PUBLIC Health England (PHE) has published its assessment of two serology tests (from Roche[1] and Abbott[2]) to detect antibodies to SARS-CoV-2, the virus that causes coronavirus disease 2019 (COVID-19). Both are approved in the US and European Economic Area. Such tests will provide invaluable epidemiological data and help shape the public health response to COVID-19. But it is premature to suggest that, with no vaccine available, serology tests will reassure employers trying to mobilise their workforce, let alone be used to issue 'immunity passports'.

Until recently, the focus on testing for COVID-19 was on polymerase chain reaction (PCR) tests for viral antigens. PCR tests play a vital part in confirming if someone is infected and in contact tracing to help protect others. But their low sensitivity means that a negative result cannot be used by itself to give the all-clear that someone is safe to return to work (see pp. 35–37). Unlike PCR screening, serology tests show that a person has already been exposed to the virus and has had an immune response. Could these be used to confirm that someone is safe to return to work without restrictions?

We know that most people with COVID-19 develop IgG antibodies within 14 days of infection, and that an increase in antibody titre correlates with the patient clearing the virus[3]. There have been no confirmed reports of people becoming re-infected after recovery from COVID-19. One animal study on seven rhesus macaques, which had recovered after infection with SARS-CoV-2, found no signs of new infection after re-inoculation with the virus[4]. These findings suggest that infection does trigger an effective immune response. On the other hand, it has been reported that 10%–20% of people with COVID-19 symptoms produce little or no detectable antibodies[3] and it is not yet known if they remain susceptible to infection. There is no solid evidence that people can be re-infected with the human coronaviruses SARS-Cov-1 and MERS-CoV[5]. However, re-infections are known to occur with four other coronaviruses – including common-cold viruses 229E and OC43[6]. This could be due to a lack of long-lasting immunity or because distinct strains of the same virus have emerged. Some 2,000 mutations and 34 defined genotypes of SARS-CoV-2 have already been identified – with 16 circulating in the UK[7].

What we can say so far is that not everyone exposed to the virus produces detectable antibodies; but in those who do there is a good chance that this confers immunity, at least in the short term. We don't know how long immunity will last and thus if it will protect against future disease waves or new virus strains. The WHO warns that 'immunity passports' could be counterproductive, with people who test positive for antibodies ignoring public health advice and putting themselves and others at risk[8]. Any employer operating such a passport scheme not only compromises safety by promoting a false sense of security, but could also even encourage people to seek infection (to get the required antibodies) if that were their only means to obtain work.

John Ballard, editor

Sensitive and specific tests for COVID-19 antibodies have been approved in Europe and the US and will provide much needed data on the spread of the disease. However, they should not be used to certify an unrestricted return to work.

Send letters to: editorial@atworkpartnership.co.uk

Notes

1 X Evaluation of Roche Elecsys Anti-SARS-CoV-2 serology assay for the detection of anti-SARS-CoV-2 antibodies. London: PHE, 2020. ohaw.co/PHEroche

2 Evaluation of the Abbott SARS-CoV-2 IgG for the detection of anti-SARS-CoV-2 antibodies. London: PHE, 2020. ohaw.co/PHEabbott

3 Altmann DM, Douek DC, Boyton RJ. What policy makers need to know about COVID-19 protective immunity. The Lancet 2020; 395: 1527–1529. ohaw.co/Altmann2020

4 Bao L, Deng W et al. Lack of reinfection in rhesus macaques infected with SARS-CoV-2. bioRxiv 2020; doi: 10.1101/2020.03.13.990226. ohaw.co/Bao2020

5 Sars-Cov-1 and MERS-CoV cause severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS), respectively.

6 Kirkcaldy RD, King BA, Brooks JT. COVID-19 and postinfection immunity: limited evidence, many remaining questions. JAMA 2020; online first: doi: 10.1001/jama.2020.7869. ohaw.co/Kirkcaldy20

7 COVID-19 immunology research. London: Academy of Medical Sciences, 1 May, 2020. ohaw.co/AMS2020

8 'Immunity passports' in the context of COVID-19. Scientific Brief, 24 April 2020. Geneva: World Health Organization, 2020. ohaw.co/WHOsbApr (accessed 20.5.2020).