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, CLIN0005AF

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

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

Abstract

Diagnostic Breast Imaging

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Table 1. Revision History

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

Table 2. Clinical White Paper Contributors

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Table 3. Artifact Identifier

Domain	Artifact ID	Name
urn:va.gov:kbs:knart:artifact:r1	cf64ef14-25fa-53f4-b32d-a128163e3482	B44

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. PatientAge

Expression: type=elm:SingletonFrom
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 1.2. PatientGender

Expression: type=elm:SingletonFrom
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))->[248152002 |Female (finding)]]

Table 1.3. ScreeningMammogram_FullReport

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic
Annotation:
Codes: elm:element[elm:Code]: [TSR-NoCode]

Table 1.4. ScreeningMammogram_Images

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic
Annotation:
Codes: elm:element[elm:Code]: [24623002 |Screening mammography (procedure)|]

Table 1.5. ScreeningMammogram_BIRADSCategory

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic
Annotation:
Codes: elm:element[elm:Code]: [[386053000 |Evaluation procedure (procedure)]- ->(363702006 |Has focus (attribute))->[397137005 |Mammography assessment finding (finding)]- ->(363714003 |Interprets (attribute))->[96b3834d-b84e-4e41-baf6-87898c70d399 |Breast Imaging Reporting and Data System category (observable entity)];]

Table 1.6. ScreeningMammogram_GeneralBreastComposition

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic
Annotation:
Codes: elm:element[elm:Code]: [[386053000 |Evaluation procedure (procedure)]- ->(363702006 |Has focus (attribute))->[397137005 |Mammography assessment finding (finding)]- ->(363714003 |Interprets (attribute))->[96b3834d-b84e-4e41-baf6-87898c70d399 |Breast Imaging Reporting and Data System category (observable entity)];]

Table 1.7. ScreeningMammogram_ImportantFindings

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [[24623002 |Screening mammography (procedure)] ->(363702006 | Has focus (attribute))->[129714008 |Mammography finding (finding)]]

Table 1.8. ScreeningMammogram_ComparisonToPriorImaging

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [TSR-NoCode]

Table 1.9. ScreeningMammogram_ManagementRecommendations

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [TSR-NoCode]

Table 1.10. DiagnosticMammogram_FullReport

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [TSR-NoCode]

Table 1.11. DiagnosticMammogram_Images

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [71651007 |Mammography (procedure)|]

Table 1.12. DiagnosticMammogram_BIRADSCategory

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [[386053000 |Evaluation procedure (procedure)]- ->(363702006 |Has focus (attribute))->[397137005 |Mammography assessment finding (finding)]- ->(363714003 |Interprets (attribute))->[96b3834d-b84e-4e41-baf6-87898c70d399 |Breast Imaging Reporting and Data System category (observable entity)];]

Table 1.13. DiagnosticMammogram_GeneralBreastComposition

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [[71651007 |Mammography (procedure)] ->(363702006 |Has focus (attribute))->[129715009 |Mammographic breast composition finding (finding)]]

Table 1.14. DiagnosticMammogram_ImportantFindings

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [[71651007 |Mammography (procedure)] ->(363702006 |Has focus (attribute))->[129714008 |Mammography finding (finding)]]

Table 1.15. DiagnosticMammogram_ComparisonToPriorImaging

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [TSR-NoCode]

Table 1.16. DiagnosticMammogram_ManagementRecommendations

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [TSR-NoCode]

Table 1.17. BreastUltrasound_FullReport

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [TSR-NoCode]

Table 1.18. BreastUltrasound_Images

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [47079000 |Ultrasonography of breast (procedure)|]

Table 1.19. BreastUltrasound_BIRADSCategory

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [[386053000 |Evaluation procedure (procedure)]- ->(363702006 |Has focus (attribute))->[397137005 |370380004 |Ultrasound scan finding (finding)]- ->(363714003 |Interprets (attribute))->[96b3834d-b84e-4e41-baf6-87898c70d399 |Breast Imaging Reporting and Data System category (observable entity)];]

Table 1.20. BreastUltrasound_GeneralBreastComposition

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [[47079000 |Ultrasonography of breast (procedure)] ->(363702006 | Has focus (attribute))->[96f9de2e-3f7f-4381-8ce7-27e7575b18d4 |Ultrasonographic breast composition (finding)]]

Table 1.21. BreastUltrasound_ImportantFindings

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [[47079000 |Ultrasonography of breast (procedure)] ->(363702006 | Has focus (attribute))->[397137005 |370380004 |Ultrasound scan finding (finding)]]

Table 1.22. BreastUltrasound_ComparisonToPriorImaging

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [TSR-NoCode]

