



Deep Vein Thrombosis and Pulmonary Embolism



When your child needs a hospital, everything matters.

Deep Vein Thrombosis and Pulmonary Embolism

Deep vein thrombosis (DVT) is the formation of blood clots inside the deep veins of the body. Occasionally, these clots may travel to the lungs causing a pulmonary embolism (PE). Historically DVT-PE had been considered adult-only problems, but the number of cases in children is on the rise. One recent study noted a 70 percent increase in incidence of DVT-PE in patients cared for at children's hospitals between the years 2001 and 2007. At Nationwide Children's Hospital, hematologists see 130-150 new cases of DVT-PE each year.

If you suspect that your child is suffering from DVT, call (614) 355-0221 to speak with a hematologist at Nationwide Children's for a same day appointment or hospital admission. If you suspect PE, call 911/emergency transport and send the patient to Nationwide Children's Emergency Department, as this is a medical emergency.

Risk Factors for Thrombosis

Patient education regarding risk factors for blood clots is essential to the early identification and prevention of clots. Risk factors include:

Non-Modifiable

- Being overweight/obese
- Inactivity
- Using estrogen containing hormonal contraceptives
- Smoking
- Family history

Modifiable

- Family History
- Pregnancy
- Cancer
- Surgery
- Injuries
- Diabetes
- Certain heart defects
- Certain inflammatory conditions (ie: inflammatory bowel disease, lupus, cystic fibrosis, etc)
- Central venous catheters

Common Signs and Symptoms	
Deep Vein Thrombosis in Extremities	Pulmonary Embolism
<ul style="list-style-type: none">• Swelling in an arm or leg• Soreness or pain in an arm or leg• Red, pale or bluish skin color• Warmth over an arm or leg	<ul style="list-style-type: none">• Trouble breathing• Chest pain• Rapid heartbeat• Coughing• Slight fever• Fainting

Diagnosis

DVT-PE are diagnosed by physical examination, medical history, and appropriate imaging. The common imaging test used to diagnose DVT in the extremities is a doppler sonogram. Pulmonary embolism is often diagnosed using a computed tomography (CT) angiogram.

Medical Management

The Anticoagulation Clinic at Nationwide Children's offers comprehensive anticoagulation management. The anticoagulation team includes four physicians, a senior hemostasis-thrombosis fellow, a nurse practitioner and two registered nurses. This team manages the anticoagulation needs for more than 500 patients throughout the state of Ohio.

In most cases, thrombosis can be managed with anticoagulant therapy. Duration of anticoagulation ranges from 6 weeks to 1 year depending on patient age and risk factors causing the DVT-PE. Commonly used anticoagulants in children include:

- Heparin (intravenous infusion)
- Low Molecular Weight Heparin (subcutaneous injection)
- Warfarin (oral)
- Rivaroxaban (oral)

Thrombolysis

In severe cases, the patient may be a candidate for thrombolysis, which uses the medication tissue plasminogen activator (tPA) delivered intravenously to the site of the clot. At Nationwide Children's, our team of specialists including hematologists and interventional radiologists are well versed in this procedure, performing 20-25 thrombolysis procedures each year with high safety and success rates.

Precautions for Your Patient on Anticoagulation Therapy

Patients on anticoagulation therapy may need to make modifications to their lifestyle. For example, , they will need to avoid contact and collision sports, aspirin and nonsteroidal anti-inflammatory drugs (NSAIDS) while on anticoagulation. Additionally, appropriate dental care is particularly important for the duration of anticoagulation therapy.

Clinical Trials

As leaders in care, clinicians in the Division of Hematology/Oncology/BMT at Nationwide Children's are participating in numerous clinical trials related to the use of novel oral anticoagulants in children. These include:

- An ongoing trial of Apixiban in pediatric patients with DVT-PE
- A randomized study investigating 6 weeks versus 3 months of anticoagulation for provoked clots (KIDS DOTT)

For more information about these and other trials at Nationwide Children's, visit [NationwideChildrens.org/cancer-clinical-studies](https://www.nationwidechildrens.org/cancer-clinical-studies).

Referrals and Consultations

Online: [NationwideChildrens.org/Hematology-Oncology-BMT](https://www.NationwideChildrens.org/Hematology-Oncology-BMT)

Phone: (614) 355-1272 | Fax: (614) 722-3369

Physician Direct Connect Line for 24-hour urgent physician consultations:
(614) 355-0221 or (877) 355-0221.

