



LETTERS

THE BURNING BUILDING

Covid-19 mass testing facilities could end the epidemic rapidly

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In Editor's Choice of 19 March Godlee mentions the urgent need for increased capacity to test frontline healthcare workers serologically to verify their immunity to the covid-19 virus.^[1] Even more urgent is capacity for weekly viral detection in the whole UK population. This, together with intensive contact tracing, could enable the country to resume normal life immediately. The virus could only survive in those who are untested, and contact tracing would often lead to them. Within the tested population anyone infected would be detected within about a week (0 to 7 days plus sample transport and testing) of becoming infectious.

Centrally organised facilities with the capacity to test the entire UK population weekly (in 6 days at 10 million tests per day) can be made available much more quickly and cheaply than a vaccine, probably within weeks. This heroic but straightforward national effort would involve a crash programme to enlist all existing PCR (polymerase chain reaction) facilities, acquire or manufacture the PCR reagents, and agree protocols including a laptop program for barcode reading in smaller laboratories. The US Food and Drug Administration (FDA) has just authorised a test kit for detecting the covid-19 virus that can be run on machines used in the NHS for HPV screening. Only laboratories that do PCR routinely would participate, subject to central quality control and at cost price. The Wellcome Sanger Institute, UK Biocentre, and smaller academic laboratories, together with all commercial facilities, should have enough machines or can get more immediately from the manufacturers. The 24-hour extra staffing to run their machines continuously would be bioscience students, graduates, and postgraduates familiar with PCR who already work in or near the laboratory. Processing capacity equivalent to 4000 Roche COBAS 8800 systems is needed, and the UK may already have both the machines and the trained staff in post or immediately available.

All patients registered with a GP would be sent a test kit (a swab for throat and nasal self-sample, and a transport tube labelled

with their name, NHS number, and a barcode). Homeless people and other disadvantaged groups would be served by charities already in contact with them. The Post Office, Amazon, and other companies already have the capacity to collect swabs from everyone with an address. Swabs might go to central facilities for preparation and arraying before dispatch to local laboratories for PCR.

Everyone should be tested weekly. All households and care homes would return self-taken swabs from all residents together. In most homes all residents would test negative and they could resume normal life immediately. An identification card certifying date and result of latest test (positive, negative, negative contact of a positive case) might be useful for policing arrangements. By the time the first test is done there may be more than a million infected people who must be treated or remain quarantined at home or in care until all residents at the address test negative. That unavoidable crisis for the NHS would be ameliorated by earlier diagnosis and treatment, and hence reduced pressure on intensive care, and by having all staff as well as patients tested regularly. Contacts of positive people who test negative could choose continued home quarantine or, at little extra risk, choose to join a group of up to 10 test-negative contacts (usually with other family members). Subsequent weekly national testing, together with behavioural changes and efficient contact tracing, would find progressively fewer infections and might soon be extended to a month. This emergency system would only be needed for about 2 months but could be rapidly reintroduced to control any future epidemic caused by a new virus.

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1 Godlee F. The burning building. Editor's choice. *BMJ* 2020;368:m110110.1136/bmj.m1101. Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to <http://group.bmj.com/group/rights-licensing/permissions>