

# Treatment of Acute DVT

Armando Mansilha



SÃO JOÃO

U.A.G. de Medicina

Serviço de Angiologia e Cirurgia Vascular

U. PORTO

FM  
UP

FACULDADE DE MEDICINA  
UNIVERSIDADE DO PORTO

## Disclosures

- I have the following potential conflicts of interest to report:
  - Receipt of grants/research support
  - Receipt of honoraria and travel support
  - Participation in a company-sponsored speaker bureau
  - Employment in industry
  - Shareholder in a healthcare company
  - Owner of a healthcare company
- I do not have any potential conflict of interest

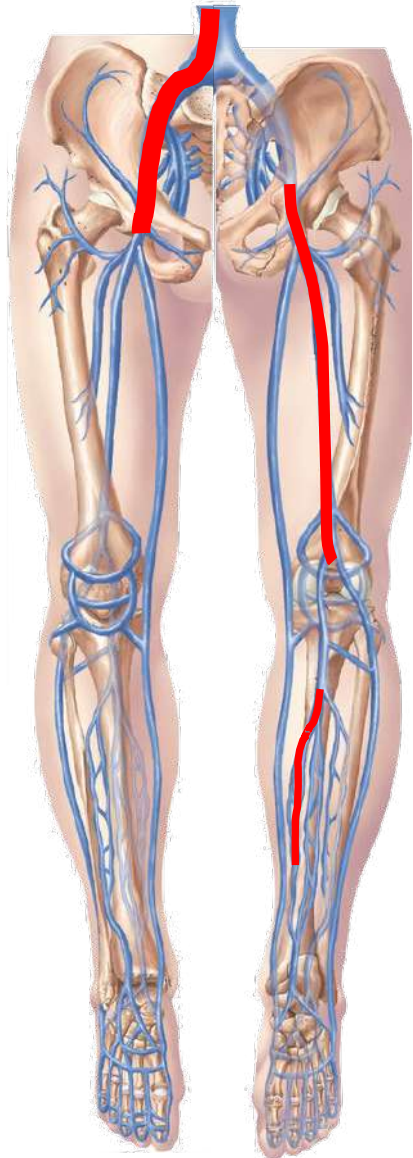




# DEEP VENOUS THROMBOSIS

- Affects **0,1%** of the general population per year
- Complicated acutely by **Pulmonary embolism**
  - Third most common CV related mortality cause
- Long-term complication: **Post-Thrombotic syndrome (PTS)**
  - Pain, venous claudication, venous ulcer
  - Great morbidity
  - Great economic impact: **NHS £1 billion per year to treat.**

# ACUTE DEEP VENOUS THROMBOSIS



- Treatment **STRATEGIES** and **DURATIONS** differ according to:

