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Making the Diagnosis of DVT - Main Session (Workshop options scheduled)

Saturday, 18 August 2012 Start 7:30am Duration: 45mins Plenary

Making the Diagnosis of DVT

Andre van Rij

Department Surgical Sciences

South GP CME 2013

Deep Vein Thrombosis

- DVT and PE:
  - 117 people per 100,000 per year
- Post Thrombotic Syndrome (PTS)

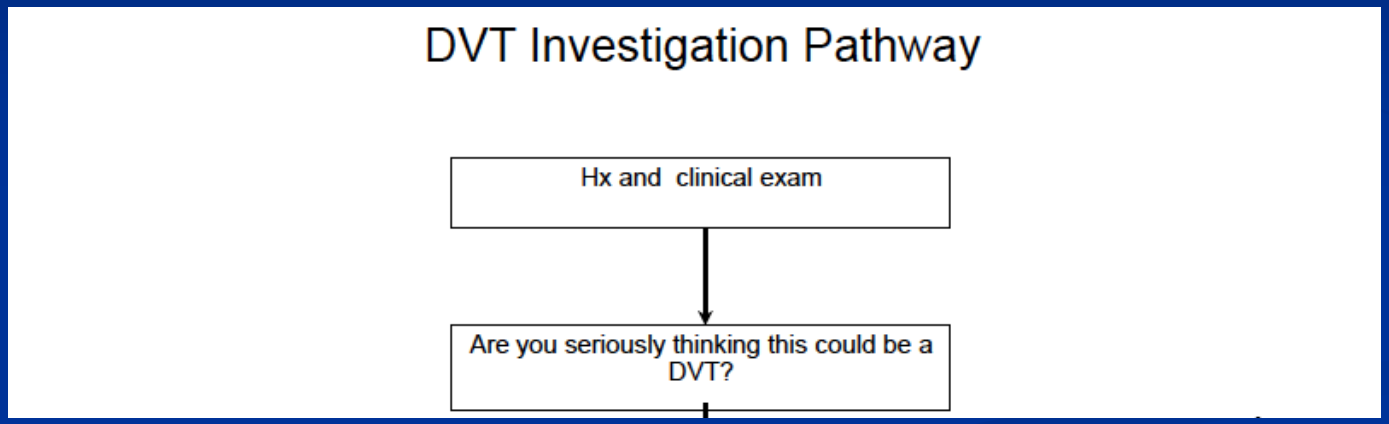
Patient

- 40 yr woman
- discomfort in left calf 3 days
- bit of swelling
- was skiing last week, couple of tumbles

- tender calf, maybe some swelling
- varicose veins - cosmetic

DVT Risk Factors

- **General**
  - Age >40 years
  - Immobilization > 3/7
  - Pregnancy / post-partum
  - Major surgery ~ 4 weeks
  - Trip (>4h) in past 4 weeks
- **Medical**
  - Cancer
  - Previous DVT
  - CHF
  - Sepsis
  - Nephrotic syndrome
- **Trauma**
  - CNS / spinal cord injury
  - Burns
  - Lower extremity fractures
- **Hematologic**
  - Thrombocytosis
  - Anti-thrombin III deficiency
  - Protein C deficiency
  - Protein S deficiency
  - Factor V Leiden
- **Drugs**
  - OCP
  - Estrogens



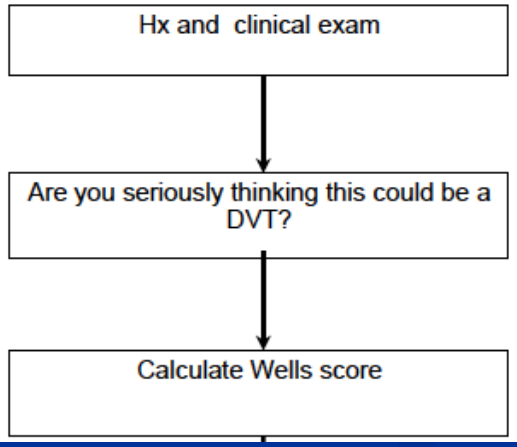
What else could it be ?

What else could it be ?

- Baker's cyst
- Superficial thrombophlebitis
- Cellulitis
- Hematoma
- Lymphoedema
- Arterial insufficiency
- Extrinsic vein compression
- Congestive Heart Failure
- Muscle / soft tissue injury

And you are still not sure ?

