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Yield of invasive coronary angiography following the UK NICE 2016 guideline expansion of CT coronary angiography

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The UK National Institute of Health and Care Excellence (NICE) updated chest pain guidelines in 2016 and recommended CT coronary angiography (CTCA) as the first line investigation for all patients presenting with new stable chest pain and the removal of the pre-test probability risk scoring. There is a concern that using CTCA in populations with higher likelihood of coronary artery disease (CAD), can lead to higher rates of downstream testing with invasive coronary angiography (ICA). We implemented the NICE 2016 guideline and audited the downstream testing after CTCA. We also evaluated the performance of the ESC risk score (ESC RS).

Methods
We undertook a retrospective search of the radiology database from January 2017 to June 2018. CTCA reported CAD degree of stenosis as normal/minimal stenosis, mild (30-50%), moderate (50-70%), or severe (>70%).

Results
In total 652 patients underwent CTCA (mean age 55 yrs; 330 male). 92 patients were found to have moderate or severe stenosis. 69 of them were referred directly to ICA, with 63 undergoing ICA and confirming severe CAD in 40 patients, a yield of 63%. 18 patients with moderate stenosis were referred for stress echo (SE) with one positive result. In total 35 patients went on to be revascularised.

62 patients were found to have mild stenosis. The majority of patients (n=462) had normal/minimal stenosis. There were 36 inconclusive studies.

The ESC RS was calculated retrospectively with the following results:

70 patients had an ESC RS <15% and 2 (3%) were found to have moderate stenosis. 427 patients had an ESC RS 15-50%; 17 (4%) had severe stenosis and 32 (8%) moderate stenosis. 149 patients had an ESC RS 50-85%; 17 (11%) were found to have severe stenosis and 23 (15%) moderate stenosis. Lastly 2 patients had an ESC RS >85% and one had moderate stenosis.

Conclusions
Our results demonstrate that CTCA is an effective first line test for most patients with new stable chest pain as the majority were found to have normal/minimal disease. In the patients that went on to have ICA, CTCA had a relatively high yield of detecting severe CAD (63%). This was achieved with some use of SE as a gatekeeper to ICA, particularly in patients with moderate CTCA stenosis. SE should be used more after CTCA in patients with moderate stenosis, as a gatekeeper to ICA.
The ESC RS was predictive of significant CAD but overestimated the likelihood of CAD.