

THE SMART USE OF TECHNOLOGY AND IMPLICATIONS FOR CLINICAL WORKFLOW

Simultaneously imaging the macula and optic nerve with the NIDEK Retina Scan Duo 2 Retina map with B-scan Denoising Software rapidly captures all the information needed to efficiently focus the exam.



BY MICHAEL TOULCH, OD

Although a multitude of factors might impact whether our practice integrates new technology into our clinical workflow, there are a few key questions we tend to ask: Will it enhance the ability to diagnose and/or manage eye diseases? How does it impact the patient's experience? How will it impact the duration of the whole exam process? How much training and operator skill is required to master the technique?

In other words, we want to figure out if a piece of equipment will add to the quality of the exam, improve our clinical efficiency, and enhance the patient experience. Each of these factors is an important consideration, especially given the cost of acquiring new technology.

Most of the technology we implement marks an iterative improvement in one or more of the domains of quality, simplicity, and efficiency. When we recently added the NIDEK Retina Scan Duo 2 OCT and fundus camera system (Duo 2), it was the rare piece of technology that made a significant improvement in all three.

A WORKHORSE FOR THE BUSY CLINICIAN

From a technical perspective, the Duo 2 combines 12 X 9 mm OCT (with a speed of up to 70,000

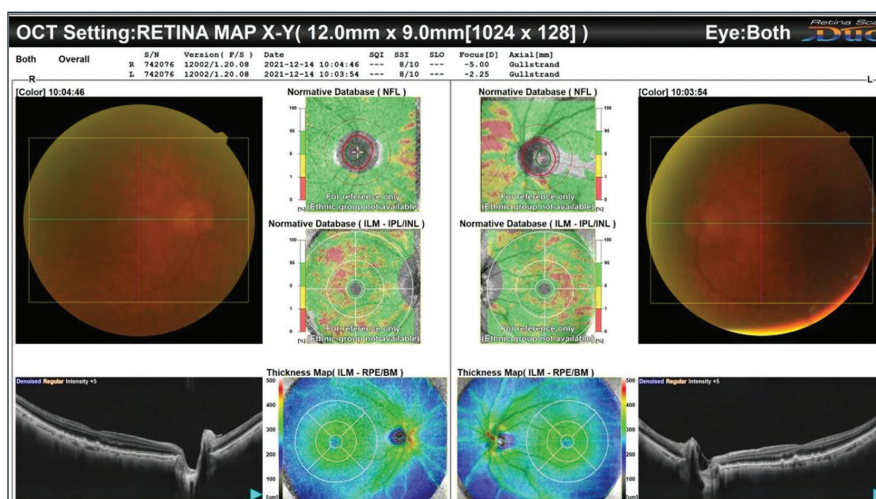


Figure 1. Retina map from an 80-year-old woman concerned about her reading glasses prescription. A single capture of the macula and optic nerve helps identify the presence of a cataract and early signs of age-related macular degeneration.

A-scans/second) and fundus camera on a single platform, with capability to perform fundus autofluorescence. The platform is equipped with NIDEK's B-scan Denoising Software, an image enhancement protocol that removes speckle noise using just a single scan to produce a B-scan image that is as clear as the one generated by averaging 120 images. Altogether, because of its advanced features, the Duo 2 is a sophisticated multimodal platform capable of imaging a variety of complex and interesting pathologies.

The Duo 2 makes its greatest impact for us in everyday, routine use. The amount of data that it captures in just seconds, and with ease for both

the operator (whether optometrist or technician) and the patient, is truly unparalleled. We have found the system to be smartly designed and extremely intuitive, and, more importantly, the reports that it produces are highly relevant for directing the exam. The new feature we have found most impactful is the Retina map scan, which captures both macula and disc OCT data with simultaneous fundus photography in a single shot, along with B-scan denoising of all captured retinal lines. All of this is captured in a couple of seconds. The reports generated are impressive, and they come with the analyses based on normative databases (Figure 1).

