

Primary Care: Anaphylaxis Treatment Protocol Order Set

Order Set: Conceptual Structure

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

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Primary Care: Anaphylaxis Treatment Protocol Order Set: Order Set: Conceptual Structure

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
April 4, 2018	Published
April 4, 2018	Created
December 6, 2017	Created
December 6, 2017	Pre-published

Table 2. Clinical White Paper Contributors

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Table 3. Artifact Identifier

Domain	Artifact ID	Name
urn:va.gov:kbs:knart:artifact:rl	53e4c891-786c-5d47-8998-d72439fd8731	O16

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	Adult Patient						
WorkflowSetting	Emergency Medicine		SNOMED CT	225728007 Accident and Emergency department (environment)			
ClinicalVenue	Outpatient						
TargetUser	Provider to include Emergency Medicine						
WorkflowTask	Routine		SNOMED CT	50811001 Routine (qualifier value)			

Models

Table 5. Model References

Referenced Model	Description
urn:solor.io:anf-model:1.0	VA Analysis Normal Form Model

Chapter 1. Medications

⊕ epinephrine auto-injector 0.3 mg solution intramuscular 1 time inject into anterolateral thigh as needed; repeat once if needed; seek medical care immediately upon use. Quantity 2 auto-injectors with 2 refills (routine)

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

"statementType:Precoordinated Expression topic:Postcoordinated Expression , unstructured: seek medical care immediately upon use , unstructured: Quantity 2 auto-injectors with 2 refills , requestedResult.lowerBound: 1 , requestedResult.upperBound: 2 , requestedResult.includeLowerBound: TRUE , requestedResult.includeUpperBound: TRUE , requestedResult.measureSemantic:Precoordinated Expression , priority:Precoordinated Expression"

(Codes: 385644000 |Requested (qualifier value)| [416118004 |Administration (procedure)] ->(260686004 |Method (attribute))>[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))>[Rx;1989112 0.3 ML EPINEPHrine 1 MG/ML Prefilled Syringe] ->(410675002 |Route of administration (attribute))>[78421000 |Intramuscular route (qualifier value)] ->(405813007 |Procedure site - Direct (attribute))>[68367000 |Thigh structure (body structure)] 385218009 |Injection (qualifier value)| 50811001 |Routine (qualifier value)|)

⊕ epinephrine auto-injector 0.3 mg solution subcutaneous 1 time inject into anterolateral thigh as needed; repeat once if needed; seek medical care immediately upon use. Quantity 2 auto-injectors with 2 refills (routine)

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

"statementType:Precoordinated Expression topic:Postcoordinated Expression , unstructured: seek medical care immediately upon use , unstructured: Quantity 2 auto-injectors with 2 refills , requestedResult.lowerBound: 1 , requestedResult.upperBound: 2 , requestedResult.includeLowerBound: TRUE , requestedResult.includeUpperBound: TRUE , requestedResult.measureSemantic:Precoordinated Expression , priority:Precoordinated Expression"

(Codes: 385644000 |Requested (qualifier value)| [416118004 |Administration (procedure)] ->(260686004 |Method (attribute))>[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))>[Rx;1989112 0.3 ML EPINEPHrine 1 MG/ML Prefilled Syringe] ->(410675002 |Route of administration (attribute))>[34206005 |Subcutaneous route (qualifier value)] ->(405813007 |Procedure site - Direct (attribute))>[68367000 |Thigh structure (body structure)] 385218009 |Injection (qualifier value)| 50811001 |Routine (qualifier value)|)

Chapter 2. Consults and Referrals

- consult Allergy Service to evaluate patient following episode of anaphylaxis (routine)

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

"statementType:Precoordinated Expression topic:Precoordinated Expression , purpose[0]:Postcoordinated Expression , priority:Precoordinated Expression"

(Codes: 385644000 |Requested (qualifier value)| 1351000205108 |Allergy service consultation and report (procedure) [386053000 |Evaluation procedure (procedure)] ->(363702006 |Has focus (attribute))->[39579001 |Anaphylaxis (disorder)] 50811001 |Routine (qualifier value)|)

-
- consult Immunology Service to evaluate patient following episode of anaphylaxis (routine)

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

"statementType:Precoordinated Expression topic:Postcoordinated Expression , purpose[0]:Postcoordinated Expression , priority:Precoordinated Expression"

(Codes: 385644000 |Requested (qualifier value)| 1361000205106 |Immunology service consultation and report (procedure) [386053000 |Evaluation procedure (procedure)] ->(363702006 |Has focus (attribute))->[39579001 |Anaphylaxis (disorder)] 50811001 |Routine (qualifier value)|)

Chapter 3. Patient and Caregiver Education

- Use of epinephrine autoinjector education (routine)

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

"statementType:Postcoordinated Expression topic:Precoordinated Expression , priority:Precoordinated Expression"

(Codes: 385644000 |Requested (qualifier value)| 1251000205104 |Education about epinephrine autoinjector use (procedure) 50811001 |Routine (qualifier value)|)

- Anaphylaxis action plan education (routine)

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

"statementType:Postcoordinated Expression topic:Postcoordinated Expression , priority:Precoordinated Expression"

(Codes: 385644000 |Requested (qualifier value)| [409073007 |Education (procedure)] ->(363702006 |Has focus (attribute))->[386512002 |Anaphylaxis management (regime/therapy)] 50811001 |Routine (qualifier value)|)

- Medications that can interfere with anaphylaxis treatment education (routine)

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

"statementType:Postcoordinated Expression topic:Postcoordinated Expression , priority:Precoordinated Expression"

(Codes: 385644000 |Requested (qualifier value)| [428391000124104 |Medication interaction with medication education (procedure)] ->(363702006 |Has focus (attribute))->[737855007 |Anaphylaxis care (regime/therapy)] 50811001 |Routine (qualifier value)|)