DVT Investigation Pathway

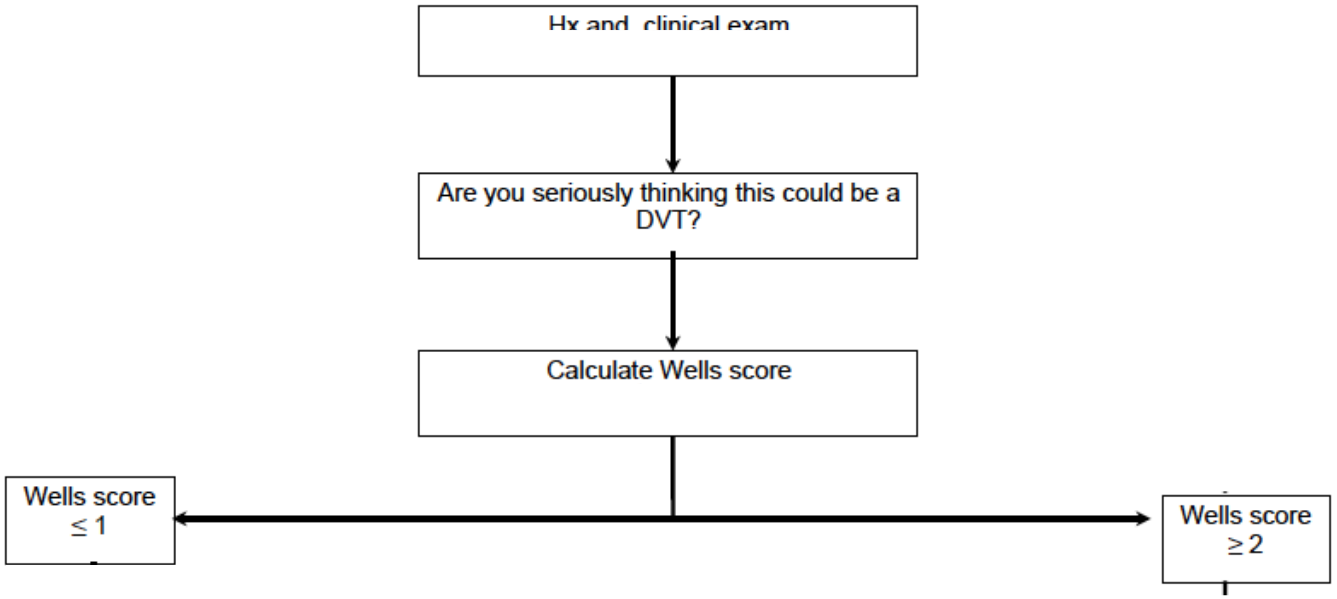


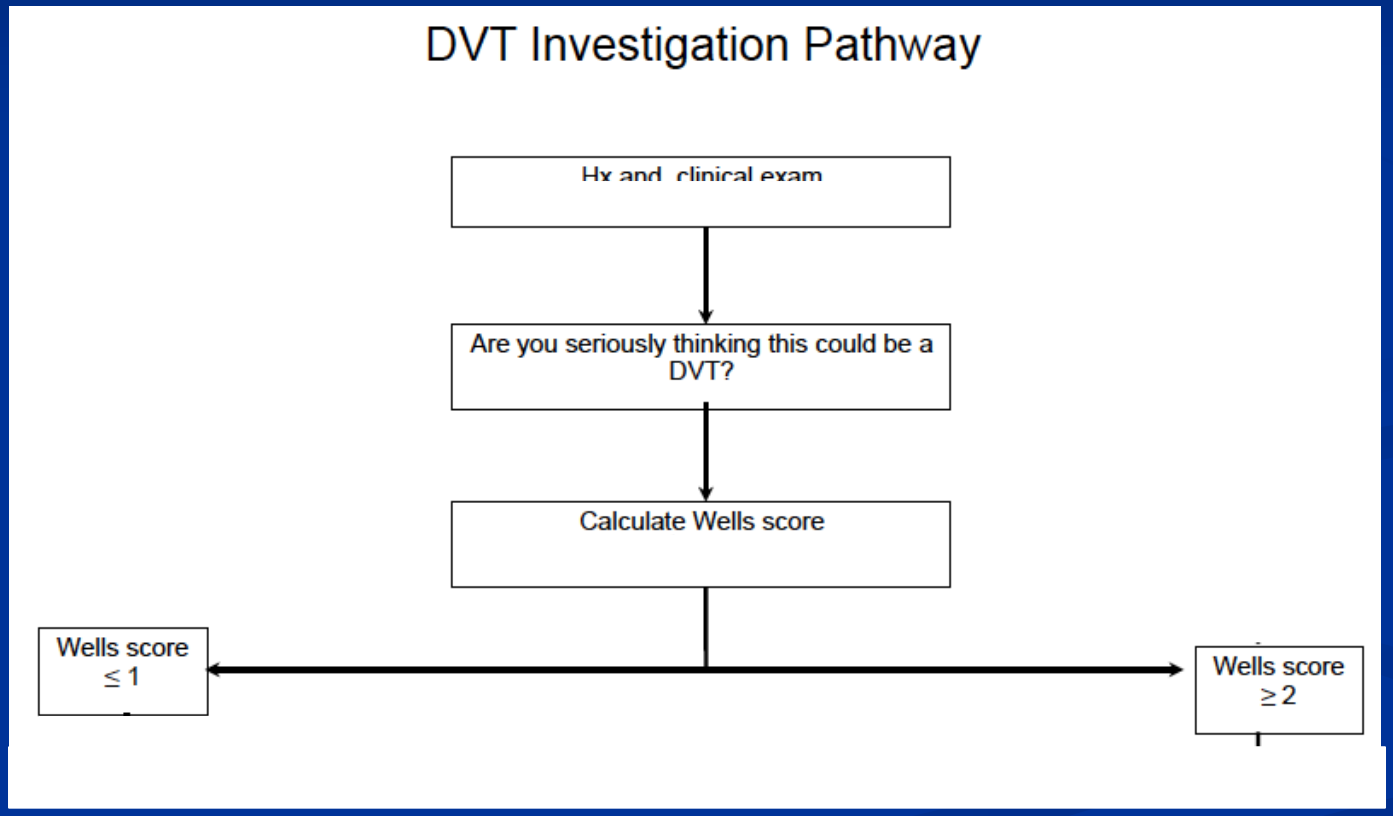
Wells Clinical Score for DVT

Clinical Parameter	Score
Active cancer	+1
Paralysis or recent immobilization of extremities	+1
Recently bedridden for > 3 days or major surgery <4 weeks	+1
Tenderness along distribution of deep venous system	+1
Entire leg swollen	+1
Calf swelling > 3cm circumference difference from unaffected leg	+1
Pitting edema	+1
Previous DVT	+1
Collateral superficial veins	+1
Alternative diagnosis as likely or more likely than DVT	-2

