

EMRs for the Glaucoma Doctor

Can an electronic medical record really help your practice?

BY KYLE H. SMITH, MD

If you feel skeptical about implementing an electronic medical record (EMR) system in your practice, you are not alone. A great majority of ophthalmologists share your concerns about the potential for an EMR system to help their practice in any meaningful way. You may have heard that 50% to 80% of EMR implementations fail and that these efforts are more prone to failure in ophthalmology practices than in other specialties because of the high volume of patients and data-intensive nature of eye care.¹ Given the poor track record, you may have concluded that an EMR system will be just another bitter pill to swallow when government regulations finally force you to take your medicine or face the financial penalties for noncompliance.

As you walk through the graveyard of EMR failures, you do not need to be a brilliant diagnostician to determine the cause of death in most cases. EMR systems that fail generally do so because they undermine efficiency in the practice.^{2,3} Inefficiency kills productivity. Who cares about the \$44,000 Health Information Technology for Economic and Clinical Health (HITECH) Act incentive for using an EMR when your practice is 10% to 20% less productive? Even worse, an inefficient system may also decrease the quality of patients' care. No patient wants his or her doctor's attention to be dominated by a computer screen for the entire visit.

Despite these valid concerns, it will behoove you to keep an open mind when considering EMR systems.

EFFICIENCY: CAN AN EMR COMPETE WITH PAPER? Not an Electronic Paper Chart

A common misconception among doctors who are anticipating making the switch from paper charts to an EMR system is that the latter should look and function just like the former. In reality, such an EMR system would be terribly inefficient and could never achieve the full potential of electronic data storage and manipulation. EMRs are a completely new paradigm in documenting encounters with patients. By allowing EMR design to break free of the traditional model of paper charts, the potential for efficiency and quality far exceeding that of paper records can become a reality.

New technology coupled with enhanced, efficiency-focused, eye care-specific EMR designs is finally bringing the promise of EMRs into real-world clinical practice.

User Interface Design

The design of the user interface is the single most important element in an EMR system's adoption by doctors and staff. The fundamental requirements of an efficient user interface are data entry, data assimilation, and task management.

The EMR system must allow quick and efficient data entry throughout the encounter, without undue reliance on typing, lengthy pick lists, or excessive mouse clicks to accomplish a task. A larger challenge is the need for doctors to document their thoughts about their patients as efficiently as possible. Doctors are paid to think, and their thought processes are the most important information in the record. Some EMR systems deal with this challenge by using customizable blocks of text (macros) that are created, saved, and imported as needed.

A truly efficient EMR system will present data to the user with intuitive formatting that anticipates the user's thoughts and needs. A key concept in efficient user interface design is the elimination of visual "noise." Users presented with too much information on a screen will waste time searching for that one piece of information they really need at that moment.

Finally, the user interface must facilitate the various tasks that users need to accomplish in every encounter with patients. An EMR system designed to maximize efficiency will quickly generate forms, letters, orders, and prescriptions. It will help keep the entire team on task and well organized.

Diagnostic Equipment Interfaces

The sheer volume of clinical data generated by sophisticated diagnostic devices is another major challenge for EMR systems, particularly in a glaucoma practice. The vast majority of diagnostic devices in use today were not designed to send data to an EMR system. Instead, they send data to a



Figure 1. This glaucoma summary screen illustrates the power of an EMR system. This type of longitudinal analysis of multiple data points gives the physician more valuable clinical information in one view than a paper chart could ever provide.

printer so that a paper document can be incorporated into the patient's chart. Scanning those documents and then uploading the files into the EMR system is somewhat inefficient and time consuming. Fortunately, new technology is allowing successful and efficient data transfer from these units directly into EMR systems. Most newly manufactured diagnostic devices are designed with network interfaces that facilitate integration with EMR systems.

IMPROVED CARE

Good physicians are always seeking means by which to provide better care to their patients. Can an EMR system help you in this regard? Systems that fail to clear the efficiency hurdle also tend to sacrifice quality care. A well-designed user interface that allows a user to work with great efficiency, however, can also significantly improve patients' care.

