Primary Care: Abnormal Laboratory Value Alert Rule

Rule: Conceptual Structure

Contract: VA118-16-D-1008, Task Order (TO): VA-118-16-F-1008-0007, CLIN0007AA

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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Preface

Table 1. Revision History

Date	Life Cycle Event
June 11, 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	87c046d0-0c41-542b-9d56-2e0207194fa2	O1

Artifact Applicability

Table 4. Applicability Foci, Description and Codes

Focus	Description	Code System	Code	Value Set	Value Set Version
PatientAgeGroup	All			N/A	N/A
ClinicalVenue	All			N/A	N/A
PatientGender	All			N/A	N/A
WorkflowSetting	All			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

No externalData expression definitions are present.

Triggers

Table 1.1. newLaboratoryResult

Trigger: type=DataEventTrigger, DataElementAdded
Expression: type=elm:Retrieve , dataType=ClinicalStatement, codeProperty=topic
Annotation: Any receipt of a laboratory result by the laboratory management system
Codes: elm:element[elm:Code]: [15220000 |Laboratory test (procedure)|]

Chapter 2. Expression Definitions

Table 2.1. abnormalLabResultQuery

Expression: type=elm:Query
Annotation: Abnormal laboratory result query, Value outside of defined normal reference range for test
Codes: elm:operand[elm:Code]: [398166005 |Performed (qualifier value)|]elm:operand[elm:Code]: [[404684003 |Clinical finding (finding)\] ->(363714003 |Interprets (attribute))->[386053000 |Evaluation procedure (procedure)\] ->(363713009 |Has interpretation (attribute))->[263654008 |Abnormal (qualifier value)\]]

Chapter 3. Primary Care: Abnormal Laboratory Value Alerts

Primary Care: Abnormal Laboratory Value Alerts

Notify the clinical provider of the noncritical abnormal laboratory test result through the laboratory management system

actionSentence[type=elm:Instance, classType=anf:TSR-NoModel]

topic: Communicate abnormal lab result to the clinical provider for the abnormal lab value.

Chapter 4. Tabular List

Terminology Service Request (TSR) Mappings

Table 4.1. Terminology Versions

Name	Identifer	Version
SNOMED CT	2.16.840.1.113883.6.96	United States Edition 20180301
RXNorm	2.16.840.1.113883.6.88	5-Mar-18
LOINC	2.16.840.1.113883.6.1	2.61

Table 4.2. Terminology References

System	Code	Display Text[a]	References[b]
SNOMED CT	15220000 |Laboratory test (procedure)|	Precoordinated Expression	1
SNOMED CT	398166005 |Performed (qualifier value)|	Precoordinated Expression	1
SNOMED CT	[404684003 |Clinical finding (finding)] ->(363714003 |Interprets (attribute))->[386053000 | Evaluation procedure (procedure)] ->(363713009 |Has interpretation (attribute))->[263654008 | Abnormal (qualifier value)]	Postcoordinated Expression	1

[a]If a code is used multiple times in the KNART, only the display text of the first instance is shown.

[b]Count of the number of times the given code system and code pair is used in the KNART.

Chapter 5. Behavior Symbols

Table 5.1. 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 5.2. 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 5.3. 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 5.4. 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 5.5. 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 5.6. 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 5.7. 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] *Primary Care: Abnormal and Panic Laboratory Value Alerts Clinical Content White Paper*

[CSD] *Primary Care: Abnormal Laboratory Value Alert Rule Conceptual Structure Document*

[KVRpt] *Primary Care: Abnormal Laboratory Value Alert Rule KNART Validation Report*

Supporting Evidence

[Callen 2012] *J. L. Callen, J. I. Westbrook, A. Georgiou, and J. Li, "Failure to follow-up test results for ambulatory patients: a systematic review.," J. Gen. Intern. Med., vol. 27, no. 10, pp. 1334–1348, Oct. 2012.* (link [https://doi.org/10.1007/s11606-011-1949-5])

[Hickner 2005] *J. M. Hickner, D. H. Fernald, D. M. Harris, E. G. Poon, N. C. Elder, and J. W. Mold, "Issues and initiatives in the testing process in primary care physician offices," Joint Commission journal on quality and patient safety, vol. 31, no. 2, pp. 81–89, Feb. 2005.* (link [https://doi.org/10.1016/S1553-7250(05)31012-9])

[VHA Directive 1088] *U.S. Department of Veterans Affairs, "Communicating Test Results to Providers and Patients," VHA Directive 1088, 07-Oct-2015. [Online]. Available: https://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=3148. [Accessed: 07-Oct-2015].* (link [https://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=3148])

[VHA 1106.01] *VHA Handbook 1106.01: Pathology and Laboratory Medicine Service (P&LMS) procedures. 2016.* (link [https://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=3169])