

Neurosurgery: Radiculopathy (Cervical) Documentation Template

Documentation Tem- plate: Conceptual Structure

Contract: VA118-16-D-1008, Task Order (TO): VA-118-16-F-1008-0007, CLIN0005AG

Department of Veterans Affairs (VA)



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

Publication date 03/28/2018

Version: 1.0

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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
March 28, 2018	Published
March 28, 2018	Reviewed
July 17, 2017	Created
October 31, 2017	Pre-published

Table 2. Clinical White Paper Contributors

Name	Role	Affiliation
Adamson David (Cory) , MD	Author	Physician, 1670 Clairmont Rd, Atlanta, GA 30033
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Table 3. Artifact Identifier

Domain	Artifact ID	Name
urn:va.gov:kbs:knart:artifact:r1	3ee4e-caf-6185-5d2f-99b1-1ce4b3d44725	B39

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						
ClinicalVenue	Primary Care						
ClinicalVenue	Outpatient being referred to Neurosurgery for Radiculopathy (Cervical)						

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. cervicalSpineX-rays

Expression: type=elm:Query
Annotation:
Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [2904f20f-aaf3-4b68-a580-d84b90f47b93 Diagnostic radiography of cervical spine with flexion and extension studies (procedure)]

Table 1.2. cervicalSpineX-raysInterpretation

Expression: type=elm:Query
Annotation:
Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [[370851004 Evaluation of diagnostic study results (procedure)] ->(363702006 Has focus (attribute))>[2904f20f-aaf3-4b68-a580-d84b90f47b93 Diagnostic radiography of cervical spine with flexion and extension studies (procedure)]]

Table 1.3. cervicalSpineMRI

Expression: type=elm:Query
Annotation:
Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [241646009 Magnetic resonance imaging of cervical spine (procedure)]

Table 1.4. cervicalSpineMRIInterpretation

Expression: type=elm:Query
Annotation:
Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [[370851004 Evaluation of diagnostic study results (procedure)] ->(363702006 Has focus (attribute))>[241646009 Magnetic resonance imaging of cervical spine (procedure)]]

Table 1.5. cervicalSpineMyelogram

Expression: type=elm:Query
Annotation:
Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [2847006 Cervical myelography (procedure)]

Table 1.6. cervicalSpineMyelogramInterpretation

Expression: type=elm:Query
Annotation:
Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [[370851004 Evaluation of diagnostic study results (procedure)] ->(363702006 Has focus (attribute))>[2847006 Cervical myelography (procedure)]]

Table 1.7. cervicalSpineCT

Expression: type=elm:Query
Annotation:
Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [241578008 Computed tomography of cervical spine (procedure)]

Table 1.8. cervicalSpineCTInterpretation

Expression: type=elm:Query
Annotation:
Codes: elm:value[elm:Code]: [398166005 Performed (qualifier value)]elm:value[elm:Code]: [[370851004 Evaluation of diagnostic study results (procedure)] ->(363702006 Has focus (attribute))->[241578008 Computed tomography of cervical spine (procedure)]]

Chapter 2. Chief Complaint

❖ What are the patient's chief complaints?

	<p>◆ prompt: Complaint response: Code (Multiple) response range: EnumerationConstraint (List) item: Pain item: Numbness item: Weakness ☞ item: Other</p> <p>Location of symptoms.</p>
	<p>◆ prompt: Where are these symptoms occurring? response: Code (Multiple) response range: EnumerationConstraint (List) item: Neck Pain([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[81680005 Neck pain (finding)]) item: Neck Weakness([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[249931001 Weakness of neck (finding)]) item: Neck Numbness([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[44077006 Numbness (finding)]- ->(363698007 Finding site (attribute))->[43081002 Skin structure of neck (body structure)]; item: Left Arm Pain([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[22253000 Pain (finding)]- ->(363698007 Finding site (attribute))->[53120007 Upper limb structure (body structure)]- ->(272741003 Laterality (attribute))->[7771000 Left (qualifier value)]; item: Right Arm Pain([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[22253000 Pain (finding)]- ->(363698007 Finding site (attribute))->[53120007 Upper limb structure</p>

