

Clinical Decision Support (CDS) Content and Health Level 7 (HL7) - Compliant Knowledge Artifacts (KNARTs)

Women's Health: Cervical Cancer Screening Clinical Content White Paper

Comment [KK1]: Team B3 12/27: revisions made since 12/20 response from PO.
-Globally: all KBS comments have been reviewed
-responses noted in green where needed.

Comment [CS2]:

Department of Veterans Affairs (VA)



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

Clinical Decision Support (CDS) Content and Health Level 7 (HL7)
- Compliant Knowledge Artifacts (KNARTs): Women's Health:
Cervical Cancer Screening Clinical Content White Paper

by Department of Veterans Affairs (VA), , , and

Publication date ~~December~~ March 20187

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Table 1. Relevant KNART Information

Women's Health KNART	Associated CLIN
Cervical Cancer Screening - ECA Rule	CLIN0007BA
Cervical Cancer Screening - Order Set	CLIN0008AA
Cervical Cancer Screening - Documentation Template	CLIN0008CA

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Clinical Decision Support (CDS)
Content and Health Level 7 (HL7)
Compliant Knowledge Artifacts
(KNARTs)

Clinical Decision Support (CDS) Content and Health Level 7 (HL7) Compliant Knowledge Artifacts (KNARTs)

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1.1. Clinical Context Domains..... 1

VA Subject Matter Expert (SME) Panel

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Introduction

The VA is committed to improving the ability of clinicians to provide care for patients while increasing quality, safety, and efficiency. Recognizing the importance of standardizing clinical knowledge in support of this goal, VA is implementing the HL7 Knowledge Artifact Specification for a wide range of VA clinical use cases. Knowledge Artifacts, referred to as *KNARTs*, enable the structuring and encoding of clinical knowledge so the knowledge can be integrated with electronic health records to enable clinical decision support.

The purpose of this Clinical Content White Paper (*CCWP*) is to capture the clinical context and intent of KNART use cases in sufficient detail to provide the *KNART* authoring team with the clinical source material to construct the corresponding knowledge artifacts using the *HL7* Knowledge Artifact Specification. This paper has been developed using material from a variety of sources: VA artifacts, clinical practice guidelines, evidence in the body of medical literature, and clinical expertise. After reviewing these sources, the material has been synthesized and harmonized under the guidance of VA subject matter experts to reflect clinical intent for this use case.

Unless otherwise noted, items within this white paper (e.g., documentation template fields, orderable items, etc.) are chosen to reflect the clinical intent at the time of creation. To provide an exhaustive list of all possible items and their variations is beyond the scope of this work.

Conventions Used

Conventions used within the knowledge artifact descriptions include:

<obtain> : Indicates a prompt to obtain the information listed

- If possible, the requested information should be obtained from the underlying system(s). Otherwise, prompting the user for information may be required
- Default Values: Unless otherwise noted, <obtain> indicates to obtain the most recent observation. It is recognized that this default time-frame value may be altered by future implementations

[...]: Square brackets enclose explanatory text that indicates some action on the part of the clinical user, or general guidance to the clinical or technical teams. Examples include, but are not limited to:

[Begin ...], [End ...]: Indicates the start and end of specific areas to clearly delineate them for technical purposes.

[Activate ...]: Initiates another knowledge artifact or knowledge artifact section.

[Section Prompt: ...]: If this section is applicable, then the following prompt should be displayed to the user.

[Section Behavior: ...]: Indicates technical constraints or considerations for the selection of items outlined in the section prompt.

[Attach: ...]: Indicates that the specified item (e.g. procedure or result interpretation) should be attached to the documentation template if available.

[Link: ...]: Indicates that rather than attaching an item (e.g. image), a link should be included in the documentation template.

[Clinical Comment: ...]: Indicates technical considerations or notes to be utilized for KNART authoring and at time of implementation planning.

[Technical Note: ...]: Indicates technical considerations or notes to be utilized for KNART authoring and at time of implementation planning.

[If ...]: Indicates the beginning of a conditional section.

[Else, ...]: Indicates the beginning of the alternative branch of a conditional section.

[End if ...]: Indicates the end of a conditional section.

☐[Check box]: Indicates items that should be selected based upon the section selection behavior.

Chapter 1. Women's Health: Cervical Cancer Screening

Comment [LLW3]: KBS is OK with edits in Chapter 1

[Begin Women's Health: Cervical Cancer Screening.]

1.1. Clinical Context

[Begin Clinical Context.]

Cervical cancer is largely a preventable disease due to the success of early treatment enabled by appropriate preventive screening (ACOG 2016). Therefore, it is imperative that women be screened according to evidence-based guidelines. Screening is particularly important, as secular trends indicate decreasing levels of screening among women and the persistence of health care disparities among certain groups of women based on race, ethnicity, and socioeconomic factors.

The Cervical Cancer Screening KNART set is intended to prompt providers to identify a woman's cervical cancer risk category; counsel her about that risk; identify her screening preferences; screen based on age, risk, and patient preference; and document the entire process.

Table 1.1. Clinical Context Domains

Target User	Provider to include Primary Care, Designated Women's Health Providers, and Gynecologists
Patient	Female that is at least 21 years of age or older
Priority	Routine
Specialty	Primary Care, Designated Women's Health Providers, and Gynecology
Location	Outpatient

[End Clinical Context.]

1.2. Knowledge Artifacts

[Begin Knowledge Artifacts.]

This section describes the Clinical Decision Support (CDS) knowledge artifacts specific to cervical cancer screening. These knowledge artifacts are intended for users providing primary and preventative care to women to ensure that timely cervical cancer screening is performed and that women's preferences are incorporated into the decision-making process. Target clinical users include primary care providers, women's health clinical providers and gynecologists. The patient cohort includes women aged 21 years and older with an intact cervix and without cervical cancer risk factors.

Comment [JF4]: not sure I understand who these clinicians are?

Women with the following risk factors are excluded from the patient cohort as they are followed in accordance with alternative protocols:

- Women who have an immune disorder such as being Human Immunodeficiency Virus (*HIV*) positive.
- Women with a history of high-grade precancerous cervical lesion(s) or cervical cancer.
- Women with in utero exposure to diethylstilbestrol.

This section describes the CDS knowledge artifacts that are part of the Cervical Cancer Screening group, and include:

- An Event-Condition-Action (*ECA*) Rule: Cervical Cancer Screening

Comment [LLW5]: KBS: OK to leave as is

Women's Health: Cervical Cancer Screening

Women's Health: Cervical Cancer Screening

- Rule logic that describes the activation of the documentation template and order set.
- Actions may include activating documentation templates or order sets.
- A Documentation Template: Cervical Cancer Screening
 - A template that facilitates documentation of the management of a patient's cervical cancer screening.
 - Includes logic for the appropriate display of the documentation sections.
- An Order Set: Cervical Cancer Screening
 - Orderable items associated with management of cervical cancer screening.
 - Includes logic for the appropriate display of the order set.

