Endocrinology: Hypoglycemia Order Set

Order Set: Conceptual Structure

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Department of Veterans Affairs (VA)

Knowledge Based Systems (KBS)
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Clinical Decision Support (CDS)

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Endocrinology: Hypoglycemia 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
June 18, 2018	Published
May 17, 2018	Published
May 17, 2018	Reviewed
April 20, 2018	Pre-published
April 20, 2018	Created

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	b5c97034-fb05-5d16-9102-ca6b75b56d25	B33

Artifact Applicability

Table 4. Applicability Foci, Description and Codes

Focus	Description	Code System	Code	Value Set	Value Set Version
TargetUser	Clinical Providers			N/A	N/A
PatientAgeGroup	Adult outpatient with an active problem of either diabetes mellitus, type 1 or type 2	SNOMED CT	133936004 |Adult (person)|	N/A	N/A
ClinicalVenue	Emergency Department (ED)			N/A	N/A
ClinicalVenue	inpatient hospital			N/A	N/A
ClinicalVenue	urgent care			N/A	N/A
ClinicalVenue	ambulatory care clinic			N/A	N/A
WorkflowTask	Care and Management of the Diabetic Patient			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

Table 1.1. insulin

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic
Annotation: active medication of regular insulin or isophane insulin (NPH)
Codes: elm:element[elm:Code]: [[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[126210001 |Human insulin product (product)]]elm:element[elm:Code]: [[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[416089000 |Isophane insulin human (product)]]

Table 1.2. sulfonylurea

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic
Annotation: sulfonylurea medication
Codes: elm:element[elm:Code]: [[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[34012005 |Product containing sulfonylurea (medicinal product)]]

Table 1.3. glucagon

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic
Annotation: glucagon medication
Codes: elm:element[elm:Code]: [[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[10712001 |Product containing glucagon (medicinal product)]]

Table 1.4. hypoglycemicEpisodeOrRisk

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic
Annotation: evaluation of a hypoglycemic episode or hypoglycemia risk
Codes: elm:element[elm:Code]: [[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[10712001 |Product containing glucagon (medicinal product)]]elm:element[elm:Code]: [[225338004 |Risk assessment (procedure)] ->(363702006 |Has focus (attribute))->[237630007 |Hypoglycemic disorder (disorder)]]

Table 1.5. anyTypeOfInsulin

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic
Annotation: active medication of any type of insulin
Codes: elm:element[elm:Code]: [[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[39487003 |Product containing insulin (medicinal product)]]

Triggers

No trigger definitions are present.

Chapter 2. Expression Definitions

No expression definitions are present.

Chapter 3. Medications

The Medications section should be available to clinical providers for any patients presenting for evaluation of a hypoglycemic episode or hypoglycemia risk

Condition:elm:Exists (insulin)

Insulin

Discontinue regular insulin (now)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [304540007 |Recommendation to stop drug treatment (procedure)]- ->363702006 |Has focus (attribute))->[416118004 |Administration (procedure)]- ->(363701004 |Direct substance (attribute))->[39487003 |Product containing insulin (medicinal product)];

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Discontinue NPH insulin (now)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [304540007 |Recommendation to stop drug treatment (procedure)]- ->363702006 |Has focus (attribute))->[416118004 |Administration (procedure)]- ->(363701004 |Direct substance (attribute))->[412220005 |Isophane insulin nph (product)];

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Insulin aspart solution subcutaneous 3 refills (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[388452006 |Product containing insulin aspart (medicinal product)] ->(410675002 |Route of administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Insulin glargine solution subcutaneous 3 refills (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 | Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[126212009 |Product containing insulin glargine (medicinal product)] ->(410675002 |Route of administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Insulin detemir solution subcutaneous 3 refills (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 | Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[414518007 |Product containing insulin detemir (medicinal product)] ->(410675002 |Route of administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Condition:elm:Exists (sulfonylurea)

Sulfonylureas

Discontinue glyburide (now)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [304540007 |Recommendation to stop drug treatment (procedure)]- ->363702006 |Has focus (attribute))->[416118004 |Administration (procedure)]- ->(363701004 |Direct substance (attribute))->[Rx;4815 glyBURIDE];

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Glipizide 5 mg tablet oral 3 refills (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 | Direct substance (attribute))->[Rx;310490 glipiZIDE 5 MG Oral Tablet] ->(410675002 |Route of administration (attribute))->[260548002 |Oral (qualifier value)]

unstructured[0]: 3 refills

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Condition:elm:Exists (glucagon)

