

Women's Health: Diagnostic Breast Imaging Documentation Template

Documentation Template: Conceptual Structure

Contract: VA118-16-D-1008, Task Order (TO): VA-118-16-F-1008-0007, CLIN0009CA

Department of Veterans Affairs (VA)



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

Publication date 05/24/2018

Version: 1.0

Women's Health: Diagnostic Breast Imaging Documentation Template: Documentation Template: Conceptual Structure

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

Publication date 05/24/2018

Table of Contents

Preface	v
Artifact Applicability	vi
Models	vii
1. External Data Definitions	1
Definitions	1
Triggers	1
2. Expression Definitions	2
3. Reason for Visit	3
4. Breast Imaging History	4
5. Focused History	6
6. Problem List	11
7. Surgical History	12
8. Medication List	13
9. Clinical Breast Exam	14
10. Patient/Proxy Discussion	15
11. Plan of Care	17
12. Tabular List	20
13. Behavior Symbols	26
A. References	28

List of Tables

1. Revision History	v
2. Clinical White Paper Contributors	v
3. Artifact Identifier	v
4. Applicability Foci, Description and Codes	vi
5. Model References	vii
1.1. LastScreeningMammogram	1
1.2. SurgicalHistory	1
1.3. CurrentMedications	1
2.1. PatientAge	2
2.2. PatientGenderFemale	2
12.1. Terminology Versions	20
12.2. Terminology References	20
13.1. Group Organizational Behavior	26
13.2. Group Selection Behavior	26
13.3. Required Behavior	26
13.4. Precheck Behavior	27
13.5. Cardinality Behavior	27
13.6. Item Flags	27
13.7. Read Only Behavior	27

Preface

Table 1. Revision History

Date	Life Cycle Event
May 24, 2018	Published
May 24, 2018	Reviewed
April 19, 2018	Created

Table 2. Clinical White Paper Contributors

Name	Role	Affiliation
C. Yvette Williams-Harris, MD MPH	Author	Physician, 1670 Clairmont Rd Atlanta, GA 30033
Megan Gerber, MD MPH	Author	Physician, VA Boston HealthCare System, 150 South Huntington Ave Boston, MA 02130
Caitlin M. Cusack, MD MPH	Author	Contractor - Physician Informaticist, Office of Women's Health Services, 8455 Colesville Rd, 12th Floor Silver Spring, MD 20910

Table 3. Artifact Identifier

Domain	Artifact ID	Name
urn:va.gov:kbs:knart:artifact:r1	3798c95b-e881-5871-b6b9-39f4e29ce40b	O32

Artifact Applicability

Table 4. Applicability Foci, Description and Codes

Focus	Description	Code System	Code	Value Set	Value Set Version
TargetUser	Primary Care Provider	SNOMED CT	453231000124104 Primary care provider (occupation)	N/A	N/A
TargetUser	Gynecologist			N/A	N/A
ClinicalVenue	Outpatient	SNOMED CT	33022008 Hospital-based outpatient department (environment)	N/A	N/A
ClinicalFocus	Primary Care, Gynecology, Interventional Radiology, Pathology, Oncology, Surgery			N/A	N/A
PatientGender	Female	SNOMED CT	248152002 Female (finding)	N/A	N/A
PatientAgeGroup	Adult	SNOMED CT	133936004 Adult (person)	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. LastScreeningMammogram

Expression: type=elm:Query
Annotation:
Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [24623002 Screening mammography (procedure)]

Table 1.2. SurgicalHistory

Expression: type=elm:Query
Annotation:
Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [TSR-NoCode]

Table 1.3. CurrentMedications

Expression: type=elm:Query
Annotation:
Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [TSR-NoCode]

Triggers

No trigger definitions are present.

