



## Evaluation and Management of a Patient with Acute Thromboembolic Venous Disease

<b>Description of the Activity</b>	Vascular surgeons evaluate and treat patients with acute venous pathologies and should have a comprehensive understanding of the different causes, clinical presentation, diagnostic techniques, and medical and surgical management of this disease process, including selection criteria for intervention and timing of intervention. Additionally, surgeons should understand perioperative management, including recognition and treatment of complications of interventions, follow-up, and surveillance strategies.
<b>Functions</b>	<ul style="list-style-type: none"><li>❖ Nonoperative/Preoperative<ul style="list-style-type: none"><li>➤ Synthesize essential information from a patient’s referring providers, records, history, physical examination, and initial diagnostic evaluation to develop a differential diagnosis.</li><li>➤ Perform an evidence-based, cost-effective diagnostic evaluation.</li><li>➤ Determine whether intervention is indicated.</li><li>➤ Synthesize an optimal medical management plan for a patient in whom intervention is not indicated, including wound care and edema management.</li><li>➤ Communicate the diagnosis and potential treatment options to the patient/caregiver(s) and consultants.</li><li>➤ Recognize complications of acute venous disease requiring emergency intervention.</li><li>➤ Select a treatment approach consistent with a patient’s anatomy, comorbidities, and acuity of presentation.</li><li>➤ Obtain informed consent. Describe the indications, risks, benefits, alternatives, and potential complications of the planned intervention, and ensure patient/caregiver understanding.</li><li>➤ Synthesize a treatment plan that demonstrates understanding of the operative anatomy, physiology, indications, contraindications, risks, benefits, alternatives, and potential complications of:<ul style="list-style-type: none"><li>▪ Anticoagulation</li><li>▪ Catheter-directed intervention</li><li>▪ Inferior vena cava (IVC) filters</li><li>▪ Thrombolysis</li></ul></li></ul></li><li>❖ Intraoperative<ul style="list-style-type: none"><li>➤ Perform the procedures required to manage acute venous disease.<ul style="list-style-type: none"><li>▪ Catheter-directed thrombolysis, pharmacomechanical thrombolysis</li><li>▪ Iliocaval stenting</li><li>▪ IVC filter insertion and removal</li><li>▪ Mechanical thrombectomy</li><li>▪ Open surgical thrombectomy, fasciotomy</li><li>▪ Venography, intravascular ultrasound</li></ul></li><li>➤ Integrate new information discovered intraoperatively to modify the surgical plan or technique as necessary, such as:<ul style="list-style-type: none"><li>▪ Aberrant iliac vein/caval anatomy</li><li>▪ Compartment syndrome</li><li>▪ Iliocaval occlusion</li></ul></li></ul></li></ul>



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	<ul style="list-style-type: none"><li>▪ Pulmonary embolism (PE)</li><li>➤ Work with anesthesia staff, nursing staff, and other perioperative health care professionals to create and maintain an intraoperative environment that promotes patient-centered care.</li><li>❖ Postoperative<ul style="list-style-type: none"><li>➤ Initiate and oversee postoperative care, including monitoring for complications, prescribing appropriate medical therapy, managing edema, ordering follow-up imaging, and performing filter removal if indicated.</li><li>➤ Communicate with the patient/caregiver(s) and members of the health care team to ensure understanding of postprocedure instructions and the patient's ability to carry out the resultant plan within the context of their life (eg, transportation, living situation, insurance, access to a pharmacy).</li><li>➤ Recognize, evaluate, and manage early and late complications following intervention (bleeding, early re-thrombosis, fracture, IVC filter migration, pain from stent placement, PE, perforation, stent fracture or migration, thrombosis).</li><li>➤ Identify a surveillance and anticoagulation management plan and indications for reintervention.</li></ul></li></ul>
<b>Scope</b>	<ul style="list-style-type: none"><li>❖ In scope<ul style="list-style-type: none"><li>➤ Acute thrombophlebitis</li><li>➤ Anticoagulation, lytic therapy</li><li>➤ IVC filter management</li><li>➤ May-Thurner syndrome</li><li>➤ Phlegmasia</li><li>➤ Upper and lower extremity acute deep vein thrombosis (DVT)</li></ul></li><li>❖ Out of scope<ul style="list-style-type: none"><li>➤ Acute PE</li><li>➤ Lymphedema</li><li>➤ Venous thoracic outlet syndrome</li></ul></li><li>❖ Special Population<ul style="list-style-type: none"><li>➤ Patients with phlegmasia</li><li>➤ Pediatric patients with acute DVT</li><li>➤ Pregnant patients with acute DVT</li></ul></li></ul>



