Cardiology: Venous thromboembolism (VTE) Prophylaxis Order Set

Order Set: Conceptual Structure

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Department of Veterans Affairs (VA)

Cardiology: Venous thromboembolism (VTE) Prophylaxis 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 12, 2018	Published
April 3, 2018	Published
April 3, 2018	Reviewed
August 29, 2017	Pre-published
August 10, 2017	Created

Table 2. Clinical White Paper Contributors

Name	Role	Affiliation
Bruce Bray, MD	Author	Professor, Cardiovascular Medicine, University of Utah School of Medicine; Staff Cardiologist, Salt Lake City VA Medical Center (VAMC)
Scott Wall, MD	Author	Assistant Professor, Cardiovascular Medicine, University of Utah; School of Medicine Staff Cardiologist, Electrophysiology, Salt Lake City VAMC, Salt Lake City, UT 84148
Aiden Abidov, MD PhD	Author	Professor of Medicine, Wayne State University; Section Chief, Cardiology, John Dingell VAMC, 4646 John R St, Detroit, MI 48201
Claibe Yarbrough, MD	Author	National Program Director, North Texas VHCS, Pulmonary/ Critical Care/Sleep Medicine, Dallas, TX, 4500 S Lancaster, Dallas, TX 75216
Benjamin Brooke, MD	Author	Attending SLC VAMC, Surgery Services, Salt Lake City, UT, 508 Fulton St, Durham, NC 27705

Table 3. Artifact Identifier

Domain	Artifact ID	Name
urn:va.gov:kbs:knart:artifact:r1	78885b6c-569b-5a75-bc75-cef8b2d861dc	O25

Artifact Applicability

Table 4. Applicability Foci, Description and Codes

Focus	Description	Code System	Code	Value Set	Value Set Version
TargetUser	Hospitalist, residents, and other ordering providers involved in managing the patient cohort, and nurses	SNOMED CT	4a0ec59e-7f9a-452e-95ac-01efd0b52a4e |Hospitalist physician (occupation)	N/A	N/A
ClinicalVenue	Inpatient	SNOMED CT	416800000 | Inpatient (person)|	N/A	N/A
ClinicalVenue	Medical and/or Surgical Service	SNOMED CT	702860000 |General surgery clinic (environment)|	N/A	N/A
PatientAgeGroup	Adult inpatients without known VTE and not pregnant			N/A	N/A
PatientGender	All			N/A	N/A

Models

Table 5. Model References

Referenced Model	Description
urn:solor.io:anf-model:0.9	VA Analysis Normal Form Model

Chapter 1. External Data Definitions

No externalData expression definitions and no trigger definitions are present.

Chapter 2. Expression Definitions

Table 2.1. Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

Expression: type=elm:Instance

Annotation:

Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)|]elm:value[elm:Code]: [[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 | Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;978733 0.2 ML Dalteparin Sodium 25000 UNT/ML Prefilled Syringe] ->(410675002 |Route of administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]]elm:value[elm:Code]: [385218009 |Injection (qualifier value)|]elm:value[elm:Code]: [50811001 |Routine (qualifier value)|]elm:value[elm:Code]: [258703001 |day (qualifier value)|]elm:value[elm:Code]: [258703001 | day (qualifier value)|]]

Table 2.2. Heparin 5000 U solution subcutaneous daily 2 times (routine)

Expression: type=elm:Instance

Annotation:

Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)|]elm:value[elm:Code]: [[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;849699 0.2 ML heparin calcium 25000 UNT/ML Prefilled Syringe] ->(410675002 |Route of administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]]elm:value[elm:Code]: [385218009 |Injection (qualifier value)|]elm:value[elm:Code]: [50811001 |Routine (qualifier value)|]elm:value[elm:Code]: [258703001 |day (qualifier value)|]elm:value[elm:Code]: [258703001 | day (qualifier value)|]]

Table 2.3. Fondaparinux 2.5 mg solution subcutaneous daily 1 time (routine)

Expression: type=elm:Instance

Annotation:

Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)|]elm:value[elm:Code]: [[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;861360 0.5 ML Fondaparinux sodium 5 MG/ML Prefilled Syringe] ->(410675002 |Route of administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]]elm:value[elm:Code]: [385218009 |Injection (qualifier value)|]elm:value[elm:Code]: [50811001 |Routine (qualifier value)|]elm:value[elm:Code]: [258703001 |day (qualifier value)|]elm:value[elm:Code]: [258703001 | day (qualifier value)|]]

Table 2.4. Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

Expression: type=elm:Instance

Annotation:

Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)|]elm:value[elm:Code]: [[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;854235 0.4 ML Enoxaparin sodium 100 MG/ML Prefilled Syringe] ->(410675002 |Route of

administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]]elm:value[elm:Code]: [385218009 |Injection (qualifier value)|]elm:value[elm:Code]: [50811001 |Routine (qualifier value)|]elm:value[elm:Code]: [258703001 |day (qualifier value)|]elm:value[elm:Code]: [258703001 | day (qualifier value)|]

Table 2.5. Intermittent pneumatic compression (routine)

Expression: type=elm:Instance

Annotation:

Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)|]elm:value[elm:Code]: [443448006 |Application of intermittent pneumatic compression device (procedure)|]elm:value[elm:Code]: [50811001 |Routine (qualifier value)|]

Table 2.6. Graduated compressed stockings (routine)

Expression: type=elm:Instance

Annotation:

Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)|]elm:value[elm:Code]: [[129425003 |Application - action (qualifier value)] ->(363699004 |Direct device (attribute))->[465885d2-268c-49a8-93e3-c90ed3b6643b |Graduated compression stockings (physical object)]]elm:value[elm:Code]: [50811001 |Routine (qualifier value)|]

Chapter 3. Resources and Risk Stratification: Medical Patients

This section should be available for all medical patients.