Chapter 2. Expression Definitions

Table 2.1. PatientAge

Expression: type=elm:Query Annotation: Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value) elm:value[elm:Code]: [[a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] -(363702006 Has focus (attribute))-[105726004 Age AND/OR growth finding (finding)]]
--

Table 2.2. PatientGenderFemale

Expression: type=elm:SingletonFrom Annotation: Codes: elm:element[elm:Code]: [[a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] -(363702006 Has focus (attribute))-[248152002 Female (finding)]]

Chapter 3. Reason for Visit

□ prompt: Patient age in years

response: Integer (Single)

initialValue: PatientAge

□ prompt: Reason for visit

response: String (Single)

Chapter 4. Breast Imaging History

Condition:elm:Exists (LastScreeningMammogram)

Most Recent Screening Mammography Results

☐ Date

prompt:

response: Timestamp (Single)

initialValue: elm:Property LastScreeningMammogram

☐ BI-RADS Category

prompt:

response: Code (Single)

☐ General breast composition

prompt:

response: String (Single)

☐ Important findings

prompt:

response: String (Single)

☐ Mammography comparison to prior imaging

prompt:

response: String (Single)

☐ Management recommendations

prompt:

response: String (Single)

☐ Patient or Proxy notification completed?

prompt:

response: Boolean (Single)

responseBinding: Property ("NotificationCompleted")

☐ **Condition:**elm:Property ()

Notification Documentation

☐ Date

prompt:

response: Timestamp (Single)

☐ Method

prompt:

response: String (Single)

☐ Notification recipient

prompt:

response: String (Single)

☐ Prior Breast Imaging?

prompt:

Enable recording of multiple prior imaging results

response: Boolean (Single)

responseBinding: Property ("PriorBreastImaging")

☐ **Condition:**elm:Property ()

☐ Is a written report available?

prompt:

response: Boolean (Single)

responseBinding: Property ("WrittenReportAvailable")

☐ **Condition:**elm:Property ()

☐ Please send a copy of the report to the radiology department to

prompt: record result in electronic health record and to document result

response: Boolean (Single)

☐ Result of written report

prompt:

response: String (Single)

response EnumerationConstraint (List)

range:

item: Normal image (no evidence of malignancy)(17621005 |Normal
(qualifier value))

item: Abnormal image(263654008 |Abnormal (qualifier value))

item: Incomplete image needing additional image

☐ ❖ Additional Details

☐ BI-RADS Categories

prompt:

response: String (Single)

☐ Date

prompt:

response: Timestamp (Single)

☐ Location

prompt:

response: String (Single)

☐ Result

prompt:

response: String (Single)

Chapter 5. Focused History

☐ Patient Breast Symptoms

☐ prompt: Distinct breast mass

itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[89164003 |Breast lump (finding)]

response: Boolean (Single)

responseBinding: Property ("DistinctBreastMass")

☐ **Condition:**elm:Property ()

☐ prompt: Location

response: String (Single)

☐ prompt: Details

response: String (Single)

☐ prompt: Indistinct breast tissue thickening

itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[7c92d261-2f82-4a07-a9bb-b88fa7fa6ddf |Thickening of tissue of breast (finding)]

response: Boolean (Single)

responseBinding: Property ("IndistinctFindingThickening")

☐ prompt: Indistinct breast tissue nodularity

itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[67b3628a-559f-4f45-9d84-e5dbb14b5298 |Nodularity of tissue of breast (finding)]

response: Boolean (Single)

responseBinding: Property ("IndistinctFindingNodularity")

☐ **Condition:**elm:Or (elm:Property("IndistinctFindingThickening" from: elm:ParameterRef(Responses)) elm:Property("IndistinctFindingNodularity" from: elm:ParameterRef(Responses)))

☐ prompt: Location

response: String (Single)

☐ prompt: Details

response: String (Single)

☐ prompt: Nipple discharge

itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[54302000 |Discharge from nipple (disorder)]

response: Boolean (Single)

responseBinding: Property ("NippleDischarge")


☐ **Condition:**elm:Property ()

☐ prompt: Type of discharge

response: String (Single)

response EnumerationConstraint (List)
range:

