Measure Information Form
Collected For:
CMS Voluntary Only

Measure Set: Surgical Care Improvement Project (SCIP)

Set Measure ID#: SCIP-VTE-2

Performance Measure Name: Surgery Patients Who Received Appropriate Venous Thromboembolism Prophylaxis Within 24 Hours Prior to Surgery to 24 Hours After Surgery

Description: Surgery patients who received appropriate Venous Thromboembolism (VTE) prophylaxis within 24 hours prior to Anesthesia Start Time to 24 hours after Anesthesia End Time.

Rationale: There are over 30 million surgeries performed in the United States each year. Despite the evidence that VTE is one of the most common postoperative complications and prophylaxis is the most effective strategy to reduce morbidity and mortality, it is often underused. The frequency of Venous Thromboembolism (VTE), that includes deep vein thrombosis and pulmonary embolism, is related to the type and duration of surgery, patient risk factors, duration and extent of postoperative immobilization, and use or nonuse of prophylaxis. According to Heit et al, 2000, surgery was associated with over a twenty-fold increase in the odds of being diagnosed with VTE. Studies have shown that appropriately used thromboprophylaxis has a positive risk/benefit ratio and is cost effective. Prophylaxis recommendations for this measure are based on selected surgical procedures from the 2008 American College of Chest Physicians guidelines.

Timing of prophylaxis is based on the type of procedure, prophylaxis selection, and clinical judgment regarding the impact of patient risk factors. The optimal start of pharmacologic prophylaxis in surgical patients varies and must be balanced with the efficacy-versus-bleeding potential. Due to the inherent variability related to the initiation of prophylaxis for surgical procedures, 24 hours prior to surgery to 24 hours post surgery was recommended by consensus of the SCIP Technical Expert Panel in order to establish a timeframe that would encompass most procedures.

Type of Measure: Process

Improvement Noted As: An increase in the rate

Numerator Statement: Surgery patients who received appropriate Venous Thromboembolism (VTE) prophylaxis within 24 hours prior to Anesthesia Start Time to 24 hours after Anesthesia End Time.
Included Populations: Not applicable

Excluded Populations: None

Data Elements:
- VTE Prophylaxis
- VTE Timely

Denominator Statement: All selected surgery patients

Included Populations:
- ICD-9-CM Principal Procedure Code of selected surgeries (as defined in Appendix A, Table 5.10 for ICD-9-CM codes)
- AND
- ICD-9-CM Principal Procedure Code of selected surgeries (as defined in Appendix A, Table 5.17-5.24 for ICD-9-CM codes)

Excluded Populations:
- Patients less than 18 years of age
- Patients who have a Length of Stay greater than 120 days
- Burn patients (as defined in Appendix A, Table 5.14 for ICD-9-CM codes)
- Patients enrolled in clinical trials
- Patients who are on oral anticoagulation therapy prior to admission
- Patients whose ICD-9-CM principal procedure occurred prior to the date of admission
- Patients whose total surgery time is less than or equal to 60 minutes
- Patients who stay less than two nights
- Patients who expire perioperatively
- Patients with reasons for not administering both mechanical and pharmacological prophylaxis

Data Elements:
- Admission Date
- Anesthesia End Date
- Anesthesia End Time
- Anesthesia Start Date
- Anesthesia Start Time
- Birthdate
- Clinical Trial
- Discharge Date
- ICD-9-CM Principal Diagnosis Code
- ICD-9-CM Principal Procedure Code
- Perioperative Death
- Preadmission Oral Anticoagulation Therapy
- Reason for Not Administering VTE Prophylaxis
Risk Adjustment: No

Data Collection Approach: Retrospective data sources for required data elements include administrative data and medical record documents. Some hospitals may prefer to gather data concurrently by identifying patients in the population of interest. This approach provides opportunities for improvement at the point of care/service. However, complete documentation includes the principal or other ICD-9-CM diagnosis and procedure codes, which require retrospective data entry.

Data Accuracy: Variation may exist in the assignment of ICD-9-CM codes; therefore, coding practices may require evaluation to ensure consistency.

Measure Analysis Suggestions: Low measure rates may indicate the need for staff education or evaluation of organizational factors and processes of care.

Sampling: Yes, please refer to the measure set specific sampling requirements and for additional information see the Population and Sampling Specifications section.

Data Reported As: Aggregate rate generated from count data reported as a proportion.

Selected References:
- Goldhaber SZ, Dunn K, MacDougall RC. New onset of venous thromboembolism among hospitalized patients at Brigham and Women's Hospital is caused more often by prophylaxis failure than by withholding treatment. *Chest*. 000;118:1680-1684. PMID: 1115458.