1. **Precipitating factors:**

Unprovoked

Provoked, persistent risk factor

Provoked, transient risk factor

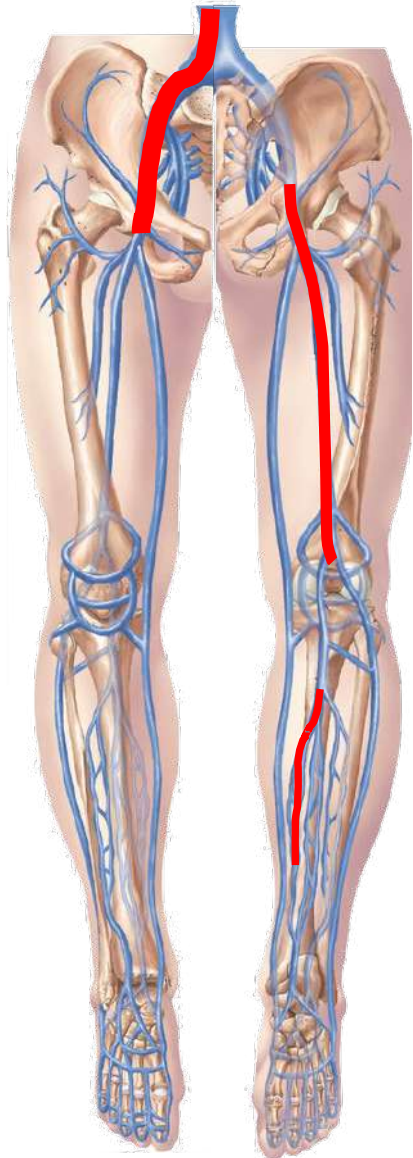
2. **Anatomic involvement:**

Ilio-femoral

Proximal

Isolated distal DVT

# ACUTE DEEP VENOUS THROMBOSIS



2021

CLINICAL PRACTICE GUIDELINE DOCUMENT

**Editor's Choice – European Society for Vascular Surgery (ESVS) 2021 Clinical Practice Guidelines on the Management of Venous Thrombosis**★



2021

**Antithrombotic Therapy for VTE Disease**  
Second Update of the CHEST Guideline and Expert Panel Report

# ACUTE DEEP VENOUS THROMBOSIS

## 1. PRECIPITATING FACTORS → PROVOKED DVT



Recommendation 15		
For patients with a provoked proximal deep vein thrombosis with a major transient risk factor, <b>three months</b> of anticoagulation treatment over six months or longer duration should be considered.		
Class	Level	References
Ila	A	Boutitie <i>et al.</i> (2011), <sup>123</sup> Pinede <i>et al.</i> (2001) <sup>126</sup>

Recommendation 18		
In selected patients with provoked proximal deep vein thrombosis with a minor transient risk factor, <b>anticoagulation beyond three months may be considered</b> , after evaluation of thrombotic and bleeding risks with periodic reassessment.		
Class	Level	Reference
Iib	C	Prins <i>et al.</i> (2018) <sup>122</sup>

VS

### MAJOR TRANSIENT RISK FACTOR

- In patients with VTE diagnosed in the setting of a major transient risk factor, we **recommend against** offering **extended-phase** anticoagulation;

Strong; Level B

### MINOR TRANSIENT RISK FACTOR

- In patients with VTE diagnosed in the setting of a minor transient risk factor, we **suggest against** offering **extended-phase** anticoagulation;

Weak; Level B

# ACUTE DEEP VENOUS THROMBOSIS

## 1. PRECIPITATING FACTORS → PERSISTENT FACTOR OR UNPROVOKED DVT



Recommendation 21		
For patients with unprovoked proximal deep vein thrombosis who are at low or moderate bleeding risk, <b>extended anticoagulation</b> beyond three months, with periodic re-evaluation of bleeding risk, <b>is recommended.</b>		
Class	Level	References
I	A	Kakkos <i>et al.</i> (2014), <sup>129</sup> Agnelli <i>et al.</i> (2013), <sup>140</sup> Weitz <i>et al.</i> (2017) <sup>154</sup>

VS

- In patients with acute VTE who do not have a contraindication we **RECOMMEND** a **3-month treatment** phase of anticoagulation;

