

NQF-ENDORSED VOLUNTARY CONSENSUS STANDARDS FOR HOSPITAL CARE

Measure Information Form

Measure Set: Venous Thromboembolism (VTE)

Set Measure Set ID #: VTE-2

Performance Measure Name: Intensive Care Unit Venous Thromboembolism Prophylaxis

Description: This measure assesses the number of patients who received VTE prophylaxis or have documentation why no VTE prophylaxis was given the day of or the day after the initial admission (or transfer) to the Intensive Care Unit (ICU) or surgery end date for surgeries that start the day of or the day after ICU admission (or transfer).

Rationale: Approximately two-thirds of cases of Deep Vein Thrombosis (DVT) or Pulmonary Emboli (PE) are associated with recent hospitalization. This is consistent with the 2001 report by Agency for Healthcare Research and Quality (Shojania, et al., 2001). AHRQ reports that “the appropriate application of effective preventive measures in hospitals has major potential for improving patient safety, by reducing the incidence of VTE.”

Almost all hospitalized patients have at least one risk factor for Venous Thromboembolism (VTE), and approximately 40% have three or more risk factors. Without thromboprophylaxis, the incidence of objectively confirmed, hospital-acquired DVT is approximately 10% to 40% among medical or general surgical patients and 40% to 60% following major orthopedic surgery (Geerts et al., 2008).

Commonly, criteria for admission to the Intensive Care Unit (ICU) itself, puts patient's at an increased risk for developing VTE, and subsequent increased risk of morbidity from PE. Some risk factors are related to the acute illness present that allowed for the admission to the ICU unit, and some risk factors may be acquired during the ICU admission due to subsequent medical treatments, for example limitations of mobility, presence of central venous lines or mechanical ventilation and subsequent pharmacological paralysis. Reports of DVT in the population of ICU patients vary in relation to the acuity of the illness in this population. DVT in ICU patients diagnosed with routine venography or Doppler ultrasound found ranges between 10% to 100%. Five studies prospectively screened patients who were not receiving thromboprophylaxis during their ICU stays. The rates of DVT using Fibrinogen Uptake Test, Doppler Ultrasound or venography ranged from 13 to 31% (Geerts et al., 2008). It is essential for all ICUs to assess each patient upon admission to the ICU unit, a change in level of status, for the need for VTE prophylaxis due to the above increased development of risk factors (Geerts, et al., 2004).

Type of Measure: Process

Improvement Noted As: An increase in the rate

Numerator Statement: Patients who received VTE prophylaxis, or have documentation why no VTE prophylaxis was given:

- the day of or the day after ICU admission (or transfer)
- the day of or the day after surgery end date for surgeries that start the day of or the day after ICU admission (or transfer)

Included Populations: Not Applicable

Excluded Populations: None

Data Elements:

- *Anesthesia Start Date*
- *ICU VTE Prophylaxis*
- *ICU VTE Prophylaxis Date*
- *Reason for No VTE Prophylaxis – ICU Admission*
- *Reason for Oral Factor Xa Inhibitor - ICU Admission*
- *Surgery End Date – ICU Admission*
- *Surgical Procedure – ICU Admission*

Denominator Statement: Patients directly admitted or transferred to ICU

Included Populations: Not Applicable

Excluded Populations:

- Patients less than 18 years of age
- Patients who have a hospital length of stay (LOS) less than two days and greater than 120 days
- Patients with *Comfort Measures Only* documented on day of or day after hospital arrival
- Patients enrolled in clinical trials
- Patients with ICU LOS less than one day without VTE prophylaxis administered and documentation for no VTE prophylaxis
- Patients with *ICD-9-CM Principal or Other Diagnosis Code* of Obstetrics or VTE as defined in Appendix A, Table 7.02, 7.03, or 7.04
- Patients with *ICD-9-CM Principal Procedure Code* of Surgical Care Improvement Project (SCIP) VTE selected surgeries as defined in Appendix A, Tables 5.17, 5.19, 5.20, 5.21, 5.22, 5.23, 5.24 that start the day of or the day after ICU admission or transfer

