

IHE Eye Care: Profiles and Eye Care Extensions

IHE North America Webinar Series 2008

Don Van Syckle

DVS Consulting Inc.



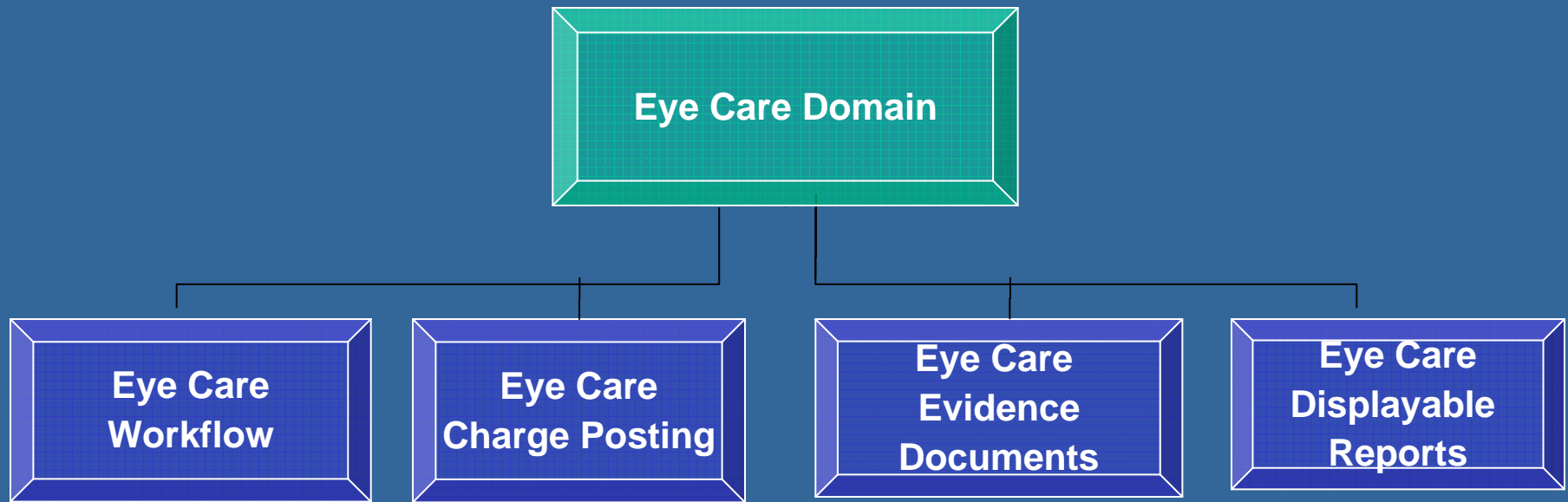
Learning Objectives

- Eye Care Integration Profiles
- How Eye Care has extended Radiology Profiles
- Typical profiles for Eye Care Products
- If the relevance isn't clear, Ask now.

Goal:

