

## Coronavirus Lateral Flow Devices (LFD)

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The Innova SARS-CoV-2 lateral flow device detects viral antigen, present in the upper respiratory tract in the acute phase of the illness for a relatively short time. Its intended use is to detect asymptomatic infection and reduce transmission (through self-isolation). Community-based studies have shown low sensitivities (40% for a single self-taken test in the Liverpool study) but high specificities (>99%), when compared with PCR. However, LFD sensitivities were much higher for those with high viral loads, likely also to correspond to infectivity.

PCR tests detect RNA after the infective window, so false negative LFDs should be considered in that context. There is substantial individual variation in loss of positivity for PCR testing (<28 days for most, but up to 3 months). Lateral Flow Tests (LFTs) are quick, involve self-testing and it is likely that repeated testing will increase sensitivity. **However, the optimal interval of re-testing and the overall effect of the testing intervention remain unproven.** A particular harm in a GP setting is unnecessary self-isolation with a false positive test, in the context of a relatively small team.

The effectiveness and cost-effectiveness of the programme have not been formally evaluated by controlled trials in primary care medical settings. The Scottish guidance highlights reductions in transmission but in a hospital context (May 2020)<sup>1</sup>. This, and screening studies in community settings, do not account for our PPE provision, and largely vaccinated workforce. The new national push for testing relates not just to the high prevalence rates, but also the emergence of the new variant, currently accounting for the majority of new positive cases in Scotland. Clearly infections in GP staff will also be caught in non-work environments and testing especially prior to work may reduce absences as outlined in the Scottish Government letter.

### Arguments in favour of testing include:

- Easy and simple to do and anecdotally the test process acceptable to users.
- Expert- rather than lay- self-testing is associated with far higher sensitivities: intensively trained and “assured” self-testing by senior staff is associated with fairly high sensitivities. Performance therefore can be optimised.
- Although individual test sensitivity is low, HCWs must continue social distancing and PPE interventions despite a negative test, and not compromise current precautions
- The potential hazards of an asymptomatic carrier in a health care setting.
- A positive test is likely to be truly so, particularly when viral prevalences are high. However, all positive LFTs need PCR confirmation, and self-isolation until that result is known.
- The potential for blame or negative publicity if a medical setting has not used LF testing and it is perceived (rightly or wrongly) that any outbreak might have evolved differently had it been.
- False negative tests are overall associated with lower viral loads and possibly also with less infectivity.

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<sup>1</sup> Evans S, Agnew E, Vynnycky E, Robotham J. The impact of testing and infection prevention and control strategies on within hospital transmission dynamics of COVID-19 in English hospitals.

<https://www.medrxiv.org/content/10.1101/2020.05.12.20095562v2>

The predictive values of the test also depend on local prevalence, with the positive predictive value falling markedly with low prevalences. This is therefore a complex area and a decision to adopt lateral flow testing in General Practice even more so. General Practices are small units, where a loss of a small number of staff due to self-isolating can be crippling. There may be consequences for income loss for sessional staff. We therefore recommend that decisions about test adoption be made locally and remain voluntary. Much of the Scottish Government guidance reads as though this is a mandatory programme, but it is voluntary at both practice and individual level.

If testing is adopted, GPs should be clear that:

- Staff are fully aware of the need to take full PPE and social distancing precautions whatever the result.
- Lateral Flow Device technique be optimised to maximise test performance.
- There is assured occupational 24-hour turnaround for PCR testing.
- There is public health advice as to when is the optimal time to stop testing based on prevalence (or changes in other emerging epidemiological or LFD evidence).
- This involves organisational and personal effort, including training, test processing and digital platform updating. And that will be for a possibly low, and falling, return, and one which is currently unknown.
- The test must never be used to assess symptoms, and that the 'softer' psychological reassurances of a negative test may influence behaviour, including at a subliminal level.