

An Assessment of the Incremental Value of the ABCD2 Score in the Emergency Department Evaluation of Transient Ischemic Attack

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Outline

- Study objective & introduction
- Materials and Methods
- Results & limitations
- Discussion & Conclusion

■ Study objective:

ABCD2 score in predicting risk of ischemic stroke after thorough ED evaluation of TIA.

■ Methods:

- a prospective observational study presenting in ED
- Full ED evaluation, including CNS and carotid artery imaging, after which ABCD2 scores and risk category were assigned.
- evaluated correlations between risk categories and occurrence of subsequent ischemic stroke at 7 and 90 days.

ABCD2 Score for Transient Ischemic Attack (TIA)

- A simple score (ABCD2) to identify individuals at high early risk of stroke after transient ischemic attack.
- **A** (Age); 1 point for age ≥ 60 years,
- **B** (Blood pressure $\geq 140/90$ mmHg); 1 point for hypertension at the acute evaluation,
- **C** (Clinical features); 2 points for unilateral weakness, 1 for speech disturbance without weakness, and
- **D** (symptom Duration); 0 point for less than 10 minutes, 1 point for 10–59 minutes, 2 points for ≥ 60 minutes.
- **D** (Diabetes); 1 point
- Total scores ranged from 0 (lowest risk) to 7 (highest risk).
- Scores 0-3: low risk
- Scores 4-5: moderate risk
- Scores 6-7: high risk

INTRODUCTION

- An important warning sign of stroke, with 12% to 20% of all ischemic strokes heralded by a transient ischemic attack.
- Clinical scores are of interest
- managing the balance between patient safety and hospitalization.
- recently been proposed for transient ischemic attack risk stratification is the **ABCD2**.

Goals:

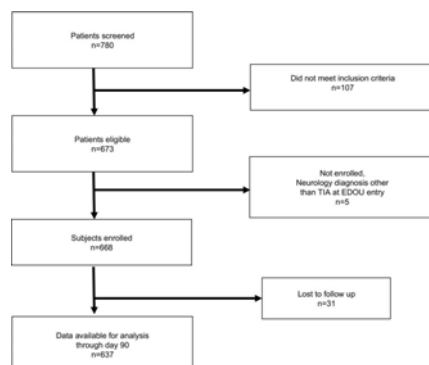
- If ABCD2 score would add incremental value to our institutional protocol in terms of risk stratification.

MATERIALS AND METHODS

- The study was conducted from December 2001 to December 2006.
- included all patients with TIA.
- All patients followed up through telephone interview and review of medical records for a minimum of 90 days.
- Follow-up was achieved in 95%, and those lost to follow-up were characterized.

- All patients older than 18 years who had a TIA were included.
- The exclusion criteria:
symptoms lasting longer than 24 hours or patients with acute ischemic or hemorrhagic stroke.
- All patients undergo the same initial evaluation, including a head CT, ECG, laboratory tests, and carotid Doppler study.

- Of a total of 673 patients, 668 were considered to have possible transient ischemic attack by the emergency physician and entered into the protocol (Figure 1).
- Thirty-one patients did not have 90-day follow-up and were excluded from the study.



■ Methods of Measurement:

- calculated ABCD2 score at presentation.
- the risk of stroke at 7 and 90 days.

Results

- 637 patients, of which 47% were women. The mean age was 73.0 years, with an SD of 13.3 years.
- The 90-day follow-up rate was 95.4%.
- The patients lost to follow-up were younger (mean age 67), had lower ABCD2 scores, and were less likely to be admitted to the hospital.

- a total of 15 ischemic strokes occurring within 90 days after the index TIA.

Table 1. Demographic characteristics by occurrence of ischemic stroke at 90 days.

Characteristics	No Stroke, No. (%), Total n=622	Stroke, No. (%), Total n=15	Difference (95% CI) *
Age, y, mean (SD)	73.0 (13.3)	74 (14)	1 (-8 to 6)
Women, No. (%)	293 (47.1)	5 (33)	14 (-0.1 to 0.3)
Previous transient ischemic attack	111 (17.8)	3 (20)	2 (-0.1 to 0.3)
Previous ischemic stroke	114 (18.3)	2 (13)	5 (-0.2 to 0.2)
Hypertension	419 (67.3)	10 (68)	1 (-0.2 to 0.3)
Diabetes mellitus	119 (19.1)	1 (7)	12 (-0.1 to 0.2)
Previous atrial fibrillation	103 (16.5)	15 (100)	83 (0.6 to 0.9)

Table 2. Distribution of stroke events at 7 and 90 days, by ABCD2 scores.

