

## CORRESPONDENCE



## Persistent False Positive Covid-19 Rapid Antigen Tests

**TO THE EDITOR:** Rapid antigen tests for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) are effective tools for the diagnosis of acute infection, particularly when used serially.<sup>1</sup> The percentage of rapid antigen tests with false positive results is reported to be less than 1%.<sup>2</sup> However, we have observed persons who repeatedly test positive with rapid antigen tests despite concurrent negative molecular tests; this infrequent phenomenon occurs predominantly among women and persons with autoimmune disorders.

Our report is based on two longitudinal cohort studies in which participants underwent serial, paired rapid antigen testing and reverse-transcriptase–polymerase-chain-reaction (RT-PCR) testing for SARS-CoV-2.<sup>1,3</sup> Participants were considered to have a false positive result if they reported a positive rapid antigen test with a corresponding negative RT-PCR test of samples obtained within 48 hours of each other. All tests were performed with anterior nasal samples, and RT-PCR tests were performed with the Roche Cobas 6800 SARS-CoV-2 assay (see the

Methods section in the Supplementary Appendix, available with the full text of this letter at NEJM.org). False positive tests were classified as incidental false positives (in participants with at least one negative rapid antigen test during the study period) or persistent false positives (in participants with at least 5 days of positive rapid antigen tests and no negative rapid antigen test during the study period) (Fig. S1 in the Supplementary Appendix).

Among 11,297 participants who performed 76,610 days of testing, 1.7% had at least one false positive rapid antigen test. Of the 191 participants with false positive results, 13 had persistent false positives (Table 1). Most of the participants with persistent false positive results were women (12 of 13) and used the Quidel QuickVue rapid antigen test (12 of 13). We found a higher prevalence of participant-reported autoimmune disorders among participants with persistent false positives than among those with incidental false positives (in 6 of 13 vs. 10 of 178; crude odds ratio, 14.4; 95% confidence interval, 3.2 to 59.9). Persistent false positive results were obtained with tests from different lots and were not likely to be related to issues with test quality.<sup>4</sup>

This finding has substantial clinical relevance. The persistent false positivity may be a result of cross-reactivity of test antibodies with rheumatoid factor and could potentially occur in any patient who has a condition characterized by circulating rheumatoid factor.<sup>5</sup> Because testing for SARS-CoV-2 is commonly performed among symptomatic patients, false positive results may be unrecognized clinically. However, persons who encounter persistent positive tests after in-

### THIS WEEK'S LETTERS

- 764 Persistent False Positive Covid-19 Rapid Antigen Tests
- 766 Semaglutide and Cardiovascular Outcomes
- 769 Inhaled Amikacin to Prevent Ventilator-Associated Pneumonia
- 771 More on Pre-Covid-19, SARS-CoV-2–Negative MIS-C

**Table 1. Demographic and Testing Characteristics of Participants with Persistently Positive Tests.**

Participant No.	Sex	Age yr	Autoimmune Disorder*	Rapid Antigen Test†	Days of Rapid Antigen Test Positivity‡	No. of Rapid Antigen Tests Taken
1	Female	20	None	Quidel	14	8
2	Female	40	Rheumatoid arthritis	Quidel	14	8
3	Female	58	None	Quidel	12	7
4	Female	19	None	Abbott	14	8
5	Female	33	None	Quidel	13	7
6	Female	50	None	Quidel	13	4
7	Female	68	Sjögren's syndrome	Quidel	53	15
8	Male	57	Rheumatoid arthritis	Quidel	14	8
9	Female	48	Lupus and antisynthetase syndrome	Quidel	16	9
10	Female	27	None	Quidel	12	7
11	Female	43	Unidentified disorder	Quidel	14	8
12	Female	46	None	Quidel	9	10
13	Female	55	Unidentified disorder	Quidel	14	7

\* Autoimmune disorders were reported by the participants.

† Quidel refers to the Quidel QuickVue At-Home OTC COVID-19 Test, and Abbott refers to the Abbott BinaxNOW COVID-19 Antigen Self Test.

‡ Participants were considered to be positive on the days between two positive tests unless the tests were more than 7 days apart.

fection or in the absence of symptoms may find reassurance in the recognition of this uncommon but known phenomenon. We suggest that patients with persistent false positive results and a history of autoimmune disease with rheumatoid factor may benefit from repeat testing with a different brand of rapid antigen test. Finally, this report may help public health officials and health care providers to distinguish between cross-reactive false positivity and SARS-CoV-2 rebound.

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