	<p>(body structure)]- -(272741003 Laterality (attribute))->[24028007 Right (qualifier value)];)</p> <p>item: Left Arm Numbness([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))->[44077006 Numbness (finding)]- -(363698007 Finding site (attribute))->[53120007 Upper limb structure (body structure)]- -(272741003 Laterality (attribute))->[7771000 Left (qualifier value)];)</p> <p>item: Right Arm Numbness([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))->[44077006 Numbness (finding)]- -(363698007 Finding site (attribute))->[53120007 Upper limb structure (body structure)]- -(272741003 Laterality (attribute))->[24028007 Right (qualifier value)];)</p> <p>item: Left Arm Weakness([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))->[249944006 Monoparesis - arm (disorder)]- -(272741003 Laterality (attribute))->[7771000 Left (qualifier value)];)</p> <p>item: Right Arm Weakness([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))->[249944006 Monoparesis - arm (disorder)]- -(272741003 Laterality (attribute))->[24028007 Right (qualifier value)];)</p> <p>☞ item: Other</p> <p>Details</p> <hr/> <p>Please provide details regarding the character of the pain (e.g., burning, shooting, aching, electric, jabbing, etc.).</p> <hr/> <p>prompt: Pain characteristics</p> <p>response: Code (Multiple)</p> <p>response range: EnumerationConstraint (List)</p> <p>item: burning([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))->[36349006 Burning pain (finding)])</p> <p>item: shooting([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))->[49575005 Shooting pain (finding)])</p> <p>item: aching([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))->[27635008 Aching pain (finding)])</p>
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	<p>item: electric([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[723316007 Electric shock type pain (finding)])</p> <p>item: jabbing([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[55145008 Stabbing pain (finding)])</p> <p>☞ item: Other</p> <p>Details</p>
Duration of symptoms	<p>prompt: What is the duration of symptoms?</p> <p>response: Code (Multiple)</p> <p>response range: EnumerationConstraint (List)</p> <p>item: Acute (less than 2 weeks)([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[54404000 Cervical radiculopathy (disorder)] ->(263502005 Clinical course (attribute))->[373933003 Acute onset (qualifier value)];)</p> <p>item: Subacute (less than 3 months)([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[54404000 Cervical radiculopathy (disorder)] ->(263502005 Clinical course (attribute))->[19939008 Subacute (qualifier value)];)</p> <p>item: Chronic (greater than 3 months)([a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] ->(363702006 Has focus (attribute))->[54404000 Cervical radiculopathy (disorder)] ->(263502005 Clinical course (attribute))->[90734009 Chronic (qualifier value)];)</p>

Chapter 3. Prior Conservative Therapies

Which conservative therapies have been tried?

Medications	
<input type="checkbox"/> ❖	Non-steroidal anti-inflammatory drug (NSAIDs) <div> <input type="checkbox"/> prompt: NSAID response: Code (Single) </div> <div> <input type="checkbox"/> prompt: Dose response: PhysicalQuantity (Single) </div> <div> <input type="checkbox"/> prompt: Date Started response: Timestamp (Single) </div> <div> <input type="checkbox"/> prompt: Date Ended response: Timestamp (Single) </div>
<input type="checkbox"/> ❖	Opioids <div> <input type="checkbox"/> prompt: Opioid Medication response: Code (Single) </div> <div> <input type="checkbox"/> prompt: Dose response: PhysicalQuantity (Single) </div> <div> <input type="checkbox"/> prompt: Date Started response: Timestamp (Single) </div> <div> <input type="checkbox"/> prompt: Date Ended response: Timestamp (Single) </div>
<input type="checkbox"/> ❖	Antiepileptics <div> <input type="checkbox"/> prompt: Antiepileptic Medication response: Code (Single) </div> <div> <input type="checkbox"/> prompt: Dose response: PhysicalQuantity (Single) </div> <div> <input type="checkbox"/> prompt: Date Started response: Timestamp (Single) </div> <div> <input type="checkbox"/> prompt: Date Ended response: Timestamp (Single) </div>
<input type="checkbox"/> ❖	Tricyclic antidepressants <div> <input type="checkbox"/> prompt: Tricyclic antidepressant medication response: Code (Single) </div> <div> <input type="checkbox"/> prompt: Dose response: PhysicalQuantity (Single) </div> <div> <input type="checkbox"/> prompt: Date Started response: Timestamp (Single) </div>

	<input type="checkbox"/>	❖	Other Medications	<input type="checkbox"/> prompt: Date Ended response: Timestamp (Single)
				<input type="checkbox"/> prompt: Other Medication response: Code (Single)
				<input type="checkbox"/> prompt: Dose response: PhysicalQuantity (Single)
				<input type="checkbox"/> prompt: Date Started response: Timestamp (Single)
Other therapies	<input type="checkbox"/>		Occupational Therapy	<input type="checkbox"/> prompt: Date Ended response: Timestamp (Single)
				<input type="checkbox"/> prompt: Other Medication response: Code (Single)
				<input type="checkbox"/> prompt: Dose response: PhysicalQuantity (Single)
				<input type="checkbox"/> prompt: Date Started response: Timestamp (Single)
	<input type="checkbox"/>		Cervical Traction	<input type="checkbox"/> prompt: Date Ended response: Timestamp (Single)
				<input type="checkbox"/> prompt: Other Medication response: Code (Single)
				<input type="checkbox"/> prompt: Dose response: PhysicalQuantity (Single)
				<input type="checkbox"/> prompt: Date Started response: Timestamp (Single)
	<input type="checkbox"/>		Spinal Manipulation	<input type="checkbox"/> prompt: Date Ended response: Timestamp (Single)
				<input type="checkbox"/> prompt: Other Medication response: Code (Single)
				<input type="checkbox"/> prompt: Dose response: PhysicalQuantity (Single)
				<input type="checkbox"/> prompt: Date Started response: Timestamp (Single)