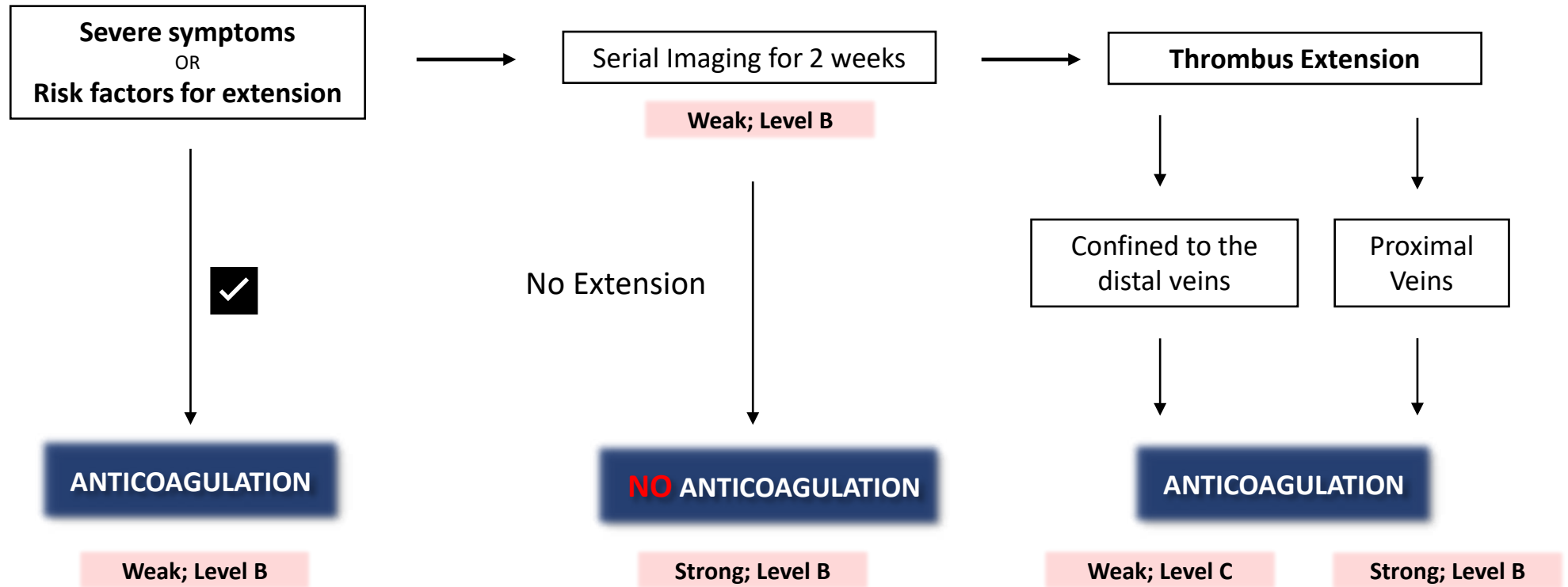
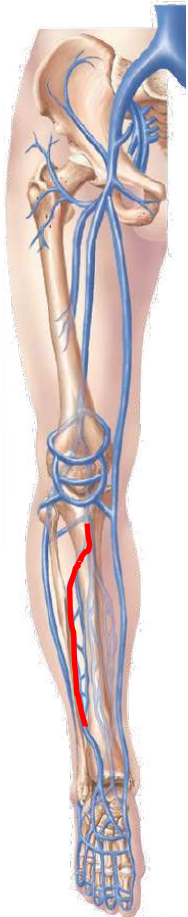
Strong; Level B

- In patients with VTE diagnosed in the absence of transient provocation, we **RECOMMEND** offering **extended-phase anticoagulation** with a DOAC;

Strong; Level B

# ACUTE DEEP VENOUS THROMBOSIS

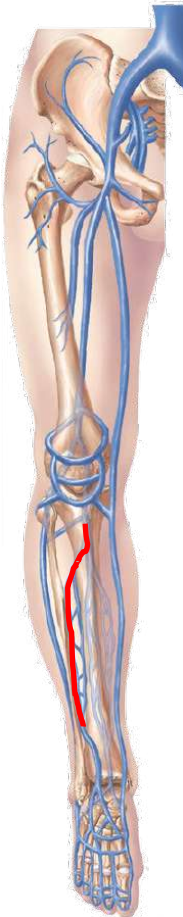
## 2. ANATOMIC INVOLVEMENT → ISOLATED DISTAL DVT





# ACUTE DEEP VENOUS THROMBOSIS

## 2. ANATOMIC INVOLVEMENT → ISOLATED DISTAL DVT



### Recommendation 38

For patients with calf deep vein thrombosis, a decision to anticoagulate based on symptoms, risk factors for progression, and bleeding risk should be considered.

Class	Level	Reference
IIa	C	Consensus

### Recommendation 39

For patients with symptomatic calf deep vein thrombosis requiring anticoagulant treatment, three months of therapy is recommended over shorter durations.

Class	Level	References
I	A	Franco <i>et al.</i> (2017), <sup>243</sup> Kirkilesis <i>et al.</i> (2020) <sup>250</sup>

### Recommendation 42

For patients with symptomatic calf deep vein thrombosis not receiving anticoagulation, clinical re-assessment and repeat whole leg ultrasound after one week is recommended.

Class	Level	Reference
I	B	Garry <i>et al.</i> (2016) <sup>241</sup>

# ACUTE DEEP VENOUS THROMBOSIS

## 2. ANATOMIC INVOLVEMENT → ISOLATED ILIO-FEMORAL DVT



esvs

CHEST  
AMERICAN COLLEGE  
of CHEST PHYSICIANS

### Recommendation 34

In selected patients with symptomatic iliofemoral deep vein thrombosis, early thrombus removal strategies should be considered.

