

## Reducing Unnecessary CT Aorta Scans in the Emergency Department

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**Abstract :** Background: Prior to this project, the number of CT aorta requests from our Emergency Department (ED) was reported by the radiology department to be high with a low positive event rate: only 1- 2% of CT aortas performed were positive for acute aortic syndrome. This trend raised concerns about the time required to process and report these scans, potentially impacting the timely reporting of other high-priority imaging, such as trauma-related scans. Other harms identified were unnecessary radiation, patients spending longer in ED contributing to overcrowding, and, most importantly, the patient not getting the right care the first time. The radiology department also raised the problem of reporting bias because they expected our CT aortas to be normal. Aim: The main aim of this project was to reduce the number of unnecessary CT aortas requested, which would be shown by 1. Number of CT aortas requested and 2. Positive event rate. Methodology: This was a quality improvement project carried out in the ED at Frimley Park Hospital, UK. Starting from 1 st January 2024, we recorded the number of days required to reach 35 CT aorta requests. We looked at all patients presenting to the ED over the age of 16 for whom a CT aorta was requested by the ED team. We looked at how many of these scans were positive for acute aortic syndrome. The intervention was a change in practice: all CT aortas should be approved by an ED consultant or ST4+ registrar (5th April 2024). We then reviewed the number of days it took to reach a total of 35 CT aorta requests following the intervention and again reviewed how many were positive. Results: Prior to the intervention, 35 CT Aorta scans were performed over a 20-day period. Following the implementation of the ED senior doctor vetting process, the same number of CT Aorta scan requests was observed over 50 days - more than twice the pre-intervention period. This indicates a significant reduction in the rate of CT Aorta scans being requested. During the pre-intervention phase, there were two positive cases of acute aortic syndrome. In the post-intervention period, there were zero. Conclusion: The mandatory review of CT Aorta scan requested by the ED consultant effectively reduced the number of scans requested. However, this intervention did not lead to an increase in positive scan results. We noted that post-intervention, approximately 50% of scans had been approved by registrar-grade doctors and, only 50% had been approved by ED consultants, and the majority were not in-person reviews. We wonder if restricting the approval to consultant grade only might improve the results, and furthermore, in person reviews should be the gold standard.

**Keywords :** quality improvement project, CT aorta scans, emergency department, radiology department, aortic dissection, scan request vetting, clinical outcomes, imaging efficiency

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