



***Be Successful with EHR***

# ***EHR is Just Better Medicine***

**An Illustrated Guide to Using EHR in the Delivery of Patient Care**

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***Inside...*** *With so much focus on government mandates and the cost of electronic health records (EHR), it's easy to lose sight of the fact that there are good clinical reasons for moving away from paper.*

My group practice transitioned to EHR five years ago to eliminate the inefficiencies of paper records. Since then, I've found that EHR actually has a profound effect on patient care, in ways I never anticipated. Here are just a few examples of what we can do with EHR that we couldn't before.

## 24/7 access to critical patient information

When I get a Friday night call from one of my partners' elderly patients who has run out of "the drops in the white bottle," I can actually pull up the record on my phone or laptop to see what drops Mrs. Smith is talking about and whether her medical history indicates an urgent need to refill that prescription. Figure 1 is what a patient's medication history looks like on my iPhone screen.

As you can see in the photo, I can switch tabs at the top of the screen to review anything else I want to see in the patient's record. So if Mrs. Smith has early glaucoma and well controlled IOP, I might tell her not to worry about two or three days without drops. She can call my office on Monday to process the refill. But if I see that she has advanced nerve damage and a history of very high IOP, I can call the pharmacy or send an e-prescription so that she can pick up that refill sooner rather than later. Thanks to EHR, when I get a call like this, I can make an educated decision without driving to the office to pull the chart.



Fig. 1

## Better data, better decision making

In following a patient with a chronic condition like glaucoma, most of us use a summary flow sheet to get a snapshot overview of progression over time. Previously my staff or I had to copy over IOP, tests performed, cup-to-disc ratio, etc., onto the glaucoma flow sheet after every visit. A sample of what a paper flow sheet looks like is shown in Fig. 3

The paper flow sheet works well enough, but it is only as good as how readable the handwriting is and how consistently we add to it. In a busy practice, the transfer of data might not always happen, leading me to unnecessarily repeat a test or miss a problematic test result.

With EHR the accuracy of the flow sheet is much greater. After each visit, the new information is automatically updated to the flow sheet so that I always have a current, complete view of that patient's disease progression and the impact of therapeutic interventions over time. "Figure 2 is an example of the glaucoma flow sheet in Ophthalmology Advantage/EHR™.

In the EHR version I have a clear view of pressure readings over time, nicely color-coded so that I can easily distinguish between the right and left eye IOP. I can also look at all IOP readings in a list format if I prefer (Fig. 4). All the glaucoma-related testing we've performed is clearly listed by date. I can click on any test to see the actual perimetry results (Fig. 5) or to view the nerve fiber layer images (Fig. 6).

