



## SHORT REPORT

# Radiologist Approval for CTPA in the ED: A Single-Centre Pilot Study Did Not Demonstrate a Statistically Significant Difference in Diagnostic Yield

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## ABSTRACT

**Objective:** Overuse of CT Pulmonary Angiography (CTPA) remains a challenge in emergency medicine. Some institutions resort to radiologist vetting to reduce unnecessary imaging. This is a pilot study that aims to investigate the effect of radiology vetting on the CTPA yield.

**Methods and Results:** This is a retrospective study comparing CTPA yields with and without radiology vetting. The results showed that there was no statistically significant difference in CTPA diagnostic yield, 11.4% (CI 9.2–14.0) versus 10.2% (CI 6.8–14.6),  $p = 0.60$ .

**Conclusion:** This study showed that removing radiologist approval for CTPA did not appear to reduce diagnostic yield.

## 1 | Introduction

Overuse of CT Pulmonary Angiography (CTPA) remains a recognised challenge in emergency medicine, with many centres seeking processes that improve diagnostic yield and reduce unnecessary imaging [1, 2]. Some institutions require radiology approval before CTPA is performed, although the value of this additional screening step remains unclear. We report findings from a small exploratory pilot study evaluating whether radiologist approval influenced CTPA yield in our emergency department (ED).

## 2 | Setting and Clinical Practice

The study was conducted at a tertiary mixed adult-paediatric ED with approximately 76,000 annual presentations. CTPA requests are typically guided by clinical decision tools such as the Wells score, PERC rule, YEARS algorithm and age-adjusted D-dimer thresholds, although their use is at clinician discretion. Senior FACEM review is available for most CTPA decisions. Prior to

April 2023, radiology trainees vetted all CT requests; refusals were uncommon, not systematically recorded and informally estimated to be near zero.

## 3 | Pilot Intervention

Between 1 April and 30 May 2023, the ED and radiology department trialled a temporary suspension of radiologist approval for CT imaging. This created a natural experiment comparing CTPA yield before and during the trial period.

## 4 | Methods

A retrospective review of all CTPAs performed between 1 October 2022 and 31 May 2023 was conducted. The pre-intervention period (radiologist approval required) spanned 6 months, while the pilot period (no radiologist approval) spanned 2 months. Reports were reviewed for the presence of acute pulmonary embolism. Chi-square analysis was performed using R (2024.04).

## 5 | Results

Of 953 eligible CTPAs, 106 (11.1%; 95% CI 9.2%–13.3%) were positive for pulmonary embolism.

- Radiologist approval required ( $n = 699$ ): Yield 11.4% (95% CI 9.2%–14.0%), 80 positives.
- No radiologist approval ( $n = 254$ ): Yield 10.2% (95% CI 6.8%–14.6%), 26 positives.

There was no statistically significant difference between groups ( $p = 0.60$ ). Confidence intervals overlapped substantially, allowing for the possibility of a modest increase or decrease in yield. Daily CTPA ordering rates were similar (3.8 vs. 4.2 scans/day).

## 6 | Discussion

This exploratory pilot did not identify a clear signal that radiologist approval improved CTPA yield in our setting. However, several limitations affect interpretation:

1. Underpowered study: The 2-month pilot period was insufficient to detect clinically relevant differences (e.g., 2%–3% change in yield).
2. Short washout period: Radiology gatekeeping behaviours would require  $\geq 6$  months to wash out.
3. Low refusal rates: Radiology refusal was informally known to be rare, suggesting approval may have functioned largely as administrative processing.
4. Single-centre design: Findings may not generalise to sites without senior-led CTPA decision-making.

## 7 | Context With Current Benchmarks

Target CTPA yields vary internationally. The Royal College of Radiologists recommends a minimum diagnostic yield of 15.4%, while multicenter Australian data from the RESPECT-ED study reports yields of 10%–12%, considered acceptable [3, 4]. Our findings fall within this range, suggesting overall CTPA utilisation in our ED is broadly appropriate irrespective of radiologist involvement.

## 8 | Conclusion

In this single-centre pilot study, removing radiologist approval for CTPA did not appear to reduce diagnostic yield, although the study was not powered to detect small differences. These findings support the need for larger, multicentre studies with adequate washout periods to determine whether radiologist vetting meaningfully influences CTPA utilisation.

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### Ethics Statement

Approved by the Clinical Governance Unit, Nepean Blue Mountains Local Health District.

### Conflicts of Interest

The authors declare no conflicts of interest.

### Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

### References

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