Glucagon

Glucagon 1 mg solution subcutaneous; Use as needed for clinically significant hypoglycemia when situationally appropriate (e.g., blood glucose less than or equal to 54 mg/dL or other threshold as specified in patient treatment plan, or as directed and required by circumstances); Dissolve glucagon in accompanying diluent before administering; repeat after 15 minutes if delayed response; Dispense 2 kits; 3 refills (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;310497 glucagon (rDNA) 1 MG Injection] ->(410675002 |Route of administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]

unstructured[0]: dispense 2 kits; 3 refills

unstructured[1]: Use as needed for clinically significant hypoglycemia when situationally appropriate (e.g., blood glucose less than or equal to 54 mg/dL or other threshold as specified in patient treatment plan, or as directed and required by circumstances); Dissolve glucagon in accompanying diluent before administering; repeat after 15 minutes if delayed response

purpose[0]: Postcoordinated Expression [277132007 |Therapeutic procedure (procedure)] ->(363702006 |Has focus (attribute))->[302866003 |Hypoglycemia (disorder)]

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Chapter 4. Supplies

Condition:elm:Exists (hypoglycemicEpisodeOrRisk)

Glucose Monitoring Supplies

Blood glucose monitoring device dispense 1 device

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [439894008 |Provision of device (procedure)] ->(363699004 |Direct device (attribute))->[354068006 |Blood glucose monitoring equipment (physical object)]

unstructured[0]: 1 device

Blood glucose monitoring test strips dispense 1 box; 3 refills

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [439894008 |Provision of device (procedure)] ->(363699004 |Direct device (attribute))->[337388004 |Blood glucose testing strips (physical object)]

unstructured[0]: 1 box, 3 refills

Blood glucose monitoring lancets dispense 1 box; 3 refills

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [439894008 |Provision of device (procedure)] ->(363699004 |Direct device (attribute))->[5110c3ba-4e1d-4929-8c44-9f6c09ba6425 |Blood glucose monitoring lancet (physical object)]

unstructured[0]: 1 box, 3 refills

Alcohol swabs dispense 1 box; 3 refills

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [439894008 |Provision of device (procedure)] ->(363699004 |Direct device (attribute))->[356858000 |Isopropyl alcohol 70% injection swab (physical object)]

unstructured[0]: 1 box, 3 refills

Blood glucose monitoring control solution dispense 1 bottle; 3 refills

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [439894008 |Provision of device (procedure)] ->(363699004 |Direct device (attribute))->[f60e8123-93bd-462b-94bf-41bcc4ed8685 |Blood glucose monitoring control solution (physical object)]

unstructured[0]: 1 bottle, 3 refills

Condition:elm:Exists (anyTypeOfInsulin)

Insulin Supplies

Insulin syringes dispense 1 box; 3 refills

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [439894008 |Provision of device (procedure)] ->(363699004 |Direct device (attribute))->[462662009 |Insulin syringe, fixed-needle (physical object)]

Chapter 5. Laboratory Tests

Conditions
Condition:elm:Exists (hypoglycemicEpisodeOrRisk)

Basic metabolic profile

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 1421000205106 |Basic metabolic panel (procedure)|

HbA1c

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 43396009 |Hemoglobin A1c measurement (procedure)|

Fasting blood glucose

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 271062006 |Fasting blood glucose measurement (procedure)|

Serum creatinine

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 113075003 |Creatinine measurement, serum (procedure)|

Urinary albumin-to-creatinine ratio

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 271075006 |Urine albumin/creatinine ratio measurement (procedure)|

Urinalysis

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 27171005 |Urinalysis (procedure)|

Complete blood count

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 26604007 |Complete blood count (procedure)|

Liver function tests

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 26958001 |Hepatic function panel (procedure)|

Fasting lipid profile

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|
topic: Precoordinated Expression 252150008 |Fasting lipid profile (procedure)|

Chapter 6. Point-of-Care Tests

Conditions
Condition:elm:Exists (hypoglycemicEpisodeOrRisk)

Fingerstick blood glucose 1 time (now)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 302789003 |Capillary blood glucose measurement (procedure)|

Dipstick urine ketones 1 time (now)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 271347000 |Urine dipstick for ketones (procedure)|

Dipstick urine albumin 1 time (now)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 271346009 |Urine dipstick for protein (procedure)|

