

**Measure Information Form
Collected For:
CMS Voluntary Only**

Measure Set: Venous Thromboembolism (VTE)

Set Measure Set ID #: VTE-4

Performance Measure Name: Venous Thromboembolism Patients Receiving Unfractionated Heparin with Dosages/Platelet Count Monitoring by Protocol or Nomogram

Description: This measure assesses the number of patients diagnosed with confirmed VTE who received intravenous (IV) UFH therapy dosages AND had their platelet counts monitored using defined parameters such as a nomogram or protocol.

Rationale: Heparin is commonly involved in adverse drug events (Geerts et al., 2008). Sub-therapeutic and supratherapeutic levels can lead to thromboembolic or bleeding complications that may increase the patient's length of stay. The use of weight-based nomograms has increased the likelihood that a therapeutic partial prothromboplastin time (aPTT) will be achieved within the first 24 to 48 hours of therapy. The risk of recurrent thromboembolism is reduced when a therapeutic level of heparin is reached quickly. Unfractionated heparin (UFH) management by weight-based aPTT adjusted protocols have demonstrated their ability through clinical trials to achieve a therapeutic aPTT more rapidly than with standard UFH dosing without increasing major bleeding (Rashke et al, 1993).

Heparin nomograms are superior compared to routine care in the timely achievement of therapeutic anticoagulation despite the trend toward patients having aPTTs above the target range (ahrq.gov/clinic/ptsafety/chap9.htm, retrieved October 6, 2011).

Heparin-induced thrombocytopenia (HIT) occurs more commonly in patients who receive UFH than in those who receive low molecular weight heparin (Martin et. al., 2005). HIT is defined as an unexplained fall in platelet count (specifically, a 50% fall in platelet count from baseline, even if the platelet count remains above $150 \times 10^9/L$) (Warkentin et. al., 2008). Platelet counts generally begin to fall 5-10 days after the initiation of heparin therapy. Prompt recognition of HIT is important so that heparin can be discontinued and the risk of venous and arterial thrombosis minimized.

To detect HIT, platelet count monitoring is recommended for all patients treated with UFH (Warkentin et. al., 2008).

Type of Measure: Process

Improvement Noted As: An increase in the rate

Numerator Statement: Patients who have their IV UFH therapy dosages AND platelet counts monitored according to defined parameters such as a nomogram or protocol.

Included Populations: Not Applicable

Excluded Populations: None

Data Elements:

Monitoring Documentation

Denominator Statement: Patients with confirmed VTE receiving IV UFH therapy.

Included Populations:

ICD-9-CM Principal or Other Diagnosis Codes of VTE as defined in Appendix A, Table 7.03 or 7.04

Excluded Populations:

- Patients less than 18 years of age
- Patients who have a length of stay greater than 120 days
- Patients with *Comfort Measures Only* documented
- Patients enrolled in clinical trials
- Patients discharged to a health care facility for hospice care
- Patients discharged to home for hospice care
- Patients who expired
- Patients who left against medical advice
- Patients discharged to another hospital
- Patients without *UFH Therapy Administration*
- Patients without VTE confirmed by diagnostic testing

Data Elements:

- *Admission Date*
- *Birthdate*
- *Clinical Trial*
- *Comfort Measures Only*
- *Discharge Date*
- *Discharge Disposition*
- *ICD-9-CM Other Diagnosis Codes*
- *ICD-9-CM Principal Diagnosis Code*
- *UFH Therapy Administration*
- *VTE Confirmed*
- *VTE Diagnostic Test*

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: Data results can be used to identify patients with VTE that received intravenous UFH dosages to determine whether any patients were diagnosed with HIT based on laboratory results. Hospitals could then use this information to evaluate whether HIT was recognized and treated appropriately.