([Padua 2018])	Padua VTE Risk Caclulator link [https://www.mdcalc.com/padua-prediction-score-risk-vte]
# prompt:	Acknowledge?
response:	Boolean (Single)

Chapter 4. Medications: Medical Patients

This section should be available for all medical patients requiring pharmacological VTE prophylaxis

Acutely Ill Patients

This subsection should be available for all acutely ill medical patients at increased risk of thrombosis who are not bleeding or at high risk for bleeding

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

Heparin 5000 U solution subcutaneous daily 2 times (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Heparin 5000 U solution subcutaneous daily 2 times (routine)

Heparin 5000 U solution subcutaneous daily 3 times (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;849699 0.2 ML heparin calcium 25000 UNT/ML Prefilled Syringe] ->(410675002 |Route of administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]

requestedResult.lowerBound: 1

requestedResult.upperBound: 1

requestedResult.includeLowerBound: true

requestedResult.includeUpperBound: true

requestedResult.measureSemantic: Precoordinated Expression 385218009 |Injection (qualifier value)|

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

repetition[0].periodDuration.lowerBound: 1

repetition[0].periodDuration.includeLowerBound: true

repetition[0].periodDuration.includeUpperBound: false

repetition[0].periodDuration.resolution: 1

repetition[0].periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

repetition[0].eventFrequency.lowerBound: 3

repetition[0].eventFrequency.upperBound: 3

repetition[0].eventFrequency.includeLowerBound: true

repetition[0].eventFrequency.includeUpperBound: true

repetition[0].eventFrequency.resolution: 1

repetition[0].eventFrequency.measureSemantic:
Precoordinated Expression 258703001 |day (qualifier value)|

Fondaparinux 2.5 mg solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Fondaparinux 2.5 mg solution subcutaneous daily 1 time
(routine)

Critically Ill Patients

This subsection should be available for all critically ill medical patients at increased risk of
thrombosis who are not bleeding or at high risk for bleeding

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

Heparin 5000 U solution subcutaneous daily 2 times (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Heparin 5000 U solution subcutaneous daily 2 times (routine)

Chapter 5. Procedures: Medical Patients

This section should be available for all medical patients requiring mechanical VTE prophylaxis, particularly those who are at increased risk of bleeding events

Acutely Ill Patients

This subsection should be available for all acutely ill medical patients at increased risk of thrombosis who are bleeding or at high risk for major bleeding

Graduated compressed stockings (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Graduated compressed stockings (routine)

Intermittent pneumatic compression (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Intermittent pneumatic compression (routine)

Critically Ill Patients

This subsection should be available for all critically ill medical patients at increased risk of thrombosis who are bleeding or at high risk for major bleeding

Graduated compressed stockings routine

actionSentence[type=elm:ExpressionRef, classType=]

Graduated compressed stockings (routine)

Intermittent pneumatic compression routine

actionSentence[type=elm:ExpressionRef, classType=]

Intermittent pneumatic compression (routine)

Chapter 6. Resources and Risk Stratification: Nonorthopedic Surgical Patients

This section should be available for all nonorthopedic surgical patients.

([Padua 2018])	Padua VTE Risk Caclulator link [https://www.mdcalc.com/padua-prediction-score-risk-vte]
([Caprini 2018])	Caprini Risk Assessment – Online Version – Venous Resource Center link [https://venousdisease.com/dvt-risk-assessment-online/]
([Bates 2012])	VTE, Thrombophilia, Antithrombotic Therapy, and Pregnancy: Antithrombotic Therapy and Prevention of Thrombosis, 9th Ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines link [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3278054/]
# prompt:	Acknowledge
response:	Boolean (Single)

Chapter 7. Activity: Nonorthopedic Surgical Patients

This section should be available for all nonorthopedic surgery patients requiring VTE prophylaxis

General and Abdominal-Pelvic Surgery Patients at Very Low Risk for VTE

This subsection should be available for all general and abdominal-pelvic surgery patients at very low risk for VTE

Ambulate with assistance 1 time per shift (routine)

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

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

topic: Precoordinated Expression 1111000205107 |Ambulating with assistance (regime/therapy)

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

repetition[0].eventFrequency.lowerBound: 8

repetition[0].eventFrequency.upperBound: 8

repetition[0].eventFrequency.includeLowerBound: true

repetition[0].eventFrequency.includeUpperBound: true

repetition[0].eventFrequency.resolution: 1

repetition[0].eventFrequency.measureSemantic: Precoordinated Expression 258702006 |hour (qualifier value)|