	<p>item: Normal lactation([a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))-[54302000 Discharge from nipple (disorder)]- -(42752001 Due to (attribute))-[82374005 Lactation normal (finding)];)</p> <p>item: Nonspontaneous([a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] -(363702006 Has focus (attribute))-[cbf03791-769c-403d-aac6-f6581bd103c8 Non-spontaneous discharge from nipple (disorder)])</p> <p>item: Suspicious([a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] -(363702006 Has focus (attribute))-[c76068c5-002d-4442-8795-5ce6662261f8 Suspicious discharge from nipple (disorder)])</p> <p><input type="checkbox"/> prompt: Details</p> <p>response: String (Single)</p>
<input type="checkbox"/> prompt: Skin Changes	<p>itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))-[115951000119105 Breast symptom of change in skin (finding)]</p> <p>response: Boolean (Single)</p> <p>responseBinding: Property ("SkinChanges")</p> <p><input type="checkbox"/> Condition:elm:Property ()</p>
	<p><input type="checkbox"/> prompt: Location</p> <p>response: String (Single)</p> <p><input type="checkbox"/> prompt: Details</p> <p>response: String (Single)</p>
<input type="checkbox"/> prompt: Breast Pain	<p>itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))-[53430007 Pain of breast (finding)]</p> <p>response: Boolean (Single)</p> <p>responseBinding: Property ("BreastPain")</p> <p><input type="checkbox"/> Condition:elm:Property ()</p>
	<p><input type="checkbox"/> prompt: Cyclic</p> <p>itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] -(363702006 Has focus (attribute))-[237453001 Cyclical mastalgia (finding)]</p> <p>response: Boolean (Single)</p> <p><input type="checkbox"/> prompt: Focal</p> <p>itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] -(363702006 Has focus (attribute))-[11779c10-f86f-44d6-b7f7-38adcbf128e7 Focal pain of breast (finding)]</p> <p>response: Boolean (Single)</p> <p>responseBinding: Property ("FocalBreastPain")</p> <p><input type="checkbox"/> Condition:elm:Property ()</p>
	<p><input type="checkbox"/> prompt: Location</p>

		response: String (Single)
		<input type="checkbox"/> prompt: Details
		response: String (Single)
<input type="checkbox"/>	prompt: Other breast symptoms	
	response: Boolean (Single)	
	responseBinding: Property ("OtherBreastSymptoms")	
<input type="checkbox"/>	Condition: elm:Property ()	
	<input type="checkbox"/> prompt: Details	
	response: String (Single)	
<input type="checkbox"/>	prompt: No breast symptoms	
	response: Boolean (Single)	
<input type="checkbox"/>	Breast Cancer Risk Factors	
<input type="checkbox"/>	prompt: Risk Factors	
	response: String (Multiple)	
	response EnumerationConstraint (List)	
	range:	
	item:	Dense breast tissue([a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[d4398d10-bdb2-4353-8d-d5-63baa97ef026 Breast tissue dense (finding)])
	item:	Radiation therapy to chest before age of 30 years(711299007 Radiotherapy to thorax (procedure))
	item:	BRCA mutation carrier([a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[445333001 Breast cancer genetic marker of susceptibility positive (finding)])
	item:	First degree relative is a BRCA mutation carrier([a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[445333001 Breast cancer genetic marker of susceptibility positive (finding)])
	item:	Prior proliferative breast disease on biopsy(TSR-NoCode)
	item:	Personal history of breast cancer([a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[254837009 Malignant neoplasm of breast (disorder)])
	item:	Family history of breast cancer([a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[254837009 Malignant neoplasm of breast (disorder)])
	item:	Significant family history of other cancers(TSR-NoCode)
	 item: Other	
<input type="checkbox"/>	prompt: Other Details	
	response: String (Single)	
<input type="checkbox"/>	Overall Breast Cancer Risk	
<input type="checkbox"/>	prompt: Details of overall breast cancer risk	
	response: String (Single)	
<input type="checkbox"/>	National Cancer Institute's Breast Cancer Risk Assessment Tool	

response: URL (Single)

initialValue: elm:Literal (String) <https://www.cancer.gov/bcrisktool/>

☐ Breast Implants

☐ prompt: Has breast implants

itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->[363702006 |Has focus (attribute)]->[449844005 |Breast prosthesis in situ (finding)]

response: Boolean (Single)

responseBinding: Property ("BreastImplants")

