

# Management of transient ischaemic attacks in the emergency department: a quality improvement project

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## Abstract

The initial management of transient ischaemic attacks (TIAs) effectively triages patients into either high or low risk categories. The literature demonstrates that the identification of high risk patients significantly reduces the subsequent risk of stroke. The administration of aspirin following a TIA reduces the risk of stroke by approximately 25%.

A full cycle retrospective audit which included a baseline audit with two improvement cycles was completed. The notes of every patient presenting to Croydon University Hospital's emergency department (ED), who were subsequently diagnosed with a TIA were reviewed, with the aim of identifying areas for improvement and to implement sustainable long term interventions aimed to improve patient safety.

The patient's notes were compared with the guidelines for the management of TIA. The baseline audit demonstrated results requiring an immediate intervention. A teaching session was provided for new FY2 doctors starting their emergency medicine rotations, which covered the initial management of TIA and the importance of following the local guideline.

The first improvement cycle saw an improvement in all outcomes measured. A statistically significant improvement (P-value = 0.05) was seen in the documentation of symptoms in the prior week and the prescription of antiplatelets in the department. Furthermore, where only 31% of TIA patients received antiplatelets at the baseline measurement, 86% received this treatment during the first improvement cycle. This means that 55% more patients received improved initial management, subsequently reducing their stroke risk by 25%. Similar results were seen in the second improvement cycle, thus demonstrating the intervention had been both successful and sustainable.

In conclusion, a simple intervention can provide significant and sustainable improvements to the management of TIA in the ED.

## Problem

There are well documented guidelines for the management of transient ischaemic attacks (TIAs) in the emergency department (ED). These effectively triage patients into either high or low risk categories, which then determine the time frame in which the patient receives the appropriate investigation and specialist follow-up. The guidelines set out by the National Institute for Health and Care Excellence (NICE) suggest that this time frame for high risk patients is 24 hours and one week for low risk patients.[1]

Croydon University Hospital, England, has produced a specific guideline for the management of TIA in the ED to encompass all aspects of NICE guidance. High risk patients include those with an ABCDD score of four and above, TIAs occurring while on warfarin, and crescendo TIAs, meaning more than one event in the prior week (please see figure 1). Furthermore, the Croydon guidelines recommend a faster follow up of the next working day for low risk patients.

The correct application of these guidelines improves patient safety, ensuring that patients not only receive the appropriate initial treatment, but are also triaged into the appropriate care pathway. It was noted that ED doctors often did not refer to the trust guideline and as a result some patients presenting with a TIA received

suboptimal care and follow-up.

## Background

In people who have a TIA, the average incidence of subsequent stroke ranges between 5% to 11% over the next seven days and 24% to 29% over the following five years.[2] This risk greatly varies depending on the initial and subsequent management. Giles and Rothwell demonstrated that patients receiving emergency treatment in specialist stroke centers had a subsequent 0.9% risk of stroke and those without urgent treatment had a risk of 11%.[3] Patients in the higher risk categories have a risk of stroke closer to 11%.[2]

The identification of high risk patients and the appropriate initial management of TIAs significantly reduces the subsequent risk of stroke. More specifically, the administration of aspirin following a TIA reduces the risk of stroke by approximately 25%.[4]

This data reinforces the importance of the risk stratification and the administration of antiplatelets in patients with TIA. At Croydon University Hospital, prior attempts had been made to ensure the correct management of TIAs by placing the trust specific guidance on the intranet. Although the impact of this intervention was not formally measured, anecdotally it was felt that many doctors were not using this resource routinely.

## Baseline measurement

A retrospective audit was completed by reviewing the notes of every patient presenting to Croydon University Hospital's emergency department with a TIA in July and August 2013.

After each ED admission, the discharge diagnosis is coded electronically by the doctor who assessed the patient. The database was interrogated for each ED discharge diagnosis of TIA and a unique identifier made it able to retrieve a scanned copy of the ED notes including the ambulance handover notes (if applicable). Notes for these admissions were then reviewed by the authors, who determined whether the clinical presentation matched the recorded TIA diagnosis. Records which had been coded as TIA in error were excluded from the study. Those included were then objectively scored against the aforementioned criteria.

The aim of the audit was to compare the trust specific guideline (see figure 1) for the management of TIAs with the documented evidence in the patient's notes. It was found that the ABCDD score was documented in 50% of patient notes, the symptoms or events in the prior week in 44%, the current antiplatelet / anticoagulation in 81%, and finally it was seen that an antiplatelet was given in the ED to only 31% of patients.

See supplementary file: ds3886.doc - "Figure 1 - Guidance for the management of TIA in the emergency department"

## Design

Trust specific guidelines already existed for the management of TIA in the ED at Croydon University Hospital and this was available on the intranet. However, the baseline audit results indicated that these were not being routinely followed by ED doctors. Printing out the guidelines and making these available as a proforma was considered as a possible intervention, however it was decided that this approach may not fully resolve the problem as there would be difficulty in ensuring that every doctor would utilise the proforma. Therefore it was decided that a mandatory teaching session on TIAs and their initial management would be the best way to raise awareness of the guidelines. The baseline audit results were also presented alongside the dedicated teaching session so that the importance could be reinforced and the scale of patients who were not receiving antiplatelets in the ED could be appreciated. This was included in the induction programme for every new cohort of junior doctors and middle grades, as explained below.