Class	Level	References
IIa	A	Sharifi <i>et al.</i> (2010), <sup>172</sup> Enden <i>et al.</i> (2012), <sup>222</sup> Vedantham <i>et al.</i> (2017), <sup>223</sup> Notten <i>et al.</i> (2020), <sup>226</sup> Sharifi <i>et al.</i> (2012), <sup>230</sup> Comerota <i>et al.</i> (2019), <sup>233</sup> Kahn <i>et al.</i> (2020) <sup>237</sup>

VS

16. In patients with acute proximal DVT of the leg, we suggest anticoagulant therapy alone over CDT \*

Grade 2C

# ACUTE DEEP VENOUS THROMBOSIS



"I'm puzzled."

**WHAT ARE THE ANTICOAGULANTS  
OF CHOICE?**

# ACUTE DEEP VENOUS THROMBOSIS

ANTICOAGULANTS OF CHOICE → GENERAL POPULATION



Recommendation 16		
For patients with provoked proximal deep vein thrombosis, treatment with a direct oral anticoagulant is recommended over a vitamin K antagonist for the principal treatment phase.		
Class	Level	Reference
I	A	Kakkos <i>et al.</i> (2014) <sup>129</sup>

Recommendation 19		
For patients with unprovoked proximal deep vein thrombosis, treatment with a direct oral anticoagulant is recommended over treatment with low molecular weight heparin followed by a vitamin K antagonist for the principal treatment phase.		
Class	Level	Reference
I	A	Kakkos <i>et al.</i> (2014) <sup>129</sup>

VS

In patients with VTE (DVT of the leg or PE) we **RECOMMEND APIXABAN, DABIGATRAN, EDOXABAN, OR RIVAROXABAN** over vitamin K antagonist (VKA) as treatment-phase (first 3 months) anticoagulant therapy

Strong; Level B

# ACUTE DEEP VENOUS THROMBOSIS

ANTICOAGULANTS OF CHOICE → SPECIFIC POPULATIONS

ANTIPHOSPHOLIPID SYNDROME



Recommendation 68		
For patients with deep vein thrombosis and triple positive antiphospholipid syndrome, treatment with a <b>vitamin K antagonist</b> titrated to maintain a target international normalised ratio between 2–3 should be considered.		
Class	Level	Reference
Ila	B	Pengo <i>et al.</i> (2018) <sup>395</sup>

Recommendation 67		
For patients with deep vein thrombosis and antiphospholipid syndrome who are triple positive or have a history of arterial or small vessel thrombosis, <b>direct oral anticoagulants should not be used.</b>		
Class	Level	References
III	B	Tektonidou <i>et al.</i> (2019), <sup>69</sup> Pengo <i>et al.</i> (2018), <sup>395</sup> Malec <i>et al.</i> (2020), <sup>396</sup> Ordi-Ros <i>et al.</i> (2019) <sup>397</sup>

VS

In patients with confirmed antiphospholipid syndrome being treated with anticoagulant therapy, we **suggest** adjusted dose **VKA** (target INR 2.5) over direct oral anticoagulant (DOAC) therapy during the treatment phase

Weak; Level B

# ACUTE DEEP VENOUS THROMBOSIS

ANTICOAGULANTS OF CHOICE → SPECIFIC POPULATIONS

CANCER-ASSOCIATED VTE



Recommendation 63		
For patients with cancer associated deep vein thrombosis, a low molecular weight heparin is recommended for initial and principal phase anticoagulation.		
Class	Level	Reference
I	A	Kirkilesis <i>et al.</i> (2019) <sup>365</sup>

Recommendation 65		
In selected patients with cancer associated deep vein thrombosis, with the malignancy not located in the gastrointestinal or genitourinary systems, an approved direct oral anticoagulant for initial, principal, and extended treatment should be considered.		
Class	Level	References
Ila	A	Posch <i>et al.</i> (2015), <sup>364</sup> Kirkilesis <i>et al.</i> (2019), <sup>365</sup> Kraaijpoel <i>et al.</i> (2018), <sup>367</sup> McBane <i>et al.</i> (2020), <sup>369</sup> Agnelli <i>et al.</i> (2020) <sup>370</sup>