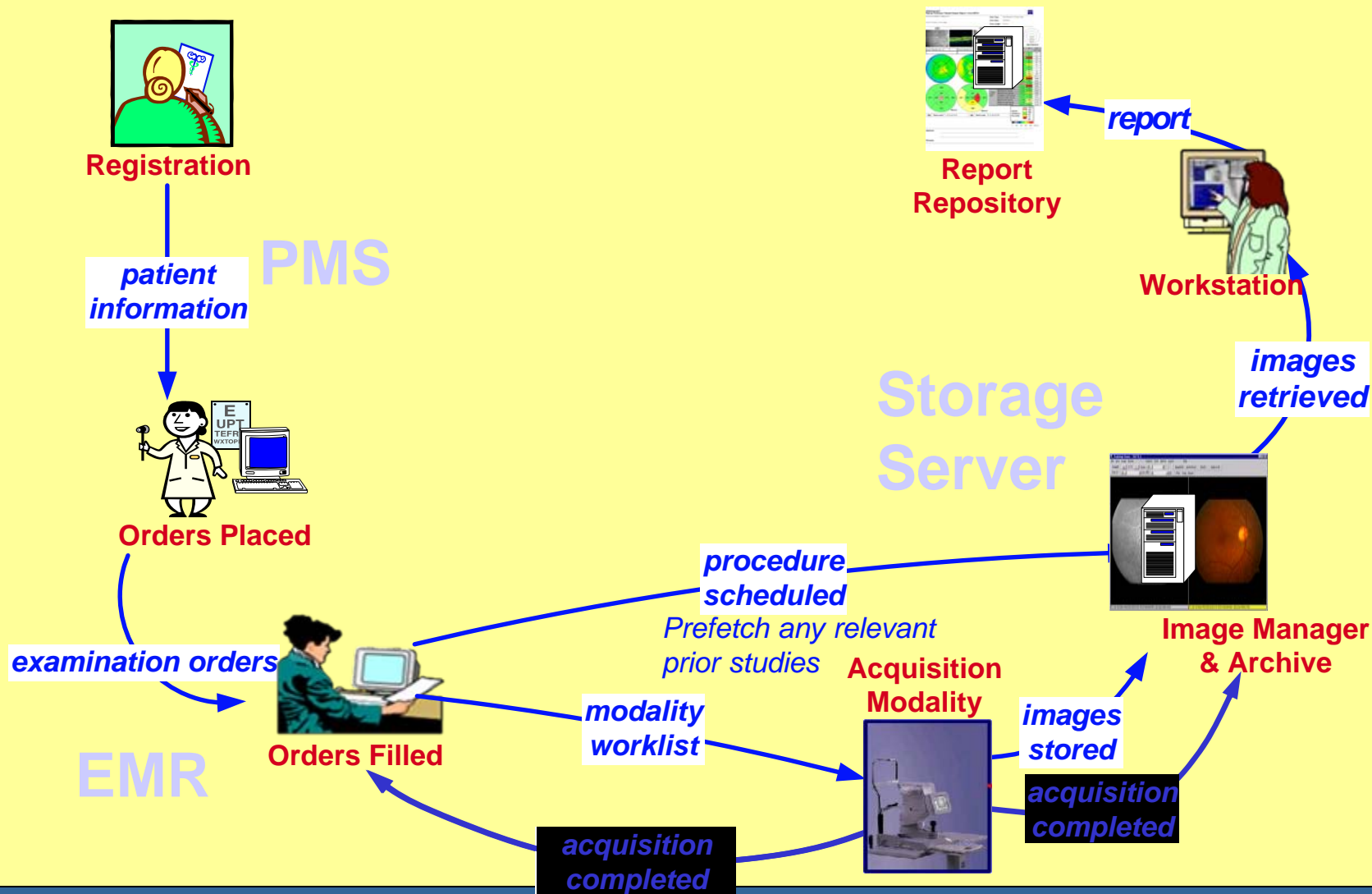
Help you decide which profiles are relevant and where additional information can be obtained

Relevant Domains and Profiles



Builds upon well established Integration Profiles from Radiology with Eye Care specific extensions

Eye Care Workflow Profile



Builds Upon Radiology Workflow with Key Eye Care Extensions

- Automatic and direct physician orders
- Multiple types of modality acquisition equipment (called instruments)
 - Create images, refractive measures, encapsulated PDF documents, etc.
- Select performed protocol on modality which enables automatic charge posting
- Incorporates Patient Information Reconciliation as a required part of the workflow
- DICOM Encapsulated PDF displayable physician reports

Specific or Automatic Orders

- **Automatic Orders are clinic defined procedure(s) commonly performed for a patient's visit**
 - A new patient triggers automatic orders for an auto-refraction device, a lensometer, a keratometer, etc.
 - But not all may be performed. How do you know? DICOM MPPS
- **Specific orders are used when the procedure(s) to perform are known upon schedule time**
 - Maybe after the doctor has met with the patient and determines fundus photos or OPT images are needed, etc.
- **When the orders are triggered is often decided by configuration on the Order Filler**
 - Patient arrives, based upon the appointment time,
 - This decision is outside of the IHE scope, driven by the clinic policies

Automatic Order Example Use Case

- **A new patient calls the clinic and set up an appointment for the future**
 - **Triggers an A05 Pre-Admission message from the ADT/Pat. Reg. to the Order Placer and Order Filler**
 - **The Order Placer creates multiple “automatic” orders using an ORM message (one for each possible procedure) to the Order Filler**
 - **The Order Filler retains this information of “scheduled procedures”**

Automatic Order Example Use Case (con't)

- **The patient arrives for the appointment:**
 - Triggers an A04 Out-Patient message from the ADT/Pat. Reg. to the Order Placer and Order Filler
 - The Order Placer determines it already has placed the “automatic” orders for this patient and does nothing
 - The Order Filler recognizes the A04 and determines that the “held scheduled procedures” are now available to both the Image Manager (ORM) and Acquisition Modality (MWL)
 - DICOM MPPS is used to specify what actually was performed on the patient (see later in the presentation)
- **This Use Case uses the patient arrival in the clinic to trigger the knowledge of the scheduled procedures**
- **Another close example could be trigger by the date of the appointment**
 - At the beginning of the day the “scheduled procedure” is known by the system

