

# The Coronary CT-First Approach

Heart disease is still the number one cause of death globally<sup>1</sup>. Many diagnostic tests currently considered the standard of care for detecting heart disease simply do not provide enough information. The result: unhealthy people are sent home, while others unnecessarily go to the cath lab. We think we can help provide a better way.

## As Barriers Fall, a Better Pathway Emerges

Among the existing noninvasive tests available for detecting coronary artery disease (CAD) are stress testing - including exercise treadmill tests, SPECT, and stress echo - as well as a coronary computed tomography (CT). A number of recent studies have shown that a coronary CT-first pathway has benefits over the traditional stress testing approach<sup>2</sup>. Coupling the HeartFlow Analysis with a coronary CT adds the ability to understand whether a specific lesion is restricting blood flow, information that was previously only available invasively.

However, coronary CT has been difficult to order in certain circumstances, preventing some patients with suspected CAD from experiencing the benefits of HeartFlow. Fortunately, this scenario is changing rapidly.

### Pre-authorization

Radiology Benefits Management companies, such as AIM and eviCore, have reduced the pre-authorization requirements for ordering a coronary CT. Now, ordering a coronary CT, and HeartFlow Analysis, if needed, can be as easy as ordering a stress test.

### Modern CT scanners

CT technology has advanced dramatically in recent years. Newer CT scanners rapidly acquire coronary images and are ideally suited for coronary applications.

### Broad patient population

For coronary CT to be a front line test, it needs to work in a wide range of patients. Coronary CT has traditionally been limited to low- to intermediate- risk patients, as a result of its very high sensitivity. However, SYNTAX III demonstrates that coronary CT can be used in high-risk patients.



## A Radiologist's View

**Dr. Jonathan Leipsic, FRCPC, FSCCT**  
*Past President SCCT*

"With a quality CT image, you are provided with tremendous information regarding anatomy, plaque morphology and extent of the disease. You get a broad overview. With stress tests, you get no sense of the extent of atherosclerosis and with some can completely miss triple vessel disease. Yet, with CT, you are still missing key information in approximately 30-40% of patients. The missing link is the impact on blood flow, and this is exactly where the HeartFlow FFR<sub>CT</sub> Analysis comes in. With it, I get a complete picture; the 3D model is color-coded making it clear where I need to focus my evaluation. Ultimately, CT plus FFR<sub>CT</sub> is going to change how we diagnose and manage patients with CAD. I'm incredibly excited."



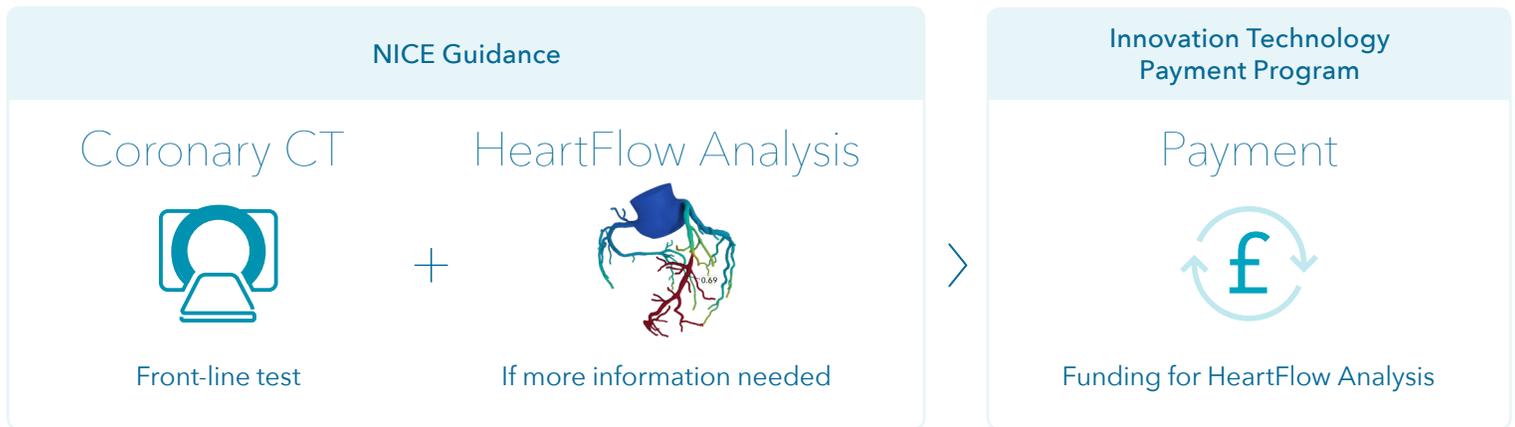
## SYNTAX III

The SYNTAX III trial enrolled patients with multivessel disease whose doctors were deciding on the best treatment: stenting or coronary bypass surgery. For each patient, two heart teams decided independently on the best treatment for the patient. One heart team looked only at coronary CT and the HeartFlow Analysis, while another looked only at invasive angiography data. The study, which included more than 200 patients, showed almost perfect agreement in the treatment recommendations of the heart teams using coronary CT and heart teams using invasive angiography. SYNTAX III also demonstrated that the HeartFlow Analysis provided supplemental information to a coronary CT, allowing physicians to understand the functional significance of each lesion - in some cases changing the treatment recommendation<sup>3</sup>.

## Shifts in the UK

Looking to the UK provides an example of how this shift to a CT-first strategy can happen systematically. The UK's National Institute of Health and Care Excellence (NICE) issued a clinical guidance that recommended patients with suspected chest pain get a coronary CT first, rather than stress testing. In this Clinical Guidance, the NICE found that CT is the most cost-effective front line test for patients with stable chest pain. NICE also issued a medical technology guidance recommending the HeartFlow Analysis when more information is needed after a coronary CT. Finally, the NHS selected the HeartFlow Analysis for the highly competitive Innovation Technology Payment program, whereby funding is made available to hospitals to pay for the HeartFlow Analysis. Taken together, these three steps position and enable the CT-HeartFlow Analysis pathway as the preferred approach in the UK.

### The Preferred Pathway



1. World Health Organization (2017, January 12). Top 10 Causes of Death. <http://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death>.
2. Lu MT, et al. Noninvasive FFR Derived From Coronary CT Angiography: Management and Outcomes in the PROMISE Trial. JACC Cardiovasc Imaging 2017 [Epub ahead of print Apr 7]; Newby, David, et al. Scottish Computed Tomography of the HEART - SCOT HEART Trial. American College of Cardiology 2017 [Updated: April 2017].
3. Serruys, PW, SYNTAX III Revolution Trial. Presented at EuroPCR 2018.

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