

# The implications of elevated D-dimer following completion of anticoagulation for VTE

Caroline Baglin

Nurse Consultant Thrombophilia & Anticoagulation

Addenbrooke's Hospital Cambridge

## Aim

- What is a D dimer?
- Evidence to support its use
- How we use this information
- The future

## What is a D dimer?

- Elevated
- Used with pre test probability assessment to exclude VTE
- After treatment stopped used to identify risk of recurrence

## BCSH for VTE diagnosis

- Low pre test probability & low D dimer = DVT excluded without need for imaging
- Moderate pre test probability & low D dimer =
- High pre test prob & raised D dimer = imaging to confirm

# Evidence to support its use

## Unprovoked recurrent venous thrombosis: prediction by D-dimer and clinical risk factors.

- *Baglin T, Palmer CR, Luddington R, Baglin, C.*
- *Journal of Thrombosis and Haemostasis 2008 April; 6(4):577-82.*
- Aim
- Determine the predictive value of D-dimer
- 272 patients provoked & unprovoked events
- D-dimer 1-2 months after stopping warfarin
- Outcome
- Positive D-dimer significantly associated with unprovoked recurrence for VTE

# Systematic review; D-dimer to predict recurrent disease after stopping anticoagulant therapy for unprovoked VTE

*Verhovsek, Douketis, Shrivastava, Tait, Baglin, Poli, Lim*

*Annals of Internal Medicine 2009*

- 7 studies
- 1888 patients with 1<sup>st</sup> unprovoked VTE
- Looked at annual rates of recurrence in positive & negative D-dimer results
- Conclusion
- After 3 months of OAT for 1<sup>st</sup> unprovoked VTE follow up after 2 years
- Negative D-dimer 3.5% annual risk for recurrence
- Positive D-dimer 8.9% annual risk for recurrence

# Elevated D-dimer levels predict recurrence in patients with idiopathic VTE: a meta-analysis

- *Bruinstroop et al*
- *Journal of Thrombosis & Haemostasis 2009*
- 4 studies
- 1539 patients with 1<sup>st</sup> unprovoked VTE
- D-dimer 1 month after stopping OAT
- Aim look at recurrence rate with positive & negative D-dimer results
- Results
- Elevated D-dimer recurrence rate (over 1.5 to 3 years) 16.6%
- Normal D-dimer recurrence rate (over 1.5 to 3 years) 7.2%
- Conclusion
- Elevated D-dimer 1 month after stopping OAT identified patients with idiopathic VTE at higher risk of recurrence



## How we use this information

- Anticoagulant Service
- BCSH 1998 standard duration
- NPSA alert18 2007 - End of treatment assessment



# Risk Assessment

- Starting warfarin



# Thrombosis Care Pathway

- - Either
    - VTE in unusual site
  - Or
    - Previous VTE
  - Or
    - VTE patient with malignancy
  - Or
    - 1st Calf DVT
  - 
  - **Stop date**\_\_ / \_\_ / \_\_
  - 
  - Or
    - 1st Proximal DVT / PE
  - »
  - **Stop date**\_\_ / \_\_ / \_\_
  - 
  - Or
    - 1st Proximal DVT / PE
  - 
  - 
  - 
  - **Stop date**\_\_ / \_\_ / \_\_
- Thrombophilia clinic** while on OAT
- Thrombophilia clinic** appointment
- Oncologist to give stop date
- 3 months treatment
- discharge with information letter
- Triggered by □ surgery □ plaster cast
- 6 months treatment
- discharge with information letter
- Triggered by □ pregnancy / post partum
- hormone treatment □ travel □ minor risk
- 6 months treatment
- discharge with information letter

# Thrombosis Care Pathway *continued*

## PATIENT HAS A FAMILY HISTORY OF VTE

If yes after treatment Thrombophilia profile

Positive result → Thrombophilia clinic or letter

Or

**Unprovoked** 1st Proximal DVT / PE

6 months treatment **Stop date** \_\_ / \_\_ / \_\_

VTE clinic appointment after stopping treatment

For PTS assessment, D-dimer measurement & duration decision

# Risk Assessment

- Stopping warfarin



# End of Treatment - Risk assessment

- 1<sup>st</sup> event
- Type of VTE      Calf / Proximal / PE
- Left or right leg
- Was VTE unprovoked? Y / N
- Trigger      transient / permanent / none identified
- Duration of anticoagulant therapy

# Risk assessment after stopping warfarin *continued*

- Family history of VTE Y/N
- Did they wear compression hosiery Y / N
- If yes, how long for?

