Introduction to Results Distribution (RD)

Teri M. Sippel Schmidt, Vital Images
Steve Langer, Mayo Clinic
Tessa Cook, MD, Univ of Pennsylvania
Value Proposition

• The radiology imaging result (i.e., the report) is the product of radiologists which provides value to the ordering physicians

• Today, very few radiology reports are structured and/or coded (i.e., free format text, not easily computer processable)

• Structured, or at least key structured data, in a radiology report can trigger downstream activities and provide benefits
Benefits of semi-structured, coded reporting

Enough information to automate trigger of:

• Follow up of non-critical actionable findings
• Additional billing
• Consults
• Submission to Population Health registries/analysis
• Submission to REM registries
• Clinical decision support (CDS) feedback loop
• Submission to cancer registries
• Submission for inquiries to clinical trials
• Business analysis including IHE Standardized Operational Log of Events (SOLE) profile
RD Focus: installed base

• RD Decision: Focus on **Installed base and adoption**:
  • HL7 FHIR Diagnostic Imaging Report Resource
  • DICOM Part 20 Imaging Reports in CDA (xml)
  • IHE/FHIR Structured Data Capture (SDC)
  • DICOM SR -> often used for measurements, also used for final radiology reports
  • HL7 v2.x ORU -> FOCUS!

• Enable SOME structured, coded data to begin to move industry

• Gap solution, not end game
  • Bridge/gap solution solution towards CDA or SDC
  • Important “baby steps” towards computer processable data
Actors and Simple Use Case

Report Creator examples:
- Voice dictation system
- Point and click reporting
- Natural language processing
- Template driven or text
- Radiology or cardiology, etc

Report Manager examples:
- Reporting systems
- PACS system
- EMR

Report Consumer examples:
- Report Viewer
- EMR
- Research database
- Regulatory (ACC NCDR)
- Follow-up Actionable Finding Mgr

e.g., follow up on non-critical finding
RD Use Cases (X.4.2)

The RD profiles specifies two primary use cases:

1. Send an imaging result to an EMR
2. Send an imaging result to a Follow-Up Source (i.e., Non-Critical Actionable Findings)
RD Concepts Section (X.4)

The RD profiles makes extensive use of the Concepts section:

- DICOM Part 20 and CDA Level 1/2/3
- Reports v. Results (and the role of DICOM SR)
- ACR/ESR Clinical Reporting Guidelines
- Report Templates and Classification systems (MRRT, BI-RADS, etc)
- Actionable Findings, Timing, and Results Priority
- Voice Dictation
- Coded Results, Structured and Synoptic Reports
- Imaging Results Payload Formats

READ THE X.4 CONCEPTS SECTION!
### RD Profile HL7 v2.5.1 ORU

<table>
<thead>
<tr>
<th>ORU^R01 Segments</th>
<th>Message Content</th>
<th>HL7 v2.5.1 Chapter</th>
<th>Reference</th>
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</thead>
<tbody>
<tr>
<td>MSH</td>
<td>Message Header</td>
<td>2</td>
<td>4.Y1.4.1.2.1 MSH Segment</td>
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<tr>
<td>EVN</td>
<td>Event Type</td>
<td>3</td>
<td>4.Y1.4.1.2.2 EVN Segment</td>
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<tr>
<td>PID</td>
<td>Patient Identification</td>
<td>3</td>
<td>4.Y1.4.1.2.3 PID Segment</td>
</tr>
<tr>
<td>PV1</td>
<td>Patient Visit</td>
<td>3</td>
<td>4.Y1.4.1.2.4 PV1 Segment</td>
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<td>{ROL}</td>
<td>Role</td>
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<td>4.Y1.4.1.2.5 ROL Segment</td>
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<td>[ORC]</td>
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<td>4.Y1.4.1.2.6 ORC Segment</td>
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<tr>
<td>OBR</td>
<td>Order Detail</td>
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<td>4.Y1.4.1.2.7 OBR Segment</td>
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<tr>
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<td>4.Y1.4.1.2.8 TQ1 Segment</td>
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<td>{OBX}</td>
<td>Observation/Result (See Note 1)</td>
<td>7</td>
<td>4.Y1.4.1.2.9-11 OBX Segments</td>
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</table>