Bed to chair 1 time per shift (routine)

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

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

topic: Precoordinated Expression 445970000 |Moving subject from bed to chair (procedure)|

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

repetition[0].eventFrequency.lowerBound: 8

repetition[0].eventFrequency.upperBound: 8

repetition[0].eventFrequency.includeLowerBound: true

repetition[0].eventFrequency.includeUpperBound: true

repetition[0].eventFrequency.resolution: 1

repetition[0].eventFrequency.measureSemantic: Precoordinated Expression 258702006 |hour (qualifier value)|

Up ad lib now

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

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

topic: Precoordinated Expression 423791005 |Ambulation without limitation (regime/therapy)|

priority: Precoordinated Expression 49499008 |Stat (qualifier value)|

Chapter 8. Medications: Nonorthopedic Surgical Patients

This section should be available for all nonorthopedic surgery patients requiring pharmacological VTE prophylaxis

General and Abdominal-Pelvic Surgery Patients at Moderate Risk for VTE
This subsection should be available for all general and abdominal-pelvic surgery patients at moderate risk for VTE who are not at high risk for major bleeding complications
# Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)
actionSentence[type=elm:ExpressionRef, classType=]
Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)
# Dalteparin 2500 U solution subcutaneous daily 1 time (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;978725 0.2 ML Dalteparin Sodium 12500 UNT/ML Prefilled Syringe] ->(410675002 |Route of administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]
requestedResult.lowerBound: 1
requestedResult.upperBound: 1
requestedResult.includeLowerBound: true
requestedResult.includeUpperBound: true
requestedResult.measureSemantic: Precoordinated Expression 385218009 |Injection (qualifier value)|
priority: Precoordinated Expression 50811001 |Routine (qualifier value)|
repetition[0].periodDuration.lowerBound: 1
repetition[0].periodDuration.includeLowerBound: true
repetition[0].periodDuration.includeUpperBound: false
repetition[0].periodDuration.resolution: 1
repetition[0].periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|
repetition[0].eventFrequency.lowerBound: 1
repetition[0].eventFrequency.upperBound: 1
repetition[0].eventFrequency.includeLowerBound: true
repetition[0].eventFrequency.includeUpperBound: true
repetition[0].eventFrequency.resolution: 1

repetition[0].eventFrequency.measureSemantic:
Precoordinated Expression 258703001 |day (qualifier value)|

Heparin 5000 U solution subcutaneous daily 2 times (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Heparin 5000 U solution subcutaneous daily 2 times (routine)

General and Abdominal-Pelvic Surgery Patients at High Risk for VTE

This subsection should be available for all general and abdominal-pelvic surgery patients at high risk for VTE who are not at high risk for major bleeding complications

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

Heparin 5000 U solution subcutaneous daily 2 times (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Heparin 5000 U solution subcutaneous daily 2 times (routine)

General and Abdominal-Pelvic Surgery Patients at High Risk for VTE with Inability to Use Either LMWH or UFH

This subsection should be available for all general and abdominal-pelvic surgery patients at high risk for VTE for whom both LMWH and UFH are contraindicated or unavailable and who are not at high risk for major bleeding complications

Fondaparinux 2.5 mg solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Fondaparinux 2.5 mg solution subcutaneous daily 1 time (routine)

Aspirin 160 mg tablet oral daily 1 time (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;243670 Aspirin 81 MG Oral Tablet] ->(410675002 |Route of administration (attribute))->[26643006 |Oral route (qualifier value)]

requestedResult.lowerBound: 2

requestedResult.upperBound: 2

requestedResult.includeLowerBound: true

requestedResult.includeUpperBound: true

requestedResult.measureSemantic: Precoordinated Expression 421026006 |Oral tablet (qualifier value)|

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

repetition[0].periodDuration.lowerBound: 1

repetition[0].periodDuration.includeLowerBound: true

repetition[0].periodDuration.includeUpperBound: false

repetition[0].periodDuration.resolution: 1

repetition[0].periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

repetition[0].eventFrequency.lowerBound: 1

repetition[0].eventFrequency.upperBound: 1

repetition[0].eventFrequency.includeLowerBound: true

repetition[0].eventFrequency.includeUpperBound: true

repetition[0].eventFrequency.resolution: 1

repetition[0].eventFrequency.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

Cardiac Surgery Patients with Nonhemorrhagic Surgical Complications

This subsection should be available for all cardiac surgery patients whose inpatient stay is prolonged by nonhemorrhagic surgical complications

Heparin 5000 U solution subcutaneous daily 2 times (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Heparin 5000 U solution subcutaneous daily 2 times (routine)

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

Thoracic Surgery Patients at Moderate Risk for VTE

This subsection should be available for all thoracic surgery patients at moderate risk for VTE who are not at high risk for perioperative bleeding

Heparin 5000 U solution subcutaneous daily 2 times (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Heparin 5000 U solution subcutaneous daily 2 times (routine)

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

Thoracic Surgery Patients at High Risk for VTE

This subsection should be available for all thoracic surgery patients at high risk for VTE who are not at high risk for perioperative bleeding

