

# Remote Refraction

New remote diagnostic technology allows refractions from anywhere



## Evolving Refraction Capabilities

By H. Jay Wisnicki, MD

Even before COVID was an issue, our New York City-based eye care practice of optometrists and ophthalmologists had been doing an increasing amount of virtual work. This has been the case for many of us in eye care; we have been outsourcing our billing operations, front desk services, human resources, and a variety of administrative and clerical functions for many years.

At the same time, the introduction of electronic medical records (EMRs) has increased the level of medical device integration and the exchange of clinical information across the spectrum of eyecare. For example, image management software has made it possible for us to view fundus and OCT images, in addition to findings from corneal topography, biometry, ultrasound, and other digital devices between our offices and networks.

In the clinical realm, while medical specialties such as radiology, pathology and behavioral health have been conducting some form of telemedicine for years, other areas of medicine such as optometry and ophthalmology requiring a close-up view of the patient, have had a slower time making the same leap. A few areas of eyecare have successfully used telemedicine to some degree to monitor patients with, or at risk of retinal pathologies such as diabetic retinopathy or age-related macular degeneration. However, eyecare in general has not utilized remote capabilities to perform portions of the comprehensive eye examination or conduct diagnostic evaluations and tests.

That is all changing with the introduction of new software technology enabling clinicians to perform remote diagnostics, refractions and eye examinations without being physically in front of the patient.

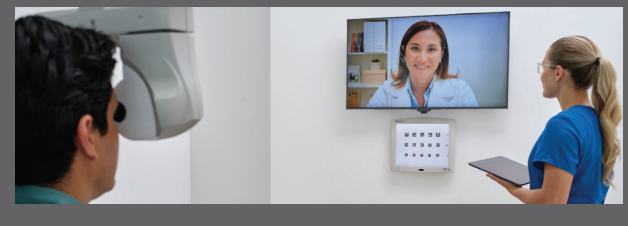
### Advancing Refraction Capabilities

There has been an evolution of refraction technology over the years, from conventional subjective refraction to computerized or digital phoropters and now remote operation.

In December 2020, Topcon Healthcare (Tokyo, Japan) introduced Topcon RDx®, an ocular telehealth platform enabling eye care providers to remotely connect to their offices to conduct portions of the comprehensive eye exam. RDx integrates with Topcon's CV-5000S digital phorop-

### Topcon RDx® and the CV-5000S Digital Phoropter Benefits the Patient and the Practice

Topcon RDx®, an ocular telehealth platform enables eye care providers to connect to their offices remotely and conduct portions of the comprehensive eye exam. Topcon's CV-5000S automated phoropter integrates with RDx remotely, so practitioners can perform refractions from anywhere.



ter so practitioners can virtually perform refractions, view supplementary diagnostic information through Topcon's Harmony data management software, and video consult with the patient in real time.

This new capability offers the patient and provider more exam flexibility, efficiency and an increased level of safety. The doctor and patient are able to virtually meet for the patient's eye exam, which helps to ensure the patient is presented with timely, high quality eye care while reducing the number of people and touch points encountered during an exam. Imagine how much more comfortable the patient might feel in a room with just one technician, while the person performing the exam is in a different location.

From a practice standpoint, this technology has transformed our busy urban clinics. Our remote optometrists are able to quickly move from patient to patient, serving patients in both of our office locations from essentially anywhere.

H. Jay Wisnicki, MD, is a professor of ophthalmology at the Icahn School of Medicine at Mount Sinai, and founder and medical director of Union Square Eye Care, all in New York City.



# Benefits of Remote Refraction

By Ryan Ngo, OD

As an optometrist who has spent years manually and digitally refracting patients, heading into a virtual realm has required a slightly different approach to the way I practice; however, the remote refraction process is not that different from using the CV-5000S digital phoropter in the office. The main difference is that rather than using a manual control panel in the examination room, the clinician is instead using a computer interface and mouse at a remote location to control the phoropter head.

I like that the Topcon RDx platform is intuitive and easy to start using. A technician is still needed to set up and align the patient before the refraction starts, but once the program is up and running, the sequence of steps is the same as an in-person refraction. The more we use the technology, the more seamless and integrated it's becoming in our day-to-day clinical examinations.

## Patient & Provider Benefits of RDx Technology

In practice, we have found that the patients' experience with this new way of refracting has been overwhelmingly positive. After a recent remote refraction on a patient, the young woman gave us her impression of the process: "I was told prior to my exam that I would be getting a remote refraction from a clinician that would be offsite. This new examination process was so easy and was as if the doctor was still in the room with me!"

She liked the efficiency that remote refraction offered, noting: "It's nice just to be able to walk in, have a seat, video connect with the doctor and start the refraction process. I really liked that I didn't have to wait. Sometimes in busy practices the doctors are running behind schedule, but with the remote refraction, I was able to get in front of the video screen with Dr. Ngo right away and he quickly refracted me and provided a new prescription."

This patient also appreciated the additional flexibility and convenience that remote refraction offered. She said, "You have more choices now based on your schedule or what doctor you prefer to see, because the doctor does not have to physically be in the office to see you. For people who are super busy and have fast-paced lifestyles, I think the convenience and time savings with remote refraction is going to be a big value moving forward."

As an eye care provider, I also value flexibility in my professional life. Remote eye exams and refractions are especially helpful if I am travelling, unable to make it into one of our offices or need to work from home. In the past, one

of the main drawbacks of being an eyecare professional was that you couldn't provide care to patients and work from home at the same time. Now that we have the ability to remotely conduct eye exams, including refractions, that opens up options for doctors who may mix in-person and remote work, switching between the two to suit their personal needs and allowing a better quality of life.



## Utilization Today

In addition to its potential use for many of our routine evaluations, I think remote refraction can help improve access to vision care and fill in service gaps for large and small practices. For example, a patient who has an urgent need for glasses but can't schedule a live visit with a doctor nearby, could schedule an appointment at a practice offering remote refractions, and quickly obtain a prescription through this virtual service. In addition, high-volume specialty practices that don't do refractions might consider adding remote capabilities to offer a more comprehensive eye exam for their patients. Another application could be for small optical shops that can't afford a full-time optometrist but could hire someone part-time to manage remote refractions.

While remote refraction is an excellent fit for many patients, certain patients might not be ideal candidates. Those individuals could include patients with large degrees of astigmatism, or those who have conditions such as keratoconus or more complicated pathologies that require in-person or follow-up evaluations. Young children or elderly patients may not be as well-suited for remote refraction.

I estimate that 60% to 70% of my patient population might enjoy utilizing this new technology, in particular, "computer-age" patients like Millennials, Generations X and Z who have a comfort level with innovation and virtual technology. In all cases, it will be exciting to see where remote refraction will take eye care now and into the future.

Ryan Ngo, OD, is an optometrist at Denny Eye & Laser Center in San Francisco; he formerly practiced at Union Square Eye Care in New York City.