Access to Information

Doubtless, you have faced the frustration of having to make a clinical decision without full access to data that might have made a difference in that decision. In a world where information is king, the ability to access clinical data electronically is a fantastic advantage. Electronic data are instantly accessible and are rarely lost or filed incorrectly. Internet-delivered systems provide the additional advantage of access from anywhere at any time.

Summary Screens

The true value of a summary screen in an EMR system is its ability to present the user with a longitudinal analysis of information. This is critical in glaucoma care where an analysis of multiple data points over the course of time is essen-

tial for assessing and managing the disease. Unlike paper chart systems where these data points require time-consuming manual entry on summary documents, an EMR system can automatically pull the relevant data from each encounter and present it to the user in a meaningful, visually comprehensive format (Figure 1).

Image Viewing System

Most EMR systems are equipped with some sort of an image viewing system that allows efficient viewing and interpretation of digital images. The glaucoma doctor can quickly scan through a series of visual fields, disc photographs, optical

coherence tomography examinations, or other glaucoma-related studies (Figure 2). Newer monitors provide higher-resolution images than printed copies. Monitors that permit stereoscopic analysis of disc photographs will soon be commonplace.

Communication

Care is always enhanced when providers communicate effectively about their mutual patients. Most EMR systems allow the user to generate letters to primary care physicians, referring physicians, and other providers with only a few mouse clicks. These letters may be printed and mailed or transmitted electronically over the Internet.

Error Prevention

Systems that allow automated data entry from diagnostic devices and electronic prescription services minimize the potential for human error.

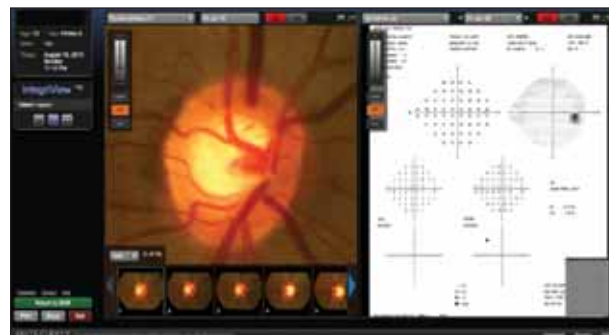


Figure 2. Image viewing applications allow the physician to quickly analyze any type of diagnostic testing image across multiple encounters and in a variety of formats.

MAKING GLAUCOMA CARE EASIER AND MORE EFFICIENT

By John C. Burchfield, MD

Electronic medical record (EMR) systems lend themselves readily for use in caring for glaucoma patients and can greatly improve the efficiency and quality of care. In his article, Kyle Smith, MD, nicely outlines some of these advantages. I would like to focus on three of the most important in a glaucoma practice.

ADVANTAGES

Access to and Assimilation of Data

Managing glaucoma patients requires the assimilation and coordination of much information in the form of examination findings and test results. In paper charts, this task has traditionally been accomplished through the use of flow sheets that display IOP readings, optic disc measurements, gonioscopic findings, past diagnoses and procedures, etc. Flow sheets, however, require manual updating, they are limited in what they can hold, and information is sometimes incomplete. Moreover, the sheets can become lost or damaged. EMR flow sheets have the advantages

of being updated automatically and being much more flexible and complete in their content.

In my practice, an eye summary page (Figure 1) contains virtually every piece of information I need to make a decision regarding a glaucoma patient's care. Most is displayed for view on a single page, and other pages can be accessed with a single click of the mouse. All of this information except the eye history is loaded automatically from data fields in other templates. The eye history box summarizes pertinent information, either taken from the old paper chart or entered the first time a patient is seen. In converting from paper to EMRs, clinicians will find that the relevant history can be distilled down to four or five lines for the vast majority of patients, regardless of the size of their charts. I therefore strongly recommend against automatically scanning all paper charts into an EMR system.