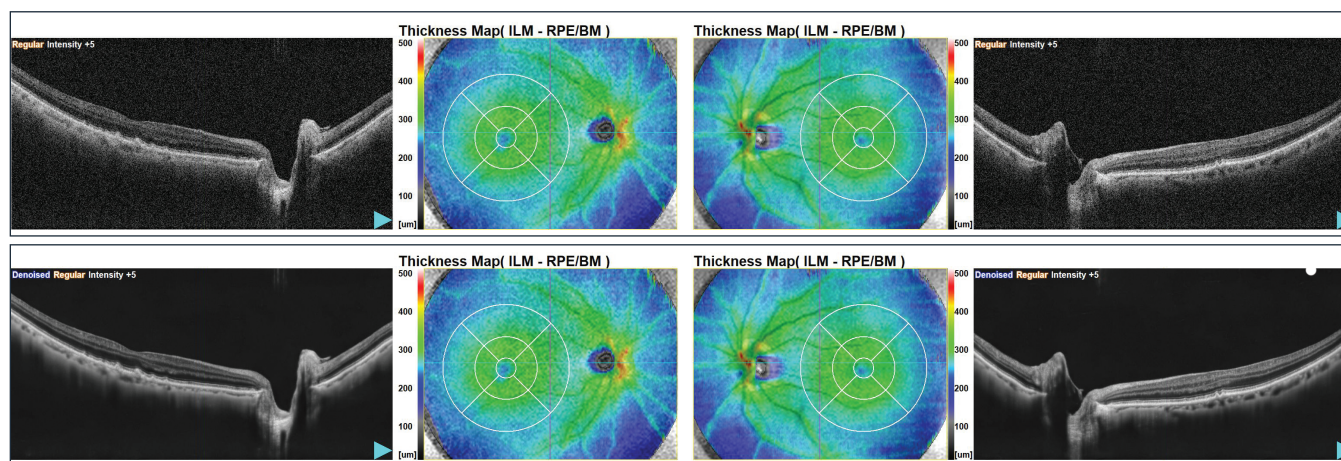


Figure 2. The original (top) and denoised B-scan (bottom) images from the patient in Figure 1 demonstrate the noise reduction filter on the Duo 2.

In our clinic, the Duo 2's Retina map is performed essentially on all patients presenting for an examination. The test is usually performed by a technician before the patient is seen by the optometrist. The case of the patient whose imaging is depicted in Figure 1 is a great example of how this integrates into our workflow. This was an 80-year-old woman coming to us for a general checkup, primarily to update her reading glasses prescription. In a single capture, which takes a couple of seconds, we obtained both macula and disc OCT data, as well as corresponding fundus photos. As this was an elderly patient with dry eyes and reduced mobility, we found the time saving to be very substantial. The demand on the patient's ability to keep her eyes open without blinking was reduced, as was the need for multiple captures or retakes. As well, because the B-scan Denoising Software effectively reduces signal noise, even in the presence of opacified media such as a cataract, the resulting B-scan image is easy to visualize for interpretation (Figure 2). While wanting to direct the exam toward her chief complaint—reviewing the reading glasses prescription—I was also able to make sure she and I were aware of the other issues affecting the health of her eye.

ENHANCING THE PATIENT'S EXPERIENCE

One of the most powerful ways the Retina map allows me to connect with

patients is when we put the image up on a remote viewing screen in the exam room, which is set up so both patient and optometrist can comfortably view and discuss what is depicted. Almost all patients appreciate the explanation of what is being presented. Cataracts, AMD, glaucoma, and so many other pathologies are much easier to discuss with patients. This is clearly a powerful tool to get patients to appreciate the importance of follow-up and/or treatment. But healthy patients with healthy eyes also love to hear about and see inside their eyes. I have found patients who are also healthcare professionals, in particular physicians and nurses, are most impressed and intrigued by the technology. Often, they become among our best sources of referrals. In short, this technology helps patients of all ages and in various states of ocular and general health engage with the optometrist and the exam.

Increasingly, patients are looking to be informed about the health of their eyes and want to participate in the decision-making process. Often patients have consulted with Dr. Google and think they have this or that condition but, happily, they want our assessment too. This change in patient behavior has become even more pronounced during the COVID-19 pandemic. Patients very much appreciate seeing that we invest in new equipment while also updating and automating other aspects of our practice.

All of this demonstrates that we consider their experience and their health and safety to be highly important.

There are, I think, some unfortunate connotations with the concept of “screening” in eye care, perhaps driven by the misperception that it is intended to negate the need for more in-depth examinations. I believe when we screen intelligently—in this case, using an advanced piece of technology to efficiently gather a wealth of information in the smallest amount of time—our clinical expertise becomes even more important. And all of this must occur against the backdrop of optimizing our staff's time and energy while simultaneously enhancing patient care and comfort.

It would be a mistake to think that technology can be a panacea for instantly improving clinical workflow, or that its use will instantly result in satisfied patients. But the smart use of technology, such as Duo 2, can indeed improve the quality of our examinations, be simple to use and integrate, and therefore improve our efficiency in the clinic. ■

Product/model name:
Optical Coherence Tomography RS-330

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