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<p><b>1</b></p> <p><b><u>Limited Participation</u></b></p> <p>Demonstrates understanding of information and has very basic skills</p> <p><b><u>Framework:</u></b> What a learner directly out of medical school should know</p> <p>The attending can show and tell.</p>	<ul style="list-style-type: none"> <li>Elicits a history and performs a vascular exam (swelling, discoloration, labored breathing)</li> <li>Evaluates risk factors for acute DVT (hypercoagulable state, perioperative, travel, immobilization)</li> <li>Identifies imaging modalities used for acute venous disease (duplex, CT, MRA, IVUS)</li> <li>Identifies the need for intervention over medical management</li> <li>Demonstrates understanding of literature regarding the management of an acute DVT and uses available resources to guide routine patient care</li> <li>Respectfully communicates basic facts about the condition to a patient/caregiver(s); demonstrates understanding of the elements of an informed consent discussion</li> </ul>	<ul style="list-style-type: none"> <li>Identifies treatment options and indications for the selected procedure</li> <li>Uses US to obtain vascular access with guidance</li> <li>Respectfully communicates with the health care team and remains open to feedback about performance</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrates basic understanding of how to manage long-term anticoagulation</li> <li>Communicates with the health care team to ensure understanding of the postop management plan; gathers and reports recommendations from different members of the health care team (eg, consulting services)</li> </ul>
<p><b>2</b></p> <p><b><u>Direct Supervision</u></b></p> <p>Demonstrates understanding of the steps of the operation but requires direction through principles and</p>	<ul style="list-style-type: none"> <li>Orders and interprets appropriate imaging (venous duplex, CTV) to evaluate a patient with acute VTE and establish a differential</li> <li>Uses imaging findings to support a differential; uses duplex findings to identify acute DVT and determine eligibility for intervention</li> <li>Synthesizes clinical data to choose endo intervention (lysis, percutaneous</li> </ul>	<ul style="list-style-type: none"> <li>Identifies most steps of the procedure and the equipment required; requires prompting to advance the procedure</li> <li>Uses US to obtain vascular access; demonstrates basic catheter and wire-handling techniques</li> </ul>	<ul style="list-style-type: none"> <li>Describes the duration of long-term anticoagulation based on current CHEST guidelines</li> <li>Communicates efficiently with the health care team; executes recommendations from consulting services but may still require assistance identifying when to question or discuss recommendations</li> </ul>

*The vascular surgery EPAs may be further refined based on pilot data and final review by several ABS Council Committees; final versions including any edits stemming from those processes will be available in fall 2024.*



