

## Role of inpatient coronary CT angiography on clinical decision making during COVID-19 pandemic

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**Background:** The COVID-19 pandemic has had a profound effect on healthcare delivery. Here we describe the effect of repurposing of a research Computed Tomography scanner on clinical care of cardiology patients in an urban academic medical centre which did not have routine access to CCTA prior to the pandemic.

Patients requiring invasive coronary angiography require transfer to a regional cardiac centre (no ICA available on site).

**Purpose:** We investigated the effect of CCTA on i) diagnostic certainty ii) avoidance of clinician defined unnecessary invasive angiography in hospitalised patients.

**Methods:** This was a prospective, longitudinal cohort study involving hospitalized patients admitted to an urban academic medical centre (catchment population 650 000) between March 29 and September 21, 2020. Routinely collected (usual care) data were gathered by clinicians who were members of the usual care medical team and ethics approval or explicit patient consent was not required. High-sensitivity Troponin-I was measured on admission and 3- and 6- hours after if mandated (Abbott Architect Tnl assay).

A 320-detector scanner (Aquilion ONE, Canon) was used. Intravenous metoprolol was used where required to control the heart rate (target 60 b.p.m.) and sublingual glyceryl trinitrate will be given to all patients immediately before the scan acquisition.

**Results:** Forty-three patients underwent inpatient CCTA, mean age: 61 ± 13 years (range 30-88y), 54% female. The presenting complaint was typical chest pain in 28 (65%), atypical chest pain in 10 (23%), and a variety of symptoms in 5 (12%) including palpitations, syncope, breathlessness.

Thirty-six (84%) of patients had a detectable Tnl above the 99% centile. Median(IQR) peak Tnl was 127 (33-635)ng/L.

CCTA was carried out on average 1 day post request.

CCTA resulted in an improvement in clinician diagnostic certainty (Initial review: 21% yes, 79% probable, post-CCTA review: 84% yes, 16% probable) in providing a diagnosis.

21 (49%) of invasive coronary angiograms were avoided due to CCTA, whilst an inpatient invasive coronary angiogram (ICA) was performed in 4(9%) due to CCTA demonstrating significant disease, and in 2(%) the ICA was changed from out-patient to in-patient. Three ICA tests were requested as OP due to CCTA findings. CCTA did not overestimate disease severity in this cohort.

We saved 21 inter hospital transfers for ICA during this time period.

Using NHS England cost tariffs, a cost saving of >£36,000 was made for using CCTA instead of ICA in these 21 patients who would have required ICA.

**Conclusion:** Inpatient CCTA resulted in greater clinician diagnostic confidence, avoidance of unnecessary invasive angiograms and a significant cost saving. This also reduced the duration of patient stay, reducing the potential exposure of patients to COVID-19.

Abstract Table 1. Effect of CCTA on ICA

Effect of CCTA on Invasive coronary angiography		
	Number	%
No ICA (but would not have been scheduled if CCTA had not been available)	8	18.6
<b>No ICA (avoided due to CCTA)</b>	21	48.8
IP ICA performed – (indicated only due to CCTA)	4	9.3
IP ICA performed (changed from OP)	2	4.7
IP ICA performed – (would have been indicated even if CCTA had not been available)	3	7
OP ICA performed – (indicated only due to CCTA)	3	7
OP ICA performed – (would have been indicated even if CCTA had not been available)	2	4.7
<b>Final Management following CCTA</b>		
Normal / reassurance	7	16.3
Mild CAD / secondary prevention	11	25.6
Moderate CAD / secondary prevention +/- anti-ischaemic treatment	1	2.3
Severe CAD / secondary prevention +/- anti-ischaemic treatment	6	14.0
	ICA	
Medical treatment post ICA	0	0
For defined target PCI	10	23.3
Other outcome (including CABG)	5	11.6
Alternative non-coronary diagnosis	3	7

CCTA-Coronary Computed Tomography Angiography; ICA- Invasive Coronary Angiography, IP- Inpatient, OP- Outpatient