[End Knowledge Artifacts.]

[End Women's Health: Cervical Cancer Screening.]

Chapter 2. Event-Condition-Action (ECA) Rule: Women's Health: Cervical Cancer Screening

[Begin ECA Rule.]

2.1. Knowledge Narrative

[Begin Knowledge Narrative.]

[See Clinical Context in Chapter 1.]

The Event-Condition-Action Rule will assure:

- Clinicians have access to the current guidelines at the point of care to guide their counseling; and
- Patients are notified when they are due for cervical cancer screening either during or outside of in-person clinical visits.

[Clinical Comment: The purpose of the *ECA* rule for cervical cancer screening is to assess the patient's cervical cancer screening status and if warranted, to document cervical cancer risk and screening desires as well as to order the recommended test/screen.]

[End Knowledge Narrative.]

2.2. Primary Level (trunk) cohort identification

Event

[Begin Event]

- Opening of the patient record during an outpatient visit to primary care provider, designated women's health provider or gynecologist, OR
- System run of preventive screening rules, run monthly.

[End Event]

Conditions

[Begin Conditions]

- Include female patients aged 21 years or older.
- Exclude women who have had a total hysterectomy (cervix + uterus), women who have congenital absence of the cervix, and women who meet any of the following high-risk criteria:
 - Immunosuppression; or
 - Presence of *HIV* infection; or
 - Exposure to diethylstilbestrol in utero; or
 - A history of high-grade dysplasia or prior treatment for Cervical Intra-epithelial Neoplasia (*CIN* 2, *CIN* 3), or cervical cancer; or

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Comment [LLW6]: Please make explicit whether events are disjunctive or conjunctive (OR or AND logic).

Comment [LLW7]: 1/30/18 KBS: Please reply indicating whether or not you made the relevant corrections.

Comment [KK8]: Team B3 3/9: updated as needed per 2/20 meeting with Catherine.

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Comment [LLW9]: Combining the logic for monthly background screening rules with logic for point of care is confusing given current VA reminder protocol where there is no concept of a persistent DUE DATE field within the patient record (DUE DATES are instead evaluated in real-time when opening patient record or running a report). Consider separating the logic for monthly screening rules vs point of care logic. Please discuss with KBS

01/24: Team B3 does NOT RECOMMEND breaking out this logic.

Comment [JK(10)]: Should this be spelled out the first time?
KBS: OK

Comment [LLW11]: KBS: spell acronyms out the first time they are used

2017-12-20 KBS Comment: Resolved. Thank you

Comment [LLW12]: We need to discuss throughout this document, clarify: 1 what is meant by high grade dysplasia, and exactly what are the exclusion criteria because they vary throughout the document.

01/24 Team B3: Conferred with Motive Dr. Smoy. This is correct and follows ACOG Guidelines.

~~Event-Condition-Action (ECA) Rule:~~
~~Women's Health: Cervical Cancer~~
~~Screening~~

~~Event-Condition-Action (ECA) Rule: Women's Health: Cervical Cancer Screening~~

- Women in whom screening has been discontinued due to:
 - life expectancy less than 10 years
 - history of adequate screening among women over 65

[Technical Note: Adequate negative prior screening results are defined as 3 consecutive negative cytology results or 2 consecutive negative co-test results within the previous 10 years, with the most recent test performed within the past 5 years.]

[End Conditions]

Actions

[Begin Actions]

- Activate Chapter 2, sections 2.2.1 – 2.2.6

[End Actions]

~~[End Knowledge Narrative.]~~

2.2.1. Cervical Cancer Screening for 21-29 Years of Age: In Person

[Begin Cervical Cancer Screening for 21-29 years of age: In Person.]

Event

[Begin Event]

- Opening of the patient record during an outpatient visit to primary care provider, designated women's health provider or gynecologist.

[End Event]

Conditions

[Begin Conditions]

- Patient age is ≥ 21 to ≤ 30 years old

Comment [LLW13]: Please make logic consistent for the sake of future readers

Comment [KK14]: Team B3 3/9: updated as needed per 2/20 meeting with Catherine.

Comment [CS15]: 3/22/18- KBS resolved

Comment [CS16]: need to review

Comment [KK17]: Team B3 3/9: updated as needed per 2/20 meeting with Catherine.

Comment [CS18]: 3/22/18- KBS resolved

Event-Condition-Action (ECA) Rule:
Women's Health: Cervical Cancer
Screening

- No cervical cytology exam within the past 3 years or patient coming due in the next 60 days.

[Technical Note: If Due Date > Today + 60 Days, stop.]

[End Conditions]

Actions

[Begin Actions]

- Open the Cervical Cancer Screening Documentation Template
- Open the Cervical Cancer Screening Order Set

[Technical Note: Make sure the associated recommendations and guidelines for the age group are available to the provider.]

[End Actions]

[End Cervical Cancer Screening for 21-29 years of age: In Person .]

2.2.2. Cervical Cancer Screening for 21-29 Years of Age: Reporting

[Begin Cervical Cancer Screening for 21-29 years of age: Reporting.]

Event

[Begin Event]

- Monthly system run of preventative screening rules

[End Event]

Conditions

[Begin Conditions]

- Patient is ≥ 21 to < 30 years old
- Has had no cervical cytology exam within the past 3 years
- Due Date is within 30 days in the past and 60 days in the future of the system run date

[Technical Note: Given a monthly system run, this condition results in 3 notifications being sent to the patient.]

[End Conditions]

Actions

[Begin Actions]

- Identify the patient as “due” for cervical cancer screening
- Send patient cervical cancer screening “due” notification

[Technical Note: Make sure the associated recommendations and guidelines for the age group are available to the care team.]

[End Actions]

[End Cervical Cancer Screening for 21-29 years of age: Reporting.]

Comment [CS19]: 1/26/18 VA KBS: the sme' wanted this to be activated if the woman was coming due in 60 days (e.g., two years and 10 months after the last results) and they only want 3 notifications to be sent (e.g., since the system runs monthly, that means a three month window should be used). Therefore, It should read:

“... and has a cervical cytology due date between 30 days in the past to 60 days in the future.” See table at the end of the white paper for examples.

Comment [LLW20]: 1/29/18: We talked about changing this to simply “within the past 2 years and 10 months”. I like that approach. Motive please tell me your thoughts.

Comment [KK21]: Team B3 3/9: updated as needed per 2/20 meeting with Catherine.

Comment [CS22]: 3/22/18- KBS - resolved

Comment [CS23]: 1/26/18 – VA KBS – this needs to be added.

Comment [KK24]: Team B3 3/9: Noted.

