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High proportion of asymptomatic and presymptomatic COVID-19 infections in travelers and returning residents to Brunei

Highlight

We report early findings from COVID-19 cases in Brunei suggesting a remarkably high proportion of asymptomatic (12%) and presymptomatic (30%) cases. This proportion was even higher in imported cases. These have implications for measures to prevent onward local transmission and should prompt reconsideration of current testing protocols and safe de-escalation of social distancing measures.

Main text

Asymptomatic transmission of SARS-CoV-2 could complicate disease control, yet robust evidence on such transmission is lacking. Reports have described clusters arising from asymptomatic transmission.¹ Estimates of the asymptomatic proportion of COVID-19 infections range from 17.9% to 30.8%.^{2,3} Given the urgency of knowing the proportion of

asymptomatic and presymptomatic COVID-19 cases, we share initial findings from analysis of the first 138 confirmed cases in Brunei Darussalam.

COVID-19 surveillance in Brunei (pop. 459,400) is mandatory by law. All individuals with a) contact history; b) travel history regardless of symptoms (since March 21); c) pneumonia; or d) present a second time at a healthcare facility for an influenza-like illness within a 14 day period, must undergo reverse transcriptase polymerase chain reaction (RT-PCR) testing via nasopharyngeal (NP) sampling. All SARS-CoV-2 positive patients are admitted and isolated until viral clearance. We can thus distinguish between patients who remain asymptomatic until viral clearance (hereafter referred to as 'asymptomatic') and those who were asymptomatic at diagnosis but later developed symptoms (hereafter referred to as 'presymptomatic').

Brunei detected its first case on March 5. As of April 24, Brunei has reported 138 cases. We found 16 (12%) cases were asymptomatic and 42 (30%) were presymptomatic. Figure 1 indicates that all local transmissions had a relevant contact history, therefore short serial intervals suggest presymptomatic transmission. We estimate Serial Interval (SI) (defined as the difference in symptom onset dates between secondary and index case) for 53 symptomatic infector-infectee pairs. 21 (39.6%) had a SI of ≤ 3 days and 6 (11.3%) had zero or negative SI values, suggesting potential infectivity when asymptomatic (minimum SI is -4 days). The median incubation period is 4.5 days.

Since the start of outbreak in Brunei, 55 cases were imported. Of these 19 (35%) were presymptomatic, and 7 (13%) were asymptomatic. From March 21 (when mass testing for all arrivals to Brunei commenced) until April 24, 1,396 arrivals were tested and isolated for 14 days. Of these 30 (2.15%) tested positive for SARS-CoV-2, 11 (0.8%) were presymptomatic, and 3 were asymptomatic (0.3%) suggesting that nearly half of all imported cases (or 1% of all travelers) do not have symptoms at time of diagnosis. Our finding of a 2.15% infected rate in all travelers is lower than the 3.6% - 6.3% observed in repatriation flights to Greece,⁴ but higher than the 0.87% observed in flights from Wuhan at the peak of the epidemic there.⁵

These findings have several implications. First, the high level of asymptomatic and presymptomatic imported cases suggests that symptom-based screening at points of entry may miss silent chains of transmission. To account for this, a number of countries have implemented 14-day quarantine periods for travelers, however these may be unsustainable in the long-term.⁶ In the absence of widespread vaccination, the development of an accurate

rapid test kit that can identify early disease and its widespread adoption at points of entry for travelers from high-risk areas regardless of symptoms should be considered as an interim measure.

Second, many countries that have implemented enhanced physical distancing measures, are now preparing for relaxation. Our findings suggest that this cannot be safely accomplished until the relevant infrastructure is in place for large-scale community-based testing, including the capacity for testing individuals without symptoms.

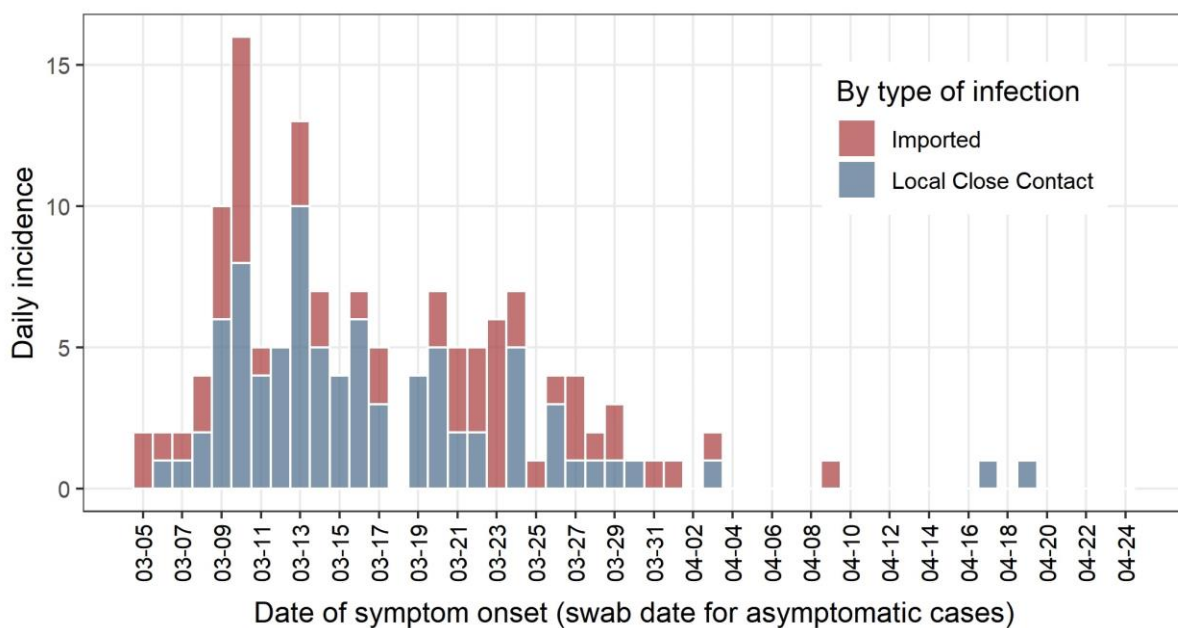


Figure 1: Epidemic Curve, 138 cases in Brunei Darussalam (5-Mar to 24-April, 2020)

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