Chapter 7. Consults and Referrals

Consult care management to evaluate risks related to the patient's ability to adhere to the treatment plan. Factors evaluated should include access to and ability to use self-monitoring of blood glucose (SMBG) device, glucagon, and insulin injections as directed as well as other factors that may increase the patient's risk of hypoglycemia (e.g., food insufficiency). Actions to be taken may include connecting the patient to appropriate services to mitigate risks, ensuring availability and patient understanding of the patient-specific symptom action plan, and identification and management of any psychosocial barriers to care (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 97ebe45b-29b3-4ef6-8e87-766934db5eb7 |Case management consultation and report (procedure)|

unstructured[0]: Factors evaluated should include access to and ability to use self-monitoring of blood glucose (SMBG) device, glucagon, and insulin injections as directed as well as other factors that may increase the patient's risk of hypoglycemia (e.g., food insufficiency). Actions to be taken may include connecting the patient to appropriate services to mitigate risks, ensuring availability and patient understanding of the patient-specific symptom action plan, and identification and management of any psychosocial barriers to care

purpose[0]: Postcoordinated Expression [225338004 |Risk assessment (procedure)] ->(363702006 |Has focus (attribute))->[397695000 |Finding related to ability to comply with treatment (finding)]

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Consult nutrition service (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression c86bf351-ec7e-4310-ae35-5cfc41d3f9fe |Nutrition and food services consultation and report (procedure)|

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Consult social services to evaluate psychosocial barriers to care (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 935b3-168e-4e9a-96d2-4135409ce715 |Social services consultation and report (procedure)|

unstructured[0]: evaluate functional status issues that may interfere with diabetes self-management

purpose[0]: Precoordinated Expression [386053000 |Evaluation procedure (procedure)] ->(284465006 |Finding relating to psychosocial functioning (finding)]

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Consult occupational therapy to evaluate functional status issues that may interfere with diabetes self-management (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [11429006 |Consultation (procedure)] ->(363702006 | Has focus (attribute))->[84478008 |Occupational therapy (regime/therapy)]

unstructured[0]: evaluate functional status issues that may interfere with diabetes self-management

purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)] ->(363702006 |Has focus (attribute))->[248536006 |Finding of functional performance and activity (finding)]

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Consult physical therapy to evaluate functional status issues that may interfere with diabetes self-management (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 71318009 |Physical medicine consultation and report (procedure)|

unstructured[0]: evaluate functional status issues that may interfere with diabetes self-management

purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)] ->(363702006 |Has focus (attribute))->[248536006 |Finding of functional performance and activity (finding)]

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Consult diabetes education to evaluate self-management issues such as knowledge and skill deficiencies (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Postcoordinated Expression [11429006 |Consultation (procedure)] ->(363702006 | Has focus (attribute))->[385805005 |Diabetic care education (procedure)]

unstructured[0]: evaluate self-management issues such as knowledge and skill deficiencies

purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)] ->(363702006 |Has focus (attribute))->[733863009 |Assessment of readiness for self-management (procedure)]

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Consult psychiatry to evaluate mental health issues that may interfere with diabetes self-management (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression [bc33b934-5dd3-4742-a09d-ef2d2187bb11 |Psychiatric consultation and report (procedure)

unstructured[0]: evaluate mental health issues that may interfere with diabetes self-management

purpose[0]: Postcoordinated Expression [386053000 |Evaluation procedure (procedure)] ->(363702006 |Has focus (attribute))->[413307004 |Mental health problem (finding)]

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Consult geriatric medicine to evaluate hypoglycemia risk (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 901c349c-4a30-4b36-8d5c-a8c03da98f61 |Geriatric medicine consultation and report (procedure)|

purpose[0]: Postcoordinated Expression [225338004 |Risk assessment (procedure)] ->(363702006 |Has focus (attribute))->[302866003 |Hypoglycemia (disorder)]

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Consult clinical pharmacy to evaluate diabetic medication therapy (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 484734b5-57e4-4a57-9800-0cee25db8573 |Clinical pharmacy consultation and report (procedure)|

purpose[0]: Precoordinated Expression 394725008 |Diabetes medication review (procedure)|

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Chapter 8. Patient and Caregiver Education

Conditions
Condition:elm:Exists (hypoglycemicEpisodeOrRisk)

