

# Get With The Guidelines®–Stroke performance indicators in patients with transient ischemic attack

Indicadores de desempenho do programa “Get With The Guidelines®–Stroke” em pacientes com ataque isquêmico transitório

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## ABSTRACT

Get With The Guidelines®–Stroke is an in-hospital program for improving stroke care by promoting adherence to scientific guidelines. Of the patients with transient ischemic attack (TIA), 10–15% have a stroke within three months, and many patients do not receive the recommended interventions to prevent this outcome. **Objective:** The goal of this study was to assess the adherence to stroke quality indicators in patients with TIA. **Methods:** This retrospective observational study evaluated consecutive patients admitted to a primary stroke center with TIA or acute ischemic stroke (AIS) from August 2008 to December 2013. Six quality indicators applicable to both TIA and AIS were analyzed and compared between groups. **Results:** A total of 357 patients with TIA and 787 patients with AIS were evaluated. Antithrombotic medication use within 48 hours of admission, discharge use of anticoagulation for atrial fibrillation and counseling for smoking cessation were similar between groups. In the TIA group, discharge use of antithrombotic medication (95% versus 98%;  $p = 0.01$ ), lipid-lowering treatment (57.7% versus 64.1%;  $p < 0.01$ ) and stroke education (56.5% versus 74.5%;  $p < 0.01$ ) were all less frequently observed compared with patients with AIS. **Conclusions:** The adherence to some of the Get With The Guidelines®–Stroke quality indicators was lower in patients with TIA than in patients with AIS. Measures should be undertaken to reinforce the importance of such clinical interventions in patients with TIA.

**Keywords:** quality indicators, health care; transient ischemic attack; stroke, prevention & control.

## RESUMO

O “Get With The Guidelines®–Stroke (GWTG-S)” é um programa hospitalar criado para melhorar os cuidados em pacientes com AVC ao promover a adesão às diretrizes. Dez a quinze por cento dos pacientes com ataque isquêmico transitório terão um AVC em 3 meses, sendo que muitos não recebem intervenções de prevenção secundária recomendadas. **Objetivo:** Avaliar a adesão aos indicadores de qualidade do programa GWTG em pacientes com ataque isquêmico transitório. **Métodos:** Este estudo retrospectivo observacional avaliou pacientes consecutivos admitidos em um centro de AVC com suspeita de ataque isquêmico transitório ou AVC isquêmico agudo de agosto/2008 a dezembro/2013. Seis indicadores de qualidade aplicáveis tanto ao ataque isquêmico transitório quanto ao AVC isquêmico agudo foram analisados e comparados entre os grupos. **Resultados:** Um total de 357 pacientes com ataque isquêmico transitório e 787 pacientes com AVC isquêmico agudo foram avaliados. O uso de antiagregante dentro das primeiras 48 horas da admissão, liberação na alta com anticoagulante para fibrilação atrial e aconselhamento para cessação do tabagismo foram similares entre os grupos. No grupo com ataque isquêmico transitório, o uso de antiagregante na alta hospitalar, o tratamento com estatina e a educação sobre o AVC foram observados menos frequentemente quando comparados ao grupo de pacientes com AVC isquêmico agudo. **Conclusões:** A adesão a alguns dos indicadores de qualidade do programa GWTG-S foi mais baixa em pacientes com ataque isquêmico transitório quando compara a pacientes com AVC isquêmico agudo. Medidas devem ser tomadas para reforçar a importância dessas intervenções em pacientes admitidos com ataque isquêmico transitório.

**Palavras-chave:** indicadores de qualidade em assistência à saúde; ataque isquêmico transitório; acidente vascular cerebral, prevenção & controle.

Despite the widely-available evidence supporting that clinical interventions can improve health outcomes for patients hospitalized with transient ischemic attack (TIA) or acute

ischemic stroke (AIS), many patients do not receive these recommended approaches<sup>1</sup>. Recognizing that both knowledge and acceptance of guidelines do not necessarily indicate guideline

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**Conflict of interest:** There is no conflict of interest to declare.

Received 13 March 2018; Accepted 06 June 2018.



adherence, the American Stroke Association developed a national quality improvement program for TIA and AIS, the "Get With The Guidelines–Stroke" (GWTG-S). The program is aimed at closing the adherence gap by making different hospital systems of care more uniform<sup>2,3</sup>. After implementation, a significant improvement in stroke treatment quality was found after one year in hospitals using the GWTG-S program<sup>4</sup>.