Data Elements:

- *Admission Date*
- *Birthdate*
- *Clinical Trial*
- *Comfort Measures Only*

- *Discharge Date*
- *ICD-9-CM Other Diagnosis Codes*
- *ICD-9-CM Principal Diagnosis Code*
- *ICD-9-CM Principal Procedure Code*
- *ICU Admission or Transfer Date*
- *ICU Admission or Transfer*
- *ICU Discharge Date*

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: In order to identify areas for improvement, hospitals may want to review the results based on the patient's (ICU) location or ICD-9-CM codes. Data could then be analyzed to determine which specific ICUs or patient groups within the ICU are not being re-evaluated for prophylaxis within one day of admission or transfer to the ICU or if there are documentation issues. Data could also be analyzed to obtain additional information about the type(s) of prophylaxis that were administered.

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

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

Selected References:

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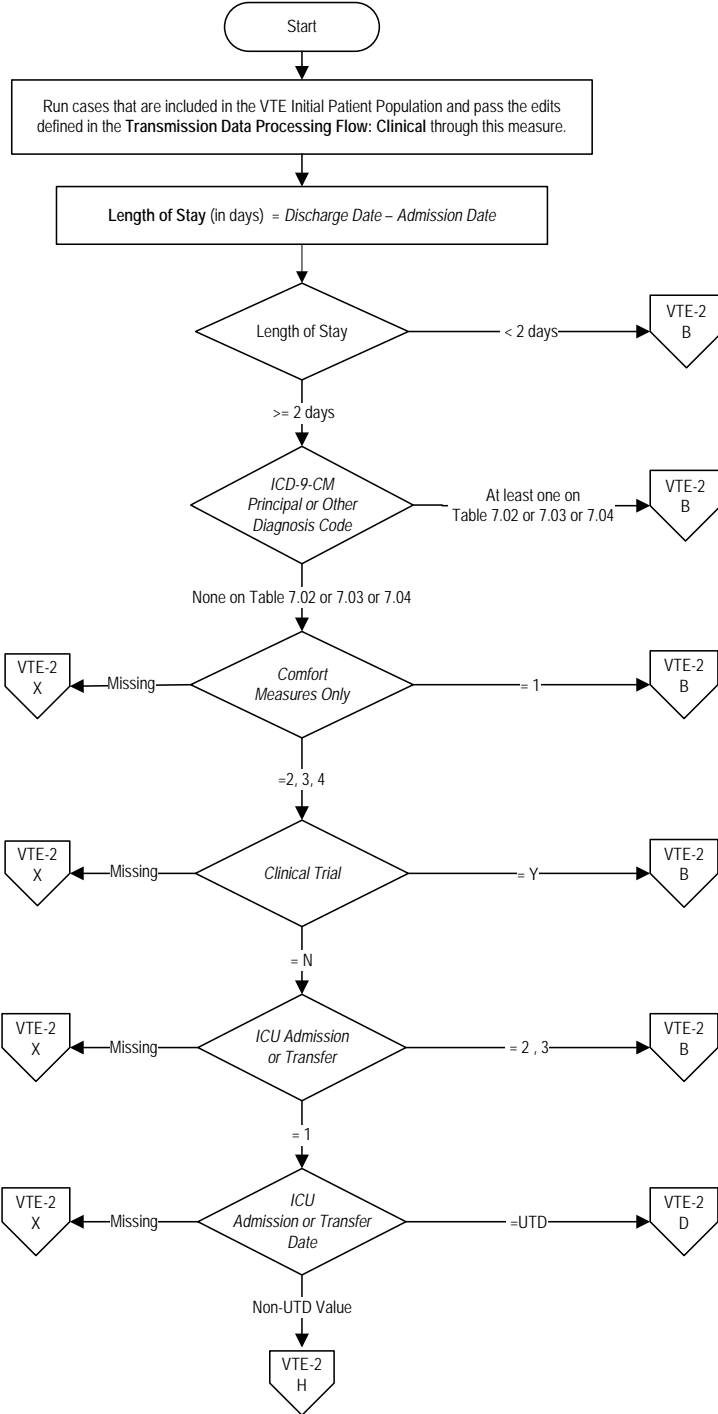
VTE-2: Intensive Care Unit Venous Thromboembolism Prophylaxis