DICOM Storage for Different Types of Equipment

- **Storage includes images, measurements and evidence documents, currently defined:**
 - Ophthalmic 8 and 16 bit Photography Image Storage
 - Ultrasound Image and Multi-frame Storage, Stereometric Relationship
 - Ophthalmic Tomography Image Storage
 - Lensometry, Autorefraction, Keratometric, Subjective Refractive, Visual Acuity Measurements Objects
 - Spectacle Prescription Report
 - Radiology images such as X-ray, CT, MR, Secondary Capture, etc.
 - DICOM Structured Reporting, DICOM Encapsulated PDF
 - Others will be supported upon completion into DICOM, such as Visual Fields, etc.

Compression

- **Both Lossless and Lossy JPEG required for the images objects**
 - Ophthalmic 8 and 16 bit Photography Image Storage
 - Ultrasound Image and Multi-frame Storage
 - Stereometric Relationship Storage
- **Acquisition Modalities must be able to “configure” the compression choices based upon the eye care facility preferences**
- **Other compressions and rules may be considered when new DICOM objects are supported**

MPPS – Modality Feedback used to identify actual protocol performed



Acquisition Modality

Acquisition in progress, linked to SPS, etc.

Acquisition is completed, what procedure was performed, list of data created, etc.



EMR

Name	ID	Accession #	Procedure	Protocol	Time
Joe Smith	1234-8	678-1236	92135	OPT Disc	8:30am

Protocol Codes
 OPT Disc
 OPT Macula
 OPT Lesion
 OPT yyy.....



The operator:

- Views worklist, selects patient, confirms protocol or selects actual protocol
- Ends the acquisition

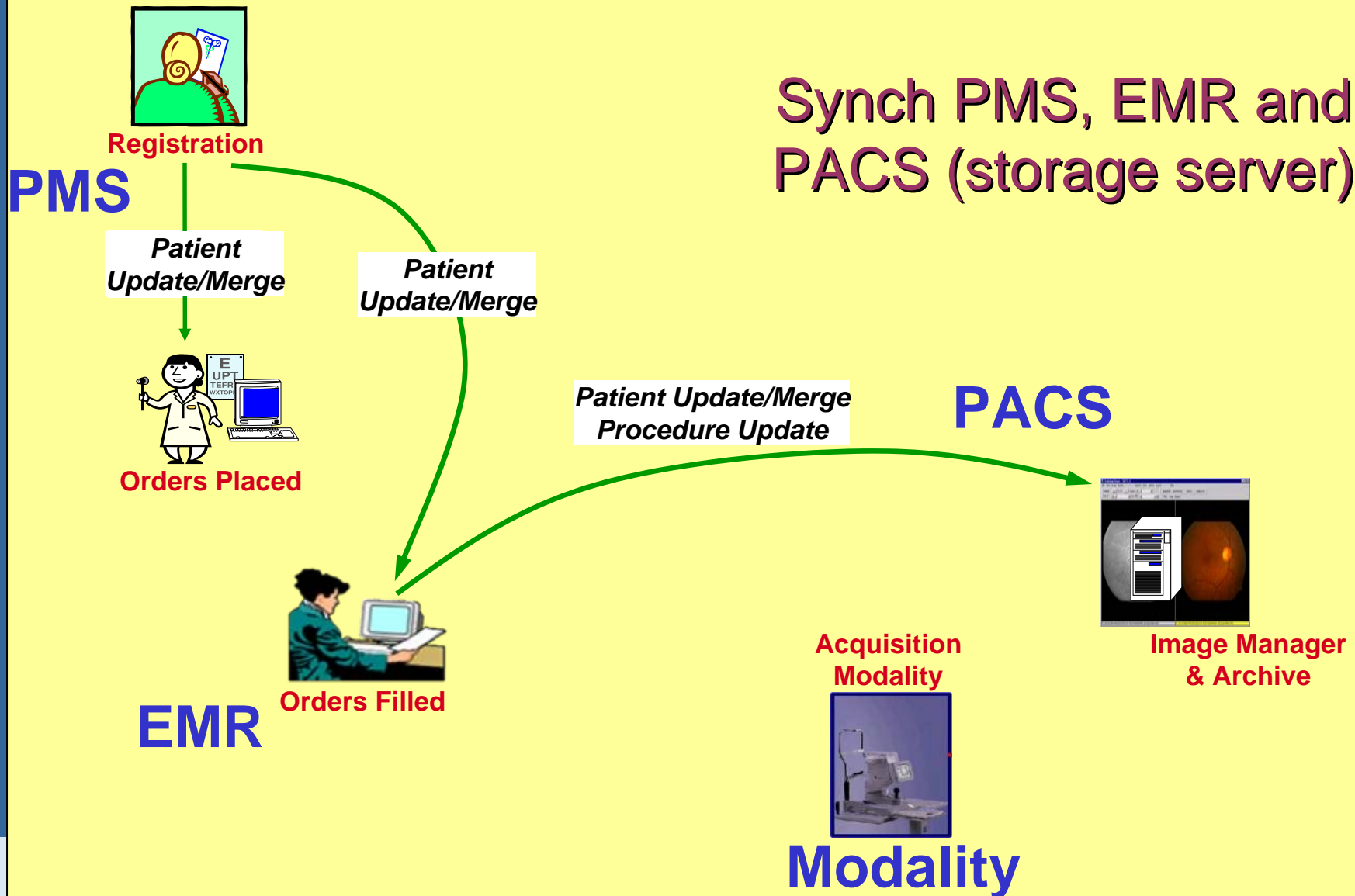
Closes the loop between what was ordered and what was performed

