NQF-ENDORSED VOLUNTARY CONSENSUS STANDARDS FOR HOSPITAL CARE

Measure Information Form

Measure Set: Venous Thromboembolism (VTE)

Set Measure Set ID #: VTE-1

Performance Measure Name: 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 hospital admission or surgery end date for surgeries that start the day of or the day after hospital admission.

Rationale: Hospitalized patients at high-risk for VTE may develop an asymptomatic deep vein thrombosis (DVT), and die from pulmonary embolism (PE) even before the diagnosis is suspected. The majority of fatal events occur as sudden or abrupt death, underscoring the importance of prevention as the most critical action step for reducing death from PE (Heit, 2008).

The estimated annual incidence of deep-vein thrombosis (DVT) and pulmonary embolism (PE), known collectively as venous thromboembolism (VTE), is approximately 900,000 (Heit, 2008). Approximately two-thirds of cases of DVT or PE are associated with recent hospitalization. This is consistent with the 2001 report by The Agency for Healthcare Research and Quality (AHRQ). AHRQ indicates that “the appropriate application of effective preventive measures in hospitals has major potential for improving patient safety by reducing the incidence of venous thromboembolism” (Shojania, 2001).

Despite its proven effectiveness, rates of appropriate thromboprophylaxis remain low in both medical and surgical patients. A recent analysis from the ENDORSE survey, which evaluated prophylaxis rates in 17,084 major surgery patients, found that more than one third of patients at risk for VTE (38%) did not receive prophylaxis and that rates varied by surgery type (Cohen, et al., 2008).

In a review of evidence-based patient safety practices, the Agency for Healthcare Research and Quality defined thromboprophylaxis against VTE as the "number one patient safety practice" for hospitalized patients (Shojania, 2001). Updated “safe practices” published by the National Quality Forum (NQF) recommend routine evaluation of hospitalized patients for risk of VTE and use of appropriate prophylaxis (National Quality Forum. National Voluntary Consensus Standards for Prevention and Care of Venous Thromboembolism, 2006).

As noted by the ACCP, a vast number of randomized clinical trials provide irrefutable evidence that thromboprophylaxis reduces VTE events, and there are studies that have also shown that fatal PE is prevented by thromboprophylaxis (Geerts, et al. 2008).

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 hospital admission
- the day of or the day after surgery end date for surgeries that start the day of or the day after hospital admission

Included Populations: Not Applicable

Excluded Populations: None

Data Elements:

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

Denominator Statement: All patients

Included Populations: Not Applicable

Excluded Populations:

- Patients less than 18 years of age
- Patients who have a 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 who are direct admits to intensive care unit (ICU), or transferred to ICU the day of or the day after hospital admission with ICU LOS greater than or equal to one day
- Patients with *ICD-9-CM Principal Diagnosis Code* of Mental Disorders or Stroke as defined in Appendix A, Table 7.01, 8.1 or 8.2
- Patients with *ICD-9-CM Principal or Other Diagnosis Codes* 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

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 specific ICD-9-CM codes or patient populations. Data could then be analyzed to determine additional information about the type(s) of prophylaxis that were administered or evaluate documentation regarding non-use of prophylaxis for similar patient groups.

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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- Shojania KG, Duncan BW, McDonald DM, et al. (Eds.). (2001). Making healthcare safer; A critical analysis of patient safety practices (Evidence Report/Technology Assessment No. 43). Prepared by the University of California at San Francisco-Stanford Evidenced-based Practice Center under Contract no. 290-97-0013 (AHRQ Publication NO.01-E058). Rockville, MD:Agency for Healthcare Research and Quality.