ABCD2 Score	7 Days		Stroke Event Rate	90 Days		Stroke Event Rate
	Stroke, N=6	No Stroke, N=631	0.94	Stroke, N=15	No Stroke, N=622	2.35
Low (0-3)	2	187	1.06	4	185	2.12
Intermediate (4-5)	1	335	0.30	7	329	2.08
High (6-7)	3	109	2.68	4	108	3.57

Saad et al

ABCD2 Score in the Emergency Department

Table 3. Actual number and percentages of patients with each of the variables within the ABCD2 score.

	Low (0-3) (N, n=189)	Intermediate (4-5) (N, n=236)	High (6-7) (N, n=112)
A (Age): 1 point for age >60 y	135 (71)	299 (89)	107 (96)
B (Blood pressure >140/90 mm Hg): 1 point for hypertension at the acute evaluation	100 (53)	249 (74)	96 (86)
C (Clinical features): 2 points for unilateral weakness, 1 for speech disturbance without weakness	22 (2 points) (12)	163 (2 points) (49)	106 (2 points) (95)
D (Symptom duration): 1 point for 10-59 min, 2 points for >60 min	50 (1 point) (26)	121 (1 point) (36)	6 (1 point) (5)
D (Diabetes): 1 point	73 (1 point) (39)	138 (1 point) (41)	12 (1 point) (11)
	20 (11)	67 (20)	32 (29)

Figure 2. Distribution of ABCD2 score.

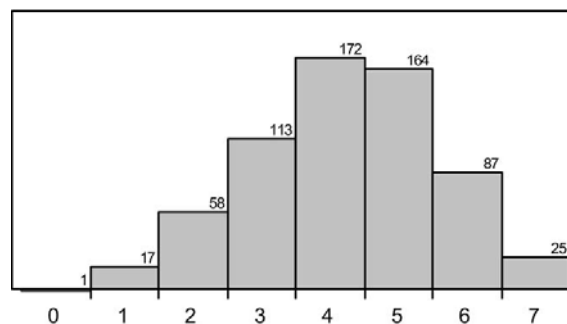
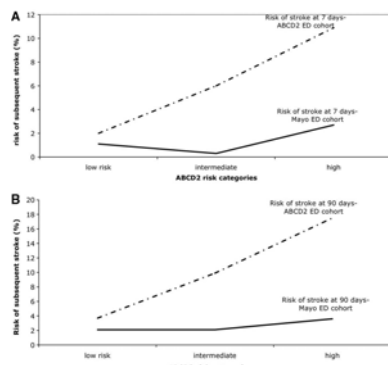


Figure 3. Risk of stroke at 7 and 90 days in ABCD2 ED and our ED cohorts.



- Results:
- 637 patients (47% women; mean age 73 years; SD 13 years).
- 15 strokes within 90 days after the index TIA.
- At 7 days, the rate of stroke according to ABCD2 category in our cohort was 1.1% in the low-risk group, 0.3% in the intermediate-risk group, and 2.7% in the high-risk group.
- At 90 days, the rate of stroke in our ED cohort was 2.1% in the low-risk group, 2.1% in the intermediate-risk group, and 3.6% in the high-risk group.

- In other words, there was **no statistically significant relationship** between ABCD2 score at presentation and subsequent stroke after TIA at 7 or 90 days.

LIMITATIONS

- include the nature of TIA and how it is diagnosed.

DISCUSSION

- an ED TIA evaluation, which includes brain and carotid imaging, is an appropriate initial diagnostic strategy.
- when performed in conjunction with the initiation of proper preventive strategies (ie. antithrombotics), does an excellent job.
- ABCD2 score did **not** add any additional value in predicting stroke risk in our cohort.

- We have characterized the cohort lost to follow-up and found that they are younger, have lower ABCD2 scores, and are less likely to be admitted to the hospital, which suggests they would not contradict our current findings.

- The ABCD2 has merit when there are limited resources and definitive imaging studies are not readily available in the clinic or ED.
- In this, ABCD2 may help to risk stratify patients to determine the urgency of definitive evaluation.

Conclusion:

- A full ED evaluation of transient ischemic attack patients is the preferred approach
- In this population of TIA patients, the rate of stroke was independent of ABCD2 stratification
- And that, in this setting, the ABCD2 score does not provide incremental value.

- Thank you~~