Reducing CT imaging of low-risk transient ischaemic attack patients in an emergency setting: quality improvement project with introduction of guideline

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AIMS

- Identify a patient group receiving unnecessary CT imaging in Kings Mill Hospital Emergency Department
- Introduce a guideline to improve stewardship over scans in the context of suspected transient ischaemic attack patients, and align decision making with current NICE guidelines

INTRODUCTION

NICE guidance lacks clarity on when to CT patients with suspected TIA; stating patients should not receive a CT “unless there is clinical suspicion of an alternative diagnosis”(1).

Gold-standard imaging for TIA patients is MRI (in Kings Mill Hospital this is organized through an outpatient TIA clinic) as CT does not show small infarctions. It should only be used to rule out TIA mimics, e.g. Space-occupying lesion, haemorrhage. Therefore, patients with symptoms typical of TIA that have now resolved and had no features of mimics do not require a scan (1).

NICE does not specify what symptoms would necessitate a scan. Clinicians must rely on personal judgement/preference, causing inter-clinician variation and overuse of CT, increasing ED pressures (2) and patient radiation exposure.

METHODS

Retrospective audit (Jan–Oct 2025). SystmOne identified 424 people with TIAs, 304 of whom had a CT. We took a random sample of 130 patients

SystmOne used to isolate patient group.

Data collected using ICE and SystmOne, anonymously entered in excel.

Patient Group Criteria:	Data Gathered
Patients with coded diagnosis of TIA in ED AND had a CT between the dates of 1/1/25 and 28/10/25 = 304 Sample of 130 patients taken	CT request text + report text MRI report text Any follow-up in TIA clinic When TIA symptoms resolved (before, during, or after ED attendance) On anticoagulation Data on red flags indicating high risk TIA

Red flags recorded:

Anticoagulated (DOAC)	Known malignancy
Head injury	BP >180/105
Crescendo TIA	Symptoms last >30mins

RESULTS + DISCUSSION

30/129 (23.3%) patients received a CT despite resolved symptoms and no red flags. Extrapolated, imaging could be reduced by 77 TIA patients a year at KMH alone. This is a potential 25.33% reduction of scans in TIA patients.