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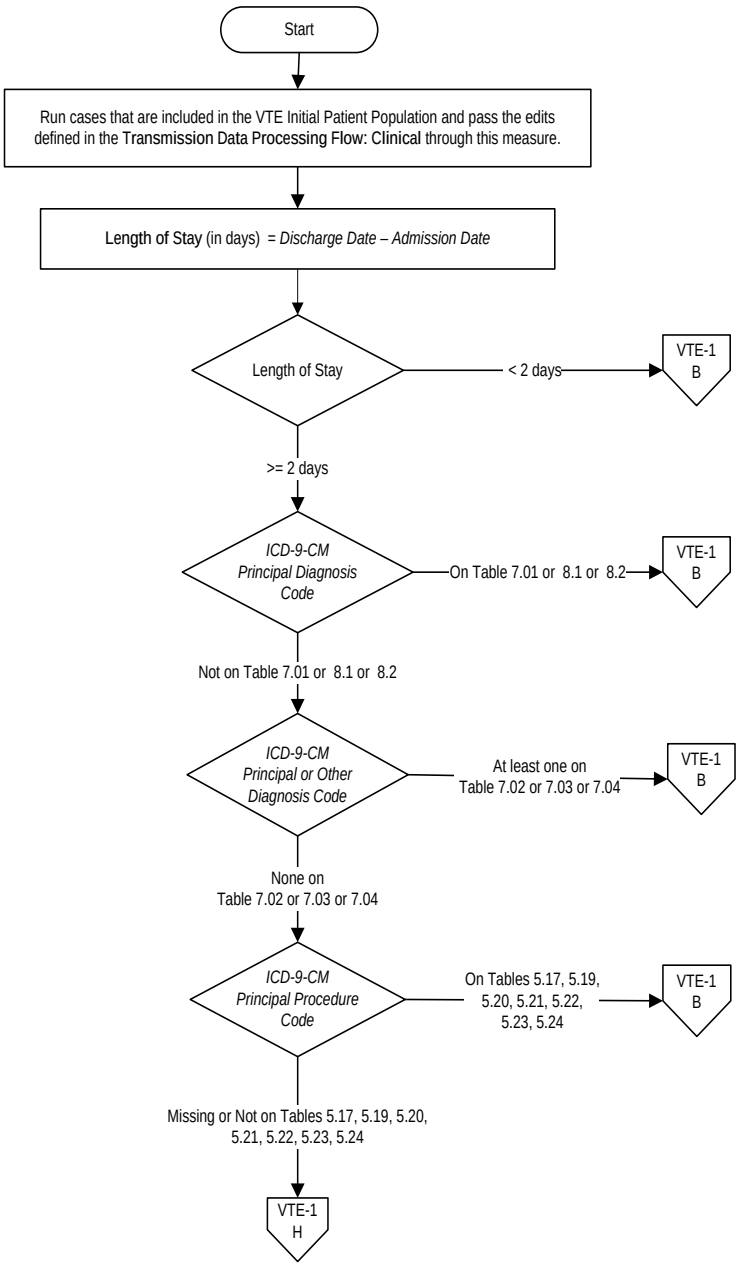
VTE-1: Venous Thromboembolism Prophylaxis