Diabetes self-management education (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|

topic: Precoordinated Expression 398773005 |Diabetes self-monitoring health education (procedure)|

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

Provide patient with link for on-line education

Unresolved related resource reference (root='LocalDocBook', extension='e10')

Chapter 9. Tabular List

Terminology Service Request (TSR) Mappings

Table 9.1. Terminology Versions

Name	Identifer	Version
SNOMED CT	2.16.840.1.113883.6.96	United States Edition 20180301

Table 9.2. Terminology References

System	Code	Display Text[a]	References[b]
SNOMED CT	113075003 |Creatinine measurement, serum (procedure)|	Precoordinated Expression	1
SNOMED CT	133936004 |Adult (person)|	Adult outpatient with an active problem of either diabetes mellitus, type 1 or type 2	1
SNOMED CT	1421000205106 |Basic metabolic panel (procedure)|	Precoordinated Expression	1
SNOMED CT	252150008 |Fasting lipid profile (procedure)|	Precoordinated Expression	1
SNOMED CT	26604007 |Complete blood count (procedure)|	Precoordinated Expression	1
SNOMED CT	26958001 |Hepatic function panel (procedure)|	Precoordinated Expression	1
SNOMED CT	271062006 |Fasting blood glucose measurement (procedure)|	Precoordinated Expression	1
SNOMED CT	271075006 |Urine albumin/creatinine ratio measurement (procedure)|	Precoordinated Expression	1
SNOMED CT	271346009 |Urine dipstick for protein (procedure)|	Precoordinated Expression	1
SNOMED CT	271347000 |Urine dipstick for ketones (procedure)|	Precoordinated Expression	1
SNOMED CT	27171005 |Urinalysis (procedure)|	Precoordinated Expression	1
SNOMED CT	302789003 |Capillary blood glucose measurement (procedure)|	Precoordinated Expression	1
SNOMED CT	385644000 |Requested (qualifier value)|	Precoordinated Expression	36
SNOMED CT	394725008 |Diabetes medication review (procedure)|	Precoordinated Expression	1

System	Code	Display Text[a]	References[b]
SNOMED CT	398773005 |Diabetes self-monitoring health education (procedure)|	Precoordinated Expression	1
SNOMED CT	43396009 |Hemoglobin A1c measurement (procedure)|	Precoordinated Expression	1
SNOMED CT	484734b5-57e4-4a57-9800-0ee25dcb8573 |Clinical pharmacy consultation and report (procedure)|	Precoordinated Expression	1
SNOMED CT	50811001 |Routine (qualifier value)|	Precoordinated Expression	18
SNOMED CT	71318009 |Physical medicine consultation and report (procedure)|	Precoordinated Expression	1
SNOMED CT	901c349c-4a30-4b36-8d5c-a8c03da98f61 |Geriatric medicine consultation and report (procedure)|	Precoordinated Expression	1
SNOMED CT	935b3-168e-4e9a-96d2-413[illegible]409ce715 |Social services consultation and report (procedure)|	Precoordinated Expression	1
SNOMED CT	97ebe45b-29b3-4e-f6-8e87-766934db5eb7 | Case management consultation and report (procedure)|	Precoordinated Expression	1
SNOMED CT	[11429006 |Consultation (procedure)] ->(363702006 |Has focus (attribute))->[385805005 |Diabetic care education (procedure)]	Postcoordinated Expression	1
SNOMED CT	[11429006 |Consultation (procedure)] ->(363702006 |Has focus (attribute))->[84478008 |Occupational therapy (regime/therapy)]	Postcoordinated Expression	1
SNOMED CT	[225338004 |Risk assessment (procedure)] ->(363702006 |Has focus (attribute))->[237630007 |Hypoglycemic disorder (disorder)]	Postcoordinated Expression	1
SNOMED CT	[225338004 |Risk assessment (procedure)] ->(363702006 |Has focus	Postcoordinated Expression	1

