Thrombosis Canada
Thrombose Canada

VTE MANAGEMENT CARE PATH

PHASES OF VTE MANAGEMENT		
ACUTE Initial 5-10 days	**SHORT-TERM** After day 10 until 3-6 months	**LONG-TERM** After 3-6 months

Initial Assessment (within 24 hours of diagnosis)

– combined with existing VTE Order Set

1. Indication for anticoagulant therapy
   - Acute DVT or PE
   - Unusual site[1] acute venous thrombosis
2. Baseline blood testing (before initiating anticoagulant therapy)
   - CBC, INR, aPTT
   - Serum creatinine and renal function (estimated GFR)
   - Optional tests: AST, ALT, ALP, β-HCG, D-dimer
3. Assessment for contraindications to anticoagulant therapy
   - Active bleeding
   - At high risk for (re)bleeding
   - Severe thrombocytopenia (platelets <50×109/L) or coagulopathy (INR >1.7, aPTT >45 sec)

KEY DECISION POINT: Factors determining choice of anticoagulant

- Cancer vs. non-cancer
- Pregnancy vs. non-pregnancy
- Body weight (<40 kg or >120 kg)
- Renal function (CrCl <30 vs. >30 mL/min vs. dialysis)
- Selected severe thrombophilia (HIT, APLA)
- Concomitant medication assessment
  - interact with warfarin (need to monitor closely)
  - interact with DOACs (certain antiarrhythmics, anticonvulsants, antifungals, anti-rejection, anti-retrovirals, antimicrobials)

ANTICOAGULANT CHOICES

LMHW to WARFARIN
- Severe renal insufficiency (CrCl <15-30 mL/min)
- Extremes of body weight (<40 kg, >120 kg)*
- If lytic therapy is considered for DVT or PE (requiring extended-duration LMWH)
- Drug interactions that preclude DOAC use
- Selected severe thrombophilia
- Unable to afford DOAC

LMWH
- Cancer**
- Pregnancy

DOAC (± INITIAL 5 DAYS OF LMWH)
- DVT or PE (lytic therapy not required)
- Cancer**

*In patients <40 kg or >120 kg, DOACs should be considered with caution and, preferably, when VKA treatment is not a clinically acceptable option.
**After consultation with specialist, consider avoiding use of DOACs in patients with selected cancer types, e.g. cancers of the gastrointestinal tract.

MITIGATING RISKS FOR BLEEDING OR THROMBOTIC COMPLICATIONS
- Avoid non-essential aspirin/antiplatelet drugs
- Avoid NSAIDs (short-term [<1 week] use acceptable)
- Avoid at-risk behaviours (excessive alcohol, extreme sports)

PATIENT EDUCATION
- On the diagnosis of VTE ~~and~~ the importance of taking the anticoagulant as prescribed
- About the increased risk of bleeding while taking an anticoagulant
- Provide follow-up directions: who to see next and when

[1]non-leg, non-lung

5-10 days follow-up

FOLLOW-UP AFTER INITIAL VISIT/DIAGNOSIS BY AN APPROPRIATELY TRAINED CLINICIAN	
HEMATOLOGY/THROMBOSIS ASSESSMENT SUGGESTED • VTE requiring lytic therapy • Idiopathic/unprovoked VTE • Cancer-associated VTE • VTE at unusual location (e.g. splanchnic vein) • VTE associated with thrombophilia such as APAS • Selected, complicated provoked VTE (e.g. massive postoperative PE)	**PRIMARY CARE FOLLOW-UP ONLY SUGGESTED** • Selected, uncomplicated provoked VTE (e.g. leg DVT or PE) • Selected, uncomplicated arm DVT (e.g. not associated with cancer)

1. Assess for adherence and symptom worsening (disease recurrence/extension)
   - If worsening: consider changing anticoagulant
2. Assess for bleeding
   - If serious bleeding: consider stopping anticoagulant and inserting IVC filter
   - If non-serious bleeding: consider temporary anticoagulant interruption or switching anticoagulant
3. Counselling to minimize risk for thrombotic and bleeding complications and to ensure drug taken as prescribed

1-month follow-up

1. Assess for expected symptom stabilization or improvement
2. Assess for early post-thrombotic syndrome (need for GCS?)
3. Anticoagulant management
   - Ensure tolerance and compliance with anticoagulant regimen (INR testing for VKAs, injection tolerance for LMWHs, gastrointestinal tolerance for DOACs)
   - Consider reducing dose of LMWH by 25% if you are treating cancer-associated VTE after initial 6 weeks of treatment
4. Assess for bleeding and general tolerance of anticoagulation
5. Counselling to minimize risk for thrombotic and bleeding complications and to ensure drug taken as prescribed

