WHO meeting thrashes out R&D strategy against Zika

WHO convened a multidisciplinary consultation last week to identify the tools and interventions needed to outsmart the Zika epidemic. John Maurice reports from Geneva.

The large meeting room fell silent as Brazilian epidemiologist and infectious disease researcher Celina Turchi spoke of her first encounter with the Zika epidemic. Listening to her were some 150 experts from 27 countries invited by WHO to discuss what tools will be needed to combat the epidemic. Last August, the Brazilian health minister sent Turchi to the coastal city of Recife, northeastern Brazil, to investigate reports of an unexplained increase in cases of Zika infection. What she found was a baffling cluster of babies born with small heads and other deformities. "The staff had seen the occasional case of this microcephaly in the past but not in clusters of four, five, six babies in each hospital, and not with the deformities we were seeing. The babies had not only small heads but also misshapen hands and feet, and neuroimaging scans showed massive calcification of the brain. In my entire career I have never witnessed such a clinical picture. We were facing a new phenomenon and a potential public health disaster."

As of March 10, Brazil has reported more than 6000 cases of microcephaly and other forms of central nervous system malformation. The evidence from 745 of these cases puts the blame convincingly on the Zika virus as the prime cause. In a statement on March 8, WHO Director-General Margaret Chan said "we can now conclude that Zika virus is neurotropic, preferentially affecting tissues in the brain and brain stem of the developing foetus". Evidence is also mounting of a link between the Zika virus and an increased incidence of Guillain-Barré syndrome observed in nine countries, including Brazil.

There was a clear consensus among meeting participants that a vaccine against Zika was sorely needed, mainly to protect women of childbearing age, especially pregnant women. Joachim Hombach, senior adviser of WHO's vaccine research programme, told the meeting that 23 projects are currently being worked on by 14 vaccine developers, of which seven are headquartered in the USA, three in France, two in Brazil, one in India, and one in Austria. "The field is evolving quickly", Hombach told *The Lancet*. "But none of the vaccine projects has reached the clinical testing stage. It is difficult to predict when we will have a vaccine but we are confident that some candidates will be in clinical evaluation by the end of this year." Several discussants pointed out that by the time a vaccine comes on the market, the current wave of the Zika epidemic will probably have petered out in many places as more and more people become infected and acquire immunity to the virus. The vaccine, however, could be used to prevent further waves of infection.

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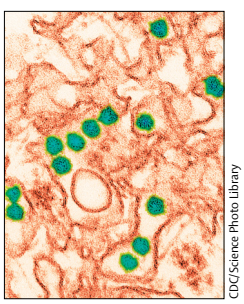
Jorge Kalil, head of the Butantan Institute, a major vaccine producer in Brazil, mentioned obstacles that could slow efforts to make a Zika vaccine. "One complication is that we need a vaccine that will be safe for a pregnant woman and her fetus without triggering the onset of Guillain-Barré syndrome, which is caused by an auto-immune mechanism. Another is the choice between making a very safe vaccine that uses a killed Zika virus but elicits a relatively weak degree of immunity, or making a potentially more risky vaccine that elicits a strong immune response by using a live attenuated virus. We are working on the safer inactivated vaccine."

A more urgent need than a vaccine, many participants agreed, is for a reliable, point-of-care diagnostic test. After his presentation to the meeting, Bill Rodriguez, chief medical officer of the Swiss-based Foundation for Innovative New Diagnostics, spoke to *The Lancet*. "What we desperately need is a rapid test as easy to use as a pregnancy test that, by measuring the level of virus-specific IgG and IgM antibodies, tells us which of three closely related viruses, namely Zika, dengue, or chikungunya, is or has been infecting a patient. We also need a test based on Zika RNA to diagnose acute Zika infection." At least 18 companies are working on such tests. Ten are in Europe and the rest in Australia, Brazil, China, India, Israel, Japan, South Korea, and the USA.

Meeting participants heard of another need. A systematic review about to be published of studies done since 1980 on dengue vector control found many that assessed the effectiveness of insecticide fogging (area spraying) in reducing mosquito populations but not a single study was found that evaluated the effectiveness of the fogging in reducing the transmission or incidence of the disease.

Towards the end of the meeting, delegates representing the major regulatory agencies in the USA, Europe, and Brazil, committed to putting Zika-related products on a regulatory fast-track. They also agreed that instead of waiting, as they usually do, for manufacturers to approach them, they would take the initiative and approach companies working on promising products. Their gesture, in a sense, encapsulates the success of the meeting in bringing together so many minds from so many disciplines to focus, for 3 intensive days, on a single issue of vital importance.

John Maurice



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