Table 1.23. BreastUltrasound_ManagementRecommendations

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [TSR-NoCode]

Table 1.24. LastBreastBxReport

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [TSR-NoCode]

Table 1.25. LastBreastBxImages

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [122548005 |Biopsy of breast (procedure)|]

Table 1.26. LastBreastBxType

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [TSR-NoCode]

Table 1.27. LastBreastBxGrossDx

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [TSR-NoCode]

Table 1.28. LastBreastBxMicroscopicDx

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [TSR-NoCode]

Table 1.29. AbnormalImagingResultBiRadsCategory4

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [[a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[397144001 |Mammography assessment (Category 4) - Suspicious abnormality, biopsy should be considered (finding)]]

Table 1.30. AbnormalImagingResultBiRadsCategory5

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [[a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[397145000 |Mammography assessment (Category 5) - Highly suggestive of malignancy (finding)]]

Table 1.31. AbnormalImagingResultWithSymptoms

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [[a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[198116001 |Breast signs and symptoms (finding)]]

Table 1.32. ExamFindingRequiringUrgentEvaluation

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [TSR-NoCode]

Table 1.33. BreastImagingAbnormalResult

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [TSR-NoCode]

Table 1.34. PriorBreastImagingResults

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic

Annotation:

Codes: elm:element[elm:Code]: [TSR-NoCode]

Triggers

No trigger definitions are present.

Chapter 2. Expression Definitions

No expression definitions are present.

Chapter 3. Consult Request: Radiology

For review of outside breast imaging study or studies please provide the following information.

☐ Consult: Radiology
prompt:

re- Boolean (Single)
sponse:

responseBinding: Property ("RadiologyConsult")

☐ **Condition:**elm:Property

    ☐ prompt: Screening mammogram interpretation

    response: Boolean (Single)

responseBinding: Property ("ScreeningMammogram_Interpretation")

    ☐ **Condition:**elm:Property

        ☐ prompt: Priority-Routine

        response: Code (Single)

    initalValue: elm:Code

        ☐ prompt: Full report

        response: Tuple (Single)

    initalValue: ScreeningMammogram_FullReport

        ☐ prompt: Images

        response: Tuple (Single)

    initalValue: ScreeningMammogram_Images

        ☐ prompt: Date

        response: Timestamp (Single)

    initalValue: elm:Property ScreeningMammogram_Images

        ☐ prompt: BI-RADS category

        response: Code (Single)

    initalValue: ScreeningMammogram_BIRADSCategory

        ☐ prompt: General breast composition

        response: String (Single)

    initalValue: ScreeningMammogram_GeneralBreastComposition

        ☐ prompt: Important findings

        response: String (Single)

    initalValue: ScreeningMammogram_ImportantFindings

        ☐ prompt: Comparison to prior imaging

        response: String (Single)

    initalValue: ScreeningMammogram_ComparisonToPriorImaging

        ☐ prompt: Management recommendations

        response: String (Single)

initalValue: ScreeningMammogram_ManagementRecommendations

☐ prompt: Diagnostic mammogram interpretation

response: Boolean (Single)

responseBinding: Property ("DiagnosticMammogram_Interpretation")

☐ **Condition:**elm:Property

☐ prompt: Priority-Routine

response: Code (Single)

initalValue: elm:Code

☐ prompt: Full report

response: Tuple (Single)

initalValue: DiagnosticMammogram_FullReport

☐ prompt: Images

response: Tuple (Single)

initalValue: DiagnosticMammogram_Images

☐ prompt: Date

response: Timestamp (Single)

initalValue: elm:Property DiagnosticMammogram_Images

☐ prompt: BI-RADS category

response: Code (Single)

initalValue: DiagnosticMammogram_BIRADSCategory

☐ prompt: General breast composition

response: String (Single)

initalValue: DiagnosticMammogram_GeneralBreastComposition

☐ prompt: Important findings

response: String (Single)

initalValue: DiagnosticMammogram_ImportantFindings

☐ prompt: Comparison to prior imaging

response: String (Single)

initalValue: DiagnosticMammogram_ComparisonToPriorImaging

☐ prompt: Management recommendations

response: String (Single)

initalValue: DiagnosticMammogram_ManagementRecommendations

☐ prompt: Breast ultrasound interpretation

response: Boolean (Single)

responseBinding: Property ("BreastUltrasound_Interpretation")

