



Testing of staff (and pupils) in schools

Reliability of self-administered lateral flow device testing

Introduction

Roll-out of pupil testing using lateral flow tests [has been paused](#) in English schools, pending further evaluation. Current guidance is that asymptomatic school staff should continue to test themselves twice weekly. A number of academics have questioned the efficacy of lateral flow tests, on the grounds that they return a large number of false negative results. This means that people who are actually infected are told that they are clear.

An [article](#) on the website of the British Medical Journal quotes figures from the Liverpool mass testing pilot, using the Innova Antigen Rapid Qualitative Test, showed an overall sensitivity (accuracy in identifying positive cases) of 76.8% and a specificity (accuracy in identifying negative cases) of 99.68%. According to the [Office for National Statistics](#), the prevalence of Covid-19 infections in England in the week to 12th February was estimated at 0.88%. We can create a table using these figures that shows how this would be expected to pan out if 1,000 randomⁱ people (e.g. the entire staff of a MAT) took the Innova lateral flow test:

	<i>Tested positive</i>	<i>Tested negative</i>
<i>Actually positive</i>	7	2
<i>Actually negative</i>	3	988

Of ten people testing positive, seven would actually be infected; three would be told to self-isolate unnecessarily. Of the 1,000 who were tested, two people would incorrectly be told that they were negative for Covid and could potentially continue to spread it. Over 99% would receive an accurate result.

Studies of Covid-19 lateral flow tests have always showed variability in results. The primary factors are how well the test is administered and the viral load. We can run these figures using the sensitivity figure reported for self-administered tests in the same article of 58% and the specificity of 99.6% (prevalence is still assumed to be 0.88%):

	<i>Tested positive</i>	<i>Tested negative</i>
<i>Actually positive</i>	5	4
<i>Actually negative</i>	4	987

With these parameters, false positives increase to four but false negatives double to four. Just over 99% of people still receive the correct result. Twice as many people could potentially continue to spread the infection, albeit that is an increase of only 0.2% of people in total.

Actual prevalence varies regionally and numbers receiving an incorrect result increase with prevalence.

Testing routes and options

Colleagues are rightly expressing concern about testing for Music Education Hub staff. Although legally an employer cannot insist that a member of staff is tested, some schools have been refusing entry to their own staff without a negative test. It follows that these schools will require visiting staff to have had a recent negative test (and since the school will generally not be the employer, they can legally impose this requirement on suppliersⁱⁱ).

Music Mark has approached the Department for Education several times, including again on 22nd February, but the DfE has so far not agreed to provide testing kits for Music Education Hub tutors.

Some options laid out here are either being followed successfully by music services/hubs; some have been suggested by the Department for Education.

1. Local Authorities treating Music Education Hub staff as key/essential/frontline workers

Some Local Authorities have adopted a policy of testing all frontline staff, including peripatetic tutors. While these are mostly directly employed staff, we are aware of an example of a music service in a Local Authority Trading Company (an arm's length commercial trading vehicle) being included within this definition. Staff who are brought into the LA's testing regime are also likely to be prioritised for vaccination.

How to secure tests through this route

Approach senior council officers and the Public Health team to make them aware of peri tutors' special working situation. Working with other departments with unattached teachers (SEN, Behaviour Support, Traveller Education, Virtual School...) can only strengthen the message. Independent music services/hubs may try arguing that they should be included because they serve maintained schools and because the LA has responsibility for all pupils in their area, including those in academies.

2. Securing testing kits issued to schools which are not using them

We are aware of one LA music service that is based in a PRU which is not currently open. The Head of Service has secured the testing kits issued to the PRU.

How to secure tests through this route

This is a very unusual situation and is unlikely to work in many other places. It may work if the Music Education Hub has a good relationship with a school that is not open. It may also cease to be relevant when all schools reopen on 8th March.

3. Sending staff to community testing facilities (Department for Education suggestion)

While this will work in some cases, it falls short of being a practical response. It will not be for tutors with anything approaching a full timetable. Some colleagues have reported that local testing stations are only open between 10:00 and 3:00 on weekdays. There is an issue of travel and paying staff time. As prevalence falls locally, these stations will be retired, so they are only a short-term solution.

How to secure tests through this route

Check local arrangements.