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:

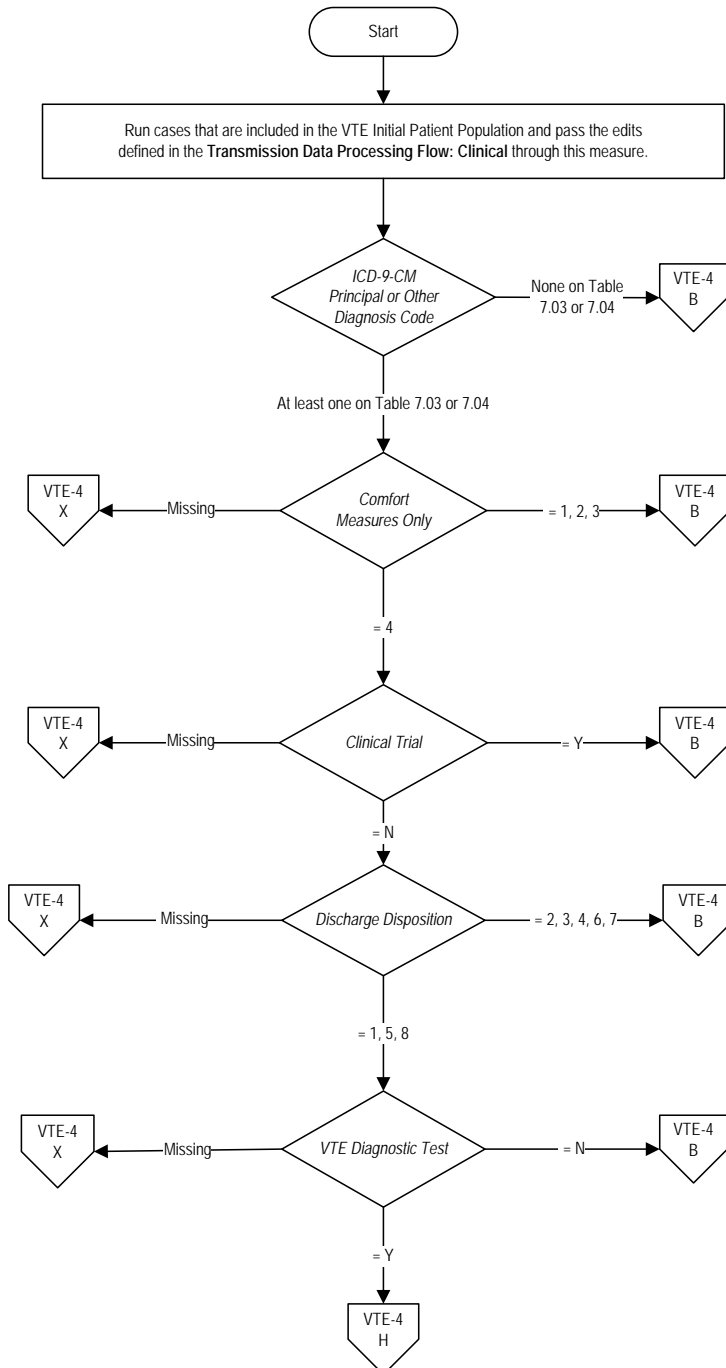
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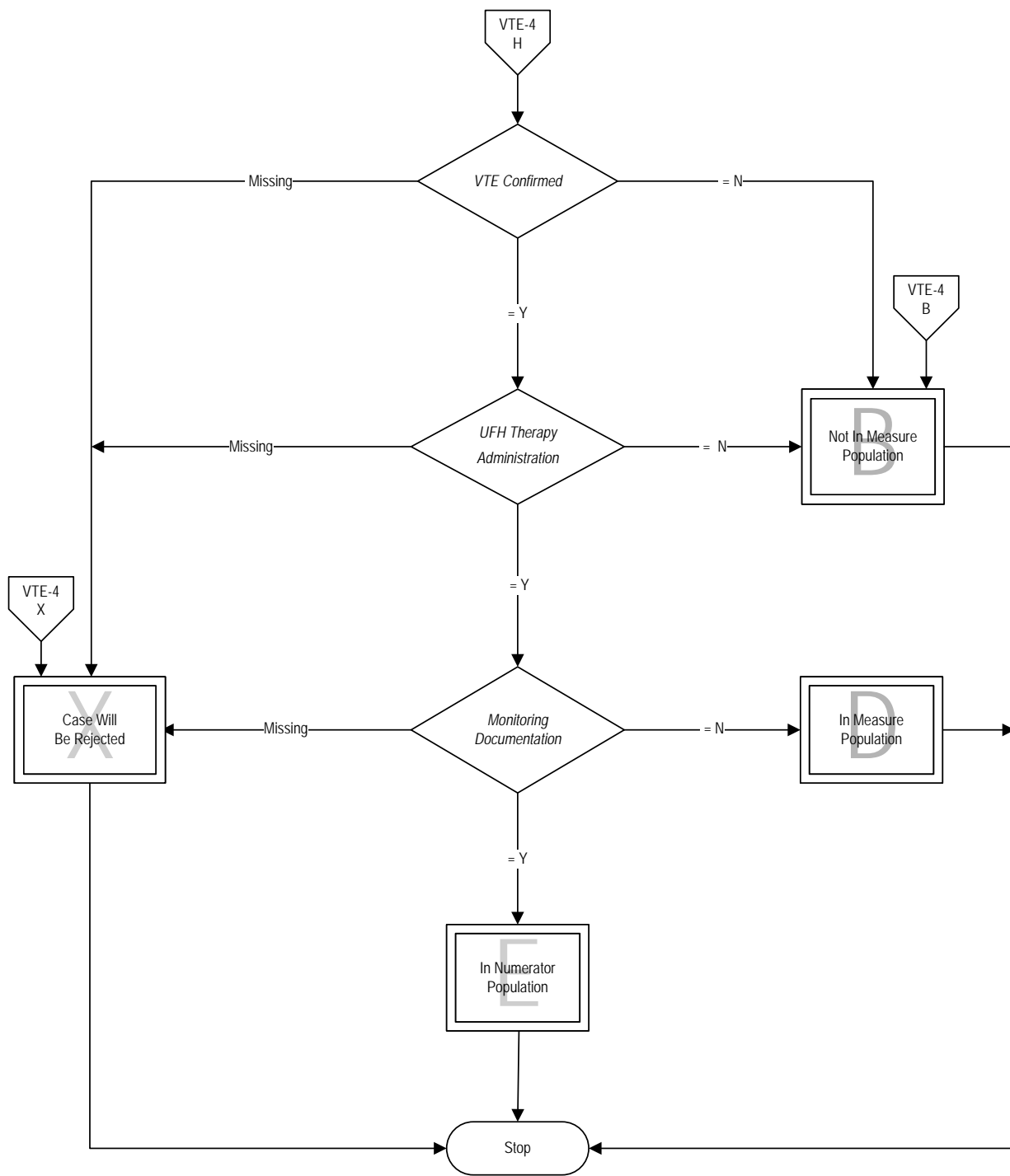
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Numerator: Patients who have their IV UFH therapy dosages AND platelet counts monitored according to defined parameters such as a nomogram or protocol