*Adapted from the HL7 Standard, version 2.5.1*

Note 1: The OBX segment may repeat because there are different types of OBX segments defined in this transaction, independently identified by coded values in **OBX-3 Observation Identifier**.
Profiled OBX Segments

Identified by LOINC Codes in Observation Identifier (OBX-3):
1. OBX – DICOM Study Instance UID
2. OBX – Finding
3. OBX – Radiologist’s Recommendation
4. OBX – Radiologist Requests Consultation
5. OBX - Radiologist Requests Feedback
6. OBX - Imaging Result Payload

OBX segments with actionable findings and priority flags
### Review: ACR Actionable Findings Categories

<table>
<thead>
<tr>
<th>Finding type</th>
<th>ACR Actionable Finding Category</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Normal</td>
<td>As expected or unremarkable</td>
</tr>
<tr>
<td>Non-actionable</td>
<td>Non-Actionable</td>
<td>Not quite normal, but no action to be taken (e.g., “the spleen is slightly enlarged”)</td>
</tr>
<tr>
<td>Non-critical</td>
<td>ACR Category 3</td>
<td>Medical attention required within days to months; “incidental” (e.g., lung nodule)</td>
</tr>
<tr>
<td>Urgent</td>
<td>ACR Category 2</td>
<td>Medical attention required within hours (e.g., diverticulitis)</td>
</tr>
<tr>
<td>Emergent</td>
<td>ACR Category 1</td>
<td>Medical attention required within minutes (e.g., large pneumothorax)</td>
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</tbody>
</table>

See CONCEPTS section for more information!
### Mapping of Actionable Finding Codes and Priority

<table>
<thead>
<tr>
<th>Key Field</th>
<th>Abnormal Flag</th>
<th>Category</th>
<th>Abnormal Flag</th>
<th>Category</th>
<th>Priority</th>
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<tr>
<td>Segment fields:</td>
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<tr>
<td>Non-actionable observation:</td>
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<td>Non-critical Actionable Finding observation:</td>
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<tr>
<td>Urgent Actionable Finding observation:</td>
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</tbody>
</table>

**Notes:**
- HL7 v.2.5.1 Table 0078
- RadLex code system (See Note 1)
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- HL7 v.2.5.1 Table 0078
- OBR-27.6 and TQI-9.1 Priority

**Abbreviations:**
- OBX-8.1 - 8.3 Abnormal Flag
- OBX-15.1 - 15.3 Producer's Reference
- OBX-8.1 - 8.3 Abnormal Flag
- OBX-15.1 - 15.3 Producer's Reference
- OBX-8.1 - 8.3 Abnormal Flag
- OBX-15.1 - 15.3 Producer's Reference
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- OBX-15.1 - 15.3 Producer's Reference
- OBX-8.1 - 8.3 Abnormal Flag
- OBX-15.1 - 15.3 Producer's Reference

**Priority Levels:**
- Normal
- Non-actionable
- Non-critical Actionable
- Critical Actionable
- Urgent Actionable
Public Comment Period

• IHE Rad Results Distribution (RD) Public Comment period:
  • Profile:  http://ihe.net/Public_Comment/#radiology
  • Public Comment period:  June 21 – July 21, 2017
  • Submit link:  http://ihe.net/Radiology_Public_Comments/

• IHE Rad Follow-up of Non-Critical Actionable Findings (FUNC) still in development
Questions?

• Any questions?
• Questions later?:
  • Teri Sippel Schmidt: tsippel@vitalimages.com
  • Steve Langer: langer.steve@mayo.edu
  • Tessa Cook, MD:
  • IHE Rad: radiology@ihe.net