

Cardiology: Cardiac Catheterization Documentation Template

Documentation Tem- plate: Conceptual Structure

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Department of Veterans Affairs (VA)



**Knowledge Based Systems (KBS)
Office of Informatics and Information Governance (OIIG)
Clinical Decision Support (CDS)**

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by Knowledge Based Systems (KBS), Office of Informatics and Information Governance (OIIG), and Clinical Decision Support (CDS)

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Preface

Table 1. Revision History

Date	Life Cycle Event
April 27, 2018	Published
April 27, 2018	Reviewed
April 4, 2018	Reviewed
August 29, 2017	Pre-published
August 10, 2017	Created

Table 2. Clinical White Paper Contributors

Name	Role	Affiliation
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Table 3. Artifact Identifier

Domain	Artifact ID	Name
urn:va.gov:kbs:knart:artifact:rl	cf545df8-8afe-55b0-b4c0-a72c4dc9e2c6	O30

Artifact Applicability

Table 4. Applicability Foci, Description and Codes

Focus	Description	Code System	Code	Value Set	Value Set Version
TargetUser	Cardiologists			N/A	N/A
ClinicalFocus	Adult Catheterization lab patients			N/A	N/A
ClinicalVenue	Inpatient			N/A	N/A
ClinicalVenue	Cardiology Service			N/A	N/A
PatientAgeGroup	Adult patients with suspected cardiac disease requiring invasive diagnosis and/or treatment	SNOMED CT	133936004 Adult (person)	N/A	N/A
PatientGender	All			N/A	N/A
WorkflowTask	Cardiac Catheterization			N/A	N/A

Models

Table 5. Model References

Referenced Model	Description
urn:solor.io:anf-model:1.0	VA Analysis Normal Form Model

Chapter 1. External Data Definitions

Definitions

Table 1.1. Comprehensive Metabolic Profile Lab Result

Expression: type=elm:Query Annotation: Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [1411000205104 Comprehensive metabolic panel (procedure)]

Table 1.2. Complete Blood Count Lab Result

Expression: type=elm:Query Annotation: Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [26604007 Complete blood count (procedure)]

Table 1.3. Brain Natriuretic Peptide Lab Result

Expression: type=elm:Query Annotation: Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [390917008 Brain natriuretic peptide measurement (procedure)]

Table 1.4. Troponin Lab Result

Expression: type=elm:Query Annotation: Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [105000003 Troponin measurement (procedure)]
--

Table 1.5. Magnesium Result

Expression: type=elm:Query Annotation: Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [38151008 Magnesium measurement (procedure)]
--

Table 1.6. Activated Partial Thromboplastin Time (aPTT) Result

Expression: type=elm:Query Annotation: Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [42525009 Partial thromboplastin time, activated (procedure)]

Table 1.7. Human Chorionic Gonadotropin Result

Expression: type=elm:Query

Annotation:
 Codes: elm:value[elm:Code]: [398166005 |Performed (qualifier value)]elm:value[elm:Code]:
 [67900009 |Human chorionic gonadotropin measurement (procedure)]

Table 1.8. Fingerstick Glucose Result

Expression: type=elm:Query
 Annotation:
 Codes: elm:value[elm:Code]: [398166005 |Performed (qualifier value)]elm:value[elm:Code]:
 [302789003 |Capillary blood glucose measurement (procedure)]

Table 1.9. 12-Lead ECG

Expression: type=elm:Query
 Annotation:
 Codes: elm:value[elm:Code]: [398166005 |Performed (qualifier value)]elm:value[elm:Code]:
 [268400002 |12 lead electrocardiogram (procedure)]

Table 1.10. 12-Lead ECG Interpretation

Expression: type=elm:Query
 Annotation:
 Codes: elm:value[elm:Code]: [398166005 |Performed (qualifier value)]elm:value[elm:Code]:
 [[370851004 |Evaluation of diagnostic study results (procedure)] ->(363702006 |Has focus (at-
 tribute))>[268400002 |12 lead electrocardiogram (procedure)]]

Table 1.11. Chest X-Ray

Expression: type=elm:Query
 Annotation:
 Codes: elm:value[elm:Code]: [398166005 |Performed (qualifier value)]elm:value[elm:Code]:
 [399208008 |Plain chest X-ray (procedure)]

Table 1.12. Chest X-Ray Interpretation

Expression: type=elm:Query
 Annotation:
 Codes: elm:value[elm:Code]: [398166005 |Performed (qualifier value)]elm:value[elm:Code]:
 [[370851004 |Evaluation of diagnostic study results (procedure)] ->(363702006 |Has focus (at-
 tribute))>[399208008 |Plain chest X-ray (procedure)]]

Table 1.13. Echocardiogram

Expression: type=elm:Query
 Annotation:
 Codes: elm:value[elm:Code]: [398166005 |Performed (qualifier value)]elm:value[elm:Code]:
 [40701008 |Echocardiography (procedure)]

Table 1.14. Echocardiogram Interpretation

<p>Expression: type=elm:Query</p> <p>Annotation:</p> <p>Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [[370851004 Evaluation of diagnostic study results (procedure)] ->(363702006 Has focus (attribute))->[40701008 Echocardiography (procedure)]]</p>

Triggers

No trigger definitions are present.

Chapter 2. Expression Definitions

No expression definitions are present.

Chapter 3. Cardiac Catheterization Indications

Indications for cardiac catheterization.