		<p>response: Timestamp (Single)</p> <p><input type="checkbox"/> prompt: Visits</p> <p>response: Integer (Single)</p> <p><input type="checkbox"/> prompt: Outcome</p> <p>response: String (Single)</p>
	<input type="checkbox"/> Cognitive behavioral therapy	<p>Represented Concepts: 304891004 Cognitive - behavior therapy (regime/therapy) </p> <p><input type="checkbox"/> prompt: Therapy Summary</p> <p>response: String (Single)</p> <p><input type="checkbox"/> prompt: Date started</p> <p>response: Timestamp (Single)</p> <p><input type="checkbox"/> prompt: Date ended</p> <p>response: Timestamp (Single)</p> <p><input type="checkbox"/> prompt: Visits</p> <p>response: Integer (Single)</p> <p><input type="checkbox"/> prompt: Outcome</p> <p>response: String (Single)</p>
	<input type="checkbox"/> Pain clinic	<p><input type="checkbox"/> prompt: Therapy Summary</p> <p>response: String (Single)</p> <p><input type="checkbox"/> prompt: Date started</p> <p>response: Timestamp (Single)</p> <p><input type="checkbox"/> prompt: Date ended</p> <p>response: Timestamp (Single)</p> <p><input type="checkbox"/> prompt: Visits</p> <p>response: Integer (Single)</p> <p><input type="checkbox"/> prompt: Outcome</p> <p>response: String (Single)</p>
	<input type="checkbox"/> Selective nerve root blocks	<p>Represented Concepts: 231043002 Local anesthetic block on spinal nerve root (procedure) </p> <p><input type="checkbox"/> prompt: Therapy Summary</p> <p>response: String (Single)</p> <p><input type="checkbox"/> prompt: Date started</p> <p>response: Timestamp (Single)</p> <p><input type="checkbox"/> prompt: Date ended</p> <p>response: Timestamp (Single)</p> <p><input type="checkbox"/> prompt: Visits</p> <p>response: Integer (Single)</p>

	<input type="checkbox"/> prompt: Outcome response: String (Single)
<input type="checkbox"/>	actionSentence[type=elm:Instance, classType=anf:ClinicalStatement] "statementType:Precoordinated Expression topic:Precoordinated Expression" (Codes: 398166005 Performed (qualifier value) 231043002 Local anesthetic block on spinal nerve root (procedure))
<input type="checkbox"/>	Epidural steroid injections
	Represented Concepts: 303611006 Epidural steroid injection (procedure)
	<input type="checkbox"/> prompt: Therapy Summary response: String (Single)
	<input type="checkbox"/> prompt: Date started response: Timestamp (Single)
	<input type="checkbox"/> prompt: Date ended response: Timestamp (Single)
	<input type="checkbox"/> prompt: Visits response: Integer (Single)
	<input type="checkbox"/> prompt: Outcome response: String (Single)
<input type="checkbox"/>	actionSentence[type=elm:Instance, classType=anf:ClinicalStatement] "statementType:Precoordinated Expression topic:Precoordinated Expression" (Codes: 398166005 Performed (qualifier value) 303611006 Epidural steroid injection (procedure))
<input type="checkbox"/> ❖	Other
	<input type="checkbox"/> prompt: Therapy? response: String (Single)
	<input type="checkbox"/> prompt: Therapy Summary response: String (Single)
	<input type="checkbox"/> prompt: Date started response: Timestamp (Single)
	<input type="checkbox"/> prompt: Date ended response: Timestamp (Single)
	<input type="checkbox"/> prompt: Visits response: Integer (Single)
	<input type="checkbox"/> prompt: Outcome response: String (Single)

Chapter 4. Medical History

Select items that apply from the patient's medical history.