Heparin 5000 U solution subcutaneous daily 2 times (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Heparin 5000 U solution subcutaneous daily 2 times (routine)

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

Craniotomy Patients at Very High Risk for VTE

This subsection should be available for all craniotomy patients at very high risk for VTE once adequate hemostasis is established and the risk of bleeding decreases

Heparin 5000 U solution subcutaneous daily 2 times (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Heparin 5000 U solution subcutaneous daily 2 times (routine)

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

Fondaparinux 2.5 mg solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Fondaparinux 2.5 mg solution subcutaneous daily 1 time (routine)

Spinal Surgery Patients at High Risk for VTE

This subsection should be available for all spinal surgery patients at high risk for VTE once adequate hemostasis is established and the risk of bleeding decreases

Heparin 5000 U solution subcutaneous daily 2 times (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Heparin 5000 U solution subcutaneous daily 2 times (routine)

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

Fondaparinux 2.5 mg solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Fondaparinux 2.5 mg solution subcutaneous daily 1 time (routine)

Major Trauma Patients

This subsection should be available for all major trauma patients without contraindication

Heparin 5000 U solution subcutaneous daily 2 times (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Heparin 5000 U solution subcutaneous daily 2 times (routine)

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Enoxaparin 40 mg solution subcutaneous daily 1 time (routine)

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

Chapter 9. Procedures: Nonorthopedic Surgical Patients

This section should be available for all nonorthopedic surgical patients requiring mechanical VTE prophylaxis, particularly those who are at increased risk of bleeding events

General and Abdominal-Pelvic Surgery Patients at Low Risk for VTE

This subsection should be available for all general and abdominal-pelvic surgery patients at low risk for VTE

Intermittent pneumatic compression (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Intermittent pneumatic compression (routine)

General and Abdominal-Pelvic Surgery Patients at Moderate Risk for VTE

This subsection should be available for all general and abdominal-pelvic surgery patients at moderate risk for VTE

Intermittent pneumatic compression (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Intermittent pneumatic compression (routine)

Graduated compression stockings (routine)

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

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

topic: Postcoordinated Expression [129425003 |Application - action (qualifier value)] ->(363699004 |Direct device (attribute))->[465885d2-268c-49a8-93e3-c90ed3b6643b | Graduated compression stockings (physical object)]

General and Abdominal-Pelvic Surgery Patients at High Risk for VTE

This subsection should be available for all general and abdominal-pelvic surgery patients at high risk for VTE

Intermittent pneumatic compression (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Intermittent pneumatic compression (routine)

Cardiac Surgery Patients

This subsection should be available for all cardiac surgery patients

Intermittent pneumatic compression (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Intermittent pneumatic compression (routine)

Thoracic Surgery Patients at High Risk for VTE

This subsection should be available for all thoracic surgery patients at high risk for VTE

Intermittent pneumatic compression (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Intermittent pneumatic compression (routine)

Graduated compression stockings (routine)

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

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

topic: Postcoordinated Expression [129425003 |Application - action (qualifier value)] ->(363699004 |Direct device (attribute))->[465885d2-268c-49a8-93e3-c90ed3b6643b | Graduated compression stockings (physical object)]

Craniotomy Patients

This subsection should be available for all craniotomy patients

Intermittent pneumatic compression (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Intermittent pneumatic compression (routine)

Spinal Surgery Patients

This subsection should be available for all spinal surgery patients

Intermittent pneumatic compression (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Intermittent pneumatic compression (routine)

Major Trauma Patients

This subsection should be available for all major trauma patients without contraindication due to lower-extremity injury

Intermittent pneumatic compression (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Intermittent pneumatic compression (routine)

Chapter 10. Activity: Orthopedic Surgical Patients

This section should be available for all orthopedic surgical patients requiring VTE prophylaxis.

> This section should be available to clinical providers and should be prompted to consider early mobilization as indicated by postoperative activity orders for the given surgery, context, and objectives related to weightbearing status.
>
> | # prompt: | Acknowledge? |
> |---|---|
> | response: | Boolean (Single) |

Chapter 11. Medications: Orthopedic Surgical Patients

This section should be available for all orthopedic surgery patients requiring pharmacological VTE prophylaxis.

Total Hip Arthoplasty, Total Knee Arthoplasty, and Hip Fracture Surgery Patients

This subsection should be available for all total hip arthroplasty, total knee arthroplasty, and hip fracture surgery patients.

