Stage	HIMSS Analytics EMR Adoption Model	AAO Ophthalmology EHR Adoption Model	AAO Recommendations for IHE Eye Care Compliance	AAO IT Organizational Maturity Model
7	• Medical record fully electronic and EMR able to contribute to EHR. Clinical information can be readily shared via electronic transactions or exchange of electronic records with all entities within a regional health network (i.e. other hospitals, ambulatory clinics, sub-acute environments, employers, payers and patients).	*Interoperability with other settings* • The ophthalmologist/eye clinic is able to exchange medical record information and images with eye care providers, other medical providers, and other entities within a secure regional health network • Ophthalmologists can obtain remote access to medical record information and images within a secure regional health network • Different care systems use the same controlled medical terminology so that the content of medical records can be understood (semantic interoperability)	• Security for patient information confidentiality, data integrity and user accountability supported via IHE Audit Trail and Node Authentication (ATNA) Integration profile • Cross-enterprise document sharing implemented via IHE Cross Enterprise Document Sharing (XDS) (ophthalmology extensions still need development) • Exchange of DICOM spectacle prescription reports	• Comprehensive IT security plan in use for data sharing • RFPs request vendor MDS^2 statements • Comprehensive IT quality system established

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6	• Full physician documentation / charting (structured templates) are implemented. • A full complement of radiology PACS systems is implemented (i.e. all images, both digital and film-based, are available to physicians via an intranet or other secure network).	*Fully electronic eye clinic* • The eye clinic/office is fully electronic and the ophthalmologist uses structured forms (templates) to enter examinations and observations, based on a terminology that is agreed upon and understood in the clinic/office. • The ophthalmologist can obtain image and date results from all diagnostic devices via an intranet or secure network that connects all the satellite office. Ophthalmology PACS / image management functions are fully implemented. • In case of hospital or multi-specialty environment, the eye clinic is able to exchange medical record information with other departments.	• Full compliance with IHE Eye Care framework • Single sign-on for software applications via IHE Enterprise User Authentication (EUA) profile • Patient selection in software applications synchronized via IHE Patient Synchronized Application (PSA) profile	• WAN effectively connects all practice locations • IT risk management plans in use for acquisition processes • RFPs systematically reference IHE Eye Care technical framework, request vendor IHE Eye Care integration statements, DICOM conformance statements, and Manufacturer Disclosure Statement for Medical Device Security (MDS[2]) statements • IT staff available onsite to ensure target up-time, has tools and working knowledge of HL7 and DICOM transactions • Clinical Context Object Workgroup (CCOW) context manager software deployed to enable disparate applications to synchronize in real-time

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5	• Closed loop medication administration fully implemented. eMAR and bar coding or other auto-identification technology such as radio frequency identification (RFID) are implemented and integrated with CPOE and pharmacy to maximize point-of-care patient safety processes for medication administration.	*Electronic patient safety processes* • The ophthalmologist/eye clinic institutes electronic safeguards or protocols for patient safety, e.g., automatic drug interactions, contraindications, pre-op and intra-operative site verification forms • The electronic order process automatically verifies the patient identification prior to the procedure being performed and matches images correctly with the patient record.	• All IHE Eye Care use cases for patient information reconciliation supported • Verification reports stored via IHE Eye Care displayable reports profile	• Work instructions for patient identification verification and patient information reconciliation documented and followed • IT risk management plans in use for operations processes

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4	• Computerized practitioner/physician order entry (CPOE) for use by any clinician added to CDR environment • CDSS clinical protocols implemented	*Computerized order entry* • The ophthalmologist electronically enters prescription orders. • The ophthalmologist electronically enters orders for diagnostic tests/procedures, including lab tests and surgical procedures. Most or all imaging devices and instruments are integrated into the imaging system (via DICOM Modality Worklist (MWL)).	• EMR, PACS and modalities interfaced via IHE Eye Care CPOE transactions (RAD-2, RAD-3, RAD-4, RAD-13, EYECARE-1 – HL7 ORM and DICOM MWL)	• IT staff trained in IHE Eye Care, DICOM and HL7 • IT staff trained in cyber security, electronic signatures and HIPAA requirements • Process quality and efficiency metrics defined and in use • Joint clinical / IT team in place to define / refine use of coding schemes

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3	• Clinical documentation installed (vital signs, flow sheets, nursing notes, care plan charting and/or the electronic medication administration record (eMAR). • CDSS error checking with order entry (drug/drug, drug/food, drug/lab, conflict checking normally found in the pharmacy) • Some level of medical image access from picture archive and communication systems (PACS) is available for access by physicians via the organization's intranet or other secure networks	*Structured clinical documentation and medical images* • The ophthalmologist electronically enters clinical notes and interpretation reports and uses some structured forms/templates to enter medication information and/or refractive data. • The ophthalmologist can access some digital images via an intranet or other secure local area network. Ophthalmology PACS / image management functions partially implemented.	• Patient demographics transferred from PMS to EMR via IHE RAD-1 and RAD-12 (HL7 ADT) transactions • Modalities store images to PACS via IHE EYECARE-2 (Digital Imaging and Communications in Medicine (DICOM) standards storage) transaction.	• IT staff aware of IHE Eye Care, DICOM and Health Level 7 (HL7) standards • IT staff familiar with cyber security issues and techniques; aware of Health Information Portability and Accountability Act (HIPAA) requirements • IT staff involved throughout acquisition process • RFP's impose technical constraints on interfaces and image storage • Image archival solution deployed including disaster recovery

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2	• Ancillary clinical systems feed data to clinical data repository (CDR) that provides physician access for retrieving and reviewing results • CDR contains a controlled medical vocabulary (CMV) • Clinical decision support system (CDSS) for rudimentary conflict checking	*Clinical data repository* • The ophthalmologist has an electronic system for accessing and storing medical record information. This may be a document management system for scanned chart information or a transcription system for clinical reports. Images and data reports may also be scanned into the document management system.	• In purchasing decisions for new equipment, look for devices that have Integrating the Health care Enterprise (IHE) Eye Care integration statements	• Ongoing Information Technology (IT) services scheduled to ensure data integrity; same IT service provider used consistently. • CDR storage solution deployed • Backup strategy implemented and verified
1	• All ancillary clinical systems (laboratory, pharmacy and radiology) installed	*Ancillary systems* • The ophthalmologist has an optical ancillary system (if ophthalmologist/eye clinic has an optical shop)	• Start investigating whether devices used in the optical system have IHE Eye Care integration statements	IT services called in as needed for optical ancillary system
0	• Some clinical automation may exist • Not all ancillary clinical systems (laboratory, pharmacy and radiology) installed	*Limited clinical automation* • The ophthalmologist has a PMS (practice management system) that is used for appointment scheduling, billing etc. • The ophthalmologist has a digital fundus image acquisition system	• Acquire a PMS that has an IHE Eye Care integration statement	• IT services called in as needed for projects