

# Study: Anti-clotting drugs rarely needed in children with big-bone fractures

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(Medical Xpress) -- Children with pelvic and thigh fractures develop dangerous blood clots so rarely that anti-clotting therapy should be given only to those with underlying conditions that increase clotting risk, according to a study from Johns Hopkins Children's Center.

The research, to be published in the June issue of the *Journal of Pediatric Orthopaedics*, challenges several earlier reports that found a relatively high risk of developing dangerous clots deep inside the veins among pediatric patients. The new findings, the investigators say, suggest that preemptive anti-coagulant medications may be best reserved for children whose risk of forming a clot outweighs the small but very real risk of bleeding associated with anti-clotting drugs.

For the study, researchers reviewed 1,782 records of pediatric trauma patients treated at Hopkins between 1990 and 2009. Clots were reported in three children (0.17 percent), none of whom developed life-threatening complications.

The investigators say they believe their research is the first to evaluate clotting risk in healthy children with pelvic and thigh [fractures](#) and should help clinicians better weigh the pros and cons of preemptive anti-clotting therapy. Anticoagulants have serious, if rare, side effects that include bleeding in the brain, stomach and other organs.

Anticoagulants are routinely given to adult trauma patients to prevent deep-vein clotting. Between 20 and 90 percent of adult trauma patients

develop such blood clots, researchers estimate. Known as deep venous thrombosis, or DVT, such clots can travel to the lungs and cause pulmonary embolism, a potentially fatal condition that requires emergency treatment. Previous studies have found that between 4 and 22 percent of adult trauma patients with DVT progress to pulmonary embolism.

Because of this well-established risk, guidelines call for anti-coagulant therapy in all adult [trauma patients](#) with bone fractures. But to date, scant data on clotting risk among children has rendered such decisions tricky, the researchers say.

“Weighing the unknown risk of blood clots against the risk of over-treatment is like solving an equation with two unknowns, but we hope that our findings will provide some context and clarity for pediatricians in such situations,” says study lead investigator Michael Ain, M.D., a pediatric orthopedic surgeon at Hopkins Children’s.

“Because we found that clots are extremely rare in otherwise healthy children who suffer traumatic fractures, we believe that anti-clotting medications should be saved for those with underlying conditions like heart disease and cancer or some inherited conditions that make the blood more prone to clotting,” adds Ain.

In the study, the three children with [blood clots](#) developed them in their femoral veins and were diagnosed by ultrasound prompted by symptoms suggestive of a blood clot. Such symptoms usually include leg pain and swelling or skin discoloration and warmth in the affected leg. Many people who develop DVT, however, have no symptoms, the research team cautions.

All three children with DVT were treated successfully with anti-clotting medication and none experienced complications from either the clot or

the treatment. Thirty-one of the children in the study died, none of them of DVT-related complications. The most common causes of death were brain bleeding and brain swelling, secondary to traumatic brain injury.

Although 4 percent of the children (68) in the current study had a central venous catheter — a device believed to be the single most important DVT risk factor in otherwise healthy children — none of the three who developed DVT had such a device, the study found. Nine percent of patients in the study received preemptive anti-clotting therapy. There were no adverse effects among those who got anti-clotting medication.

Researchers emphasize that the low rate of DVT in the population they studied likely stems from the fact that most of the [children](#) were healthy and had no underlying diseases that drive up clotting risk, such as congenital heart disease or cancer.

Provided by Johns Hopkins University

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