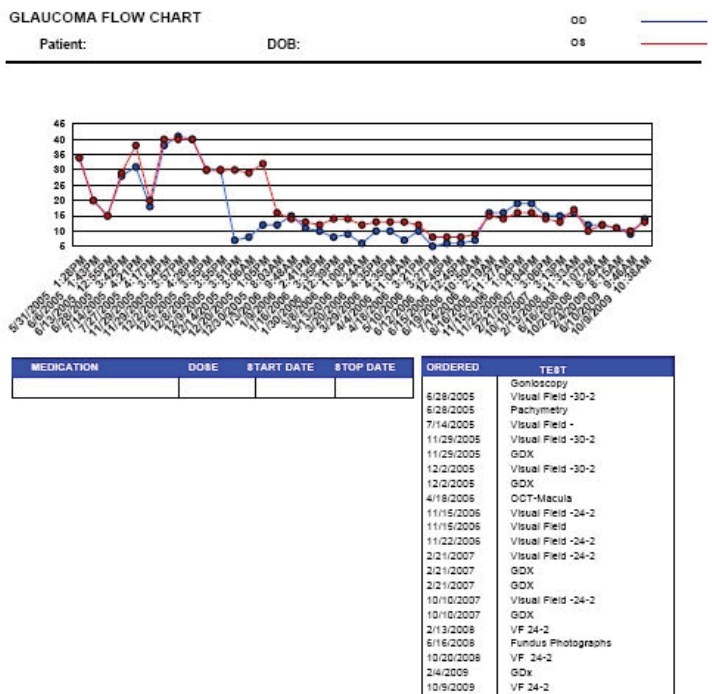


Fig. 2: Glaucoma flow chart in Ophthalmology Advantage/EHR™

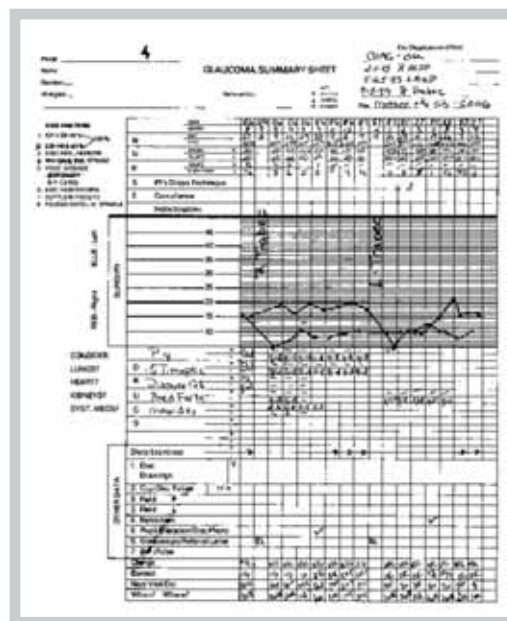


Fig. 3: Paper glaucoma flow sheet

It is just as easy to look at perimetry testing from 5 years ago as it is to see the current results, so there is no more flipping through reams of paper in a folder to compare the sets of images.

Put simply, accurate information gives me the power to make better decisions.

I customized my flow chart to show only ophthalmic medications (the patient in Fig. 2 is currently not on any drops), because systemic medications aren't a priority for me in tracking progression. If I do want to see the systemic medications, I just click on the "medications" tab to see a full list like the one that appeared on my iPhone screen in Fig. 1.

