Buying an Integrated Electronic Health Record
How to Require an IHE and Open Standards Solution
Based on the Academy's Special Requirements for EHRs in Ophthalmology [1]

In purchasing the components of an electronic medical office, seamless integration of the Electronic Health Record (EHR), Practice Management System (PMS), and eye care instruments is critical to a successful outcome. In the Academy's publication entitled "Special Requirements for Electronic Health Records in Ophthalmology,"[1] IHE Eye Care is specified as an essential requirement for interoperability. The Academy-sponsored IHE (Integrating the Healthcare Enterprise) Eye Care Domain has worked to leverage open standards (i.e., DICOM[2] and HL7[3]) to specify an integration approach to meet the needs of Eye Care. To achieve seamless integration, products must support one or more of the IHE Eye Care (EYECARE) use cases, which are referred to as "profiles."

Eye Care Workflow Profiles specify the scheduling and coordination of procedure data for a wide variety of diagnostic imaging and testing devices, and its reliable storage in an image management system where it is available to support subsequent workflow steps, such as reporting and billing. They also enable acquisition devices (such as diagnostic imaging, measuring, test equipment) to identify the actual procedure(s) that were performed. There are two related but separate profiles for Eye Care Workflow: Basic and Advanced.

Below we describe briefly the most important things that you need to know before purchasing each component of an integrated electronic office. In some sections it is important to distinguish between Basic and Advanced Eye Care Workflow. These are the functions you will gain by choosing Advanced, rather than Basic Eye Care Workflow:

- Tracking procedure order status - establish when the procedure has been started, completed, or cancelled
- Automatic transfer of procedure codes to the billing system - optional, must be specified separately

In addition, these functions are desirable:

- Tracking fulfillment of orders between the EHR and eye care instruments
- Creating, utilizing, and exchanging physician documentation in standardized format

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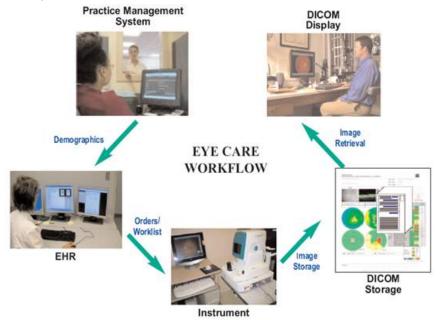
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When radiology was challenged with acquisition and management of clinical instrument data, they created the DICOM standard to define the digital objects and the protocols for communicating between instruments and image manager/image archive systems (PACS). The American Academy of Ophthalmology has worked with DICOM to add ophthalmic instrument standards that are the backbone of the IHE Eye Care open standards solution (i.e., standardized eye care images and measurement data).

To achieve seamless integration, products must support one or more of the IHE Eye Care Profiles. This can best be accomplished by having all products support IHE. IHE defines "actors" which vendors implement; these actors have technical names that are simplified by the following table:

COMMON TERMINOLOGY	IHE ACTOR
Practice Management System (PMS)	ADT/Patient Registration
EHR	Department Scheduler/Order Filler
Eye Care Instrument	Acquisition Modality
Non-DICOM Eye Care instrument	Acquisition Modality Importer (converts non DICOM into DICOM/IHE)
Storage System - (PACS)	Image Manager/Image Archive
Display Workstation	Image Display
Create standard physician documentation	Content Creator
Utilize standard physician documentation	Content Consumer
Exchange standard physician documentation	Actors from profiles XDS, XDR, XDM, ATNA

Vendors may choose to implement one or more of these IHE "actors" in a product. For example, if an EHR is able to store and retrieve images/measurements, the product would support at least three actors (Department System Scheduler/Order Filler, Image Manager/Image Archive and Image Display). The vendors document their choices in IHE Integration Statements. Don't forget to ask for them.

References

[1] Chiang MF, Boland MV, Brewer A,et al.Special Requirements for Electronic Health Record Systems in Ophthalmology.Ophthalmology 2011;118:1681-6.

[2] Digital Imaging and Communication in Medicine: A medical standard which defines the structure of medical images, measurements, associated meta-data and how these digital objects are communicated from one device to another.

[3] Health Level 7 - Standards for electronic interchange of clinical, financial, and administrative information among health care oriented computer systems.