☐ Chronic pain

Represented Concepts: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)]- -(363702006 |Has focus (attribute))->[82423001 |Chronic pain (finding)]

☐ prompt: Summary of chronic pain history

response: String (Single)

☐ prompt: Consult date

response: Timestamp (Single)

☐ prompt: Consult results

response: String (Single)

☐ prompt: Current status

response: String (Single)

☐

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

"statementType:Precoordinated Expression topic:Postcoordinated Expression , timing.includeLowerBound: FALSE , timing.includeLowerBound: FALSE , timing.resolution: 1"

(Codes: 398166005 |Performed (qualifier value)| [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)]- -(363702006 |Has focus (attribute))->[82423001 |Chronic pain (finding)])

☐ Post-traumatic stress disorder

Represented Concepts: [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)]- -(363702006 |Has focus (attribute))->[47505003 |Posttraumatic stress disorder (disorder)]

☐ prompt: Summary of post-traumatic stress disorder history

response: String (Single)

☐ prompt: Consult date

response: Timestamp (Single)

☐ prompt: Consult results

response: String (Single)

☐ prompt: Current status

response: String (Single)

☐

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

"statementType:Precoordinated Expression topic:Postcoordinated Expression , timing.includeLowerBound: FALSE , timing.includeLowerBound: FALSE"

(Codes: 398166005 |Performed (qualifier value)| [a997cc03-3e99-40eb-833a-6374c7750a3a |Observation pro-

	cedure (procedure)]- -(363702006 Has focus (attribute))-[47505003 Posttraumatic stress disorder (disorder)]
□	Anxiety
	Represented Concepts: [a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))-[197480006 Anxiety disorder (disorder)]
	<input type="checkbox"/> prompt: Summary anxiety history response: String (Single)
	<input type="checkbox"/> prompt: Consult date response: Timestamp (Single)
	<input type="checkbox"/> prompt: Consult results response: String (Single)
	<input type="checkbox"/> prompt: Current status response: String (Single)
□	
	actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]
	"statementType:Precoordinated Expression topic:Postcoordinated Expression , timing.includeLowerBound: FALSE , timing.includeLowerBound: FALSE , timing.resolution: 1" (Codes: 398166005 Performed (qualifier value) [a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))-[197480006 Anxiety disorder (disorder)]
□	Depression
	Represented Concepts: [a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))-[35489007 Depressive disorder (disorder)]
	<input type="checkbox"/> prompt: Summary depression history response: String (Single)
	<input type="checkbox"/> prompt: Consult date response: Timestamp (Single)
	<input type="checkbox"/> prompt: Consult results response: String (Single)
	<input type="checkbox"/> prompt: Current status response: String (Single)
□	
	actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]
	"statementType:Precoordinated Expression topic:Postcoordinated Expression , timing.includeLowerBound: FALSE , timing.includeLowerBound: FALSE , timing.resolution: 1" (Codes: 398166005 Performed (qualifier value) [a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))-[35489007 Depressive disorder (disorder)]

❖ Other mental conditions

- prompt: Other mental condition
response: String (Single)
- prompt: History
response: String (Single)
- prompt: Consult date
response: Timestamp (Single)
- prompt: Results
response: String (Single)
- prompt: Current status
response: String (Single)

❖ Oncological conditions

- prompt: Summary
response: String (Single)
- prompt: Consult date
response: Timestamp (Single)
- prompt: Results
response: String (Single)
- prompt: Current status
response: String (Single)

Obesity

- prompt: Body Mass Index (BMI)
response: PhysicalQuantity (Single)

responseBinding: Property ("bmi")

□

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

"statementType:Precoordinated Expression topic:Precoordinated Expression , result.lowerBound: bmi , result.upperBound: bmi , result.includeLowerBound: TRUE , result.includeUpperBound: TRUE"

(Codes: 398166005 |Performed (qualifier value)| [a997c-c03-3e99-40eb-833a-6374c7750a3a |Observation procedure (procedure)]- -(363702006 |Has focus (attribute))>[301331008 |Finding of body mass index (finding)])

❖ Cardiovascular conditions

- prompt: Summary
response: String (Single)
- prompt: Consult date
response: Timestamp (Single)
- prompt: Results
response: String (Single)

<div><div></div><div><div><div></div></div></div></div>	<div><div></div><div><div><div></div></div></div></div> <div><div></div><div><div><div></div></div></div></div>
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Chapter 5. Surgical History

Select items that apply from the patient's surgical history.

Represented Concepts: 387713003 |Surgical procedure (procedure)|

❖ Spinal surgery

Represented Concepts: 392236004 |Operative procedure on spinal structure (procedure)|

prompt: Summary

response: String (Single)

prompt: Date

response: Timestamp (Single)

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

"statementType:Precoordinated Expression topic:Precoordinated Expression , result.lowerBound: 0 , timing.includeLowerBound: FALSE , timing.includeLowerBound: FALSE , timing.resolution: 1"

(Codes: 398166005 |Performed (qualifier value)| 392236004 | Operative procedure on spinal structure (procedure)|)

❖ Other prior surgeries

prompt: Summary

response: String (Single)

prompt: Date

response: Timestamp (Single)

Chapter 6. Social History

Select items that apply from the patient's social history.

