Rheumatology: Rheumatoid Arthritis Consult Request Documentation Template

Documentation Template: Conceptual Structure

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Knowledge Based Systems (KBS)
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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 1. Revision History

Date	Life Cycle Event
March 21, 2018	Published
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Table 2. Clinical White Paper Contributors

Name	Role	Affiliation
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Table 3. Artifact Identifier

Domain	Artifact ID	Name
urn:va.gov:kbs:knart:artifact:r1	2c3cc-ce7-4e81-590e-b37c-7bd-beccbbe77	B38

Artifact Applicability

Table 4. Applicability Foci, Description and Codes

Focus	Description	Code System Name	Code System	Code	Code System Version	Value Set	Value Set Version
PatientAgeGroup	Population 18 years old or older		SNOMED CT	133936004			
ClinicalVenue	Primary Care						
ClinicalVenue	Outpatient		SNOMED CT	33022008			

Models

Table 5. Model References

Referenced Model	Description
urn:solor.io:anf-model:0.8	VA Analysis Normal Form Model

Chapter 1. External Data Definitions

Definitions

Table 1.1. cReactiveProteinLab

Expression: type=elm:Retrieve , dataType=anf:MeasurementOfLaboratoryTestAction, codeProperty=topicFocus, dateProperty=dateTime	
Annotation: C-reactive protein	
Codes: elm:List	
	element[elm:Code]: C-reactive protein 55235003
dateRange[elm:Interval]	low: elm:Add(elm:Today() elm:Quantity(-3 Month))
	high: elm:Today()

Table 1.2. erythrocyteSedimentationRateLab

Expression: type=elm:Retrieve , dataType=anf:MeasurementOfLaboratoryTestAction, codeProperty=topicFocus, dateProperty=dateTime	
Annotation: Erythrocyte sedimentation rate	
Codes: elm:List	
	element[elm:Code]: Erythrocyte sedimentation rate 416838001
dateRange[elm:Interval]	low: elm:Add(elm:Today() elm:Quantity(-3 Month))
	high: elm:Today()

Table 1.3. hepatitisCAntibodyScreenLab

Expression: type=elm:Retrieve , dataType=anf:MeasurementOfLaboratoryTestAction, codeProperty=topicFocus, dateProperty=dateTime	
Annotation: Hepatitis C antibody screen	
Codes: elm:List	
	element[elm:Code]: Hepatitis C antibody screen 413107006
dateRange[elm:Interval]	low: elm:Add(elm:Today() elm:Quantity(-3 Month))
	high: elm:Today()

Table 1.4. completeBloodCountLab

Expression: type=elm:Retrieve , dataType=anf:MeasurementOfLaboratoryTestAction, codeProperty=topicFocus, dateProperty=dateTime	
Annotation: Complete blood count	
Codes: elm:List	
	element[elm:Code]: Complete blood count 26604007
dateRange[elm:Interval]	low: elm:Add(elm:Today() elm:Quantity(-3 Month))
	high: elm:Today()

Table 1.5. completeMetabolicPanelLab

Expression: type=elm:Retrieve , dataType=anf:MeasurementOfLaboratoryTestAction, codeProperty=topicFocus, dateProperty=dateTime	
Annotation: Complete metabolic panel	
Codes: elm:List	
	element[elm:Code]: Complete metabolic panel 85acf077-d744-48bc-b57a-fa3b5ce12d97
dateRange[elm:Interval]	low: elm:Add(elm:Today() elm:Quantity(-3 Month))
	high: elm:Today()

Table 1.6. rheumatoidFactorLab

Expression: type=elm:Retrieve , dataType=anf:MeasurementOfLaboratoryTestAction, codeProperty=topicFocus, dateProperty=dateTime	
Annotation: Rheumatoid factor	
Codes: elm:List	
	element[elm:Code]: Rheumatoid factor 54921001

Table 1.7. antiCyclicCitrullinatedPeptideAntibodyLab

Expression: type=elm:Retrieve , dataType=anf:MeasurementOfLaboratoryTestAction, codeProperty=topicFocus, dateProperty=dateTime	
Annotation: Anti-cyclic citrullinated peptide antibody	
Codes: elm:List	
	element[elm:Code]: Anti-cyclic citrullinated peptide antibody 408200008

