

Transient ischaemic attack and stroke risk: pilot of a primary care electronic decision support tool

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ABSTRACT

INTRODUCTION: Transient ischaemic attacks (TIAs) indicate high risk for stroke and rapid management reduces stroke burden. Rapid specialist access to initiate timely management is often challenging to achieve.

AIM: To assess the feasibility of implementing a TIA/Stroke electronic decision support (EDS) tool intended to aid general practitioners (GPs) in the timely management of TIAs.

METHODS: An eight-week pilot provided access to the TIA/Stroke EDS to selected GPs in the MidCentral district, with subsequent patient record review and a post-pilot user satisfaction survey.

RESULTS: Eleven patients from eight practices were entered into the tool and when EDS-rendered advice was followed, diagnosis was accurate and management was in accordance with New Zealand TIA guidelines. No adverse outcomes resulted and user feedback was positive.

DISCUSSION: Results indicate that wider implementation of the TIA/Stroke EDS tool is feasible.

KEYWORDS: Decision support systems; primary health care; software; stroke; transient ischaemic attack

Introduction

Stroke is the second most common cause of death worldwide and the most common cause of long-term adult disability in developed countries.^{1,2} Transient ischaemic attacks (TIA) identify people at high risk of stroke. This risk is greatest in the first 48 hours and then decreases over time. The key intervention that reduces subsequent stroke is same-day specialist review and initiation of best medical therapy at first point of contact,^{3,4} which has been associated with an 80% reduction in 90-day stroke risk from 10.3% to 2.1%.⁴

Providing 24-hour, seven-days-a-week rapid access to stroke specialists is a challenge throughout New Zealand and in particular in the smaller-sized district health boards (DHBs). To circumvent the problem of limited or delayed access to hospital specialist assessment, the MidCentral Stroke Service, in collaboration with the MidCentral DHB, and the Best Practice Advocacy Centre Inc. (BPAC Inc.), developed a novel electronic decision support (EDS) tool to aid general practitioners (GPs) in diagnosing, triaging, and

treating patients appropriately and expediently. The tool is based primarily on the *New Zealand Guideline for the Assessment and Management of People with Recent Transient Ischaemic Attack*⁵ and its main objective is to prompt initiation of best medical therapy at first point of contact in the community, rather than awaiting potentially delayed specialist review at the hospital. In order to support rapid work-up in the community, GPs also gain access to relevant diagnostics (e.g. head CT and carotid ultrasound) if deemed appropriate by the EDS tool. The tool is web-based, maintained by BPAC Inc., and requires access to the MedTech32 practice management system.

The purpose of this pilot was to assess the feasibility of implementing the TIA/Stroke EDS in the MidCentral DHB primary care sector prior to a district-wide launch.

Methods

At the time of the pilot there were 32 practices in the MidCentral District using MedTech32. This pilot involved eight (25%) of the 32 eligible GP

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practices and pilot practices were chosen based on three factors: adequate numbers of GPs, current capability to access best practice EDS modules, and an overall representative patient mix of the MidCentral population. Practices were located in the provincial centre of Palmerston North and the smaller nearby town of Feilding. One practice serves a predominantly Maori population. Practices were of median size ranging from two to five GPs per practice.

The tool itself consists of a web-based data entry form requesting information about the presenting symptoms and a brief examination. Some entry fields are self-populated through data extraction from the practice management system. Entering patient data takes approximately three to five minutes.

The tool then runs the information through an algorithm with three main possible diagnostic outcomes: (a) stroke, (b) TIA, or (c) 'non-straight-forward neurological presentation.'

The first two are further subdivided by risk category and anatomic localisation. Lastly, several additional stipulations to 'diagnosis and triage' advice are provided if (a) the patient is young (<60 years), (b) presentation includes atypical symptoms, or (c) the patient is either terminally ill or severely demented.

Triage advice is given in accordance with the New Zealand TIA guidelines⁵ and depends on the diagnosis, localisation, and risk category. If several management options are acceptable, then the GP is presented with options varying in degree of specialist support.

Two weeks prior to the pilot period, an educational session was offered to participating GPs and their practice nurses covering TIA management principles and instructions as to how to use the tool. The EDS was made available to participating practices for a total of eight weeks (27/7/09–25/9/09). Participating GPs were asked to enter all potential TIA/stroke patients during the eight-week pilot period. At the end of the eight-week period, relevant patient data was reviewed through access to centralised records captured by BPAC Inc. as well as by review of

WHAT GAP THIS FILLS

What we already know: Transient ischaemic attacks (TIAs) indicate high risk for stroke and rapid management reduces stroke burden. Rapid specialist access to initiate timely management is often challenging to achieve.