Enoxaparin 30 mg solution subcutaneous every 12 hours (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;854228 0.3 ML Enoxaparin sodium 100 MG/ML Prefilled Syringe] ->(410675002 |Route of administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]

requestedResult.lowerBound: 1

requestedResult.upperBound: 1

requestedResult.includeLowerBound: true

requestedResult.includeUpperBound: true

requestedResult.measureSemantic: Precoordinated Expression 385218009 |Injection (qualifier value)|

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

repetition[0].periodDuration.lowerBound: 1

repetition[0].periodDuration.includeLowerBound: true

repetition[0].periodDuration.includeUpperBound: false

repetition[0].periodDuration.resolution: 1

repetition[0].periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

repetition[0].eventFrequency.lowerBound: 12

repetition[0].eventFrequency.upperBound: 12

repetition[0].eventFrequency.includeLowerBound: true

repetition[0].eventFrequency.includeUpperBound: true

repetition[0].eventFrequency.resolution: 1

repetition[0].eventFrequency.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

Enoxaparin 40 mg solution subcutaneous daily 1 time (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;854235 0.4 ML Enoxaparin sodium 100 MG/ML Prefilled Syringe] ->(410675002 |Route of administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]

requestedResult.lowerBound: 1

requestedResult.upperBound: 1

requestedResult.includeLowerBound: true

requestedResult.includeUpperBound: true

requestedResult.measureSemantic: Precoordinated Expression 385218009 |Injection (qualifier value)|

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

repetition[0].periodDuration.lowerBound: 1

repetition[0].periodDuration.includeLowerBound: true

repetition[0].periodDuration.includeUpperBound: false

repetition[0].periodDuration.resolution: 1

repetition[0].periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

repetition[0].eventFrequency.lowerBound: 1

repetition[0].eventFrequency.upperBound: 1

repetition[0].eventFrequency.includeLowerBound: true

repetition[0].eventFrequency.includeUpperBound: true

repetition[0].eventFrequency.resolution: 1

repetition[0].eventFrequency.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Dalteparin 5000 U solution subcutaneous daily 1 time (routine)

Fondaparinux 2.5 mg solution subcutaneous daily 1 time (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Fondaparinux 2.5 mg solution subcutaneous daily 1 time (routine)

Warfarin tablet oral per protocol (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;1161791 Warfarin Pill] ->(410675002 |Route of administration (attribute))->[26643006 |Oral route (qualifier value)]

unstructured[0]: per protocol

Apixaban 2.5 mg tablet oral daily 2 times (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;1364435 apixaban 2.5 MG Oral Tablet] ->(410675002 |Route of administration (attribute))->[26643006 |Oral route (qualifier value)]

requestedResult.lowerBound: 1

requestedResult.upperBound: 1

requestedResult.includeLowerBound: true

requestedResult.includeUpperBound: true

requestedResult.resolution: 1

requestedResult.measureSemantic: Precoordinated Expression 421026006 |Oral tablet (qualifier value)|

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

repetition[0].periodDuration.lowerBound: 1

repetition[0].periodDuration.includeLowerBound: true

repetition[0].periodDuration.includeUpperBound: false

repetition[0].periodDuration.resolution: 1

repetition[0].periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

repetition[0].eventFrequency.lowerBound: 2

repetition[0].eventFrequency.upperBound: 2

repetition[0].eventFrequency.includeLowerBound: true

repetition[0].eventFrequency.includeUpperBound: true

repetition[0].eventFrequency.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

Rivaroxaban 10 mg tablet oral daily 1 time (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;1114198 rivaroxaban 10 MG Oral Tablet] ->(410675002 |Route of administration (attribute))->[26643006 |Oral route (qualifier value)]

requestedResult.lowerBound: 1

requestedResult.upperBound: 1

requestedResult.includeLowerBound: true

requestedResult.includeUpperBound: true

requestedResult.resolution: 1

requestedResult.measureSemantic: Precoordinated Expression 421026006 |Oral tablet (qualifier value)|

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

repetition[0].periodDuration.lowerBound: 1

repetition[0].periodDuration.includeLowerBound: true

repetition[0].periodDuration.includeUpperBound: false

repetition[0].periodDuration.resolution: 1

repetition[0].periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

repetition[0].eventFrequency.lowerBound: 1

repetition[0].eventFrequency.upperBound: 1

repetition[0].eventFrequency.includeLowerBound: true

repetition[0].eventFrequency.includeUpperBound: true

repetition[0].eventFrequency.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

Aspirin 81 mg tablet oral daily 1 time with intermittent pneumatic compression device begun intraoperatively and continued postoperatively through duration of hospital stay (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;243670 Aspirin 81 MG Oral Tablet] ->(410675002 |Route of administration (attribute))->[26643006 |Oral route (qualifier value)]

requestedResult.lowerBound: 2

requestedResult.upperBound: 2

requestedResult.includeLowerBound: true

requestedResult.includeUpperBound: true

requestedResult.measureSemantic: Precoordinated Expression 421026006 |Oral tablet (qualifier value)|

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

repetition[0].periodDuration.lowerBound: 1

repetition[0].periodDuration.includeLowerBound: true

repetition[0].periodDuration.includeUpperBound: false

repetition[0].periodDuration.resolution: 1

repetition[0].periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

repetition[0].eventFrequency.lowerBound: 1

repetition[0].eventFrequency.upperBound: 1

repetition[0].eventFrequency.includeLowerBound: true

repetition[0].eventFrequency.includeUpperBound: true

repetition[0].eventFrequency.resolution: 1

repetition[0].eventFrequency.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

Chapter 12. Procedures: Orthopedic Surgical Patients

This section should be available for all orthopedic surgical patients requiring mechanical VTE prophylaxis, particularly those who are at increased risk of bleeding events.