High Probability	≥ 3
Moderate Probability	1 or 2
Low Probabillity	0

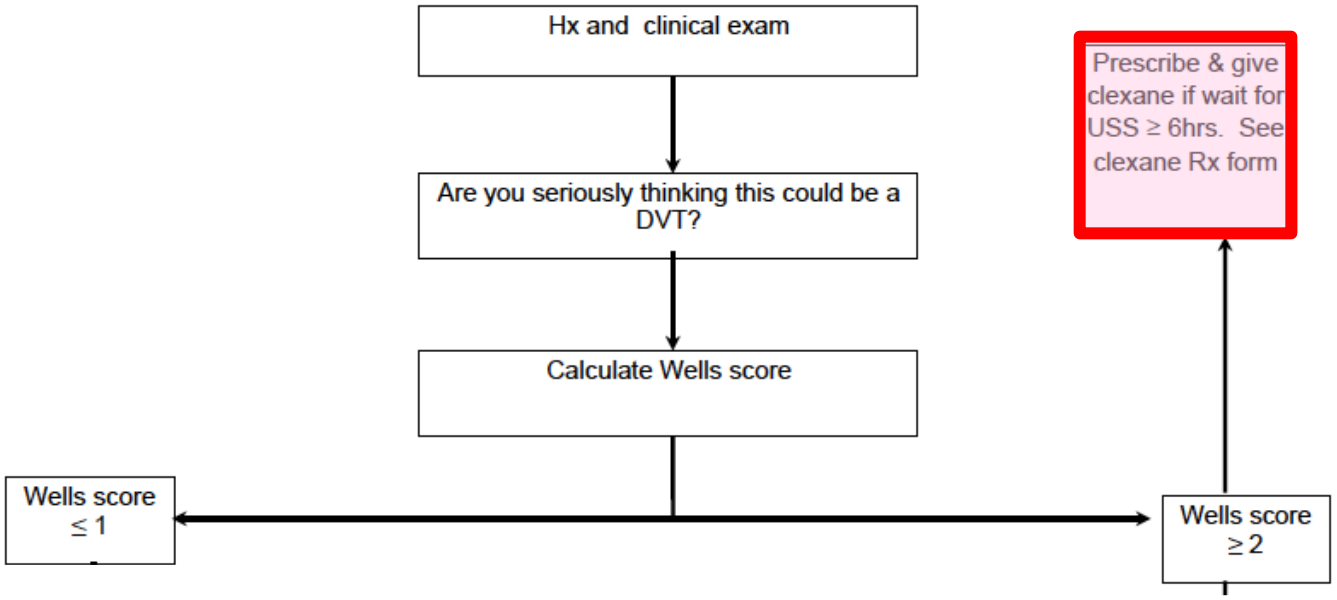
DVT Investigation Pathway



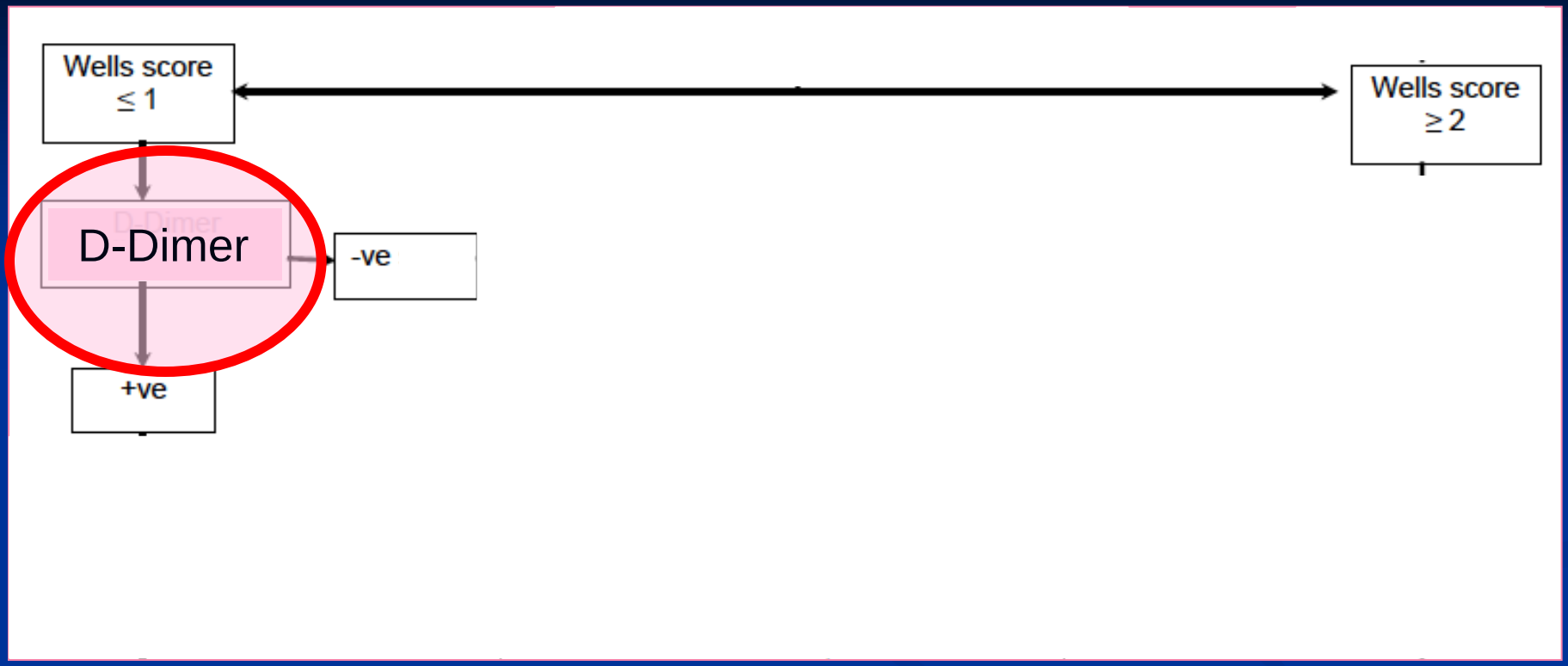


Wells 2 or more and its 5pm

DVT Investigation Pathway



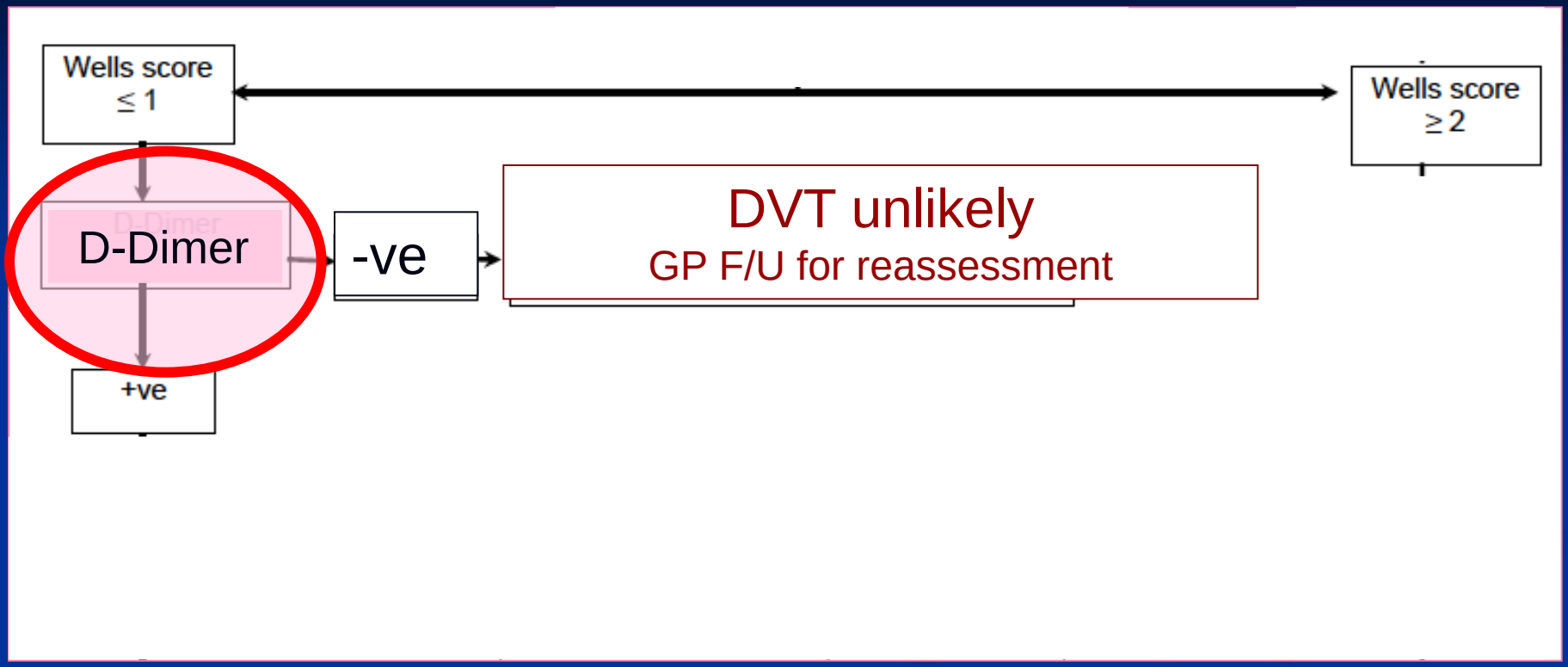

Wells score
≤ 1
Wells score
≥ 2
D-Dimer
-ve
+ve



What about D-Dimer

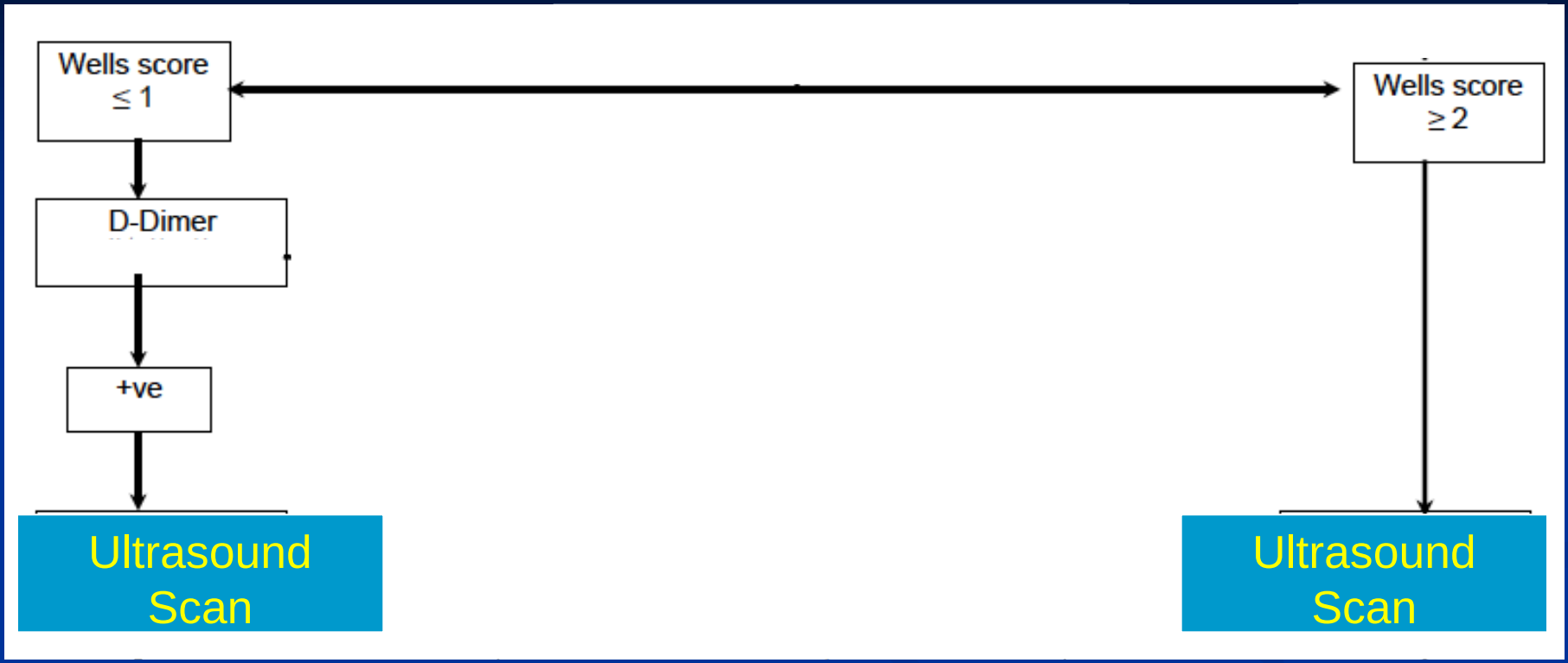
D-dimer

- Fibrin Degradation by plasmin
- Elevated where clots form
  - Trauma, recent surgery, cancer, sepsis
- Sensitive but Low specificity
- Elevated for 7 days



D-Dimer is to confirm low probability


Wells score
≤ 1
Wells score
≥ 2
D-Dimer
+ve



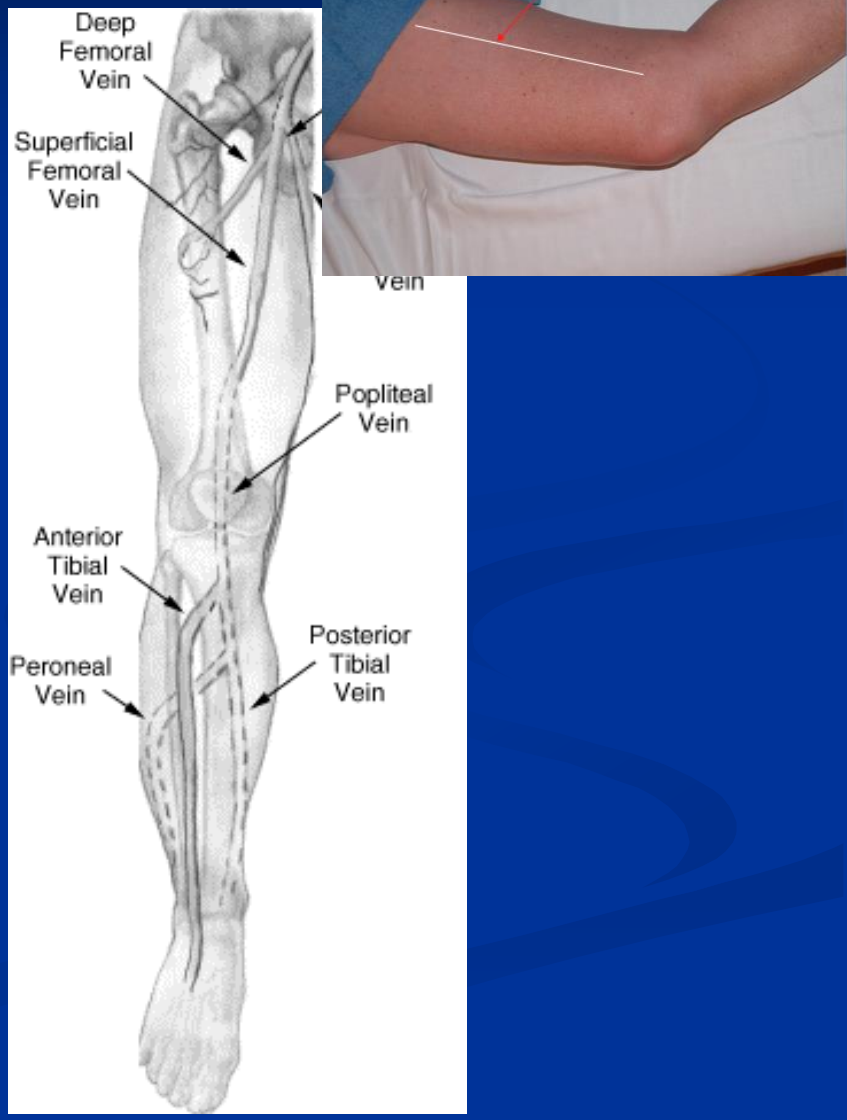
What is it about an Ultrasound Scan ?

How Good is Duplex ?

