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EXCLUSIVE

Covid-19: Mass testing at UK universities is haphazard and unscientific, finds *BMJ* investigation

The rollout of lateral flow tests across campuses has slipped off the radar. How is it working, and what lessons can be learnt, asks **Gareth Iacobucci**

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The costly rollout of screening for covid-19 among asymptomatic students at UK universities has found very few positive cases since its launch in December, an investigation by *The BMJ* has found.

Its research shows a mass testing system across UK campuses that is inconsistent and shrouded in secrecy. Almost two thirds of higher education institutions are not collecting data on numbers of students being tested, and a third are not logging how many test positive.

Experts have described campus testing as haphazard and messy, with an "outrageous" price tag. One said that the scheme was putting political ambitions above the goals of science or health.

Among 69 institutions that disclosed three months' worth of data to *The BMJ* under the Freedom of Information Act, 1649 positive results were reported from 335 383 tests carried out, a rate of 0.5%.

The BMJ's research found widespread reluctance among universities and colleges to share information about the costs of testing and its effect on containing the virus. More than three quarters of institutions refused to disclose how much money they had received from the government to set up mass testing. Some cited confidentiality agreements with the Department of Health and Social Care for England as the reason for the non-disclosure.

Experts said the findings—revealed as many universities are poised to welcome students back to campuses after the Easter holidays—cast major doubts on the cost effectiveness, the ethics, and the scientific rigour behind mass screening and called for the programme to be halted.

Allyson Pollock, professor of public health at Newcastle University, and a vocal critic of the testing programme, said, "The clear message from the data is that the mass testing is haphazard, fragmented, disjointed, and absolutely the antithesis of public health. What we have got is a very fine illustration of why we need this programme to go to the [national] screening committee and to be properly evaluated before any more rollouts of tests happen."

Costly moonshot

The University Asymptomatic Testing Programme (box 1) was launched in December as the latest phase of the government's ambitious £100bn "Moonshot" mass testing programme, details of which were revealed by *The BMJ* last September.[3]

Box 1: How does mass testing of students work?

After numerous outbreaks of covid-19 on UK university campuses last autumn, the government invited universities to test asymptomatic students from December 2020, with the aim of containing the virus before students returned home for Christmas. Most universities taught online only in January and February but continued to offer asymptomatic testing to students who were on campus.

Students are tested under supervised conditions with rapid lateral flow devices, which do not require laboratory processing, such as the Innova tests, which the UK government has spent over £1.3bn on purchasing.[1]

Two tests a week are recommended, followed by a PCR confirmatory test after a positive result. Government guidance says that twice weekly testing should continue indefinitely, although where this was not possible testing once a week "may be appropriate where students only visit campus once a week."[2]

A list compiled by the Department of Health and Social Care, disclosed to *The BMJ* under the Freedom of Information Act, showed that 216 public and 31 private higher educational institutions signed up to the programme to test students using rapid lateral flow devices.

On 17 February *The BMJ* sent freedom of information requests to the 216 public universities and colleges, which were eligible to receive public funding for setup costs, asking how much they received, how many tests they had carried out, and how many positive test results came back.

Of the 118 institutions that responded (a 55% response rate), 96 refused to disclose how much money they had received, with only 22 providing costing data.

Only 16 institutions disclosed complete data on their funding, the number of tests carried out, and the number of positive results. These showed that the government spent roughly £3000 per positive test result yielded. But experts said that this was likely to be a vast underestimate of the full cost, because it did not take into account factors such as staffing of testing sites.

Jon Deeks, professor of biostatistics at the University of Birmingham and leader of the Cochrane Collaboration's covid-19 test evaluation activities, highlighted a report published online last week (since removed but seen by *The BMJ*) from Merthyr Tydfil in South Wales, which suggested that the real cost of each lateral flow test was £20 when all costs were

factored in. This, he said, was worth noting in the context of the latest data from England's NHS Test and Trace service, which indicate that asymptomatic testing in schools was taking nearly 6000 tests to find one true positive result. "At £20 a test, that is £120 000 per case found," he told *The BMJ*.

Some 85 institutions were able to provide *The BMJ* with data on the overall number of tests carried out, giving a total of 415 930 tests. But only 69 were able to disclose data on both the number of tests conducted and the number of positive results reported.

