the Philippines collectively reported a significantly smaller proportion (five of 2196 deaths; 23 per 10 000 births; p=0·003). In a national population-based verbal autopsy survey (part of the Demographic and Health Survey) in Afghanistan in 2010, five cases of microcephaly were reported in 1607 neonates, corresponding to 31 per 10 000 births—similar to the rate reported in PHMRC facilities excluding the one in Mexico.[6]

All of these numbers are small and provide only fragmentary evidence. However, in the light of increased microcephaly rates recently reported in Brazil (February, 2016),[2] in the years before the recognised onset of the Zika virus outbreak, such data still deserve to be reported. There might be confounding factors that need to be considered, and verbal autopsies, by definition, are not clinical assessments. Nevertheless, all available fragments of relevant past data need to be forensically re-assembled. Has there been an ongoing background of microcephaly in Latin America (eg, in Mexico) that might be attributable to Zika virus infections? Individual fragments of evidence from the past might be unsubstantial, but the present Zika virus outbreak should act as a stimulus for enhanced action to curate and aggregate all available data and thus to inform necessary strategies.

We declare no competing interests.

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