4. Making arrangements with schools (Department for Education suggestion)

Schools are responsible for arrangements to test and verify people admitted to their siteⁱⁱⁱ, so some may be willing to test any Music Education Hub tutors which visit them. Many will say however that they only have enough testing kits for their own staff. Even where agreements are reached, this is likely to result in a patchwork of arrangements and some tutors will only visit schools which will not co-operate.

Another concern is tutors being required to be tested in/by multiple schools. Whatever arrangement is reached, test results need to be 'portable', like a DBS check.

How to secure tests through this route

This can only be arranged on a case-by-case basis with individual schools. Arrangements may vary between [primary](#) and [secondary](#) schools.

5. Registering as an employer for free LTF tests from the Government

You *may* be able to get tests from the Government. The scheme is open to public and private sector organisations with over fifty employees who cannot work from home. Tests are distributed at the discretion of Local Authorities and supplies may be limited.

How to secure tests through this route

Register on the [Government website](#).

6. Buy the tests privately

Tests are available for private purchase and the Government publishes a [list](#) of providers who have declared that they meet the minimum standards. School-based staff are given boxes of seven tests and asked to test twice weekly. For MEHs of any size, privately financed testing at this frequency will become unaffordable very quickly.

How to secure tests through this route

Music Mark does not recommend buying private test kits unless there is really no alternative.

Actions following a negative test result

There is a small but significant chance that a Covid-positive subject will test negative, usually either through poor swabbing or because the viral load is still low. It is therefore important to continue to follow all required control measures to mitigate spread of infection. This includes wearing face coverings in common areas of schools, maintaining social distancing from pupils and colleagues, limiting unavoidable close contact to the very minimum possible time and ventilating teaching rooms reasonably.

In a frequent testing regime, there is a fair chance that a false negative due to low viral load will be corrected at the next test (in three to four days' time).

Actions following a positive test result

A positive result should be verified in short order with a polymerase chain reaction (PCR) test, which has a sensitivity of around 94% and a claimed specificity of 100% (although in practice a very small number of false negatives are likely). In the interim, self-isolating guidance must be followed. Positive LTF results must be logged on the NHS portal (instructions are included in LTF testing packs).

Lateral flow testing following a Covid infection

Taking a lateral flow test within ninety days of having Covid-19 may result in a false positive and should be avoided. People enjoy some immunity following recovery from Covid-19 although there are examples of re-infection more than ninety days after a positive test.

If LTF tests are so inaccurate that we still have to mitigate after a negative test and to get a PCR test after a positive result, why bother?

It's a fair question. Mass testing will pick up around two-thirds of pre-symptomatic and asymptomatic cases^{iv} and will take those individuals out of circulation sooner, meaning fewer people are spreading unknowingly. Retesting provides more chances to take infectious people out of circulation.

Despite there being no evidence of Covid-19 infections caused or spread by peripatetic music tutors, (and no restrictions in the guidance on visiting teachers or even on the number of schools they may visit in a day), visitors will inevitably still be regarded with suspicion and testing helps to address these, albeit it is not absolutely conclusive.

Lateral Flow testing is a cheap and practical response to the problem.

Conclusion

With twice-weekly testing of the whole adult population in schools, protection will improve as people become more adept at self-administering the test and there is a good chance that false negatives due to low viral load will be corrected in subsequent tests. Lateral flow testing is not perfect, so positive results should be verified and negative results must not lessen vigilance. Alongside sensible and consistently applied control measures however, it provides reasonable protection at a population level.

Gary Griffiths
23rd February 2021

ⁱ In a targeted testing regime, such as we had during the first lockdown where only people with suspected symptoms were tested, the figures would change dramatically. Effectively, prevalence (among the tested population) would be much higher and the overall probability of any individual test being accurate would fall.

ⁱⁱ Employers cannot force their own employees to take the test, so the problem devolves in this circumstance to the music service or hub. Over time, people who refuse to take tests (or, similarly, to be vaccinated) may find that their employment options become limited and may have to accede.

ⁱⁱⁱ More information from the NEU: <https://neu.org.uk/coronavirus-school-testing>.

^{iv} Nick Gibb and Matt Hancock have recently quoted the Porton Down/Oxford study (published 08Nov20) which used multiple data sources to reach the conclusion that mass testing identified 70% of positive cases. The SAGE paper (25Nov20) found that only 48% of cases were found in the Liverpool testing pilot. This is low but better information and frequent retesting will bring familiarity with the test procedure and enable more cases to be picked up. Nevertheless, false negatives are high enough that a negative test result cannot be read as definitive.