Alcohol use
Represented Concepts: [a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[704197006 Admits alcohol use (finding)]
<div><div>prompt: Summary</div><div>response: String (Single)</div><div>prompt: Current status</div><div>response: String (Single)</div><div>prompt: Applicable dates</div><div>response: Timestamp (Multiple)</div></div>
<div>actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]</div> <div>"statementType:Precoordinated Expression topic:Postcoordinated Expression , result.lowerBound: 0 , timing.includeLowerBound: FALSE , timing.includeLowerBound: FALSE , timing.resolution: 1"</div> <div>(Codes: 398166005 Performed (qualifier value) [a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[704197006 Admits alcohol use (finding)])</div>
Alcohol abuse
Represented Concepts: [a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[15167005 Alcohol abuse (disorder)]
<div><div>prompt: Summary</div><div>response: String (Single)</div><div>prompt: Current status</div><div>response: String (Single)</div><div>prompt: Applicable dates</div><div>response: Timestamp (Multiple)</div></div>
<div>actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]</div> <div>"statementType:Precoordinated Expression topic:Precoordinated Expression , result.lowerBound: 0 , timing.includeLowerBound: FALSE , timing.includeLowerBound: FALSE , timing.resolution: 1"</div> <div>(Codes: 398166005 Performed (qualifier value) [a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[15167005 Alcohol abuse (disorder)])</div>
Rehabilitation
Represented Concepts: 52052004 Rehabilitation therapy (regime/therapy)

	<p>prompt: Summary</p> <p>response: String (Single)</p> <p>prompt: Current status</p> <p>response: String (Single)</p> <p>prompt: Applicable dates</p> <p>response: Timestamp (Multiple)</p>
	<p>actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]</p> <p>"statementType:Precoordinated Expression topic:Precoordinated Expression"</p> <p>(Codes: 398166005 Performed (qualifier value) 52052004 Rehabilitation therapy (regime/therapy))</p>
Detoxification	
	<p>Represented Concepts: 67516001 Detoxification therapy (regime/therapy) </p>
	<p>prompt: Summary</p> <p>response: String (Single)</p> <p>prompt: Current status</p> <p>response: String (Single)</p> <p>prompt: Applicable dates</p> <p>response: Timestamp (Multiple)</p>
	<p>actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]</p> <p>"statementType:Precoordinated Expression topic:Precoordinated Expression"</p> <p>(Codes: 398166005 Performed (qualifier value) 67516001 Detoxification therapy (regime/therapy))</p>
Current or former tobacco user	
	<p>Represented Concepts: [a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[110483000 Tobacco user (finding)]</p>
	<p>prompt: Summary</p> <p>response: String (Single)</p> <p>prompt: Current status</p> <p>response: String (Single)</p> <p>prompt: Applicable dates</p> <p>response: Timestamp (Multiple)</p> <p>prompt: Pack years</p> <p>response: Integer (Single)</p> <p>responseBinding: Property ("tobaccoPack")</p>
	<p>actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]</p>

	<p>"statementType:Precoordinated Expression topic:Postcoordinated Expression , result.lowerBound: 1 , result.upperBound: tobaccoPack , timing.includeLowerBound: FALSE , timing.includeLowerBound: FALSE , timing.resolution: 1 , result.includeLowerBound: TRUE , result.includeUpperBound: TRUE , result.resolution: 1 , result.measureSemantic:Precoordinated Expression"</p> <p>(Codes: 398166005 Performed (qualifier value) [a997c-c03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))>[110483000 Tobacco user (finding)] 401201003 Cigarette pack-years (observable entity))</p>
Cocaine abuse	
Represented Concepts:	[a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))>[733461000 Cocaine user (finding)]
	<p>prompt: Summary</p> <p>response: String (Single)</p> <p>prompt: Current status</p> <p>response: String (Single)</p> <p>prompt: Applicable dates</p> <p>response: Timestamp (Multiple)</p>
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]	<p>"statementType:Precoordinated Expression topic:Postcoordinated Expression , result.lowerBound: 0 , timing.includeLowerBound: FALSE , timing.includeLowerBound: FALSE"</p> <p>(Codes: 398166005 Performed (qualifier value) [a997c-c03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))>[733461000 Cocaine user (finding)])</p>
Cocaine abuse	
Represented Concepts:	[a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))>[78267003 Cocaine abuse (disorder)]
	<p>prompt: Summary</p> <p>response: String (Single)</p> <p>prompt: Current status</p> <p>response: String (Single)</p> <p>prompt: Applicable dates</p> <p>response: Timestamp (Multiple)</p>
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]	<p>"statementType:Precoordinated Expression topic:Postcoordinated Expression , result.lowerBound: 0 , timing.includeLowerBound: FALSE , timing.includeLowerBound: FALSE"</p>