- ☐ Suspected Acute Coronary Syndrome

prompt:

item- [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 | Code: Has focus (attribute))->[394659003 |Acute coronary syndrome (disorder)]

re- Boolean (Single)

sponse:

- ☐ Suspected Coronary Artery Disease (CAD)

prompt:

item- [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 | Code: Has focus (attribute))->[53741008 |Coronary arteriosclerosis (disorder)]

re- Boolean (Single)

sponse:

-
- ☐ Suspected CAD Detail

- ☐ prompt: ST-segment Elevation Myocardial Infarction (STEMI)

response: Boolean (Single)

- ☐ prompt: Stress Test Findings

response: EntityName (Multiple)

response range: EnumerationConstraint (List)

item: High-Risk Findings on Electrocardiogram (ECG) Stress Test (e.g., Duke Treadmill Score <-12, Ventricular Tachycardia, Prolonged ST-Segment Depression, or Exercise-Induced Hypotension)(TSR-NoCode)

item: High-Risk Findings on Imaging Stress Test (e.g., >10% Ischemic Myocardium on Nuclear Perfusion Imaging, Stress-Induced Wall Motion Abnormality in >= 2 Segments on Echocardiography, Transient Ischemic Dilation, or Stress-Induced Left Ventricular Dysfunction)(TSR-NoCode)

item: Resting Left Ventricular Ejection Fraction (LVEF) <41% and Viable Myocardium in Dysfunctional Segment (Reversible Ischemia) on Imaging Stress Test(000ca427-81f2-4af6-829e-06fa21957039 |Cardiovascular stress diagnostic imaging procedure (procedure) ->(363714003 |Interprets (attribute))->[250908004 |Left ventricular ejection fraction (observable entity)])

- ☐ prompt: Symptoms

response: EntityName (Multiple)

response range: EnumerationConstraint (List)

item: Symptomatic Patient with High Pretest Probability of coronary artery disease and No Prior Noninvasive Stress Imaging(TSR-NoCode)

item: Symptomatic Patient with Intermediate-Risk Findings on Imaging Stress Test (5% to 10% Ischemic Myocardium on Nuclear Perfusion Imaging

- or Stress-Induced Wall Motion Abnormality in 1 Segment on Echocardiography)(TSR-NoCode)
- item: Symptomatic Patient with Discordant or Equivocal/Uninterpretable Findings on Imaging Stress Test(TSR-NoCode)
- item: Symptomatic Patient with New Left Ventricular Systolic Dysfunction (LVEF <41%) of Unknown Etiology on Transthoracic Echocardiography(TSR-NoCode)
- item: Symptomatic Patient with Suspected Significant Ischemic Complication of CAD on Transthoracic or Transesophageal Echocardiography (e.g., Mitral Regurgitation or Ventricular Septal Defect)(TSR-NoCode)
- item: Symptomatic Patient with Any Lesion $\geq 50\%$ on Coronary Computed Tomography (CT) Angiography(TSR-NoCode)
- item: Symptomatic Patient with Possibly Obstructive Lesion of Unclear Severity on Coronary CT Angiography(TSR-NoCode)
- ☐ prompt: Known Coronary Artery Disease (CAD)
- itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] -(363702006 |Has focus (attribute))->[53741008 |Coronary arteriosclerosis (disorder)]
- response: EntityName (Multiple)
- response range: EnumerationConstraint (List)
 - item: Medically Managed Patient with Limiting or Worsening Symptoms and Noninvasive Findings of Intermediate Risk that have worsened(TSR-NoCode)
 - item: Medically Managed Patient and High-Risk Noninvasive Findings(TSR-NoCode)
 - item: Post revascularization (PCI or CABG) Patient with Limiting or Worsening Symptoms and Intermediate-Risk Noninvasive Findings(TSR-NoCode)
 - item: Post revascularization Patient with Limiting or Worsening Symptoms and High-Risk Noninvasive Findings(TSR-NoCode)
- ☐ prompt: Return of Spontaneous Circulation after Resuscitated Cardiac Arrest of Unclear Etiology
- itemCode: TSR-NoCode
- response: Boolean (Single)
- ☐ prompt: Ventricular Fibrillation of Unclear Etiology
- itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] -(363702006 |Has focus (attribute))->[71908006 |Ventricular fibrillation (disorder)]
- response: Boolean (Single)
- ☐ prompt: Sustained Ventricular Tachycardia of Unclear Etiology
- itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] -(363702006 |Has focus (attribute))->[426525004 |Sustained ventricular tachycardia (disorder)]
- response: Boolean (Single)
- ☐ prompt: Assessment of Valvular Heart Disease

response: EntityName (Multiple)

response range: EnumerationConstraint (List)

item: Mitral Valve([a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))>[11851006 |Mitral valve disorder (disorder)])

item: Aortic Valve([a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))>[8722008 |Aortic valve disorder (disorder)])

item: Tricuspid Valve([a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))>[20721001 |Tricuspid valve disorder (disorder)])

item: Pulmonary Valve([a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))>[76267008 |Pulmonary valve disorder (disorder)])

☐ prompt: Pulmonary Hypertension Disproportionate to Valvular Disease

itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))>[70995007 |Pulmonary hypertension (disorder)]

response: Boolean (Single)

☐ prompt: Left Ventricular Dysfunction Disproportionate to Valvular Disease

itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))>[429589006 |Left ventricular cardiac dysfunction (disorder)]

response: Boolean (Single)

☐ prompt: Conflict between Findings of Noninvasive Imaging for Mitral or Aortic Stenosis or Regurgitation and Clinical Impression of Severity

response: Boolean (Single)

☐ prompt: Suspected Pericardial Tamponade

itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))>[35304003 |Cardiac tamponade (disorder)]

response: Boolean (Single)

☐ prompt: Suspected or Uncertain Constrictive or Restrictive Pericardial Disease

itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))>[85598007 |Constrictive pericarditis (disorder)]

response: Boolean (Single)

☐ prompt: Suspected or Known Cardiomyopathy

itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))>[85898001 |Cardiomyopathy (disorder)]

response: Boolean (Single)

☐ prompt: Reevaluation of Known Cardiomyopathy to Guide Therapy or after Change in Clinical Status or Exam

itemCode: [386053000 |Evaluation procedure (procedure)] ->(363702006 |Has focus (attribute))->[85898001 |Cardiomyopathy (disorder)]

response: Boolean (Single)

☐ prompt: Additional Prior Indication Detail

response: String (Single)

Chapter 4. Prior Cardiac Procedures

Prior Cardiac Procedures.

