http://dx.doi.org/10.5588/ijtld.20.0169

CORRESPONDENCE

Adapting a TB contact investigation strategy for COVID-19

T-A. Nguyen,[1,2] Q. N. Cuong,[3] A. L. T. Kim,[4] T. N. Huong,[5] H. N. Nguyen,[6] G. J. Fox,[1,2] G. B. Marks[1,7]

[1]Woolcock Institute of Medical Research, Hanoi, Viet Nam; [2]Sydney School of Medicine, Faculty of Medicine and Health, The University of Sydney, Sydney, NSW, Australia; [3]Save the Children International, Vientiane Capital, Lao PDR; [4]Hanoi University of Public Health, Hanoi [5]Strategic Consultancy Company, Hanoi, Viet Nam [6]National Hospital for Tropical Diseases, Hanoi, Viet Nam; [7]University of New South Wales, Sydney, NSW, Australia

Correspondence to: Nguyen Thu Anh, Woolcock Institute of Medical Research, 298 Kim Ma, Ba Dinah, Hanoi, Viet Nam e-mail: thuanh.nguyen@sydney.edu.au

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Article submitted 21 March 2020. Final version accepted 24 March 2020.

Dear Editor,

The virus SARS-CoV-2 may be transmitted from person to person, mainly via respiratory droplet or touching of the nose, mouth and eyes after contact with contaminated surfaces.[1] While symptomatic patients are believed to be most contagious, transmission from asymptomatic people may still occur.[2]

Contact investigation is an important strategy to detect and isolate infection sources and reduce continuing transmission.[3,4] This technique has been used to control transmission of other infectious respiratory diseases such as tuberculosis,[5] MERS CoV[6] and SARS.[7]

Viet Nam appeared to successfully control the first COVID-19 outbreak up to 13 February 2020, when all 16 cases detected had recovered. However, since 2 March 2020, a second outbreak has been ongoing related to the arrival from abroad of several COVID-19 cases who have spread the virus to their contacts. In an attempt to contain the outbreak, 28,979 people were put under quarantine or isolation, 4,588 people have been tested and a total of 44

confirmed cases have been identified.[8] Contact investigation has been initiated to collect information on close contacts within 14 days of the index event. A confirmed case who has a RT-PCR positive test result for SARS-CoV-2 is quarantined at hospital. A suspect case, who has respiratory symptoms and an epidemiological risk factor, is tested for SARS-CoV-2, and put under 14-day quarantine and symptoms monitored. Close contacts, who have been exposed to a confirmed or suspect case had to self-isolate for 14 days.[9]

Experience from the contact investigation indicates some gaps, which could be addressed to maximise the effectiveness of the contract investigation. Inappropriate quarantine discharge could occur among patients who have an initial negative test for SARS-CoV-2 and may subsequently test positive. An example of this is a person who was discharged from hospital after the first negative test result, who later became positive and transmitted the virus to her close contacts.[10] Transmission could also occur prior to contact investigation being performed. For example, Case B had returned from the United States for 8 days and then visited a local hospital with unresolved respiratory symptoms and tested positive for SARS-CoV-2.[8] Over the intervening period, Case B had transmitted the virus to eight primary and four secondary close contacts.[8] Unfortunately, the patient had not reported all the places she had visited or all the people she met: initially she reported close contact with 17 people; after a few days treatment she reported 31 close contacts; and a further six days later she reported a total of 42 close contacts and 141 other contacts. This resulted in delays to the investigation. In settings of limited community transmission, contact investigation may be sufficient initially. However, once the epidemic has started to expand, large-scale contact investigation becomes infeasible. The current testing strategy would thus not detect community transmission. In practice, it is difficult to identify when this stage is reached.[8]

Learning from the above challenges, as well as our extensive experience in investigating close contacts with TB patients,[5] we propose a strategy for SARS-CoV-2 screening and contact tracing in settings with low levels of community transmission (see Figure).

First, three generations of contact (F) with COVID-19 cases should be traced to offer timely testing if the previous contact generation is found positive. This algorithm starts with the first generation (F1) who are close contacts of the index case (F0). All F1 contacts should be tested for SARS-CoV-2 regardless of symptom presentation. F1 individuals who are asymptomatic or have two negative tests 24 hours apart should be quarantined for 14 days. Case B's contact tracing as described above suggests that the investigation should go beyond F1, and to people who have close contact with F1 (F2). F2 contacts should self-isolate at home and be monitored by public health units. If F1 tests positive, we recommend that F3 contacts should

also be identified. When the previous F becomes positive, the next one will be informed to follow the contact management procedure. Because all F generations are made aware of the risk, they should implement prevention measures in a timely manner.

Second, people who present with respiratory symptoms at health clinics or pharmacies should be carefully evaluated. They should be tested for SARS-CoV-2 if they have a history of exposure to people with COVID-19, or unresolved respiratory symptoms, or a radiological evidence of bilateral interstitial pneumonitis. Those testing positive should be isolated and a contact investigation should be initiated. Those initially testing negative should be isolated until a second test indicates a negative result.

Although this strategy is recommended for locations with limited community transmission, it is difficult to identify when widespread community transmission is underway until it is too late. We suggest universal implementation of social distancing to maximise the efforts in slowing the spread of SARS-CoV-2. Sentinel testing of patients with respiratory symptoms in the general population and contacts of people confirmed to have COVID-19, or suspect cases, should be conducted. In this way, the onset of sustained community-transmission can be rapidly identified and resources can be re-deployed.

Conflicts of interest: none declared.

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Figure Algorithm for investigation of COVID-19 contacts and symptomatic suspect cases.