

# **Women's Health: Cervical Cancer Screening Order Set**

## **Order Set: Conceptual Structure**

**Contract: VA118-16-D-1008, Task Order  
(TO): VA-118-16-F-1008-0007, CLIN0008AA**

**Department of Veterans Affairs (VA)**



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

**Publication date 06/14/2018**

**Version: 1.0**

---

# Women's Health: Cervical Cancer Screening Order Set: Order Set: Conceptual Structure

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

Publication date 06/14/2018

Copyright © 2018 B3 Group, Inc.

Copyright © 2018 Cognitive Medical Systems, Inc.

## B3 Group, Inc.

### NOTICE OF GOVERNMENT COPYRIGHT LICENSE AND UNLIMITED RIGHTS LICENSE

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License.

You may obtain a copy of the License at <http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Portions of this content are derivative works from content produced by Cognitive Medical Systems, Inc. licensed under the Apache License, Version 2.0.

Additional portions of this content are derivative works from content contributed by Motive Medical Intelligence Inc., under Creative Commons Attribution-ShareAlike 4.0.

Contributions from 2013-2018 were performed either by US Government employees, or under US Veterans Health Administration contracts.

US Veterans Health Administration contributions by government employees are work of the U.S. Government and are not subject to copyright protection in the United States. Portions contributed by government employees are USGovWork (17USC §105). Not subject to copyright.

See: <https://www.usa.gov/government-works>

Contribution by contractors to the US Veterans Health Administration during this period are contractually contributed under the Apache License, Version 2.0 and US Government sponsorship is acknowledged under Contract VA118-16-D-1008, Task Order VA11817F10080007.

## Cognitive Medical Systems, Inc.

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License.

You may obtain a copy of the License at <http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

This and related content produced by Cognitive Medical Systems, Inc. licensed under the Apache License, Version 2.0 is available at: <https://bitbucket.org/cogmedsys/hl7-kas-examples>

Additional portions of this content are derivative works from content contributed by Motive Medical Intelligence Inc., under Creative Commons Attribution-ShareAlike 4.0. <https://bitbucket.org/cogmedsys/kas-source-material>

Contributions from 2013-2018 were performed either by US Government employees, or under US Veterans Health Administration contracts.

US Veterans Health Administration contributions by government employees are work of the U.S. Government and are not subject to copyright protection in the United States. Portions contributed by government employees are USGovWork (17USC §105). Not subject to copyright. See: <https://www.usa.gov/government-works>

Contribution by contractors to the US Veterans Health Administration during this period are contractually contributed under the Apache License, Version 2.0 and US Government sponsorship is acknowledged under Contract VA118-16-D-1008-0007.

---

---

# Table of Contents

Preface .....	v
Artifact Applicability .....	vi
Models .....	vii
1. External Data Definitions .....	1
Definitions .....	1
Triggers .....	1
2. Expression Definitions .....	2
3. Laboratory Studies .....	3
4. Patient and Caregiver Education .....	4
5. Tabular List .....	5
6. Behavior Symbols .....	7
A. References .....	9

---

## 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. PatientGenderFemale .....	1
1.2. PatientAge .....	1
5.1. Terminology Versions .....	5
5.2. Terminology References .....	5
6.1. Group Organizational Behavior .....	7
6.2. Group Selection Behavior .....	7
6.3. Required Behavior .....	7
6.4. Precheck Behavior .....	8
6.5. Cardinality Behavior .....	8
6.6. Item Flags .....	8
6.7. Read Only Behavior .....	8

---

# Preface

**Table 1. Revision History**

Date	Life Cycle Event
June 14, 2018	Published
May 29, 2018	Published
May 29, 2018	Reviewed
March 27, 2018	Pre-published
March 27, 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	85643801-dded-55c8-9ddf-c635f940d866	O14

---

# Artifact Applicability

**Table 4. Applicability Foci, Description and Codes**

Focus	Description	Code System	Code	Value Set	Value Set Version
TargetUser	Primary Care	SNOMED CT	453231000124104  Primary care provider (occupation)	N/A	N/A
TargetUser	Designated Women's Health Providers			N/A	N/A
TargetUser	Gynecologists	SNOMED CT	83685006   Gynecologist (occupation)	N/A	N/A
PatientAgeGroup	At least 21 years of age or older			N/A	N/A
PatientGender		SNOMED CT	248152002  Female (finding)	N/A	N/A
ClinicalVenue	Primary Care	SNOMED CT	5351000124100   Primary care clinic (environment)	N/A	N/A
ClinicalVenue	Outpatient	SNOMED CT	33022008   Hospital-based outpatient department (environment)	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. 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)]]
--

**Table 1.2. 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)]]
--

## Triggers

No trigger definitions are present.