- Cavaye et al (1990)
  - Sensitivity 90.9%
  - Specificity 91.3%
- Anywhere in the lower leg

Lower Extremity Venous Anatomy

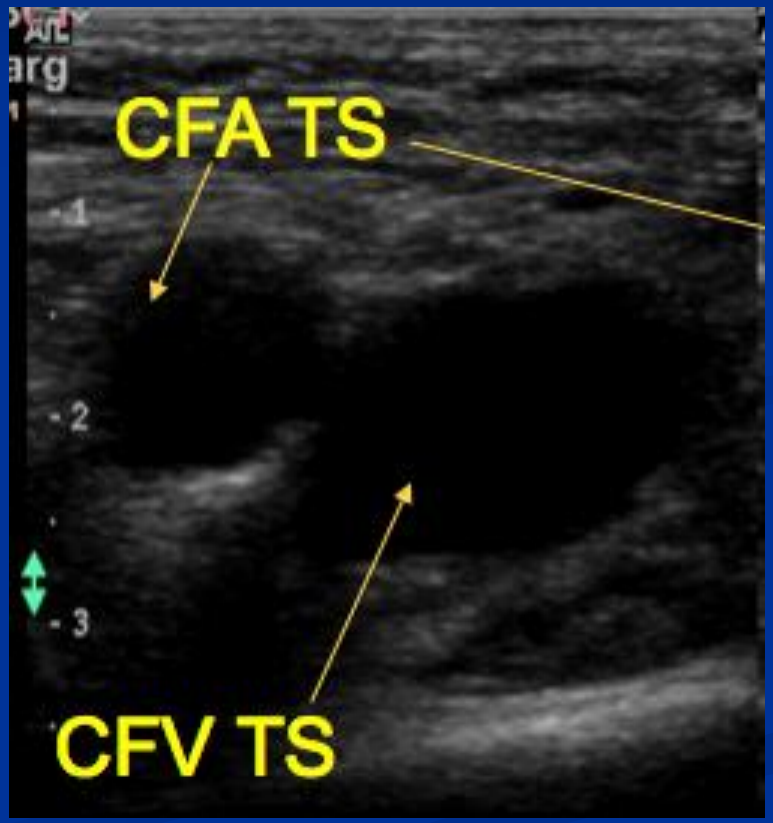
- External Iliac
- Common Femoral Vein
- Deep femoral vein
- Femoral Vein
- Popliteal Vein
- Anterior Tibial Vein
- Posterior Tibial Vein
- Peroneal Vein



Characteristics of Normal Vein

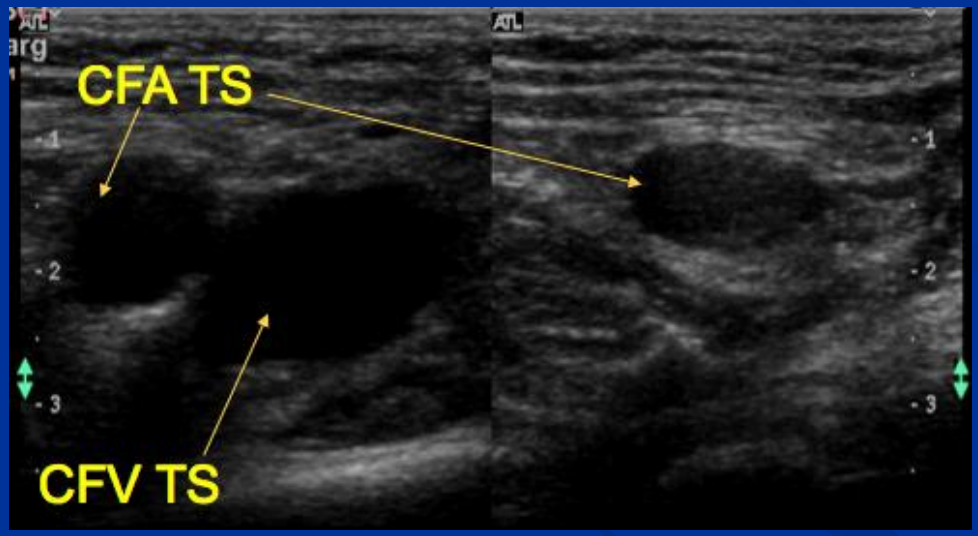
- Thin Walled
- Larger than Corresponding Artery
- Smooth Interior Lumen
- Echo Free Lumen

- Easy to Compress

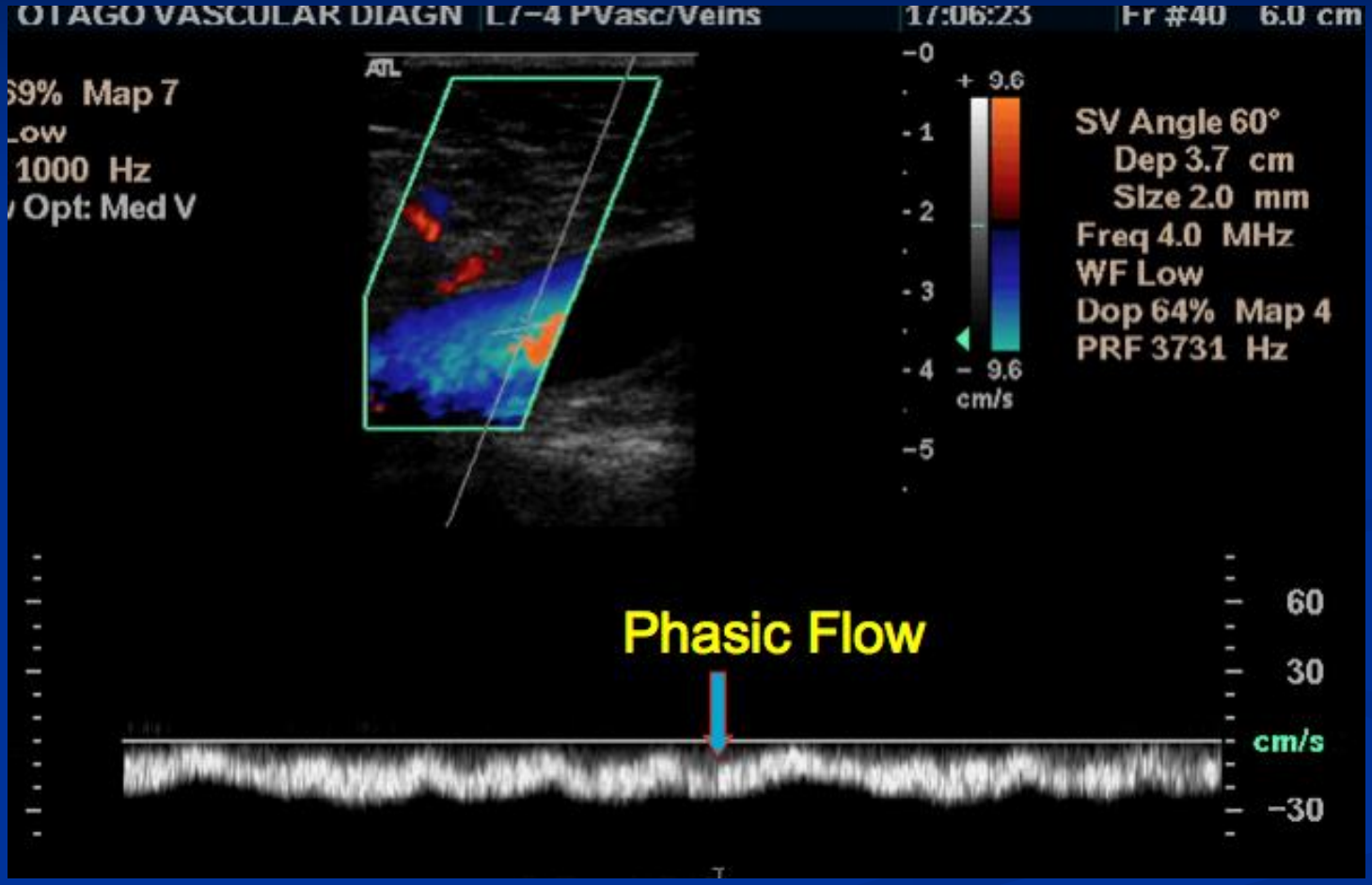


Major Criteria: Compressibility

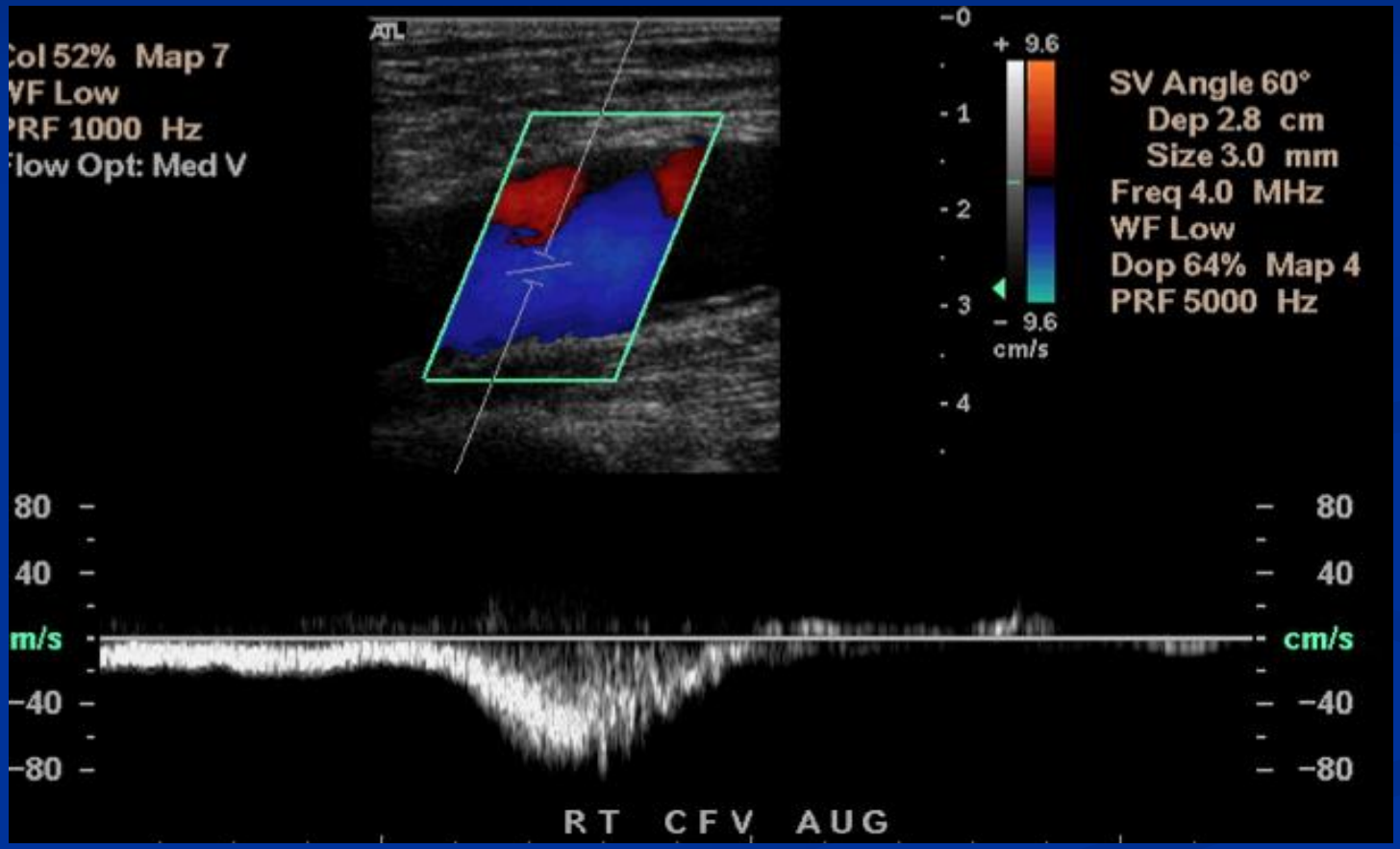
- Collapse of lumen of vein
  - Complete apposition of anterior and posterior wall
  - Compress with transducer in transverse



