

## NQF-ENDORSED VOLUNTARY CONSENSUS STANDARDS FOR HOSPITAL CARE

### Measure Information Form

**Measure Set:** Venous Thromboembolism (VTE)

**Set Measure Set ID #:** VTE-3

**Performance Measure Name:** Venous Thromboembolism Patients with Anticoagulation Overlap Therapy

**Description:** This measure assesses the number of patients diagnosed with confirmed VTE who received an overlap of parenteral (intravenous [IV] or subcutaneous [subcu]) anticoagulation and warfarin therapy. For patients who received less than five days of overlap therapy, they should be discharged on both medications or have a *Reason for Discontinuation of Parenteral Anticoagulation Therapy*. Overlap therapy should be administered for at least five days with an international normalized ratio (INR) greater than or equal to 2 prior to discontinuation of the parenteral anticoagulation therapy, discharged on both medications or have a *Reason for Discontinuation of Parenteral Anticoagulation Therapy*.

**Rationale:** For patients who present with a confirmed acute VTE, parenteral anticoagulation is the first line of therapy because of its rapid onset of action (Buller et al., 2004). Warfarin can be initiated on the first day of treatment after the first dose of a parenteral anticoagulant has been given. Because the warfarin has a very slow onset of action, it cannot be used as mono-therapy for acute VTE (Ansell et al., 2008).

The strong (Level I) recommendations to overlap parenteral anticoagulation with oral warfarin therapy in the initial treatment of VTE events is based in part on the known effect of warfarin on the coagulation cascade (Brandjes, et al., 1992). The early increase in the Prothrombin time (PT) and INR often reflects the laboratory finding of initial reduction in clotting factors of the extrinsic pathway of coagulation resulting in prolongation of the PT/INR, while the patient is still at risk of thromboembolic events due to persistent levels of coagulation factors of the intrinsic pathway and common pathways of coagulation.

The recommendation that heparins and warfarin overlap for a five-day period is based on pharmacokinetic, pharmacologic, pathophysiologic, and clinical evidence as noted by Wittkowsky A.K. (2005). All studies support the pharmacokinetic characteristics of warfarin and the time delay in achieving an antithrombotic effect suggesting the need for overlap of heparin during initial warfarin dosing in order to prevent thrombus extension, embolization to the lungs, death due to Pulmonary Emboli (PE), and the development of complications such as recurrent thromboembolic events and the postthrombotic syndrome. Kearon et al, 2008 also denotes current recommendation for treatment of confirmed VTE to begin with oral warfarin therapy, with combination of initial

anticoagulation therapy for a minimum of 5 days and until the INR is >2.0 for at least 24 hours, and then a recommended target rate.

**Type of Measure:** Process

**Improvement Noted As:** An increase in the rate

**Numerator Statement:** Patients who received overlap therapy.

**Included Populations:** Patients who received warfarin **and** parenteral anticoagulation:

- Five or more days, with an INR greater than or equal to 2 prior to discontinuation of parenteral therapy OR
- Five or more days, with an INR less than 2 and discharged on overlap therapy OR
- Less than five days and discharged on overlap therapy OR
- With documentation of reason for discontinuation of parenteral therapy OR
- With documentation of a reason for no overlap therapy

**Excluded Populations:** None

**Data Elements:**

- *INR Value*
- *Overlap Therapy*
- *Overlap Therapy Start Date*
- *Parenteral Anticoagulant End Date*
- *Parenteral Anticoagulant Prescribed at Discharge*
- *Reason for Discontinuation of Parenteral Anticoagulation Therapy*
- *Reason for No Overlap Therapy*

**Denominator Statement:** Patients with confirmed VTE who received warfarin.

**Included Populations:**

Discharges with an *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 warfarin therapy during hospitalization
- 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*
- *VTE Confirmed*
- *VTE Diagnostic Test*
- *Warfarin Administration*

**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 cases that did not pass the measure to determine if documentation, medication administration or other reasons need to be addressed.

