The Eye Handbook: A Mobile App in Ophthalmic Medicine

by Ken Lord, MD, Vinay A. Shah MD & Rohit Krishna, MD

Mobile smartphone technology has revolutionized how we practice medicine.

Ken Lord, MD, (above top), MSMA member since 2010, is a vitreoretinal specialist at Retina Associates of Southern Utah. Vinay A. Shah, MD, (left), is a Vitreoretinal specialist at the Dean McGee Eye Institute and a Clinical Associate Professor in the Department of Ophthalmology at the University of Oklahoma in Oklahoma City. Rohit Krishna, MD, (right), MSMA member since 2000, is Director of the Glaucoma service and Associate Professor of Ophthalmology at UMKC and is Medical Director/CEO at Epic Surgery Centers in Kansas City.
Contact: dr.kenlord@gmail.com

The Eye Handbook is the most popular and successful application available in eye care. What began as a resident research project three years ago at the University of Missouri Kansas City Department of Ophthalmology has evolved into the number one source for mobile eye care information in the world, with over half a million downloads and over 25 thousand active users.

Mobile smartphone technology has revolutionized how we practice medicine. It is estimated that over 70-80% of physicians own a smartphone.[1] Ophthalmology is a tech heavy field with many different devices utilized in the normal process of patient care. The Eye Handbook, a diagnostic and treatment reference app has a myriad of functions that enhance the ability of ophthalmologists and other health care providers to deliver timely and quality eye care.[2]

The app is a portal of ophthalmic information giving users the ability to treat and diagnose eye conditions in virtually any setting. While there are about 80+ mobile smartphone applications at the present time available in the field of eye care, no single app offers more features and applicability then Eye Handbook. An abbreviated list of Eye Handbook's features are listed below:

• Patient Education Videos/Material
• Eye Atlas
• Testing Tools/Calculators
• Practice Efficiency tools
• Revenue/Coding tools
• Physician References
• Board Review Material
• Lectures/Videos
• Meetings/Journals Portals
• Selected American Academy of Ophthalmology (AAO) Content
• Treatment Reference Manual
• Forum Discussion boards
• Eye Care Professional Directory

One of the most useful Eye Handbook features is the ability to perform diagnostic testing in various forms on the application. Whether doing a consult in a hospital or seeing a patient in the emergency room, having the ability to perform basic vision tests on a mobile device is very useful. (See Figures 1A and 1B.) These tests don't replace standardized office exams, but they can certainly give the clinician an idea of the patients overall visual status.

Another popular feature is the calculators section. (See Figures 2A and 2B.) Every field in medicine is benefited by the use of calculators in one form or another. The Eye Handbook has formulas allowing a user to perform intraocular lens

calculations, lens power transpositions, glaucoma risk calculations, and many others. More calculators are planned for implementation in future upgrades.

The Eye Handbook also has a digital Eye Atlas with pictures of common ophthalmic conditions. (See Figures 3A, 3B and 3C.) Eye care professionals across the globe have submitted their own images for inclusion in the atlas. The atlas can be used to educate patients on a disease process, discuss a contemplated surgery, or even to refresh the memory of physicians treating a particular disease. There is also the ability to perform small quizzes within the atlas.

Users of the Eye Handbook also commonly use the coding section where popular ophthalmic ICD-9 codes are listed and easily indexed. The coding section contains CPT codes, modifiers, and global periods for easy accessibility. Many physicians report the great utility in having a quick reference of common ophthalmic ICD-9 codes on the go.

Eye Handbook was built to include important information valuable not only to medical students and residents, but to busy practicing ophthalmologists, optometrists, and ancillary personnel like technicians. As the app has evolved, the app has been tailored to meet the needs of anyone involved in eye care.

The latest addition to the Eye Handbook is a user profile & directory and an eye care forum portal. Now users can list themselves in a global directory of eye care professionals. And as well, answer and post questions about eye conditions or questions about eyecare in general. This is the only forum of its type available on a mobile platform. (See Figures 4A, 4B, and 4C.)

A graph is shown of the most common Eye Handbook features accessed in an average month. The numbers represent the amount these items were accessed in the month of October 2012. As you can see, the Eye Handbook has a large user base. (See Figure 5.)