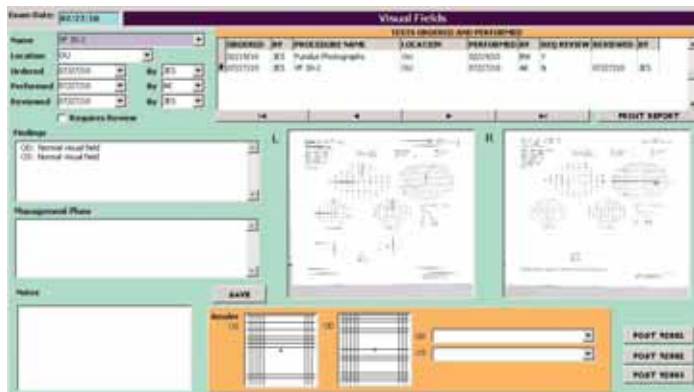


Fig. 5: Visual fields tab

DATE	OD	OS	METH	TIME	VA CC OD	VA CC OS
5/31/2005	34	34	APPL	13:28	20/20	20/20
6/6/2005	20	20	APPL	13:43		
6/13/2005	15	15	APPL	12:55		
6/28/2005	28	29	APPL	15:42	20/20	20/20-
7/14/2005	31	38	APPL	16:21	20/20	20/20-
7/27/2005	18	20	APPL	16:17	20/20	20/25-
	38	40	APPL	15:54	20/20	20/30
	41	40	APPL	15:57	20/20	20/30
12/2/2005	40	40	APPL	16:28	20/20	20/20
12/5/2005	30	30		15:55	20/25+	20/40
12/8/2005	30	30		15:55		
12/9/2005	7	30		15:51	20/60	20/25
	8	29		3:06	20/50	20/25-
	12	32	APPL	13:05	20/30-	20/20
	12	16		08:03	20/25-	20/20-
1/3/2006	15	14		09:48	20/25	20/25++
1/9/2006	11	13		14:41	20/25-	20/20-
1/16/2006	10	12		15:35	20/20-	20/20-
1/30/2006	8	14		12:39	20/20-	20/20-
3/8/2006	9	14		13:00	20/70-	20/20
3/13/2006	6	12	APPL	4:24	20/200	20/25
3/20/2006	10	13	APPL	16:35	20/200	20/20
3/29/2006	10	13	APPL	16:35	20/200	20/20
4/4/2006	7	13	APPL	11:04	20/200	20/20
4/18/2006	10	12	APPL	15:21	20/200	20/20
5/10/2006	5	8	APPL	15:27	20/200-	20/20
6/12/2006	6	8	APPL	12:45		
6/15/2006	6	8	APPL	12:45		
6/19/2006	7	9	APPL	10:50	20/150-	20/20-
7/14/2006	16	15	APPL	2:19	20/150	20/15-
8/16/2006	16	14	APPL	11:27	20/200	20/20
	19	16	APPL	13:04		
	19	16	APPL	13:04		
2/21/2007	15	14	APPL	15:06		
	15	13	APPL	15:13	20/20	20/30
2/13/2008	16	17	APPL	11:33		
6/16/2008	12	10	APPL	13:07		
	12	12	APPL	8:26		

Fig. 4: IOP list

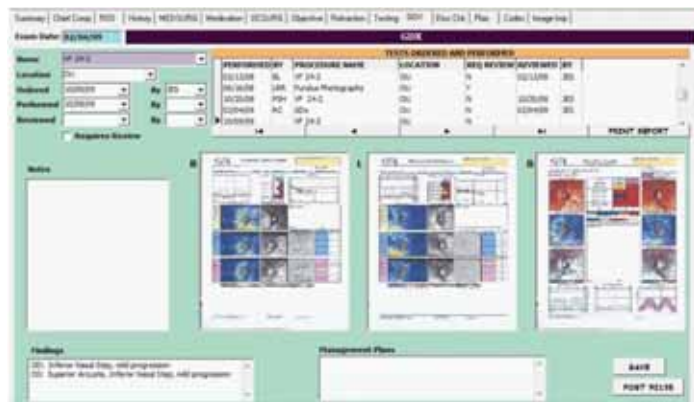


Fig. 6: GDX images in the patient record

The digital version of my glaucoma flow chart also lends itself much better to patient education. Each of our 11 exam lanes is equipped with a 17-inch monitor on a swing arm, as shown in Fig. 7.



With this setup, I can show the patient that graph of IOP readings over time, the visual fields, or any other testing we've done to reinforce a compliance message or explain the need for surgery. We also use the monitors to display patient education videos in the exam room.

## Prevention of surgical errors

We really can't overestimate the importance of error prevention, especially in elective surgery.

In the past, we would write cataract patients' names, birth dates, left/right eye, and the IOL type and power on a whiteboard in the O.R.—an error waiting to happen. Our EHR system now prints out a full-size page for each procedure on the schedule that day, with all the correct information in large font (Fig. 8).

I can see at a glance which eye I'm operating on and know that there was no error in transcribing the lens choices or toric axis from paper. In Figure 8, you can see that a relevant allergy to iodine is also clearly noted on the sheet posted on the wall in the O.R.

With an established patient, something like an iodine allergy might be easy to miss in a paper file.