☐ **Condition:**elm:Property ()

☐ prompt: Details

response: String (Single)

☐ Other Breast Surgeries or Biopsies

☐ prompt: Prior Breast Surgeries Not Addressed Above

itemCode: 392090004 |Operation on breast (procedure)|

response: Boolean (Single)

responseBinding: Property ("OtherSurgeries")

☐ prompt: Prior Biopsies Not Addressed Above

itemCode: 122548005 |Biopsy of breast (procedure)|

response: Boolean (Single)

responseBinding: Property ("OtherBiopsies")

☐ ❖ **Condition:**elm:Or (elm:Property("OtherSurgeries" from: elm:ParameterRef(Responses)) elm:Property("OtherBiopsies" from: elm:ParameterRef(Responses)))

☐ prompt: Procedure

response: String (Single)

☐ prompt: Date

response: Timestamp (Single)

☐ Current Therapy for Breast Conditions

☐ prompt: Current Therapy for Breast Conditions

response: Boolean (Single)

responseBinding: Property ("CurrentTherapy")

☐ ❖ **Condition:**elm:Property ()

☐ prompt: Diagnosis of breast condition

response: String (Single)

☐ prompt: Current therapy for breast condition description(s)

response: String (Single)

☐ prompt: Details

response: String (Single)

☐ Reproductive Status

☐ prompt: Reproductive Status

response: String (Single)

response EnumerationConstraint (List)
 range:
 item: Postmenopausal([a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[76498008 |Postmenopausal state (finding)])
 item: Pregnant([a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[77386006 |Pregnant (finding)])
 item: Premenopausal, Not pregnant(TSR-NoCode)

□ Contraceptive Status

○ ◆ prompt: Contraceptive Status

response: String (Single)

response EnumerationConstraint (List)

range:

item: Not applicable

item: Tubal ligation(77543007 |Ligation of fallopian tube (procedure))

item: Permanent implanted birth control([a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[00baab-ba-6174-4ba0-81ac-fbf9ffe0bd28 |Permanent implanted contraception (finding)])

item: Using contraceptives([a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[762650003 |Uses contraception (finding)])

item: Attempting to conceive([a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[169449001 |Trying to conceive (finding)])

item: Not attempting to conceive([a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[169449001 |Trying to conceive (finding)])

item: Not using contraception([a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[762650003 |Uses contraception (finding)])

responseBinding: Property ("ContraceptiveStatus")

○ **Condition:**elm:Or (elm:Equal(elm:Property("ContraceptiveStatus" from: elm:ParameterRef(Responses)) elm:Literal()) elm:Equal(elm:Property("ContraceptiveStatus" from: elm:ParameterRef(Responses)) elm:Literal()))

○ ◆ prompt: Details

response: String (Single)

Chapter 6. Problem List

- ☐ prompt: Problem List
response: String (Single)
- ☐ prompt: Relevant comorbidities to breast cancer risk
response: String (Single)

Chapter 7. Surgical History

□ prompt: Relevant Surgical History Not Addressed Above

response: Tuple (Single)

initalValue: SurgicalHistory

Chapter 8. Medication List

□ prompt: Current Medication List

response: Tuple (Single)

initialValue: CurrentMedications

Chapter 9. Clinical Breast Exam

Include Location and Distance from Nipple for Positive Findings

- ☐ prompt: Appearance
response: String (Single)
- ☐ prompt: Findings on breast palpation
response: String (Single)
- ☐ prompt: Lymph node findings
response: String (Single)
- ☐ prompt: Other findings
response: String (Single)