<input type="checkbox"/>	Most Recent Angiography	
		Represented Concepts: 33367005 Coronary angiography (procedure)
		⊗ prompt: Date response: Timestamp (Single) ⊗ prompt: Findings response: String (Single)
<input type="checkbox"/>	Most Recent Percutaneous Coronary Intervention	
		Represented Concepts: 415070008 Percutaneous coronary intervention (procedure)
		⊗ prompt: Date response: Timestamp (Single) ⊗ prompt: Findings response: String (Single)
<input type="checkbox"/>	Prior Cardiac Operative Report	
		⊗ prompt: Date response: Timestamp (Single) ⊗ prompt: Findings response: String (Single)
<input type="checkbox"/>	Prior Cardiac Reports	
		⊗ prompt: Additional Prior Cardiac Reports? response: String (Single) response range: EnumerationConstraint (List) item: Yes item: No ⊗ ❖ Prior Cardiac Operative Report
		⊗ prompt: Date response: Timestamp (Single) ⊗ prompt: Findings response: String (Single)
<input type="checkbox"/>	Additional report information if available	
	prompt:	
	re-	String (Single)
	sponse:	

Chapter 5. Plan

☐ Planned Procedure?

☐ prompt: Left Heart Catheterization

itemCode: 67629009 |Catheterization of left heart (procedure)|

response: Boolean (Single)

☐

☐ prompt: Coronary Angiography

itemCode: 33367005 |Coronary angiography (procedure)|

response: Boolean (Single)

☐ prompt: Left Ventriculography

itemCode: 265484009 |Left ventriculogram (procedure)|

response: Boolean (Single)

☐ prompt: Right Heart Catheterization

itemCode: 40403005 |Catheterization of right heart (procedure)|

response: Boolean (Single)

☐ prompt: Pericardiocentesis

itemCode: 309849004 |Pericardiocentesis (procedure)|

response: Boolean (Single)

☐ prompt: Possible Percutaneous Coronary Intervention, Angioplasty, and Stent

itemCode: 415070008 |Percutaneous coronary intervention (procedure)|

itemCode: 41339005 |Coronary angioplasty (procedure)|

itemCode: 36969009 |Placement of stent in coronary artery (procedure)|

response: Boolean (Single)

☐ prompt: Endomyocardial Biopsy

itemCode: 387829002 |Endomyocardial biopsy (procedure)|

response: Boolean (Single)

☐ prompt: Other procedures?

response: Boolean (Single)

☐

☐ prompt: Specify other planned procedure

response: String (Single)

☐ Planned Access Site?

☐ prompt: Specify Site

response: Code (Single)

response range: EnumerationConstraint (List)

item: Left Femoral Vein([83419000 |Femoral vein structure (body structure)] -
>(272741003 |Laterality (attribute))->[7771000 |Left (qualifier value)])

item: Right Femoral Vein([83419000 |Femoral vein structure (body structure)] -
>(272741003 |Laterality (attribute))->[24028007 |Right (qualifier value)])

item: Left Radial Artery([45631007 |Structure of radial artery (body structure)] ->(272741003 |Laterality (attribute))->[7771000 |Left (qualifier value)])

item: Right Radial Artery([45631007 |Structure of radial artery (body structure)] ->(272741003 |Laterality (attribute))->[24028007 |Right (qualifier value)])

item: Left Internal Jugular Vein([12123001 |Internal jugular vein structure (body structure)] ->(272741003 |Laterality (attribute))->[7771000 |Left (qualifier value)])

item: Right Internal Jugular Vein([12123001 |Internal jugular vein structure (body structure)] ->(272741003 |Laterality (attribute))->[24028007 |Right (qualifier value)])

item: Left Subclavian Vein([9454009 |Structure of subclavian vein (body structure)] ->(272741003 |Laterality (attribute))->[7771000 |Left (qualifier value)])

item: Right Subclavian Vein([9454009 |Structure of subclavian vein (body structure)] ->(272741003 |Laterality (attribute))->[24028007 |Right (qualifier value)])

item: Other

☐

☐ prompt: Details of alternative site and approach
response: String (Single)

Chapter 6. Consent

	<p>prompt: Consent Obtained?</p> <p>response: Boolean (Single)</p>
--	--

Chapter 7. Special Considerations

☐ Radiocontrast Allergy

☐ prompt: Radiocontrast Allergy?

itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[293637006 |Allergy to contrast media (disorder)]

response: String (Single)

response range: EnumerationConstraint (List)

item: Yes

item: No

responseBinding: Property ("Radiocontrast Allergy")

Condition:elm:IsTrue (elm:Property("Radiocontrast Allergy"))

☐ prompt: History and Description of Reaction

response: String (Single)

☐ Diabetes?