<table>
<thead>
<tr>
<th>Surgery Type</th>
<th>Recommended Prophylaxis Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intracranial Neurosurgery</td>
<td>Any of the following:</td>
</tr>
<tr>
<td>Appendix A, Table 5.17</td>
<td>• Intermittent pneumatic compression devices (IPC) with or without graduated compression stockings (GCS)</td>
</tr>
<tr>
<td></td>
<td>• Low-dose unfractionated heparin (LDUH)</td>
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<td></td>
<td>• Low molecular weight heparin (LMWH)</td>
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<tr>
<td></td>
<td>• LDUH or LMWH combined with IPC or GCS</td>
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<td>General Surgery</td>
<td>Any of the following:</td>
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<tr>
<td>Appendix A, Table 5.19</td>
<td>• Low-dose unfractionated heparin (LDUH)</td>
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<td></td>
<td>• Low molecular weight heparin (LMWH)</td>
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<td></td>
<td>• Factor Xa Inhibitor</td>
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<td></td>
<td>• Intermittent pneumatic compression devices (IPC)</td>
</tr>
<tr>
<td>Gynecologic Surgery</td>
<td>Any of the following:</td>
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<tr>
<td>Appendix A, Table 5.20</td>
<td>• Low-dose unfractionated heparin (LDUH)</td>
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<td>• Low molecular weight heparin (LMWH)</td>
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<td></td>
<td>• Factor Xa Inhibitor</td>
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<td></td>
<td>• Intermittent pneumatic compression devices (IPC)</td>
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<td></td>
<td>• LDUH or LMWH or Factor Xa Inhibitor combined with IPC or GCS</td>
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<tr>
<td>Urologic Surgery</td>
<td>Any of the following:</td>
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<tr>
<td>Appendix A, Table 5.21</td>
<td>• Low-dose unfractionated heparin (LDUH)</td>
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<td></td>
<td>• Low molecular weight heparin (LMWH)</td>
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<td></td>
<td>• Factor Xa Inhibitor</td>
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<tr>
<td></td>
<td>• Intermittent pneumatic compression devices (IPC)</td>
</tr>
<tr>
<td></td>
<td>• LDUH or LMWH or Factor Xa Inhibitor combined with IPC or GCS</td>
</tr>
<tr>
<td>Elective Total Knee or Total Hip Replacement</td>
<td>Any of the following:</td>
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<tr>
<td>Appendix A, Table 5.22 and Table 5.23</td>
<td>• Low molecular weight heparin (LMWH)</td>
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<tr>
<td></td>
<td>• Factor Xa Inhibitor</td>
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<td></td>
<td>• Oral Factor Xa Inhibitor</td>
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<tr>
<td></td>
<td>• Warfarin</td>
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<tr>
<td></td>
<td>• Intermittent pneumatic compression devices (IPC)</td>
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<tr>
<td></td>
<td>• Venous foot pump (VFP)</td>
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<td></td>
<td>• Low-dose unfractionated heparin (LDUH)</td>
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<td>• Aspirin</td>
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<td>Hip Fracture Surgery</td>
<td>Any of the following:</td>
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<tr>
<td>Appendix A, Table 5.24</td>
<td>• Low-dose unfractionated heparin (LDUH)</td>
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<td>• Low molecular weight heparin (LMWH)</td>
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<td>• Factor Xa Inhibitor</td>
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<td></td>
<td>• Aspirin</td>
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SCIP-VTE-2: Surgery Patients Who Received Appropriate Venous Thromboembolism Prophylaxis Within 24 Hours Prior to Surgery to 24 Hours After Surgery

Numerator: Surgery patients who received appropriate venous thromboembolism (VTE) prophylaxis 24 hours prior to Anesthesia Start Time to 24 hours after Anesthesia End Time.

Denominator: All selected surgery patients.
Specifications Manual for National Hospital Inpatient Quality Measures
Discharges 01-01-15 (1Q15) through 09-30-15 (3Q15)

SCIP-VTE-2-7
Specifications Manual for National Hospital Inpatient Quality Measures
Discharges 01-01-15 (1Q15) through 09-30-15 (3Q15)  
SCIP-VTE-2-8

**Note:** If VTE Prophylaxis field is populated with an allowable value of 1,2,3,4,5,6,7,8 or 9 and the corresponding VTE Timely field is Missing, the entire case will be rejected by the Joint Commission and CMS warehouses.
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SCIP- Venous Thromboembolism (VTE)-2: Surgery Patients Who Received Appropriate Venous Thromboembolism Prophylaxis Within 24 Hours Prior to Surgery to 24 Hours After Surgery

Numerator: Surgery patients who received Venous Thromboembolism (VTE) prophylaxis 24 hours prior to Anesthesia Start Time to 24 hours after Anesthesia End Time.

Denominator: All selected surgery patients.

