Non-invasive imaging software to assess the functional significance of coronary stenoses: a systematic review and economic evaluation

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Plain English summary

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Stable angina is a type of chest pain; left untreated, it can lead to heart failure, heart attack and sudden death. To avoid these outcomes, patients may require surgical intervention to open obstructed arteries, known as 'revascularisation'.

Patients who might need revascularisation undergo tests to identify blocked arteries. The last line of testing is called invasive fractional flow reserve assessment. This is an invasive measurement of blood flow that involves inserting a wire into an artery after the patient has taken drugs to dilate the artery. It carries some risks and may have side effects.

Non-invasive tests have been proposed to precede or replace invasive fractional flow reserve assessments. These include QAngio® XA 3D/QFR® (three-dimensional/quantitative flow ratio) (Medis Medical Imaging Systems BV, Leiden, the Netherlands) and CAAS® vFFR® (vessel fractional flow reserve) (Pie Medical Imaging BV, Maastricht, the Netherlands) imaging software.

This project investigated whether or not these technologies can provide accurate assessments of blood pressure, and if they are a reasonable use of NHS resources. A thorough review of all the literature on the technologies was performed. All data were combined and re-analysed to determine whether or not the tests accurately predict the need for revascularisation and to consider their clinical benefits. An economic analysis was conducted to investigate whether or not using either of these technologies is economically viable.

The project found that QAngio XA 3D/QFR can accurately measure blood flow, may be a reasonable alternative to fractional flow reserve, pending more evidence on benefits to patients' health, and is a reasonable use of NHS resources. The current evidence for CAAS vFFR is too limited to draw any firm conclusions.

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This report

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