Chapter 10. Patient/Proxy Discussion

<input type="checkbox"/> Imaging results reviewed, and next steps/plan of care discussed with:	
prompt:	
re- String (Single)	
sponse:	
re- EnumerationConstraint (List)	
sponse	
range:	
item: Patient(116154003 Patient (person))	
item: Proxy(451171000124107 Appointed healthcare surrogate (person))	
responseBinding: Property ("DiscussionTarget")	
<input type="checkbox"/>	Condition: elm:Equal (elm:Property("DiscussionTarget" from: elm:ParameterRef(Responses)) elm:Literal())
Proxy Information	
<hr/>	
<input type="checkbox"/>	prompt: Relationship
	response: String (Single)
response range: EnumerationConstraint (List)	
	item: Spouse(127848009 Spouse (person))
	item: Significant other(262043009 Partner in relationship (person))
	item: Medical power of attorney(57a30df3-8aea-4038-a55b-c1a245666f4e Medical power of attorney (record artifact))
	item: Other
<input type="checkbox"/>	prompt: Other Details
	response: String (Single)
<input type="checkbox"/>	prompt: Legal status, if applicable
	response: String (Single)
<input type="checkbox"/>	prompt: Details
	response: String (Single)
<input type="checkbox"/> Potential need for extended follow-up addressed?	
prompt:	
Patient aware of need for extended follow-up?	
re- Boolean (Single)	
sponse:	
responseBinding: Property ("ExtendedFollowupAddressed")	
<input type="checkbox"/>	Condition: elm:Property ()
<hr/>	
<input type="checkbox"/>	prompt: Is patient likely to be available for extended follow up?
	response: Boolean (Single)
responseBinding: Property ("PatientAvailable")	
<input type="checkbox"/>	Condition: elm:IsFalse (elm:Property("PatientAvailable" from: elm:Parameter- Ref(Responses)))
<hr/>	
	prompt: Details

	response: String (Single)
--	---------------------------


☐ Patient/Proxy Preferences Discussed?

prompt:

re- Boolean (Single)

sponse:

responseBinding: Property ("PreferencesDiscussed")

<input type="checkbox"/> Condition: elm:Property ()	<p><input type="checkbox"/> prompt: Patient Preferences:</p> <p>response: String (Single)</p> <p>response range: EnumerationConstraint (List)</p> <p>item: Active pursuit of diagnosis(TSR-NoCode)</p> <p>item: Monitoring only(182777000 Monitoring of patient (regime/therapy))</p> <p>item: Aggressive treatment(133877004 Therapeutic regimen (regime/therapy))</p> <p>item: Palliation only(103735009 Palliative care (regime/therapy))</p> <p> item: Other</p> <p><input type="checkbox"/> prompt: Other Details</p> <p>response: String (Single)</p>
--	--

☐ Patient Contact Preference

prompt:

re- String (Multiple)

sponse:

re- EnumerationConstraint (List)

sponse


range:

item: Phone call

item: In person

item: Non-registered letter

item: Secure messaging

 Other

item:

☐ Other Details

prompt:

re- String (Single)

sponse:

Chapter 11. Plan of Care

- ☐ Continue Standard Screening Mammography

prompt:

Recommended for BI-RADS Category 1 or 2 Screening Mammography result.

re- Boolean (Single)

sponse:

responseBinding: Property ("ContinueStandardScreeningMammography")

- ☐ **Condition:**elm:Property ()

☐ prompt: Date next mammogram due

response: Timestamp (Single)

- ☐ Diagnostic Mammography in 6 months from today

prompt:

Recommended for evaluation of BI-RADS Category 3 Screening Mammography result.

re- Boolean (Single)

sponse:

responseBinding: Property ("DiagnosticMammography6")

- ☐ **Condition:**elm:Property ()

☐ prompt: Date next mammogram due

response: Timestamp (Single)

initialValue: elm:AddDefault value is today + 6 months. elm:Today() elm:Quantity(6 months)

- ☐ Diagnostic Mammography Now

prompt:

Recommended for Patients Age 30 Years or Older with a Breast Mass, Asymmetric Thickening or Nodularity, Persistent Focal Breast Pain, Skin Changes, or Suspicious Nipple Discharge; an Option for Patients Younger than Age 30 Years with Asymmetric Thickening or Nodularity, Skin Changes, or Suspicious Nipple Discharge.

re- Boolean (Single)

sponse:

responseBinding: Property ("DiagnosticMammographyNow")

- ☐ **Condition:**elm:Property ()

☐ prompt: Details

response: String (Single)

- ☐ Breast Ultrasound Imaging Now

prompt:

Recommended for Patients Younger Than Age 30 Years with a Breast Mass, Asymmetric Thickening or Nodularity, Persistent Focal Breast Pain, Skin Changes, or Suspicious Nipple Discharge; Recommended in Conjunction with Diagnostic Mammography for Patients Age 30 Years or Older with Asymmetric Thickening or Nodularity, Skin Changes, or Suspicious Nipple Discharge; an Option in Conjunction with Diagnostic Mammography for Patients Age 30 Years or Older with Persistent Focal Breast Pain; an Option as the Initial Diagnostic Evaluation for Patients Age 30 to 39 Years Old with a Suspected Cyst or a Breast Mass or Asymmetric Thickening or Nodularity Where the Clinical Suspicion is Low.

re- Boolean (Single)
sponse:

responseBinding: Property ("BreastUltrasoundImagingNow")

☐ **Condition:**elm:Property ()

☐ prompt: Details

response: String (Single)

☐ Referral for Breast Biopsy Now

prompt:

Recommended for Evaluation of BI-RADS Category 4 or 5 Screening Mammography Result; Recommended for Evaluation of BI-RADS Category 3 Screening Mammography Result in Patients Unlikely to Return for Follow-Up; an Option for Evaluation of BI-RADS Category 3 Screening Mammography Result in Patients with a Strong Preference for More Immediate Evaluation.

re- Boolean (Single)
sponse:

responseBinding: Property ("BreastBxReferralNow")

☐ **Condition:**elm:Property ()

☐ prompt: Details

response: String (Single)

☐ Reassurance and Patient Education with or without Symptomatic Therapy

prompt:

Recommended for Patients with Cyclic, Diffuse Pain, Whose Clinical Breast Exams Are Otherwise Normal and Whose Mammograms Are Up-to-Date and Normal.

re- Boolean (Single)
sponse:

responseBinding: Property ("ReassuranceEducation")

☐ **Condition:**elm:Property ()

☐ prompt: Details

response: String (Single)

☐ Observation and Patient Education

prompt:

Recommended for Patients with Bilateral or Multiple-Duct Nonspontaneous Nipple Discharge Whose Clinical Breast Exams Are Otherwise Normal and Whose Screening Mammograms, If Recommended, Are Up-to-Date and Normal.

re- Boolean (Single)
sponse:

☐ Observation and Patient Education

prompt:

Recommended for Patients Younger Than Age 30 Years with a Palpable Breast Mass or Asymmetric Thickening or Nodularity Where the Clinical Suspicion Is Low.

re- Boolean (Single)
sponse:

☐ Evaluate Medications for Potential Causes of Galactorrhea

prompt:

re- Boolean (Single)

sponse:

responseBinding: Property ("EvaluateMeds")

☐ **Condition:**elm:Property ()

☐ prompt: Details

response: String (Single)

☐ Obtain Prior External Breast Imaging Results and/or Films

prompt:

re- Boolean (Single)

sponse:

responseBinding: Property ("ObtainPrior")

☐ **Condition:**elm:Property ()

☐ prompt: Details

response: String (Single)

☐ Plan Reviewed with and Agreed to by Patient/Proxy

prompt:

re- Boolean (Single)

sponse:

☐ Other

prompt:

re- Boolean (Single)

sponse:

responseBinding: Property ("OtherPlan")

☐ **Condition:**elm:Property ()

☐ prompt: Details

response: String (Single)

Chapter 12. Tabular List

Terminology Service Request (TSR) Mappings

Table 12.1. Terminology Versions

Name	Identifier	Version
SNOMED CT	2.16.840.1.113883.6.96	United States Edition 20180301

