



**Southeast Minnesota Regional
Trauma Advisory Committee (SMRTAC)
Regional Practice Management Guideline**

<u>Reverse Anticoagulation Guideline</u> <u>for the Known or Suspected</u> <u>Adult Head Injured Patient</u>	
Adult Practice Management Guideline	Effective: 10/2012
Contact: SMRTAC Coordinator	Last Reviewed:

Purpose

Purpose: To outline a process for the urgent reversal of anti-coagulation in the adult patient with a known or suspected head injury who is taking Warfarin or low-molecular weight heparin

Policy Statements

1. Minor mechanisms of injury (MOI) are a known cause of significant cranial hemorrhage in patients on anti-coagulation therapy. This should include sitting or standing level falls.
2. Warfarin-related intracranial hemorrhage (ICH) is a medical emergency with a mortality rate as high as 50% at thirty (30) days.
3. Rapid reversal of Warfarin anticoagulation is recommended in Warfarin related ICH, especially with higher relative international normalized ratios (INR) and in patients who are symptomatic with a neurological deficit.
4. Currently no guidelines exist for reversing the effects of direct thrombin inhibitors or platelet inhibitors.

Procedure Statements

Any patient taking anti-coagulation medications with a known mechanism of injury history (any fall to include sitting and standing, struck head on object, etc) with a persistent GCS \leq 13 or reported change in mentation by caregiver:

1. Arrange for immediate transfer to a facility with Neurosurgery capabilities. If time permits, obtain head CT—this should not delay transfer.
2. Obtain stat baseline INR for patients on Warfarin or low-molecular-weight heparin.
3. If INR \geq 1.5
 - a. Transfuse 2 – 4 units of Fresh Frozen Plasma if available
 - i. Do not delay transfer to administer plasma
 - ii. Mayo One helicopters carry plasma and can bring to patient for administration during transport.
 - b. Administer **Vitamin K** (Phytonadione) 10 mg IV as a slow IV push with maximum 1mg/min or as a IV piggyback over thirty (30) minutes (maximum dosing is 1mg/min). The decision to treat with IV vitamin K rests with the treating physician, and carries a risk (3/10,000) of anaphylactic and uncertain risk (possibly rare) or

anaphylactoid reaction. Monitor for allergic reactions during infusion of medication

- c. Notify receiving facility of INR results

Any patient taking anti-coagulation medications with a known mechanism of injury history (fall, struck head on object, etc) with a persistent GCS > 13:

1. Obtain stat baseline CBC, PT, INR and stat head CT.
 - a. Do not delay transport to tertiary care in order to obtain head CT.
 - b. Order other lab and radiologic studies as appropriate
2. If head CT positive for hemorrhage begin following sequence if INR \geq 1.5
 - a. Arrange for immediate transfer to facility with Neurosurgery capabilities
 - i. Communicate patient anti-coagulation history and INR to referring facility
 - ii. Immediately arrange for transmission of head CT imaging via web or PACS system after patient referral accepted
 - b. Transfuse 2 – 4 units of Fresh Frozen Plasma if available
 - i. Do not delay transport to administer plasma
 - ii. Mayo One helicopters carry plasma and can bring to patient for administration during transport.
 - c. Administer **Vitamin K** (Phytonadione) 10 mg IV as a slow IV push with maximum 1mg/min or as a IV piggyback over thirty (30) minutes (maximum dosing is 1mg/min). The decision to treat with IV vitamin K rests with the treating physician, and carries a risk (3/10,000) of anaphylactic and uncertain risk (possibly rare) or anaphylactic reaction. Monitor for allergic reactions during infusion of medication
 - d. Notify receiving facility of INR results
3. For those patients on low-molecular weight Heparin may consider **Protamine Sulfate** (maximum dose 50 mg).

References

1. Ansell J, Hirsh, J Hylek E, Jacobson A, et al. Pharmacology and Management of the Vitamin K Antagonists: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition) *Chest* June 2008 133:160S-198S; doi:10.1378/chest.08-0670.
2. Makris M, Greaves M, Phillips WS, Kitchen S, et al. Emergency oral anticoagulation reversal: the relative efficacy of infusion of fresh frozen plasma and clotting factor concentrate on correction of the coagulopathy. *Thromb Haemost.* 1997;77:477-480.

Prepared by: SMRTAC Leadership

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Disclaimer: This is a general guideline and is not intended as a substitute for clinical judgment or as a protocol for the management of all trauma patients.

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Guideline for Reversal of Anticoagulation Therapy in the Known or Suspected Head-injured Adult