Flow Pattern

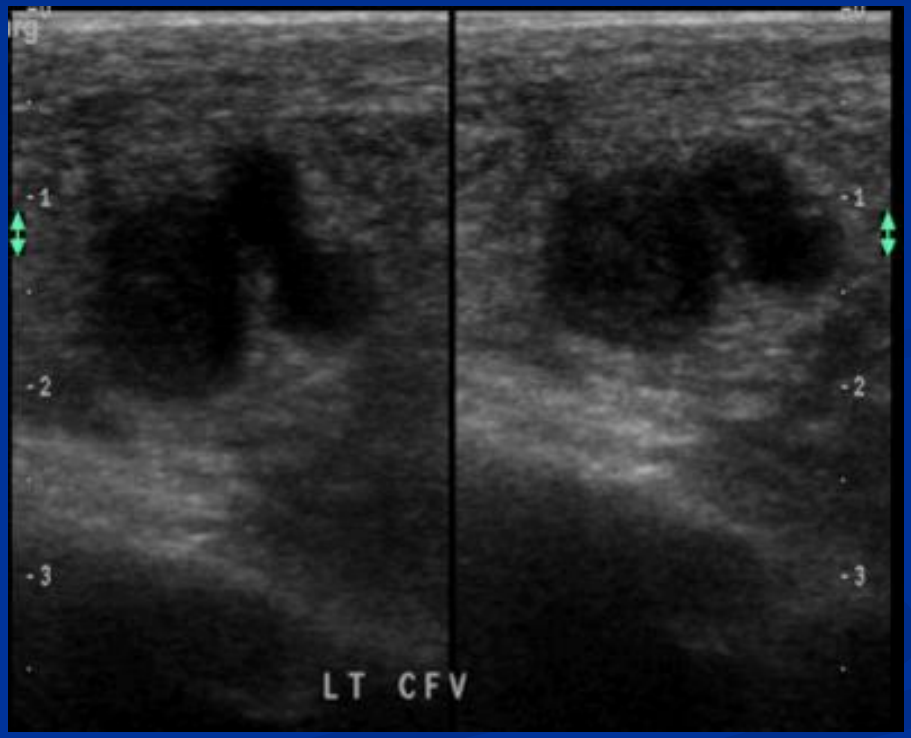


Distal Augmentation



Characteristics of DVT

- Inability to Compress Vein
- Echolucent - Acute
- Echogenic - Old
- Increased Diameter Acute phase
- Shrink smaller
  - Chronic phase



Ultrasound for DVT

Major criterion –

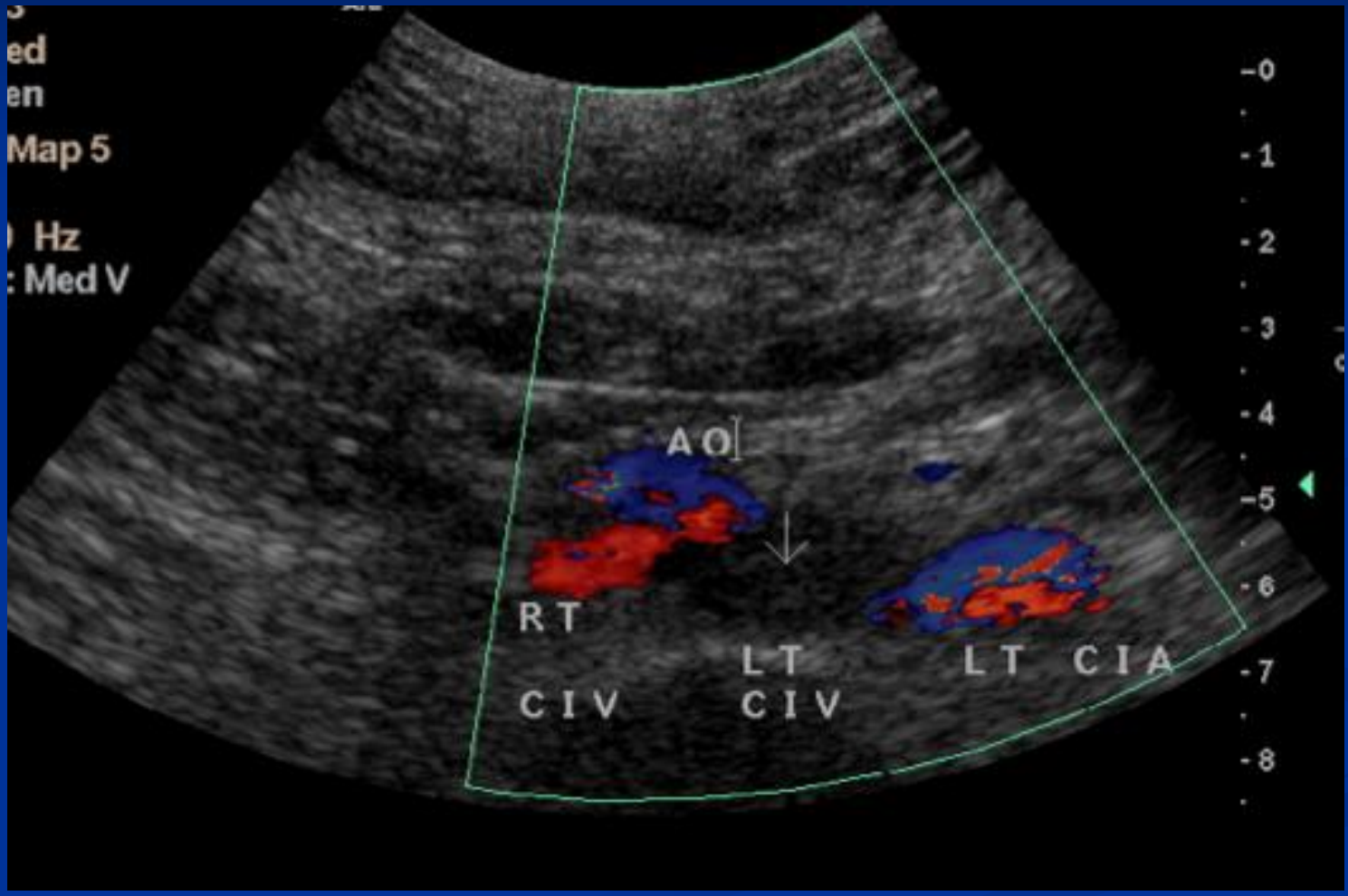
- Failure to compress vascular lumen
- Not visualization of lumen
- Acute thrombus can be anechoic
- Slow flowing blood can have internal echoes

Ultrasound for DVT

Minor criterion –

- Absence of a normal Doppler signals
- Absence of flow
- Absence of respiratory variation in flow
- Decreased augmentation with distal compression
- Distension of vessel