Total Hip Arthoplasty, Total Knee Arthoplasty, and Hip Fracture Surgery Patients

This subsection should be available for all acutely ill medical patients at increased risk of thrombosis who are bleeding or at high risk for major bleeding

Intermittent pneumatic compression (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Intermittent pneumatic compression (routine)

Chapter 13. Laboratory Tests

The following laboratory studies should be considered for patients who will receive warfarin. These laboratory studies may also be indicated for patients on other medications for VTE prophylaxis if clinically indicated per clinician judgment.

Complete blood count daily 1 time (routine)

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

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

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

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

   repetition[0].periodDuration.lowerBound: 1

   repetition[0].periodDuration.includeLowerBound: true

   repetition[0].periodDuration.includeUpperBound: false

   repetition[0].periodDuration.resolution: 1

   repetition[0].periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

   repetition[0].eventFrequency.lowerBound: 1

   repetition[0].eventFrequency.upperBound: 1

   repetition[0].eventFrequency.includeLowerBound: true

   repetition[0].eventFrequency.includeUpperBound: true

   repetition[0].eventFrequency.resolution: 1

   repetition[0].eventFrequency.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

Basic metabolic panel daily 1 time (routine)

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

   statementType: Request

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

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

   repetition[0].periodDuration.lowerBound: 1

   repetition[0].periodDuration.includeLowerBound: true

   repetition[0].periodDuration.includeUpperBound: false

   repetition[0].periodDuration.resolution: 1

   repetition[0].periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

   repetition[0].eventFrequency.lowerBound: 1

   repetition[0].eventFrequency.upperBound: 1

   repetition[0].eventFrequency.includeLowerBound: true

   repetition[0].eventFrequency.includeUpperBound: true

   repetition[0].eventFrequency.resolution: 1

   repetition[0].eventFrequency.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

Activated partial thromboplastin time daily 1 time (routine)

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

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

        topic: Precoordinated Expression 42525009 |Partial thromboplastin time, activated (procedure)|

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

        repetition[0].periodDuration.lowerBound: 1

        repetition[0].periodDuration.includeLowerBound: true

        repetition[0].periodDuration.includeUpperBound: false

        repetition[0].periodDuration.resolution: 1

        repetition[0].periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

        repetition[0].eventFrequency.lowerBound: 1

        repetition[0].eventFrequency.upperBound: 1

        repetition[0].eventFrequency.includeLowerBound: true

        repetition[0].eventFrequency.includeUpperBound: true

        repetition[0].eventFrequency.resolution: 1

        repetition[0].eventFrequency.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

Complete International normalized ratio daily 1 time (routine)

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

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

        topic: Precoordinated Expression 440685005 |Calculation of international normalized ratio (procedure)|

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

        repetition[0].periodDuration.lowerBound: 1

        repetition[0].periodDuration.includeLowerBound: true

        repetition[0].periodDuration.includeUpperBound: false

        repetition[0].periodDuration.resolution: 1

        repetition[0].periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

        repetition[0].eventFrequency.lowerBound: 1

        repetition[0].eventFrequency.upperBound: 1

        repetition[0].eventFrequency.includeLowerBound: true

        repetition[0].eventFrequency.includeUpperBound: true

        repetition[0].eventFrequency.resolution: 1

        repetition[0].eventFrequency.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

Chapter 14. Tabular List

Terminology Service Request (TSR) Mappings

Table 14.1. Terminology Versions

Name	Identifer	Version
SNOMED CT	2.16.840.1.113883.6.96	United States Edition 20180301

Table 14.2. Terminology References

System	Code	Display Text[a]	References[b]
SNOMED CT	1111000205107 | Ambulating with assistance (regime/therapy)	Precoordinated Expression	1
SNOMED CT	1421000205106 | Basic metabolic panel (procedure)	Precoordinated Expression	1
SNOMED CT	258702006 |hour (qualifier value)|	Precoordinated Expression	2
SNOMED CT	258703001 |day (qualifier value)|	Precoordinated Expression	32
SNOMED CT	26604007 |Complete blood count (procedure)|	Precoordinated Expression	1
SNOMED CT	385218009 |Injection (qualifier value)|	Precoordinated Expression	8
SNOMED CT	385644000 |Requested (qualifier value)|	Precoordinated Expression	23
SNOMED CT	416800000 |Inpatient (person)|	Inpatient	1
SNOMED CT	421026006 |Oral tablet (qualifier value)|	Precoordinated Expression	4
SNOMED CT	423791005 |Ambulation without limitation (regime/therapy)|	Precoordinated Expression	1
SNOMED CT	42525009 |Partial thromboplastin time, activated (procedure)|	Precoordinated Expression	1
SNOMED CT	440685005 |Calculation of international normalized ratio (procedure)|	Precoordinated Expression	1
SNOMED CT	443448006 |Application of intermittent pneumatic compression device (procedure)|	Precoordinated Expression	1

