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Mass screening for asymptomatic SARS-CoV-2 infection

A misguided policy, unlikely to reduce transmission

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Project Moonshot[1] has now extended to twice weekly self-testing at home for all adults in England, and soon Scotland.[2] Yet the UK is already performing more coronavirus tests per case detected than anywhere in the world[3] with little effect according to the Public Accounts Committee.[4] The cost and benefit from adding universal testing are unknown, and no plans are in place to measure them.

In 60 years of screening healthy people, effectiveness has never yet been achieved just by offering tests. What matters is a tightly designed pathway that can be shown to deliver positive outcomes in real life. Forty million cervical cytology screening tests from 1964 to 1985 achieved no net benefit.[5] Deaths from cervical cancer fell only after the introduction of a quality assured programme that reached those at highest risk and took appropriate action after each test result.[6]

Ten years of infant phenylketonuria screening similarly had no impact until systems and quality assurance were introduced.[7] Response in a pandemic requires speed, but without training and proficiency testing for those taking and reading samples, plus a robust process for ensuring appropriate actions follow a test result, SARS-CoV-2 self-testing by asymptomatic members of the public is unlikely to reduce transmission.

We have no empirical data to support mass SARS-CoV-2 screening, and home self-testing has not been evaluated.[8] The December surge of infections in Liverpool, where trained testers screened a quarter of the population, was no lower than in other cities without screening.[9] The effects of screening university students from December remain unclear, and data have not been made public.[10] Care homes conducting asymptomatic testing have struggled to adhere to protocols and experienced no fewer outbreaks than care homes without asymptomatic testing.[11] From early March, testing of millions of schoolchildren was accompanied by a short lived rise in the ascertainment of school age cases, but there is no evidence of change in the trajectory of case rates in older age groups, suggesting a lack of effect on onward transmission.[12]

Wrong focus

A key justification cited by government for mass testing of asymptomatic people at low risk is the assertion that "up to one third" of cases are symptomless, although it doesn't define what is meant by a case or by symptoms. Evidence is growing that transmission arises overwhelmingly from people with symptomatic infections and their contacts.[13 14] The priority continues to be improving the testing programme for everyone with symptoms, no matter how minor or non-specific, and all their contacts. From 31 March 2021 it became policy in England for contacts of someone who has tested positive for covid-19 to have polymerase chain reaction (PCR) tests.

In addition to concerns about the cost and ineffectiveness of asymptomatic testing, self-reported results from asymptomatic people are already skewing nationwide data on test numbers, cases, and positivity rates, making trends harder to interpret. False positive results will be a problem when prevalence is low, even with PCR confirmation. And the temptation for people with symptoms to opt for unsupervised, rapid, and lower sensitivity self-testing may lead to false reassurance, as happens with other screening,[15] leading to potential increases in transmission.

The UK is an outlier globally in placing such emphasis on asymptomatic testing. From May 2020, ministers focused their efforts on reaching targets for test numbers, creating centrally commissioned "lighthouse" laboratories and disregarding the quality of the tests or of the overall programme.[4 16] They also commissioned a separate initiative for evaluating rapid tests,[17] bypassing highly effective and flexible processes and expertise[18] both in developing screening programmes—the UK National Screening Programmes—and in evaluating diagnostic tests—for example, the medtech and in vitro diagnostics cooperatives funded by the National Institute for Health Research. The challenge was framed as "find a valid test and roll it out as quickly as possible" rather than "devise best systems for using testing to help contain the pandemic."

The issue is not, and never has been, about whether to test but about how to do it most effectively.[19] The World Health Organization has never advised testing low risk people. The EU Council advice on rapid tests[20] focuses on those with high pre-test probability, such as contacts of cases or where test positivity rates are >10%. The US Centers for Disease Control and Prevention (CDC) is explicit on limitations of rapid tests in low prevalence settings and is careful to distinguish diagnostic uses from screening.[21] Innova, the UK's preferred screening test, is not included on the EU or CDC recommended lists.

The challenge now is to use the past year's learning, the new laboratory capacity, and the availability of rapid tests to best effect. Current efforts are undermined by secrecy,[10] quality failures,[16] underused capacity,[4] and a misplaced focus on low yield uses. Both the laboratories and the rapid tests could be targeted to deliver a substantially more effective and cost effective testing service founded

on the public service principles of sound evaluation, strong ethics, high quality, and full transparency.

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