Guidelines for
Physical, Occupational, and Lymphedema Therapy
in Patients with Venous Thromboembolism

❖ Lower Extremities

1. For patients with acute Lower Extremity Deep Vein Thrombosis (DVT), with or without Pulmonary Embolism (PE), and no Inferior Vena Cava (IVC) filter, therapy (including physical, occupational, and lymphedema with bandaging & manual lymphatic drainage [MLD]) can be initiated once they are therapeutic on an anticoagulant.
    A. Low-molecular-weight heparin (LMWH) preparations are preferred as they are therapeutic immediately following the first injection. Monitoring is not required. Common preparations include: enoxaparin (Lovenox®), dalteparin (Fragmin®), and tinzaparin (Innohep®). Patients may begin PT immediately after starting LMWH.
    B. Unfractionated heparin binds to and activates antithrombin III; this enzyme inactivates thrombin and factor Xa. It may take one to two days to become therapeutic and is more prone to bleeding complications than LMWH. The Adjusted Partial Thromboplastin Time (APTT) should be monitored and therapy can begin when it is between 50 and 70. Warfarin (Coumadin®) acts by depleting active Vitamin K, a key component in the function of factors 11, VII, IX and X. It may take several days to become therapeutic. The International Normalized Ratio (INR) should be monitored and therapy can begin when it is between 2 and 3 if patients are not already on LMWH or therapeutic on heparin.
    C. Rivaroxaban (Xarelto®) , apixaban (Eliquis®), and edoxaban (Savaysa®) are pills which work by factor Xa inhibition. With these medications, therapy may begin as early as 2-4 hours after the initial treatment dose.
    D. Argatroban (Acova®) is a small molecule direct thrombin inhibitor. It is an infusion and therapeutic within as little as 2 hours after start of therapy. APTT is considered therapeutic between 55-100 during Argatroban therapy. PT/OT may begin as early as 2 hours after the initial treatment dose.
    E. Dabigatran (Pradaxa®) is also a small molecule direct thrombin inhibitor. Dabigatran is taken orally and usually initiated 5-10 days after parenteral therapy with Argatroban is underway. APTT is not routinely monitored during treatment with Dabigatran. Patients would not typically receive this medication in isolation as treatment for acute thrombosis.

F. Fondaparinux (Arixtra®) is a subcutaneous injection similar to LMWH but with evidence of fewer unintended bleeding events or induced thrombocytopenia. It is therapeutic within 2 hours after the injection. PT/OT may begin as early as 2 hours after the initial treatment dose.

2. For patients with acute Lower Extremity DVT (with or without PE) and an IVC filter, therapy can be initiated immediately regardless of their anticoagulation status.

3. For patients with acute Lower Extremity DVT who cannot be anticoagulated and an IVC filter cannot be placed, therapy should not be done except with palliative intent as such patients are at very high risk for PE and death. Any planned therapy interventions should be discussed with the patient's primary attending or the rehabilitation medicine attending prior to initiation. An updated referral is required which clearly indicates that the patient is "medically cleared to resume therapy in setting of recent DVT."

❖ **Upper Extremities**

1. Upper Extremity DVT is more likely to embolize due to a lack of valves. Filters are not protective. Therapy involving upper extremity resistance or compression should not be started until the patient has been therapeutic for at least 3 days on an anticoagulant to give the thrombus time to mature. As the clot matures, cross links will form which stabilize the clot.
2. Therapy involving upper extremity resistance or compression should not be performed on patients who cannot be anticoagulated. Up to 1/3 of untreated upper extremity clots can result in PE.
3. Activity of daily living training (ADL) training supervised by an occupational therapist is appropriate. (See anticoagulation guidelines above).

References and additional reading:

Trujillo-Santos, J., et al. "Bed rest or ambulation in the initial treatment of patients with acute deep vein thrombosis or pulmonary embolism: findings from the RIETE registry" Chest. 2005 May;127(5):1631-6.

Liu, Z., et al. "Bed rest versus early ambulation with standard anticoagulation in the management of deep vein thrombosis: a meta-analysis." PLoS One. 2015 Apr 10;10(4)

Kearon, C., et al. "Antithrombotic Therapy for VTE Disease: CHEST Guideline and Expert Panel Report." Chest. 2016 Feb;149(2):315-52.