

# National Survey of Neurologists for Transient Ischemic Attack Risk Stratification Consensus and Appropriate Treatment for a Given Level of Risks

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*Background:* Patients with a new transient ischemic attack (TIA) have a 5% subsequent stroke risk within 7 days. The Canadian TIA Score accurately determines the risk of subsequent stroke risk; however, it is unclear if physicians will use this new scale or how it will be used. Our objectives were to assess: (1) anticipated use; (2) component face validity; (3) risk strata for stroke within 7 days; and (4) actions required, for a given risk for subsequent stroke based on the proposed Canadian TIA Score. *Methods:* After a rigorous development process (sample selection, key informant interviews, development of questionnaire following Dillman Tailored Design technique, cognitive interviews, and pilot-testing), a survey questionnaire was administered to a random sample of 300 neurologists selected from all neurologists listed in a national medical directory. The surveys were distributed using a modified Dillman technique. *Results:* From a total of 265 eligible surveys, we received 140 (52.8%) completed surveys; 7 of 13 components comprising the Canadian TIA Score were rated as “very important” or “important” by survey respondents. Risk categories for subsequent stroke were defined as: minimal risk: less than 1%; low risk: 2%-4.9%; high risk: 5%-10%; critical risk: more than 10% risk of subsequent stroke within 7 days. Most (87.1%) of the neurologists would use a validated Canadian TIA Score. *Conclusions:* Neurologists appear ready to use a validated Canadian TIA Score in their clinical practice. Risk strata are definable, which may allow physicians to determine immediate actions, based on subsequent stroke risk. **Key Words:** Transient ischemic attack—stroke—clinical decision rules—prevention—electrocardiogram—computed tomography.

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## Introduction

Transient ischemic attack (TIA) is defined by the World Health Organization as a sudden, focal neurologic deficit lasting for less than 24 hours, presumed to be of vascular origin, and confined to an area of the brain or eye perfused by a specific artery.<sup>1,2</sup> TIAs are relatively common with an annual incidence of 68 per 100,000.<sup>3</sup> Although TIAs are relatively benign with temporary neurologic deficit, they may be used to identify individuals at high risk of subsequent stroke. Previous studies have estimated the risk of subsequent stroke to be 4%-10% within 7 days of TIA and increases to 8%-12% by 90 days.<sup>3-12</sup> For this study, we used the World Health Organization time-based definition of TIA.<sup>1</sup> The tissue-based definition defines TIA as a brief episode of neurologic dysfunction caused by focal brain or retinal ischemia, with clinical symptoms typically lasting less than 1 hour and without evidence of acute infarction.<sup>2</sup> Given that most hospitals in the world still cannot get magnetic resonance imaging immediately, the World Health Organization definition was used.

The ABCD2 score (age, blood pressure, clinical features, duration of symptoms, and diabetes) has been previously used to help identify patients at high risk of stroke after having a TIA.<sup>13-18</sup> However, the ACBD2 score has not performed well as shown by a meta-analysis<sup>19</sup> and in a prospective validation study (c-statistic, .56).<sup>20</sup> We conducted a prospective multicenter study of TIA patients presenting to emergency departments, associated with high risk of stroke to develop a clinical prediction score for impending stroke.<sup>21</sup> This new score, The Canadian TIA Score consists of 13 variables, identifies the risk of subsequent stroke for 7 or less days, and quantifies the impending stroke risk after an emergency department visit for a new TIA (c-statistic, .77).<sup>21</sup> Although this new score is able to identify the risk for subsequent stroke, it is not clear if this new score will be used by clinicians or how this score will be used clinically.

The objectives of the present study were to assess neurologist's opinions regarding the following: (1) define the risk strata for stroke for 7 or less days (ie, obtain a consensus on what range of risk constitutes "minimal," "low-risk," "high-risk," and "critical" risk groups), (2) assess the minimal suggested clinical actions for a given risk for subsequent stroke, (3) assess the anticipated use of the proposed Canadian TIA Score by neurologists, and (4) assess each component of The Canadian TIA Score's face validity. Determining if neurologists will use the Canadian TIA Score is essential before recommending its routine clinical use. Furthermore, identifying risk strata cutpoints with suggested actions may help clinicians better standardize (1) the need for admission, (2) timing of investigations, (3) timing of medical interventions, and (4) how quickly patients discharged from the

emergency need to be seen by a stroke specialist (if not assessed during the index visit).

## Methods

### *Study Design and Participants*

This study was a postal survey of neurologists in the National Canadian Medical Directory that is claimed to have an address accuracy of more than 97%.<sup>22</sup> To be considered for the study, physicians must have been practicing neurology and seeing adult patients. We randomly selected 300 neurologists, using computer-generated numbers, from a total of 786 neurologists in the medical directory. A \$10 coffee card was given with the first survey to all the neurologists.

### *Outcome Measures*

Our primary outcome measures were (1) the optimal subsequent stroke risk cutpoints for creating minimal, low-risk, high-risk, or critical risk strata and (2) the actions required for a given subsequent stroke risk within 7 days after TIA diagnosis. We were interested in determining the optimal cutpoints and the actions required that the majority (75%) of neurologists would be satisfied with (ie, the 25th percentile). This percentile was chosen a priori by the study team as a pragmatic value, which would include 75% of physicians, whereas the median would only satisfy half of the physicians. This study also investigated physicians' opinions on the TIA score's component face validity.

### *Questionnaire Development*

The survey was designed by following the well-known Dillman Tailored Design technique.<sup>23</sup> The survey was developed in 3 stages: (1) key informant, in-person interviews (pre-survey), (2) cognitive interviews (draft survey), and (3) pilot testing (final draft survey). Convenience samples of 4 neurologists and 4 emergency physicians were selected for the key informant and cognitive interviews. These key informant interviews (pre-survey) allowed us to obtain current knowledge of physicians on TIA and determine ideal methods on gathering information for the components of the TIA and the risk strata. Cognitive interviews were subsequently conducted with 3 neurologists to evaluate clarity, comprehensibility, and face validity of the draft survey. The cognitive interviews were conducted by providing the questionnaire to the physicians and asking them to verbalize their reactions and thoughts while completing the survey. In addition, their body language such as facial expressions, pauses, and referrals to previously completed questions were observed and verbal probing were conducted to clarify their thoughts and body language. Any potential problems with our survey implementation procedures or the

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