Table 1.8. xRayHandsImaging

Expression: type=elm:Retrieve , dataType=anf:RadiographicImagingOfBodyStructureAction, codeProperty=topicFocus, dateProperty=dateTime	
Annotation: x-ray hands, bilateral, to evaluate for possible rheumatoid arthritis	
Codes: elm:List	
	element[elm:Code]: x-ray hands, bilateral 85562004
dateRange[elm:Interval]	low: elm:Add(elm:Today() elm:Quantity(-12 Month))
	high: elm:Today()

Table 1.9. xRayHandsImagingInterpretation

Expression: type=elm:Retrieve , dataType=anf:InterpretationOfRecordArtifactAction, codeProperty=topicFocus, dateProperty=dateTime	
Annotation:	
Codes: elm:List	
	element[elm:Code]: XR Hand 28582-5
dateRange[elm:Interval]	low: elm:Add(elm:Today() elm:Quantity(-12 Month))
	high: elm:Today()

Chapter 2. History

Please ask the patient the following questions:

✦ Answer Yes or No to the prompt

prompt: Is the duration of joint pain greater than 6 weeks?

response: Boolean (Single)

✦ Answer Yes or No to the prompt

prompt: Are hands or wrists involved?

response: Boolean (Single)

✦ Answer Yes or No to the prompt

prompt: Is morning stiffness present?

response: Boolean (Single)

✦ Answer Yes or No to the prompt

prompt: Did the pain have a gradual onset?

response: Boolean (Single)

◇ Optional additional information

prompt:

response: String (Single)

Chapter 3. Physical Exam

Please answer the following questions and provide any required additional details.

✦ prompt: Are there greater than four joints involved?

response: Boolean (Single)

responseBinding: Property ("greaterThan4Joints")

Condition:elm:IsTrue (elm:Property("greaterThan4Joints" from: elm:ParameterRef (Responses)))

✦ prompt: Specific Joints Affected

response: String (Multiple)

response range: EnumerationConstraint (List)

item: Hand joint pain(202472008)

item: Wrist joint pain(202482009)

☐ prompt: Are there signs of joint inflammation (e.g., warmth, soft tissue swelling, or tenderness)?

response: Boolean (Single)

responseBinding: Property ("signsOfJointInflammation")

Condition:elm:IsTrue (elm:Property("signsOfJointInflammation" from: elm:ParameterRef (Responses)))

☐ prompt: Specific Joints Affected

response: String (Multiple)

☐ prompt: Check all signs that are applicable.

response: Code (Multiple)

response range: EnumerationConstraint (List)

item: Warmth(298256005)

item: Soft Tissue Swelling(271771009)

item: Tenderness(110288007)

Chapter 4. Medication History

Please answer the following questions and provide any required additional details.

prompt:	Current or prior use of disease-modifying anti-rheumatic drugs?
response:	Boolean (Single)
responseBinding:	Property ("currentOrPriorUseOfDMARD")

Condition: elm:IsTrue (elm:Property("currentOrPriorUseOfDMARD" from: elm:ParameterRef (Responses)))	

☀ prompt:	DMARDs
response:	Code (Multiple)
response range:	ValueSetConstraint (List)
response range:	EnumerationConstraint (List)
item:	adalimumab(327361)
item:	etanercept(214555)
item:	hydroxychloroquine(5521)
item:	infliximab(191831)
item:	leflunomide(27169)
item:	methotrexate(6851)
item:	rituximab(121191)
item:	sulfasalazine(9524)
☞ item:	Other
	Please provide details of this medication

prompt:	Was there prior use of prednisone or other glucocorticoids?
response:	Boolean (Single)
responseBinding:	Property ("priorUseOfSteroids")

❖ **Condition:** elm:IsTrue (elm:Property("priorUseOfSteroids" from: elm:ParameterRef (Responses)))	

✦ prompt:	Drug name
response:	String (Single)
prompt:	Date Initiated
response:	Timestamp (Single)

prompt:	If there are any other medication history details, please include them here
response:	String (Single)