KEY DECISION POINT: Assess for possible malignancy

- Age- and sex-appropriate screening (e.g. mammography)
- More intensive screening (e.g. chest imaging, colonoscopy) in selected patients with major risk factors or organ-specific symptoms

3- to 6-month follow-up

1. Assess for expected symptom resolution
2. Assess for early post-thrombotic syndrome (need for GCS?)
3. Assess for possible CTEPH clinically (need for V/Q, 2D echo, respirology assessment?)
4. Assess for bleeding and general tolerance of anticoagulation
5. Assess need for ongoing anticoagulant therapy (VKA, LMWH, DOAC)
   - Ongoing symptoms: Continue anticoagulation until symptom resolution
   - Provoked VTE: 3-month treatment usually sufficient (if no ongoing symptoms and no ongoing VTE risk factors)
   - Unprovoked VTE
     - Risk stratification for recurrent leg DVT or recurrent PE (HERDOO-2 or DASH models)*
     - Consider need for anticoagulation in unusual VTE locations (cerebral sinus, splanchnic, upper extremity)

KEY DECISION POINT: Stop or continue therapy

STOP ANTICOAGULANT THERAPY	CONTINUE ANTICOAGULANT THERAPY	TEMPORARILY INTERRUPT ANTICOAGULANT THERAPY
• Advise patients of symptoms/ signs and provide contact information • If DVT: baseline CUS of legs when treatment stopped • If PE: no need for baseline CTPA when treatment stopped	• Repeat assessment: Mitigating risks for bleeding or thrombotic complications (as above)	• In order to repeat D-dimer testing • Consider thrombophilia testing • Consider ECASA, 81 mg daily, during anticoagulant interruption

One month after interrupting anticoagulants (ONLY for patients with unprovoked VTE)

1. D-dimer testing**
   - If negative, consider stopping anticoagulation (e.g. refer to a clinical decision aid*)
   - If positive, consider resuming anticoagulation at previous dose (VKA, DOAC) or at a lower-intensity regiment (DOAC)
2. Consider thrombophilia work-up (in consultation with thrombosis/hematology)
   - Testing may include: factor V Leiden mutation, prothrombin gene mutation, deficiencies of protein C, protein S and antithrombin, lupus anticoagulant, anticardiolipin antibodies, JAK 2 mutation, PNH
   - Consider long-term anticoagulation with selected thrombophilias: APLA, homozygous factor V Leiden or prothrombin mutations, compound heterozygotes, deficiency of protein C, protein S, antithrombin

*Clinical decision aids include the HERDOO 2 and DASH scores
**High-sensitivity D-dimer assay

Long-term (post 3-6 months) anticoagulant management

1. Resumption of anticoagulant therapy
   - Full-dose VKA, LMWH, DOAC regimen
   - Low-dose DOAC regimen
2. Regular (every 6-12 months) follow-up
   - Re-assess appropriateness of anticoagulant therapy, type and dose
   - Re-evaluate INR control (if taking VKA)
   - Re-evaluate weight, CrCl, concomitant medications (if taking DOAC)
   - Repeat assessment: Mitigating risks for bleeding or thrombotic complications (as above)

ALP, alkaline phosphatase; ALT, alanine transaminase; APLA, antiphospholipid antibodies; aPTT, activated partial thromboplastin time; AST, aspartate transaminase; β-HCG, beta human chorionic gonadotropin; CBC, complete blood count; CrCl, creatinine clearance; CTEPH, chronic thromboembolic pulmonary hypertension; CTPA, computed tomographic pulmonary angiography; CUS, carotid ultrasound; DOAC, direct oral anticoagulant; DVT, deep vein thrombosis; ECASA, enteric-coated acetylsalicylic acid; GCS, graduated compression stockings; GFR, glomerular filtration rate; HIT, heparin-induced thrombocytopenia; INR, international normalized ratio; IVC, inferior vena cava; LMWH, low molecular weight heparin; NSAIDs, non-steroidal anti-inflammatories; PE, pulmonary embolism; PNH, paroxysmal nocturnal hemoglobinuria; VKA, vitamin K antagonist; VTE, venous thromboembolism; V/Q, ventilation perfusion ratio; 2D echo, 2-dimensional echocardiography