

Women's Health: Breast Cancer Screening Documentation Template

Documentation Tem- plate: Conceptual Structure

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

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Women's Health: Breast Cancer Screening Documentation Template: Documentation Template: Conceptual Structure

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
June 11, 2018	Published
April 16, 2018	Published
April 16, 2018	Reviewed
April 10, 2018	Reviewed
January 18, 2018	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:r1	2c790646-af49-53ef-983d-f2923f0afb9c	B53

Artifact Applicability

Table 4. Applicability Foci, Description and Codes

Focus	Description	Code System	Code	Value Set	Value Set Version
PatientAgeGroup	Female outpatients over the age of 18			N/A	N/A
ClinicalVenue	Primary Care			N/A	N/A
ClinicalVenue	Obstetrics/Gynecology	SNOMED CT	702892004 Obstetrics and gynecology clinic (environment)	N/A	N/A
ClinicalVenue	Women's Health	SNOMED CT	2651000175101 Women's health service (qualifier value)	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

No externalData expression definitions and no trigger definitions are present.

Chapter 2. Expression Definitions

Table 2.1. mammographyImage

Expression: type=elm:Query
Annotation:
Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [71651007 Mammography (procedure)]

Table 2.2. mammographyImageInterpretation

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))->[71651007 Mammography (procedure)]]

Table 2.3. biopsy

Expression: type=elm:Query
Annotation:
Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [122548005 Biopsy of breast (procedure)]

Chapter 3. Breast Cancer Screening History

Represented Concepts: 268547008 |Screening for malignant neoplasm of breast (procedure)|

Does the patient have breast implants?
prompt:
item- 119853006 |Breast implantation (procedure)|
Code:
re- Boolean (Single)
sponse:
Does the patient have a history of breast cancer screening?
prompt:
item- 268547008 |Screening for malignant neoplasm of breast (procedure)|
Code:
re- Boolean (Single)
sponse:
responseBinding: Property ("historyOfBreastCancerScreening")

#	Condition: elm:IsTrue (elm:Property("historyOfBreastCancerScreening" from: elm:Parameter-Ref(Responses))) Last screening result
	# prompt: Date response: Timestamp (Single) # prompt: Location response: String (Single) # prompt: Results response: Tuple (Single) initalValue: mammographyImageInterpretation # prompt: Mammography image response: Tuple (Single) initalValue: mammographyImage
#	Condition: elm:IsTrue (elm:Property("historyOfBreastCancerScreening" from: elm:Parameter-Ref(Responses))) # prompt: Does the patient have a history of abnormal breast imaging and/or history of treatment for breast abnormality? itemCode: 85b90625-b862-4a8e-8cdc-2db834f88e86 Imaging of breast (procedure) itemCode: [277132007 Therapeutic procedure (procedure)] ->(363702006 Has focus (attribute))->[290085007 Breast problem (finding)] response: Boolean (Single) responseBinding: Property ("historyOfAbnormalBreastImaging")

#	Condition: elm:IsTrue (elm:Property("historyOfAbnormalBreastImaging" from: elm:ParameterRef(Responses)))
	Abnormal result
	# prompt: Date
	response: Timestamp (Single)
	# prompt: Location
	response: String (Single)
	# prompt: Abnormal Results
	response: Tuple (Single)
	initialValue: mammographyImageInterpretation
	# prompt: Abnormal Mammography image
	response: Tuple (Single)
	initialValue: mammographyImage
	# prompt: Clinical Comments
	response: String (Single)
	# prompt: Does the patient have a history of mammographically dense breasts?
itemCode:	[a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[bed9e1fd-b39e-4b49-af56-e5c35501482f Dense breast composition (finding)]
	response: Boolean (Single)
	# prompt: Does the patient have a history of a breast biopsy?
itemCode:	122548005 Biopsy of breast (procedure)
	response: Boolean (Single)
	responseBinding: Property ("historyOfBreastBiopsy")
	Condition: elm:IsTrue (elm:Property("historyOfBreastBiopsy" from: elm:ParameterRef(Responses)))
	# prompt: Biopsy Results
	response: Tuple (Single)
	initialValue: biopsy

