



One Year Later: What Have We Learned From COVID-19? Lessons and Accomplishments in Academic Pathology Departments

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It is just over a year since COVID-19 began in earnest for most of us, and it has been a year like never before. At the time of this writing, SARS CoV-2 has infected 55 million people worldwide, killing nearly 2.5 million. The United States has been hit particularly hard, with an estimated 29 million infected and over half a million deaths due to the virus.¹

Never has the laboratory been so squarely the focus of attention—among our colleagues, in our own institutions, in the media, politics, and the public eye. Never had we expected to be explaining Ct values and viral sequence drift to neighbors and news reporters—an odd juxtaposition during this past year when science seemed to have been largely ignored at higher levels. Never did we expect to face such challenges to our supply chain, requiring us to expand and diversify our testing platforms in hopes of maintaining our ability to test for the virus. Our colleagues and our staff have continued to amaze us with their dedication and tenacity, dealing with unpredictable shifts and unbelievable workloads.

Truly, the pandemic has shone a very bright light on the lab, and we have risen to the occasion, and more. Laboratories saw the issues that lay ahead with respect to testing, and led the charge to expand our testing capacity through implementing multiple commercial platforms as possible, developing our own laboratory-developed tests (LDTs), and as was feasible, pursuing Emergency Use Approval by the Food and Drug Administration for those LDTs.²⁻⁵ We became supply chain experts, led testing and collection efforts, encouraged, fed, and thanked our teams, and even worked the benches ourselves when needed. Despite the countless challenges, we have

succeeded in serving our patients and our institutions, providing COVID-19 testing along with a wide range of other services. This required innovation, coordination, and collaboration,^{6,7} and novel approaches to institutional organization in response to the pandemic.^{8,9}

We have served our institutions by allowing them to restart elective procedures and increase services safely. The rapidity with which our institutions could again meet routine patient care needs would have been impossible without onsite polymerase chain reaction testing for SARS-CoV-2. The implications of this capability are enormous, not only for the delivery of much needed non-COVID-19 care for our patients but also for the financial health and sustainability of our institutions.^{10,11}

Beyond SARS-CoV-2 diagnostic testing, we managed to address countless other laboratory needs. We scrambled to make our blood donor services self-sufficient as the commercial blood products dwindled during the shut-down.¹² We worked to understand and adapt to increased levels of coagulation testing as COVID-19 patients developed coagulopathy.¹³ We set up new services for the collection of convalescent plasma to lessen the impact and mortality for some patients¹⁴ and supported our

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institutions' participation in the requisite clinical trials to find new therapies for COVID-19.¹⁵ We responded to shifting needs in our clinical labs by increasing our services where needed to support the clinical care of hospitalized COVID-10 patients, implementing serology for the virus,¹⁶ and shifting our workforce to support the heavy demands of accessioning specimens for the increased testing workload.

We have also continued to fulfill our anatomic pathology duties by adapting and innovating with digital pathology and remote sign-out, virtual conferences, and digital consults to ensure that patients continue to receive the most timely and accurate diagnoses following biopsy or surgery.^{17,18}

Our students and trainees have been able to continue learning via creative delivery of teaching and rotations using novel solutions, and have been members of major research teams for the generation of new knowledge about COVID-19.¹⁹ Medical students have experienced pathology, learned about the lab, and made decisions about future careers via remote learning and interactions with faculty and mentors.²⁰⁻²⁶ We were also able to maintain residency recruitment activities virtually, since COVID-19 interrupted our usual practices of elective rotations and observerships, on-site interviews and interacting with potential residents and fellows at regional and national meetings.²⁷ By the time of publication, we should be able to assess our recruitment success, and whether the attention paid to the lab this past year has influenced any career paths.

Lastly, we have contributed to the collective understanding of the disease via fundamental observations arising from studies of the central nervous system, lungs, vascular changes, and placenta. As with other diseases, the science and understanding of COVID has been advanced through performance of autopsy, and has again demonstrated the central role of Pathology in science and medicine.²⁸ Histologic and autopsy studies have revealed a great deal about the inflammatory, thrombotic, and other abnormalities arising in patients afflicted with SARS-CoV-2 infections.²⁹⁻³⁴

It has been a long and difficult year, but labs across the country and around the world have risen to the challenge of SARS-CoV-2. We have clearly demonstrated our value, and the central role of our field in medicine. It has been a proud and exhausting time to be part of the lab—and a year from which we must learn. We must carry these lessons forward in anticipation of future challenges, pandemic or otherwise. Thus, we have chosen to acknowledge and record the remarkable activities of the past year in a Special Collection of COVID-19 articles in *Academic Pathology*. We have highlighted some of these articles, and others from the pathology and laboratory literature, and hope you will find these publications useful and inspirational.

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