

Rohit Varma, MD, MPH

Dr. Varma reflects on the value of adaptability and the focus of medical education.

How did your upbringing in a military family affect your decision to pursue a career in ophthalmology and your outlook as a physician? My father was a general in the Indian Army and the head of the Dental Corps. Throughout his career, he would tell me stories of obstacles he encountered and how he got around them. One thing he consistently said to me was, “Persist in your goals but adapt your approach.” He meant that, while you are striving toward a goal, conditions constantly change and you must adapt in order to succeed.

His advice affected how I pursued my career, conducted research, managed patients, and lived my life. For example, when I came to the United States as a foreign medical graduate, my goal was to become well trained in research and contribute to creating new science in ophthalmology. Many of the individuals I encountered early on told me that I would not be able to get into an ophthalmology training program, because it was so competitive, even for medical students who had graduated from schools in the United States. I never changed my goal, but I altered my approach. Instead of applying immediately for a residency, I pursued research, published some articles, and then applied for a residency and was accepted by the Wilmer Eye Institute of Johns Hopkins University in

Baltimore. Ironically, many years later, I served as an associate editor for *Ophthalmology*, and in that position, I critiqued the work of some of the individuals who once told me I would not succeed.

Those achievements would not have been possible, however, without the many friends, family members, and mentors (including Roger Hitchings, FRCOphth; George Spaeth, MD; Alfred Sommer, MD; Harry Quigley, MD;

Ronald Klein, MD; Stephen Ryan, MD; and Ronald Smith, MD) who have supported me through the years.



What differences did you observe between medical training in India versus the United States? Medical training in India was very didactic. By this, I mean that medical education emphasized terminology, definitions, and details that may not be relevant to understanding the pathobiology of a disease or its management. The importance of the circle of Zinn-Haller is not its

name. Of significance is how blood vessels are oriented in and around the optic nerve and how variations in the vascular structure can influence the risk of developing vascular insufficiency in various diseases. I found that US medical schools placed relatively more emphasis on understanding disease biology and on the practical aspects of disease man-

FAST FACTS

- Professor, Department of Ophthalmology and Preventive Medicine, University of Southern California, Keck School of Medicine, Los Angeles, 2005 to present
- Director of the University of Southern California's Glaucoma Fellowship Program (1997 to present), Ocular Epidemiology Center (2002 to present), Glaucoma Service of the Department of Ophthalmology (2004 to present), and the Clinical Trials Unit of the Doheny Eye Institute (2007 to present)
- Member of the NIH Anterior Eye Disease Study Section (2008 to present), chair of the NIH Toolbox Steering Committee-Vision Section (2007 to present), and member of the NIH Special Emphasis Panel Grant Review Committee (1999 to present)
- Co-chair of the AAO's Glaucoma Subspecialty Day Program Committee, 2008 to present
- Member of the National Eye Health Education Program Planning Committee, 2007 to present
- Member of the NEI Board of Scientific Counselors, 2005 to present
- Member and chair of the Clinical Research Section Program Committee for ARVO, 2005 to 2008
- Clinical center principal investigator for Advanced Imaging for Glaucoma (NIH R01 EY013516), 2004 to 2013
- Principal investigator for the Multi-Ethnic Pediatric Eye Disease Study, 2002 to 2010
- Clinical center principal investigator for the Tube Versus Trabeculectomy Study, 1999 to present
- Principal investigator for the Los Angeles Latino Eye Study (NIH U10 EY11753), 1998 to 2008
- Clinical center principal investigator for the Collaborative Initial Glaucoma Treatment Study (NIH U10 EY009100), 1993 to 2003
- Recipient of the President's Award, Glaucoma Research Foundation, 2009
- Recipient of Research to Prevent Blindness' Career Development Award (2007) and Sybil B. Harrington Scholar Award (2003)
- Recipient of the AAO's Senior Achievement Award (2006) and Honor Award (1998)

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agement rather than on knowing a specific name or term. This is how one should focus medical education.

Another difference is a relative lack of concentration in India on research methodology and understanding how to interpret the medical literature. That was my main motivation for coming to the United States. I wanted to understand better how to conduct innovative, scientifically rigorous research. During the past decade, given a “flattening” of the world in science and education, however, I believe that medical training in India has become excellent, primarily because it is evolving to focus more on the practical value of scientific data and their interpretation.

Do you have plans for further studies in the Hispanic population? During the last few years, my fellow researchers and I have learned about specific characteristics of ocular disease in this population. We have concentrated on sociodemographic issues and conventional epidemiologic methods and outcomes. Now, we have shifted our focus to studying the genetics and proteomics of eye disease within a framework of individual environmental and community/population-level issues. Why does glaucomatous damage progress in some cases but remain stable in others?

What do you think will be the next great glaucoma surgery?

When we perform a trabeculectomy or implant a glaucoma drainage device, we certainly expect the pressure to decrease, but we cannot predict the amount. More importantly, we cannot modify the procedure to produce a greater or lesser reduction in IOP. A significant advance would be the development of a procedure in which we could carefully calibrate (noninvasively and in multiple steps, if necessary) the amount by which IOP was lowered in an eye during the postoperative period.

I believe that microelectronics should allow the creation of a device that will provide for the careful titration of the IOP noninvasively after its surgical implantation. Such technology would automatically and continuously modulate the pressure so that, during normal diurnal fluctuations, it does not rise above a set point or fall below a certain level. The device would also permit us to adjust the IOP if we found in time that the original target was not sufficiently low to prevent progressive damage.

What role might new antiscarring agents play in glaucoma surgery? Again, the key is to be able to modify, modulate, and adapt. We should be able to alter the trajectory of the scarring cascade. Currently, glaucoma surgery results in the formation of either too much or too little scar tissue. We can give additional injections of 5-fluorouracil, increase the concentration of an antifibrotic agent, or extend the duration of its application. Once a trabeculectomy begins to fail, however, converting it into a success is difficult at best. What we need is a reliable drug delivery device that will allow us to release more or less of the antiscarring agent if the ocular healing response differs from our original expectation. Unfortunately, we are not currently at that stage. □