## Breakthrough/extension of thrombosis

**Updated: 10/27/2017** 

- 1. Potential causes of breakthrough
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## Potential causes of breakthrough/extension

Breakthrough VTE while on anticoagulation suspected

#### **Ensure VTE is truly breakthrough:**

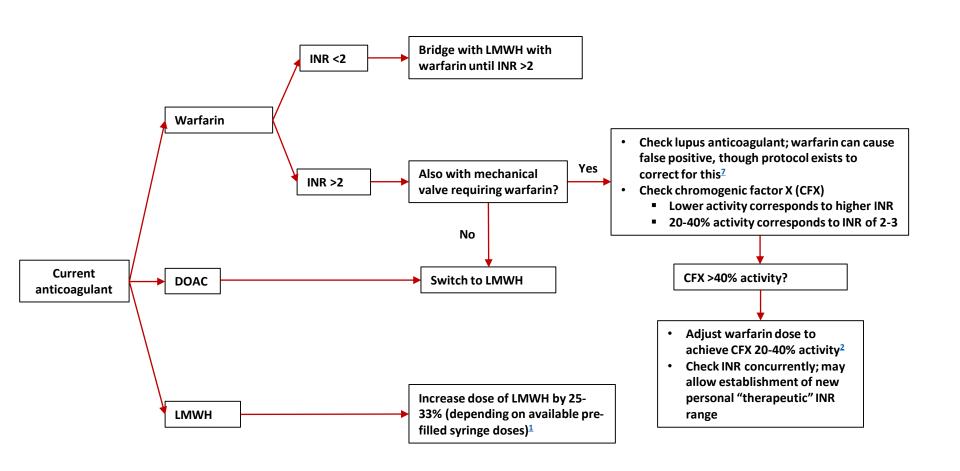
- Consider if actually post-thrombotic syndrome
- Compare serial US and/or CTA
  - Comparing studies performed at different centers can be difficult
  - Only half of patients have normal US or CTA findings after 6-12 months of anticoagulation<sup>6</sup>
  - Ipsilateral recurrence or extension: consider positive if new clot in previously unaffected vein segment, or clot diameter increased by >4mm

#### Breakthrough likely:

- Consider possible underlying causes
- No guidelines exist to guide evaluation, so testing should be performed based on clinical context
  - 1. Medication non-adherence
    \*\*\*MOST COMMON CAUSE\*\*\*5
    - Prolonged coagulation tests can support compliance with DOACs, but do NOT correlate accurately with therapeutic drug levels
  - 2. Malignancy
    - Ensure age-appropriate cancer screening
    - May consider CT chest or abdomen/pelvis
    - Data in FIRST unprovoked VTE show CT abdomen/pelvis does not detect significantly more cancers<sup>3</sup>
  - 3. Vascular abnormalities
    - May-Thurner syndrome, thoracic outlet obstruction
  - 4. Obesity
    - DOACs not approved and may be subtherapeutic for weight >120 kg, BMI >40
  - 5. APLA
  - 6. Drug interactions especially for warfarin
  - 7. Pregnancy young, female
  - 8. MPN if CBC abnormalities
  - 9. PNH if anemic, hemolysis
  - 10. HIT if currently/recently on heparin product

Anticoagulation management for confirmed breakthrough

# Anticoagulation management for confirmed breakthrough/extension



### References

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- 2. <u>Crowl A, Schullo-feulner A, Moon JY. Warfarin monitoring in antiphospholipid syndrome</u> and lupus anticoagulant. Ann Pharmacother. 2014;48(11):1479-83.
- 3. <u>Carrier M, Lazo-langner A, Shivakumar S, et al. Screening for Occult Cancer in Unprovoked Venous Thromboembolism. N Engl J Med. 2015;373(8):697-704.</u>
- 4. <u>Schulman S. How I treat recurrent venous thromboembolism in patients receiving anticoagulant therapy.</u> Blood. 2017;129(25):3285-3293.
- 5. Kyrle PA. How I treat recurrent deep-vein thrombosis. Blood. 2016;127(6):696-702.
- 6. <u>Le gal G, Kovacs MJ, Carrier M, et al. Validation of a diagnostic approach to exclude recurrent venous thromboembolism. J Thromb Haemost.</u> 2009;7(5):752-9.
- 7. Pengo V, Tripodi A, Reber G, et al. Update of the guidelines for lupus anticoagulant detection. Subcommittee on Lupus Anticoagulant/Antiphospholipid Antibody of the Scientific and Standardisation Committee of the International Society on Thrombosis and Haemostasis. J Thromb Haemost. 2009;7(10):1737-40.

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