Comment [CS25]: 3/22/18- KBS resolved

~~Event-Condition-Action (ECA) Rule:~~
~~Women's Health: Cervical Cancer~~
~~Screening~~

~~Event-Condition-Action (ECA) Rule: Women's Health: Cervical Cancer Screening~~

2.2.3. Cervical Cancer Screening for 30 to 65 Years of Age: In Person

[Begin Cervical Cancer Screening for 30-65 Years of Age: In Person.]

Event

[Begin Event]

- Opening of the patient record during an outpatient visit to primary care provider, designated women's health provider or gynecologist.

[End Event]

Conditions

[Begin Conditions]

- Patient age is ≥ 30 and ≤ 65 years old
- Has had none of the following screens:
 - Cervical Cytology within the past 3 years, or
 - Cotesting (cervical cytology and cervical Human Papillomavirus (HPV) screen) within the past 5 years

[Technical Note: If Due Date > Today + 60 Days, stop.]

~~[End Conditions]~~

~~Actions~~

~~[Begin Actions]~~

~~Due Date is within 30 days in the past and 60 days in the future of the system run date~~

~~[Technical Note: Given a monthly system run, this condition results in 3 notifications being sent to the patient.]~~

~~[End Conditions]~~

~~Actions~~

Comment [CS26]: 1/26/18 VA KBS: the sme wanted this to be activated if the woman was coming due in 60 days. Therefore, this logic should read:

- 1. Cervical Cytology within the past 2 years and 10 months, or
- 2. Cotesting (cervical cytology and cervical HPV screen) within the past 4 years and 10 months

Comment [LLW27]: 1/30/18 KBS: Please apply throughout the document.

Comment [KK28]: Team B3 3/9: updated as needed per 2/20 meeting with Catherine.

Comment [CS29]: 3/22/18- Resolved -

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Event-Condition-Action (ECA) Rule:
Women's Health: Cervical Cancer
Screening

[Begin Actions]

- Open Cervical Cancer Screening Documentation Template.
- Open Cervical Cancer Screening Order Set

[Technical Note: Make sure the associated recommendations and guidelines for the age group are available to the provider.]

[End Actions]

[End Cervical Cancer Screening for 30-65 Years of Age: In Person.]

2.2.4. Cervical Cancer Screening for 30 to 65 Years of Age: Reporting

[Begin Cervical Cancer Screening for 30-65 Years of Age: Reporting.]

Event

[Begin Event]

- Monthly system run of preventative screening rules

[End Event]

Conditions

[Begin Conditions]

- Patient age is ≥ 30 and ≤ 65 years old
- Has had none of the following screens:
 - Cervical Cytology within the past 3 years, or
 - Cotesting (cervical cytology and cervical Human Papillomavirus (HPV) screen) within the past 5 years

Due Date is within 30 days in the past and 60 days in the future of the system run date

[Technical Note: Given a monthly system run, this condition results in 3 notifications being sent to the patient.]

[End Conditions]

Actions

[Begin Actions]

~~Due Date is within 30 days in the past and 60 days in the future of the system run date~~

~~[Technical Note: Given a monthly system run, this condition results in 3 notifications being sent to the patient.]~~

~~[End Conditions]~~

Actions

~~[Begin Actions]~~

~~Identify the patient as "due" for cervical cancer screening~~

- Send patient cervical cancer screening "due" notification

Comment [CS30]: 1/26/18 VA KBS: the sme wanted this to be activated if the wonan was coming due in 60 days. Therefore, this logic should read:

- 1. Cervical Cytology within the past 2 years and 10 months, or
- 2. Cotesting (cervical cytology and cervical HPV screen) within the past 4 years and 10 months

NEED TO QA THIS AND REFER TO TABLE AT THE END. THIS MAY NOT BE QUITE CORRECT.

Comment [KK31]: Team B3 3/9: updated as needed per 2/20 meeting with Catherine.

Comment [CS32]: 3/22/18- Resolved

But I had to add the text about the due date which was sitting in the wrong place above in the logic based on opening the chart.

Comment [CS33]:

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~~Event-Condition-Action (ECA) Rule:~~
~~Women's Health: Cervical Cancer~~
~~Screening~~

~~Event-Condition-Action (ECA) Rule: Women's Health: Cervical Cancer Screening~~

[Technical Note: Make sure the associated recommendations and guidelines for the age group are available to the care team.]

[End Actions]

[End Cervical Cancer Screening for 30-65 Years of Age: Reporting.]

2.2.5. Cervical Cancer Screening for Older than 65 Years of Age: In Person

[Begin Cervical Cancer Screening for Older than 65 Years of Age: In Person.]

Event

[Begin Event]

- Opening of the patient record during an outpatient visit to primary care provider, designated women's health provider or gynecologist.

[End Event]

Conditions

[Begin Conditions]

- Patient age > 65 years old
- Has had none of the following screens:
 - Cervical Cytology within the past 3 years, or
 - Cotesting (cervical cytology and cervical Human Papillomavirus (HPV) screen) within the past 5 years

[Technical Note: If Due Date > Today + 60 Days, stop.]

← Exclude those who have discontinued screening based on a history of adequate screening.

[Technical Note: Adequate negative prior screening results are defined as 3 consecutive negative cytology results or 2 consecutive negative co-test results within the previous 10 years, with the most recent test performed within the past 5 years.]

Comment [CS34]: 1/26/18 VA KBS: the sme' wanted this to be activated if the woman was coming due in 60 days. Therefore, this logic should read:

- 1. Cervical Cytology within the past 2 years and 10 months, or
- 2. Cotesting (cervical cytology and cervical HPV screen) within the past 4 years and 10 months

Comment [KK35]: Team B3 3/9: updated as needed per 2/20 meeting with Catherine.

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Comment [CS36]: 1/26/2018 VA KBS – to be more clear, it should read: "Exclude those for whom screening has been discontinued based on documentation of a history of adequate screening."

Event-Condition-Action (ECA) Rule:
Women's Health: Cervical Cancer
Screening

[End Conditions]

Actions

[Begin Actions]

- Open Cervical Cancer Screening Documentation Template
- Open Cervical Cancer Screening Order Set

[Technical Note: Make sure the associated recommendations and guidelines for the age group are available to the provider.]

[End Actions]

[End Cervical Cancer Screening for Older than 65 Years of Age: In Person.]

2.2.6. Cervical Cancer Screening for Older than 65 Years of Age: Reporting

[Begin Cervical Cancer Screening for Older than 65 Years of Age: Reporting.]

Event

[Begin Event]

- Monthly system run of preventative screening rules

[End Event]

Conditions

[Begin Conditions]

- Patient age > 65 years old
- Has had none of the following exams:
 - Cervical Cytology within the past 3 years, or
 - Cotesting (cervical cytology and cervical Human Papillomavirus (HPV) screen) within the past 5 years

~~• Exclude those who have discontinued screening based on a history of adequate screening.~~

[Technical Note: Adequate negative prior screening results are defined as 3 consecutive negative cytology results or 2 consecutive negative co-test results within the previous 10 years, with the most recent test performed within the past 5 years.]

