



Structured Procedure Reporting: Changing Roles and Responsibilities

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RAPID Think Tank
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Objectives

- Describe the team-based, workflow-oriented structured reporting paradigm
- Discriminate structured reporting (a process) from the structured report (a document)
- Acknowledge barriers to clinician adoption – and the role of professional societies in accelerating adoption



What is Structured Reporting?

- Data management integrated into workflow, with data acquisition by the person closest to (handling) the data
- Collect data once, use many times
- Multiple contributors to documentation
- MD focus on cognitive functions
- ROI: ↑ data quality /quantity, ↓ time to final reports, ↓ FTE
- Result: efficient and effective documentation and communication



What is Needed for Structured Reporting?

- Clinical vocabulary → interoperable data standards
 - clinical to standard to CVIS to EHR to registry
- Understanding, implementing best-practice workflows
 - who does what when, where, and how (industrial engineering)
- New MD professionalism standards
 - conversion from dictation to information model
- Partnership with IT vendors
 - information model, HIT systems aligned with clinical care

Standardized Cardiovascular Data for Clinical Research, Registries, and Patient Care

A Report From the Data Standards Workgroup of the National Cardiovascular Research Infrastructure Project

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Houston, Texas; Newark, Delaware; New York, New York; Charlotte and Durham, North Carolina; San Francisco, California; and Washington, DC

- CV vocabularies – NCI
- Balloted via HL7 CIC
- Available on NCI-EVS (caDSR)

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2013;61: 1835

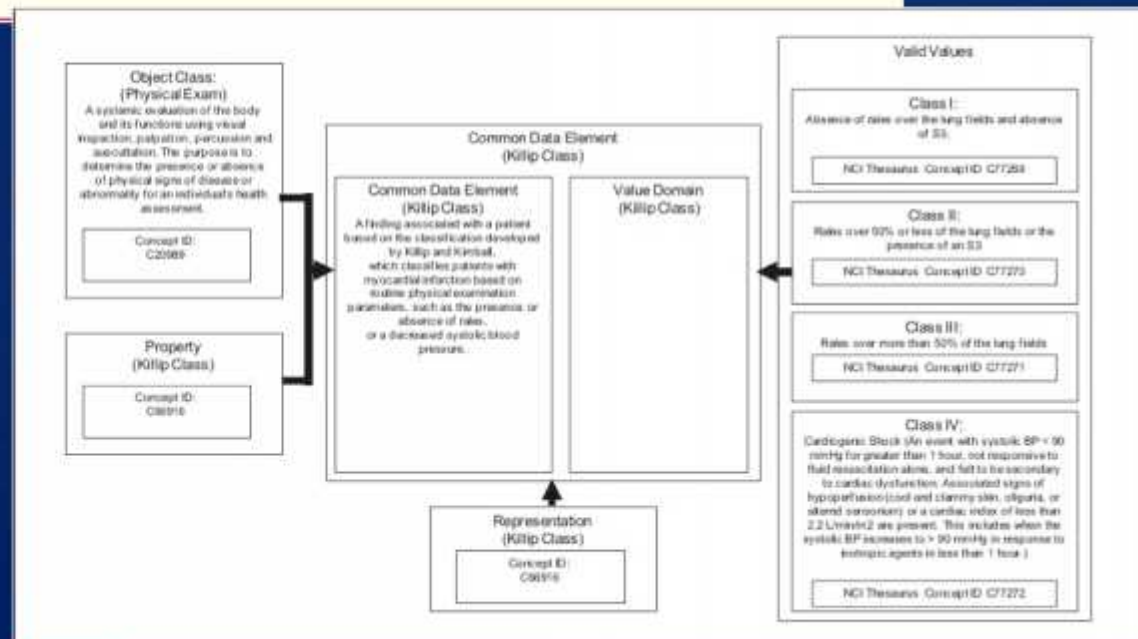

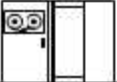


Figure 1. Simplified View of a CDE in the caDSR Implementation of the ISO 11179 Metamodel