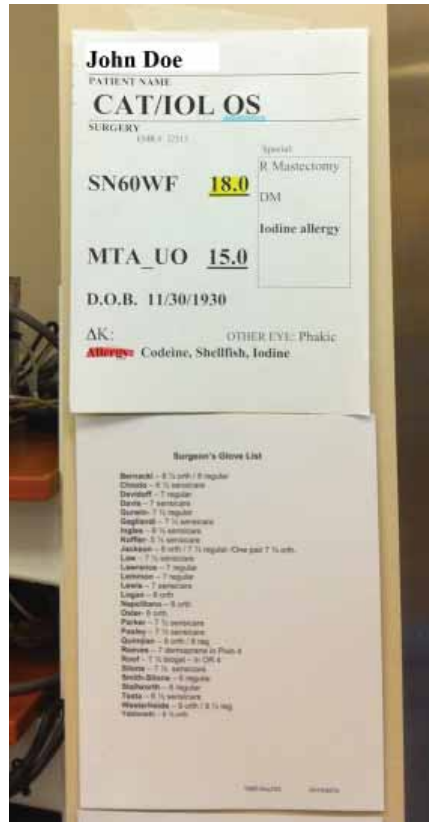


Fig. 8

EHR not only prevents errors in the operating room, it reduces human error throughout the visit. Think about the autorefractor. If you are using a paper chart, the technician writes down the results at the autorefractor. Those numbers might get transferred again to a glaucoma flow sheet, referral letter or other location. Each time, there is an opportunity to write down the wrong number or accidentally transpose data for the right and left eyes.

With EHR, images can be automatically uploaded to the patient record and data from many of our ophthalmic devices can be automatically imported into the correct fields so a human doesn't have to write it down (and risk making an error) at all. Compulink offers more than 150 ophthalmic device interfaces, the most in the industry.

## Maintain my standards of care

In an ideal world, every patient with glaucoma should get an annual fundus exam; every cataract patient with significant astigmatism should be offered LRIs or a toric IOL. In the real world, we often fall short of these goals. With EHR, I establish the protocols I want my staff and myself to follow and Smart Functions in the EHR system prompt us to take action. These Smart Functions are customizable to work exactly as we want. They can even automatically calculate variables, fill in fields or generate letters.

For example, we have added a Smart Function to the keratometry section (Fig.9), to facilitate decisions and discussions about toric IOLs. As soon as the technician enters the second keratometry (K) reading, the software automatically calculates the difference between the horizontal and vertical Ks and puts it in the "difference" field. This eliminates calculation errors and ensures that we are ready to address our astigmatic patients' needs with just a glance at the screen.

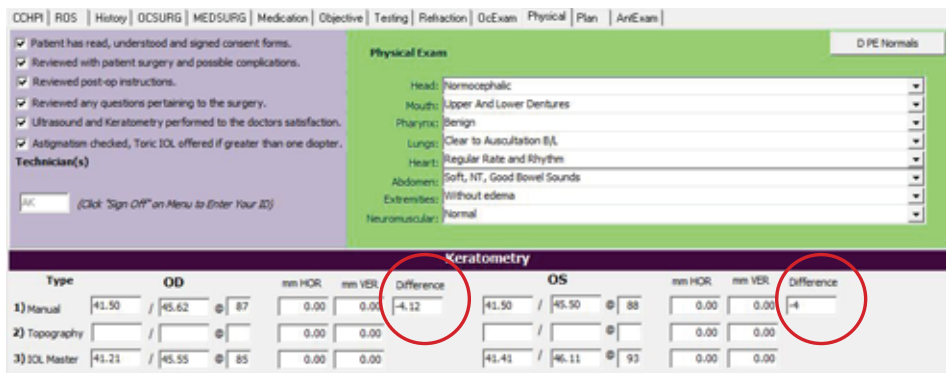


Fig. 9: Keratometry Smart Function

How many times have you accidentally repeated a test because the results weren't in the file (or you didn't notice them)? Worse yet is when a needed test goes undone because you've forgotten it's time to take fundus photos again. To avoid this, we added fields on the summary screen in green (Fig.10) to alert us when the patient last had important tests performed.

Remember, no one needs to note the tests in the green boxes. They are automatically updated as soon as test results are entered or imported from a device.

Another Smart Function is set to automatically prompt technicians to check both near and distance vision at postop visits for any patient who has a multifocal IOL implanted. This saves time during the postop visits because we aren't sending patients back to the technicians for missed near vision testing.

There is no doubt that EHR makes it easier for me to communicate effectively with other doctors on the patient's care team. With a diabetic patient who has ocular complications, for example, communication among the internist, endocrinologist, and ophthalmologist is essential. The doctor who referred the patient to me needs to know what I found and how I plan to treat the ocular complications. I may need their intervention to better control the patient's underlying condition. But consistently dictating letters with all the needed information is very challenging.