Table 12.2. Terminology References

System	Code	Display Text ^a	References ^b
SNOMED CT	103735009 Palliative care (regime/therapy)	Palliation only	1
SNOMED CT	116154003 Patient (person)	Patient	1
SNOMED CT	122548005 Biopsy of breast (procedure)	Precoordinated Expression	1
SNOMED CT	127848009 Spouse (person)	Spouse	1
SNOMED CT	133877004 Therapeutic regimen (regime/therapy)	Aggressive treatment	1
SNOMED CT	133936004 Adult (person)	Adult	1
SNOMED CT	17621005 Normal (qualifier value)	Normal image (no evidence of malignancy)	1
SNOMED CT	182777000 Monitoring of patient (regime/therapy)	Monitoring only	1
SNOMED CT	24623002 Screening mammography (procedure)	Precoordinated Expression	1
SNOMED CT	248152002 Female (finding)	Female	1
SNOMED CT	262043009 Partner in relationship (person)	Significant other	1
SNOMED CT	263654008 Abnormal (qualifier value)	Abnormal image	1
SNOMED CT	33022008 Hospital-based outpatient department (environment)	Outpatient	1
SNOMED CT	392090004 Operation on breast (procedure)	Postcoordinated Expression	1
SNOMED CT	398166005 Performed (qualifier value)	Precoordinated Expression	4

System	Code	Display Text ^a	References ^b
SNOMED CT	451171000124107 Ap- pointed healthcare surro- gate (person)	Proxy	1
SNOMED CT	453231000124104 Prima- ry care provider (occupa- tion)	Primary Care Provider	1
SNOMED CT	57a30df3-8aea-4038-a55b- c1a245666f4e Medical power of attorney (record artifact)	Medical power of attorney	1
SNOMED CT	711299007 Radiotherapy to thorax (procedure)	Radiation therapy to chest before age of 30 years	1
SNOMED CT	77543007 Ligation of fal- lopian tube (procedure)	Tubal ligation	1
SNOMED CT	TSR-NoCode ^c	Precoordinated Expression	6
SNOMED CT	[a997cc03-3e99-40e- b-833a-6374c7750a3a Observation proce- dure (procedure)] - ->(363702006 Has fo- cus (attribute))->[00baab- ba-6174-4ba0-81ac-fbf9ffe0b- d28 Permanent implanted contraception (finding)]	Permanent implanted birth control	1
SNOMED CT	[a997cc03-3e99-40e- b-833a-6374c7750a3a Observation proce- dure (procedure)] - ->(363702006 Has focus (attribute))->[105726004 Age AND/OR growth finding (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e- b-833a-6374c7750a3a Ob- servation procedure (pro- cedure)] ->(363702006 Has focus (at- tribute))->[115951000119105 Breast symptom of change in skin (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e- b-833a-6374c7750a3a Observation proce- dure (procedure)] - ->(363702006 Has focus (attribute))->[11779c10- f86f-44d6-b7f7-38ad-	Postcoordinated Expression	1

System	Code	Display Text ^a	References ^b
	cbf128e7 Focal pain of breast (finding)]		
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[169449001 Trying to conceive (finding)]	Attempting to conceive	2
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[237453001 Cyclical mastalgia (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[248152002 Female (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[254837009 Malignant neoplasm of breast (disorder)]	Personal history of breast cancer	2
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[445333001 Breast cancer genetic marker of susceptibility positive (finding)]	BRCA mutation carrier	2
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[449844005 Breast prosthesis in situ (finding)]	Postcoordinated Expression	1

System	Code	Display Text ^a	References ^b
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[53430007 Pain of breast (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[54302000 Discharge from nipple (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[67b3628a-559f-4f45-9d84-e5dbb14b5298 Nodularity of tissue of breast (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[762650003 Uses contraception (finding)]	Using contraceptives	2
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[76498008 Postmenopausal state (finding)]	Postmenopausal	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[77386006 Pregnant (finding)]	Pregnant	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (pro-	Postcoordinated Expression	1

