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Dr. Philip Wells, Division of Hematology  
at the University of Ottawa

## Freeing Up the Flow

Ottawa researcher works to prevent, detect and treat blood clots

By: Mihiri De Silva

**Deep-vein thrombosis (DVT) — blood clots formed deep in the body, usually the leg— can escalate from a mildly uncomfortable to fatal condition if enough clot travels to the arteries in the lung to block the circulation of blood through the body. Up to 25 per cent of all cases are severe enough to cause death. Now, researchers at the University of Ottawa are enhancing the effectiveness of the most common DVT treatment – the blood thinner heparin – to keep DVT mortalities at bay.**

Dr. Philip Wells, Chief of the Division of Hematology, University of Ottawa, developed the thrombosis unit at the Ottawa Hospital. Within the unit, his research approaches DVT from all angles, including prevention, detection and treatment. As a physician, he is aware that one of the challenges in treating DVT is the uncertainty regarding how long to carry out treatment using blood thinners – too much medication can cause the patient to bleed out and too little won't prevent clotting.

"We ultimately hope to provide care that is specific to the individual," says Wells. "Using unique patient characteristics or genetic attributes to correctly balance the risks and benefits of the treatment options"

Increasing the effectiveness of DVT prevention and treatment will have a large impact in hospitals where post-surgery patients highly prone to DVT must be made aware of their risk for blood clots, a risk that continues even after they are healthy enough to return home.

Wells' work has helped to cut out the costly and inconvenient initial in-hospital monitoring phase by incorporating a low molecular weight version of the blood thinner heparin. While several times more expensive, the chemically altered drug only requires one dose daily—rather than a continuous intravenous supply—and reduces the patients' likelihood

of bleeding. Patients can also administer the improved medication themselves and monitor the effects at home, making it particularly beneficial for both the patient and the inpatient-laden healthcare system.

This project is only one in a long line of investigations Wells has conducted over the past 10 years in reference to DVT. Because mortalities from a blockage in the lung artery—known as a pulmonary embolism— often occur even without a DVT diagnosis, Wells dedicated a significant amount of research time to identifying factors that put people at the greatest risk for developing blood clots and how to make the diagnosis.

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His research led to the development of the Wells Clinical Prediction Rule in 1997—clinically proven indicators that allow physicians to categorize patients at low, medium or high risk of developing DVT. Factors include age, edema, swollen limbs, cancer, and inactivity. The scoring system is now widely adapted and highly successful. His impressive contributions to the field of DVT research was inspired by his innate interest in the primary research that influences treatment and development of blood clots.

"I've always been interested in understanding why we treat people the way we do," says Wells. "I was disappointed to find that there wasn't enough rigorous science to answer questions regarding DVT, we were desperately in need of sound clinical research."

While treatment and detection are the primary foci of his work, Wells is currently validating the benefits of exercise on long-term DVT prevention. With 10 years of DVT research under his belt, Wells will continue his schedule of rigorous investigation to set the standard for DVT research.

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