- Due Date is within 30 days in the past and 60 days in the future of the system run date

[Technical Note: Given a monthly system run, this condition results in 3 notifications being sent to the patient.]

[End Conditions]

Actions

[Begin Actions]

~~• Identify the patient as “due” for cervical cancer screening~~

- Send patient cervical cancer screening “due” notification

Comment [KK37]: 12/8 comment review: technical note moved per discussion.

Comment [LLW38]: KBS: OK

Comment [CS39]: 1/26/18- VA KBS – add this here as well. It was previously only included below.

~~Event-Condition-Action (ECA) Rule:~~
~~Women's Health: Cervical Cancer~~
~~Screening~~

Event-Condition-Action (ECA) Rule: Women's Health: Cervical Cancer Screening

[Technical Note: Make sure the associated recommendations and guidelines for the age group are available to the care team.]

[End Actions]

[End Cervical Cancer Screening for Older than 65 Years of Age: Reporting.]

[End ECA Rule.]

Chapter 3. Documentation Template: Women's Health: Cervical Cancer Screening

[Begin Documentation Template.]

[Technical Note: This documentation template should be made available for patients for whom the Cervical Cancer Screening *ECA* Rule KNART is activated (i.e., criteria met)positive.]

3.1. Knowledge Narrative

[Begin Knowledge Narrative.]

[See Clinical Context in Chapter 1.]

[Clinical Comment: The Cervical Cancer Screening Documentation Template will guide clinicians in their conversations with a woman based upon her age and risk-based screening preferences as well as allow for the efficient documentation of those conversations and capture the woman's personal preferences.]

[Technical Note: Discrete data elements will be acquired through a series of questions and answers. Any information that can be obtained from the system should pre-populate the field in a manner that is apparent to the user.]

[Technical Note: The template should automatically adjust to be specific to the following age groups: 21-29, 30-65 and older than 65 years of age.]

[Technical Note: The template should allow for the documentation of prior cervical cancer screening and results from outside of the organization.]

[End Knowledge Narrative.]

3.2. History

[Begin History section.]

[Section Prompt: Patient Age.]

<obtain> Age in years

[Section Prompt: History of high-grade dysplasia or prior treatment for Cervical Intraepithelial Neoplasia (*CIN*) 2 or higher?]

[Section Selection Behavior: Select one. Required.]

☐ Yes

<obtain> Details

☐ No

[Previously treated for *CIN* 2, *CIN* 3, or Cervical Cancer?]

[Section Selection Behavior: Select one. Required.]

☐ Yes

<obtain> Details

Comment [LLW40]: Throughout this document, please change similar verbiage to that which we suggested in the laboratory section below.

Comment [KK41]: Team B3 3/9: updated as needed per 2/20 meeting with Catherine.

Comment [CS42]: 3/22/18- KBS – Resolved. Edited to make it clear. Saying 'positive' sounds like test results, rather than just that the logic was met.

Comment [MMI43]: Here and throughout the documentation template, the absence of correct and consistent use of indentation and list styles undermines an accurate understanding of the intended meaning. Please refer to the Motive L1 for the correct levels in the information hierarchy and make these corrections.

Comment [LLW44]: 1/30/18 KBS: We agree.

☐ No

[Section Prompt: Exposed to Diethylstilbestrol in Utero?]

[Section Selection Behavior: Select one. Required.]

☐ Yes

<obtain> Details

☐ No

[Section Prompt: Hysterectomy with Removal of Cervix (Total Hysterectomy)?]

[Section Selection Behavior: Select one. Required.]

☐ Yes

<obtain> Details

☐ No

[Section Prompt: Infected with *HIV*?]

[Section Selection Behavior: Select one. Required.]

☐ Yes

<obtain> Details

☐ No

[Section Prompt: Immunocompromised (Other Than *HIV*)?]

[Section Selection Behavior: Select one. Required.]

☐ Yes

<obtain> Details

☐ No

[Section Prompt: Significant Comorbidity Limits Life Span to < 10 Years?]

[Section Selection Behavior: Select one. Required.]

☐ Yes

<obtain> Details

☐ No

[End History section.]

3.3. Laboratory Studies

[Begin Laboratory Studies section.]

3.3.1. Laboratory Studies: Aged 21–29 Years.

[This section of the documentation template should be made available when the ECA Rule Cervical Cancer Screening for 21-29 Years of Age: In Person is executed.]

[Section Prompt: Most Recent Cervical Cytology.]

<obtain> Results

<obtain> Date

3.3.2. Laboratory Studies: Aged 30–65 Years

[This section of the documentation template should be made available when the ECA Rule Cervical Cancer Screening for 30 to 65 Years of Age: In Person is executed.]

[Section Prompt: Most Recent Cervical Cytology.]

<obtain> Results

<obtain> Date

[Section Prompt: Most Recent Cervical HPV Screening.]

<obtain> Results

<obtain> Date

3.3.3. Laboratory Studies: Aged Older Than 65 Years

[This section of the documentation template should be made available when the ECA Rule Cervical Cancer Screening for Older than 65 Years of Age: In Person is executed.]

[Section Prompt: Most Recent Cervical Cytology.]

<obtain> Results

<obtain> Date

[Section Prompt: Second-Most Recent Cervical Cytology.]

<obtain> Results

<obtain> Date

[Section Prompt: Third-Most Recent Cervical Cytology.]

<obtain> Results

<obtain> Date

[Section Prompt: Most Recent Cervical HPV Screen.]

<obtain> Results

<obtain> Date

[Section Prompt: Second-Most Recent Cervical HPV Screen.]

<obtain> Results

<obtain> Date

[End Laboratory Studies section.]

3.4. Plan of Care

Comment [LLW45]: According to section 6 chapter 2 we need to display THREE results for cervical cytology.

Comment [KK46]: 12/8 comment review: correct; update noted.

Comment [LLW47]: KBS: OK

[Begin Plan of Care.]

[Section Prompt: Due Date for Cervical Cancer Screening.]

<obtain> Due Date <<calculated per ECA rule>>

[\[Technical Note: Due Date is calculated per patient-relevant ECA rule.\]](#)

3.4.1. Plan: Aged 21–29 Years

[This section of the documentation template should be made available when the ECA Rule Cervical Cancer Screening for 21-29 Years of Age: In Person is executed.]

[Section Prompt: Cervical Cancer Preventive Screening Plan.]

[Section Selection Behavior: Select one. Required.]

- ☐ Continue Screening Every Three Years with Cervical Cytology Alone
- ☐ Discontinue Screening Due to Life Expectancy < 10 Years
- ☐ Other

<obtain> Details

[Section Prompt: Plan Discussed with and Agreed to by Patient?]

[Section Selection Behavior: Select one. Required.]