System	Code	Display Text[a]	References[b]
	(attribute))->[302866003 | Hypoglycemia (disorder)]		
SNOMED CT	[225338004 |Risk assessment (procedure)] ->(363702006 |Has focus (attribute))->[397695000 |Finding related to ability to comply with treatment (finding)]	Postcoordinated Expression	1
SNOMED CT	[277132007 |Therapeutic procedure (procedure)] ->(363702006 |Has focus (attribute))->[302866003 | Hypoglycemia (disorder)]	Postcoordinated Expression	1
SNOMED CT	[304540007 |Recommendation to stop drug treatment (procedure)]- ->363702006 |Has focus (attribute))->[416118004 |Administration (procedure)]- ->(363701004 |Direct substance (attribute))->[39487003 | Product containing insulin (medicinal product)];	Postcoordinated Expression	1
SNOMED CT	[304540007 |Recommendation to stop drug treatment (procedure)]- ->363702006 |Has focus (attribute))->[416118004 |Administration (procedure)]- ->(363701004 |Direct substance (attribute))->[412220005 |Isophane insulin nph (product)];	Postcoordinated Expression	1
SNOMED CT	[304540007 |Recommendation to stop drug treatment (procedure)]- ->363702006 |Has focus (attribute))->[416118004 |Administration (procedure)]- ->(363701004 |Direct substance (attribute))->[Rx;4815 glyBURIDE];	Postcoordinated Expression	1
SNOMED CT	[386053000 |Evaluation procedure (procedure)] ->(284465006 |Finding	Precoordinated Expression	1

System	Code	Display Text[a]	References[b]
	relating to psychosocial functioning (finding)]		
SNOMED CT	[386053000 |Evaluation procedure (procedure)] ->(363702006 |Has focus (attribute))->[248536006 | Finding of functional performance and activity (finding)]	Postcoordinated Expression	2
SNOMED CT	[386053000 |Evaluation procedure (procedure)] ->(363702006 |Has focus (attribute))->[413307004 |Mental health problem (finding)]	Postcoordinated Expression	1
SNOMED CT	[386053000 |Evaluation procedure (procedure)] ->(363702006 |Has focus (attribute))->[733863009 |Assessment of readiness for self-management (procedure)]	Postcoordinated Expression	1
SNOMED CT	[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 | Direct substance (attribute))->[10712001 |Product containing glucagon (medicinal product)]	Postcoordinated Expression	2
SNOMED CT	[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 | Direct substance (attribute))->[126210001 | Human insulin product (product)]	Postcoordinated Expression	1
SNOMED CT	[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - ac-	Postcoordinated Expression	1

System	Code	Display Text[a]	References[b]
	tion (qualifier value)] ->(363701004 | Direct substance (attribute))->[126212009 | Product containing insulin glargine (medicinal product)] ->(410675002 |Route of administration (attribute))->[34206005 | Subcutaneous route (qualifier value)]		
SNOMED CT	[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 | Direct substance (attribute))->[34012005 | Product containing sulfonylurea (medicinal product)]	Postcoordinated Expression	1
SNOMED CT	[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 | Direct substance (attribute))->[388452006 | Product containing insulin aspart (medicinal product)] ->(410675002 |Route of administration (attribute))->[34206005 | Subcutaneous route (qualifier value)]	Postcoordinated Expression	1
SNOMED CT	[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 | Direct substance (attribute))->[39487003 | Product containing insulin (medicinal product)]	Postcoordinated Expression	1

System	Code	Display Text[a]	References[b]
SNOMED CT	[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 | Direct substance (attribute))->[414518007 | Product containing insulin detemir (medicinal product)] ->(410675002 |Route of administration (attribute))->[34206005 | Subcutaneous route (qualifier value)]	Postcoordinated Expression	1
SNOMED CT	[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 | Direct substance (attribute))->[416089000 | Isophane insulin human (product)]	Postcoordinated Expression	1
SNOMED CT	[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 | Direct substance (attribute))->[Rx;310490 glipiZIDE 5 MG Oral Tablet] ->(410675002 | Route of administration (attribute))->[260548002 | Oral (qualifier value)]	Postcoordinated Expression	1
SNOMED CT	[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 | Direct substance (attribute))->[Rx;310497 glucagon (rDNA) 1 MG	Postcoordinated Expression	1