---

# Chapter 2. Expression Definitions

No expression definitions are present.

---

## Chapter 3. Laboratory Studies

# Papanicolaou test cervical cells for cervical cancer screening routine

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [440623000 |Microscopic examination of cervical Papanicolaou smear (procedure)] ->(363702006 |Has focus (attribute))->[171149006 |Screening for malignant neoplasm of cervix (procedure)]

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

# Liquid-based cytology cervical cells for cervical cancer screening routine

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 417036008 |Liquid based cervical cytology screening (procedure)|

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

# **Condition:**elm:GreaterOrEqual (PatientAge elm:Quantity(30 years))

If Age >= 30, then co-testing for HPV and cervical cytology is recommended, although cervical cytology alone is an option if patient prefers

---

# HPV screen cervical cells as part of cervical cancer cotesting routine

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [700152009 |Human papillomavirus screening (procedure)] ->(405813007 |Procedure site - Direct (attribute))->[71252005 |Cervix uteri structure (body structure)]

unstructured[0]: as part of cervical cancer cotesting routine

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

---

# Chapter 4. Patient and Caregiver Education

# Cervical cancer screening education (Pap smear testing, liquid-based cervical cytology, HPV testing, and cervical cancer) routine

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [243072006 |Cancer education (procedure)] -

>(363702006 |Has focus (attribute))->[171149006 |Screening for malignant neoplasm of cervix (procedure)]

unstructured[0]: Pap smear testing, liquid-based cervical cytology, HPV testing, and cervical cancer

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

---

# Chapter 5. Tabular List

## *Terminology Service Request (TSR) Mappings*

**Table 5.1. Terminology Versions**

Name	Identifier	Version
SNOMED CT	2.16.840.1.113883.6.96	United States Edition 20180301

**Table 5.2. Terminology References**

System	Code	Display Text <sup>a</sup>	References <sup>b</sup>
SNOMED CT	248152002  Female (finding)		1
SNOMED CT	2651000175101  Women's health service (qualifier value)	Women's Health	1
SNOMED CT	33022008  Hospital-based outpatient department (environment)	Outpatient	1
SNOMED CT	385644000  Requested (qualifier value)	Precoordinated Expression	4
SNOMED CT	398166005  Performed (qualifier value)	Precoordinated Expression	1
SNOMED CT	417036008  Liquid based cervical cytology screening (procedure)	Precoordinated Expression	1
SNOMED CT	453231000124104  Primary care provider (occupation)	Primary Care	1
SNOMED CT	50811001  Routine (qualifier value)	Precoordinated Expression	4
SNOMED CT	5351000124100  Primary care clinic (environment)	Primary Care	1
SNOMED CT	702892004  Obstetrics and gynecology clinic (environment)	Obstetrics/Gynecology	1
SNOMED CT	83685006  Gynecologist (occupation)	Gynecologists	1
SNOMED CT	[243072006  Cancer education (procedure)] ->(363702006  Has focus (attribute))->[171149006  Screening for malignant neoplasm of cervix (procedure)]	Postcoordinated Expression	1

System	Code	Display Text <sup>a</sup>	References <sup>b</sup>
SNOMED CT	[440623000  Microscopic examination of cervical Papanicolaou smear (procedure)] ->(363702006  Has focus (attribute))->[171149006  Screening for malignant neoplasm of cervix (procedure)]	Postcoordinated Expression	1
SNOMED CT	[700152009  Human papillomavirus screening (procedure)] ->(405813007  Procedure site - Direct (attribute))->[71252005  Cervix uteri structure (body structure)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40eb-833a-6374c775d03d  Observation procedure (procedure)] ->(363702006  Has focus (attribute))->[105726004  Age AND/OR growth finding (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40eb-833a-6374c775d03d  Observation procedure (procedure)] ->(363702006  Has focus (attribute))->[248152002  Female (finding)]	Postcoordinated Expression	1

<sup>a</sup>If a code is used multiple times in the KNART, only the display text of the first instance is shown.

<sup>b</sup>Count of the number of times the given code system and code pair is used in the KNART.

---

# Chapter 6. Behavior Symbols

**Table 6.1. 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 6.2. 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 6.3. 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 6.4. 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 6.5. 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 6.6. 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 6.7. 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 Order Set Conceptual Structure Document*

[KVRpt] *Women's Health: Cervical Cancer Screening Order Set 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](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>])