**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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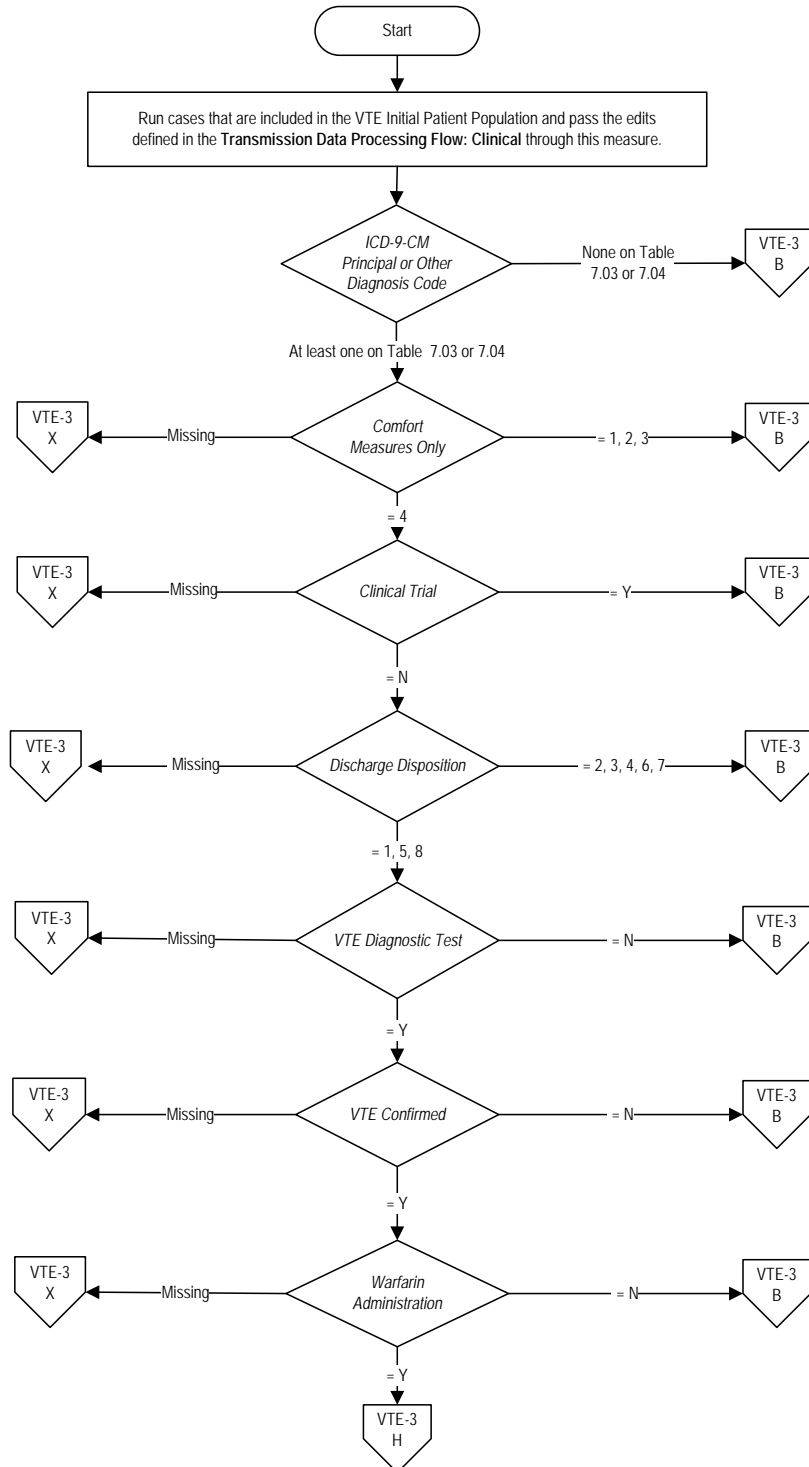
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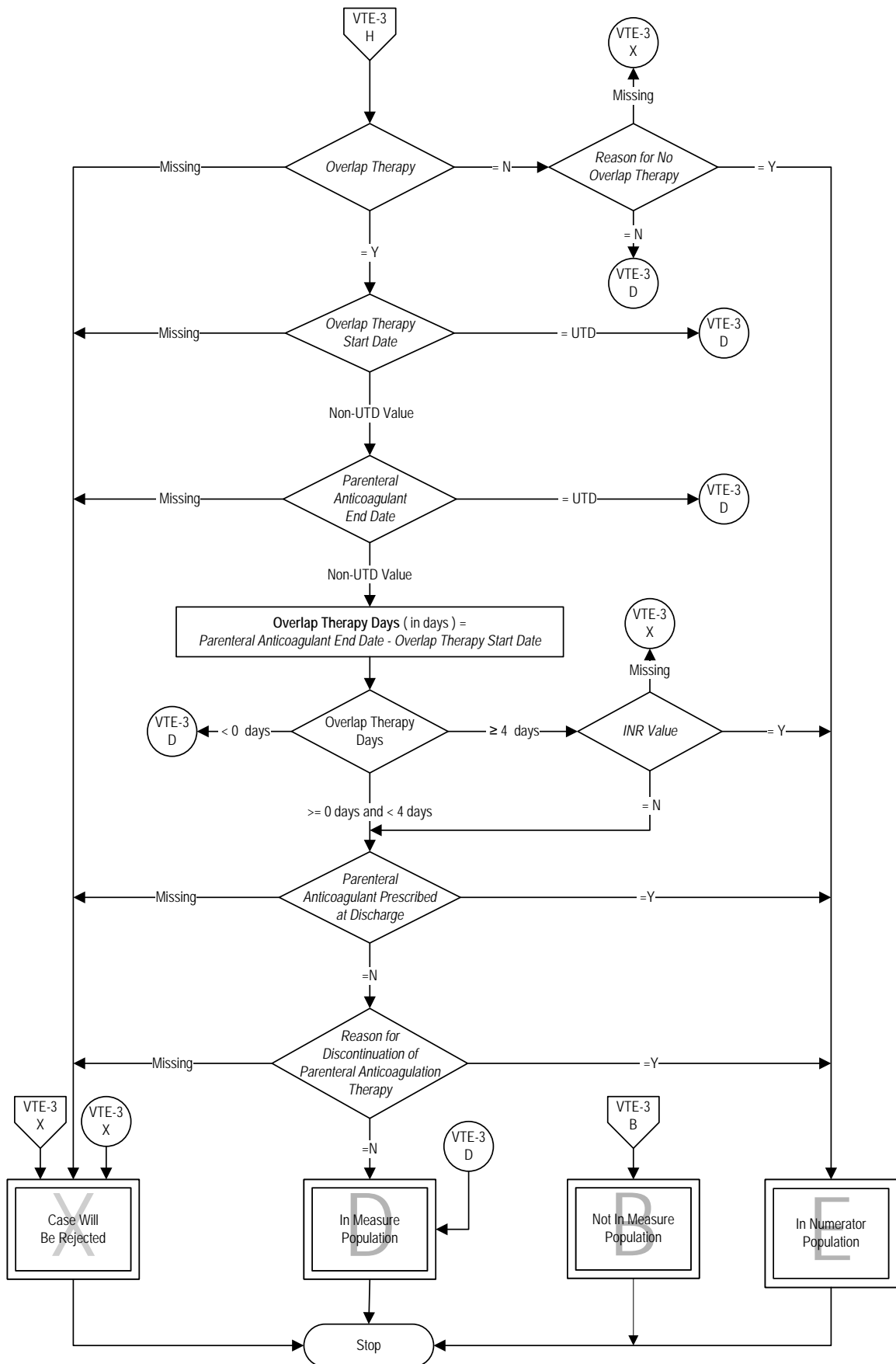
## VTE-3: Venous Thromboembolism Patients with Anticoagulation Overlap Therapy