Patients with TIA have a high risk of stroke, up to 15% in three months. Unlike patients with stroke, those with TIA frequently present to the hospital after symptom resolution, giving them and caregivers a false sense of safety<sup>5</sup>. A head-to-head comparison of adherence rates between TIA and AIS, however, has not been previously addressed<sup>4,6</sup>. Therefore, based on the GWTG-S program, we compared the performance measures between TIA and AIS, in a private joint commission-accredited tertiary hospital.

## METHODS

### Patients and data collection

We retrospectively analyzed a database of consecutive patients admitted with TIA or AIS to a private tertiary hospital certified by the Joint Commission International as a Primary Stroke Centre in São Paulo, Brazil, from August 2008 to December 2013. This database is an ongoing institutional initiative created as part of a quality assurance/quality improvement program for stroke treatment.

Eligible patients were those without any documented medical contraindication, as well any reason for non-treatment for each of the applicable measures<sup>4,6</sup>.

A TIA was defined as a brief episode of neurological dysfunction caused by focal brain or retinal ischemia, with clinical symptoms typically lasting less than one hour, and without evidence of acute infarction on neuroimaging<sup>5</sup>. This study was approved by the Local Ethics Committee of the Hospital Israelita Albert Einstein.

### Measurement of quality indicators

The GWTG-S treatment quality indicators applicable to both AIS and TIA evaluated were: 1) antithrombotic medication (antiplatelet or anticoagulant) use within 48 hours of admission; 2) discharge use of antithrombotic medication; 3) discharge use of anticoagulation for atrial fibrillation; 4) dosing of low density lipoprotein (LDL) and treatment for LDL  $\geq$  100 mg/dl in patients meeting National Cholesterol Education Program Adult Treatment Panel III guidelines; 5) counseling for smoking cessation; and 6) stroke education provided to patient and/or caregiver.

All measures indicate the proportion of eligible patients (those without documented reasons for non-treatment) who received the intervention described<sup>7</sup>. A composite measure score of performance was calculated by summing the numerators for each measure across the patients evaluated to create a composite numerator (all the care that was given), summing

the denominators for each measure to form a composite denominator (all the care that should have been given), and reporting the ratio of all the needed care that was given. The percentage of adherence to these measures was also obtained for each individual patient through an all-or-none adherence-eligibility index, which was calculated by the ratio between eligible measures and compliance to them in a single patient<sup>6,7</sup>.

## Statistical analysis

Data were reported as mean and standard deviation or median and interquartile range. Categorical variables were reported as percentage and were compared among groups with the  $X^2$  test or Fisher's exact test, as appropriate. Associations between dichotomous and continuous variables were assessed by the Mann-Whitney U test. Appropriateness of parametric testing was analyzed with the Kolmogorov-Smirnov test, Q-Q plots, and histograms. Multiple linear regression was used to adjust for potential confounders of the association between cerebrovascular disease subtype (AIS or TIA) and the adherence-eligibility index. All variables that showed an association in the univariate analysis with a  $p$  value  $<$  0.1 were included in the multivariate model. The statistical significance was set at the  $\alpha \leq$  0.05 level. All analyses were performed by the statistical department of the hospital using SPSS Statistics version 17.0 (IBM Corp. Armonk, NY).

## RESULTS

A total of 1,144 consecutive patients with TIA ( $n = 357$ ; 31.2%) and AIS ( $n = 787$ ; 68.8%) were evaluated from August 2008 to December 2013. Patients with TIA were younger ( $66.1 \pm 15.7$  versus  $71.8 \pm 16.1$  years old,  $p <$  0.01) and had a lower frequency of previous stroke (16.9% versus 25.8%,  $p <$  0.01) than patients with AIS. The median ABCD<sup>2</sup> score, a risk assessment tool designed to improve the prediction of short-term stroke risk in patients with TIA, was 3 (95% CI [2,4]) (Table 1).

The following performance measures were similar between TIA and AIS groups: antithrombotic medication use within 48 hours of admission (96.8% in versus 98.5%,  $p = 0.08$ ), discharge on anticoagulation for atrial fibrillation (93% versus 88.5%,  $p = 0.4$ ) and counseling for smoking cessation (61.1% versus 80.4%,  $p = 0.1$ ), respectively. On the other hand, the use of anti-thrombotics, lipid lowering treatment and stroke education at discharge were all less-frequently observed in the TIA group than in the AIS group (95% versus 98%,  $p = 0.01$ ; 57.7% versus 64.1%,  $p <$  0.01; and 56.5% versus 74.5%,  $p <$  0.01, respectively) (Table 2).

