

Women's Health: Cervical Cancer Screening Documentation Template

Documentation Template: 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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Women's Health: Cervical 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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Table of Contents

Preface	v
Artifact Applicability	vi
Models	vii
1. External Data Definitions	1
Definitions	1
Triggers	2
2. Expression Definitions	3
3. History	4
4. Laboratory Studies	6
5. Plan of Care	7
6. Tabular List	9
7. Behavior Symbols	12
A. References	14

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. CervicalCytology	1
1.2. MostRecentCervicalCytology	1
1.3. SecondMostRecentCervicalCytology	1
1.4. ThirdMostRecentCervicalCytology	1
1.5. CervicalHPVScreen	1
1.6. MostRecentCervicalHPVScreen	1
1.7. SecondMostRecentCervicalHPVScreen	1
1.8. CervicalCancerScreeningDueDate	2
2.1. PatientAge	3
2.2. PatientGender	3
6.1. Terminology Versions	9
6.2. Terminology References	9
7.1. Group Organizational Behavior	12
7.2. Group Selection Behavior	12
7.3. Required Behavior	12
7.4. Precheck Behavior	13
7.5. Cardinality Behavior	13
7.6. Item Flags	13
7.7. Read Only Behavior	13

Preface

Table 1. Revision History

Date	Life Cycle Event
June 14, 2018	Published
March 27, 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	825376b8-b7d8-504b-8206-5f347b3870d4	O22

Artifact Applicability

Table 4. Applicability Foci, Description and Codes

Focus	Description	Code System	Code	Value Set	Value Set Version
PatientAgeGroup	Female outpatients 21 years of age or older			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

Definitions

Table 1.1. CervicalCytology

Expression: type=elm:Query Annotation: Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [416107004 Cervical cytology test (procedure)]
--

Table 1.2. MostRecentCervicalCytology

Expression: type=elm:Indexer Annotation: Codes:

Table 1.3. SecondMostRecentCervicalCytology

Expression: type=elm:Indexer Annotation: Codes:

Table 1.4. ThirdMostRecentCervicalCytology

Expression: type=elm:Indexer Annotation: Codes:

Table 1.5. CervicalHPVScreen

Expression: type=elm:Query Annotation: Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [700152009 Human papillomavirus screening (procedure)]
--

Table 1.6. MostRecentCervicalHPVScreen

Expression: type=elm:Indexer Annotation: Codes:

Table 1.7. SecondMostRecentCervicalHPVScreen

Expression: type=elm:Indexer Annotation: Codes:

Table 1.8. CervicalCancerScreeningDueDate

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: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 2.2. PatientGender

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))->[248152002 Female (finding)]]

Chapter 3. History

prompt: Patient Age
response: Real (Single)
initialValue: PatientAge

prompt: History of high-grade dysplasia or prior treatment for Cervical Intraepithelial Neoplasia (CIN) 2 or higher?
itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[252991009 |Cervical intraepithelial neoplasia grade III with severe dysplasia (disorder)]
itemCode: [277132007 |Therapeutic procedure (procedure)] ->(363702006 |Has focus (attribute))->[285838002 |Cervical intraepithelial neoplasia grade 2 (disorder)]
response: Boolean (Single)
responseBinding: Property ("HxHighGradeDysplasia")
Condition:elm:Property

prompt: Details
response: String (Single)
prompt: Previously treated for CIN 2, CIN 3, or Cervical Cancer?
itemCode: [277132007 |Therapeutic procedure (procedure)] ->(363702006 |Has focus (attribute))->[92564006 |Carcinoma in situ of uterine cervix (disorder)]
itemCode: [277132007 |Therapeutic procedure (procedure)] ->(363702006 |Has focus (attribute))->[363354003 |Malignant tumor of cervix (disorder)]
response: Boolean (Single)
responseBinding: Property ("TxCINOrCervicalCA")
Condition:elm:Property

prompt: Details
response: String (Single)
prompt: Exposed to Diethylstilbestrol in Utero?
itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[698582007 |Fetal or neonatal effect of diethylstilbestrol transmitted via placenta (disorder)]
response: Boolean (Single)
responseBinding: Property ("DESExposure")
Condition:elm:Property

prompt: Details
response: String (Single)
prompt: Hysterectomy with Removal of Cervix (Total Hysterectomy)?
itemCode: 116140006 |Total hysterectomy (procedure)|
response: Boolean (Single)
responseBinding: Property ("TotalHysterectomy")
Condition:elm:Property

