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using a pretested questionnaire. Personal and food risk factors for Yf were assessed. An observational checklist was applied to respondents' houses to assess housing and environmental risk. Data analysis was done using chi-square test and multivariate logistic regression. Statistical significance was set as  $p < 0.05$ . Ethical considerations were addressed.

**Results:** Two hundred and thirty-four (97.5%) had ever heard of yellow fever, with 42 (17.5%) having poor knowledge and 198 (82.5%) good knowledge. Two hundred and thirty-four (97.5%) were aware of the Yf vaccine. In multivariate analysis, occupation was significantly associated with knowledge of Yf (Adjusted odds ratio (AOR) = 0.51, 95% CI [0.33–0.78]. Majority, 225 (93.8%) had good attitude towards Yf prevention. Attitude was not associated with any demographic variable. One hundred and forty-nine (62.1%) were not sure of the vaccination status of household members. Personal risk factors included non-ownership of bed net 123 (51.2%), poor or non-use of bed net among those who owned one, 73 (62.9%) and infrequent covering of arms and legs when outdoors, 168 (70.0%). Prevalence of household risk factors included over-grown bushes near dwelling 70 (30.0%), un-netted windows, 29 (12.1%), uncovered water storage container 4 (1.7%). Seventeen (7.1%) respondents did not regularly spray their houses with insecticides. Thirty-four (14.2%) households farmed at the outskirts of the community.

**Conclusion:** Although knowledge and attitude towards Yf was high, intensified health education and behavioural change communication are necessary to reduce risk practices.

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### The race between contact tracing and transmission: A framework for resource allocation during an emerging pathogen epidemic

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**Background:** The epidemics of severe acute respiratory syndrome (SARS) in Hong Kong generates the need to evaluate the effectiveness of control measures. Hong Kong is a densely populated international city with strong communication links between residents which facilitate the rapid spread of infectious diseases. In the early phase of outbreaks, contact tracing followed by quarantine or isolation is an important infection control measure. However, it may not be achievable to trace all contacts with limited resources in a short period of time. Given that resources were top stretched to the limit over a short period of time in early phase of outbreak, resources need to be prioritized and allocated to trace number of identified physical contacts.

**Methods and materials:** An individual-based mathematical model was developed alongside a resource-constrained contact tracing process for SARS outbreak. We assumed that the outbreak is uncontrolled if the cumulative number of severe/death cases is

more than the number of intensive care unit beds in Hong Kong. This simulation environment was tested in scenarios that reflect both actual uncertainties of SARS. We estimate the likelihood to control the outbreak by varying (1) the maximum number of individuals to be traced (2) the proportion successfully to be traced (3) start time to implement the contact tracing since the start of the epidemic.

**Results:** Given 100% of contacts traced and duration of quarantine of 2 days, varying the resources for the maximum daily number of contacts traced from unlimited to one, the latest start time to implement the contact tracing since the start of the epidemics to ensure at least 95% confidence to control the disease changed from Day 22 to Day 12. Reduction of successful contacts traced to 50% with unlimited resources, the probability of disease containment dropped substantially to ~28% if contact tracing still started on day 22. Contact tracing was shown to be ineffective if only 1 contact was traced per day with 50% proportion successfully to be traced.

**Conclusion:** An improved understanding of the transmission dynamics of the SARS outbreak under different scenarios of contact tracing approach helps design the optimal control strategies with the given resources to control new emerging disease in the future.

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### The emerging role of measuring and quantifying infectious disease preparedness: A comparative analysis of four public health preparedness metrics

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**Background:** The rapid and sustained outbreak transmission in the West African Ebola virus disease outbreak in 2014–15 was preceded by significant health systems weaknesses in the three most affected nations; Guinea, Liberia, and Sierra Leone. The gaps in public health preparedness were missed, in part as a result of absence or limitations of the then existing preparedness measurement tools.