What this study adds: A TIA/Stroke electronic decision support tool was created to facilitate early initiation of best medical management by general practitioners (GPs) to circumvent need for rapid specialist access in all cases. This pilot suggests that the use of this tool by GPs is feasible and safe.

relevant GP and hospital records. In addition, participating GPs were interviewed using a standardised questionnaire.

National Ethics Committee research ethics approval was not required for the evaluation of the TIA/Stroke EDS roll-out in the MidCentral District. This non-experimental and observational 'study' was classed as a clinical audit.

Results

Throughout the pilot period eight GPs entered 11 patients into the EDS tool seeking management advice.

In nine of these patients, the advice rendered by the EDS was followed by the treating GPs and this resulted in two emergency department referrals, three TIA clinic referrals, and four community 'work-ups' by GPs. In all nine cases, the initial diagnosis made by the EDS was later confirmed as appropriate by a stroke specialist and TIA triage and management occurred in accordance with the New Zealand TIA guidelines.⁵ None of the patients experienced any adverse outcomes relating to EDS use.

In two cases, GPs did not utilise the EDS tool appropriately and subsequent management was not in accordance with New Zealand TIA guidelines. In the first, the GP started to use the EDS tool but aborted use before reaching the 'advice' screen. Thus the GP managed the patient 'on his own' without benefiting from EDS use. This patient was diagnosed by the GP as having a TIA; however, this diagnosis was later deemed incorrect by a specialist. Had the GP continued on to the EDS advice screen, the EDS tool would

have informed the GP that a diagnosis of TIA was in fact unlikely, which may have led to arriving at the correct diagnosis sooner. The second patient's data was entered correctly into the EDS tool and was correctly diagnosed by the tool as having suffered a stroke rather than a TIA. However, despite the EDS advising the GP to refer the patient to the Accident & Emergency Department (A&E) for urgent specialist review, general practice-based management continued. This led to inappropriate delays in diagnostics and precluded timely access to rehabilitation services. The author is aware of one additional TIA patient who presented to this cohort of GPs during the pilot period who was not entered into the EDS because of local IT difficulties.

According to the post-pilot questionnaire, all participating GPs who had used the tool were satisfied with the TIA/Stroke EDS software and had no major concerns regarding user-friendliness, time required to enter data, or the overall advice given by the tool. A few minor issues were raised, including a request to allow the GP more override options if the advice given by the tool appeared to be inappropriate. Other comments included a mention that some medications were not recognised by the EDS and a request to add a free-text box to enter additional information to appear on the referral form. In addition, some GPs voiced concerns that A&E staff might turn down referrals for patients with TIA as they would not be deemed urgent enough by frontline hospital staff. However, those GPs who in fact used an EDS-generated A&E referral to send a patient to the A&E reported that having used the tool actually helped the A&E referral process because it lent extra credence to the GP's assessment.

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COMPETING INTERESTS

None declared.

Discussion

TIAs are medical emergencies requiring urgent intervention in high-risk patients and this novel TIA/Stroke EDS tool is intended to improve appropriateness and urgency of care. However, prior to launching this tool it was important to ensure that there were no significant risks to patients associated with software use.

Overall, this pilot did not identify any areas of unacceptable risk associated with TIA/Stroke

EDS use that would preclude wider implementation. In addition, participant feedback was positive and suggested that the tool was user-friendly and seen as potentially beneficial by treating GPs.

The request to allow GPs more override options is a slightly difficult one. On the one hand, if sufficient flexibility is not allowed, clinicians may see the tool as impinging on their autonomy and may simply not use it. On the other hand, the pilot data indicated that when GPs did not follow the advice given by the EDS, management was less appropriate. To compromise, some additional override options were added to the EDS following the pilot; however, diagnostic access continues to be available only for patients deemed to require them by the EDS tool. In addition, GPs have to enter a reason for overriding the advice and are continuously reminded that they are veering away from the suggested and guideline-based treatment plan.

In conclusion, this pilot was judged sufficient to indicate acceptable usability and safety and the TIA/Stroke EDS has been launched in the Mid-Central District. Based on this pilot and preliminary results from district-wide post-implementation evaluations, the Health Research Council has funded a randomised controlled trial comparing EDS versus non-EDS assisted TIA management in a number of New Zealand DHBs. This trial (FASTEST Trial: ACTRN12611000792921) is currently underway to assess feasibility of nationwide launch of this software tool and results will be available next year.

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