- ☐ Yes
- ☐ No

<obtain> Explanation

3.4.2. Plan: Aged 30–65 Years

[This section of the documentation template should be made available when the ECA Rule Cervical Cancer Screening for 30 to 65 Years of Age: In Person is executed.]

[Section Prompt: Cervical Cancer Preventive Screening Plan.]

[Section Selection Behavior: Select one. Required.]

- ☐ Continue Screening Every Three Years with Cervical Cytology Alone
- ☐ Continue Screening Every Five Years with Cotesting (Cervical Cytology Plus Cervical HPV Screening)
- ☐ Discontinue Screening Due to Life Expectancy < 10 Years
- ☐ Other

<obtain> Details

[Section Prompt: Plan Discussed with and Agreed to by Patient?]

[Section Selection Behavior: Select one. Required.]

- ☐ Yes
- ☐ No

<obtain> Explanation

3.4.3. Plan: Aged Older Than 65 Years

[This section of the documentation template should be made available when the ECA Rule Cervical Cancer Screening for Older than 65 Years of Age: In Person is executed.]

[Section Prompt: Cervical Cancer Screening Plan.]

[Section Selection Behavior: Select one. Required.]

- ☐ Continue Screening Every Three Years with Cervical Cytology Alone
- ☐ Continue Screening Every Five Years with Cotesting (Cervical Cytology Plus Cervical HPV Screening)
- ☐ Discontinue Screening Due to Life Expectancy < 10 Years
- ☐ 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)
- ☐ Other

<obtain> Details

[Section Prompt: Plan Discussed with and Agreed to by Patient?]

[Section Selection Behavior: Select one. Required.]

- ☐ Yes
- ☐ No

<obtain> Explanation

[End Plan of Care.]

[End Documentation Template.]

Comment [LLW48]: Please make this edit throughout the document.

Comment [KK49]: Team B3 3/9: updated as needed per 2/20 meeting with Catherine.

Comment [CS50]: 3/22/18- Resolved

Chapter 4. Order Set: Women's Health: Cervical Cancer Screening

[Begin Order Set.]

[Technical Note: This Order Set is to be made available for patients for whom Cervical Cancer Screening *ECA* Rule KNART was positive.]

4.1. Knowledge Narrative

[Begin Knowledge Narrative.]

[See Clinical Context in Chapter 1.]

[Clinical Comment: The order set allows users to order cervical cancer screening, including cervical cytology and *HPV* co-testing, quickly and efficiently.]

[Technical Note: Currently, VA users can enter orders directly or they can order from within the clinical reminder dialog (see Appendix A).]

[End Knowledge Narrative.]

4.2. Cervical Cancer Screening

[Begin Cervical Cancer Screening.]

[Section Prompt: Laboratory Studies.]

[Section Selection Behavior: Select one or more. Optional.]

☐ Papanicolaou test cervical cells for cervical cancer screening routine

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

[Section Prompt: If Age \geq 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

[Section Prompt: Patient and Caregiver Education.]

[Selection Behavior: Select one. Optional.]

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

[End Cervical Cancer Screening.]

[End Order Set.]

Comment [LLW51]: Please provide CDS re when to choose PAP vs liquid...cytology.

Comment [LLW52]: 1/30/18 KBS: Agree.

Comment [KK53]: Team B3 3/9: updated as needed per 2/20 meeting with Catherine.

Comment [CS54]: 3/22/18- KBS- Resolved

Bibliography/Evidence

Committee on Practice Bulletins—Gynecology.. *Practice Bulletin No. 168: Cervical Cancer Screening and Prevention*. *Obstet Gynecol*. 2016. 128. (4). e111-e130.

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<https://www.prevention.va.gov/docs/CervicalCProvider.pdf>.. June 2013.

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<https://www.cdc.gov/cancer/cervical/pdf/guidelines.pdf>. July 2017.

Committee on Gynecologic Practice. *Committee Opinion No. 534: Well-Woman Visit*. *Obstetrics and Gynecology*. August 2012. 120. (2 Pt 1). 421.

Department of Veteran Affairs National Center for Health Promotion and Disease Prevention, Cervical Cancer Screening.
https://www.prevention.va.gov/Preventing_Diseases/Screening_for_Cervical_Cancer.asp#frequency. July 2017.

[Massad, 2013] LS Massad, MH Einstein, WK Huh, HA Katki, WK Kinney, M Schiffman, D Solomon, N Wentzensen, and HW. Lawson. “2012 Updated Consensus Guidelines For The Management Of Abnormal Cervical Cancer Screening Tests And Cancer Precursors”. *Obstetrics and Gynecology*. April 1, 2013. 121. (4). 829-46.

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

Appendix A. Existing VA Artifacts

Figure A.1. HPV Orders

Order a Lab Test

Available Lab Tests: HPV DNA, HIGH RISK (31532) [selected]
HPV DNA, HIGH AND LOW RISK (31532)
HPV DNA, RECTAL 17185
HPV GENOTYPE 16933
HPV ISH <HPV, LOW/HIGH RISK (31532)
HPV mRNA E6/E7 RFLX GEN (31532)
HPV, HIGH RISK, HYBRID CA (31532)
HPV, LOW/HIGH RISK DNAJ (31532)

HPV DNA, HIGH RISK (31532)

Collect Sample: THIN PREP
Specimen: VAGINAL/CERV
Urgency: ROUTINE

Collection Type: Send Patient to Lab
Collection Date/Time: TODAY
How Often?: ONE TIME
How Long?:

YOU MUST PRINT ORDER AND SEND PRINTOUT W/SPECIMEN.

Accept Order
Quit

Order a Lab Test

Available Lab Tests: HPV DNA, HIGH RISK (31532) [selected]
HPV DNA, HIGH AND LOW RISK (31532)
HPV DNA, RECTAL 17185
HPV GENOTYPE 16933
HPV ISH <HPV, LOW/HIGH RISK (31532)
HPV mRNA E6/E7 RFLX GEN (31532)
HPV, HIGH RISK, HYBRID CA (31532)
HPV, LOW/HIGH RISK DNAJ (31532)

HPV DNA, HIGH RISK (31532)

Collect Sample: THIN PREP
Specimen: VAGINAL/CERV
Urgency: ROUTINE

Collection Type: Send Patient to Lab
Collection Date/Time: TODAY
How Often?: ONE TIME
How Long?:

YOU MUST PRINT ORDER AND SEND PRINTOUT W/SPECIMEN.