System	Code	Display Text[a]	References[b]
SNOMED CT	445970000 |Moving subject from bed to chair (procedure)|	Precoordinated Expression	1
SNOMED CT	49499008 |Stat (qualifier value)|	Precoordinated Expression	1
SNOMED CT	4a0ec59e-7f9a-452e-954c-0...bf30b52b4e |Hospitalist physician (occupation)	Hospitalist, residents, and other ordering providers involved in managing the patient cohort, and nurses	1
SNOMED CT	50811001 |Routine (qualifier value)|	Precoordinated Expression	20
SNOMED CT	702860000 |General surgery clinic (environment)|	Medical and/or Surgical Service	1
SNOMED CT	[129425003 |Application - action (qualifier value)] ->(363699004 |Direct device (attribute))->[465885d2-268c-49a8-93e3-c90ed3b6643b |Graduated compression stockings (physical object)]	Postcoordinated Expression	3
SNOMED CT	[416118004 | Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 | Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;1114198 rivaroxaban 10 MG Oral Tablet] ->(410675002 |Route of administration (attribute))->[26643006 |Oral route (qualifier value)]	Postcoordinated Expression	1
SNOMED CT	[416118004 | Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 | Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;1161791 Warfarin Pill] ->(410675002 | Route of administration	Postcoordinated Expression	1

System	Code	Display Text[a]	References[b]
	(attribute))->[26643006 |Oral route (qualifier value)]		
SNOMED CT	[416118004 | Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 | Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;1364435 apixaban 2.5 MG Oral Tablet] ->(410675002 |Route of administration (attribute))->[26643006 |Oral route (qualifier value)]	Postcoordinated Expression	1
SNOMED CT	[416118004 | Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 | Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;243670 Aspirin 81 MG Oral Tablet] ->(410675002 |Route of administration (attribute))->[26643006 |Oral route (qualifier value)]	Postcoordinated Expression	2
SNOMED CT	[416118004 | Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 | Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;849699 0.2 ML heparin calcium 25000 UNT/ML Prefilled Syringe] ->(410675002 | Route of administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]	Postcoordinated Expression	2

System	Code	Display Text[a]	References[b]
SNOMED CT	[416118004 | Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 | Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;854228 0.3 ML Enoxaparin sodium 100 MG/ML Prefilled Syringe] ->(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))->[Rx;854235 0.4 ML Enoxaparin sodium 100 MG/ML Prefilled Syringe] ->(410675002 |Route of administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]	Postcoordinated Expression	2
SNOMED CT	[416118004 | Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 | Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;861360 0.5 ML Fondaparinux sodium 5 MG/ML Prefilled Syringe] ->(410675002 |Route of administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]	Postcoordinated Expression	1
SNOMED CT	[416118004 | Administration (procedure)] ->(260686004	Postcoordinated Expression	1

System	Code	Display Text[a]	References[b]
	|Method (attribute))->[129445006 | Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;978725 0.2 ML Dalteparin Sodium 12500 UNT/ML Prefilled Syringe] ->(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))->[Rx;978733 0.2 ML Dalteparin Sodium 25000 UNT/ML Prefilled Syringe] ->(410675002 | Route of administration (attribute))->[34206005 |Subcutaneous route (qualifier value)]	Postcoordinated Expression	1

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

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

Chapter 15. Behavior Symbols

Table 15.1. 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 15.2. 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 15.3. 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.
◇	Could	An action with this behavior may be included in the set of actions processed by the end user.

Symbol	Name	Definition
➢	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 15.4. 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 15.5. 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 15.6. 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 15.7. 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] *Cardiology: Venous Thromboembolism (VTE) Prophylaxis Clinical Content White Paper*

[CSD] *Cardiology: Venous thromboembolism (VTE) Prophylaxis Order Set Conceptual Structure Document*

[KVRpt] *Cardiology: Venous thromboembolism (VTE) Prophylaxis Order Set KNART Validation Report*

[Padua 2018] *Padua VTE Risk Caclulator* (link [https://www.mdcalc.com/padua-prediction-score-risk-vte])

[Caprini 2018] *Caprini Risk Assessment – Online Version – Venous Resource Center* (link [https://venousdisease.com/dvt-risk-assessment-online/])

Supporting Evidence

[Jacobs 2012] *Jacobs, Joshua J., Michael A. Mont, Kevin John Bozic, Craig J. Della Valle, Stuart Barry Goodman, Courtland G. Lewis, Adolph Chick J. Yates, et al. 2012. "American Academy of Orthopaedic Surgeons Clinical Practice Guideline on: Preventing Venous Thromboembolic Disease in Patients Undergoing Elective Hip and Knee Arthroplasty." The Journal of Bone and Joint Surgery. American Volume 94 (8): 746–47. doi:10.2106/JBJS.9408.ebo746.* (link [https://doi.org/10.2106/JBJS.9408.ebo746])

[Bates 2012] *Bates, Shannon M., Ian A. Greer, Saskia Middeldorp, David L. Veenstra, Anne-Marie Prabulos, and Per Olav Vandvik. 2012. "VTE, Thrombophilia, Antithrombotic Therapy, and Pregnancy: Antithrombotic Therapy and Prevention of Thrombosis, 9th Ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines." Chest 141 (2 Suppl): e691S–e736S. doi:10.1378/chest.11-2300* (link [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3278054/])