- BMI Calculator

- Height
- Weight

**BMI =**

- Ashwell Shape Calculator

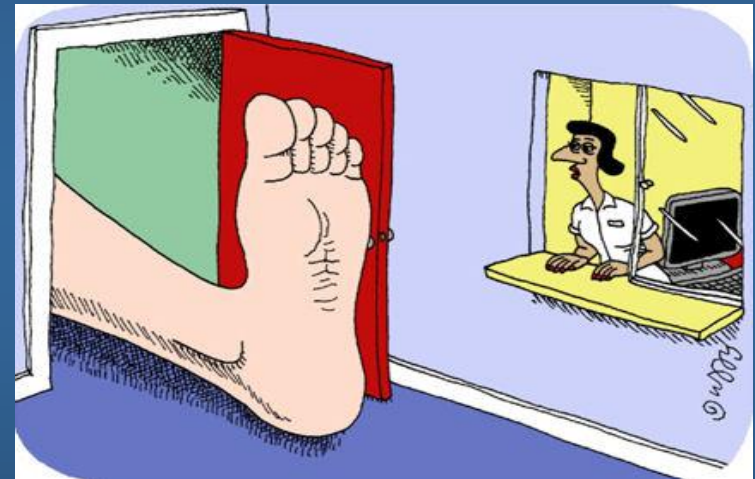
- Height
- Waist circumference

**Shape =**

- Thrombophilia testing & D-dimer

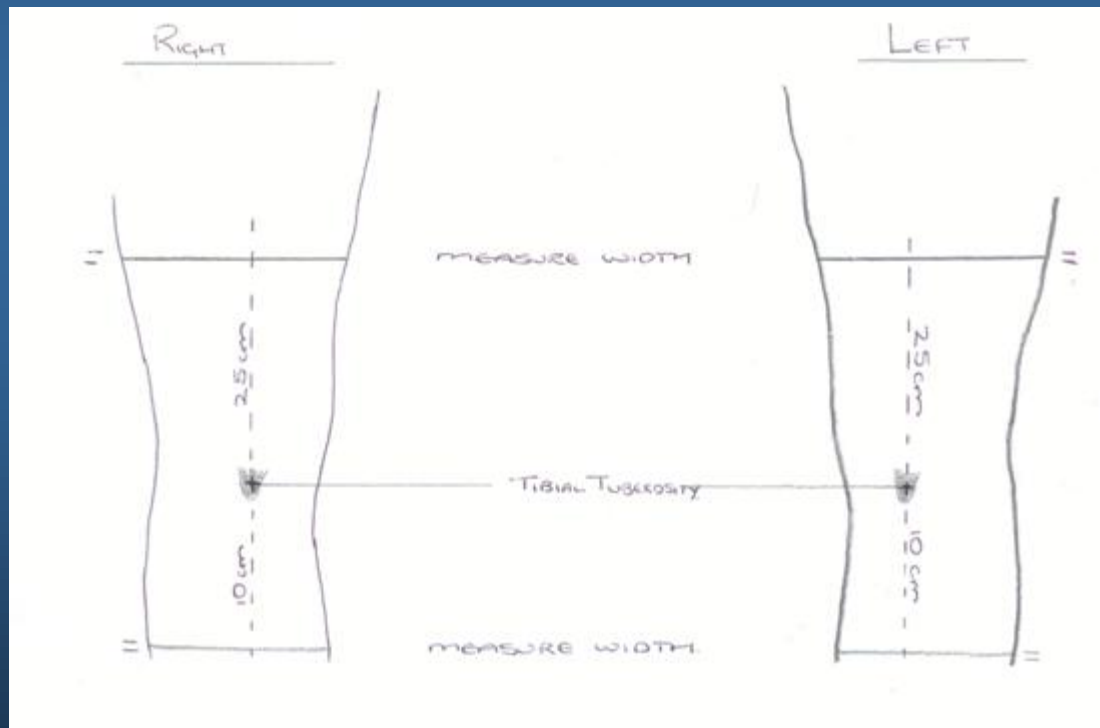
# PTS - Villalta Scoring 1994

• <u>Clinical assessment</u>		Left leg	Right leg
• <u>Symptoms</u>			
• Pains		0 1 2 3	0 1 2 3
• Cramps		0 1 2 3	0 1 2 3
• Heaviness		0 1 2 3	0 1 2 3
• Pruritus		0 1 2 3	0 1 2 3
• paraesthesia		0 1 2 3	0 1 2 3
• <u>Signs</u>			
• oedema		0 1 2 3	0 1 2 3
• skin induration		0 1 2 3	0 1 2 3
• hyperpigmentation		0 1 2 3	0 1 2 3
• venous ectasia		0 1 2 3	0 1 2 3
• redness		0 1 2 3	0 1 2 3
• pain during calf compression		0 1 2 3	0 1 2 3
•			
• RATE EACH	0 (absent)	1 (mild)	2 (moderate) 3 (severe)
•			
• <b>Final Score =</b>			0-4 - No PTS
			5-14 - Mild/moderate PTS
			15 or more or presence of ulcer - Severe PTS
•			





# Measurements



# Risk assessment after stopping warfarin *continued*

## Advice

Weight reduction  
Exercise/Sport  
Smoking cessation  
Clothing / Footwear  
Travel  
OCP  
Elevation of leg  
Leg care



# Leaflets

- Travel
- End of treatment



## 2<sup>nd</sup> visit

- Results of testing
- Answer questions
- Patient preference
- Care of episode complete
- Decision about long-term care



## Examples

- 52 year old male
- Unprovoked left proximal DVT
- 6 months warfarin
- End of treatment assessment
- No family history, BMI 33,
- D-dimer – 1,200

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## Examples

- 52 year old male
- Unprovoked left proximal DVT
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- No family history, BMI 33,
- D-dimer – 200

????



# Example

- 66 year old female
- PE
- Trigger - surgery
- 6 months warfarin

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# Example

- 66 year old female
- PE
- Unprovoked
- 6 months warfarin

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# The future

- Further studies
- Change in guidelines
- Change in care delivery