Accept Order
Quit

GYNECOLOGY CONSULTS

Done

Gynecology Consults

Consults:

[Gynecology Outpatient](#)

Gynecology Inpatient

E Consults:

E Consult: Gynecology

Template: GYNECOLOGY OUTPATIENT NEW

☒ Gynecology

****If this request can be completed with a record review please cancel and submit a Gyn E-consult.****

Consult urgency: *

☐ Emergent (Contact on Call GYN Resident)

☐ Routine

Click on consult request desired

☐ Birth Control

☐ Pelvic Pain

☐ Ovarian Cyst/Pelvic Mass

☒ Abnormal Pap Smear

☒ -Detailed history of prior Pap Smear (Normal/Abnormal)

☐ -History and records of prior Colposcopy/biopsies, treatments (LEEP,Cryo)

☐ -Smoking Cessation discussion/managed.

PAP date: *

Results: *

HPV test results: *

☐ Reason for request:

☐ Abnormal Bleeding

Figure A.13. Pap Smear Screening Clinical Reminder

Reminder Resolution: PAP Smear Screening

The VHA recommends women ages 21-65 have a Pap smear at least every 3 years (or every 5 years if combined with negative HPV screening).

☐ View more information and links to VHA Guidelines

Screening

☐ PAP smear was obtained at this encounter

☐ Order HPV testing

☐ Record prior or outside Pap and/or HPV results:

☐ Consult orders

Refusals, Defer or Stop Screening

☐ Patient declined Pap smear

☐ Defer reminder for 4 months

☐ Stop Screening: Cervical cancer screening not clinically indicated:

Clear Clinical Maint Visit Info < Back Next > Finish Cancel

Reminder Resolution: PAP Smear Screening

The VHA recommends women ages 21-65 have a Pap smear at least every 3 years (or every 5 years if combined with negative HPV screening).

☐ View more information and links to VHA Guidelines

Screening

☐ PAP smear was obtained at this encounter

☐ Order HPV testing

☐ Record prior or outside Pap and/or HPV results:

☐ Consult orders

Refusals, Defer or Stop Screening

☐ Patient declined Pap smear

☐ Defer reminder for 4 months

☐ Stop Screening: Cervical cancer screening not clinically indicated:

Clear Clinical Maint Visit Info < Back Next > Finish Cancel

Figure A.42: Pap Smear Screening Clinical Reminder with Record Outside Pap section expanded

Reminder Resolution: PAP Smear Screening

☐ PAP smear was obtained at this encounter

☐ Order HPV testing

☒ Record prior or outside Pap and/or HPV results:

** Review of actual report is recommended

☐ Prior NORMAL Pap smear

☐ Prior ABNORMAL (ASCUS result) Pap smear

☐ Prior ABNORMAL (other result) Pap smear

☐ Prior cervical HPV screening test NEGATIVE (Negative for intermediate or high risk HPV)

☐ Prior cervical HPV screening test POSITIVE (Intermediate or high risk HPV was detected)

☐ Consult orders

Refusals, Defer or Stop Screening

☒ Patient declined Pap smear

☐ Defer reminder for 4 months

☐ Stop Screening: Cervical cancer screening not clinically indicated:

Frequency of Screening

☐ Change the frequency of Pap smears for this patient:

ClearClinical MaintVisit Info< BackNext >FinishCancel

CLINICAL REMINDER ACTIVITY/PLAN OF CARE

PAP Smear Screening:

Health Factors: WH PAP SMEAR DECLINED

Reminder Resolution: PAP Smear Screening

☐ PAP smear was obtained at this encounter
☐ Order HPV testing
☒ Record prior or outside Pap and/or HPV results:

**** Review of actual report is recommended**

☐ Prior NORMAL Pap smear
☐ Prior ABNORMAL (ASCUS result) Pap smear
☐ Prior ABNORMAL (other result) Pap smear

☐ Prior cervical HPV screening test NEGATIVE (Negative for intermediate or high risk HPV)
☐ Prior cervical HPV screening test POSITIVE (Intermediate or high risk HPV was detected)

☐ Consult orders

Refusals, Defer or Stop Screening

☒ Patient declined Pap smear
☐ Defer reminder for 4 months
☐ Stop Screening: Cervical cancer screening not clinically indicated:

Frequency of Screening

☐ Change the frequency of Pap smears for this patient:

Clear Clinical Maint Visit Info < Back Next > Finish Cancel

CLINICAL REMINDER ACTIVITY/PLAN OF CARE

PAP Smear Screening:

Health Factors: **WH PAP SMEAR DECLINED**

Figure A.3. HPV Orders

Order a Lab Test

Available Lab Tests

HPV DNA, HIGH RISK (31532)

☒ HPV DNA, HIGH RISK (31532)
☐ HPV DNA, HIGH AND LOW RISK (31533)
☐ HPV DNA, RECTAL 17185
☐ HPV GENOTYPE 16933
☐ HPV ISH <HPV, LOW/HIGH RISK (31534)
☐ HPV mRNA E6/E7 RFLX GEN (31535)
☐ HPV, HIGH RISK, HYBRID CA (31536)
☐ HPV, LOW/HIGH RISK DNAJ (31537)

Collect Sample: THIN PREP
 Specimen: VAGINAL/CERV
 Urgency: ROUTINE

Collection Type: Send Patient to Lab
 Collection Date/Time: TODAY
 How Often?: ONE TIME
 How Long?:

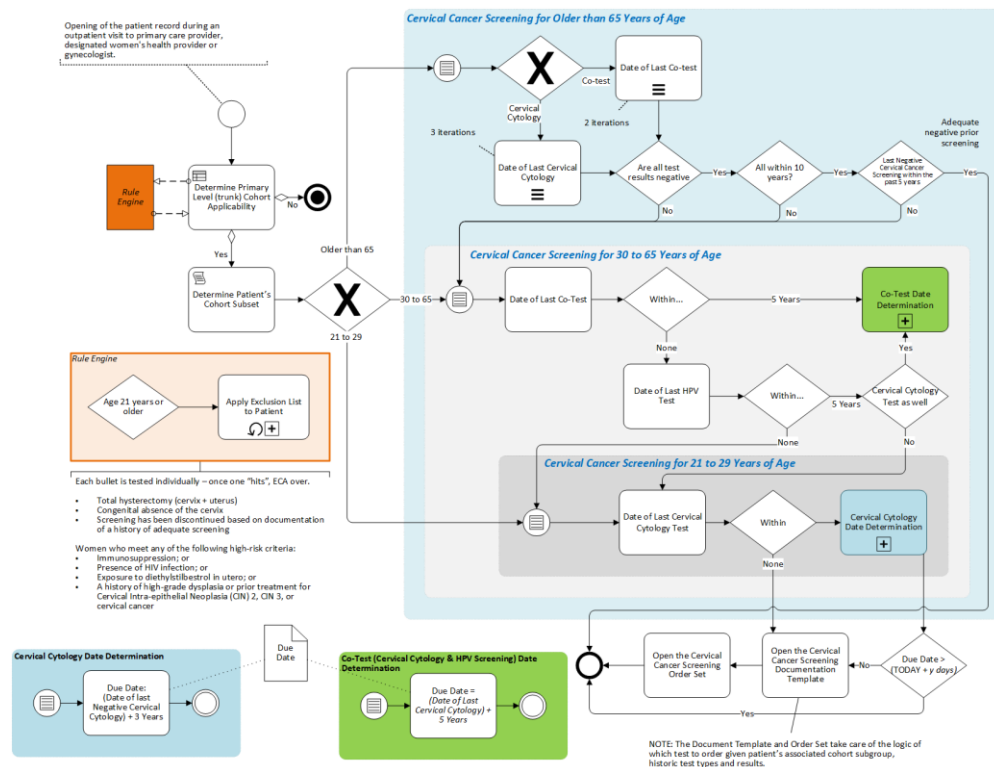
H M **YOU MUST PRINT ORDER AND SEND PRINTOUT W/SPECIMEN.**

