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

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Table of Contents

List of Tables

Preface

Table 1. Revision History

Date	Life Cycle Event
April 27, 2018	Published
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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	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
PatientGender	Female outpatients 21 years of age or older	SNOMED CT	248152002 |Female (finding)|	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	265100017510 |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)

initalValue: 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 condi-
tions (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)))	
prompt: Most Recent Cervical Cytology	
response: Tuple (Single)	
initalValue: MostRecentCervicalCytology	
Condition: elm:And (elm:GreaterOrEqual(PatientAge elm:Quantity(30))elm:Less(PatientAge elm:Quantity(66)))	
prompt: Most Recent Cervical Cytology	
response: Tuple (Single)	
initalValue: MostRecentCervicalCytology	
prompt: Most Recent Cervical HPV Screen	
response: Tuple (Single)	
initalValue: MostRecentCervicalHPVScreen	
Condition: elm:GreaterOrEqual (PatientAge elm:Quantity(66))	
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	

Chapter 5. Plan of Care

prompt: Due Date for Cervical Cancer Screening

re-
sponse: Timestamp (Single)

initalValue: CervicalCancerScreeningDueDate

Condition:elm:And (elm:GreaterOrEqual(PatientAge elm:Quantity(21))elm:Less(PatientAge elm:Quantity(30)))	
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)))	
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)])

☞ 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:GreaterOrEqual (PatientAge elm:Quantity(66))

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)])

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)])

☞ 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)

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
RXNorm	2.16.840.1.113883.6.1	5-Mar-18

Table 6.2. Terminology References

System	Code	Display Text	References
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	248152002 |Female (finding)|	Female outpatients 21 years of age or older	1
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	Precoordinated Expression	1
SNOMED CT	[223438000 |Recommendation to discontinue a procedure (procedure)] ->363702006 |Has focus (attribute))->[171149006 |Screening for malignant	Discontinue Screening Due to Life Expectancy Greater Than 10 Years	3

System	Code	Display Text	References
	neoplasm of cervix (procedure)]		
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-97d-c-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	[a997cc03-3e99-40e-b-833a-6374c7750a3a |Observation procedure (procedure)] ->(363702006 |Has focus (attribute))->[105726004 |Age AND/OR growth finding (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

System	Code	Display Text	References
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a |Observation proce-dure (procedure)] ->(363702006 |Has focus (attribute))->[252991009 |Cervical intraepithelial neoplasia grade III with se-vere dysplasia (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a |Observation proce-dure (procedure)] ->(363702006 |Has focus (attribute))->[370388006 |Patient immunocompro-mised (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a |Observation proce-dure (procedure)] ->(363702006 |Has focus (attribute))->[698582007 | Fetal or neonatal effect of diethylstilbestrol transmit-ted via placenta (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a |Observation proce-dure (procedure)] ->(363702006 |Has focus (attribute))->[86406008 | Human immunodeficiency virus infection (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a |Ob-servation procedure (pro-cedure)]- ->(363702006 |Has focus (at-tribute))->[e9841fe3-1de2-49aa-97d-c-1ccfaa8e8f2f |Limited life expectancy (finding)]- ->(42752001 |Due to (at-tribute))->[398192003 |Co-morbid conditions (find-ing)];	Postcoordinated Expression	1

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: 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])