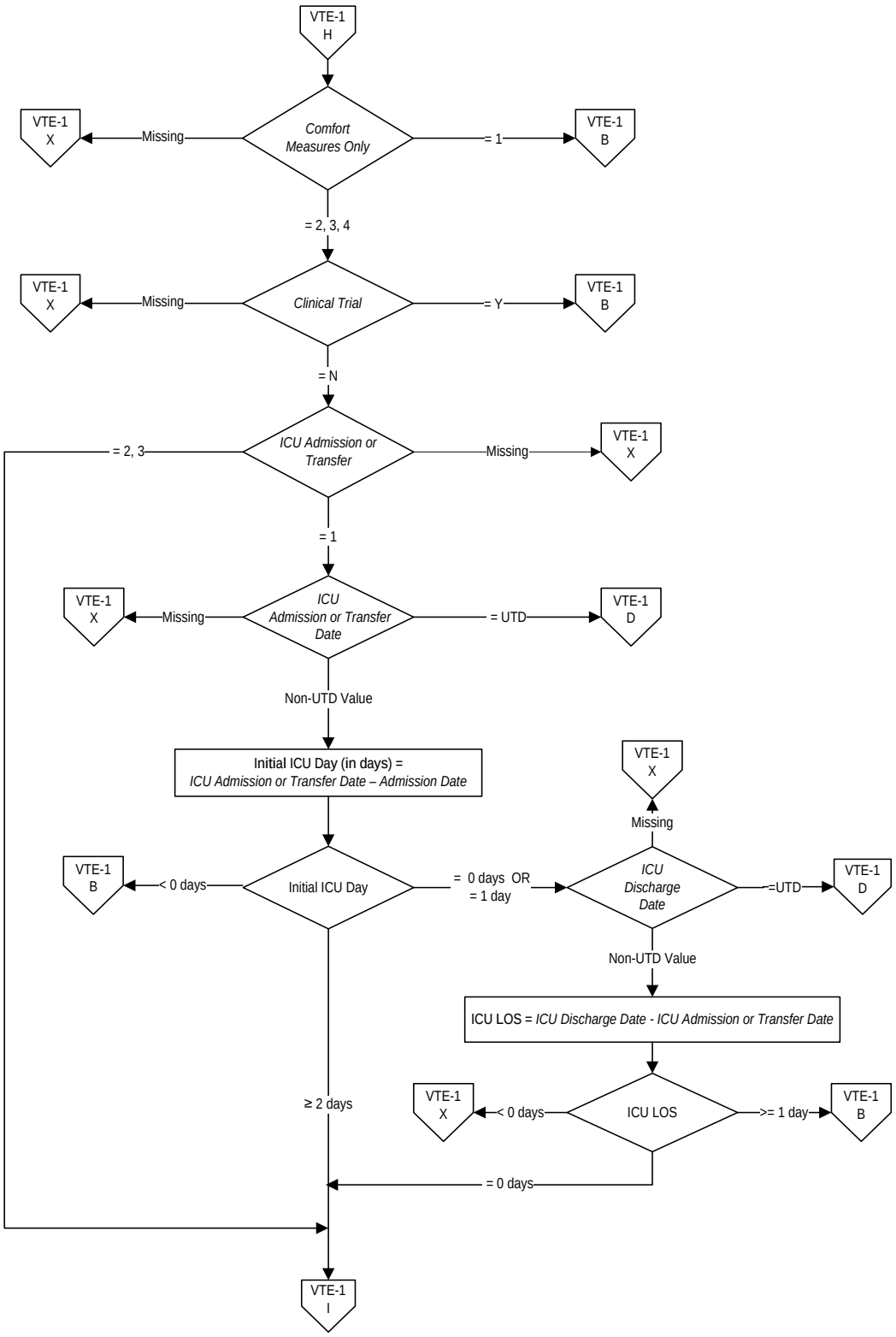
Numerator: Patients who received VTE prophylaxis or have documentation why no VTE prophylaxis was given:

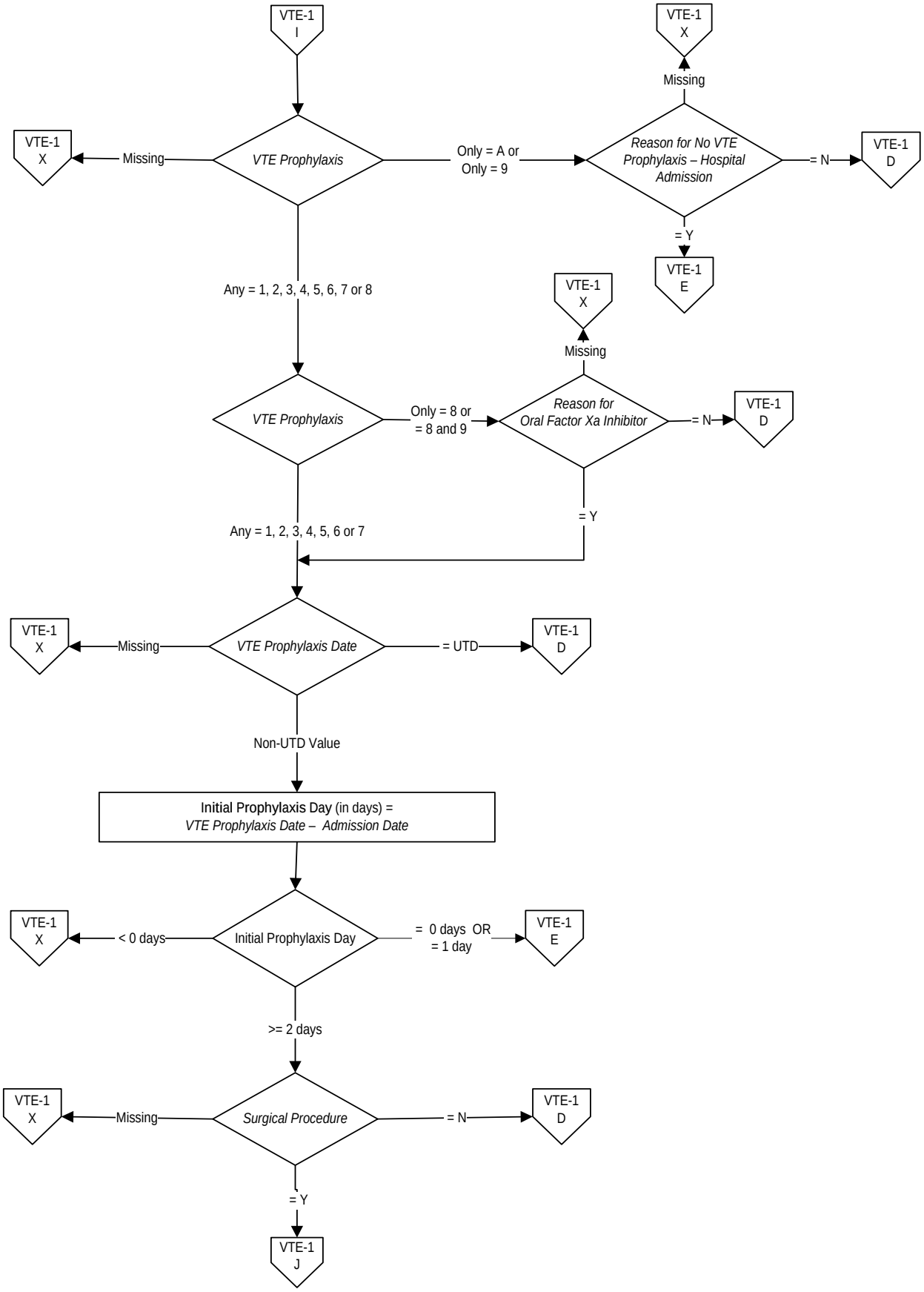
- the day of or the day after hospital admission
- the day of or the day after surgery end date for surgeries that start the day of or the day after hospital admission