prompt: Details

response: String (Single)
prompt: Infected with HIV?
itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] -
 >(363702006 |Has focus (attribute))->[86406008 |Human immunodeficiency virus infection
 (disorder)]
response: Boolean (Single)
responseBinding: Property ("HIVInfection")
Condition:elm:Property
prompt: Details
response: String (Single)
prompt: Immunocompromised (Other Than HIV)?
itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)] -
 >(363702006 |Has focus (attribute))->[370388006 |Patient immunocompromised (finding)]
response: Boolean (Single)
responseBinding: Property ("Immunocompromised")
Condition:elm:Property
prompt: Details
response: String (Single)
prompt: Significant Comorbidity Limits Life Span to < 10 Years?
itemCode: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)]- -
 >(363702006 |Has focus (attribute))->[e9841fe3-1de2-49aa-97dc-1ccfaa8e8f2f |Limited
 life expectancy (finding)]- ->[42752001 |Due to (attribute))->[398192003 |Co-morbid
 conditions (finding)];
response: Boolean (Single)
responseBinding: Property ("SignificantComorbidity")
Condition:elm:Property
prompt: Details
response: String (Single)

Chapter 4. Laboratory Studies

#	Condition: elm:And (elm:GreaterOrEqual(PatientAge elm:Quantity(21)) elm:Less(PatientAge elm:Quantity(30)))
	<div># prompt: Most Recent Cervical Cytology response: Tuple (Single) initalValue: MostRecentCervicalCytology</div>
#	Condition: elm:And (elm:GreaterOrEqual(PatientAge elm:Quantity(30)) elm:Less(PatientAge elm:Quantity(66)))
	<div># prompt: Most Recent Cervical Cytology response: Tuple (Single) initalValue: MostRecentCervicalCytology # prompt: Most Recent Cervical HPV Screen response: Tuple (Single) initalValue: MostRecentCervicalHPVScreen</div>
#	Condition: elm:GreaterOrEqual (PatientAge elm:Quantity(66))
	<div># prompt: Most Recent Cervical Cytology response: Tuple (Single) initalValue: MostRecentCervicalCytology # prompt: Second-Most Recent Cervical Cytology response: Tuple (Single) initalValue: SecondMostRecentCervicalCytology # prompt: Third-Most Recent Cervical Cytology response: Tuple (Single) initalValue: ThirdMostRecentCervicalCytology # prompt: Most Recent Cervical HPV Screen response: Tuple (Single) initalValue: MostRecentCervicalHPVScreen # prompt: Second-Most Recent Cervical HPV Screen response: Tuple (Single) initalValue: SecondMostRecentCervicalHPVScreen</div>

Chapter 5. Plan of Care

Due Date for Cervical Cancer Screening
 prompt:
 response: Timestamp (Single)
initialValue: CervicalCancerScreeningDueDate

#	Condition: elm:And (elm:GreaterOrEqual(PatientAge elm:Quantity(21)) elm:Less(PatientAge elm:Quantity(30))) <hr/> # prompt: Cervical Cancer Preventive Screening Plan response: String (Single) response range: EnumerationConstraint (List) item: Continue Screening Every Three Years with Cervical Cytology Alone(171149006 Screening for malignant neoplasm of cervix (procedure)) item: Discontinue Screening Due to Life Expectancy < 10 Years([223438000 Recommendation to discontinue a procedure (procedure)] ->363702006 Has focus (attribute))->[171149006 Screening for malignant neoplasm of cervix (procedure)] ->(42752001 Due to (attribute))->[e9841fe3-1de2-49aa-97dc-1ccfaa8e8f2f Limited life expectancy (finding)]) ☞ item: Other # prompt: Plan Discussed with and Agreed to by Patient? response: Boolean (Single) responseBinding: Property ("PlanAgreed") Condition: elm:IsFalse (elm:Property("PlanAgreed" from: elm:ParameterRef(Responses))) # prompt: Explanation response: String (Single)
#	Condition: elm:And (elm:GreaterOrEqual(PatientAge elm:Quantity(30)) elm:Less(PatientAge elm:Quantity(66))) <hr/> # prompt: Cervical Cancer Preventive Screening Plan response: String (Single) response range: EnumerationConstraint (List) item: Continue Screening Every Three Years with Cervical Cytology Alone(171149006 Screening for malignant neoplasm of cervix (procedure)) item: Continue Screening Every Five Years with Cotesting (Cervical Cytology Plus Cervical HPV Screening)(448651000124104 Microscopic examination of cervical Papanicolaou smear and Human papillomavirus deoxyribonucleic acid detection cotesting (procedure)) item: Discontinue Screening Due to Life Expectancy Greater Than 10 Years([223438000 Recommendation to discontinue a procedure (procedure)] ->363702006 Has focus (attribute))->[171149006 Screening for malignant neoplasm of cervix (procedure)])