The median of composite measure score was 75 (95%CI [50,78]). In comparative analyses, the composite measure score was significantly lower in patients with TIA than in the AIS group (66 versus 75,  $p <$  0.01). Moreover, a previous diagnosis of hypertension ( $p = 0.04$ ), dyslipidemia ( $p <$  0.01) and having a previous AIS rather than a TIA ( $p <$  0.01) were found to be independently associated with a higher adherence-eligibility index.

**Table 1.** Baseline characteristics of the patients.

Variable	TIA (n = 357)	AIS (n = 787)	p-value
Age (mean ± SD)	66.1 ± 15.7	71.8 ± 16.1	< 0.01
Females gender	47.1%	42.4%	0.14
NIHSS at admission	0 [0, 1]	3 [1, 10.75]	< 0.01
Atrial fibrillation	11%	15.5%	0.04
Previous stroke	16.9%	25.5%	< 0.01
Previous TIA	5.3%	2.3%	< 0.01
Coronary artery disease	14.9%	16.6%	0.45
Diabetes mellitus	27.5%	29.9%	0.42
Hypertension	53.1%	59.2%	0.05
Smoking	5.3%	6.7%	0.36
Dyslipidemia	31.2%	26.4%	0.09

Data reported as mean and standard deviation (± SD) or median and interquartile range; NIHSS: National Institutes of Health Stroke Scale; TIA: transient ischemic attack; AIS: acute ischemic stroke.

**Table 2.** Individual performance measures of care by cerebrovascular event type.

Quality indicator of care	TIA (n = 357)	AIS (n = 787)	p-value
Early antithrombotics	96.8%	98.5%	0.08
Antithrombotics at discharge	95%	98%	0.01
Anticoagulation for atrial fibrillation	93%	88.5%	0.4
LDL 100	57.7%	64.1%	< 0.01
Smoking cessation counseling	61.1%	80.4%	0.01
Stroke education	56.5%	74.5%	< 0.01
Perfect care composite measure	66%	75%	< 0.01

Early antithrombotics: antithrombotic medication (antiplatelet or anticoagulant) use within 48 hours of admission; LDL: low density lipoprotein; LDL 100, dosing of LDL and treatment for LDL ≥ 100 mg/dl in patients meeting the National Cholesterol Education Program Adult Treatment Panel III; TIA: transient ischemic attack; AIS: acute ischemic stroke.

## DISCUSSION

This study characterized patterns of TIA care in the context of contemporary guidelines and is among the first to compare the quality of care with the care delivered to patients with AIS. The monitored performance measures found to be less-frequently performed in patients with TIA were the use of antithrombotics, lipid-lowering treatment and stroke education at discharge. This finding could indicate an opportunity for improvements in quality of care in this population.

The GWTG-S is a remarkable initiative from the American Heart Association/American Stroke Association, which is associated with substantial and sustained improvements in acute stroke care and secondary prevention performance measures<sup>4</sup>. Optimizing care of both TIA and AIS is a global priority. Since a TIA shares the same pathophysiology as an AIS, preventive measures are similar for the two conditions, and both conditions have been addressed in the same guidelines for stroke prevention. Because TIA, by definition, is reversible in the short term, this is consequently much less alarming than an AIS to patients, family members and even to caregivers<sup>5</sup>. The milder and reversible clinical presentation

may lead to the lower adherence to preventive measures. Consistent with this idea, this study observed that adherence to the GWTG-S quality indicators was lower in patients with TIA. This difference has also been reported in the United States<sup>6-9</sup>. This is a systematically underestimated, alarming finding, especially because a TIA comprises a major risk factor for further stroke.

This study has some limitations. Firstly, this was a retrospective observational single-center study with a relatively-small sample size and non-matched groups. Moreover, long-term follow up to determine the actual clinical impact of adherence to the GWTG-S quality indicators was not evaluated. However, it is the first study in Brazil to analyze compliance with the GWTG-S recommendations in TIA patients and could serve as an important alert to the differences in care between patients with AIS and TIA. The implementation of a national stroke quality improvement program designed specifically for Brazil or Latin America should be developed.

In conclusion, adherence to the GWTG-S quality indicators was lower in patients with TIA compared to patients with AIS. Measures should be undertaken to reinforce the importance of such clinical interventions in patients with TIA.

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