

# Ultrasound scans by doctors in emergency departments to diagnose deep vein thrombosis halve patients' stay

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If doctors in hospital emergency departments are trained to carry out ultrasound on patients with suspected deep vein thrombosis (DVT), they

can nearly halve the time the patients spend in these departments.

Dr. Ossi Hannula, an emergency medicine specialist at the Well-being Services County of Central Finland, Jyväskylä, Finland, who presented the findings at the [European Emergency Medicine Congress](#), said his findings could help to reduce overcrowding in emergency departments and improve death rates by enabling [patients](#) at greatest risk of dying, usually from non-DVT-related problems, to be treated more quickly by emergency staff.

"Prolonged stays in emergency departments are linked to [emergency department](#) crowding," he said. "The longer a patient stays in an emergency department, the higher are the [death rates](#) and the risks of other complications, the longer their stay in a hospital ward, the lower the patient satisfaction, and the higher the financial costs and the burden on emergency department staff."

DVT is a blood clot in a vein, normally in the leg, and it is a common condition in patients arriving in emergency departments, accounting for 1-2% of all such visits. An ultrasound scan, usually performed by radiographers or radiologists in the hospital's imaging department, is the normal way to diagnose it, and treatments include anticoagulant medicines (or "[blood thinners](#)") to stop the clot growing and to prevent it breaking off and traveling in the blood stream to other parts of the body, such as the lungs. If this happens, it can be fatal.

Dr. Hannula's earlier studies had shown that if [general practitioners](#) working in [primary care](#) were taught to perform ultrasound scans on patients with suspected DVT, they referred fewer patients to hospital emergency departments, resulting in less crowding and lower costs. He decided to see if ultrasound performed by emergency physicians instead of radiographers and radiologists could reduce the time patients spent in emergency departments.

Between October 2017 and October 2019, 93 patients with a suspected DVT were recruited to the prospective study carried out in two hospitals: Tampere University Hospital and Kuopio University Hospital. They were included in the study if an emergency doctor who had been trained to perform ultrasound scans examined them and performed the necessary ultrasound themselves.

This is called "point-of-care ultrasound" (POCUS). POCUS can be done at the bedside in the emergency department, in the hospital ward, in an ambulance, or in the middle of a natural disaster. If the doctor thought a patient should also be referred to the imaging department, they could do this as well as performing POCUS themselves. The patients were aged over 18 years and able to give informed consent in Finnish.

"The aim of point-of-care ultrasound is to answer specific questions such as: 'Is there a deep venous thrombosis that causes this leg to swell?' or 'Are there gallbladder stones present causing the abdominal pain?'" said Dr. Hannula.

Eleven emergency medicine specialists and junior doctors in the two hospitals examined the patients in the study. Afterwards, Dr. Hannula compared the results with a [control group](#) of 135 patients who arrived in the same emergency departments with suspected DVT on the same days but were sent for [ultrasound scans](#) in the hospitals' imaging departments.

"We found that patients undergoing the standard ultrasound examination spent an average of 4.51 hours in the emergency departments, while the group receiving point-of-care ultrasound spent an average of 2.34 hours in the emergency departments—a difference of 2.16 hours," said Dr. Hannula.

"There have been mixed results from previous studies of point-of-care ultrasound that investigated how it affected the length of stay in

emergency departments. It seems that the results can depend on the setting of the study. As this study was carried out in two different emergency departments in academic [hospital](#), the results are convincing.

"The crowding in emergency departments is an increasing threat to patient safety as well as staff well-being. Using point-of-care ultrasound is one way of tackling this threat by reducing an unnecessary delay in decision making."

Dr. Hannula now plans to see if a similar reduction in length of stay in emergency departments can be achieved in other studies, for instance, for gallstones.

Professor Youri Yordanov from the St Antoine Hospital emergency department (APHP Paris), France, is Chair of the EUSEM 2023 abstract committee and was not involved in the research.

He said, "This study shows that point-of-care-[ultrasound](#) is able to provide swift and precise diagnoses for patients who come to emergency departments with suspected [deep vein thrombosis](#). An initiative like this that can reduce the time that patients have to wait in emergency departments is very welcome, especially as it has the potential to reduce the pressure on staff and improves the patients' experience."

Provided by European Society for Emergency Medicine

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