☐ prompt: History of Diabetes Mellitus?

itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[73211009 |Diabetes mellitus (disorder)]

response: Boolean (Single)

responseBinding: Property ("History of Diabetes")

☐ **Condition:**elm:IsTrue (elm:Property("History of Diabetes"))

⊙ Hold Insulin 24 hours prior to catheterization

prompt: Hold Insulin 24 hours prior to catheterization?

itemCode: [416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[67866001 |Insulin (substance)]

response: Boolean (Single)

initalValue: elm:Literal (Boolean) True

⊙ prompt: Details

response: String (Single)

☐ **Condition:**elm:IsTrue (elm:Property("History of Diabetes"))

⊙ Hold Metformin 24 hours prior to catheterization

prompt: Hold Metformin 24 hours prior to catheterization?

itemCode: [416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[372567009 |Metformin (substance)]

response: Boolean (Single)

initalValue: elm:Literal (Boolean) True

	<p>⊗ prompt: Details response: String (Single)</p>
<p><input type="checkbox"/> Anticoagulation?</p>	<p><input type="checkbox"/> prompt: Currently on Anticoagulant Therapy? itemCode: 182764009 Anticoagulant therapy (procedure) response: Boolean (Single) responseBinding: Property ("Currently on Anticoagulant Therapy") <input type="checkbox"/> Condition:elm:IsTrue (elm:Property("Currently on Anticoagulant Therapy")) <input type="checkbox"/> Hold Anticoagulant Therapy 24 hours prior to catheterization prompt: Hold Anticoagulant Therapy 24 hours prior to catheterization? itemCode: [416118004 Administration (procedure)] ->(260686004 Method (attribute))->[129445006 Administration - action (qualifier value)] ->(363701004 Direct substance (attribute))->[372862008 Anticoagulant (substance)] response: Boolean (Single) initialValue: elm:Literal (Boolean) True <input type="checkbox"/> prompt: Details response: String (Single)</p>
<p><input type="checkbox"/> Renal Disease</p>	<p><input type="checkbox"/> prompt: History of renal disease? itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[90708001 Kidney disease (disorder)] response: Boolean (Single) <input type="checkbox"/> prompt: Stage? response: Code (Single) response range: EnumerationConstraint (List) item: Stage 1 (Glomerular Filtration Rate ≥ 90 mL/min per 1.73 m^2)([a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[431855005 Chronic kidney disease stage 1 (disorder)]) item: Stage 2 (Glomerular Filtration Rate 60 to 89 mL/min per 1.73 m^2)([a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[431856006 Chronic kidney disease stage 2 (disorder)]) item: Stage 3 (Glomerular Filtration Rate 30 to 59 mL/min per 1.73 m^2)([a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[433144002 Chronic kidney disease stage 3 (disorder)]) item: Stage 4 (Glomerular Filtration Rate 15 to 29 mL/min per 1.73 m^2)([a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[431857002 Chronic kidney disease stage 4 (disorder)])</p>

item: Stage 5 (Glomerular Filtration Rate < 15 mL/min per 1.73 m² or on dialysis)([a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] -(363702006 |Has focus (attribute))>[433146000 |Chronic kidney disease stage 5 (disorder)])

Chapter 8. Laboratory Studies

Lab Results

prompt: Comprehensive Metabolic Profile Lab Result

response: Tuple (Single)

initalValue: Comprehensive Metabolic Profile Lab Result

prompt: Complete Blood Count Lab Result

response: Tuple (Single)

initalValue: Complete Blood Count Lab Result

prompt: Brain Natriuretic Peptide Lab Result

response: Tuple (Single)

initalValue: Brain Natriuretic Peptide Lab Result

prompt: Troponin Lab Result

response: Tuple (Single)

initalValue: Troponin Lab Result

prompt: Magnesium Result

response: Tuple (Single)

initalValue: Magnesium Result

prompt: Activated Partial Thromboplastin Time (aPTT) Result

response: Tuple (Single)

initalValue: Activated Partial Thromboplastin Time (aPTT) Result

prompt: Human Chorionic Gonadotropin Result

response: Tuple (Single)

initalValue: Human Chorionic Gonadotropin Result

Point of Care Studies

prompt: Fingerstick Glucose Result

response: Tuple (Single)

initalValue: Fingerstick Glucose Result

Chapter 9. Imaging and Diagnostic Results

12-Lead ECG
Link results: 12-Lead ECG interpretation
prompt: 12-Lead ECG Interpretation response: Tuple (Single) initalValue: 12-Lead ECG Interpretation Link images: 12-Lead ECG
prompt: 12-Lead ECG response: Tuple (Single) initalValue: 12-Lead ECG Chest X-Ray
Link results: Chest X-Ray interpretation
prompt: Chest X-Ray Interpretation response: String (Single) initalValue: Chest X-Ray Interpretation Link images: X-Ray Chest
prompt: Chest X-Ray response: Tuple (Multiple) initalValue: Chest X-Ray Echocardiogram
Link results: Echocardiogram Interpretation
prompt: Echocardiogram Interpretation response: String (Single) initalValue: Echocardiogram Interpretation Link images: Echocardiogram
prompt: Echocardiogram response: Tuple (Multiple) initalValue: Echocardiogram