Process	Schedule Patient for Cath Procedure	Physician Pre-Procedure Evaluation and Consent	Nursing Pre-Procedure Evaluation	Cardiac Catheterization Procedure	Analysis and Report Generation
Information Sources	History & Physical Other documents Laboratories	Existing clinical data History & Physical Other documents Laboratories	History & Physical Other documents Laboratories Consents	Pre-procedure evaluation packet Hemodynamics Catheterization images	Hemodynamics Catheterization images Measurements Calculations
Information Captured as Digital Data	Patient identifiers Demographics Diagnosis Laboratories Insurance	Patient identifiers Demographics History Physical Exam Previous studies Laboratories Diagnosis	Patient identifiers Height, weight, vital signs Medications	Patient identifiers Procedures Hemodynamics Findings Measurements Medications Inventory	Patient identifiers Cath results Interpretation Tree diagram
Actors 	Physician requestor Scheduling hub / Communications Center	Advanced Practice practitioners Physician operator	Outpatient / inpatient nurses	Physician operator Cath lab nurses Cath lab technologists	Physician operator
Information Systems 	Registration system Scheduling app Electronic Health Record	Electronic Health Record Procedure Reporting system	Electronic Health Record	Radiography Modality Hemodynamic Monitoring system Procedure Documentation / Reporting system	Procedure reporting system
Form Factor (for Actors)	Desktop workstation	Mobile tablet	Bedside workstation	Multiple workstations: Radiography Modality Hemodynamic Monitoring Procedure Documentation	Desktop workstation
Data Output	Schedule - to scheduling app Orders - to Electronic Health Record (EHR) system	Clinical data - to procedure reporting system (history section) Patient status - to scheduling system → electronic schedule Orders - to EHR	Nursing documentation - to EHR Patient status - to scheduling system → electronic schedule	DICOM Modality Worklist to Modality, Hemodynamic, and Procedure Documentation systems → procedure log report and data for procedure report (procedure section) [See also IHE CATH, CRC profiles]	Procedure results - to procedure reporting system (results section) → structured procedure report

Patient Information

MRN:

Last: Suffix: First: Middle:

Patient name:

Date of birth: Age: Gender: Hispanic Ethnicity: Race:

Import Data From Prior History

Answer ALL Applicable fields

Admit source: Emergency Department Transfer in from another acute care facility Other

Procedure priority: Elective Urgent Emergency Salvage

History:

Angina

History of angina (ever)
 Onset month: Year: Not available

Angina at any time during current hospitalization

Angina within 2 weeks
 Current CCS class (w/in 2 weeks): CCS I CCS II CCS III CCS IV

Heart Failure

History of heart failure (ever but more than 2 weeks ago)
 Onset month: Year:

Heart failure with acute ischemia

Heart failure within 2 weeks
 Current NYHA class (w/in 2 weeks): I II III IV

- Cardiogenic shock within 24 hrs
- Cardiac arrest within 24 hrs

Stress Testing: Test: ETT (no imaging) Stress echo Stress nuclear Stress MR
 (w/in 6 months) Results: Positive Negative Indeterminate Unavailable
 Ischemia: Low Intermediate High Unavailable

Pre procedure EF: % Pre procedure EF modality: ECG Nuclear Cath MR

Anti-anginal meds: Beta blockers Calcium channel blockers Nitrates Ranolazine Other anti-anginals
 (w/in 2 weeks)

CAD Risk Factors

<input checked="" type="checkbox"/> Cigarette smoking, current or recent (< 1 year)	<input type="checkbox"/> Type 1 diabetes	<input checked="" type="checkbox"/> Prior MI	<input type="checkbox"/> Prior valve surge
<input checked="" type="checkbox"/> Hypertension	<input type="checkbox"/> Type 2 diabetes	<input type="checkbox"/> Cerebrovascular disease	<input type="checkbox"/> Date (most r
<input type="checkbox"/> Dyslipidemia	Therapy: <input checked="" type="radio"/> Diet <input checked="" type="radio"/> Oral <input checked="" type="radio"/> Insulin	<input type="checkbox"/> Peripheral vascular disease	<input checked="" type="checkbox"/> Prior FCI
<input type="checkbox"/> Family history of premature CAD	<input type="radio"/> Other <input type="radio"/> None	<input type="checkbox"/> Central (aorta, renal) vascular disease	<input type="checkbox"/> Date (most r
		<input type="checkbox"/> Cardiomyopathy / LV systolic dysfunction	<input type="checkbox"/> Prior CABG
		<input type="checkbox"/> Chronic lung disease	<input type="checkbox"/> Date (most r
		<input checked="" type="checkbox"/> ESRD on dialysis (current)	

Duke University Coronary Angiography Report

Native Diagnostic Summary

Name:
History #:
Cine #:
Attending:
Fellow:

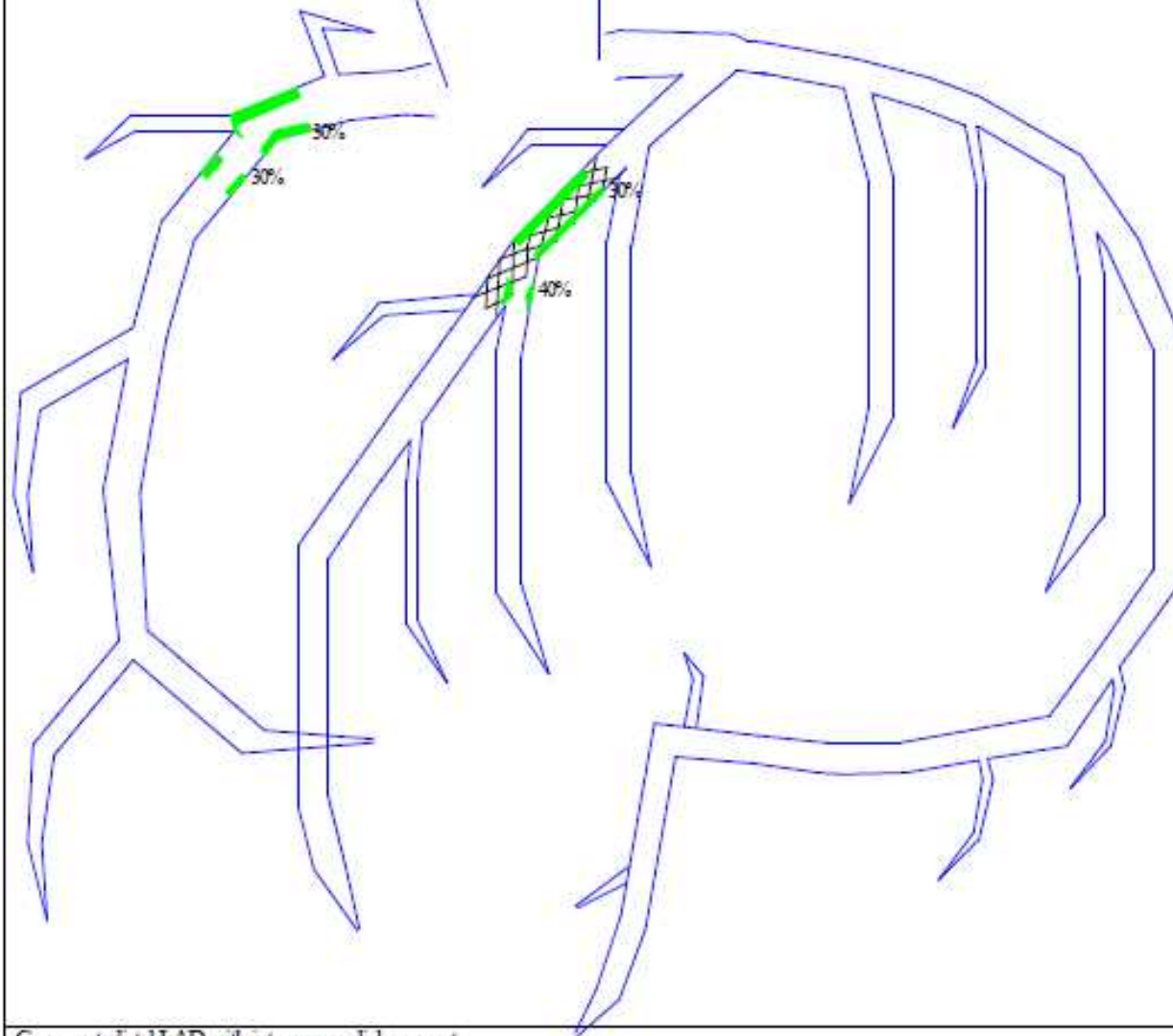
Right Coronary Artery
Prox RCA - 30% Tubular
30% Tubular

Left Main
** NORMAL **

Left Circumflex Artery
OMC - small
LPL1 - small
LPL2 - small
L PDA - large

** NORMAL **
Left Anterior Descending


Mid LAD - Stent
D2 - 30% Tubular
D3 - 40% Discrete
- small



Comment: distal LAD with intramyocardial segment



The Structured Report: Recompile and Interpret

- **Who**
 - Physician (with the aid of the computer)
 - **What information**
 - Findings and interpretations (physician)
 - **What information as data**
 - Compiled H&P, compiled procedure data
 - Structured findings
 - **Output**
 - Procedure log
 - Procedure report – *“just the facts”*
- 

ACC/AHA/SCAI 2014 Health Policy Statement on Structured Reporting for the Cardiac Catheterization Laboratory



A Report of the American College of Cardiology Clinical Quality Committee

Developed in Collaboration With the American Association for Critical-Care Nurses, Asian Pacific Society of Cardiology, Canadian Cardiovascular Society, Health Level Seven International, Inter-American Society of Cardiology, Integrating the Healthcare Enterprise, Society of Thoracic Surgeons, and Society for Vascular Surgery

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Artifacts at @ACC.org

Health Policy Statement

Informatics and Health
IT Committee

Clinical Quality
Committee

Prototype procedure report

Style guide

IHE profile

Task Force on Data
Standards documents





Proposal

- Co-publication of an (abbreviated) PVI Structured Reporting Health Policy Statement
ACC/AHA – James Tcheng
SVS – Jack Cronenwett
SIR – Jeremy Durack

With extensive referencing of
ACC/AHA/SCAI 2014 HPS
- Workflow diagrams (cath lab, IR, surgery)
- Prototype procedure report (with style guide)
- Develop RAPID core data elements as the foundational data standard