Figure 11 is a sample of my standard follow-up letter for a patient with DME. The EHR system automatically adds in the patient and referring doctor information, along with the pertinent findings and recommendations from my exam. All I need to do is authorize the signoff. Mission accomplished, with no dictation required.

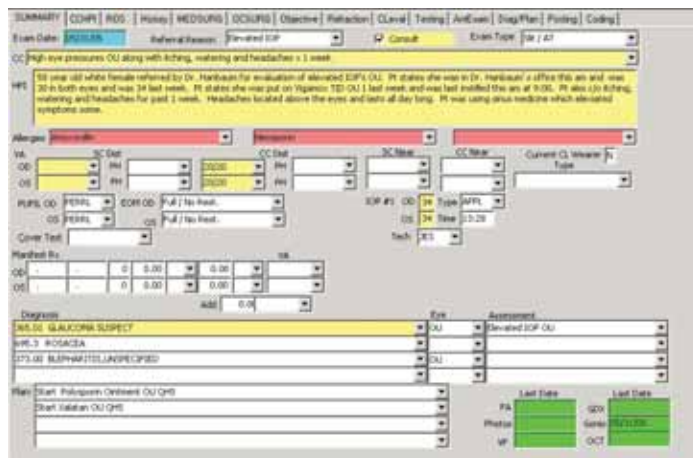


Fig. 10: Smart Function clearly identifies last testing dates

## Harvest the potential of the data you already have

Think about how much data is in your chart room—and how useless it is to anyone but the individual patient whose chart you pull. With EHR, you can suddenly access that data in the aggregate. You can design a report to analyze visual acuity outcomes in 65- to 70-year-old myopes with a particular IOL, or 5-year results after laser trabeculoplasty. We have barely tapped the potential of EHR in this regard.

At a minimum, having an EHR system makes it easy to do the kinds of things we ought to be doing to improve results, such as personalizing nomograms and optimizing A-constants. This kind of refinement is impossible without tracking outcomes.

And of course, the business applications of an integrated practice management and EHR system are almost too numerous to list.

You can much more effectively track and analyze optical shop sales, employee performance, referral sources, revenues generated by physician, insurance plan profitability, and much more. With just a few clicks, the system can generate reports with the information you need to effectively manage your practice.

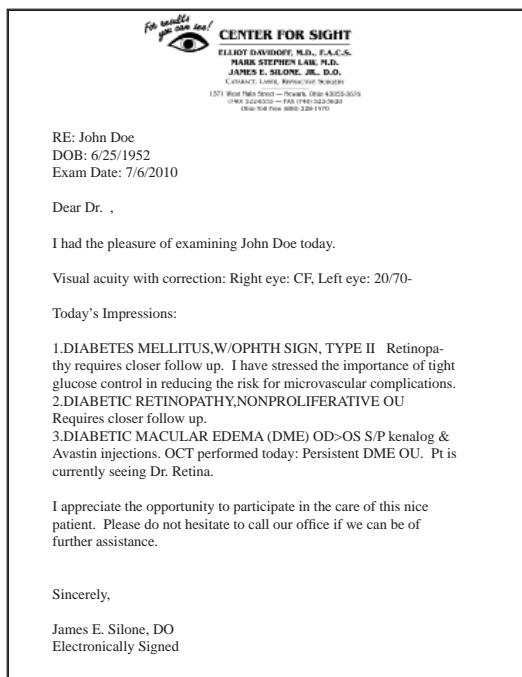


Fig. 11: Sample DME follow-up letter

By making physician correspondence easy, automatically tracking what testing has been done, and reminding staff to take certain actions, EHR helps me consistently maintain the standards of care I want in my practice.

## Choose the right EHR partner

EHR has become absolutely central to the clinical care and patient service we provide in our practice. I actually can't imagine functioning without it, so I'm very glad that our initial choice of an EHR system was the right one.