The idea for Eye Handbook began three years ago at the University of Missouri-Kansas City (UMKC). With the support of residents and faculty at UMKC, content
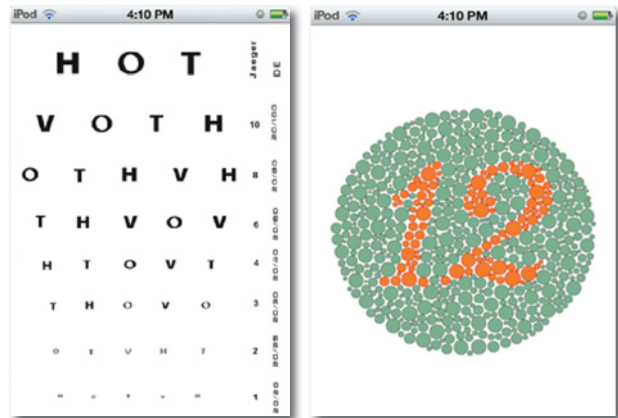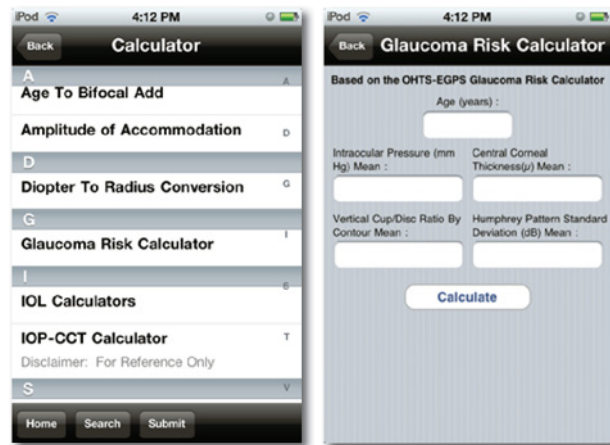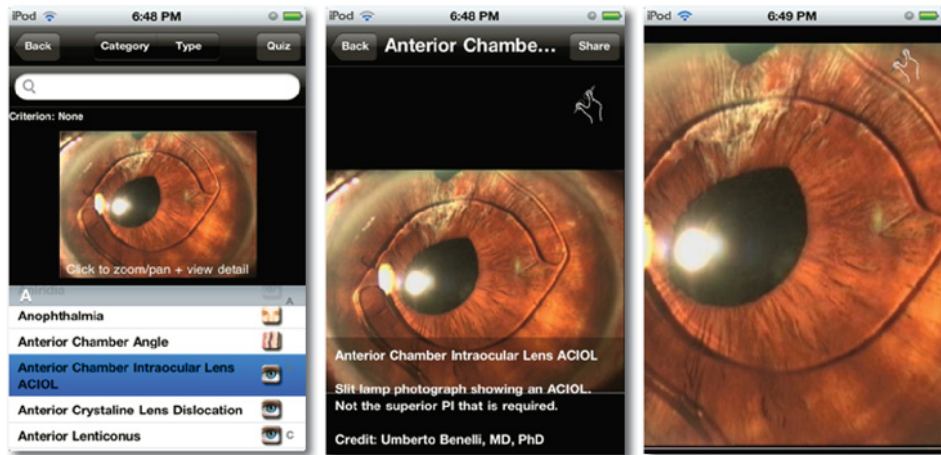

Figure 1A & 1B
A) Near Vision Card B) Ishihara Color Plate

Figures 2A & 2B
A) List of common ophthalmic calculators
B) Glaucoma Risk Calculator

Figures 3A, 3B & 3C
A) index list of ophthalmic conditions
B) metadata associated with each image
C) representation of the image pan & zoom feature

was generated and the very first version of the Eye Handbook was published to the iTunes App store in October of 2009.

The Eye Handbook application was initially released at the American Academy of Ophthalmology's (AAO) annual meeting in October 2009 and was an instant success. Because the application is free, users have had little inhibition to download the app onto their phone. Within days of the release at AAO, Eye Handbook had over ten thousand downloads. And Eye Handbook has had a persistence with users, or in other words, most users who downloaded the app have kept it on their phone. This is in direct contrast to 99% of other apps downloaded, where users try the app for a brief time and then delete.

At present, Eye Handbook development continues on both the Android and iPhone platforms, (See Figure 6A, 6B, 6C, 6D, and 6E) with updates scheduled for release in the very near future. The Eye Handbook has evolved through user feedback and we are indebted to our loyal users for their continued patronage.

The Eye Handbook is a great of example of an App that began small and filled a niche. Using a freemium model and broad credibility it has established itself as a standard in mobile ophthalmic medicine.

References

1. "72 Percent of US Physicians Use Smartphones." Mobihealthnews. Web. 14 Feb. 2012. <http://mobihealthnews.com/7505/72-percent-of-us-physicians-use-smartphones/>.

2. Lord RK, Shah VA, San Filippo AN, Krishna R. "Novel uses of smartphones in ophthalmology." Ophthalmology. 2010 Jun;117(6):1274-1274.e3.

MM

Figures 4A, 4B, 4C
A) Eye Handbook Profile screen shot
B) Eye Handbook eye care professional directory
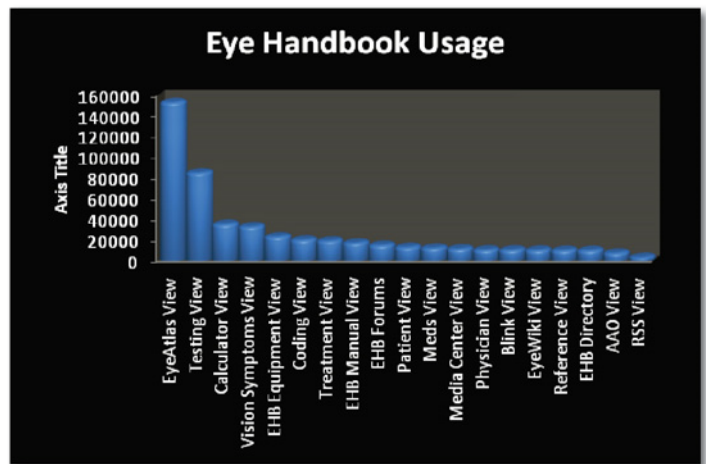C) Eye Handbook Forums

Figure 5
Most common items access on the Eye Handbook in October 2012.

Figures 6A, 6B, 6C, 6D, 6E
A) First version of the Eye Handbook published on the Apple iPhone app store October 2009
B) Version 2.3 Published June 2010
C) Version 4.0 Published June 2011
D) Version 4.3 Published September 2012
E) Version 4.4 set to be published December 2012