Variable Key: Length of Stay (LOS), Surgery Length, Surgery Days

1. Start processing. Run cases that are included in the Surgical Care Improvement Project (SCIP) Initial Patient Population and pass the edits defined in the Transmission Data Processing Flow: Clinical through this measure.

2. Check ICD-9-CM Principal Procedure Code
   a. If the ICD-9-CM Principal Procedure Code is not on Table 5.17, 5.19, 5.20, 5.21, 5.22, 5.23, or 5.24, the case will proceed to a Measure Category Assignment of B and will not be in the measure population. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.17, 5.19, 5.20, 5.21, 5.22, 5.23, or 5.24, continue processing and proceed to ICD-9-CM Principal Diagnosis Code.

3. Check ICD-9-CM Principal Diagnosis Code
   a. If the ICD-9-CM Principal Diagnosis Code is on Table 5.14, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If the ICD-9-CM Principal Diagnosis Code is not on Table 5.14, continue processing and proceed to the LOS calculation.

4. Calculate LOS. LOS, in days, is equal to the Discharge Date minus the Admission Date.

5. Check LOS
   a. If the LOS is less than 2 days, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Calculation. Stop processing.
   b. If the LOS is greater than or equal to 2 days, continue processing and proceed to Clinical Trial.

6. Check Clinical Trial
   a. If Clinical Trial is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
b. If Clinical Trial equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
c. If Clinical Trial equals No, continue processing and proceed to Preadmission Oral Anticoagulation Therapy.

7. Check Preadmission Oral Anticoagulation Therapy
   a. If Preadmission Oral Anticoagulation Therapy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
b. If Preadmission Oral Anticoagulation Therapy equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
c. If Preadmission Oral Anticoagulation Therapy equals No, continue processing and proceed to Anesthesia Start Date.

8. Check Anesthesia Start Date
   a. If the Anesthesia Start Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
b. If the Anesthesia Start Date equals Unable To Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
c. If Anesthesia Start Date equals a Non Unable To Determine Value, continue processing and proceed to the Surgery Days calculation.

9. Calculate Surgery Days. Surgery Days, in days, is equal to the Anesthesia Start Date minus the Admission Date.

10. Check Surgery Days
    a. If the Surgery Days is less than zero, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
b. If the Surgery Days is greater than or equal to zero, continue processing and proceed to Perioperative Death.

11. Check Perioperative Death
    a. If Perioperative Death is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
b. If Perioperative Death equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
c. If Perioperative Death equals No, continue processing and proceed to Anesthesia Start Time.
12. Check Anesthesia Start Time
   a. If the Anesthesia Start Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If the Anesthesia Start Time equals Unable to Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   c. If the Anesthesia Start Time equals a Non Unable to Determine Value, continue processing and proceed to Anesthesia End Date.

13. Check Anesthesia End Date
   a. If the Anesthesia End Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If the Anesthesia End Date equals Unable to Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   c. If the Anesthesia End Date equals a Non Unable to Determine Value, continue processing and proceed to Anesthesia End Time.

14. Check Anesthesia End Time
   a. If the Anesthesia End Time is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
   b. If the Anesthesia End Time equals Unable to Determine, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   c. If the Anesthesia End Time equals a Non Unable to Determine Value, continue processing and proceed to the Surgery Length calculation.

15. Calculate Surgery Length. Surgery Length, in minutes, is equal to the Anesthesia End Date and Anesthesia End Time minus the Anesthesia Start Date and Anesthesia Start Time.

16. Check Surgery Length
   a. If the Surgery Length is less than or equal to 60 minutes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
   b. If the Surgery Length is greater than 60 minutes, continue processing proceed to Reason for Not Administering VTE Prophylaxis.

17. Check Reason for Not Administering VTE Prophylaxis
   a. If Reason for Not Administering VTE Prophylaxis is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
b. If Reason for Not Administering VTE Prophylaxis equals Yes, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.

c. If Reason for Not Administering VTE Prophylaxis equals No, continue processing and proceed to VTE Prophylaxis.

18. Check VTE Prophylaxis

a. If no values are populated in the VTE grid, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.

b. If VTE Prophylaxis equals A, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

c. If the VTE grid is populated with any of values 1, 2, 3, 4, 5, 6, 7, 8, or 9, continue processing and proceed to recheck the ICD-9-CM Principal Procedure Code. Note: If VTE Prophylaxis field is populated with an allowable value of 1, 2, 3, 4, 5, 6, 7, 8 or 9 and the corresponding VTE Timely field is Missing, the entire case will be rejected by The Joint Commission and Centers for Medicare and Medicaid Services (CMS) warehouses.


b. If the ICD-9-CM Principal Procedure Code is on Table 5.19, continue processing and recheck VTE Prophylaxis.