Of 111 institutions that gave details on data collection, 60% (67) said they were not collecting data on the number of people being tested. Nearly a third (35) were not recording the number of positive tests.

Just one institution that responded, the University of South Wales, reported running its own validation study to compare effectiveness of its lateral flow tests against the more accurate polymerase chain reaction (PCR) tests. Two others, the University of St Andrews and University of Sussex, said they were participating in national studies.

Lack of evaluation

Deeks, who has consistently highlighted the limitations of lateral flow tests and their potential for false positive results, said the cost effectiveness of asymptomatic testing was even more questionable given that the prevalence of covid-19 was falling, meaning that the "ratio of true positives to false positives is becoming unfavourable."

"It's interesting, because most of the places have got very, very low rates," he said. "Regardless of the absolute figures, it is very likely that there is an important proportion of these positives that will be false positives.

"When you've got to this point, you're spending huge amounts of money to detect even smaller numbers of people. You're creating a lot of false positives, which you can mitigate to some degree by doing PCR. But the cost of it is outrageous."

Deeks said it was crucial that the health department publish an analysis of the data it was collecting from universities in England.

"We need to know," he said. "They have certainly collected this data: every university has to report it to them. I know staff at some universities have tried to find out, and they've been told, 'We're not allowed to tell you.' The confidentiality around it has been very strict, and I think there is a big control of information at DHSC. Why on earth would they not publish this?"

"Messy screening"

Angela Raffle, a consultant in public health and honorary senior lecturer at Bristol University, who has worked for the UK National Screening Programmes since their inception in 1996, described the rollout of asymptomatic testing as a "lost opportunity."

"I'm used to the national screening world, and we learnt from experience just how futile it is to do messy screening," she said. "Supposing this was a completely unevaluated treatment or unevaluated vaccination. We wouldn't design the rollout in such a way that it is impossible to say if it had any impact.

"The fact that they're not routinely collecting data by person rather than by test, that you need an FOI in order to get any oversight of what's happening, that they're not all contributing data into a central, scientifically sound means of knowing what the outcomes are from doing this testing—all this says to me is that the whole thing is a desperate exercise in trying to get favourable publicity for Number 10, trying to get rid of the Innova [rapid flow] test mountain, and trying to change the culture in this country so that we start to think that regular tests for everybody is a worthwhile use of public resources, which it isn't."

Raffle noted that Cambridge University, which was one of the first to start testing students before the government launched its national programme, had produced a comprehensive ethics guide for asymptomatic testing for SARS-CoV-2 and had made its data public.[4] But this was an exception, she said, and Cambridge's guide "needs to be widely known about."

"The sensible ones have made sure that there is informed consent, no coercion, and they're not overselling the tests," Raffles said. "But it is such a shame that there hasn't been an evaluation.

"I think it is important to highlight the visible costs, the invisible costs, the lack of any clarity about real impact on transmission, and the totally haphazard and unscientific way of going about it."

Urging universities to act

Pollock urged universities to abandon asymptomatic testing and instead focus on testing people with symptoms, particularly as students return to campuses and the prevalence of covid-19 continues to fall.

"What's quite clear from your evidence is the huge cost, the enormous effort, and the very low yield of positive results," she said. "We don't know what percentage of those cases would have been picked up anyway, what percentage of those cases are actually false positives, and how many are missed.

"What universities should do if they are serious about public health is focus on getting the message out to symptomatic students about the importance of isolating and testing, drop mass testing, and insist on a proper evaluation."

The government said it was up to universities to determine their testing approach but added it was committed to working with them to offer twice weekly asymptomatic testing to all students on campus.

A government spokesperson said, "Protecting communities and saving lives is always our first priority, and every pound spent is contributing towards our efforts to keep people safe. Testing at universities is a key pillar in reducing transmission risks and allowing more students to return to face-to-face study as safely as possible."

A spokesperson for Universities UK said, "Lateral flow device testing is not perfect; no test is. But they are easy to use and give rapid results, which can enable universities to quickly identify highly infectious asymptomatic individuals who could otherwise unknowingly be spreading the virus, and help them to follow the right course of action.

"At the end of 2020 university staff across the UK worked with the government at considerable pace to develop and roll out enhanced asymptomatic testing for students, and institutions will continue encouraging students to make the most of the opportunity to be tested regularly as part of a number of covid safety measures in place on campuses."

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