Healthcare Improvement Scotland | SHTG Advice on health technologies

Plain Language Summary

HeartFlow for the assessment of coronary artery disease | SHTG Adaptation 03 | September 2021

What is coronary artery disease?

People can develop coronary artery disease when the blood vessels that supply blood to their heart, known as coronary arteries, become narrowed or blocked. This reduces the flow of blood to the heart and can make it work less efficiently. When the heart does not receive enough oxygen via the blood, it can cause chest pain, which is also called angina. People with coronary artery disease may also suffer from shortness of breath, as the heart cannot pump enough blood to meet the body's needs. People with coronary artery disease have an increased risk of more serious complications like a heart attack.

What is HeartFlow?

HeartFlow is a new technology that creates images of the arteries around the heart that doctors can use to look at blood flow around the heart.

If a doctor thinks that someone has coronary artery disease, they may recommend that they have a cardiac CT (computed tomography) scan. This is a painless test that uses X-rays to take pictures of the heart and its blood vessels. If the CT scan shows that the person has narrowed or blocked arteries, the doctor may suggest some additional tests, like HeartFlow, to measure how well blood is flowing to the heart.

HeartFlow technology creates a colour-coded image of the arteries around the heart which doctors use to look at how blockages are affecting the flow of blood around the heart. HeartFlow is not an additional test or procedure that patients have to undergo. Instead, the technology uses information that was gathered during the patient's cardiac CT scan. A HeartFlow analysis may provide doctors with enough information to prevent some people from needing to have more invasive tests and procedures.

Why is this important?

Coronary artery disease is a major cause of death and disability in Scotland. In 2018 coronary artery disease was the underlying cause of death for 6,615 people in Scotland. The number of people needing tests and treatment because of suspected coronary artery disease is increasing. It is important that everyone gets access to the best possible standard of care within a reasonable period of time.

What we did

An English organisation called the National Institute for Health and Care Excellence (NICE) published guidance on the use of Heartflow in England in May 2021.

SHTG used the work that NICE did to produce recommendations for people in Scotland. We used an internationally-recognised adaptation process.

What we found

The NICE guidance said that HeartFlow was safe and useful when diagnosing coronary artery disease. NICE found that it would reduce the number of people needing more invasive, and expensive, tests which is good for patients and could save the NHS in England some money. The NICE guidance said that it could be one of several tools/tests available to doctors. Following our Adaptation process, we wrote some recommendations for NHSScotland that are similar to the recommendations produced by NICE, but are not as strong. We feel that more research is needed, and we plan to update our recommendations when further studies are published.

The SHTG recommendations agree that HeartFlow is safe, and that it might be useful in diagnosing coronary artery disease. We think that more information is needed before we can say whether or not HeartFlow is good value for money.

What SHTG considered when developing advice for NHSScotland

We considered whether the NICE guidance was good quality, and whether it was applicable to Scotland. We thought about any barriers there may be to implementing the recommendations in Scotland. We considered the tests that are currently available for diagnosing coronary artery disease and we looked for current relevant policy in Scotland.

What is our advice to NHSScotland?

The HeartFlow technology is safe. If a patient has a cardiac CT scan and the doctor thinks that this shows they have coronary artery disease, then a HeartFlow analysis can be used to help doctors understand whether narrowing and blockages in the arteries are reducing blood flow to the heart.

Some patients will still need to have an invasive coronary angiogram. The research is not clear about how many patients could avoid an invasive coronary angiogram by using the HeartFlow technology. We also do not know whether the use of the HeartFlow technology would be good value for money.

Doctors use a range of tests when diagnosing coronary artery disease. SHTG advice is that the HeartFlow technology may be used as one of these diagnostic tests. Doctors should consider what other tests may also help. HeartFlow may be of particular value in more rural/remote areas, where access to other diagnostic tests could be limited.

Future work

More research is being carried out about HeartFlow, including a study in NHS Western Isles.

This plain language summary has been produced based on SHTG Adaptation 03 September 2021