20. Recheck VTE Prophylaxis only if the ICD-9-CM Principal Procedure Code is on Table 5.19

a. If any VTE Prophylaxis equals 1, 2, 3 or 5, continue processing and check VTE Timely.

1. If VTE Timely equals Yes for VTE Prophylaxis of 1 or 2 or 3 or 5, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.

2. If VTE Timely equals No for VTE Prophylaxis of 1 and 2 and 3 and 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

b. If none of the VTE Prophylaxis equals 1, 2, 3 or 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

21. Recheck ICD-9-CM Principal Procedure Code for Tables 5.17, 5.20, 5.21, 5.22, 5.23, and 5.24 only if the ICD-9-CM Principal Procedure Code was not on Table 5.19
a. If the ICD-9-CM Principal Procedure Code is on Table 5.17, continue processing and recheck VTE Prophylaxis.
   1. If any VTE Prophylaxis equals 1, 2, or 3, continue processing and check VTE Timely.
      i. If VTE Timely equals Yes for VTE Prophylaxis of 1 or 2 or 3, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
      ii. If VTE Timely equals No for VTE Prophylaxis of 1 and 2 and 3, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   2. If none of the VTE Prophylaxis equals 1, 2, or 3, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

b. If the ICD-9-CM Principal Procedure Code is on Tables 5.20, 5.21, 5.22, 5.23, or 5.24, continue processing and recheck ICD-9-CM Principal Procedure Code.

22. Recheck ICD-9-CM Principal Procedure Code for Tables 5.20, 5.21, 5.22, 5.23, and 5.24 only if the ICD-9-CM Principal Procedure Code is not on Tables 5.17 or 5.19.
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.20, continue processing and recheck VTE Prophylaxis.
      1. If any VTE Prophylaxis equals 1, 2, 3 or 5, continue processing and check VTE Timely.
         i. If VTE Timely equals Yes for VTE Prophylaxis of 1 or 2 or 3 or 5, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
         ii. If VTE Timely equals No for VTE Prophylaxis of 1 and 2 and 3 and 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
      2. If none of the VTE Prophylaxis equals 1, 2, 3, or 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Tables 5.21, 5.22, 5.23, or 5.24, continue processing and recheck ICD-9-CM Principal Procedure Code.

23. Recheck ICD-9-CM Principal Procedure Code for Tables 5.21, 5.22, 5.23, and 5.24 only if the ICD-9-CM Principal Procedure Code is not on Tables 5.17, 5.19, or 5.20.
a. If the ICD-9-CM Principal Procedure Code is on Table 5.21, continue processing and recheck VTE Prophylaxis.
   1. If any VTE Prophylaxis equals 1, 2, 3, or 5, continue processing and check VTE Timely.
      i. If VTE Timely equals Yes for VTE Prophylaxis of 1 or 2 or 3 or 5, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
      ii. If VTE Timely equals No for VTE Prophylaxis of 1 and 2 and 3 and 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   2. If none of the VTE Prophylaxis equals 1, 2, 3, or 5, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

b. If the ICD-9-CM Principal Procedure Code is on Tables 5.22, 5.23, or 5.24, continue processing and recheck ICD-9-CM Principal Procedure Code.

24. Recheck ICD-9-CM Principal Procedure Code for Tables 5.22, 5.23, and 5.24 only if the ICD-9-CM Principal Procedure Code is not on Tables 5.17, 5.19, 5.20, or 5.21.
   a. If the ICD-9-CM Principal Procedure Code is on Table 5.22 or Table 5.23, continue processing and recheck VTE Prophylaxis.
      1. If any VTE Prophylaxis equals 1, 2, 3, 5, 6, 7, 8, or 9, continue processing and check VTE Timely.
         i. If VTE Timely equals Yes for VTE Prophylaxis of 1 or 2 or 3 or 5 or 6 or 7 or 8 or 9, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
         ii. If VTE Timely equals No for VTE Prophylaxis of 1 and 2 and 3 and 5 and 6 and 7 and 8 and 9, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
      2. If the VTE Prophylaxis only equals 4, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
   b. If the ICD-9-CM Principal Procedure Code is on Table 5.24, continue processing and recheck VTE Prophylaxis.

25. Recheck VTE Prophylaxis only if the ICD-9-CM Principal Procedure Code is on Table 5.24
a. If any VTE Prophylaxis equals 1, 2, 3, 5, 6, or 9, continue processing and check VTE Timely.
   1. If VTE Timely equals Yes for VTE Prophylaxis of 1 or 2 or 3 or 5 or 6 or 9, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
   2. If VTE Timely equals No for VTE Prophylaxis of 1 and 2 and 3 and 5 and 6 and 9, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

b. If none of the VTE Prophylaxis equals 1, 2, 3, 5, 6, or 9, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.