System	Code	Display Text[a]	References[b]
	Injection] ->(410675002 |Route of administration (attribute))->[34206005 | Subcutaneous route (qualifier value)]		
SNOMED CT	[439894008 |Provision of device (procedure)] ->(363699004 |Direct device (attribute))->[337388004 |Blood glucose testing strips (physical object)]	Postcoordinated Expression	1
SNOMED CT	[439894008 |Provision of device (procedure)] ->(363699004 |Direct device (attribute))->[354068006 | Blood glucose monitoring equipment (physical object)]	Postcoordinated Expression	1
SNOMED CT	[439894008 |Provision of device (procedure)] ->(363699004 |Direct device (attribute))->[356858000 | Isopropyl alcohol 70% injection swab (physical object)]	Postcoordinated Expression	1
SNOMED CT	[439894008 |Provision of device (procedure)] ->(363699004 |Direct device (attribute))->[462662009 |Insulin syringe, fixed-needle (physical object)]	Postcoordinated Expression	1
SNOMED CT	[439894008 |Provision of device (procedure)] ->(363699004 |Direct device (attribute))->[5110c3ba-4e1d-4929-8c44-9f6c09ba6425 |Blood glucose monitoring lancet (physical object)]	Postcoordinated Expression	1
SNOMED CT	[439894008 |Provision of device (procedure)] ->(363699004 |Direct device (attribute))->[f60e8123-93bd-462b-94bf-41bcc4ed8685 |Blood glucose	Postcoordinated Expression	1

System	Code	Display Text[a]	References[b]
	monitoring control solution (physical object)]		
SNOMED CT	[bc33b934-5d-d3-4742-a09d-ef2d2187b-b11 |Psychiatric consultation and report (procedure)	Precoordinated Expression	1
SNOMED CT	c86bf351-ec7e-4310-ae35-5cfc41d3f9fe |Nutrition and food services consultation and report (procedure)|	Precoordinated 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 10. Behavior Symbols

Table 10.1. 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 10.2. 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 10.3. 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 10.4. 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 10.5. 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 10.6. 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 10.7. 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] *Endocrinology: Hypoglycemia Clinical Content White Paper*

[CSD] *Endocrinology: Hypoglycemia Order Set Conceptual Structure Document*

[KVRpt] *Endocrinology: Hypoglycemia Order Set KNART Validation Report*

Supporting Evidence

[ADA, 2017] *American Diabetes Association. Diabetes Care. Standards of medical care in diabetes-20172017;40(suppl 1):S1-S135* (link [http://care.diabetesjournals.org/content/diacare/suppl/2016/12/15/40.Supplement_1.DC1/DC_40_S1_final.pdf])

[O'Neil 2015] *O'Neil G. V1-High Risk for Hypoglycemia. June 4, 2015 VISN 1 hypoglycemia reminder PowerPoint (Linda Wedemeyer, MD, email communication, July 10, 2017)* (link [V1_HIGH RISK FOR HYPOGLYCEMIA.PowerPoint.ppt.])

[Seaquist 2013] *Seaquist ER, Anderson J, Childs B, et al. Hypoglycemia and diabetes: a report of a workgroup of the American Diabetes Association and the Endocrine Society. Diabetes Care. 2013;36(5):1384-1395* (link [https://doi.org/10.2337/dc12-2480])

[NLM 2015a] *U.S. National Libray of Medicine. GLIPIZIDE- glipizide tablet (Actavis Pharma, Inc.). DailyMed Website. Revised June 2015* (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=ad55dfd7-ffb5-478a-aa84-1009fa921e22])

[NLM 2017a] *U.S. National Library of Medicine. GLUCAGON- glucagon [Eli Lilly and Company]. DailyMed Website. Revised May 2017* (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=f143db10-e889-41c3-84ed-603a0ab02f61])

[NLM 2015b] *U.S. National Library of Medicine. LANTUS- insulin glargine injection, solution, LANTUS SOLOSTAR-insulin glargine injection, solution [sanofi-aventis U.S. LLC]. DailyMed WebsiteRevised August 2015* (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=d5e07a0c-7e14-4756-9152-9fea485d654a])

[NLM 2015c] *U.S. National Library of Medicine. LEVEMIR- insulin detemir injection, solution [Novo Nordisk]. DailyMed Website Revised February 2015* (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=d38d65c1-25bf-401d-9c7e-a2c3222da8af])

[NLM 2017b] *U.S. National Library of Medicine. NOVOLOG- insulin aspart injection, solution [Novo Nordisk]. DailyMed Website. Revised March 2017* (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=3a1e73a2-3009-40d0-876c-b4cb2be56fc5])

[VA 5.0-2017] *U.S. Department of Veterans Affairs and U.S. Department of Defense. VA/DoD Clinical Practice Guideline for the Management of Type 2 Diabetes Mellitus in Primary Care, version 5.0—2017.*

VA/DoD Clinical Practice Guidelines website (link [https://www.healthquality.va.gov/guidelines/CD/diabetes/VADoDDMCPGFinal508.pdf])