System	Code	Display Text ^a	References ^b
	cedure)] ->(363702006 Has focus (at-tribute))->[7c92d261-2f82-4a07-a9bb-b88fa7fa6ddf Thickening of tissue of breast (finding)]		
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[89164003 Breast lump (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (at-tribute))->[c76068c5-002d-4442-8795-5ce6662261f8 Suspicious discharge from nipple (disorder)]	Suspicious	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (at-tribute))->[cbf03791-769c-403d-aac6-f6581bd103c8 Non-spontaneous discharge from nipple (disorder)]	Nonspontaneous	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[d4398d10-bdb2-4353-8d-d5-63baa97ef026 Breast tissue dense (finding)]	Dense breast tissue	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[54302000 Discharge from nipple (disorder)] ->(42752001 Due to (at-	Normal lactation	1

Tabular List

System	Code	Display Text ^a	References ^b
	tribute))-[82374005 Lac-tation normal (finding)];		

^aIf a code is used multiple times in the KNART, only the display text of the first instance is shown.

^bCount of the number of times the given code system and code pair is used in the KNART.

^cTSR-NoCode is a placeholder indicating a code was requested, but was not provided.

Chapter 13. Behavior Symbols

Table 13.1. 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 13.2. 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 13.3. 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 13.4. 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 13.5. 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 13.6. 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 13.7. 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] *Women's Health: Diagnostic Breast Imaging Clinical Content White Paper*

[CSD] *Women's Health: Diagnostic Breast Imaging Documentation Template Conceptual Structure Document*

[KVRpt] *Women's Health: Diagnostic Breast Imaging Documentation Template KNART Validation Report*

Supporting Evidence

[ACS 2017] *American Cancer Society. Lifetime Probability of Developing and Dying from Cancer, 2011-2013. American Cancer Society, Surveillance Research, 2017. Cancer Facts & Figures 2017 website.* (link [<https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2017/lifetime-probability-of-developing-and-dying-from-cancer-2011-2013.pdf>])

[ACR 2013] *American College of Radiology, Quality and Safety Resources – Breast Imaging - Reporting and Data Systems (BI-RADS) Atlas. 5th edition. 2013.* (link [<https://www.acr.org/Clinical-Resources/Reporting-and-Data-Systems/Bi-Rads>])

[ACR 5TIER] *Radiopaedia - 5-tier American College of Radiology (ACR) system of radiologic breast findings.* (link [<https://radiopaedia.org/articles/5-tier-acr-system-of-radiologic-breast-findings>])

[BIRADS FINAL] *Radiology Assistant - BI-RADS Final Assessment.* (link [<http://www.radiologyassistant.nl/en/p53b4082c92130/bi-rads-for-mammography-and-ultrasound-2013.html#in53b4389d91374>])

[BIRADS Mammography] *American College of Radiology. ACR BI-RADS Atlas 5th Edition – Mammography: Reporting System. American College of Radiology website.* (link [<https://www.acr.org/-/media/ACR/Files/RADS/BI-RADS/Mammography-Reporting.pdf>])

[BIRADS Ultrasound] *American College of Radiology. ACR BI-RADS Atlas 5th Edition – Ultrasound: Reporting System. American College of Radiology website.* (link [<https://www.acr.org/-/media/ACR/Files/RADS/BI-RADS/US-Reporting.pdf>])

[NCCN 2017] *National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines): Breast Cancer Screening and Diagnosis, Version 1.2017. National Comprehensive Cancer Network Guidelines website.* (link [https://www.nccn.org/professionals/physician_gls/pdf/breast-screening.pdf])

[Oeffinger 2015] *KC Oeffinger, ETH Fontham, R Etzioni, and et al. Breast Cancer Screening for Women at Average Risk: 2015 Guideline Update from the American Cancer Society. JAMA. 2015;314(15):1599-1614* (link [<https://doi.org/10.1001/jama.2015.12783>])