Accept Order
 Quit

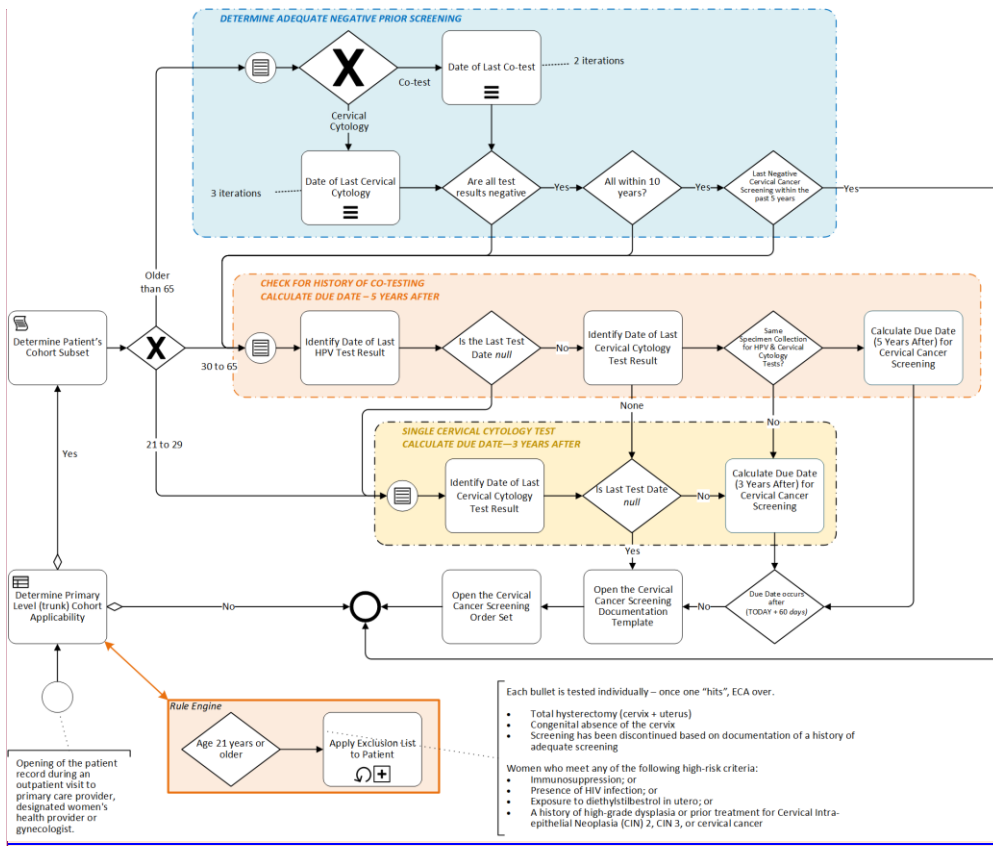
Appendix B. Cervical Cancer Screening Logic Diagrams

Comment [LLW56]: 1/30/18 KBS: ECA rules reviewed pending separate updates by Catherine Staes.

Figure B.1. Cervical Cancer Screening ECA Rules



Cervical Cancer Screening Logic Diagrams



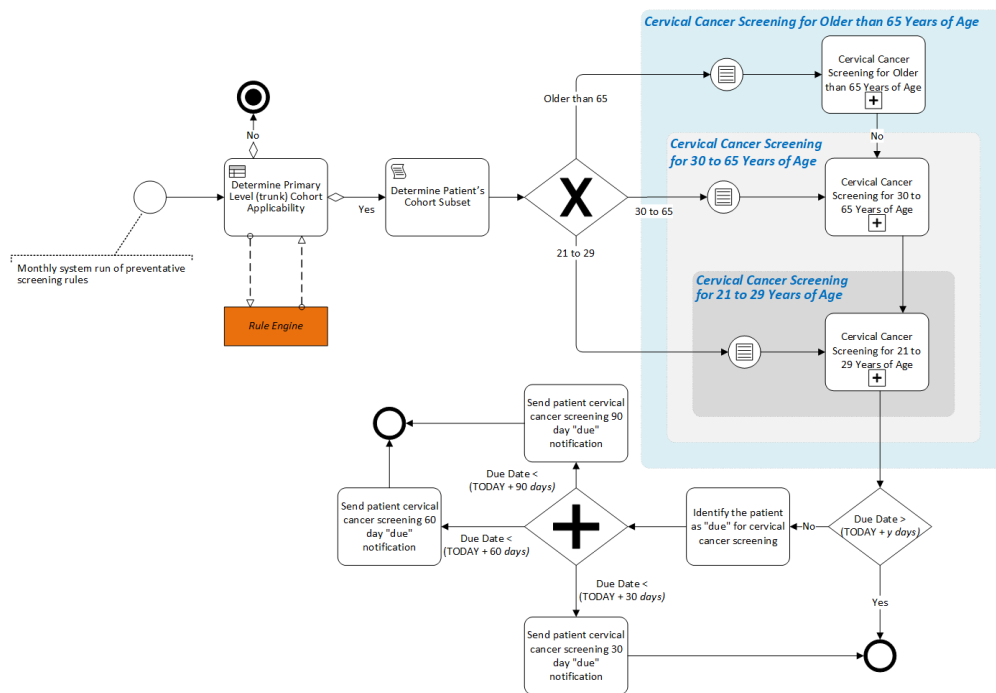
Comment [KK57]: Team B3 3/9: updated.

Comment [CS58]: 3/22/18- KBS- Resolved. T diagram is fabulous!!