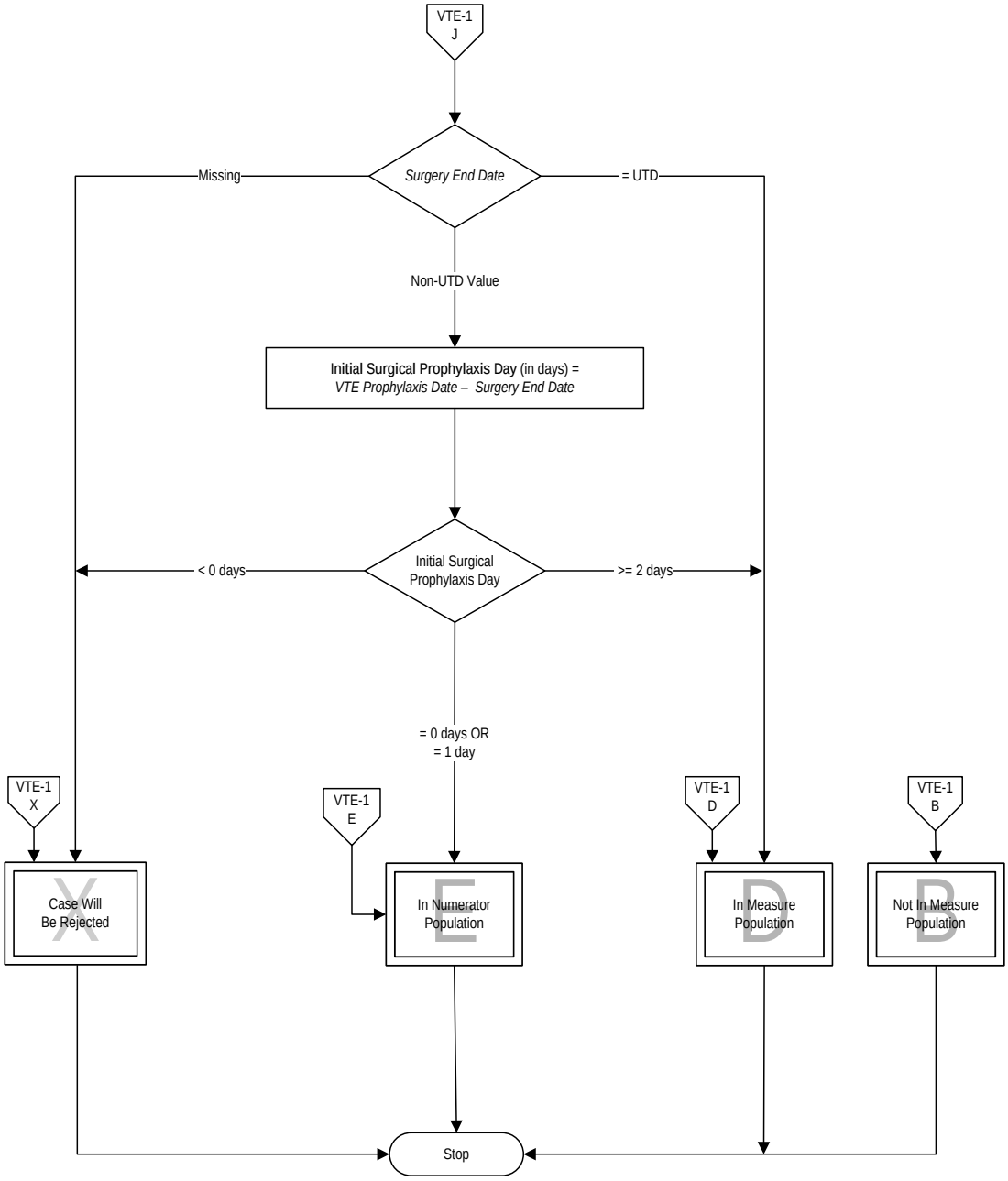
Denominator: All patients

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




VTE-1 H
Comfort Measures Only
Missing
VTE-1 X
= 1
VTE-1 B
= 2, 3, 4
Clinical Trial
Missing
VTE-1 X
= Y
VTE-1 B
= N
ICU Admission or Transfer
= 2, 3
Missing
VTE-1 X
= 1
ICU Admission or Transfer Date
Missing
VTE-1 X
= UTD
VTE-1 D
Non-UTD Value
Initial ICU Day (in days) = ICU Admission or Transfer Date – Admission Date
Initial ICU Day
< 0 days
VTE-1 B
= 0 days OR = 1 day
ICU Discharge Date
Missing
VTE-1 X
=UTD
VTE-1 D
Non-UTD Value
ICU LOS = ICU Discharge Date - ICU Admission or Transfer Date
ICU LOS
< 0 days
VTE-1 X
>= 1 day
VTE-1 B
≥ 2 days
= 0 days
VTE-1 I


VTE-1 I
VTE-1 X
Missing
VTE-1 X
Missing
VTE Prophylaxis
Only = A or Only = 9
Reason for No VTE Prophylaxis – Hospital Admission
= N
VTE-1 D
= Y
VTE-1 E
Any = 1, 2, 3, 4, 5, 6, 7 or 8
VTE-1 X
Missing
VTE Prophylaxis
Only = 8 or = 8 and 9
Reason for Oral Factor Xa Inhibitor
= N
VTE-1 D
= Y
Any = 1, 2, 3, 4, 5, 6 or 7
VTE-1 X
Missing
VTE Prophylaxis Date
= UTD
VTE-1 D
Non-UTD Value
Initial Prophylaxis Day (in days) = VTE Prophylaxis Date – Admission Date
VTE-1 X
< 0 days
Initial Prophylaxis Day
= 0 days OR = 1 day
VTE-1 E
>= 2 days
VTE-1 X
Missing
Surgical Procedure
= N
VTE-1 D
= Y
VTE-1 J


VTE-1
J
Surgery End Date
Missing
= UTD
Non-UTD Value
Initial Surgical Prophylaxis Day (in days) =
VTE Prophylaxis Date – Surgery End Date
Initial Surgical
Prophylaxis Day
< 0 days
>= 2 days
= 0 days OR
= 1 day
VTE-1
X
VTE-1
E
VTE-1
D
VTE-1
B
X
Case Will
Be Rejected
E
In Numerator
Population
D
In Measure
Population
B
Not In Measure
Population
Stop

VTE-1: 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 hospital admission
- the day of or the day after surgery end date for surgeries that start the day of or the day after hospital admission

Denominator: All patients

Variable Key: Length of Stay, Initial ICU Day, ICU LOS, Initial Prophylaxis Day, Initial Surgical Prophylaxis 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 Diagnosis Code.

