



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.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Living with COVID-19: A Perspective from New York Area Ophthalmology Residency Program Directors at the Epicenter of the Pandemic

Royce W.S. Chen, MD - *New York, New York*
Azin Abazari, MD - *Stony Brook, New York*
Sonya Dhar, MD - *Flushing, New York*
Douglas R. Fredrick, MD - *New York, New York*
Ilana B. Friedman, MD - *Bronx, New York*
Lora R. Dagi Glass, MD - *New York, New York*
Albert S. Khouri, MD - *Newark, New Jersey*
Eleanore T. Kim, MD - *New York, New York*
John Laudi, MD - *Brooklyn, New York*
Sunju Park, MD - *Bronx, New York*
Harsha S. Reddy, MD - *New York, New York*
Jamie B. Rosenberg, MD - *Bronx, New York*
Shlomit F. Sandler, MD - *Bronx, New York*
Anurag Shrivastava, MD - *Bronx, New York*
Grace Sun, MD - *New York, New York*
Jules Winokur, MD - *East Garden City, New York*

In the beginning of March, our New York—area residency program directors were bracing for the spread of a novel coronavirus that was easily transmissible and deadlier than the flu. Concerning reports emerged suggesting that ophthalmologists could be at higher risk of infection because of their proximity to patients during clinical encounters. In the midst of a nationwide shortage of personal protective equipment, we wondered how we could both protect our residents and continue the educational missions of our departments.

We gathered through teleconferencing and shared strategies for keeping residents and patients safe. To reduce the chances of infection, we developed distinct teams of residents who were caring for inpatient and emergency room consultation patients and separated them from outpatient clinics. We discussed testing, quarantine, and difficulties with knowing when a resident could return to work after coronavirus 2019 (COVID-19) symptoms. We discussed personal protective equipment use and shared strategies on the reuse and sterilization of limited supplies.

How would we continue to teach ophthalmology now that clinical and surgical training had come to a sudden halt? Because all of our lectures had migrated to teleconferencing platforms, we decided that there existed a special opportunity for all New York—area residents to be able to attend each other's lectures. Since mid March, we have shared more than 45 lectures across institutions, and many have been attended by residents from different programs. Our trainees now have access to more ophthalmic didactics than they did before COVID-19.

We developed risk-stratification guidelines to determine if patients needed to be seen in person or could be deferred.

Simultaneously, we built telemedicine programs in accordance with new Accreditation Council for Graduate Medical Education guidelines to allow residents to connect with anxious patients who did not require an in-office visit.

By late March, most New York training programs had declared stage 3 pandemic emergency status, which allowed hospitals to have the flexibility to increase physician availability for patient care. Core and specialty-specific requirements of residency were suspended, provided that adequate resources, training, supervision, and work-hour requirements were met. By early April, ophthalmology programs either were redeploying residents or were developing plans to do so to meet the surging demands of the pandemic. Programs with an earlier start gave much-needed guidance to others about the major stressors to trainees—discomfort with unfamiliar roles and the psychological challenges of seeing so many extremely sick patients die alone. As program directors, we worried about putting our trainees and their families at risk by being on the front line. We shared strategies for providing emotional support while developing connections with counseling services to provide easy access for individual trainees. By mid April, every single ophthalmology program in the greater New York area had many trainees and faculty members who had been redeployed to intensive care units and COVID-19 medicine floors.

We are cautiously optimistic that we now have passed this peak of the New York City epidemic. Although many of our faculty and residents are still redeployed and clinics remain limited to urgent and emergent visits, we are starting to plan for an uncertain future in which COVID-19 exists

alongside some semblance of regular life. Our weekly teleconference program director meetings have transformed from a tool for coping into one for optimization. For all of us, now is an opportunity to examine closely our current program structures and discard what was done simply in the name of tradition while paving new paths for residency education in the 21st century.

Going forward, resident didactics will be altered, for the better. Remote conferencing has proven so valuable in this time that we will continue lectures in this format after the COVID-19 crisis. Continuing in the spirit of collaboration, our New York-area programs are developing a citywide core education curriculum with focused subspecialty talks given by faculty from different institutions. This curriculum will serve as a foundation for all programs; individual institutions will provide supplemental didactics to their trainees.

Shortages of personal protective equipment and suspensions of elective surgery have forced us to reconsider how we teach ophthalmic surgery with fewer total surgical cases. In addition to more frequent surgical video teaching conferences, a logical conclusion is that virtual simulation platforms and practice on model eyes must play an even larger role in the surgical training of our residents. Although we anticipate a return to elective surgery in the coming

months, a greater reliance on simulation training before actual surgery will benefit our residents and patients in the future.

Teleophthalmology will play a permanent role in ophthalmic practice, and our residents will become skilled in this care model. Developing standardized protocols and incorporating objective testing into teleophthalmology will create more opportunities for its use. Uncomplicated post-operative care likely can be transitioned to virtual visits, as can some consultations for external and lid pathologic features. New patient triages may be screened through video examinations first. Efficient diagnostic-only visits (e.g., vision, pressure, imaging) with remote consultation follow-ups may be used for other conditions, such as diabetic retinopathy or stable glaucoma. Thoughtful restructuring of care models will save patients from endless hours in waiting rooms and will concentrate more severe pathologic features for our trainees to learn from and take care of in clinic.

As New York-area program directors, we are extremely proud of our residents. Although we may graduate our seniors virtually this year, we will always be bound to them by this shared experience. This pandemic has presented all of us with unprecedented challenges, but it also has provided us with a rare opportunity to innovate and collaborate side by side with our trainees.

Footnotes and Financial Disclosures

Financial Disclosure(s): The author(s) have no proprietary or commercial interest in any materials discussed in this article.

Correspondence:

Royce W. S. Chen, MD, Edward S. Harkness Eye Institute, Columbia University Irving Medical Center, Columbia University Medical Center, 635 W. 165th Street Box 104, New York, NY 10032. E-mail: rc2631@cumc.columbia.edu.