Automated devices for identifying peripheral arterial disease in people with leg ulceration: an evidence synthesis and cost-effectiveness analysis

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Plain language summary

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Leg ulcers are long-lasting wounds mostly caused by problems in blood flow in the veins, which are treated by applying bandages or stockings to create a 'compression' effect. However, compression should not be used in people with a condition called peripheral artery disease. To identify people with peripheral artery disease who should not receive compression therapy, health professionals perform a test called 'ankle–brachial pressure index', which involves taking blood pressure of the arms and ankles using a device called 'Doppler ultrasound'. The procedure is time-consuming and people with leg ulcers often find it uncomfortable. Automated devices have been proposed as a more acceptable option for assessing leg ulcers. However, we need to know whether these devices produce reliable results and represent good value for money for the National Health Service.

We found 24 clinical studies that assessed 5 automated devices to measure ankle–brachial pressure index. The type of patients and clinical setting varied between studies. Two studies assessed people with leg ulcers and showed that the automated devices tended to give higher readings than standard Doppler and, therefore, may underestimate the presence of peripheral artery disease. Results of the 22 studies assessing people without leg ulcers showed that the automated devices could correctly identify people who did not have peripheral artery disease but were less precise in identifying people with peripheral artery disease. However, there was not enough evidence to confirm if these devices are reliable enough to be used in clinical practice.

Compared to manual Doppler, the automated devices were less costly to deliver in clinical practice but had increased costs due to potentially inaccurate results. Our evaluation required many assumptions about how the devices would be used in practice, and there were no data on their impact on patient outcomes. Results are highly uncertain and should be interpreted cautiously. Given current evidence, it is unlikely that automated tests are a convenient option for the National Health Service.

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This article

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