Communication

In our relatively large practice (12 MDs and two ODs) with multiple offices and subspecialists, many of our patients receive care from two or more doctors in the group. Using EMRs, con-

The screenshot shows a complex EMR interface for an eye summary. At the top, there's a menu bar with icons for File, Edit, View, Print, and other functions. Below the menu, the patient's name 'Burchfield, John C MD' is visible. The main area is divided into several sections:

- VAACP:** A table with columns for OD, OS, and dates. It shows data for 08/31/2010, 03/01/2010, 09/25/2009, 08/24/2009, and 02/24/2009.
- C/D Ratio:** A table with columns for OD V, H, DOLS, OS V, H, DOLS. It shows data for 08/31/2010, 08/24/2009, and 02/24/2009.
- V. Fields:** A table with columns for Type, OD Interp, OS Interp, and Comments. It shows data for 03/01/2010 and 02/24/2009.
- Data Review:** A table with columns for Item1, Item2, and Item3.
- Diurnal IOP:** A table with columns for OD, OS, and dates.
- Pachymetry:** A table with columns for OD, OS, and dates.
- OHTS:** A table with columns for DOLS, STAR, and DHC.
- EYE HX - CHART NOTE:** A section for chart notes, including a 'Last visit info' box and a 'Data Review' box.

On the right side, there's a sidebar with a list of dates and a 'Default' button. At the bottom, there's a section for 'Non-V.A. Brand' and 'Generic' drugs, including DORZOLAMIDE-TIMOLOL and BRIMONIDINE.

Figure 1. The eye summary page in the author's EMR system.

sultations and notes on patients are e-mailed between physicians, greatly facilitating the coordination of care. Phone calls are documented in specialized templates that are linked to patients' charts and are e-mailed from the staff to the physician and back. This setup makes it easy to answer questions in real time without disrupting the flow of patients.

Access to Charts

Being able view a chart from any location with an Internet connection is of tremendous benefit when caring for patients who are seen at multiple sites. It is also a great help to an on-call doctor needing to access a patient's record in order to handle questions and problems during off hours.

DIAGNOSTIC TESTING

I have not listed diagnostic equipment interfaces and test analysis as strengths of an EMR system. The cost of obtaining EMR interfaces for each piece of equipment and/or a third-party program for handling this information can be significant, and viewing serial tests and images is sometimes cumbersome. Physicians have powerful statistical tools for analyzing visual fields at their disposal. This potential has yet to be realized across all visual field platforms, however, where clinicians have been forced in large part to use visual field images rather than the actual numerical data. Physicians' ability to manipulate visual field output at an examination room's workstation has been limited or nonexistent.

Haag-Streit USA, Inc. (Mason, OH), has introduced perimetry software (EyeSuite) that allows the user to vary graphical output and view statistical analyses on demand in the examination room without additional manipulations of output on the visual field machine.¹ It is to be hoped that other manufacturers will follow suit.

SUMMARY

The best way to summarize the advantages of EMR systems in caring for glaucoma patients is not to state that they will increase collections or make a practice more efficient, although they may do both of those things. Rather, EMR systems make it easier to improve the quality of care and thus practitioners' and the staff's quality of life as it relates to the practice of ophthalmology.

John C. Burchfield, MD, is in private practice with Vision Associates in Toledo, Ohio, and he is an assistant clinical professor of ophthalmology at the University of Toledo Medical Center. He acknowledged no financial interest in the products or companies mentioned herein. Dr. Burchfield may be reached at (419) 578-2020; jrburchfield@visionassociates.net.



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FINANCIAL BENEFITS

Even if an EMR system has no positive effect on the number of patients you see in a day, many financial benefits could still more than offset the cost of this technology. These include

- HITECH Act reimbursement
- Improved compliance with the Physician Quality Reporting Initiative
- Proper coding (eliminate undercoding)
- Reduced office staff (no paper charts to manage)

CONCLUSION

Perhaps you are still skeptical. Fair enough. Selecting and implementing an EMR system is a huge decision for your practice. You will do yourself and your practice a favor, however, if you keep an open mind and continue to search for the perfect EMR system for your situation. □

Kyle H. Smith, MD, is the president and CEO of Integrity Digital Solutions, LLC. Dr. Smith is also the chief of the Division of Neuro-Ophthalmology at Scott & White Eye Institute in Temple, Texas. He holds a financial interest in Integrity Digital Solutions, LLC, and its EMR product, Integrity EMR for Eyes. Dr. Smith may be reached at (254) 718-7250; ksmith@integrityemr.com.



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