Chapter 10. Brief Post-Catheterization Note

<input type="checkbox"/> Brief Post Catheterization Note	<p>link to: VA Clinical Assessment Reporting and Tracking (CART) Program for cardiac catheterization laboratories (Cart-CL) Report</p>																				
<input type="checkbox"/> Procedure Performed	<table> <tr> <td><input type="checkbox"/> prompt: CART Report response: Tuple (Single)</td><td></td></tr> <tr> <td><input type="checkbox"/> prompt: Left Heart Catheterization itemCode: 67629009 Catheterization of left heart (procedure) response: Boolean (Single)</td><td></td></tr> <tr> <td><input type="checkbox"/></td><td> <table> <tr> <td><input type="checkbox"/> prompt: Coronary Angiography itemCode: 33367005 Coronary angiography (procedure) response: Boolean (Single)</td><td></td></tr> <tr> <td><input type="checkbox"/> prompt: Left Ventriculography itemCode: 265484009 Left ventriculogram (procedure) response: Boolean (Single)</td><td></td></tr> </table> </td></tr> <tr> <td><input type="checkbox"/> prompt: Right Heart Catheterization itemCode: 40403005 Catheterization of right heart (procedure) response: Boolean (Single)</td><td></td></tr> <tr> <td><input type="checkbox"/> prompt: Pericardiocentesis itemCode: 309849004 Pericardiocentesis (procedure) response: Boolean (Single)</td><td></td></tr> <tr> <td><input type="checkbox"/> prompt: Other procedures? response: Boolean (Single)</td><td></td></tr> <tr> <td><input type="checkbox"/></td><td> <table> <tr> <td><input type="checkbox"/> prompt: Specify details of other procedure response: String (Single)</td><td></td></tr> </table> </td></tr> </table>	<input type="checkbox"/> prompt: CART Report response: Tuple (Single)		<input type="checkbox"/> prompt: Left Heart Catheterization itemCode: 67629009 Catheterization of left heart (procedure) response: Boolean (Single)		<input type="checkbox"/>	<table> <tr> <td><input type="checkbox"/> prompt: Coronary Angiography itemCode: 33367005 Coronary angiography (procedure) response: Boolean (Single)</td><td></td></tr> <tr> <td><input type="checkbox"/> prompt: Left Ventriculography itemCode: 265484009 Left ventriculogram (procedure) response: Boolean (Single)</td><td></td></tr> </table>	<input type="checkbox"/> prompt: Coronary Angiography itemCode: 33367005 Coronary angiography (procedure) response: Boolean (Single)		<input type="checkbox"/> prompt: Left Ventriculography itemCode: 265484009 Left ventriculogram (procedure) response: Boolean (Single)		<input type="checkbox"/> prompt: Right Heart Catheterization itemCode: 40403005 Catheterization of right heart (procedure) response: Boolean (Single)		<input type="checkbox"/> prompt: Pericardiocentesis itemCode: 309849004 Pericardiocentesis (procedure) response: Boolean (Single)		<input type="checkbox"/> prompt: Other procedures? response: Boolean (Single)		<input type="checkbox"/>	<table> <tr> <td><input type="checkbox"/> prompt: Specify details of other procedure response: String (Single)</td><td></td></tr> </table>	<input type="checkbox"/> prompt: Specify details of other procedure response: String (Single)	
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<input type="checkbox"/> prompt: Specify details of other procedure response: String (Single)																					
<input type="checkbox"/> Interventions	<table> <tr> <td><input type="checkbox"/> prompt: Percutaneous Coronary Intervention itemCode: 415070008 Percutaneous coronary intervention (procedure) response: Boolean (Single)</td><td></td></tr> <tr> <td><input type="checkbox"/></td><td> <table> <tr> <td><input type="checkbox"/> prompt: Angioplasty itemCode: 41339005 Coronary angioplasty (procedure) response: Boolean (Single)</td><td></td></tr> <tr> <td><input type="checkbox"/> prompt: Stent</td><td></td></tr> </table> </td></tr> </table>	<input type="checkbox"/> prompt: Percutaneous Coronary Intervention itemCode: 415070008 Percutaneous coronary intervention (procedure) response: Boolean (Single)		<input type="checkbox"/>	<table> <tr> <td><input type="checkbox"/> prompt: Angioplasty itemCode: 41339005 Coronary angioplasty (procedure) response: Boolean (Single)</td><td></td></tr> <tr> <td><input type="checkbox"/> prompt: Stent</td><td></td></tr> </table>	<input type="checkbox"/> prompt: Angioplasty itemCode: 41339005 Coronary angioplasty (procedure) response: Boolean (Single)		<input type="checkbox"/> prompt: Stent													
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<input type="checkbox"/> prompt: Stent																					

	<p>itemCode: 36969009 Placement of stent in coronary artery (procedure) </p> <p>response: Boolean (Single)</p>
<input type="checkbox"/> prompt: Endomyocardial Biopsy	
itemCode: 387829002 Endomyocardial biopsy (procedure)	
response: Boolean (Single)	
<input type="checkbox"/>	<p>⊗ prompt: Other interventions?</p> <p>response: Boolean (Single)</p> <p>⊗ prompt: Specify details of other interventions</p> <p>response: String (Single)</p>
<input type="checkbox"/> Access Site	<p><input type="checkbox"/> prompt: Specify Access Site</p> <p>response: EntityName (Single)</p> <p>response range: EnumerationConstraint (List)</p> <p>item: Left Femoral Vein([83419000 Femoral vein structure (body structure)] ->(272741003 Laterality (attribute))->[7771000 Left (qualifier value)])</p> <p>item: Right Femoral Vein([83419000 Femoral vein structure (body structure)] ->(272741003 Laterality (attribute))->[24028007 Right (qualifier value)])</p> <p>item: Left Radial Artery([45631007 Structure of radial artery (body structure)] ->(272741003 Laterality (attribute))->[7771000 Left (qualifier value)])</p> <p>item: Right Radial Artery([45631007 Structure of radial artery (body structure)] ->(272741003 Laterality (attribute))->[24028007 Right (qualifier value)])</p> <p>item: Left Internal Jugular Vein([12123001 Internal jugular vein structure (body structure)] ->(272741003 Laterality (attribute))->[7771000 Left (qualifier value)])</p> <p>item: Right Internal Jugular Vein([12123001 Internal jugular vein structure (body structure)] ->(272741003 Laterality (attribute))->[24028007 Right (qualifier value)])</p> <p>item: Left Subclavian Vein([9454009 Structure of subclavian vein (body structure)] ->(272741003 Laterality (attribute))->[7771000 Left (qualifier value)])</p> <p>item: Right Subclavian Vein([9454009 Structure of subclavian vein (body structure)] ->(272741003 Laterality (attribute))->[24028007 Right (qualifier value)])</p> <p>item: Other</p> <p><input type="checkbox"/> prompt: Details of alternative site and approach</p> <p>response: String (Single)</p>
<input type="checkbox"/> prompt: Sheath size (French)	
response: Real (Single)	