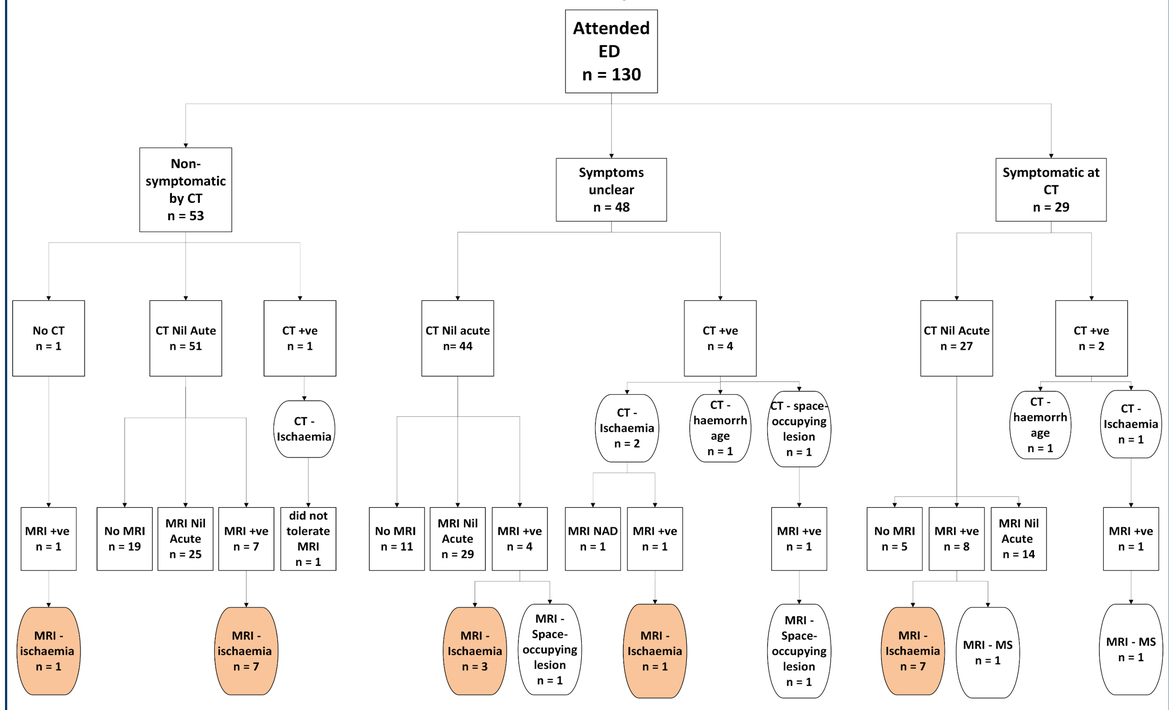


Figure 1. Visual representation of imaging outcomes divided by patient symptoms

SYMPTOMS RESOLVED	SYMPTOMS UNCLEAR	SYMPTOMS ONGOING
Symptoms resolved by CT for 52 patients. 22/52 had red flags (required CT). **= 30 patients with no clear red flags in 130 patient sample across 11 months.** **Extrapolated = 77 in 304 patient cohort across 12 months** (227-304)/304 x 100 = -25.33% With guideline, we have potential to reduce CT scans in TIA patients by 25%.	Potential group to save additional CT scans, as some patients’ symptoms may have resolved, but we were unable to tell from the documentation. 41/48 patients had no red flags -> 91 patients in 11 months -> 104 patients in 12 months However, a proportion of these may have had ongoing symptoms.	As these patients had ongoing symptoms at the time of their scan, they were being treated as stroke patients at that time, and therefore all required a CT scan.

Limitations:

The greatest limitation to our study was documentation.

- A proportion of patients refused GP record sharing – no access to TIA clinic letters or repeat medications
- ED discharge summaries often lacked detail, including on red flags/when symptoms resolved. This led to our group of ‘symptoms unclear’ patients.

DECISION AID

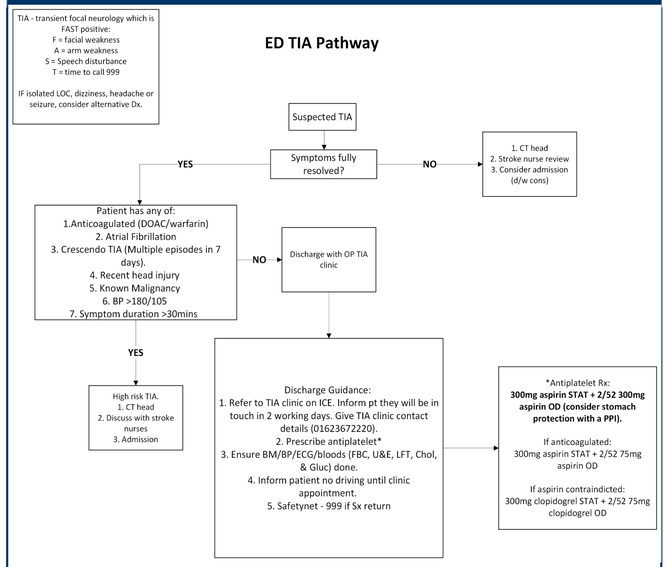


Figure 2. Decision Aid created for ED clinicians to follow with clear indications for scans

NEXT STEPS

We locally implemented a guideline and decision aid with clear red flags for when to CT patients in ED. A second cycle is pending.

We hope to improve:

- Patient exposure to radiation
- ED wait times for TIA patients (3)
- Pressure on CT scanners (2)
- Staff time (porters and radiologists)
- Decision fatigue of ED clinicians
- Overall physical and environmental cost (4)

This guideline may be of value to other hospitals, creating a mass effect and nationally reducing unnecessary imaging.

An audit on ED discharge summaries is ongoing to improve quality of documentation

REFERENCES

1. Stroke and transient ischaemic attack in over 16s: diagnosis and initial management: NICE; 2019 [Available from: https://www.nice.org.uk/guidance/ng128/chapter/Recommendations#imaging-for-people-who-have-had-a-suspected-tia-or-acute-non-disabling-stroke.
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3. Kanzaria HK, Probst MA, Ponce NA, Hsia RY. The association between advanced diagnostic imaging and ED length of stay. Am J Emerg Med. 2014;32(10):1253-8.
4. Anzai Y, Heilbrun ME, Haas D, Boi L, Moshre K, Minoshima S, et al. Dissecting Costs of CT Study: Application of TDABC (Time-driven Activity-based Costing) in a Tertiary Academic Center. Acad Radiol. 2017;24(2):200-8.