	(Codes: 398166005 Performed (qualifier value) [a997c-c03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))->[78267003 Cocaine abuse (disorder)])
Homeless	
Represented Concepts:	[a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))->[32911000 Homeless (finding)]
	<p>prompt: Summary</p> <p>response: String (Single)</p> <p>prompt: Current status</p> <p>response: String (Single)</p> <p>prompt: Applicable dates</p> <p>response: Timestamp (Multiple)</p>
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]	<p>"statementType:Precoordinated Expression topic:Postcoordinated Expression , result.lowerBound: 0 , timing.includeLowerBound: FALSE , timing.includeLowerBound: FALSE"</p> <p>(Codes: 398166005 Performed (qualifier value) [a997c-c03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))->[32911000 Homeless (finding)])</p>
Unstable home environment	
Represented Concepts:	[a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))->[276104006 Home unsettled (finding)]
	<p>prompt: Summary</p> <p>response: String (Single)</p> <p>prompt: Current status</p> <p>response: String (Single)</p> <p>prompt: Applicable dates</p> <p>response: Timestamp (Multiple)</p>
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]	<p>"statementType:Precoordinated Expression topic:Postcoordinated Expression , result.lowerBound: 0 , timing.includeLowerBound: FALSE , timing.includeLowerBound: FALSE"</p> <p>(Codes: 398166005 Performed (qualifier value) [a997c-c03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))->[276104006 Home unsettled (finding)])</p>
Home environment conducive to healing	
Represented Concepts:	[a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute))->[224250004 Satisfactory living conditions (finding)]

<p>prompt: Summary</p> <p>response: String (Single)</p> <p>prompt: Current status</p> <p>response: String (Single)</p> <p>prompt: Applicable dates</p> <p>response: Timestamp (Multiple)</p>	
<p>actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]</p> <p>"statementType:Precoordinated Expression topic:Postcoordinated Expression"</p> <p>(Codes: 398166005 Performed (qualifier value) [a997c-c03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute)))->[224250004 Satisfactory living conditions (finding)])</p>	
Geographically remote (40+mile drive to medical care)	
<p>Represented Concepts: [a997cc03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute)))->[b0549379-fc0b-45dc-8a84-befe666432f5 Residence remote from medical facility (finding)]</p>	
<p>prompt: Summary</p> <p>response: String (Single)</p> <p>prompt: Current status</p> <p>response: String (Single)</p> <p>prompt: Applicable dates</p> <p>response: Timestamp (Multiple)</p>	
<p>actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]</p> <p>"statementType:Precoordinated Expression topic:Postcoordinated Expression"</p> <p>(Codes: 398166005 Performed (qualifier value) [a997c-c03-3e99-40eb-833a-6374c7750a3a Observation procedure (procedure)]- -(363702006 Has focus (attribute)))->[b0549379-fc0b-45dc-8a84-befe666432f5 Residence remote from medical facility (finding)])</p>	

Chapter 7. Imaging History

Cervical Spine X-rays images and Interpretation
Attach or link Images: Cervical Spine X-rays with dynamic flexion and extension
<input type="checkbox"/> prompt: Cervical Spine X-rays Images with dynamic flexion and extension response: Tuple (Multiple) initalValue: cervicalSpineX-rays
<input type="checkbox"/> prompt: Cervical Spine X-rays Interpretation with dynamic flexion and extension response: Tuple (Multiple) initalValue: cervicalSpineX-raysInterpretation
Cervical MRI Imaging and Interpretation
Attach or link Images: Cervical MRI
<input type="checkbox"/> prompt: Cervical MRI Image response: Tuple (Multiple) initalValue: cervicalSpineMRI
<input type="checkbox"/> prompt: Cervical MRI Interpretation response: Tuple (Multiple) initalValue: cervicalSpineMRIInterpretation
Cervical Spine Myelogram Image and Interpretation
Attach or link Images: Cervical Spine Myelogram
<input type="checkbox"/> prompt: Cervical Spine Myelogram Image response: Tuple (Multiple) initalValue: cervicalSpineMyelogram
<input type="checkbox"/> prompt: Cervical Spine Myelogram Interpretation response: Tuple (Multiple) initalValue: cervicalSpineMyelogramInterpretation
Cervical Spine CT Image and Interpretation
Cervical Spine CT
<input type="checkbox"/> prompt: Cervical Spine CT Interpretation response: Tuple (Multiple) initalValue: cervicalSpineCT
<input type="checkbox"/> prompt: Cervical Spine CT Interpretation response: Tuple (Multiple) initalValue: cervicalSpineCTInterpretation

Chapter 8. Medications

❖ Current pain medication list

prompt: Pain Medications

response: Code (Single)

❖ Current anticoagulation and antiplatelet list

prompt: Pain Medications

response: Code (Single)