	<p>☞ item: Other</p> <p># prompt: Plan Discussed with and Agreed to by Patient?</p> <p>response: Boolean (Single)</p> <p>responseBinding: Property ("PlanAgreed")</p> <p>Condition:elm:IsFalse (elm:Property("PlanAgreed" from: elm:ParameterRef(Responses)))</p> <p># prompt: Explanation</p> <p>response: String (Single)</p> <p># Condition:elm:GreaterOrEqual (PatientAge elm:Quantity(66))</p> <hr/> <p># prompt: Cervical Cancer Preventive Screening Plan</p> <p>response: String (Single)</p> <p>response range: EnumerationConstraint (List)</p> <p>item: Continue Screening Every Three Years with Cervical Cytology Alone(171149006 Screening for malignant neoplasm of cervix (procedure))</p> <p>item: Continue Screening Every Five Years with Cotesting (Cervical Cytology Plus Cervical HPV Screening)(448651000124104 Microscopic examination of cervical Papanicolaou smear and Human papillomavirus deoxyribonucleic acid detection cotesting (procedure))</p> <p>item: Discontinue Screening Due to Life Expectancy Greater Than 10 Years([223438000 Recommendation to discontinue a procedure (procedure)] ->363702006 Has focus (attribute))->[171149006 Screening for malignant neoplasm of cervix (procedure)])</p> <p>item: Discontinue Screening because adequate screening has been completed (Three Consecutive Negative Cytology Results within the Last 10 Years OR Two Consecutive Negative Cotesting Results within the Last 10 Years, with the Most Recent Screening of either type Performed within the Past 5 Years)([223438000 Recommendation to discontinue a procedure (procedure)] ->363702006 Has focus (attribute))->[171149006 Screening for malignant neoplasm of cervix (procedure)])</p> <p>☞ item: Other</p> <p># prompt: Plan Discussed with and Agreed to by Patient?</p> <p>response: Boolean (Single)</p> <p>responseBinding: Property ("PlanAgreed")</p> <p>Condition:elm:IsFalse (elm:Property("PlanAgreed" from: elm:ParameterRef(Responses)))</p> <p># prompt: Explanation</p> <p>response: String (Single)</p>
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Chapter 6. Tabular List

Terminology Service Request (TSR) Mappings

Table 6.1. 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 6.2. Terminology References

System	Code	Display Text ^a	References ^b
SNOMED CT	116140006 Total hysterectomy (procedure)	Precoordinated Expression	1
SNOMED CT	171149006 Screening for malignant neoplasm of cervix (procedure)	Continue Screening Every Three Years with Cervical Cytology Alone	3
SNOMED CT	2651000175101 Women's health service (qualifier value)	Women's Health	1
SNOMED CT	398166005 Performed (qualifier value)	Precoordinated Expression	5
SNOMED CT	416107004 Cervical cytology test (procedure)	Precoordinated Expression	1
SNOMED CT	448651000124104 Microscopic examination of cervical Papanicolaou smear and Human papillomavirus deoxyribonucleic acid detection cotesting (procedure)	Continue Screening Every Five Years with Cotesting (Cervical Cytology Plus Cervical HPV Screening)	2
SNOMED CT	700152009 Human papillomavirus screening (procedure)	Precoordinated Expression	1
SNOMED CT	702892004 Obstetrics and gynecology clinic (environment)	Obstetrics/Gynecology	1
SNOMED CT	TSR-NoCode ^c	Precoordinated Expression	1
SNOMED CT	[223438000 Recommendation to discontinue a procedure (procedure)] ->363702006 Has focus (attribute))->[171149006 Screening for malignant neoplasm of cervix (procedure)]	Discontinue Screening Due to Life Expectancy Greater Than 10 Years	3

