Supplemental material

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Stroke Vasc Neurol

Outcomes of Medicare Beneficiaries Hospitalized with Transient Ischemic Attack and stratification using the ABCD^2 Score

(TIA outcomes for Medicare Beneficiaries)

ONLINE SUPPLEMENT

Supplemental Methods

> **M1.** Calculating the ABCD2 score from GWTG data
> **M2.** Covariates in adjusted models
> **M3.** Defect-free Care
> **M4.** Competing Interests

Supplementary Figure S1

Supplemental Methods

M1. Calculating the ABCD^2 score from GWTG data

ABCD^2 score is a risk assessment tool typically used for short-term stroke risk after transient ischemic attack (TIA). The score requires data on age, systolic and diastolic blood pressure, stroke symptoms, duration of the TIA, and history of diabetes. Points are assigned for different values for the different variables as indicated below and then summed across the five independent factors. Higher ABCD^2 scores are associated with greater risk of stroke with a recommendation to change clinical practice for patients with a score of four or greater.

Defining the ABCD^2 score

	Age	Blood Pressure*	Clinical Features[†] – Stroke Symptoms	TIA Duration	Diabetes
no point	<60 years	normal	no speech disturbance and no unilateral (one-sided) weakness	<10 minutes	no diabetes
1 point	≥60 years	raised (SBP≥140 or DBP≥90 mmHg)	speech disturbance present but no unilateral weakness	10–59 minutes	diabetes present
2 points	–	–	unilateral weakness	≥60 minutes	–

*For blood pressure, if a patient had systolic BP>=140 OR diastolic BP>=90, s/he has 1 point.
[†]For clinical features, GWTG-Stroke collected the variables Weakness/Paresis, Aphasia or language disturbance.

In 2011-2014 GWTG-Stroke/CMS linked data for TIA patients population (N=77,819), we found
- Age had complete data,
- Blood pressure had 22.9% missing,
- Stroke symptoms had 20.0% missing,
- TIA duration had 53.9% missing
- History of diabetes had 0.5% missing.

Total ABCD^2 score had 61% missing. However, the missing for ABCD^2 score ≥ 4 stratification was 47.5%. For example, if a patient has a score ≥ 4 using age, blood pressure, symptoms and history of diabetes, regardless of missing or value of TIA duration, we assigned "ABCD^2 score ≥ 4 = Yes." Thus the final study sample with complete data available to assign ABCD^2 score ≥ 4 or < 4 categories included 40,825 patients.

M2. Covariates in adjusted models

In the adjusted models, the covariates adjusted for include patient demographics (age, female sex, race-ethnicity Caucasians, Black, Hispanic, Asian and others), and patient medical history (atrial fibrillation/flutter, prosthetic heart valve, previous stroke/TIA, coronary artery disease or prior MI, carotid stenosis, peripheral vascular disease, hypertension, dyslipidemia, heart failure and smoking), number of hospitalization within 6 months prior to index, arrived at off-hours, EMS, in stroke unit, tPA use, DVT by day 2, discharge medications – antihypertensive, lipid lowering, antithrombotic, smoking cessation, and hospital characteristics (rural vs. urban setting, number of beds, teaching hospital, region, primary stroke center (PSC), annual volume of ischemic stroke and IV tPA). These covariates were either complete or had small missing (<3%) except and simple imputation was used to handle missing. For medical histories missing was imputed to no, for other variables missing was imputed to dominant level.

M3. Defect-free Care

Defect-free care is a binary metric of global quality of care.[1] It is defined as the proportion of patients who had received all of the interventions that they were eligible for.

M4. Competing Interests

Shah, Liang, Bettger: None
Bhandary, Johansson, Khan: Employees of AstraZeneca
Fonarow: Research: PCORI; Consultant: Janssen, Medtronic, and St Jude Medical. AHA GWTG Steering Committee
Smith: AHA GWTG Steering Committee
Peterson: AHA GWTG Data Analytic Center
Bhatt: Advisory Board: Cardax, Elsevier Practice Update Cardiology, Medscape Cardiology, Regado Biosciences; Board of Directors: Boston VA Research Institute, Society of Cardiovascular Patient Care, TobeSoft; Chair: American Heart Association Quality Oversight Committee; Data Monitoring Committees: Baim Institute for Clinical Research (formerly Harvard Clinical Research Institute, for the PORTICO trial, funded by St. Jude Medical, now Abbott), Cleveland Clinic, Duke Clinical Research Institute, Mayo Clinic, Mount Sinai School of Medicine, Population Health Research Institute; Honoraria: American College of Cardiology (Senior Associate Editor, Clinical Trials and News, ACC.org; Vice-Chair, ACC Accreditation Committee), Baim Institute for Clinical Research (formerly Harvard Clinical Research Institute; RE-DUAL PCI clinical trial steering committee funded by Boehringer Ingelheim), Belvoir Publications (Editor in Chief, Harvard Heart Letter), Duke Clinical Research Institute (clinical trial steering committees), HMP Global (Editor in Chief, Journal of Invasive Cardiology), Journal of the American College of Cardiology (Guest Editor; Associate Editor), Population Health Research Institute (for the COMPASS operations committee, publications committee, steering committee, and USA national co-leader, funded by Bayer), Slack Publications (Chief Medical Editor, Cardiology Today's Intervention), Society of Cardiovascular Patient Care (Secretary/Treasurer), WebMD (CME steering committees); Other: Clinical Cardiology (Deputy Editor), NCDR-ACTION Registry Steering Committee (Chair), VA CART Research and Publications Committee (Chair); Research Funding: Abbott, Amarin, Amgen, AstraZeneca, Bayer, Boehringer Ingelheim, Bristol-Myers Squibb, Chiesi, Eisai, Ethicon, Forest Laboratories, Idorsia, Ironwood, Ischemix, Lilly, Medtronic, PhaseBio, Pfizer, Regeneron, Roche, Sanofi Aventis, Synaptic, The Medicines Company; Royalties: Elsevier (Editor, Cardiovascular Intervention: A Companion to Braunwald's Heart Disease); Site Co-Investigator: Biotronik, Boston Scientific, St. Jude Medical (now Abbott), Svelte; Trustee: American College of Cardiology; Unfunded Research: FlowCo, Merck, PLx Pharma, Takeda.

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Supplementary Figure S1

One-year outcomes versus days after discharge from the index hospitalization for TIA according to $ABCD^2$
score.

REFERENCES

1.   Reeves MJ, Fonarow GC, Zhao X, Smith EE, Schwamm LH, Get With The Guidelines-Stroke Steering C and Investigators. Quality of care in women with ischemic stroke in the GWTG program. *Stroke*. 2009;40:1127-33.