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From Brazil to Singapore: Containing Zika in Southeast Asia

By Celina Y. Loyzaga

Synopsis

On 13 May 2016, Singapore's Ministry of Health (MOH) and the National Environmental Agency (NEA) reported Singapore's first imported case of the Zika virus. Although the case of patient zero is likely to be a one-off instance, Singaporeans and ASEAN nations alike should be concerned about the implications and consider upcoming medical technologies to curb the spread of the disease.

Commentary

GIVEN EXTREME weather patterns affecting Southeast Asia, states are now more susceptible to outbreaks of vector diseases. The region is currently in transition from the dry, El Niño season to the wet, La Niña period. In particular, the transition from dry to wet weather brings about days of extreme heat and torrential downpour. Stagnant rainwater deposits provide the perfect breeding grounds for the *Aedes aegypti* mosquito, which carries not only Zika, but dengue, yellow fever, and chikungunya as well.

Only a certain percentage of Zika-affected patients exhibit symptoms that are milder than that of dengue. These include, but are not limited to rash, fever, and joint or muscle pain. While the virus is barely noticeable in some, it is gravely detrimental to others. In adults Zika has been related to cases of Guillain-Barre Syndrome, and in pregnant women there is a strong scientific consensus that Zika is linked to fetal microcephaly: a disease that causes debilitating brain defects in babies.

Social factors in Spread of Zika

Since the Zika virus takes time to exhibit symptoms, if any at all, temperature checks

at regional airports implemented during the Severe Acute Respiratory Syndrome (SARS) epidemic remain impractical to catch the virus. This will pose challenges in monitoring and tracking the emergence of the virus within the region. In order to counter surveillance difficulties, rapid diagnostic testing through advanced medical technologies will be key to containing the spread of Zika.

Difficulties in disease surveillance compounded during changes in seasonal temperatures point to the likelihood that the Zika virus will be established within ASEAN. At which point, preparedness will be vital to curb social anxiety and the spread of the disease in this sub-tropical region.

The social risks of the Zika virus are particularly dire to poorer communities located in jam-packed urbanised ASEAN mega-cities. Tight communities, with poor infrastructure and sanitation services provide the enabling breeding grounds for spread. What is more, education on the spread of Zika is vital as the disease can also be sexually transmitted. Marginalised communities in ASEAN like those in Latin America are therefore likely to bear the brunt of the effects of the disease.

That said, ASEAN communities, inspired by Singapore have lead-time to prepare and mitigate disease spread. Strengthening and building up defences in the public health infrastructure in addition to environmental monitoring can ease social tensions, and will undoubtedly better mitigate Zika within the region.

Economic Risks

Without curbing social tensions, economic risks of the Zika virus can shock the region like that of the SARS epidemic. Regionally, a direct downturn in tourism and flight revenues can be expected to disturb economic growth. In addition difficulties in the surveillance of Zika can lead to transparency issues that are vital to the business making process. For example, if a country cannot tell investors whether or not there is an epidemic, this lack of information demonstrates uncertainty amongst investors and hinders the reputational risk of national companies.

Nationally, the economic cost of Zika will undoubtedly put pressure on healthcare systems that are already overburdened by limited funding and the number of patients they need to serve. Further, the economic burden of the virus will be directly borne by Zika-affected families. Raising children with microcephaly and other brain and developmental defects are expensive, and costs arguably escalate depending on the severity of the disease.

Time for Regional Cooperation on Zika?

Yes. Now that Singapore has joined other ASEAN countries like Vietnam, Cambodia, Indonesia, and Philippines in identifying Zika cases within the last year, all regional nations need to be on high alert. With extremely porous national borders and the change in weather patterns, disease spread within the region can easily be on the rise. It is imperative that ASEAN member states collaborate now that the virus is still contained.

In order to jumpstart collaboration national governments and national healthcare

institutions in countries where Zika is found need to frame the virus as a security threat to the region. In turn, this should mobilise country representatives in the ASEAN Working Group on Pandemic Preparedness and Response (APWGPPR). For its part the APWGPPR needs to overcome operational constraints by considering medical technology innovation as a way to rapidly diagnose the Zika virus.

This past week Jim Collins, professor of biological engineering at MIT and his team successfully adapted a paper-based diagnostic test for Zika that was previously used to diagnose Ebola in 2014. In their scientific paper, the inventors of the paper-based test showed that their invention can distinguish not only between Zika and dengue, but also identify differentiated Zika strains. This is critical to healthcare workers as genetic variations of Zika could mean different symptoms for patients.

For example, in the case of a strain in Brazil, specialists behind the paper-based diagnostic test have indicated that a certain strain of Zika has a higher incidence of microcephaly and Guillain-Barre than others. According to the specialists, the diagnostic test can: process a sample in approximately three hours, be kept in room temperature for up to a year, and costs less than US\$1 to make. This type of efficient, cost effective, and climate friendly diagnostic test would be vital to tracking Zika within ASEAN.

ASEAN governments may want to allocate funds for this paper-based rapid test, as it can be valuable tool for healthcare workers in more remote and underdeveloped parts of the region where complicated diagnostic technology is unavailable. Professor Collins and his team assert that their test could be ready for use in a matter of months. If ASEAN nations invest in such technologies, use of such products could just be in time to avoid the Southeast Asian spread of the Zika epidemic.

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