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<p>does not know the nuances of a basic case</p> <p><b>Framework:</b> The learner can use the tools but may not know exactly what, where, or how to do it.</p> <p>The attending gives active help throughout the case to maintain forward progression.</p>	<p>thrombectomy, IVC filter) vs open surgical thrombectomy</p> <ul style="list-style-type: none"><li>• Demonstrates understanding of CHEST and SVS guidelines and discusses them with a patient</li><li>• Explains all the risks and benefits of medical therapy vs invasive intervention and actively listens to a patient/caregiver(s) to determine expectations</li></ul>		
<p><b>3</b></p> <p><b>Indirect Supervision</b></p> <p>Can do a basic operation but will not recognize abnormalities and does not understand the nuances of an advanced case</p> <p><b>Framework:</b></p>	<ul style="list-style-type: none"><li>• Interprets physical findings and the results of imaging (duplex, CT) to develop a treatment plan for acute VTE, including anticoagulation and factors requiring escalation of care</li><li>• Demonstrates understanding of the duration of medical management and its possible complications and contraindications</li><li>• Uses imaging findings to support a differential and determine if a patient is a candidate for venous thrombectomy</li><li>• Develops a specific endo plan (lysis vs mechanical thrombectomy) and demonstrates understanding of the</li></ul>	<ul style="list-style-type: none"><li>• Identifies all critical steps of the procedure and the equipment required; advances the procedure with minimal prompting</li><li>• Performs a venogram and parts of an ilio caval thrombectomy or lysis; recognizes indications for various thrombectomy devices and uses them correctly</li></ul>	<ul style="list-style-type: none"><li>• Communicates with the health care team, including consulting services; incorporates recommendations into the treatment plan</li></ul>



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<p>The learner can perform the operation in straightforward circumstances.</p> <p>The attending gives passive help. This help may be given while scrubbed for more complex cases or during a check-in for more routine cases.</p>	<p>indications and limitations of various devices</p> <ul style="list-style-type: none"> <li>• Demonstrates understanding of the literature on the indications, risks, and benefits of invasive treatment for DVT vs medical management and applies it independently</li> <li>• Explains the details and possible complications of the procedure to a patient/caregiver(s) and includes patient/caregiver preferences in the decision-making process</li> </ul>		
<p><b>4</b></p> <p><b><u>Practice Ready</u></b></p> <p>Can manage more complex patient presentations and operations and take care of most cases</p> <p><b><u>Framework:</u></b> The learner can treat all straightforward DVT cases and has a strong understanding of surgical options and</p>	<ul style="list-style-type: none"> <li>• Synthesizes patient data, including the clinical severity of the condition, and determines a treatment plan, including consideration of anticoagulation, lysis, or clot retrieval, depending on patient factors</li> <li>• Formulates a comprehensive medical management plan for a patient with acute DVT, including starting anticoagulation, and recognizes the factors that suggest the need for further intervention (eg, right heart strain)</li> <li>• Identifies contraindications for anticoagulation and determines if a patient requires an IVC filter</li> </ul>	<ul style="list-style-type: none"> <li>• Adapts the management plan based on a change in a patient's anatomy or clinical situation (eg, phlegmasia), including from endo to open</li> <li>• Identifies all critical steps of the procedure and the equipment required (stents, IVUS); advances the procedure without prompting; recognizes critical decision points</li> <li>• Performs all steps of an iliofemoral and caval thrombectomy and adjunctive procedures (stenting, thrombolysis, suction thrombectomy, IVUS) and</li> </ul>	<ul style="list-style-type: none"> <li>• Communicates with the health care team to ensure understanding of the postop management plan; resolves discrepancies in recommendations between consulting services to optimize patient care</li> </ul>



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<p>techniques for less common scenarios.</p> <p>The attending is available at the request of the learner but is not routinely needed for common presentations, though input may be needed for more complex presentations.</p>	<ul style="list-style-type: none"><li>• Initiates cross-sectional and duplex imaging and 3D reformatting to identify abnormal findings (eg, extensive ilio caval thrombosis) and plan an advanced venous procedure</li><li>• Adapts a management plan based on a change in a patient's anatomy, including from endo to open</li><li>• Discusses conflicting data and treatment options with a patient to make an individualized treatment plan in an uncertain situation</li><li>• Customizes communication about the condition to a patient/caregiver(s) based on individual characteristics and anticipates logistical problems in optimizing the patient for surgery</li><li>• Clearly conducts an informed consent discussion for surgical intervention, individualizing risks and benefits for the patient</li></ul>	<p>troubleshoots intraop decisions independently</p>	