Chapter 9. Surgical Candidacy

prompt: Does patient want to be considered for surgery?

response: Boolean (Single)

prompt: Reason for neurosurgical consult

response: String (Single)

Chapter 10. Tabular List

Terminology Service Request (TSR) Mappings

Table 10.1. Terminology References

System	Code	Display Text	References
SNOMED CT	231043002 Local anesthetic block on spinal nerve root (procedure)	Precoordinated Expression	2
SNOMED CT	241578008 Computed tomography of cervical spine (procedure)	Precoordinated Expression	1
SNOMED CT	241646009 Magnetic resonance imaging of cervical spine (procedure)	Precoordinated Expression	1
SNOMED CT	2847006 Cervical myelography (procedure)	Precoordinated Expression	1
SNOMED CT	2904f20f-aaf3-4b68-a580-d84b90f47b93 Diagnostic radiography of cervical spine with flexion and extension studies (procedure)	Precoordinated Expression	1
SNOMED CT	303611006 Epidural steroid injection (procedure)	Precoordinated Expression	2
SNOMED CT	304891004 Cognitive - behavior therapy (regime/therapy)	Precoordinated Expression	1
SNOMED CT	387713003 Surgical procedure (procedure)	Precoordinated Expression	1
SNOMED CT	392236004 Operative procedure on spinal structure (procedure)	Precoordinated Expression	2
SNOMED CT	398166005 Performed (qualifier value)	Precoordinated Expression	27
SNOMED CT	401201003 Cigarette pack-years (observable entity)	Precoordinated Expression	1
SNOMED CT	52052004 Rehabilitation therapy (regime/therapy)	Precoordinated Expression	2
SNOMED CT	67516001 Detoxification therapy (regime/therapy)	Precoordinated Expression	2
SNOMED CT	[370851004 Evaluation of diagnostic study results (procedure)] - >(363702006 Has focus	Postcoordinated Expression	1

System	Code	Display Text	References
	(attribute))->[241578008 Computed tomography of cervical spine (procedure)]		
SNOMED CT	[370851004 Evaluation of diagnostic study results (procedure)] - >(363702006 Has focus (attribute))->[241646009 Magnetic resonance imaging of cervical spine (procedure)]	Postcoordinated Expression	1
SNOMED CT	[370851004 Evaluation of diagnostic study results (procedure)] - >(363702006 Has focus (attribute))->[2847006 Cervical myelography (procedure)]	Postcoordinated Expression	1
SNOMED CT	[370851004 Evaluation of diagnostic study results (procedure)] - >(363702006 Has focus (attribute))->[2904f20f-aaf3-4b68-a580-d84b90f47b93 Diagnostic radiography of cervical spine with flexion and extension studies (procedure)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[249931001 Weakness of neck (finding)]	Neck Weakness	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[27635008 Aching pain (finding)]	aching	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus	burning	1

System	Code	Display Text	References
	(attribute))->[36349006 Burning pain (finding)]		
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[49575005 Shooting pain (finding)]	shooting	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[55145008 Stabbing pain (finding)]	jabbing	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[723316007 Electric shock type pain (finding)]	electric	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[81680005 Neck pain (finding)]	Neck Pain	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[249944006 Monoparesis - arm (disorder)] - >(272741003 Laterality (attribute))->[24028007 Right (qualifier value)];	Right Arm Weakness	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)] - >(363702006 Has focus (attribute))->[249944006 Monoparesis - arm (disorder)] -	Left Arm Weakness	1

System	Code	Display Text	References
	>(272741003 Laterality (attribute))->[7771000 Left (qualifier value)];		
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- - >(363702006 Has focus (attribute))->[44077006 Numbness (finding)]- - >(363698007 Finding site (attribute))->[43081002 Skin structure of neck (body structure)];	Neck Numbness	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- - >(363702006 Has focus (attribute))->[44077006 Numbness (finding)]- - >(363698007 Finding site (attribute))->[53120007 Upper limb structure (body structure)]- - >(272741003 Laterality (attribute))->[24028007 Right (qualifier value)];	Right Arm Numbness	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- - >(363702006 Has focus (attribute))->[44077006 Numbness (finding)]- - >(363698007 Finding site (attribute))->[53120007 Upper limb structure (body structure)]- - >(272741003 Laterality (attribute))->[7771000 Left (qualifier value)];	Left Arm Numbness	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- - >(363702006 Has focus (attribute))->[22253000 Pain (finding)]- - >(363698007 Finding site (attribute))->[53120007	Right Arm Pain	1