- Avoidance of potential triggers education (routine)

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

"statementType:Postcoordinated Expression topic:Precoordinated Expression , priority:Precoordinated Expression"

(Codes: 385644000 |Requested (qualifier value)| 1381000205101 |Allergy trigger education (procedure) 50811001 |Routine (qualifier value)|)

- Medical identification jewelry education (routine)

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

"statementType:Postcoordinated Expression topic:Postcoordinated Expression , priority:Precoordinated Expression"

(Codes: 385644000 |Requested (qualifier value)| 1391000205104 |Education about medical identification jewelry (procedure) 50811001 |Routine (qualifier value)|)

- Medication cross-reactivity education (routine)

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

"statementType:Postcoordinated Expression topic:Precoordinated Expression , priority:Precoordinated Expression"

(Codes: 385644000 |Requested (qualifier value)| 428391000124104 |Medication interaction with medication education (procedure) 50811001 |Routine (qualifier value)|)

- Food cross-reactivity education (routine)

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

"statementType:Precoordinated Expression topic:Precoordinated Expression , priority:Pre-coordinated Expression"

(Codes: 385644000 |Requested (qualifier value)| 1401000205101 |Food interaction with food education (procedure) 50811001 |Routine (qualifier value)|)

Chapter 4. Tabular List

Terminology Service Request (TSR) Mappings

Table 4.1. Terminology References

System	Code	Display Text	References
SNOMED CT	1251000205104 Education about epinephrine autoinjector use (procedure)	Precoordinated Expression	1
SNOMED CT	1351000205108 Allergy service consultation and report (procedure)	Precoordinated Expression	1
SNOMED CT	1361000205106 Immunology service consultation and report (procedure)	Postcoordinated Expression	1
SNOMED CT	1381000205101 Allergy trigger education (procedure)	Precoordinated Expression	1
SNOMED CT	1391000205104 Education about medical identification jewelry (procedure)	Postcoordinated Expression	1
SNOMED CT	1401000205101 Food interaction with food education (procedure)	Precoordinated Expression	1
SNOMED CT	225728007 Accident and Emergency department (environment)	Emergency Medicine	1
SNOMED CT	385218009 Injection (qualifier value)	Precoordinated Expression	2
SNOMED CT	385644000 Requested (qualifier value)	Precoordinated Expression	11
SNOMED CT	428391000124104 Medication interaction with medication education (procedure)	Precoordinated Expression	1
SNOMED CT	50811001 Routine (qualifier value)	Precoordinated Expression	12
SNOMED CT	[386053000 Evaluation procedure (procedure)] ->(363702006 Has focus (attribute))->[39579001 Anaphylaxis (disorder)]	Postcoordinated Expression	2
SNOMED CT	[409073007 Education (procedure)] ->(363702006 Has focus (attribute))->[386512002	Postcoordinated Expression	1

System	Code	Display Text	References
	Anaphylaxis management (regime/therapy)]		
SNOMED CT	[416118004 Administration (procedure)] ->(260686004 Method (attribute))->[129445006 Administration - action (qualifier value)] ->(363701004 Direct substance (attribute))->[Rx;1989112 0.3 ML EPINEPHrine 1 MG/ML Prefilled Syringe] ->(410675002 Route of administration (attribute))->[34206005 Subcutaneous route (qualifier value))] ->(405813007 Procedure site - Direct (attribute))->[68367000 Thigh structure (body structure)]	Postcoordinated Expression	1
SNOMED CT	[416118004 Administration (procedure)] ->(260686004 Method (attribute))->[129445006 Administration - action (qualifier value)] ->(363701004 Direct substance (attribute))->[Rx;1989112 0.3 ML EPINEPHrine 1 MG/ML Prefilled Syringe] ->(410675002 Route of administration (attribute))->[78421000 Intramuscular route (qualifier value)] ->(405813007 Procedure site - Direct (attribute))->[68367000 Thigh structure (body structure)]	Postcoordinated Expression	1
SNOMED CT	[428391000124104 Medication interaction with medication education (procedure)] ->(363702006 Has focus (attribute))->[737855007 Anaphylaxis care (regime/therapy)]	Postcoordinated Expression	1

Chapter 5. Behavior Symbols

Table 5.1. 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 5.2. 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 5.3. 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 5.4. 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 5.5. 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 5.6. 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] *Primary Care: Anaphylaxis Treatment Protocol Clinical Content White Paper*

[CSD] *Primary Care: Anaphylaxis Treatment Protocol Conceptual Structure Document*

[KVRpt] *Primary Care: Anaphylaxis Treatment Protocol KNART Validation Report*

Supporting Evidence

[NLM 2017a] *LABEL: EPIPEN - epinephrine injection; EPIPEN JR- epinephrine injection [Internet].: National Library of Medicine; 2017. Available from: <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=7560c201-9246-487c-a13b-6295db04274a>. (link [<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=7560c201-9246-487c-a13b-6295db04274a>])*

[Lieberman 2015] *Lieberman, Phillip, et al. 'Anaphylaxis--a practice parameter update 2015.' Annals of Allergy, Asthma & Immunology 115.5 (2015): 341-384. (link [[http://www.annallergy.org/article/S1081-1206\(15\)00515-3/abstract](http://www.annallergy.org/article/S1081-1206(15)00515-3/abstract)])*

[Campbell 2014] *Campbell, Ronna L., et al. 'Emergency department diagnosis and treatment of anaphylaxis: a practice parameter.' Annals of Allergy, Asthma & Immunology 113.6 (2014): 599-608. (link [[http://www.annallergy.org/article/S1081-1206\(14\)00743-1/abstract](http://www.annallergy.org/article/S1081-1206(14)00743-1/abstract)])*