☐ **Condition:**elm:Property

☐ prompt: Priority-Routine

response: Code (Single)

initalValue: elm:Code

☐ prompt: Full report

      response: Tuple (Single)

initalValue: BreastUltrasound_FullReport

      ☐ prompt: Images

      response: Tuple (Single)

initalValue: BreastUltrasound_Images

      ☐ prompt: Date

      response: Timestamp (Single)

initalValue: elm:Property BreastUltrasound_Images

      ☐ prompt: BI-RADS category

      response: Code (Single)

initalValue: BreastUltrasound_BIRADSCategory

      ☐ prompt: General breast composition

      response: String (Single)

initalValue: BreastUltrasound_GeneralBreastComposition

      ☐ prompt: Important findings

      response: String (Single)

initalValue: BreastUltrasound_ImportantFindings

      ☐ prompt: Comparison to prior imaging

      response: String (Single)

initalValue: BreastUltrasound_ComparisonToPriorImaging

      ☐ prompt: Management recommendations

      response: String (Single)

initalValue: BreastUltrasound_ManagementRecommendations

☐ prompt: Other breast imaging interpretation

response: Boolean (Single)

responseBinding: Property ("OtherBreastImaging_Interpretation")

      ☐ **Condition:**elm:Property

      ☐ prompt: Priority-Routine

      response: Code (Single)

initalValue: elm:Code

      ☐ prompt: Full report

      response: Tuple (Single)

      ☐ prompt: Images

      response: Tuple (Single)

      ☐ prompt: Date

      response: Timestamp (Single)

      ☐ prompt: BI-RADS category

      response: Code (Single)

      ☐ prompt: General breast composition

      response: String (Single)

☐ prompt: Important findings
 response: String (Single)
☐ prompt: Comparison to prior imaging
 response: String (Single)
☐ prompt: Management recommendations
 response: String (Single)

Chapter 4. Consult Request: Pathology

For review of outside specimen(s) please provide the following information.

☐ Consult: Pathology

prompt:

re- Boolean (Single)

sponse:

responseBinding: Property ("PathologyConsult")

☐	**Condition:**elm:Property

☐ prompt: Breast biopsy interpretation

response: Boolean (Single)

responseBinding: Property ("BreastBiopsy_Interpretation")

☐	**Condition:**elm:Property

☐ prompt: Full pathology report: Breast biopsy

response: Tuple (Single)

initalValue: LastBreastBxReport

☐ prompt: Pathology images: Breast biopsy

response: Tuple (Single)

initalValue: LastBreastBxImages

☐ prompt: Priority-Routine

response: Code (Single)

initalValue: elm:Code

☐ prompt: Date

response: Timestamp (Single)

☐ prompt: Biopsy type

response: Code (Single)

initalValue: LastBreastBxType

☐ prompt: Gross description

response: String (Single)

initalValue: LastBreastBxGrossDx

☐ prompt: Microscopic description

response: String (Single)

initalValue: LastBreastBxMicroscopicDx

☐ prompt: Concordant with imaging?

response: Boolean (Single)

responseBinding: Property ("ConcordantWithImaging")

☐	**Condition:**elm:Not (elm:Property("ConcordantWithImaging"))

☐ prompt: Details

response: String (Single)

☐ prompt: Additional details

response: String (Single)

☐ ❖ Additional Breast Biopsies

☐ prompt: Type of biopsy

response: String (Single)

☐ prompt: Location

response: String (Single)

☐ prompt: Date

response: Timestamp (Single)

☐ prompt: Key findings

response: String (Single)

☐ prompt: Concordance with imaging

response: Boolean (Single)

☐ prompt: Additional detail as appropriate

response: String (Single)

Chapter 5. Consult Request: Evaluation of Abnormal Breast Imaging

Conditions
Condition: elm:AnyTrue

For abnormal imaging result BI-RADS Category 4 or 5, or abnormal result with symptoms or exam finding requiring urgent evaluation.

□ Consult specialty

prompt:

re- String (Multiple)
sponse:

re- EnumerationConstraint (List)
sponse
range:

item: Oncology

item: Surgery

item: Interventional Radiology

responseBinding: Property ("ConsultSpecialty")

□ **Condition:** elm:NotEqual (elm:Property("ConsultSpecialty") elm:Null())
□ prompt: Reason for Consult
response: String (Single)
initalValue: elm:Literal (String) Evaluate for abnormal breast imaging
□ ✦ prompt: Goal of Consult
response: String (Single)
response range: EnumerationConstraint (List)
item: Provide recommendation and return to primary care provider (PCP) for therapy
item: Start treatment and return to PCP for follow up and maintenance
item: Start treatment, monitor for effect and when on stable therapy return to PCP
item: Provide recommendations and treat as long as necessary (or indefinitely)
□ prompt: Priority-Urgent
response: Code (Single)
initalValue: elm:Code
□ prompt: Date desired
response: Timestamp (Single)
□ prompt: Referring physician
response: String (Single)
□ prompt: Referring physician contact information

    response: String (Single)