System	Code	Display Text	References
	Upper limb structure (body structure)]- ->(272741003 Laterality (attribute))->[24028007 Right (qualifier value)];		
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[22253000 Pain (finding)]- ->(363698007 Finding site (attribute))->[53120007 Upper limb structure (body structure)]- ->(272741003 Laterality (attribute))->[7771000 Left (qualifier value)];	Left Arm Pain	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[54404000 Cervical radiculopathy (disorder)]- ->(263502005 Clinical course (attribute))->[19939008 Subacute (qualifier value)];	Subacute (less than 3 months)	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[54404000 Cervical radiculopathy (disorder)]- ->(263502005 Clinical course (attribute))->[373933003 Acute onset (qualifier value)];	Acute (less than 2 weeks)	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[54404000 Cervical radiculopathy (disorder)]- ->(263502005 Clinical course (at-	Chronic (greater than 3 months)	1

System	Code	Display Text	References
	tribute))->[90734009 Chronic (qualifier value)];		
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- - >(363702006 Has focus (attribute))->[110483000 Tobacco user (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- - >(363702006 Has focus (attribute))->[15167005 Alcohol abuse (disorder)]	Precoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- - >(363702006 Has focus (attribute))->[197480006 Anxiety disorder (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- - >(363702006 Has focus (attribute))->[224250004 Satisfactory living conditions (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- - >(363702006 Has focus (attribute))->[276104006 Home unsettled (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- - >(363702006 Has focus (attribute))->[301331008 Finding of body mass index (finding)]	Precoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a	Postcoordinated Expression	1

System	Code	Display Text	References
	[Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[32911000 Homeless (finding)]		
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[35489007 Depressive disorder (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[47505003 Posttraumatic stress disorder (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[704197006 Admits alcohol use (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[733461000 Cocaine user (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[78267003 Cocaine abuse (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[82423001 Chronic pain (finding)]	Postcoordinated Expression	1

System	Code	Display Text	References
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[b0549379-fc0b-45d-c-8a84-befe666432f5 Residence remote from medical facility (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[110483000 Tobacco user (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[15167005 Alcohol abuse (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[197480006 Anxiety disorder (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[224250004 Satisfactory living conditions (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[276104006 Home unsettled (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[276104006 Home unsettled (finding)]	Postcoordinated Expression	1

System	Code	Display Text	References
	dure (procedure)]- - >(363702006 Has focus (attribute))->[32911000 Homeless (finding)]		
SNOMED CT	[a997cc03-3e99-40e- b-833a-6374c7750a3a Observation proce- dure (procedure)]- - >(363702006 Has focus (attribute))->[35489007 Depressive disorder (disor- der)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e- b-833a-6374c7750a3a Observation proce- dure (procedure)]- - >(363702006 Has focus (attribute))->[47505003 Posttraumatic stress disor- der (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e- b-833a-6374c7750a3a Observation proce- dure (procedure)]- - >(363702006 Has focus (attribute))->[704197006 Admits alcohol use (find- ing)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e- b-833a-6374c7750a3a Observation proce- dure (procedure)]- - >(363702006 Has focus (attribute))->[733461000 Cocaine user (finding)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e- b-833a-6374c7750a3a Observation proce- dure (procedure)]- - >(363702006 Has focus (attribute))->[78267003 Cocaine abuse (disorder)]	Postcoordinated Expression	1
SNOMED CT	[a997cc03-3e99-40e- b-833a-6374c7750a3a Observation proce- dure (procedure)]- - >(363702006 Has focus (attribute))->[82423001 Chronic pain (finding)]	Postcoordinated Expression	1

System	Code	Display Text	References
SNOMED CT	[a997cc03-3e99-40e-b-833a-6374c7750a3a Observation procedure (procedure)]- ->(363702006 Has focus (attribute))->[b0549379-fc0b-45d-c-8a84-befe666432f5 Residence remote from medical facility (finding)]	Postcoordinated Expression	1

Chapter 11. Behavior Symbols

Table 11.1. Group Organizational Behavior

Sym- bol	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 11.2. Group Selection Behavior

Sym- bol	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 11.3. Required Behavior

Sym- bol	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 11.4. 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 11.5. 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 11.6. 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] *Neurosurgery: Radiculopathy (Cervical) Clinical Content White Paper*

[CSD] *Radiculopathy (Cervical) Conceptual Structure Document*

[KVRpt] *Radiculopathy (Cervical) KNART Validation Report*

Supporting Evidence

[Patel 2012] Patel, Krupa, Clarissa Diamantidis, Min Zhan, Van Doren Hsu, Loreen D Walker, James Gardner, Matthew R Weir, and Jeffrey C Fink. 2012. "Influence of Creatinine versus Glomerular Filtration Rate on Non-Steroidal Anti-Inflammatory Drug Prescriptions in Chronic Kidney Disease." *American Journal of Nephrology* 36 (1): 19–26. doi:10.1159/000339439. (link [<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3417055/>])

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