Anecdotally, trust specific guidelines were not being used. Furthermore the baseline audit indicated that even if it was, it was not being followed effectively. Arranging the guideline into a proforma was considered as an intervention, however this may still not be utilised correctly without appropriate teaching. It was decided that a mandatory teaching session on TIAs and their management focussing on the guideline would be the best way to raise awareness of the guidelines, encompassing the baseline audit data into the presentation to reinforce the scale of the patients who were not receiving antiplatelets in the ED to the new doctors (both FY2

and middle grades).

## Strategy

The results from the baseline audit were discussed with the ED clinical lead and it was decided that an intervention should be implemented immediately due to the poor antiplatelet prescription in the department. At the time of obtaining the initial results, a new cohort of doctors were due to start their emergency medicine rotations in December 2013. Therefore, it was decided that the most effective intervention would be a dedicated teaching session during their ED induction programme. This included the initial management of TIA and the importance of following the local guideline and how this impacts on patient safety. This teaching was delivered by the ED clinical lead and was chosen because this approach had been successful for other specific presentations to Croydon University Hospital in the past.

Following the teaching session, the first improvement cycle audit demonstrated significantly improved results, especially for the prescription of antiplatelets in the ED. Therefore, it was decided that the same intervention would be used for the next cohort of ED doctors starting their rotations in April 2014. This would assess the sustainability of the intervention.

## Results

The audit cycle has been completed twice since the baseline measurement.

July and August 2013 (baseline measurement): 18 admissions were coded as TIA and two were excluded as coding errors.

December 2013 and January 2014 (first improvement cycle): 12 admissions were coded as TIA and five were excluded as coding errors.

June and July 2014 (second improvement cycle): 14 admissions were coded as TIA and six were excluded as coding errors.

Examples of coding errors include: stroke, patient's with a past medical history of TIA but not presenting with a TIA and where TIA was in the differential diagnosis but was not subsequently diagnosed, for example a migraine mimicking a TIA. Please see table 1 and graph 1 for a detailed breakdown of the results.

See supplementary file: ds4019.doc - "Table 1 and Graph 1 - Audit Results for TIA Management in the Emergency Department"

## Lessons and limitations

PDSA cycle 1: an improvement was seen in all outcomes measured when compared to the baseline measurement. A statistically significant improvement (P-value = 0.05) was seen in the documentation of symptoms in the prior week and the prescription of antiplatelets in the department. Where only 31% of patients presenting to the ED were receiving antiplatelets following a TIA,

86% were receiving this treatment during the first improvement cycle. This means that 55% more patients were receiving optimal initial management, thus reducing their subsequent stroke risk by 25%.

PDSA cycle 2: again an improvement was seen in all outcomes measured when compared to the baseline measurement. However, there was only a statistically significant improvement (P-value = 0.05) seen in the prescription of antiplatelets in the department when compared to baseline.

Improvements: Despite an all-round improvement, only the prescription of antiplatelets was seen to be statistically significant in both improvement cycles. It is likely that a statistically significant improvement was not seen in the other outcomes because these were already performed relatively well before the intervention (see graph 1).

Implications of improved history taking: The improvement of the documentation of ABCDD scores, symptoms in the past week and current antiplatelet / anticoagulation assists with the accurate triage of patients presenting with a TIA. This means that an increased number of high risk patients will be identified and receive investigation and specialist review within 24 hours. As Giles and Rothwell [3] assert, this timely specialist assessment has been seen to reduce a patients subsequent stroke risk.

Implications of improved antiplatelet prescribing: Where only 31% of patients presenting to the ED were receiving antiplatelets following a TIA, a much larger percentage of patients are now receiving this crucial treatment which reduces subsequent stroke risk by 25%.[4]

Study limitations: The majority of the ED doctors are in Foundation Year 2 of their training and therefore rotate every four months. This rotation meant that the junior doctors working in the ED were different during each two month period audited. This impacts on the validity of the study, as the skills of each group of doctors may vary. However, this risk is minimised as the senior doctors remained the same over the whole study. Furthermore, the sustainable improvements rely on the delivery of effective education and awareness on management of TIA's at every induction course.

A retrospective audit is also problematic as the documentation may not accurately reflect the history taken and the risk assessment made for each patient.

Future work: The teaching on the initial management of TIA will continue at each induction session. This teaching will be widened to include other common presentations to the ED. Follow up audits shall also be performed during each rotation to assess the sustainability and efficacy this teaching.

## Conclusion

The initial teaching that the ED doctors received on the correct management of TIA was seen to be a successful intervention and has improved the management of TIA in Croydon University Hospital ED. An improvement was seen in all outcome measures

following the intervention, especially the administration of antiplatelets in the ED. With more antiplatelets being given in the ED, more patients with TIA are having their subsequent risk of stroke reduced. This educational intervention has improved patient safety and has been seen to be sustainable on the second improvement cycle. As a result, this TIA teaching is now a regular part of the departmental ED induction programme at Croydon and occurs at the start of the four monthly rotation of FY2 doctors.

In conclusion, a simple educational intervention can provide significant and sustainable improvements to the management of TIA in the ED and improve patient outcomes.

## References

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## Declaration of interests

Nothing to declare.

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