    ☐ prompt: Most recent breast imaging abnormal result

    response: Tuple (Single)

initalValue: elm:Indexer BreastImagingAbnormalResult elm:Literal()

    ☐ prompt: Prior breast imaging results

    response: Tuple (Single)

initalValue: PriorBreastImagingResults

    ☐ prompt: Relevant clinical history

    response: String (Single)

Chapter 6. Tabular List

Terminology Service Request (TSR) Mappings

Table 6.1. Terminology Versions

Name	Identifer	Version
SNOMED CT	2.16.840.1.113883.6.96	United States Edition 20180301

Table 6.2. Terminology References

System	Code	Display Text[a]	References[b]
SNOMED CT	122548005 |Biopsy of breast (procedure)|	Precoordinated Expression	1
SNOMED CT	133936004 |Adult (person)|	Adult	1
SNOMED CT	24623002 |Screening mammography (procedure)|	Precoordinated Expression	1
SNOMED CT	248152002 |Female (finding)|	Precoordinated Expression	2
SNOMED CT	33022008 |Hospital-based outpatient department (environment)|	Outpatient	1
SNOMED CT	398166005 |Performed (qualifier value)|	Precoordinated Expression	2
SNOMED CT	453231000124104 |Primary care provider (occupation)|	Primary Care Provider	1
SNOMED CT	47079000 |Ultrasonography of breast (procedure)|	Precoordinated Expression	1
SNOMED CT	71651007 |Mammography (procedure)|	Precoordinated Expression	1
SNOMED CT	TSR-NoCode[c]	Precoordinated Expression	16
SNOMED CT	[24623002 |Screening mammography (procedure)] ->(363702006 |Has focus (attribute))->[129714008 |Mammography finding (finding)]	Postcoordinated Expression	1
SNOMED CT	[386053000 |Evaluation procedure (procedure)]- ->(363702006 |Has focus (attribute))->[397137005 |370380004 |Ultrasound scan finding (finding)]- ->(363714003 |Interprets	Postcoordinated Expression	1

System	Code	Display Text[a]	References[b]
	(attribute))->[96b3834d-b84e-4e41-baf6-87898c70d399 | Breast Imaging Reporting and Data System category (observable entity)];		
SNOMED CT	[386053000 |Evaluation procedure (procedure)]- ->(363702006 |Has focus (attribute))->[397137005 |Mammography assess-ment finding (finding)]- ->(363714003 |Interprets (attribute))->[96b3834d-b84e-4e41-baf6-87898c70d399 | Breast Imaging Reporting and Data System category (observable entity)];	Postcoordinated Expression	3
SNOMED CT	[47079000 |Ultrasonogra-phy of breast (procedure)] ->(363702006 |Has focus (attribute))->[397137005 |370380004 |Ultrasound scan finding (finding)]	Postcoordinated Expression	1
SNOMED CT	[47079000 |Ultrasonog-raphy of breast (proce-dure)] ->(363702006 |Has focus (at-tribute))->[96f9de2e-3f7f-4381-8ce7-27e7575b18d4 |Ultrasonographic breast composition (finding)]	Postcoordinated Expression	1
SNOMED CT	[71651007 |Mammog-raphy (procedure)] ->(363702006 |Has focus (attribute))->[129714008 |Mammography finding (finding)]	Postcoordinated Expression	1
SNOMED CT	[71651007 |Mammog-raphy (procedure)] ->(363702006 |Has focus (attribute))->[129715009 |Mammographic breast composition finding (find-ing)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a |Observation proce-dure (procedure)] ->(363702006 |Has focus	Postcoordinated Expression	1

System	Code	Display Text[a]	References[b]
	(attribute))->[105726004 |Age AND/OR growth finding (finding)]		
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[198116001 | Breast signs and symptoms (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))->[397144001 | Mammography assessment (Category 4) - Suspicious abnormality, biopsy should be considered (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[397145000 |Mammography assessment (Category 5) - Highly suggestive of malignancy (finding)]	Postcoordinated Expression	1

[a]If a code is used multiple times in the KNART, only the display text of the first instance is shown.

[b]Count of the number of times the given code system and code pair is used in the KNART.

[c]TSR-NoCode is a placeholder indicating a code was requested, but was not provided.

Chapter 7. Behavior Symbols

Table 7.1. Group Organizational Behavior

Symbol	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 7.2. Group Selection Behavior

Symbol	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 7.3. Required Behavior

Symbol	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.

Symbol	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 7.4. Precheck Behavior

Symbol	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 7.5. Cardinality Behavior

Symbol	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 7.6. Item Flags

Symbol	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 7.7. Read Only Behavior

Symbol	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] *Radiopedia - 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])