



Special Issue on Diagnostic Testing for Severe Acute Respiratory Syndrome Coronavirus 2 and Lessons from This Pandemic

Alexander J. McAdam,^a Editor in Chief, *Journal of Clinical Microbiology*

^aDepartment of Laboratory Medicine, Boston Children's Hospital, Harvard Medical School, Boston, Massachusetts, USA

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As I write this, near the end of May 2020, there have been over 5.8 million cases of confirmed coronavirus disease 2019 (COVID-19) worldwide, with over 1.7 million cases in the United States (<https://coronavirus.jhu.edu/map.html>). There have been over 360,000 deaths, over 100,000 of which occurred in the United States. What a strange and terrible time this has been. Many people were directly affected by death and illness from the pandemic, and the pain and loss have been tremendous. Many more people were not directly affected but had to cope with fear and worry for themselves and others, while managing the mundane but mentally draining challenges of lockdown life. The outbreak of COVID-19 is not over, and many of us are worried about increases in cases as many regional and national governments begin to reduce restrictions and practices put in place to reduce disease transmission.

Correct detection of cases of COVID-19 requires accurate testing for the virus that causes it, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). This issue of the *Journal of Clinical Microbiology* is about the clinical microbiology of SARS-CoV-2. It usually takes a nearly a year to create a special issue of a journal, but we assembled the articles for this issue in a month, followed by 2 months to prepare for final publication. We invited several people to submit commentaries and other nonresearch articles, and they responded enthusiastically. There was no specific open call for submissions; rather, the submissions for research articles and new-data letters were ample. (The number of submissions to the *Journal of Clinical Microbiology* more than doubled from February to May of this year.) I am grateful to the authors, editors, reviewers, and journal staff, all of whom worked far faster than usual, while upholding our high standards for articles in the journal.

Out of respect for those who have suffered or died during this pandemic, we should take the opportunity to learn from the COVID-19 outbreak. In that spirit, here are some things I experienced and that I saw others experience while working in clinical microbiology during this time.

- We were suddenly prominent. The president, chief operating officer, and chief medical officer of the hospital or health care system emailed and called often, with questions, helpful suggestions, and offers to help address supply chain problems. These emails and calls were sometimes so frequent that it was hard to do the work they were urging us to do. This was an opportunity to show the importance of diagnostic testing and to demonstrate the expertise and experience of the laboratory team.
- We had a lot of explaining to do. People were interested in the accuracy and uses of diagnostic tests, and there was confusion and misinformation about this. We had to explain the appropriate uses and limitations of antibody tests for diagnosis of an acute infection, the insensitivity of most antigen tests, and the difference

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Editor Angela M. Caliendo, Rhode Island Hospital

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Address correspondence to alexander.mcadam@childrens.harvard.edu.

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between detecting viral RNA and detecting replication-competent virus. We could provide help and information, while promoting clinical microbiology, at our hospitals and in the popular media.

- We did things we would not have considered doing before. There have been shortages of critical supplies needed for testing, including nasopharyngeal swabs and viral transport media. To meet the needs, microbiologists got involved in manufacturing and testing of viral transport media and of 3D-printed nasopharyngeal swabs. We quickly investigated the uses of novel or previously uncommon sample types for detection of respiratory viruses, including nasal swabs, throat swabs, and saliva. We also gained expertise in arcane regulatory issues, as some tests were overregulated, requiring us to file endless paperwork for emergency use authorization of nucleic acid amplified tests for SARS-CoV-2, and some tests were, at times, underregulated, which allowed flawed antibody tests to be sold.
- We were very busy. Of course, the clinical laboratory performed a tremendous number of tests and validated new assays, but other demands increased too. Research programs had to be pivoted to SARS-CoV-2 projects or paused. In biosafety, there were new questions about the emerging pathogen and operational questions about oversight of safe practices. In teaching, carefully prepared exercises and wet-laboratory sessions had to be revamped for remote teaching.

I think that the articles in the *Journal of Clinical Microbiology* about testing for SARS-CoV-2 have contributed to the response to the COVID-19 pandemic, and I am proud of the work we've done and will continue to do.