4. Check ICD-9-CM Principal Diagnosis Code
   a. If the ICD-9-CM Principal Diagnosis Code is on Table 7.01, 8.1, or 8.2, 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 7.01, 8.1, or 8.2, continue processing and proceed to ICD-9-CM Principal or Other Diagnosis Code.

5. 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 ICD-9-CM Principal Procedure Code.

6. Check ICD-9-CM Principal Procedure Code

a. 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, 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 missing or not on Table 5.17, 5.19, 5.20, 5.21, 5.22, 5.23, or 5.24, continue processing and proceed to Comfort Measures Only.

7. 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.

8. 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.

9. 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, continue processing and proceed to step 16 and check VTE Prophylaxis.
   c. If ICU Admission or Transfer is equal to 1, continue processing and proceed to ICU Admission or Transfer Date.

10. 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 Initial ICU Day calculation.

11. Calculate Initial ICU Day. Initial ICU Day, in days, is equal to ICU Admission or Transfer Date minus Admission Date.

12. Check Initial ICU Day
    a. If the Initial Day is less than 0 days, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
    b. If the Initial Day is equal to 0 days or 1 day, the case will proceed to ICU Discharge Date.
    c. If the Initial Day is greater than or equal to 2 days, continue processing and proceed to step 16 and check VTE Prophylaxis.

13. Check ICU Discharge Date
    a. If the ICU Discharge Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
    b. If the 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 the ICU Discharge Date equals a Non Unable to Determine Value, continue processing and proceed to the ICU LOS calculation.

14. Calculate ICU LOS. ICU LOS is equal to ICU Discharge Date minus ICU Admission or Transfer Date.

15. 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 greater 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.
    c. If ICU LOS is equal to zero days, continue processing and proceed to VTE Prophylaxis.

16. Check VTE Prophylaxis
    a. If VTE Prophylaxis is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
    b. If VTE Prophylaxis is only equal to A or only equal to 9, continue processing and proceed to check Reason for No VTE Prophylaxis – Hospital Admission.
        1. If Reason for No VTE Prophylaxis - Hospital Admission is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.

2. If Reason for No VTE Prophylaxis – Hospital 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 No VTE Prophylaxis - Hospital 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 any VTE Prophylaxis is equal to 1,2,3,4,5,6,7 or 8, continue processing and proceed to recheck VTE Prophylaxis.

17. Recheck VTE Prophylaxis
    a. If VTE Prophylaxis is only equal to 8 or equal to 8 and 9, continue processing and proceed to check Reason for Oral Factor Xa Inhibitor.
        1. If Reason for Oral Factor Xa Inhibitor 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 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 equals Yes, the case will proceed to check VTE Prophylaxis Date.
    b. If any VTE Prophylaxis is equal to 1, 2, 3, 4, 5, 6 or 7, continue processing and proceed to check VTE Prophylaxis Date.

18. Check VTE Prophylaxis Date
    a. If the VTE Prophylaxis Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
    b. If the 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 the VTE Prophylaxis Date equals a Non Unable to Determine Value, continue processing and proceed to the Initial Prophylaxis Day calculation.

19. Calculate Initial Prophylaxis Day. Initial Prophylaxis Day, in days, is equal to the VTE Prophylaxis Date minus the Admission Date.

20. Check Initial Prophylaxis Day
    a. If 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 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 Initial Prophylaxis Day is greater than or equal to 2 days, continue processing and proceed to Surgical Procedure.

21. Check Surgical Procedure
    a. If Surgical Procedure is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
    b. If Surgical Procedure 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 equals Yes, continue processing and proceed to Surgery End Date.

22. Check Surgery End Date
    a. If the Surgery End Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
    b. If the Surgery 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 Surgery End Date equals a Non Unable to Determine Value, continue processing and proceed to the Initial Surgical Prophylaxis Day calculation.

23. Calculate Initial Surgical Prophylaxis Day. Initial Surgical Prophylaxis Day, in days, is equal to the VTE Prophylaxis Date minus Surgery End Date.

24. Check Initial Surgical Prophylaxis Day
    a. If the 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 the 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 the 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.