- ☐ prompt: Findings
response: String (Single)
 - ☐ prompt: Details of Performed Interventions
response: String (Single)
 - ☐ prompt: Complications
response: String (Single)
 - ☐ prompt: Automatic Closure Device Employed?
response: EntityName (Single)
- response range: EnumerationConstraint (List)
- item: YES
 - item: NO

Chapter 11. Tabular List

Terminology Service Request (TSR) Mappings

Table 11.1. Terminology Versions

Name	Identifier	Version
SNOMED CT	2.16.840.1.113883.6.96	United States Edition 20180301

Table 11.2. Terminology References

System	Code	Display Text	References
SNOMED CT	000ca427-81f2-4af6-829e-000000000000 Cardiovascular stress diagnostic imaging procedure (procedure) ->(363714003 Interprets (attribute))->[250908004 Left ventricular ejection fraction (observable entity)]	Resting Left Ventricular Ejection Fraction (LVEF) <41% and Viable Myocardium in Dysfunctional Segment (Reversible Ischemia) on Imaging Stress Test	1
SNOMED CT	105000003 Troponin measurement (procedure)	Precoordinated Expression	1
SNOMED CT	133936004 Adult (person)	Adult patients with suspected cardiac disease requiring invasive diagnosis and/or treatment	1
SNOMED CT	1411000205104 Comprehensive metabolic panel (procedure)	Precoordinated Expression	1
SNOMED CT	182764009 Anticoagulant therapy (procedure)	Precoordinated Expression	1
SNOMED CT	265484009 Left ventriculogram (procedure)	Precoordinated Expression	2
SNOMED CT	26604007 Complete blood count (procedure)	Precoordinated Expression	1
SNOMED CT	268400002 12 lead electrocardiogram (procedure)	Precoordinated Expression	1
SNOMED CT	302789003 Capillary blood glucose measurement (procedure)	Precoordinated Expression	1
SNOMED CT	309849004 Pericardiocentesis (procedure)	Precoordinated Expression	2
SNOMED CT	33367005 Coronary angiography (procedure)	Precoordinated Expression	3
SNOMED CT	36969009 Placement of stent in coronary artery (procedure)	Precoordinated Expression	2

System	Code	Display Text	References
SNOMED CT	38151008 Magnesium measurement (procedure)	Precoordinated Expression	1
SNOMED CT	387829002 Endomyocardial biopsy (procedure)	Precoordinated Expression	2
SNOMED CT	390917008 Brain natriuretic peptide measurement (procedure)	Precoordinated Expression	1
SNOMED CT	398166005 Performed (qualifier value)	Precoordinated Expression	14
SNOMED CT	399208008 Plain chest X-ray (procedure)	Precoordinated Expression	1
SNOMED CT	40403005 Catheterization of right heart (procedure)	Precoordinated Expression	2
SNOMED CT	40701008 Echocardiography (procedure)	Precoordinated Expression	1
SNOMED CT	41339005 Coronary angioplasty (procedure)	Precoordinated Expression	2
SNOMED CT	415070008 Percutaneous coronary intervention (procedure)	Precoordinated Expression	3
SNOMED CT	42525009 Partial thromboplastin time, activated (procedure)	Precoordinated Expression	1
SNOMED CT	67629009 Catheterization of left heart (procedure)	Precoordinated Expression	2
SNOMED CT	67900009 Human chorionic gonadotropin measurement (procedure)	Precoordinated Expression	1
SNOMED CT	TSR-NoCode	High-Risk Findings on Electrocardiogram (ECG) Stress Test (e.g., Duke Treadmill Score <-12, Ventricular Tachycardia, Prolonged ST-Segment Depression, or Exercise-Induced Hypotension)	14
SNOMED CT	[12123001 Internal jugular vein structure (body structure)] ->(272741003 Laterality (attribute))->[24028007 Right (qualifier value)]	Right Internal Jugular Vein	2
SNOMED CT	[12123001 Internal jugular vein structure (body structure)] ->(272741003 Laterality (attribute))->[7771000 Left (qualifier value)]	Left Internal Jugular Vein	2