Chapter 4. Breast Cancer Risk Assessment

Does the patient have a personal history of any breast cancer including ductal carcinoma in situ
prompt: (DCIS)?

item- [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |
Code: Has focus (attribute))->[254837009 |Malignant neoplasm of breast (disorder)]

re- Boolean (Single)

sponse:

Does the patient have a history of chest wall radiation prior to the age of 31?
prompt:

item- 428624002 |Radiotherapy to chest wall (procedure)|
Code:

re- Boolean (Single)

sponse:

Does the patient have a history of known or suspected genetic mutation that increases risk of
prompt: breast cancer, such as BRCA?

item- [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |
Code: Has focus (attribute))->[445333001 |Breast cancer genetic marker of susceptibility positive (find-
ing)]

re- Boolean (Single)

sponse:

responseBinding: Property ("historyOfGeneticMutation")

Condition:elm:IsTrue (elm:Property("historyOfGeneticMutation" from: elm:ParameterRef(Responses)))

Genetic mutation details
prompt:

re- String (Single)

sponse:

Does the patient have any first degree relatives with ovarian cancer?
prompt:

item- [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |
Code: Has focus (attribute))->[363443007 |Malignant tumor of ovary (disorder)]

item- 125678001 |First degree blood relative (person)|
Code:

re- Boolean (Single)

sponse:

Does the patient have any first degree relatives with early breast cancer (breast cancer diagnosed
prompt: prior to age 40)?

item- [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |
Code: Has focus (attribute))->[254837009 |Malignant neoplasm of breast (disorder)]

item- 125678001 |First degree blood relative (person)|
Code:

re- Boolean (Single)
 sponse:
 # Does the patient have a history of prior diagnosis of benign proliferative breast disease?
 prompt:
 item- [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006
 Code: |Has focus (attribute))->[5a7cb816-75f5-4b16-81cb-447d12eef6d1 |Benign proliferative breast
 disease (disorder)]
 re- Boolean (Single)
 sponse:
 # Does the patient have an estimated lifetime risk of approximately 20% or greater, as defined
 prompt: by risk assessment models such as the Breast Cancer Risk Assessment Tool <https://www.cancer.gov/bcrisktool/>?
 re- Boolean (Single)
 sponse:
responseBinding: Property ("estimatedLifetimeRisk")

#	Condition: elm:IsTrue (elm:Property("estimatedLifetimeRisk" from: elm:ParameterRef(Responses)))
#	Evaluate the patient's risk factors and determine the need for genetic evaluation and/or early, more frequent, or additional breast imaging.
	# prompt: Genetic Evaluation Details
	response: String (Single)

Chapter 5. Decline Breast Cancer Screening

prompt: After discussing the need for breast cancer screening, does the patient decline screening?

response: Boolean (Single)

responseBinding: Property ("declineScreening")

Condition:elm:IsTrue (elm:Property("declineScreening" from: elm:ParameterRef(Responses)))

prompt: Patient reason for declining screening.

response: String (Single)

Chapter 6. Stop Breast Cancer Screening

prompt: Does the patient have a history of bilateral mastectomy?
itemCode: 27865001 |Bilateral mastectomy (procedure)|
response: Boolean (Single)

prompt: Does the patient have a life expectancy less than 6 months?
response: Boolean (Single)

prompt: As the patient's provider, do you feel that there is no net benefit to screening due to life expectancy less than 10 years, or that due to comorbidities the patient will be unable to tolerate further workup or treatment if breast cancer screening were positive?
response: Boolean (Single)

responseBinding: Property ("noNetBenefitToScreening")
Condition:elm:IsTrue (elm:Property("noNetBenefitToScreening" from: elm:ParameterRef(Responses)))

prompt: Date counseled
response: Timestamp (Single)

prompt: Does the patient have any reason to stop screening in addition to or other than the ones listed above in this section?
response: Boolean (Single)

responseBinding: Property ("additionalReasonTostopScreening")
Condition:elm:IsTrue (elm:Property("additionalReasonTostopScreening" from: elm:ParameterRef(Responses)))

prompt: Additional reason to stop screening.
response: String (Single)