Patient Information Reconciliation – Integrated into Eye Care Workflow

- Handle demographic information mistakes, name changes (I.e. marriage), etc.
- Handle unidentified patient (e.g. trauma)
- Propagate changes to all affected systems (PMS, EMR, PACS), update all affected data
- Reduces incorrectly identified or “lost” studies
- Uses HL7 to fix errors

Fix the incorrect information at
“One” system then propagate to others

Patient Information Reconciliation Feature



Based upon PIR from Radiology

- Workflows based upon Radiology where patient name/ID may not be known but use temporary information “trauma cases”
- Trauma use cases not as real world for Eye Care, but the solutions are the same as if we typed in a wrong name or ID, so same workflow

Eye Care Charge Posting Integration Profile

- Information exchange from department ordering systems to billing systems regarding charges associated with particular procedures
- Defines the communication between patient registration systems and billing systems about patient demographics, accounts, insurance, and guarantors

Not Common in Radiology
but a MAJOR driver in Eye Care

Eye Care Charge Posting Profile



Initial Capture of Patient Demographics

Patient Information

PMS



Registration

Account Complete

BILLING SYSTEM

patient information



order Placed

Procedure Information

BENEFITS

- Redundancy Eliminated
- Maximum Data Integrity
- Billing Available ASAP
- All Systems Updated

examination orders



EMR

Orders Filled

modality worklist

Patient and procedure information retrieved by the modality



acquisition completed

Eye Care Displayable Reports Profile

- Specifies transactions supporting the creation, query/retrieve, and reading of display-ready eye care reports
- Allows use of the DICOM Encapsulated Document IOD, which has emerged as a ubiquitous means of encoding documents ready for presentation, including graphical content
- Allows the reporting physician to control the “look” of the report, which is important for both clinical and business reasons

Eye Care Displayable Reports Profile

Initial Capture of Patient Demographics

PMS



Registration

patient information



order Placed

examination orders



Orders Filled



modality worklist

Patient and procedure information retrieved by the modality

acquisition completed



images stored



Image Manager & Archive

Eye Care Encapsulated Document

**images
evidence documents
reports
measurements**

Practice Management Systems

Typical Relevant Profiles Examples

- Eye Care Workflow
- Eye Care Charge Posting

Electronic Health Record Systems

Typical Relevant Profiles Examples

- Eye Care Workflow
- Eye Care Charge Posting
- Eye Care Displayable Reports

Imaging Modalities

Typical Relevant Profiles Examples

- Eye Care Workflow
- Eye Care Charge Posting
- Eye Care Evidence Documents

Typical Relevant Profiles Profiles

- Eye Care Workflow
- Eye Care Evidence Documents
- Eye Care Displayable Reports

Dates/Relevant Sessions from Overall Schedule

IHE Eye Care Year 3 Timeline

- August – sign up for Connectathon
- August-September – Testing with Mesa Tools
- October – Connectathon
- November 7-11, Showcase, Atlanta

More information....

- **IHE Web site:**
<http://wiki.ihe.net/index.php?title=Eyecare>
 - http://one.aao.org/CE/PracticeGuidelines/Information_Technology.aspx
 - www.hl7.org
 - <http://medical.nema.org/>
- **Technical Frameworks**
 - [ihe_eyecare_tf_yr3_vol1_Trial_Implementation_Version_041808.pdf](#)
 - [ihe_eyecare_tf_yr3_vol2_Trial_Implementation_Version_041808.pdf](#)
- **American Academy of Ophthalmology**
 - flum@aao.org