Compulink's Ophthalmology Advantage™ was designed for ophthalmology, with eye-care specific screens and templates. The "Objective Testing" screen is just one example of how this system is geared to our specialty (Fig.12).

Because it is also the most customizable system in the industry, we've been able to further modify it to view data and images in exactly the way we want to make the best clinical decisions.

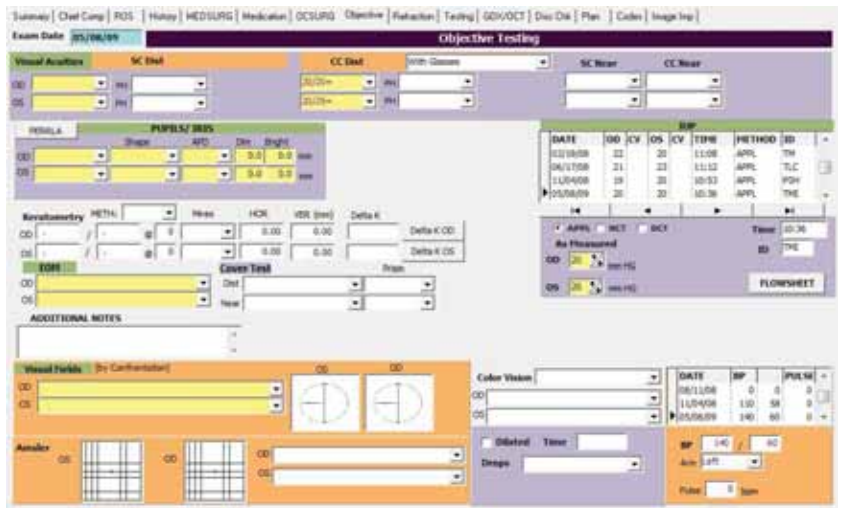


Fig. 12: Objective Testing Screen

For example, there is a long list of potential cornea exam findings (Fig. 13):

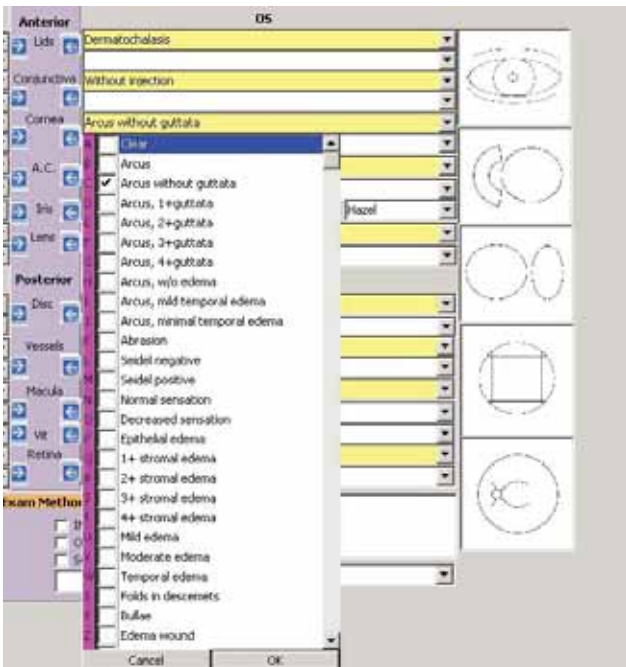


Fig. 13: Partial drop-down menu for corneal exam findings

The default finding for the A/C when I am logged in is "deep and quiet" (Fig. 14). When my partner is logged in, he sees the same screen, but the default is filled in as "clear and deep" (Fig. 15), reflecting the terminology he prefers.

Could I have gotten used to using "clear and deep"? Sure. But ophthalmologists are Type A people. The fact that each of us could continue using the terminology we preferred in an EHR system was critical to accepting and becoming comfortable using it.

We can add or modify entire layouts. Some practices choose to make their exam screens look exactly like the paper exam forms looked before—another way to speed physician acceptance.