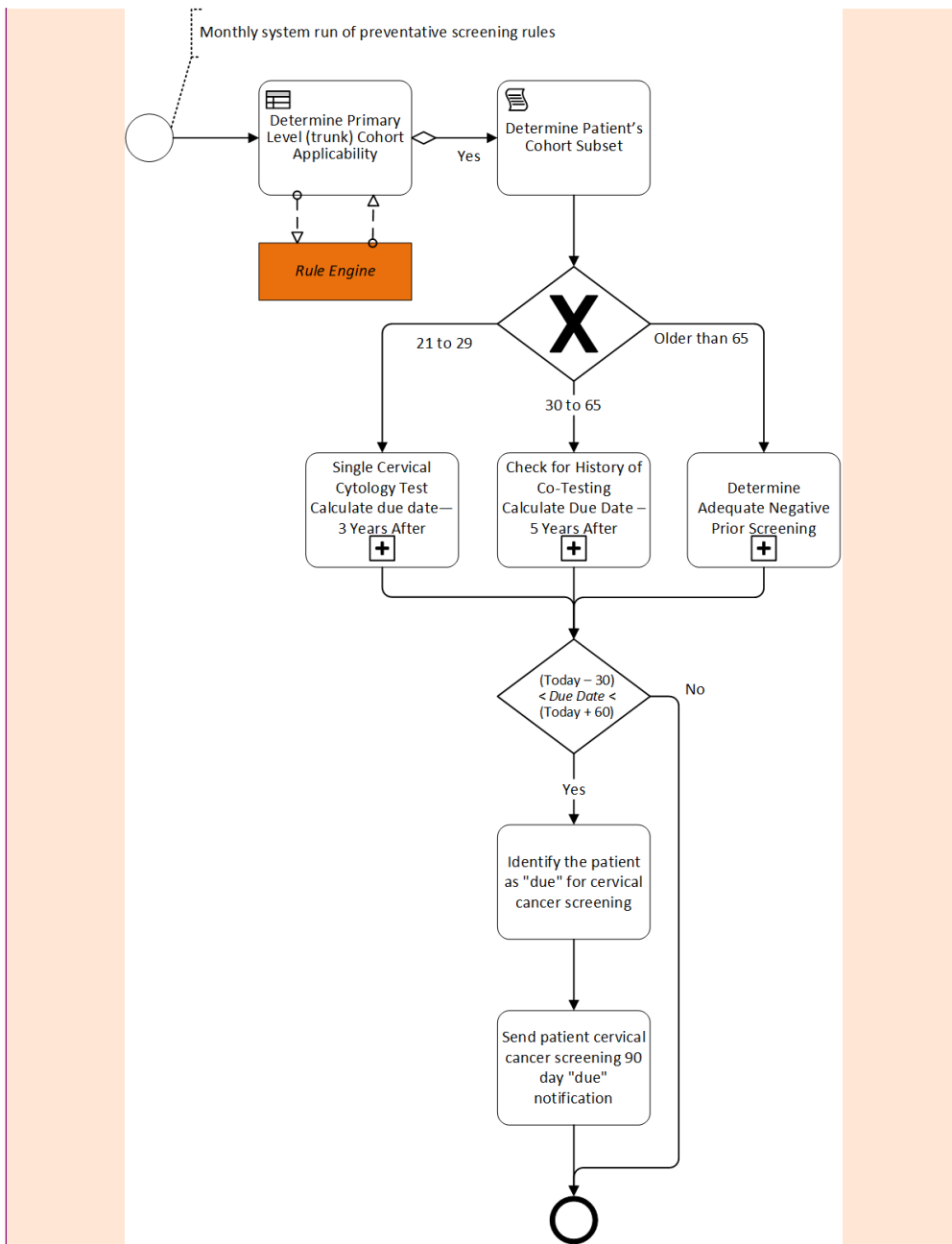
Figure B.2. Cervical Cancer Screening ECA Rules – Reporting

[Technical note: this logic is referencing logic in Figure B.1]

Formatted: Font: Not Bold



Cervical Cancer Screening Logic
Diagrams



Comment [KK59]: Team B3 3/9: Updated.

Comment [CS60]: 3/22/18- Resolved

This diagram is very clear but I think it is important to note that the diagram is dependent on logic in the other figure. Therefore, I added the Technical note to make it clear.

Acronyms

CCWP	Clinical Content White Paper
CIN	Cervical Intraepithelial Neoplasia
ECA	Event Condition Action
HIV	Human Immunodeficiency Virus
HL7	Health Level 7
HPV	Human Papillomavirus
KNART	Knowledge Artifact
KNARTs	Knowledge Artifacts
VA	Department of Veteran Affairs

1/26/2018 NOTE by Staes: this table illustrates the difference in actions based on the current Motive logic and the way the VA had originally required it. Once this white paper is updated, then the current motive column can be removed. I believe this table should be updated and included in this document to illustrate the functioning of the system.

Logic for in-person visit:

today	Last screened	Time since last screened	Due date*	VA requirement	Current Motive template
1/1/2018	No record	—	2default to today**	Action—OS/DT	Action—OS/DT
1/1/2018	10/1/2014	3-year 3 mo ago	3 mo ago	Action—OS/DT	Action—OS/DT
1/1/2018	11/1/2014	3-year 2 mo ago	2 mo ago	Action—OS/DT	Action—OS/DT
1/1/2018	12/1/2014	3-year 1 mo ago	1 mo ago	Action—OS/DT	Action—OS/DT
1/1/2018	12/31/2014	3-year 1 day	Yesterday	Action—OS/DT	Action—OS/DT
1/1/2018	1/1/2015	3-year 0 mo ago	Today	Action—OS/DT	Action—OS/DT
1/1/2018	2/1/2015	2-year 11mo ago	In 30 days	Action—OS/DT	No action
1/1/2018	3/1/2015	2-year 10mo ago	In 60 days	Action—OS/DT	No action
1/1/2018	4/1/2015	2-year 9mo ago	In 90 days	No action	No action

OS/DT—open order set and documentation template

*Due date is based on date of last cervical text plus 3 years.

**defaulting to 'today' would work in this workflow.

Logic for monthly system run:

today	Last screened	Time since last screened	Due date	VA requirement	Current Motive template
1/1/2018	No record	—	???? you wouldn't want to default to 'today' because then the patient would get a notification every month**	??	??
1/1/2018	10/1/2014	3-year 3 mo ago	Within 60-90 days in past	No action	Action—send notification
1/1/2018	11/1/2014	3-year 2 mo ago	Within 30-60 days in past	No action	Action—send notification
1/1/2018	12/1/2014	3-year 1 mo ago	Within 0-30 days ago	Action—send notification	Action—send notification
1/1/2018	2/1/2015	2-year 11mo ago	within 1-30 days in future	Action—send notification	No action
1/1/2018	3/1/2015	2-year 10 mo ago	within 30-60 days in future	Action—send notification	No action
1/1/2018	4/1/2015	2-year 9 mo ago	In 90 days	No action	No action

*Due date is based on date of last cervical text plus 3 years.

**defaulting to 'today' would NOT work in this workflow.

Comment [LLW62]: 1/30/18 KBS: Should be action – up to 3 times.

Comment [LLW61]: 1/30/18 KBS: The clinical program office would need to decide this, but it seems that "today" may be OK because the system should be set up to send a total of 3, and no more than 3 notifications. Motive please comment.