Chapter 7. Tabular List

Terminology Service Request (TSR) Mappings

Table 7.1. Terminology Versions

Name	Identifier	Version
SNOMED CT	2.16.840.1.113883.6.96	United States Edition 20180301
RXNorm	2.16.840.1.113883.6.88	5-Mar-18

Table 7.2. Terminology References

System	Code	Display Text ^a	References ^b
SNOMED CT	119853006 Breast implan- tation (procedure)	Precoordinated Expression	1
SNOMED CT	122548005 Biopsy of breast (procedure)	Precoordinated Expression	2
SNOMED CT	125678001 First degree blood relative (person)	Precoordinated Expression	2
SNOMED CT	2651000175101 Women's health service (qualifier value)	Women's Health	1
SNOMED CT	268547008 Screening for malignant neoplasm of breast (procedure)	Precoordinated Expression	2
SNOMED CT	27865001 Bilateral mas- tectomy (procedure)	Precoordinated Expression	1
SNOMED CT	398166005 Performed (qualifier value)	Precoordinated Expression	3
SNOMED CT	428624002 Radiotherapy to chest wall (procedure)	Precoordinated Expression	1
SNOMED CT	702892004 Obstetrics and gynecology clinic (envi- ronment)	Obstetrics/Gynecology	1
SNOMED CT	71651007 Mammography (procedure)	Precoordinated Expression	1
SNOMED CT	85b90625-b862-4a8e-8cd- c-2db834f88e86 Imaging of breast (procedure)	Precoordinated Expression	1
SNOMED CT	[277132007 Therapeutic procedure (procedure)] - >(363702006 Has focus (attribute))>[290085007 Breast problem (finding)]	Postcoordinated Expression	1
SNOMED CT	[370851004 Evalua- tion of diagnostic study results (procedure)] -	Postcoordinated Expression	1

System	Code	Display Text ^a	References ^b
	>(363702006 Has focus (attribute))->[71651007 Mammography (procedure)]		
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[254837009 Malignant neoplasm of breast (disorder)]	Postcoordinated Expression	2
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[363443007 Malignant tumor of ovary (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[445333001 Breast cancer genetic marker of susceptibility positive (finding)]	Precoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[5a7cb816-75f5-4b16-81cb-447d12eef6d1 Benign proliferative breast disease (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[bed9e1fd-b39e-4b49-af56-e5c35501482f Dense breast composition (finding)]	Postcoordinated Expression	1

^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.

Chapter 8. Behavior Symbols

Table 8.1. 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 8.2. 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 8.3. 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 8.4. 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 8.5. 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 8.6. 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 8.7. 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: Breast Cancer Screening Clinical Content White Paper*

[CSD] *Women's Health: Breast Cancer Screening Documentation Template Conceptual Structure Document*

[KVRpt] *Women's Health: Breast Cancer Screening Documentation Template KNART Validation Report*

Supporting Evidence

[Nelson 2009] *H. D. Nelson et al., "Screening for Breast Cancer A Systematic Review to Update the 2009 U.S. Preventive Services Task Force Recommendation," Agency for Healthcare Research and Quality, USA, Jan. 2016.* (link [<https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/breast-cancer-screening>])

[Oeffinger 2015] *Oeffinger, 2015. Oeffinger KC, Fontham ETH, Etzioni R, 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>])

[Pearlman 2017] *Pearlman, 2017. Pearlman M, Jeudy M, Chelmow D. Breast Cancer Risk Assessment and Screening in Average-Risk Women. OBSTETRICS AND GYNECOLOGY. 2017 Jul 1;130(1):E1-6* (link [<https://doi.org/10.1097/AOG.0000000000002158>])

[ACS 2017] *American Cancer Society. Breast Cancer Screening Guidelines | American Cancer Society [Internet]. 2018 [cited 2018 Jan 24].* (link [<https://www.cancer.org/health-care-professionals/american-cancer-society-prevention-early-detection-guidelines/breast-cancer-screening-guidelines.html>])