

Evidence Documents Profile

Cardiology Uses and Options



Evidence Documents Problem

- **Cardiology is measurement intensive**
- **More and more modalities and workstations provide digital measurements**
- **More and more sites are doing electronic reporting**
 - ... to improve efficiency, turnaround time and reduce errors
- **Current “state of the art”?**
- **-> Screen dump a paper report**
 - Introduces multiple unnecessary error points:
 - A series of numbers that could be misread, misspoken, misheard and mistyped
 - Introduces additional unnecessary effort / delay

Evidence Documents Problem

● Other popular kludges

- Measurements handwritten onto a worksheet which is later dictated / transcribed
- Measurements output to a printer port and intercepted by an application that scrapes the values
- Measurements recorded as a screen capture then later OCR (optical character recognition) extracts numbers and label strings

● ... brittle solutions

What are Evidence Documents?

- DICOM SR (structured results) – Image or waveform based measurements
- Created by either acquisition modality or post-processing workstation
- **Not** the clinical report – intermediate collected data managed within the department
- Interpreted along with the images and other acquired data in the production of the clinical report – viewed/processed on **imaging workstation**

Evidence Documents

Image References

Echocardiography Measurement

Patient: Doe, John **Technologist:** der Payd, N

Measurements:

Mitral valve diameter 3.1cm

- shown in image at []

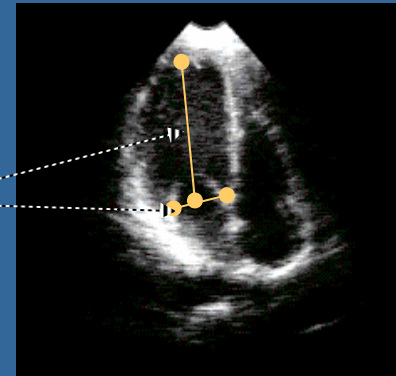
Ventricular length, diastolic 5.97 cm

- shown in image at []

Ventricular volume, diastolic 14.1 ml

- inferred from []

- inferred from VLZ algorithm



- Image references provide explicit evidentiary trail for clinical findings

Evidence Documents

Value proposition

- Measurements are managed in same study folder as images
- Data is structured and uses coded concepts and vocabulary
- Coded data can be searched, processed, databased (locally, national registry), ...
- Avoids detour through “paper-space”
 - extra handling, delay and potential loss of paper
 - additional effort and errors

Evidence Documents

Cath Evidence Option

Acquisition Modalities / Evidence Creators:

- **Shall support one or more of the following DICOM Objects:**
 - Enhanced SR
 - Comprehensive SR
 - Procedure Log
- **Shall use one or more of the following templates:**
 - 3001 Procedure Log
 - 3202 Ventricular Analysis
 - 3213 Quantitative Arterial Analysis
 - 3250 Intravascular Ultrasound
 - 3500 Hemodynamics

Image Displays:

- **Shall unambiguously render ALL of the above**
 - Includes providing visual emphasis for measurements flagged “abnormal”

Evidence Documents

Echo Evidence Option

Acquisition Modalities / Evidence Creators:

- **Shall support one or more of the following DICOM Objects:**
 - Enhanced SR
 - Comprehensive SR
- **Shall use one or more of the following templates:**
 - 5100 Vascular Ultrasound
 - 5200 Echocardiography

Image Displays:

- **Shall unambiguously render ALL of the above**
 - Includes providing visual emphasis for measurements flagged “abnormal”

Evidence Documents

CTA/MRA Option

New in 2007

Acquisition Modalities / Evidence Creators:

- **Shall support the following DICOM Objects:**
 - Enhanced SR
- **Shall use the following template:**
 - 3900 CT/MR Cardiovascular Analysis

Image Displays:

- **Shall unambiguously render ALL of the above**
 - Includes providing visual emphasis for measurements flagged “abnormal”
- **Shall render all CT and MR data that may be referenced in report**
 - New multi-frame CT and MR images

Evidence Documents

Stress Evidence Option

New in 2007

Acquisition Modalities / Evidence Creators:

- **Shall support the following DICOM Objects:**
 - Enhanced SR
- **Shall use the following template:**
 - x3300 Stress Reporting (DICOM Supplement 128 currently in approval process)

Image Displays:

- **Shall unambiguously render ALL of the above**
 - Includes providing visual emphasis for measurements flagged “abnormal”
 - Required “tabular” display of periodic stress measurements
 - User control of ECG units (mv or mm)
- **Shall render all stress data that may be referenced in report**
 - Echo and Nuc images, ECG waveforms

Evidence Documents

Stress Evidence Option

New in 2007

Grouped Image Display and Report Creator:

- Shall be able to copy content from modality evidence documents into stress clinical report
 - Entire hierarchical sub-tree
 - Careful with inherited context and cross-tree references!
- Report may be SR, CDA, PDF, or even plain text (depending on Report Creator application)



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