Briefing Note on the Application of Mass Testing in the University Setting
27 November 2020

Caroline Relton, *MRC Integrative Epidemiology Unit, Population Health Sciences, Bristol Medical School, University of Bristol.*
Angela Raffle, *University of Bristol Population Health Sciences and UK National Screening Programmes*
Margaret McCartney, *General Practitioner, writer, broadcaster, Glasgow.*
Jon Deeks, *Institute of Applied Health Research, University of Birmingham*

On 20 November we four were members of a Panel discussing testing for the BMJ Webinar 'Covid-19 Known Unknowns: facing up to scientific uncertainty in a pandemic'. One topic was the Government's November/December asymptomatic testing for University students. We agreed to prepare this briefing note in case it is helpful.

Background
All Universities will have received detailed documentation from NHS Test and Trace and the Department of Health and Social Care, and will be busy planning the asymptomatic testing offer to all students.

University testing forms one part of Government plans for society-wide serial rapid testing. It is worth noting that concerns have been raised about processes Government has used for decision-making and procurement relating to mass asymptomatic testing[1] [2].

What is the purpose of the testing programme?
The underlying purpose appears to be stated differently in different documents and sources, including:

- it is a pilot project with ethics approval[3] aiming solely at disease surveillance
- it is to 'break chains of transmission' by finding hidden infectious cases
- it is to 'safely release' students with negative test results
- it is a means of evaluating the performance of Lateral Flow Devices in the field.

Universities are expected to develop their own communications for students, and the soundest way of describing the purpose to participants is as stated in the Guidebook[4];

[1] Good Law Project seeks Judicial Review relating to 'Operation Moonshot' https://goodlawproject.org/case/operation-moonshot/
[2] Gill, M. and Gray, J.A.M. (2020) Mass testing for Covid19 in the UK. *BMJ* 2020;371:m4436 doi: https://doi.org/10.1136/bmj.m4436
[3] Department of Health and Social Care. National Testing Programme; Clinical Standard Operating Procedure (SOP) for Mass Testing with Lateral Flow Antigen Testing Devices. Version 2.4 published 18 Nov 2020.
[4] NHS Test and Trace. University Asymptomatic Testing Guidebook. Release 1.2. 18 Nov 2020

To enable students to make informed decisions regarding their return home for Christmas, minimising the risk of spreading the virus to vulnerable people at their destination.

It would be wise also to convey to students that they are being invited to participate in a pilot project with national ethics approval.

How do Lateral Flow Devices (LFD) compare with the widely used PCR tests?

- The testing protocol involves the same naso-pharyngeal swab procedure as used in a standard PCR test (self-administered, under guidance and supervision by tester who has undergone rapid training).
- A trained tester adds the swab sample to the LFD and reads the result.
- No lab facilities are required for the LFD test.
- The result can be read in 20 to 30 minutes and individuals should receive their test results electronically within two hours.
- The LFD test has high specificity i.e. a positive result only happens with high viral load.
- The LFD test has low sensitivity i.e. of people who would test positive on PCR 57% (according to PHE Porton Down/Oxford University report [5]) are detected when delivered by rapidly trained testers in field setting.
- The LFD tests are of lower cost compared to the standard PCR test.

What are the pros and cons of this form of testing programme?

- At present the evidence that informed the decision to introduce mass asymptomatic serial testing is not in the public domain.
- The intended benefit is to find symptomless but infectious individuals and as a result to change their behaviour in a way that reduces the amount of transmission they cause.
- Symptomless infection is believed to be more prevalent in younger people than older people, therefore testing before the end of term may reduce the risk of students taking infection home with them.
- The window of opportunity for finding people when infectious but pre-symptomatic, or infectious and asymptomatic throughout, is likely to be short (one to three days) therefore the additional benefit over and above a well-functioning test and trace system may be marginal.
- Unintended consequences could also ensue e.g. those with negative tests (some of whom will be infectious) may place too much reliance on this and could ignore symptoms, reduce their compliance with social distancing, etc.
- Mass testing programmes require considerable resources.

[5] Preliminary report from the Joint PHE Porton Down & University of Oxford SARS-CoV-2 test development and validation cell: rapid evaluation of lateral flow viral antigen detection devices (LFDs) for mass community testing. 8 Nov 2020. https://www.ox.ac.uk/sites/files/oxford/media_wysiwyg/UK%20evaluation_PHE%20Porton%20Down%20%20University%20of%20Oxford_final.pdf

What advice should be given for those with a negative LFD test result?

- It is important to understand that a negative result means ***low risk*** but not ***no risk***.
- An LFD test will detect between 50% and 75% of people with the virus.
- Two tests 3 days apart are recommended to reduce the false negative rate.
- To minimise the chances of spreading infection it is best to travel within 24 hours of a negative test result.
- While travelling, it is essential to maintain social distancing, use hand gel and wear a face covering.
- Someone who has been in contact with a case could have the infection even if the LFD test result is negative

A possible form of words might be; *"Unfortunately, the tests have an appreciable false negative rate. This means they will detect a proportion of cases but are likely to miss up to half of the students who have coronavirus on the day of testing. Even if you test negative, we would urge caution, especially in the last days before you leave university and the first days of arrival at home. For example, if you have a relative at home who would be at high risk of covid-19, you might consider isolating yourself before and after leaving university and being very stringent with hygiene measures. We appreciate that these decisions are difficult and that we are asking a lot of you."*

What advice should be given for those with a positive LFD test result?

- Those with a positive or unclear result from the rapid test will need to self-isolate and be re-tested using the standard test (PCR).
- If the standard test (PCR) is also positive then self-isolation for ten days at the University is needed before travelling home.

Is the testing voluntary?

- The testing is voluntary.
- Potential benefits, drawbacks, and uncertainties should be explained.
- Given that this is a pilot study it is important that students are supported to make their own decision about participation.

Does the testing programme remove the need for other infection control measures?

- Absolutely not, and this should be emphasised.

Use of personal data?

- Students should be given information about the GDPR safeguards in place for the pilot.

What are the logistical challenges faced by Universities in delivering mass testing?

- There are many logistical challenges, and the guidance has been issued with minimal consultation with Universities.
- The time frame for roll out (directive issued 9th Nov for test initiation on 30th Nov) is extremely short.

- Additional staffing needs to be met at short notice with significant new training required.
- The short testing window necessitates a high volume of testing between Nov 30th and Dec 9th, with logistical challenges in managing the flow of people and the infection control issues this raises.
- The extent of self-isolation in positive cases and resources to meet the support they will require is difficult to predict.
- Likely uptake of testing and compliance with subsequent isolation is unknown.
- Timely access to follow-up PCR test for LFD positive results could be an issue in some settings.

Is evaluation built into the proposed mass testing approach?
There is little evidence for any formal framework for evaluation of this testing approach. Guidance requires Universities to ensure that quantitative and qualitative information is collected, analysed and reviewed.
Issues that would be useful to evaluate include:

- Number of cases detected and numbers missed
- Proportion of LFD positive results validated by PCR
- Proportion of individuals seeking 1 test or 2 tests
- Proportion of individuals adhering to subsequent travel window recommendations
- Evidence of behaviour change in light of positive or negative result
- Compliance with guidance offered in light of test result

Should mass testing form part of future infection control strategies in Universities?
This is uncertain. It is worth thinking ahead to possible recommendations for return of students at the beginning of next term, and whether mass testing using LFD tests is effective and cost-effective in this setting.