System	Code	Display Text	References
SNOMED CT	[370851004 Evaluation of diagnostic study results (procedure)] ->(363702006 Has focus (attribute))->[268400002 12 lead electrocardiogram (procedure)]	Postcoordinated Expression	1
SNOMED CT	[370851004 Evaluation of diagnostic study results (procedure)] ->(363702006 Has focus (attribute))->[399208008 Plain chest X-ray (procedure)]	Postcoordinated Expression	1
SNOMED CT	[370851004 Evaluation of diagnostic study results (procedure)] ->(363702006 Has focus (attribute))->[40701008 Echocardiography (procedure)]	Postcoordinated Expression	1
SNOMED CT	[386053000 Evaluation procedure (procedure)] ->(363702006 Has focus (attribute))->[85898001 Cardiomyopathy (disorder)]	Postcoordinated Expression	1
SNOMED CT	[416118004 Administration (procedure)] ->(260686004 Method (attribute))->[129445006 Administration - action (qualifier value)] ->(363701004 Direct substance (attribute))->[372567009 Metformin (substance)]	Postcoordinated Expression	1
SNOMED CT	[416118004 Administration (procedure)] ->(260686004 Method (attribute))->[129445006 Administration - action (qualifier value)] ->(363701004 Direct substance (attribute))->[372862008 Anticoagulant (substance)]	Postcoordinated Expression	1
SNOMED CT	[416118004 Administration (procedure)] ->(260686004 Method (at-	Postcoordinated Expression	1

System	Code	Display Text	References
	tribute))->[129445006 Administration - action (qualifier value)] ->(363701004 Direct substance (attribute))->[67866001 Insulin (substance)]		
SNOMED CT	[45631007 Structure of radial artery (body structure)] ->(272741003 Laterality (attribute))->[24028007 Right (qualifier value)]	Right Radial Artery	2
SNOMED CT	[45631007 Structure of radial artery (body structure)] ->(272741003 Laterality (attribute))->[7771000 Left (qualifier value)]	Left Radial Artery	2
SNOMED CT	[83419000 Femoral vein structure (body structure)] ->(272741003 Laterality (attribute))->[24028007 Right (qualifier value)]	Right Femoral Vein	2
SNOMED CT	[83419000 Femoral vein structure (body structure)] ->(272741003 Laterality (attribute))->[7771000 Left (qualifier value)]	Left Femoral Vein	2
SNOMED CT	[9454009 Structure of subclavian vein (body structure)] ->(272741003 Laterality (attribute))->[24028007 Right (qualifier value)]	Right Subclavian Vein	2
SNOMED CT	[9454009 Structure of subclavian vein (body structure)] ->(272741003 Laterality (attribute))->[7771000 Left (qualifier value)]	Left Subclavian Vein	2
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[11851006 Mitral valve disorder (disorder)]	Mitral Valve	1

System	Code	Display Text	References
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[20721001 Tricuspid valve disorder (disorder)]	Tricuspid Valve	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[293637006 Allergy to contrast media (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[35304003 Cardiac tamponade (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[394659003 Acute coronary syndrome (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[426525004 Sustained ventricular tachycardia (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[429589006 Left ventricular cardiac dysfunction (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a	Stage 1 (Glomerular Filtration Rate >= 90 mL/min per 1.73 m^2)	1

System	Code	Display Text	References
	[Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[431855005 Chronic kidney disease stage 1 (disorder)]		
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[431856006 Chronic kidney disease stage 2 (disorder)]	Stage 2 (Glomerular Filtration Rate 60 to 89 mL/min per 1.73 m ²)	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[431857002 Chronic kidney disease stage 4 (disorder)]	Stage 4 (Glomerular Filtration Rate 15 to 29 mL/min per 1.73 m ²)	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[433144002 Chronic kidney disease stage 3 (disorder)]	Stage 3 (Glomerular Filtration Rate 30 to 59 mL/min per 1.73 m ²)	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[433146000 Chronic kidney disease stage 5 (disorder)]	Stage 5 (Glomerular Filtration Rate < 15 mL/min per 1.73 m ² or on dialysis)	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[53741008 Coronary arteriosclerosis (disorder)]	Postcoordinated Expression	2
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] -	Postcoordinated Expression	1

System	Code	Display Text	References
	>(363702006 Has focus (attribute))->[70995007 Pulmonary hypertension (disorder)]		
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[71908006 Ventricular fibrillation (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[73211009 Diabetes mellitus (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[76267008 Pulmonary valve disorder (disorder)]	Pulmonary Valve	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[85598007 Constrictive pericarditis (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[85898001 Cardiomyopathy (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[8722008	Aortic Valve	1

System	Code	Display Text	References
	Aortic valve disorder (disorder)]		
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[90708001 Kidney disease (disorder)]	Postcoordinated Expression	1

Chapter 12. Behavior Symbols

Table 12.1. Group Organizational Behavior

Sym- bol	Name	Definition
▶	Sentence Group	A group of related alternative actions is a sentence group if the item referenced by the action is the same in all the actions, and each action simply constitutes a different variation on how to specify the details for that item. For example, two actions that could be in a SentenceGroup are "aspirin, 500 mg, 2 times per day" and "aspirin, 300 mg, 3 times per day". In both cases, aspirin is the item referenced by the action, and the two actions represent two different options for how aspirin might be ordered for the patient. Note that a SentenceGroup would almost always have an associated selection behavior of "AtMostOne", unless it's a required action, in which case, it would be "ExactlyOne".
▷	Logical Group	A group with this behavior logically groups its sub-elements, and may be shown as a visual group to the end user, but it is not required to do so.
➤	Visual Group	Any group marked with this behavior should be displayed as a visual group to the end user.

Table 12.2. Group Selection Behavior

Sym- bol	Name	Definition
□	Any	Any number of the items in the group may be chosen, from zero to all.
⊙	All	All the items in the group must be selected as a single unit.
⊙	AllOrNone	All the items in the group are meant to be chosen as a single unit: either all must be selected by the end user, or none may be selected.
○	ExactlyOne	The end user must choose one and only one of the selectable items in the group. The user may not choose none of the items in the group.
⊛	AtMostOne	The end user may choose zero or at most one of the items in the group.
⊛	OneOrMore	The end user must choose a minimum of one, and as many additional as desired.