Numerator: Patients who received overlap therapy

Denominator: VTE patients with confirmed VTE who received warfarin

Variable Key:  
Overlap Therapy Days





### **VTE-3: Venous Thromboembolism Patients with Anticoagulation Overlap Therapy**

**Numerator:** Patients who received overlap therapy.

**Denominator:** Patients with confirmed VTE who received warfarin.

**Variable Key:** Overlap Therapy Days

1. Start processing. Run cases that are included in the VTE Initial Patient Population and pass the edits defined in 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 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 Warfarin Administration.
8. Check Warfarin Administration
  - a. If Warfarin Administration is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
  - b. If Warfarin 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 Warfarin Administration equals Yes, continue processing and proceed to Overlap Therapy.
9. Check Overlap Therapy
  - a. If Overlap Therapy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
  - b. If Overlap Therapy equals No, continue processing and proceed to check Reason for No Overlap Therapy.
    1. If Reason for No Overlap Therapy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
    2. If Reason for No Overlap Therapy equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
    3. If Reason for No Overlap Therapy equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.

- c. If Overlap Therapy equals Yes, continue processing and proceed to the Overlap Therapy Start Date.
10. Check Overlap Therapy Start Date
- a. If Overlap Therapy Start Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
  - b. If the Overlap Therapy 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 Overlap Therapy Start Date equals a Non Unable to Determine Value, continue processing and proceed to the Parenteral Anticoagulant End Date.
11. Check Parenteral Anticoagulant End Date
- a. If Parenteral Anticoagulant End Date is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
  - b. If the Parenteral Anticoagulant 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 Parenteral Anticoagulant End Date equals a Non Unable to Determine Value, continue processing and proceed to the Overlap Therapy Days calculation.
12. Calculate Overlap Therapy Days. Overlap Therapy Days, in days, is equal to Parenteral Anticoagulant End Date minus Overlap Therapy Start Date.
13. Check Overlap Therapy Days
- a. If Overlap Therapy Days is less than 0 days, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.
    - 1. If Overlap Therapy Days is greater than or equal to 4 days, continue processing and proceed to INR Value.
    - 2. If INR Value is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
    - 3. If INR Value equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
    - 4. If INR Value equals No, continue processing and proceed to Parenteral Anticoagulant Prescribed at Discharge.
  - b. If Overlap Therapy Days is greater than or equal to zero days and less than 4 days, continue processing and proceed to Parenteral Anticoagulant Prescribed at Discharge.
14. Check Parenteral Anticoagulant Prescribed at Discharge

- a. If Parenteral Anticoagulant Prescribed at Discharge is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
  - b. If Parenteral Anticoagulant Prescribed at Discharge equals Yes, the case will proceed to a Measure Category Assignment of E and will be in the Numerator Population. Stop processing.
  - c. If Parenteral Anticoagulant Prescribed at Discharge equals No, continue processing and proceed to Reason for Discontinuation of Parenteral Anticoagulation Therapy.
15. Check Reason for Discontinuation of Parenteral Anticoagulation Therapy
- a. If Reason for Discontinuation of Parenteral Anticoagulation Therapy is missing, the case will proceed to a Measure Category Assignment of X and will be rejected. Stop processing.
  - b. If Reason for Discontinuation of Parenteral Anticoagulation Therapy 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 Discontinuation of Parenteral Anticoagulation Therapy equals No, the case will proceed to a Measure Category Assignment of D and will be in the Measure Population. Stop processing.