Chapter 5. Laboratory Studies

□ prompt:	Obtain Rheumatoid Factor Results and Date
response:	Tuple (Single)
initalValue:	elm:Last (order by: dateTime) rheumatoidFactorLab
□ prompt:	Obtain Anti-cyclic Citrullinated Peptide Antibody (ACPA/Anti-CCP) Result and date
response:	Tuple (Single)
initalValue:	elm:Last (order by: dateTime) antiCyclicCitrullinatedPeptideAntibodyLab
□ prompt:	Obtain Hepatitis C Antibody Screen Results and Date
response:	Tuple (Multiple)
initalValue:	hepatitisCAntibodyScreenLab
□ prompt:	Obtain Complete Blood Count Results and Date
response:	Tuple (Single)
initalValue:	elm:Last (order by: dateTime) completeBloodCountLab
□ prompt:	Obtain Complete Metabolic Panel Results and Date
response:	Tuple (Single)
initalValue:	elm:Last (order by: dateTime) completeMetabolicPanelLab
□ prompt:	Obtain C-Reactive Protein Results and Date
response:	Tuple (Single)
initalValue:	elm:Last (order by: dateTime) cReactiveProteinLab
□ prompt:	Obtain Erythrocyte Sedimentation Rate Results and Date
response:	Tuple (Single)
initalValue:	elm:Last (order by: dateTime) erythrocyteSedimentationRateLab
□ prompt:	Obtain Other Test
response:	String (Single)
response range:	EnumerationConstraint (List)
☞ item:	Other
	Obtain Other Test Results Date

Chapter 6. Imaging and Diagnostic Studies

Attach or link Hand Radiograph	
prompt:	Obtain Hand Radiograph
response:	Tuple (Multiple)
initalValue:	elm:Last (order by: dateTime) xRayHandsImaging

Attach or link Hand Radiograph Interpretation	
prompt:	Obtain Hand Radiograph Interpretation
response:	Tuple (Multiple)
initalValue:	elm:Last (order by: dateTime) xRayHandsImagingInterpretation

Chapter 7. Tabular List

Terminology Service Request (TSR) Mappings

Table 7.1. Terminology References

System	Code	Display Text	References
LOINC	28582-5	XR Hand	1
RXNorm	121191	rituximab	1
RXNorm	191831	infliximab	1
RXNorm	214555	etanercept	1
RXNorm	27169	leflunomide	1
RXNorm	327361	adalimumab	1
RXNorm	5521	hydroxychloroquine	1
RXNorm	6851	methotrexate	1
RXNorm	9524	sulfasalazine	1
SNOMED CT	110288007	Tenderness	1
SNOMED CT	133936004	Population 18 years old or older	1
SNOMED CT	202472008	Hand joint pain	1
SNOMED CT	202482009	Wrist joint pain	1
SNOMED CT	26604007	Complete blood count	1
SNOMED CT	271771009	Soft Tissue Swelling	1
SNOMED CT	298256005	Warmth	1
SNOMED CT	33022008	Outpatient	1
SNOMED CT	408200008	Anti-cyclic citrullinated peptide antibody	1
SNOMED CT	413107006	Hepatitis C antibody screen	1
SNOMED CT	416838001	Erythrocyte sedimentation rate	1
SNOMED CT	54921001	Rheumatoid factor	1
SNOMED CT	55235003	C-reactive protein	1
SNOMED CT	85562004	x-ray hands, bilateral	1
SOLOR	85acf077-d744-48bc-b57a-fa3b5ce12d97	Complete metabolic panel	1

Chapter 8. Behavior Symbols

Table 8.1. 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 8.2. 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 8.3. 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.

Sym-bol	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 8.4. Precheck Behavior

Sym-bol	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 8.5. Cardinality Behavior

Sym-bol	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 8.6. Item Flags

Sym-bol	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.

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] *Rheumatology: Rheumatoid Arthritis Clinical Content White Paper*

[CSD] *Rheumatology: Rheumatoid Arthritis Conceptual Structure Document*

[KVRpt] *Rheumatology: Rheumatoid Arthritis Validation Report*

Supporting Evidence

[Aletaha 2010] *Aletaha, D., Neogi, T., Silman, A. J., Funovits, J., Felson, D. T., Bingham, C. O., et al. (2010). 2010 rheumatoid arthritis classification criteria: An american college of rheumatology/european league against rheumatism collaborative initiative. Arthritis and Rheumatism, 62(9), 2569-2581. doi:10.1002/art.27584 [doi]* (link [https://doi.org/doi:10.1002/art.27584])

[Singh 2015] *Singh, J. A., Saag, K. G., Bridges, S. L., Akl, E. A., Bannuru, R. R., Sullivan, M. C., et al. (2016). 2015 american college of rheumatology guideline for the treatment of rheumatoid arthritis. Arthritis & Rheumatology (Hoboken, N.J.), 68(1), 1-26. doi:10.1002/art.39480 [doi]* (link [https://doi.org/doi:10.1002/art.39480])