Table 12.3. Required Behavior

Sym- bol	Name	Definition
◆	Must	An action with this behavior must be included in the actions processed by the end user; the end user may not choose not to include this action.

Sym- bol	Name	Definition
◇	Could	An action with this behavior may be included in the set of actions processed by the end user.
➤	MustUnlessDocumented	An action with this behavior must be included in the set of actions processed by the end user, unless the end user provides documentation as to why the action was not included.

Table 12.4. Precheck Behavior

Sym- bol	Name	Definition
▲	Yes	An action with this behavior is one of the most frequent actions that is, or should be, included by an end user, for the particular context in which the action occurs. The system displaying the action to the end user should consider "pre-checking" such an action as a convenience for the user.
▽	No	An action with this behavior is one of the less frequent actions included by the end user, for the particular context in which the action occurs. The system displaying the actions to the end user would typically not "pre-check" such an action.

Table 12.5. Cardinality Behavior

Sym- bol	Name	Definition
◆	Single	An action with this behavior may only be completed once.
❖	Multiple	An action with this behavior may be repeated multiple times.

Table 12.6. Item Flags

Sym- bol	Name	Definition
☞	fillIn	This item, in a list entry, allows the user to enter a fill in value that is not present in the set of presented choices.

Table 12.7. Read Only Behavior

Sym- bol	Name	Definition
☆	true	For a particular action or action group, specifies whether the elements are read only.

Appendix A. References

This appendix contains the list of related resources and supporting documents used in creating this KNART.

List of References

Related Resources

- [CCWP] *Cardiology: Cardiac Catheterization, Pre-Cardiac Catheterization, and Post Catheterization Clinical Content White Paper*
- [CSD] *Cardiology: Cardiac Catheterization Documentation Template Conceptual Structure Document*
- [KVRpt] *Cardiology: Cardiac Catheterization Documentation Template KNART Validation Report*
- [AHA Risk Calculator] *American Heart Association Risk Calculator* (link [<http://static.heart.org/riskcalc/app/index.html#!/baseline-risk>])

Supporting Evidence

- [Greenberger 1991] *Greenberger PA, Patterson R. The prevention of immediate generalized reactions to radiocontrast media in high-risk patients. J Allergy Clin Immunol. 1991;87(4):867-872* (link [[Journal of Clinical Immunology 1991](#)])
- [Maddox 2014] *Maddox TM, Plomondon ME, Petrich M, et al. A national clinical quality program for Veterans Affairs catheterization laboratories (from the Veterans Affairs clinical assessment, reporting, and tracking program). Am J Cardiol. 2014;114(11):1750-1757* (link [<https://doi.org/10.1016/j.amjcard.2014.08.045>])
- [Patel 2012] *Patel MR, Bailey SR, Bonow RO, et al. ACCF/SCAI/AATS/AHA/ASE/ASNC/HFSA/HRS/SCCM/SCCT/SCMR/STS 2012 appropriate use criteria for diagnostic catheterization. Cathet Cardiovasc Intervent. 2012;80(3):E50-E81* (link [<https://doi.org/10.1016/j.jtcvs.2012.04.013>])
- [Dolgen Corp] *U.S. National Library of Medicine. ASPIRIN 81 MG (aspirin) tablet, coated [DOLGENCORP, LLC]. Revised January 2017* (link [<http://dailymed.nlm.nih.gov/dailymed/lookup.cfm?setid=b4064039-2345-4227-b83d-54dc13a838d3>])
- [AstraZeneca] *U.S. National Library of Medicine. BRILINTA- ticagrelor tablet [AstraZeneca Pharmaceuticals LP]. Revised April 2017* (link [<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=f7b3f443-e83d-4bf2-0e96-023448fed9a8>].)
- [Apotex] *U.S. National Library of Medicine. CLOPIDOGREL- clopidogrel bisulfate tablet, film coated [Apotex Corp.]. Revised November 2016* (link [<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=edae8d-f1-caf9-ff72-1304-5ae8b355f8e7>])
- [Upjohn and Company] *U.S. National Library of Medicine. DELTASONE- prednisone tablet [Pharmacia and Upjohn and Company]. Revised March 2007* (link [<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=3400d26a-41cb-40e4-99b4-780e1e0ec561>])
- [Sam's West Inc] *U.S. National Library of Medicine. DIPHENHYDRAMINE- diphenhydramine hcl tablet, coated [Sam's West Inc]. Revised June 2016* (link [<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=70a584ab-9e24-404a-aad7-f9a05c377248>])

- [APP Pharmaceuticals] *U.S. National Library of Medicine. DIPHENHYDRAMINE- diphenhydramine hydrochloride injection, solution [APP Pharmaceuticals, LLC]. Revised January 2012* (link [<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=fc574e74-1fdc-4a61-a1ed-492ae43faed2>])
- [Eli Lilly and Company] *U.S. National Library of Medicine. EFFIENT- prasugrel hydrochloride tablet, film coated [Eli Lilly and Company]. Revised July 2016* (link [<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=5fe9c118-c44b-48d7-a142-9668ae3df0c6>])
- [Pharmacia and Upjohn Company] *U.S. National Library of Medicine. SOLU-CORTEF- hydrocortisone sodium succinate injection, powder, for solution [Pharmacia and Upjohn Company LLC]. Revised October 2016* (link [<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=65eefd58-b166-4d71-ade6-45c8fdf86922>])
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