[Douketis 2012] *Douketis, James D, Alex C Spyropoulos, Frederick A Spencer, Michael Mayr, Amir K Jaffer, Mark H Eckman, Andrew S Dunn, and Regina Kunz. 2012. "Perioperative Management of Antithrombotic Therapy: Antithrombotic Therapy and Prevention of Thrombosis, 9th Ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines." Chest 141 (2 Suppl): e326S–e350S. doi:10.1378/chest.11-2298* (link [https://doi.org/10.1378/chest.11-2296])

[Gould 2012] *Gould, Michael K., David A. Garcia, Sherry M. Wren, Paul J. Karanicolas, Juan I. Arcelus, John A. Heit, and Charles M. Samama. 2012. "Prevention of VTE in Nonorthopedic Surgical Patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th Ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines." Chest 141 (2 Suppl): e227S–e277S. doi:10.1378/chest.11-2297.* (link [https://doi.org/10.2106/JBJS.9408.ebo746])

[Kahn 2012] *Kahn, Susan R., Wendy Lim, Andrew S. Dunn, Mary Cushman, Francesco Dentali, Elie A. Akl, Deborah J. Cook, et al. 2012. "Prevention of VTE in Nonsurgical Patients: Antithrombotic Therapy and Prevention of Thrombosis, 9th Ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines." Chest 141 (2 Suppl): e195S–e226S. doi:10.1378x/chest.11-2296.* (link [https://doi.org/10.1378/chest.11-2296])

[IOM 2013] *Medicine, Institute of, and Engineering National Academies of Sciences and Medicine. 2013. Improving Diagnosis in Health Care. Washington, DC: The National Academies Press. https://www.nap.edu/catalog/21794/improving-diagnosis-in-health-care. doi:10.17226/21794* (link [https://doi.org/10.17226/21794])

[Rogers 2007] *Rogers, Selwyn O., Ravi K. Kilaru, Patrick Hosokawa, William G. Henderson, Michael J. Zinner, and Shukri F. Khuri. 2007. "Multivariable Predictors of Postoperative Venous Thromboembolic Events after General and Vascular Surgery: Results from the Patient Safety in Surgery Study." Journal of the American College of Surgeons 204 (6): 1211–21. doi:10.1016/j.jamcollsurg.2007.02.072* (link [https://doi.org/10.1016/j.jamcollsurg.2007.02.072])

[Rogers 2016] *Shehab, Nadine, Maribeth C. Lovegrove, Andrew I. Geller, Kathleen O. Rose, Nina J. Weidle, and Daniel S. Budnitz. 2016. "US Emergency Department Visits for Outpatient Adverse Drug Events, 2013-2014." JAMA 316 (20): 2115–25. doi:10.1001/jama.2016.16201* (link [https://doi.org/10.1001/jama.2016.16201])

[NLM 2017a] *LABEL: ARIXTRA- fondaparinux sodium injection, solution [Internet].: National Library of Medicine; 2017. Available from: https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=d3b30c68-cf45-4b46-8ba6-72090f7ba01a.* (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=d3b30c68-cf45-4b46-8ba6-72090f7ba01a])

[NLM 2017b] *LABEL: ASPIRIN 81 MG- aspirin tablet, coated [Internet].: National Library of Medicine; 2017. Available from: https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=b4064039-2345-4227-b83d-54dc13a838d3.* (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=b4064039-2345-4227-b83d-54dc13a838d3])

[NLM 2017c] *LABEL: ELIQUIS- apixaban tablet, film coated [Internet].: National Library of Medicine; 2017. Available from: https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a454cd24-0c6d-46e8-b1e4-197388606175.* (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a454cd24-0c6d-46e8-b1e4-197388606175])

[NLM 2017d] *LABEL: FRAGMIN- dalteparin sodium injection, solution [Internet].: National Library of Medicine; 2017. Available from: https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=529711c6-6029-4e50-8ece-c0e59b06ff38.* (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=529711c6-6029-4e50-8ece-c0e59b06ff38])

[NLM 2017e] *LABEL: HEPARIN SODIUM- heparin sodium injection [Internet].: National Library of Medicine; 2017. Available from: https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=56dc3074-f1c5-45a3-b923-f1d14858e06d.* (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=56dc3074-f1c5-45a3-b923-f1d14858e06d])

[NLM 2017f] *LABEL: PRADAXA- dabigatran etexilate mesylate capsule [Internet].: National Library of Medicine; 2017. Available from: https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=5db7f199-8752-4d24-85f7-e34ca8f4d02e.* (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=5db7f199-8752-4d24-85f7-e34ca8f4d02e])

[NLM 2017g] *WARFARIN SODIUM- warfarin tablet [Internet].: National Library of Medicine; 2017. Available from: https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=c0cc4511-e656-4b6d-96cd-e02e76173b9d.* (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=c0cc4511-e656-4b6d-96cd-e02e76173b9d])

[NLM 2017h] *LABEL: XARELTO- rivaroxaban tablet, film coated [Internet].: National Library of Medicine; 2017. Available from: https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=1166231a-b23a-4c86-8cda-45d41b724e57.* (link [https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=1166231a-b23a-4c86-8cda-45d41b724e57])