

# Impact of the peri coronary artery inflammation and AI based risk predictors, using cardiac CT angiography, on the stratification of patients with suspected coronary artery disease – Insight from the NHS England Chest Pain Pilot

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**Introduction:**  
The AI-based CariHeart Risk calculator has been developed using CT coronary angiography (**CTCA**) assessment of the peri-coronary artery inflammation (**FAI**) and conventional cardiovascular risk factors to predict 8 years fatal and non-fatal cardiovascular events.  
As one of the 5 chosen Hospitals in the United Kingdom we have performed and interim analysis to assess the impact of the proposed new chest pain pathway on the risk stratification of patients referred for suspected angina to the Rapid Access Chest Pain Clinic (RACPC).

<b>Methods:</b>  135 consecutive patients referred to the RACPC are part of this analysis. 2 patients had no contrast CTCA images at patient request and were excluded.  Risk stratification was defined into 3 categories:	Category	Definition
	CAD Severity	<ul style="list-style-type: none"><li>No/mild: &lt;50% stenosis</li><li>Moderate: 50-70%</li><li>Severe: &gt;70%</li></ul>
	FAI Score	<ul style="list-style-type: none"><li>Low: &lt;50th percentile</li><li>Intermediate: 50-75th(LAD/RCA), 50-90th(LCX)</li><li>High: &gt;75th(LAD/RCA), &gt;90th(LCX)</li></ul>
	CariHeart Risk	<ul style="list-style-type: none"><li>Low: &lt;1% 8-year CV mortality</li><li>Intermediate: 1-5%</li><li>High: &gt;5%</li></ul>

## Results:

CAD Severity	Score Type	Low	Intermediate	High	p-value
No or Mild CAD (n=114)	FAI Score	3.5% (4)	14% (16)	82% (94)	<0.00001
	CariHeart Risk Score	3.6% (4)	41% (47)	55% (63)	<0.0001
Moderate CAD (n=13)	FAI Score	0%	38% (5)	62% (8)	0.025
	CariHeart Risk Score	0%	8% (1)	92% (12)	<0.007
Severe CAD (n=3)	FAI Score	0%	0%	100% (3)	—
	CariHeart Risk Score	0%	33% (1)	67% (2)	—

## Conclusion:

- ❖ The AI-based new chest pain pathway utilising CTCA images has identified higher proportion of at-risk patients particularly those with **non-obstructive CAD**.
- ❖ FAI score and CariHeart risk score seems to perform similarly in the combined intermediate and high-risk groups.
- ❖ Further research into understanding the value of initiation of cardiovascular preventive therapy to reduce perivascular inflammation and hence cardiovascular death would be essential.