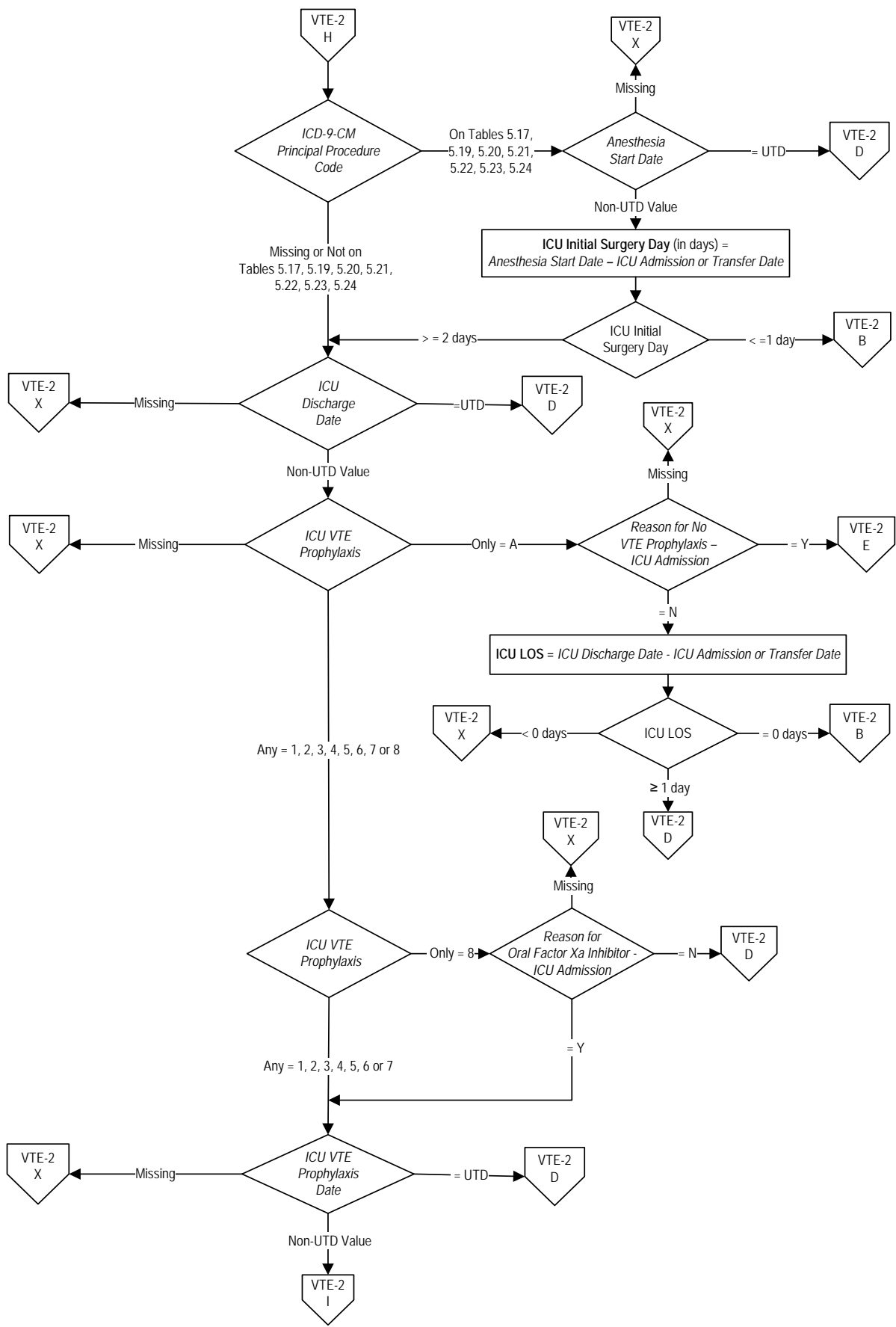
Numerator: Patients who received VTE prophylaxis or have documentation why no VTE prophylaxis was given:

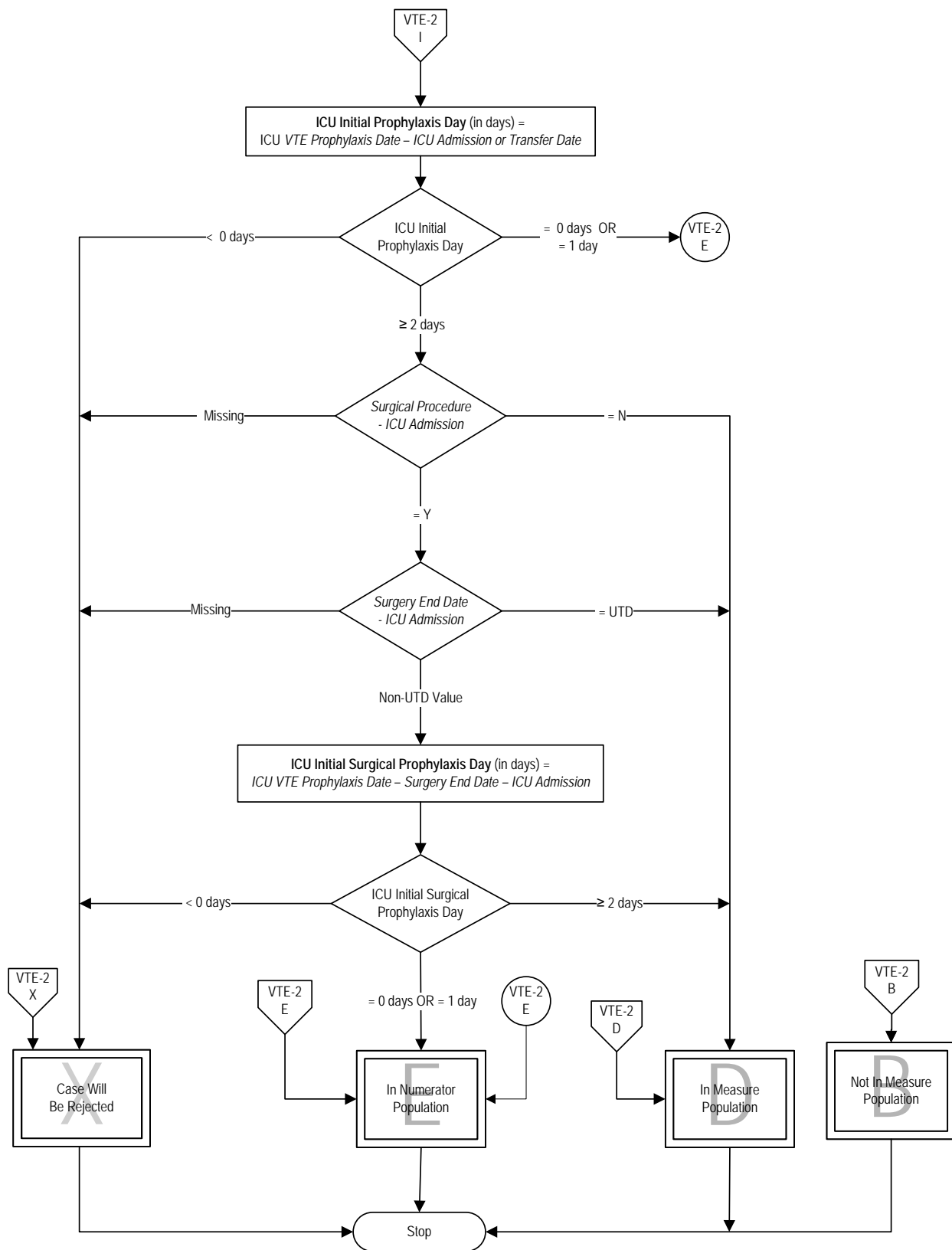
- the day of or the day after ICU admission (or transfer)
- the day of or the day after surgery end date for surgeries that start the day of or the day after ICU admission (or transfer)