Extensive DVT

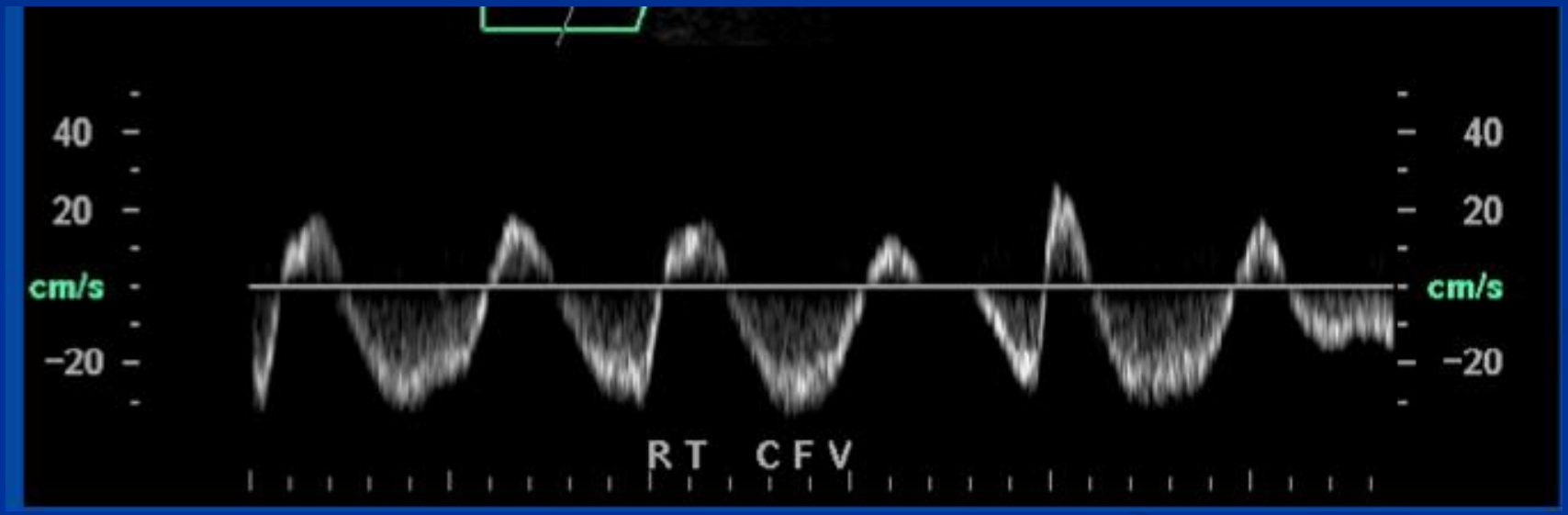


Diagnostic Difficulties

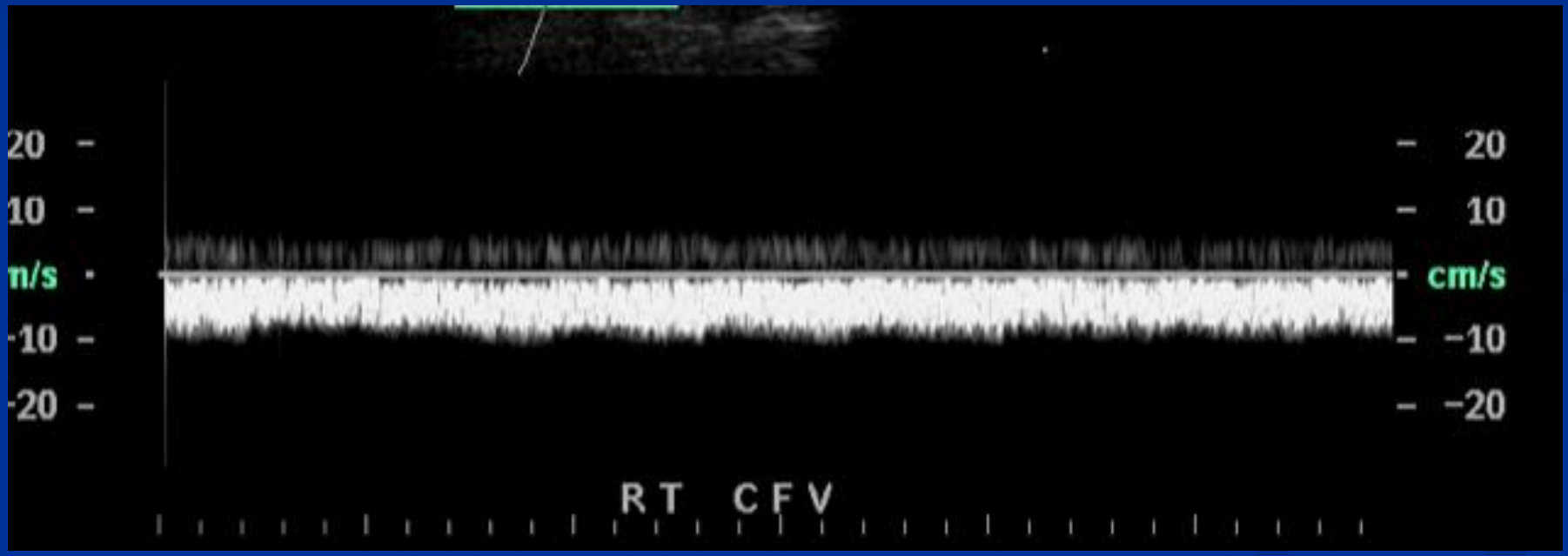
False Positives

- Chronic vs. acute
- Proximal obstruction limit compressibility
- Superficial vein filled with thrombus
- Operator Dependence

