

Improving Resident Training

The challenge is how to adapt teaching methods to the unique styles of learning and communication of today's students.

BY GRACE SUN, MD, AND NATHAN M. RADCLIFFE, MD

Confident, caring, and connected—these three words have been used to describe the Millennial generation, of which the residents we are training today are members. Born between 1977 and 1997, in an economic boom, those belonging to this cohort are optimistic about their world. They think globally and volunteer locally, but what truly sets them apart from other generations is their heavy reliance on technology, which has infused itself into the social fabric of their daily lives. Text messaging, Facebook, Twitter—these individuals are always online.

Technology has radically affected the way these people learn. The Millennials are on track to be the most educated generation in American history. The challenge of educators today is how to adapt teaching methods to these students' unique styles of learning and communication. Just yesterday, as my resident and I (NR) were scrubbing prior to a trabeculectomy, I asked him if he had read up on our surgery. His reply was, "Oh absolutely. I just watched the video on Eyetube.net this morning!" I chuckled. Are the days when residents read large volumes with intricate illustrations on surgical technique over? Is a journal article on the latest ophthalmic innovation obsolete by the time it comes out in print? Not necessarily, we hope.

ONLINE LEARNING

Glaucoma educators must address the reality that ophthalmology residents are getting their education via "just-in-time learning." Current residents and medical students prefer using online resources as their primary reference. Just before they step into the OR or laser suite, many of our trainees search online for information and surgical videos, and they are adept at finding the videos and sites that offer narration, have high ratings, or have received a large number of views.

The ophthalmic community has responded to this edu-

"Current residents and medical students prefer using online resources as their primary reference. Just before they step into the OR or laser suite, many of our trainees search online for information and surgical videos."

cational shift. The American Academy of Ophthalmology (AAO) created the ONE network. Its enormous amount of online educational content includes videos, podcasts, preferred practice patterns, and discussion forums. In the autumn of 2011, the AAO rolled out The Resident Hub. Specifically designed for those who are still in training, The Resident Hub offers pertinent educational resources, quizzes for self-assessment, and preparatory materials for the Ophthalmology Knowledge Assessment Program. It also allows residency program directors to create assignments, track residents' learning, and share content with other residency programs. For example, as part of their glaucoma learning plan, our residents have been assigned the glaucoma modules from Eyemaginations, Inc., short assessments, and selected readings from the AAO's *Focal Points*.

One arena in which online videos have dramatically improved the educational paradigm is gonioscopy. One of the best Internet resources for glaucoma education is www.gonioscopy.org, the Web site created by Wallace "Lee" Alward, MD, at the University of Iowa Medical Center in Iowa City. The site's real-time, narrated videos of both common and rare gonioscopic findings have been pivotal to our residents' grasp of the art of gonioscopy. In fact, using a different online module, researchers at the Wilmer Eye Institute in Baltimore have validated a Web-based learning

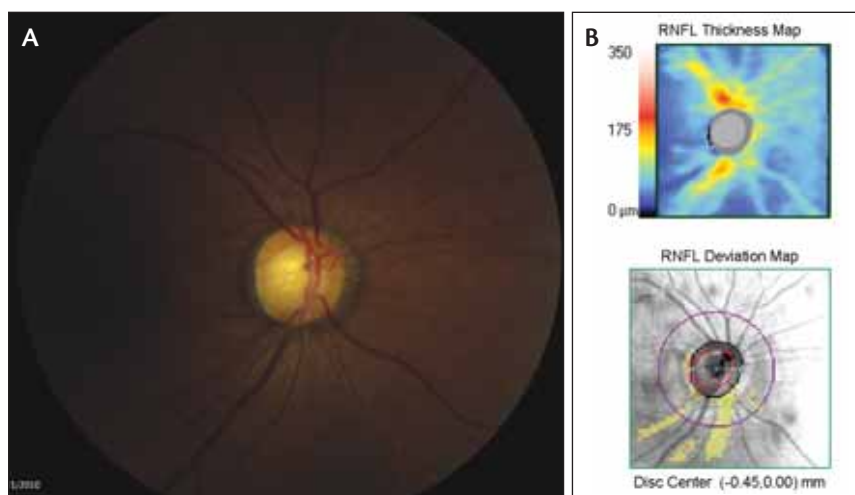


Figure 1. A small, inferotemporal RNFL defect is subtly discernible in the right optic nerve of a patient with early glaucoma. Although many in training would miss the defect on photography (A), OCT RNFL thickness and deviation maps make it easier to see (B) and point trainees toward more a careful clinical examination of the patient's RNFL.

approach for instruction on gonioscopy. Their findings indicate that this strategy is likely more than just a convenient or “neat” approach to glaucoma education.¹ Also at the University of Iowa, Thomas Oetting, MD, has created a multifaceted tool for teaching cataract surgery—not only a Web site but a blog as well as a Facebook page.

The use of social media has encouraged our residents to share their interesting and most challenging cases. Additionally, because most visitors to Web sites post messages via a pseudonym, residents can remain anonymous and ask those so-called stupid questions that they might be too intimidated to pose in person to experts (or demanding attending physicians).

ADDITIONAL RESOURCES

Technological developments initially designed to improve patients' care can also be valuable resources for educating residents. Retinal nerve fiber layer (RNFL) defects are typically challenging for residents to detect on clinical examination or even in optic nerve photographs (Figure 1A). Identification can be easier when residents evaluate thickness maps of the RNFL obtained by optical coherence tomography (OCT). On our glaucoma rotations, residents begin by examining the OCT scan prior to examining the optic nerve personally so that their clinical inspection is better directed. By the end of their rotation, we expect residents to report the anticipated OCT findings after clinically inspecting the optic nerve. We believe that this approach allows them to fine-tune their optic nerve examination by calibrating their subjective assess-

ment to objective OCT findings. A similar back-and-forth approach can be used with OCT or ultrasound biomicroscopy and gonioscopy for the evaluation of the drainage angle.

An image management system is another invaluable recent educational advance. In the near future, video content will likely be available on these systems. Residents will then be able to watch a cataract procedure that they or a colleague performed and then correlate the intraoperative events to clinical findings during follow-up. In addition, video obtained at the slit lamp will probably become more widely available, and disease progression (eg, resolution of malignant glaucoma) will be viewed through a series of slit-lamp

videos stored in the image management system. For example, the retinoblastoma expert David H. Abramson, MD, is currently using this type of real-time video examination at the Memorial Sloan-Kettering Cancer Center in New York City. Dr. Abramson is simultaneously able to educate many residents who otherwise would not be able to visualize this rare childhood retinal cancer.

CONCLUSION

As technologies advance, the opportunity to take advantage of developments in glaucoma education grows. The challenge for those involved in instruction is to adapt to both the evolving educational platforms and the changing needs of residents and students. □

Nathan M. Radcliffe, MD, is an assistant professor of ophthalmology at Weill Cornell Medical College, New York-Presbyterian Hospital, New York. He has received compensation for speaking and consultation with Carl Zeiss Meditec Inc. Dr. Radcliffe may be reached at (646) 962-2020; drradcliffe@gmail.com.



Grace Sun, MD, is associate residency program director at Weill Cornell Medical College, New York-Presbyterian Hospital, New York. She acknowledged no financial interest in the product or company mentioned herein.



1. Blumberg DM, Quigley HA, Goldberg HR. Quantitative and qualitative evaluation of a web-based, interactive approach for teaching the management of angle-closure glaucoma. *J Glaucoma*. 2009;18:107-113.