Denominator: Patients directly admitted or transferred to ICU

Variable Key:
 Length of Stay
 ICU Initial Surgery Day
 ICU LOS
 ICU Initial Prophylaxis Day
 ICU Initial Surgical Prophylaxis Day







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Denominator: Patients directly admitted or transferred to ICU

Variable Key: Length of Stay, ICU LOS, ICU Initial Prophylaxis Day, ICU Initial Surgical Prophylaxis Day, ICU Initial Surgery Day

1. Start processing. Run cases that are included in the VTE Initial Patient Population and pass the edits defined in the Transmission Data Processing Flow: Clinical through this measure.
2. Calculate Length of Stay. Length of Stay, in days, is equal to the Discharge Date minus the Admission Date.
3. Check Length of Stay
 - a. If Length of Stay is less than 2 days, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
 - b. If Length of Stay is greater than or equal to 2 days, continue processing and proceed to ICD-9-CM Principal or Other Diagnosis Code.
4. Check ICD-9-CM Principal or Other Diagnosis Code
 - a. If at least one of the ICD-9-CM Principal or Other Diagnosis Code is on Table 7.02, 7.03, or 7.04, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
 - b. If none of the ICD-9-CM Principal or Other Diagnosis Code is on Table 7.02, 7.03, or 7.04, continue processing and proceed to Comfort Measures Only.
5. Check Comfort Measures Only
 - a. If Comfort Measures Only is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If Comfort Measures Only equals 1, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
 - c. If Comfort Measures Only equals 2, 3, or 4, 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 ICU Admission or Transfer.
7. Check ICU Admission or Transfer
 - a. If ICU Admission or Transfer is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If ICU Admission or Transfer is equal to 2 or 3, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
 - c. If ICU Admission or Transfer is equal to 1, continue processing and proceed to ICU Admission or Transfer Date.
 8. Check ICU Admission or Transfer Date
 - a. If ICU Admission or Transfer Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If ICU Admission or Transfer 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 ICU Admission or Transfer Date equals a Non Unable to Determine Value, continue processing and proceed to the ICD-9-CM Principal Procedure Code.
 9. Check ICD-9-CM Principal Procedure Code
 - a. If ICD-9-CM Principal Procedure Code is on Tables 5.17, 5.19, 5.20, 5.21, 5.22, 5.23, or 5.24, the case will proceed to Anesthesia Start Date.
 - b. If ICD-9-CM Principal Procedure Code is missing or not on Tables 5.17, 5.19, 5.20, 5.21, 5.22, 5.23, or 5.24, the case will proceed to step 13 and check ICU Discharge Date.
 10. Check Anesthesia Start Date
 - a. If Anesthesia Start Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If 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 ICU Initial Surgery Day calculation.
 11. Calculate ICU Initial Surgery Day. ICU Initial Surgery Day, in days, is equal to the Anesthesia Start Date minus the ICU Admission or Transfer Date.
 12. Check ICU Initial Surgery Day
 - a. If ICU Initial Surgery Day is less than or equal to 1 day, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
 - b. If Initial Surgery Day is greater than or equal to 2 days, continue processing and proceed to ICU Discharge Date.
 13. Check ICU Discharge Date