System	Code	Display Text ^a	References ^b
SNOMED CT	[223438000 Recommendation to discontinue a procedure (procedure)] ->(363702006 Has focus (attribute))->[171149006 Screening for malignant neoplasm of cervix (procedure)] ->(42752001 Due to (attribute))->[e9841fe3-1de2-49aa-97dc-1ccfaa8e8f2f Limited life expectancy (finding)]	Discontinue Screening Due to Life Expectancy < 10 Years	1
SNOMED CT	[277132007 Therapeutic procedure (procedure)] ->(363702006 Has focus (attribute))->[285838002 Cervical intraepithelial neoplasia grade 2 (disorder)]	Postcoordinated Expression	1
SNOMED CT	[277132007 Therapeutic procedure (procedure)] ->(363702006 Has focus (attribute))->[363354003 Malignant tumor of cervix (disorder)]	Postcoordinated Expression	1
SNOMED CT	[277132007 Therapeutic procedure (procedure)] ->(363702006 Has focus (attribute))->[92564006 Carcinoma in situ of uterine cervix (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40eb-833a-0374c775f032 Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[105726004 Age AND/OR growth finding (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40eb-833a-0374c775f032 Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[248152002 Female (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40eb-833a-0374c775f032 Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[252991009 Cervical	Postcoordinated Expression	1

System	Code	Display Text ^a	References ^b
	intraepithelial neoplasia grade III with severe dysplasia (disorder)]		
SNOMED CT	[a997cc03-3e99-40eb-833a-6b34c0775d3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[370388006 Patient immunocompromised (finding)]	0374c0775d3a Coordinated Expression	1
SNOMED CT	[a997cc03-3e99-40eb-833a-6b34c0775d3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[698582007 Fetal or neonatal effect of diethylstilbestrol transmitted via placenta (disorder)]	0374c0775d3a Coordinated Expression	1
SNOMED CT	[a997cc03-3e99-40eb-833a-6b34c0775d3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[86406008 Human immunodeficiency virus infection (disorder)]	0374c0775d3a Coordinated Expression	1
SNOMED CT	[a997cc03-3e99-40eb-833a-6b34c0775d3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[e9841fe3-1de2-49aa-97dc-1ccfaa8e8f2f Limited life expectancy (finding)]- ->(42752001 Due to (attribute))->[398192003 Co-morbid conditions (finding)];	0374c0775d3a Coordinated 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.

^cTSR-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.
◇	Could	An action with this behavior may be included in the set of actions processed by the end user.

Symbol	Name	Definition
➤	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: Cervical Cancer Screening Clinical Content White Paper*

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

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

Supporting Evidence

[ACOG 2016] *Practice Bulletin No. 168: Cervical Cancer Screening and Prevention. Committee on Practice Bulletins—Gynecology. Obstet Gynecol. 2016;128(4):e111-e130* (link [<https://doi.org/10.1097/AOG.0000000000001708>])

[VHA 2013] *Provider Fact Sheet: Cervical Cancer Screening. National Center for Health Promotion and Disease Prevention. June 2013* (link [<https://www.prevention.va.gov/docs/CervicalCProvider.pdf>])

[CDC 2017] *Cervical Cancer Screening Guidelines for Average Risk Women. July 2017* (link [<https://www.cdc.gov/cancer/cervical/pdf/guidelines.pdf>])

[ACOG 2012] *Committee Opinion No. 534: Well-Woman Visit. Obstetrics and Gynecology. Committee on Gynecologic Practice. August 2012;120(2 Pt 1):421* (link [<https://doi.org/10.1097/AOG.0b013e3182680517>])

[VHA 2017] *Department of Veteran Affairs National Center for Health Promotion and Disease Prevention, Cervical Cancer Screening. July 2017* (link [https://www.prevention.va.gov/Preventing_Diseases/Screening_for_Cervical_Cancer.asp])

[Massad 2013] *Massad LS, Einstein MH, Huh WK, Katki HA, Kinney WK, Schiffman M, Solomon D, Wentzensen N, Lawson HW. 2012 Updated Consensus Guidelines For The Management Of Abnormal Cervical Cancer Screening Tests And Cancer Precursors. stetrics and Gynecology. April 1, 2013;121(4):829-46* (link [<https://doi.org/10.1097/AOG.0b013e3182883a34>])

[USPTF 2017] *United States Preventive Task Force (USPTF) Cervical Cancer Screening Guidelines. July 2017* (link [<https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/cervical-cancer-screening>])