Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Specificity and cross-reactivity of a test for anti-SARS-CoV-2 antibodies

In their Article on the risk of COVID-19 in health-care workers in Denmark, Kasper Iversen and colleagues[1] used a point-of-care test for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) IgG and IgM antibodies developed by Livzon Diagnostics (Zhuhai, Guangdong, China). That particular diagnostic kit for IgM and IgG antibodies is listed on the US Food and Drug Administration (FDA)'s removed test list.[2] According to the FDA, a test is listed on the removed test list if an Emergency Use Authorization has not been submitted by a commercial manufacturer of a serology test within a reasonable period of time or significant problems have been identified that cannot be, or have not been, addressed in a timely manner.[2]

In evaluating the point-of-care assay specificity, Iversen and colleagues do not appear to have tested sera positive for IgM or IgG antibodies against seasonal coronavirus infections and other acute infections. In addition, the authors did not assess the potential for assay cross-reactivity with autoantibodies present in the sera of patients with autoimmune disease.[3] Cross-reaction of severe acute respiratory syndrome coronavirus antigen with autoantibodies in autoimmune diseases was previously reported.[3] As immunodeficiency can lead to false-negative serology results, the measurements of total IgG and total IgM should be considered, along with any history of immunodeficiency.[4]

It is unclear whether repeat blood samples per study participant were used in the study; this information can be useful to ascertain how many individuals with positive SARS-CoV-2 serology contributed to the assessment of test sensitivity.[5]

To improve the positive predictive value of SARS-CoV-2 antibody testing, an orthogonal testing algorithm that administers a second test to individuals who initially test positive could be considered.[6] Effective orthogonal algorithms are generally based on testing a patient sample with two tests, each with unique assay design characteristics, such as antigens or assay formats.[6]

I declare no competing interests.

Kay Weng Choy
kayweng.choy@gmail.com

The Northern Hospital, Epping, VIC, Australia

1 Iversen K, Bundagaard H, Hasselbalch RB, et al. Risk of COVID-19 in health-care workers in Denmark: an observational cohort study. *Lancet Infect Dis* 2020; published online Aug 3. https://doi.org/10.1016/S1473-3099(20)30589-2.

2 US FDA. Certain COVID-19 serology/antibody tests should not be used—letter to clinical laboratory staff and health care providers. https://www.fda.gov/medical-devices/letters-health-care-providers/certain-covid-19-serologyantibody-tests-should-not-be-used-letter-clinical-laboratory-staff-and (accessed Sept 1, 2020).

3 Wang Y, Sun S, Shen H, et al. Cross-reaction of SARS-CoV antigen with autoantibodies in autoimmune diseases. *Cell Mol Immunol* 2004; **1:** 304–07.

4 Goetz L, Yang J , Green W, Zhu Y. A COVID-19 patient with repeatedly undetectable SARS-CoV-2 antibodies. *J Appl Lab Med* 2020; published online Aug 3. https://doi.org/10.1093/jalm/jfaa137.

5 Mahase E. Covid-19: two antibody tests are "highly specific" but vary in sensitivity, evaluations find. *BMJ* 2020; published online May 21. https://doi.org/10.1136/bmj.m2066.

6 CDC. Interim guidelines for COVID-19 antibody testing. https://www.cdc.gov/coronavirus/2019-ncov/lab/resources/antibody-testsguidelines.html (accessed Sept 1, 2020).

Published **Online** October 30, 2020 https://doi.org/10.1016/S1473-3099(20)30787-8