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Covid-19: Universal screening is likely to miss infected people, review finds

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One time screening for SARS-CoV-2 in apparently healthy people is likely to miss those who are infected, a systematic review has concluded.¹

The rapid review by the Cochrane Library examined 22 studies published up to May 2020 and reported weak evidence in favour of screening.

Meera Viswanathan, the lead author from RTI International in North Carolina, USA, said, “We are unsure whether combined screenings, repeated symptom assessment, or rapid laboratory tests are useful. Because screening can miss people who are infected, public health measures such as face coverings, physical distancing, and quarantine for those who may have contact with an infected person continue to be very important.”

The UK government has faced criticism from scientists over its Operation Moonshot programme to move to mass population testing, amid concerns that the plan, first revealed by *The BMJ*, could yield huge numbers of false positive results.^{2 3}

The Cochrane reviewers assessed two modelling studies that reported on the effectiveness of universal screening, as well as 20 studies (17 cohort studies, three modelling studies) that reported on screening test accuracy. The studies were conducted in the US, Europe, and Asia.

Delayed transmission

The screening methods analysed included temperature checks, questions about international travel or contact with covid-19 cases, and rapid tests. Screening was delivered over the phone, online, in person, or in homes, clinics, workplaces, airports, or schools.

One modelling study found that asking about symptoms at airports may slightly slow an outbreak in a previously unaffected country but that it would not stop the importation of infected people. Screening would delay a local outbreak by eight days if 10 infected people were arriving each week, it found. The evidence was rated as low quality.

Another model reported that weekly screening of healthcare workers may reduce transmission to patients and other healthcare workers in emergency departments by 5.1%, while biweekly screening could reduce transmission by 2.3%. This was assuming a transmission rate of 1.2 new infections per 10 000 people. The authors rated the certainty of this evidence—available as a preprint publication only—as very low.

No studies reported on negative effects of screening. And, while screening systems would catch some infected people, others would be missed or wrongly diagnosed, the review found.

Travel hubs

The 13 studies that asked about symptoms (covering 16 762 people) incorrectly identified 40-100 of 100 infected people as healthy and 0-34 of 100 healthy people as infected.

Six studies (covering 14 741 people) examined temperature measurements, questions about international travel, exposure to known infected people, and exposure to known or suspected infected people. These studies combined incorrectly identified 77-100 of 100 infected people as healthy and 0-10 of 100 healthy people as infected.

All cohort studies compared screening strategies with reverse transcription polymerase chain reaction (RT-PCR) tests.

Three studies modelled entry and exit screening in airports. One of these missed 70% of infected travellers, and another detected 90% of infections but used an unrealistic scenario. The third was deemed to have used very unreliable methods and could not be used in the review.

The authors wrote, “Low-certainty evidence suggests that screening at travel hubs may slightly slow the importation of infected cases. This review highlights the uncertainty and variation in accuracy of screening strategies.

“A high proportion of infected individuals may be missed and go on to infect others, and some healthy individuals may be falsely identified as positive, requiring confirmatory testing and potentially leading to the unnecessary isolation of these individuals.”

¹ Viswanathan M, Kahwati L, Jahn B, et al. Universal screening for SARS-CoV-2 infection: a rapid review. *Cochrane Database Syst Rev* 2020 (rapid version published 15 Sep). doi: 10.1002/14651858.CD013718.

- 2 Iacobucci G, Coombes R. Covid-19: Government plans to spend £100bn on expanding testing to 10 million a day. *BMJ* 2020;370:m3520. doi: 10.1136/bmj.m3520 pmid: 32907851
- 3 Iacobucci G. Operation Moonshot: Leaked documents prompt questions over cost, evidence, and reliance on private sector. *BMJ* 2020;370:m3580doi: 10.1136/bmj.m3580.

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