Denominator: Patients with confirmed VTE receiving IV UFH therapy





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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. Check ICD-9-CM Principal or Other Diagnosis Code
 - a. If none of the ICD-9-CM Principal or Other Diagnosis Code is not on Table 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 at least one of the ICD-9-CM Principal or Other Diagnosis Code is on Table 7.03 or 7.04, continue processing and proceed to Comfort Measures Only.
3. 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, 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 Comfort Measures Only equals 4, continue processing and proceed to Clinical Trial.
4. 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 Discharge Disposition.
5. Check Discharge Disposition
 - a. If Discharge Disposition is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If Discharge Disposition equals 2, 3, 4, 6, or 7, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.

- c. If Discharge Disposition equals 1, 5, or 8, continue processing and proceed to VTE Diagnostic Test.
6. Check VTE Diagnostic Test
- a. If VTE Diagnostic Test is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If VTE Diagnostic Test equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
 - c. If VTE Diagnostic Test equals Yes, continue processing and proceed to VTE Confirmed.
7. Check VTE Confirmed
- a. If VTE Confirmed is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If VTE Confirmed equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
 - c. If VTE Confirmed equals Yes, continue processing and proceed to UFH Therapy Administration.
8. Check UFH Therapy Administration
- a. If UFH Therapy Administration is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If UFH Therapy Administration equals No, the case will proceed to a Measure Category Assignment of B and will not be in the Measure Population. Stop processing.
 - c. If UFH Therapy Administration equals Yes, continue processing and proceed to Monitoring Documentation.
9. Check Monitoring Documentation
- a. If Monitoring Documentation is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
 - b. If Monitoring Documentation equals No, the case will proceed to a Measure Category Assignment of D, and will be in the Measure Population. Stop processing.
 - c. If Monitoring Documentation equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.