GUIDELINE STATEMENT
Traumatic intracranial hemorrhage can have devastating complications, especially for those patients on prescribed anticoagulation therapy. Trauma patients who are receiving warfarin at the time of the injury are at increased risk for hemorrhagic complications and death. Rapid reversal of this anticoagulant may minimize these risks. The use of prothrombin complex concentrate (PCC) can quickly accelerate reversal of coagulopathy at a relatively low cost.

Note: This medication is only to be ordered by a Trauma or Emergency Attending.

GUIDELINE
A. Patient Arrival: Patients arriving with a trauma mechanism, known or suspected head injury and a history of warfarin use they should be activated as a trauma consult.

Goals: *if a reliable history is not available, coagulation studies will be obtained with initial trauma laboratory panel.

1. Head CT scan completed within 20 minutes of arrival
2. STAT INR/PT/PTT and fibrinogen
3. Type and Cross and Confirmatory blood tubes sent
4. Obtain GCS and vital signs at time of triage
5. Neuro checks hourly at least until the first repeat CT scan
6. Goal: Warfarin reversal of INR <1.5 within 2 hours for active bleeding

B. If CT is positive for ICH or patient shows signs of significant bleeding
1. If INR < 1.9
   a. Administer Vitamin K 10 mg IV, consider continuation
   b. Consider additional reversal treatment, such as FFP, per physician discretion
   c. Neurosurgery consult for ICH
   d. Admit patient to critical care area
2. If INR ≥ 2.0
   a. Administer Kcentra® (PCC) (round to the nearest vial size)
      - INR 2-< 4 = 25 units/kg not to exceed 2500 units
      - INR 4-6 = 35 units/kg not to exceed 3500 units
      - INR > 6 = 50 units/kg not to exceed 5000 units
   b. Neurosurgery consult for ICH
   c. Admit to critical care area
   d. Re-check INR, PT/PTT and fibrinogen levels 30 minutes after infusions complete
      1. If INR remains ≥ 2.0
         - If fibrinogen < 100 consider administering 10 units of cryoprecipitate
         - Re-check INR, PT/PTT and fibrinogen levels 30 minutes after infusions complete.
         - Repeat head CT in 3 hours from initial CT scan
      2. If INR is ≤1.9
         - Consider Vitamin K

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Treatment of the Warfarin Anticoagulated Patient with Suspected Head Injury (PCC/ Kcentra®)

- Repeat head CT in 3 hours from initial scan

C. CT Negative for ICH or patient does not show signs of significant bleeding
   1. If INR ≤ 2.9
      a. No reversal required
      b. If there is a need for therapeutic INR: reassess and continue warfarin
      c. Discharge from ED with appropriate instructions
   2. If INR ≥ 3.0
      a. Admit and observe for 6 hours post injury with hourly neuro checks
      b. Rescan prior to discharge
      c. If there is a need for therapeutic INR: reassess and continue warfarin
      d. Discharge from hospital with appropriate instructions
Treatment of the Warfarin Anticoagulated Patient with Suspected Head Injury (PCC/ Kcentra®)

History of Warfarin Use

AND

Trauma Mechanism, Known or Suspected Head Injury

CT positive or
Significant bleeding
NS Consult

INR ≤ 1.9

Vitamin K 10mg IV
Consider additional treatment options per MD discretion

INR ≥ 2.0

Vitamin K10 mg IV;
Kcentra® per INR based dosing

Recheck INR, PT/PTT & Fibrinogen 30 minutes after infusion

INR ≤ 1.9

INR ≥ 2.0

INR ≥ 2.0

INR > 3.0

CT negative or
No significant bleeding

INR ≤ 2.9

No reversal required

INR > 3.0

Need for therapeutic INR: reassess & continue warfarin. DC from ED

Admit and observe for 6 hours post injury, hourly neuro √s and re-scan prior to DC

Need for therapeutic INR: reassess & continue warfarin.

INR > 3.0

INR ≥ 2.0

INR < 2.9

CT positive or
Significant bleeding
NS Consult

INR ≥ 2.0

Vitamin K10 mg IV;
Kcentra® per INR based dosing

Recheck INR, PT/PTT & Fibrinogen 30 minutes after infusion

INR ≤ 1.9

INR ≥ 1.9

If fibrinogen < 100 – 10 units consider Cryoprecipitate

Recheck INR, PT/PTT & Fibrinogen 30 minutes after infusion;
Repeat Head CT

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REFERENCES:

### Treatment of the Warfarin Anticoagulated Patient with Suspected Head Injury (PCC/ Kcentra®)


**REVIEWED BY:**
- TRAUMA ATTENDING MEETING; APRIL, 2013
- ED ATTENDING MEETING; APRIL, 2013
- CRITICAL CARE COMMITTEE; APRIL, 2013
- TRAUMA SYSTEMS; APRIL, 2013
- NEUROSURGERY ATTENDING MEETING; APRIL, 2013
- BLOOD UTILIZATION COMMITTEE; JUNE, 2013
- PHARMACY AND THERAPEUTICS; SEPTEMBER, 2013

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