

Dengue Case Can Be Predicted by Modelling


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Dengue is a disease caused by virus infection from flavivirus genus that spreads from human to human through Aedes mosquito bites. Yogyakarta is a province in Indonesia that has problems in dengue transmission control. According to the Health Ministry since 2004 -2013, the province ranks third nationally with incidence rate (IR) of 95.99 per 100 thousand people, far below the national target of 51 cases.

Three areas Yogyakarta municipality, Sleman and Bantul regencies are areas with high IR. Agus Kharmayana Rubaya studied 206 villages/districts in those three areas which showed that 31 villages and districts are identified as having high risk, 28 medium risk, and 147 low risk.

In his opinion, the group that has high risk of dengue transmission, weather has important role in predicting the number of case that will occur. Temperature, precipitation, and humidity are very influential. "Temperature corresponds to the acceleration of larvae growing into adult mosquito so it affects the early infeksi and increased number of average bites," he said during his doctoral promotion at Faculty of Medicine, Public Health, and Nursing on Tuesday(17/7).



In his dissertation, Agus mentions the characteristics of areas correlate with areas that have dengue transmission risk. Urban areas with high population density has bigger risk than rural areas with lower population. “This confirms and enhances such factor correlating with the dengue transmission,” he said.

For high and medium risk areas, through model of area based risk mapping, the number of case in certain months can be predicted linearly based on the the number of case in the same months of the previous year. For low risk areas, it shows that the incidence rate in certain months can be predicted linearly according to the 12 month seasonal patterns.

He opined that dengue control was closely related with people mobility between areas, hence multi-analysis approach needs to be taken across regencies and cities.

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