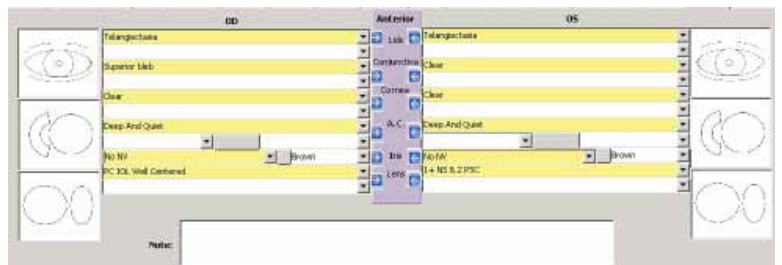


Fig. 14

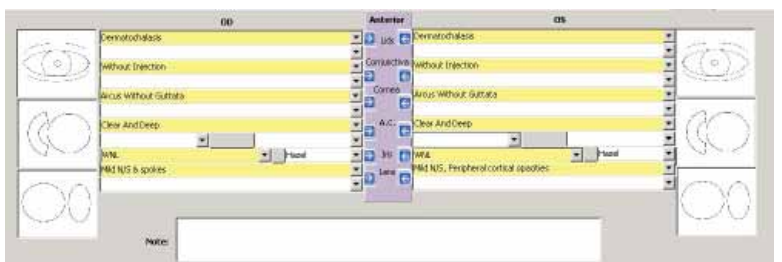


Fig. 15

Of course, you can alter this list to your liking. Most EHR systems allow you to do that. But, Compulink goes several steps beyond basic customization. My partners and I don't have to conform to the software's idea of how to note a normal anterior chamber, for example. In fact, we don't even have to conform to each others' ideas of how to note a normal anterior chamber.

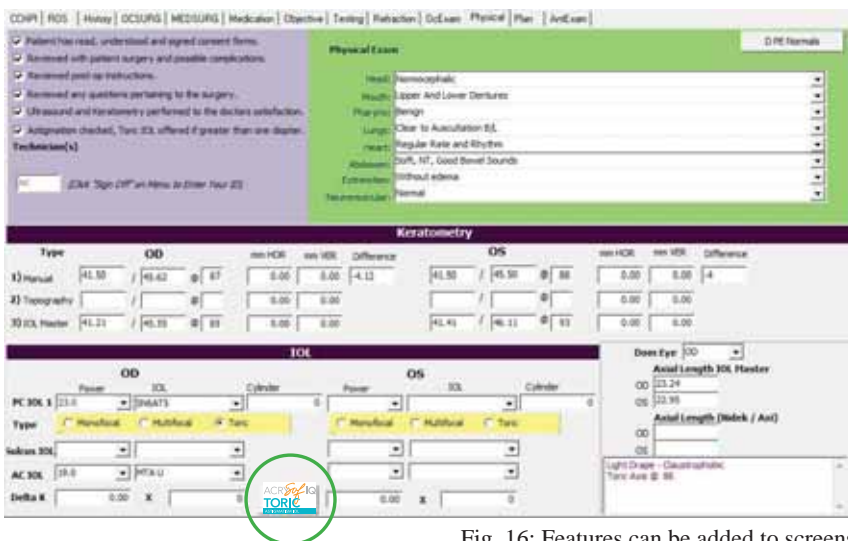


Fig. 16: Features can be added to screens

We can add new fields that we want to track, whether Compulink has thought of them or not. In Figure 16, you can see I've added an Acrysof Toric button. It links to an online calculator to calculate the power and axis for these IOLs.

This kind of customization is easy to do ourselves, so we aren't dependent on a vendor to make our EHR system "fit" the way we work.

In Compulink, we found a partner with 15 years of EHR experience and the training and technical support resources we need to be successful. Every day, Compulink is helping my practice, and over 3,000 others, practice better medicine.



Dr. Silone's private practice, Center for Sight, is located in Newark, Ohio. He is an Associate Clinical Professor in the Department of Ophthalmology at The Ohio State University in Columbus, Ohio. He serves on Compulink's Ophthalmology Advisory Board.

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