- a. If ICU Discharge Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If ICU Discharge 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 ICU Discharge Date equals a Non Unable to Determine Value, continue processing and proceed to the ICU VTE Prophylaxis.
14. Check ICU VTE Prophylaxis
- a. If ICU VTE Prophylaxis is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If ICU VTE Prophylaxis is only equal to A, continue processing and proceed to Reason for No VTE Prophylaxis – ICU Admission.
 - c. If ICU VTE Prophylaxis is equal to 1, 2, 3, 4, 5, 6, 7 or 8, continue processing and proceed to step 18 and recheck ICU VTE Prophylaxis.
15. Check Reason for No VTE Prophylaxis – ICU Admission
- a. If Reason for No VTE Prophylaxis – ICU Admission is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If Reason for No VTE Prophylaxis – ICU Admission equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
 - c. If Reason for No VTE Prophylaxis – ICU Admission equals No, continue processing and proceed to the ICU LOS calculation.
16. Calculate ICU LOS. ICU LOS is equal to ICU Discharge Date minus ICU Admission or Transfer Date.
17. Check ICU LOS
- a. If ICU LOS is less than zero days, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If ICU LOS is equal to zero days, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
 - c. If ICU LOS is greater than or equal to 1 day, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
18. Recheck ICU VTE Prophylaxis
- a. If ICU VTE Prophylaxis is only equal to 8, continue processing and proceed to check Reason for Oral Factor Xa Inhibitor – ICU Admission.
 - 1. If Reason for Oral Factor Xa Inhibitor – ICU Admission is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - 2. If Reason for Oral Factor Xa Inhibitor – ICU Admission equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

3. If Reason for Oral Factor Xa Inhibitor – ICU Admission equals Yes, the case will proceed to check ICU VTE Prophylaxis Date.
 - b. If any ICU VTE Prophylaxis is equal to 1, 2, 3, 4, 5, 6 or 7, continue processing and proceed to check ICU VTE Prophylaxis Date.
19. Check ICU VTE Prophylaxis Date
 - a. If ICU VTE Prophylaxis Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If ICU VTE Prophylaxis 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 ICU VTE Prophylaxis Date equals a Non Unable to Determine Value, continue processing and proceed to the ICU Initial Prophylaxis Day calculation.
20. Calculate ICU Initial Prophylaxis Day. ICU Initial Prophylaxis Day, in days, is equal to ICU VTE Prophylaxis Date minus ICU Admission or Transfer Date.
21. Check ICU Initial Prophylaxis Day
 - a. If ICU Initial Prophylaxis Day is less than zero days, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If ICU Initial Prophylaxis Day is equal to zero days or 1 day, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
 - c. If ICU Initial Prophylaxis Day is greater than or equal to 2 days, continue processing and proceed to Surgical Procedure – ICU Admission.
22. Check Surgical Procedure – ICU Admission
 - a. If Surgical Procedure ICU Admission is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If Surgical Procedure ICU Admission equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
 - c. If Surgical Procedure ICU Admission equals Yes, continue processing and proceed to Surgery End Date - ICU Admission.
23. Check Surgery End Date - ICU Admission
 - a. If Surgery End Date - ICU Admission is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If Surgery End Date - ICU Admission 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 Surgery End Date - ICU Admission equals a Non Unable to Determine Value, continue processing and proceed to the ICU Initial Surgical Prophylaxis Day calculation.

24. Calculate ICU Initial Surgical Prophylaxis Day. ICU Initial Surgical Prophylaxis Day, in days, is equal to the ICU VTE Prophylaxis Date minus Surgery End Date - ICU Admission.
25. Check ICU Initial Surgical Prophylaxis Day
 - a. If ICU Initial Surgical Prophylaxis Day is greater than or equal to 2 days, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
 - b. If ICU Initial Surgical Prophylaxis Day is equal to zero days or 1 day, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
 - c. If ICU Initial Surgical Prophylaxis Day is less than 0 days, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.