VS

In patients with acute VTE in the setting of cancer (cancer-associated thrombosis) we **RECOMMEND** an **oral Xa inhibitor (APIXABAN, EDOXABAN, RIVAROXABAN)** over low molecular weight heparin (LMWH) for the initiation and treatment phases of therapy

Strong; Level B

# ACUTE DEEP VENOUS THROMBOSIS



"I'm puzzled."

**ARE THERE OTHER TREATMENT  
STRATEGIES?**

# ACUTE DEEP VENOUS THROMBOSIS

## ROLE OF ASPIRIN



Recommendation 24		
For patients with unprovoked deep vein thrombosis, aspirin is <b>not recommended</b> for extended antithrombotic therapy.		
Class	Level	References
III	A	Becattini <i>et al.</i> (2012), <sup>138</sup> Brighton <i>et al.</i> (2012) <sup>139</sup>

VS

In patients with an **unprovoked proximal DVT** or PE who are **stopping anticoagulant** therapy and do not have a contraindication to aspirin, we **SUGGEST ASPIRIN** over no aspirin to prevent recurrent VTE;

WEAK; Level B



# ACUTE DEEP VENOUS THROMBOSIS

## ROLE OF COMPRESSION STOCKINGS



Recommendation 31		
For patients with proximal deep vein thrombosis, early compression at 30 – 40 mmHg with either multilayer bandaging or compression hosiery, applied within 24 hours, is <b>recommended</b> to reduce pain, oedema, and residual venous obstruction.		
Class	Level	References
I	A	Partsch & Blattler (2000), <sup>181</sup> Roumen-Klappe <i>et al.</i> (2009), <sup>182</sup> Arpaia <i>et al.</i> (2007), <sup>183</sup> Amin <i>et al.</i> (2018) <sup>184</sup>

Recommendation 32		
For patients with proximal deep vein thrombosis, use of below knee compression stockings <b>should be considered</b> in order to reduce the risk of post-thrombotic syndrome.		
Class	Level	References
IIa	A	Kahn <i>et al.</i> (2014), <sup>173</sup> Prandoni <i>et al.</i> (2004), <sup>174</sup> Partsch <i>et al.</i> (2004), <sup>176</sup> Brandjes <i>et al.</i> (1997), <sup>202</sup> Aschwanden <i>et al.</i> (2008), <sup>208</sup> Ginsberg <i>et al.</i> (2001) <sup>212</sup>

VS

In patients with acute DVT of the leg, we suggest **AGAINST** using **COMPRESSION STOCKINGS** routinely to prevent post-thrombotic syndrome (PTS)

WEAK; Level B



# CONCLUSION

- Deep venous thrombosis is a **COMMON** condition;
- It is a potentially life-threatening and burdening disease, causing great morbidity to the patients, and elevated health-related economic costs to the country;
- Current **INTERNATIONAL GUIDELINES** have **SIMILAR RECOMMENDATIONS** regarding treatment indication and duration;

**NONETHELESS,**

# CONCLUSION

- There is still no international consensus regarding some subjects, with poor evidence-based recommendations:



**PATIENT-ADJUSTED TREATMENT STRATEGIES ARE THEREFORE PARAMOUNT FOR OPTIMAL LONG TERM RESULTS. FURTHER STUDIES ARE REQUIRED TO CLARIFY CURRENT AREAS OF CONFLICT AND UNRESOLVED ISSUES**

• Aspirin **MAY HAVE A ROLE** in secondary prevention;

• **NO ROLE** for compressions stockings;

• Aspirin has **NO ROLE** in secondary prevention;

• Compression stockings are **RECOMMENDED** to prevent PTS;

# Treatment of Acute DVT

Armando Mansilha



SÃO JOÃO

U.A.G. de Medicina

Serviço de Angiologia e Cirurgia Vascular

**U.** PORTO

**FM**  
**UP**

FACULDADE DE MEDICINA  
UNIVERSIDADE DO PORTO