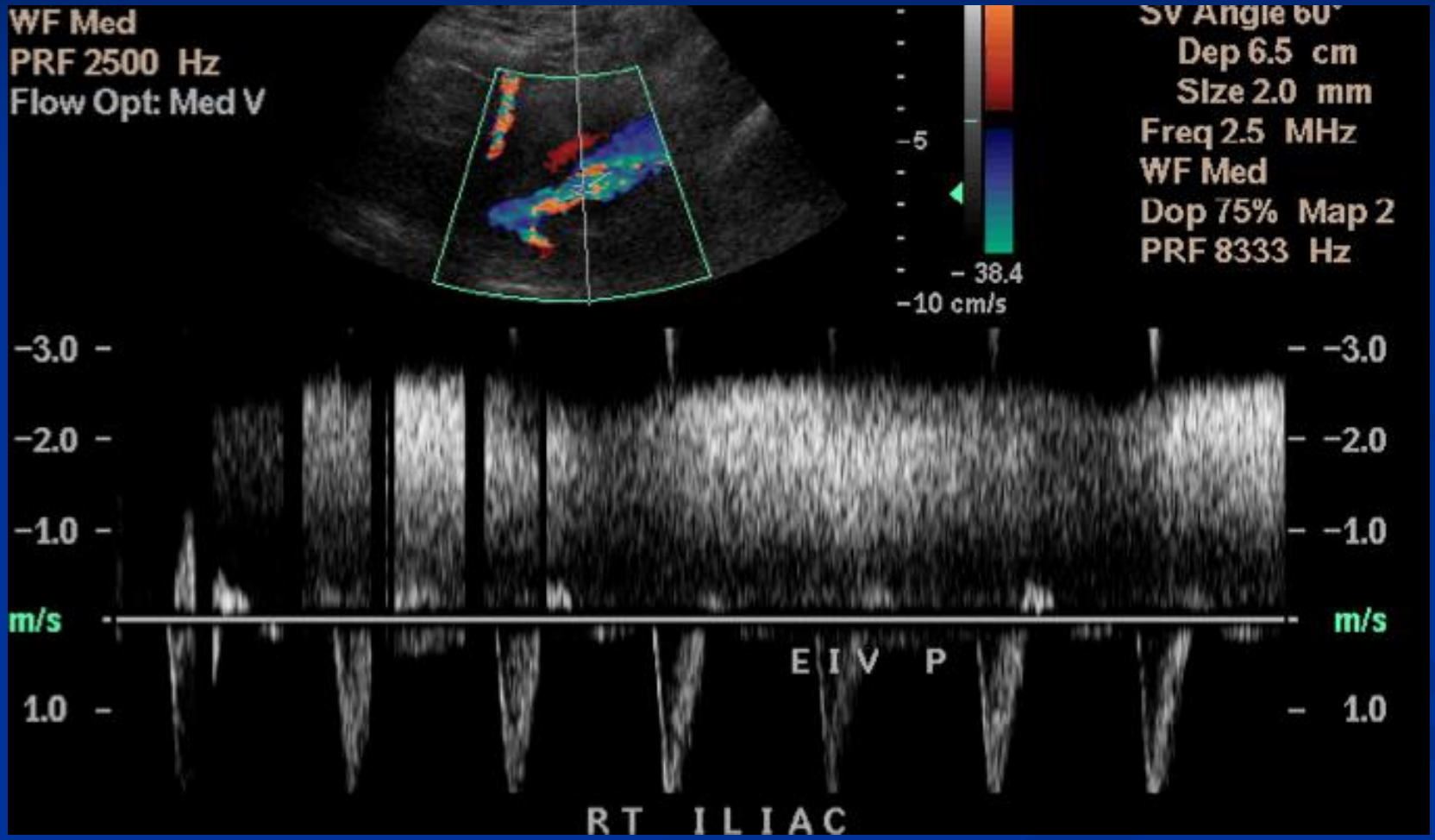
CCF



Loss of Phasicity

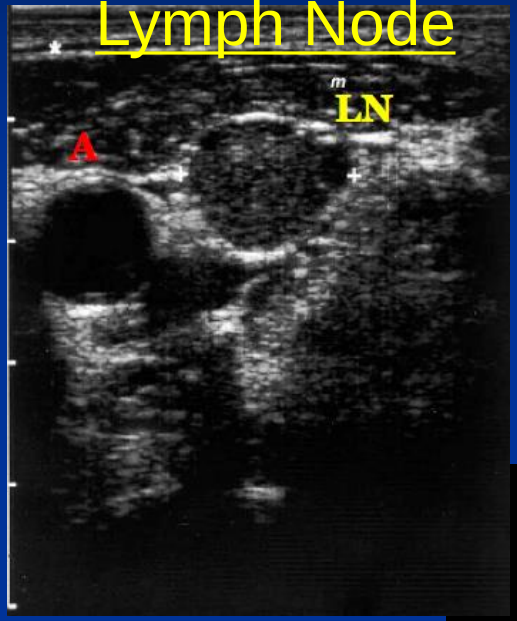


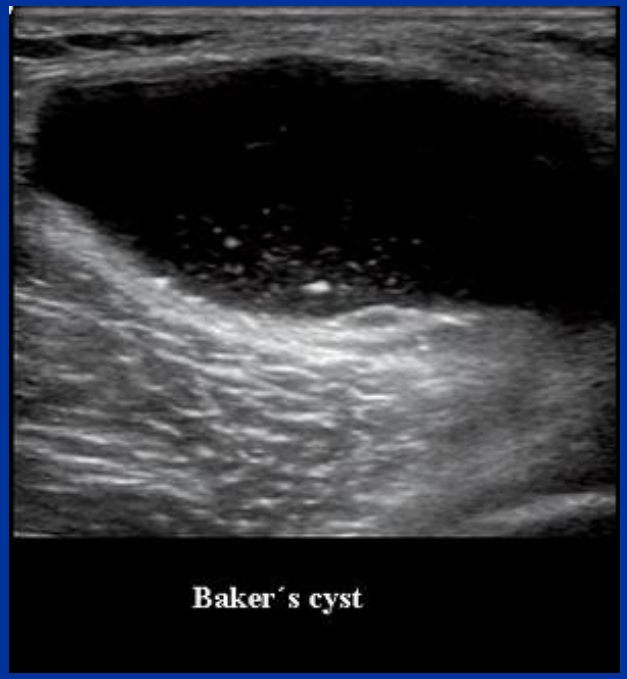
External Compression

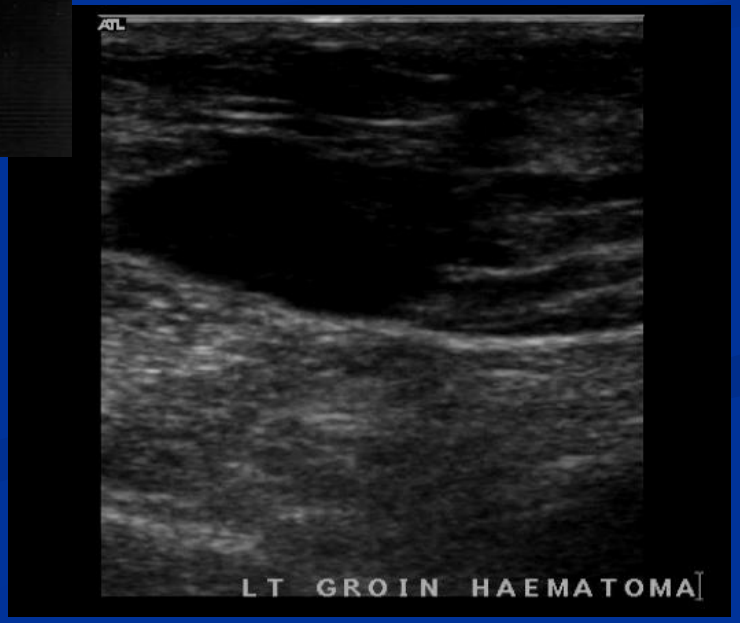


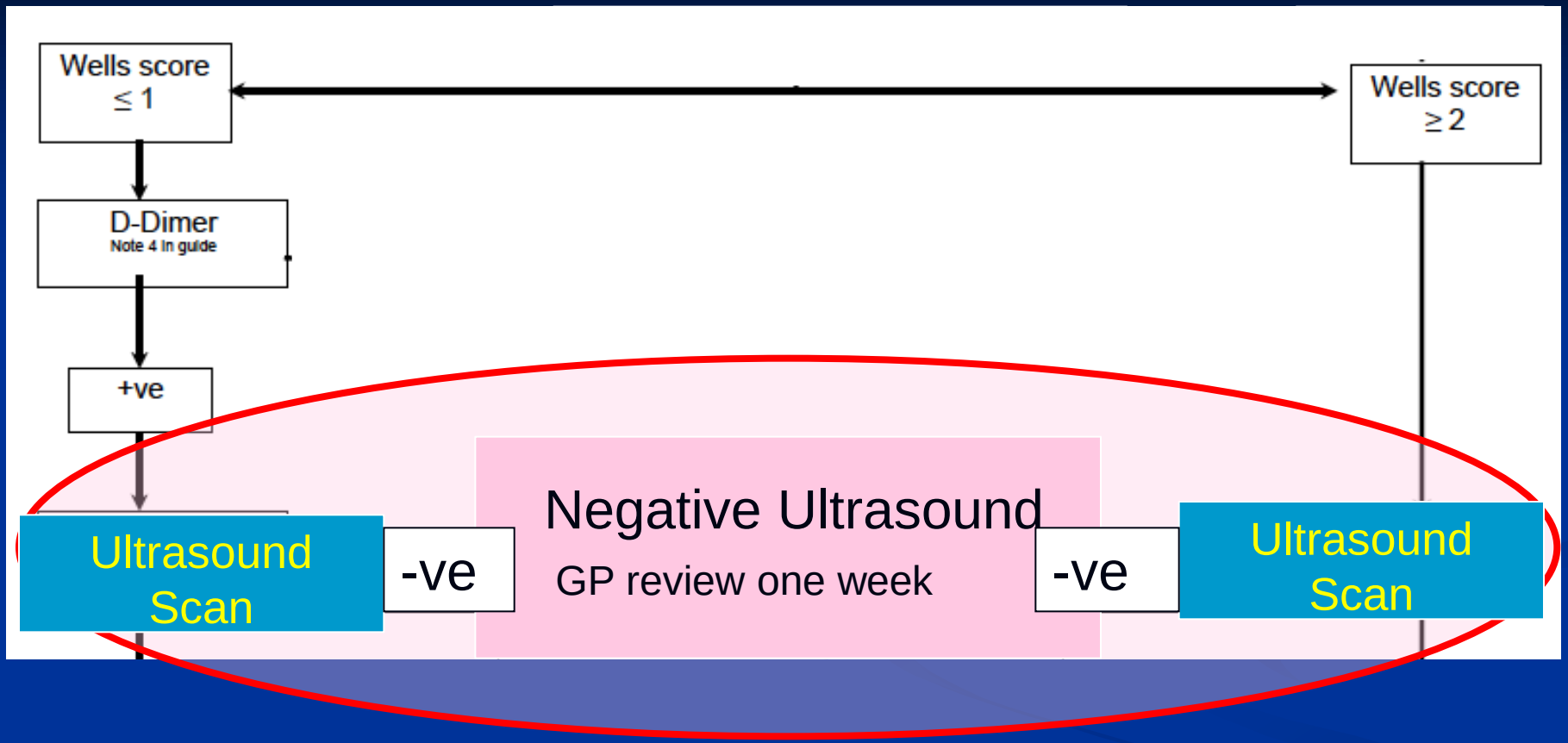
Differential Diagnosis

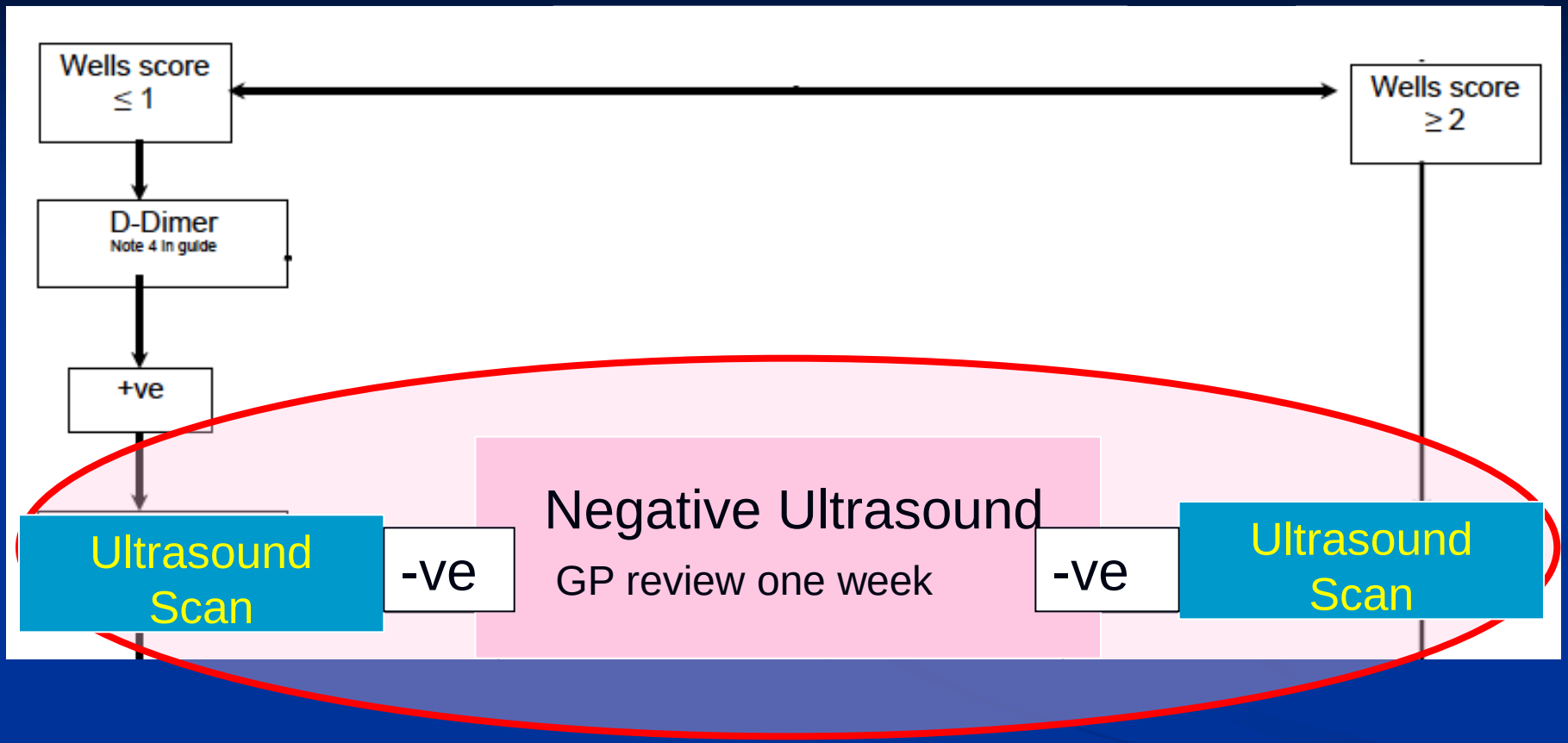
Lymph Node



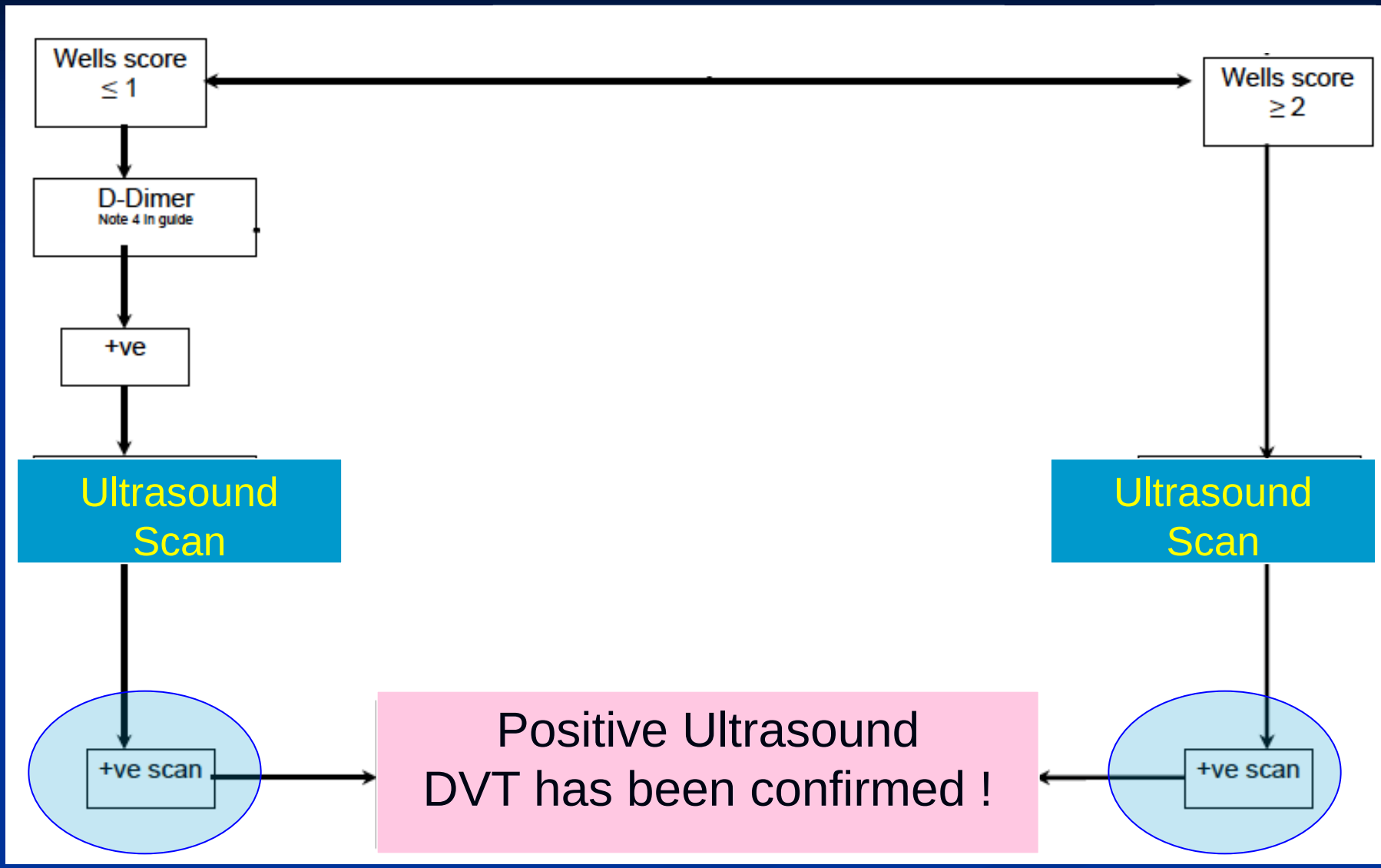


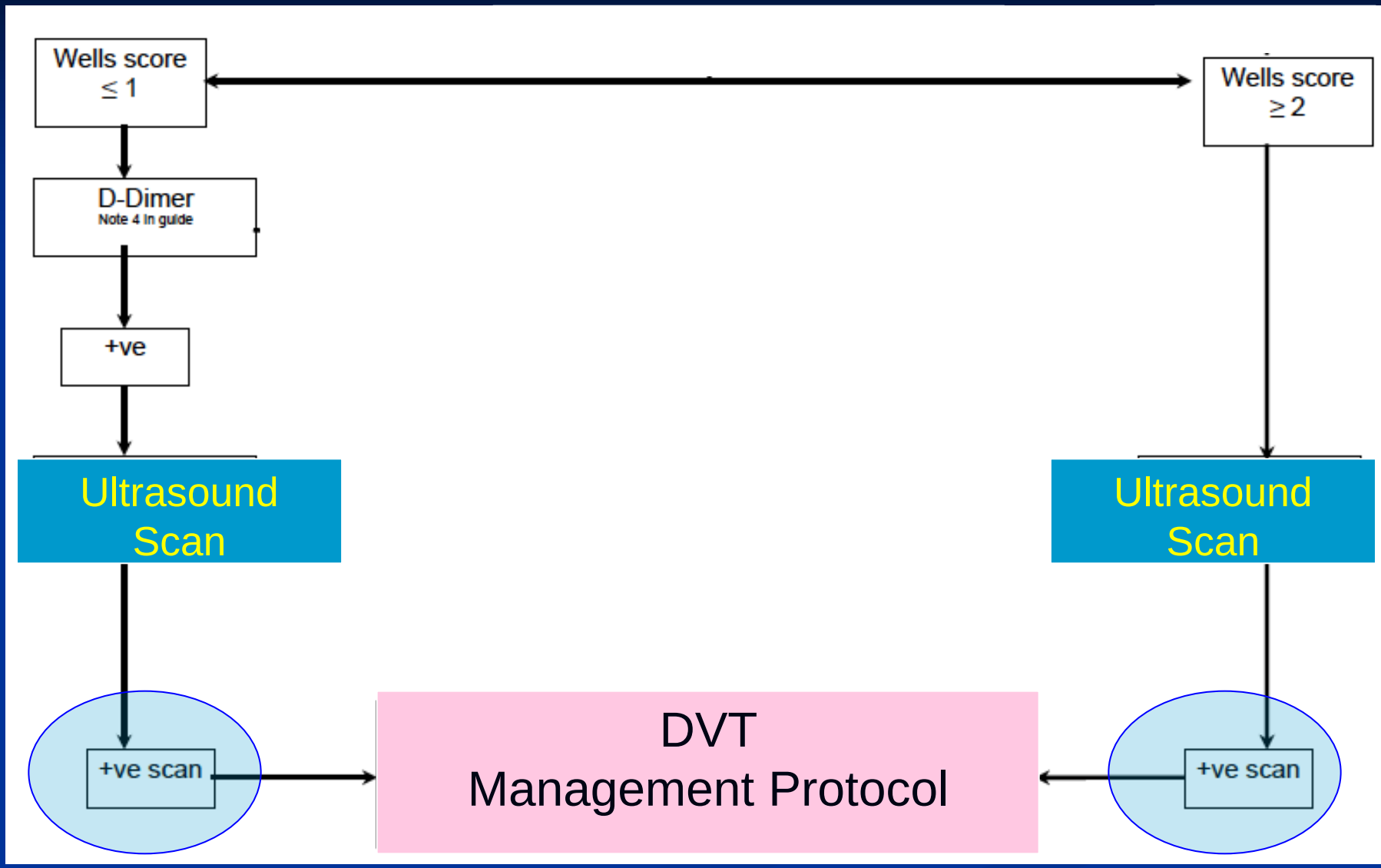



Wells score
≤ 1
Wells score
≥ 2
D-Dimer
Note 4 in guide
+ve
Ultrasound Scan
-ve
Negative Ultrasound
GP review one week
-ve
Ultrasound Scan



The repeat Ultrasound in 7 days ?


Wells score
≤ 1
Wells score
≥ 2
D-Dimer
Note 4 in guide
+ve
Ultrasound Scan
Ultrasound Scan
+ve scan
+ve scan
Positive Ultrasound
DVT has been confirmed !


Wells score
≤ 1
Wells score
≥ 2
D-Dimer
Note 4 in guide
+ve
Ultrasound
Scan
Ultrasound
Scan
+ve scan
+ve scan
DVT
Management Protocol

The Local
Management Protocol

The Fast Track
Unit
Vascular surgical

Medical Assessment
Pharmacy Education
Anticoagulation Compression

General Practice
Liason and transfer
Treatment advice

Special
investigations

Thrombolysis

Other Supports

Review as required

Making the system work for you

- Consistent clinical assessment
- Follow the protocol
- Mutual understanding and respect

Thank You