pISSN:2349-5707 Volume:13,Issue 2, February -2026 eISSN:2349-5715

# TRANSIENT ISCHEMIC ATTACK (TIA): COMPREHENSIVE MANAGEMENT AND EVIDENCE-BASED APPROACH

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**Abstract:** Transient Ischemic Attack (TIA) is a neurological emergency characterized by transient focal cerebral, spinal, or retinal ischemia without evidence of acute infarction. Although symptoms resolve completely, TIA carries a high early risk of subsequent ischemic stroke, particularly within the first 48 hours. Rapid evaluation, risk stratification, urgent neuroimaging, and immediate initiation of secondary prevention strategies significantly reduce stroke recurrence. This paper reviews current evidence-based management of TIA, including diagnostic evaluation, antithrombotic therapy, vascular interventions, cardioembolic management, risk factor modification, and lifestyle interventions based on contemporary AHA/ASA and ESO guidelines.

## 1. Introduction

Transient Ischemic Attack (TIA) is defined as a transient episode of neurological dysfunction caused by focal brain, spinal cord, or retinal ischemia without acute infarction on neuroimaging (Kleindorfer et al., 2021). The tissue-based definition has replaced the older time-based definition (<24 hours). TIA represents a warning event for impending ischemic stroke, with approximately 10–20% risk of stroke within 90 days.

## 2. Epidemiology and Risk

The highest stroke risk occurs within the first 48 hours after TIA. Early recognition and aggressive management can reduce recurrent stroke risk by up to 80% (Fonseca et al., 2021).

## 3. Initial Assessment and Risk Stratification

The ABCD² score remains a practical bedside tool for early risk assessment, incorporating age, blood pressure, clinical features, duration of symptoms, and diabetes status. High-risk patients require urgent hospitalization and comprehensive evaluation (Kleindorfer et al., 2021).

## 4. Diagnostic Evaluation

MRI with diffusion-weighted imaging is preferred for detecting silent infarction. Vascular imaging (CTA, MRA, or carotid ultrasound) is essential to identify significant stenosis. Cardiac evaluation including ECG, echocardiography, and prolonged rhythm monitoring is recommended to detect cardioembolic sources.

## 5. Antithrombotic Therapy

For non-cardioembolic TIA, aspirin should be initiated immediately. Short-term dual antiplatelet therapy (aspirin plus clopidogrel for 21 days) is recommended in high-risk patients (Kleindorfer et al., 2021). In cardioembolic TIA, particularly atrial fibrillation, oral anticoagulation with DOACs is preferred.

pISSN:2349-5707 Volume:13,Issue 2, February -2026 eISSN:2349-5715

### 6. Carotid Revascularization

Carotid endarterectomy is recommended for symptomatic carotid stenosis of 70–99%, ideally within 14 days of the event. Carotid artery stenting may be considered in selected patients (Fonseca et al., 2021).

### 7. Risk Factor Modification

Long-term prevention includes strict blood pressure control (<130/80 mmHg), high-intensity statin therapy (LDL target <70 mg/dL), glycemic control in diabetic patients, smoking cessation, Mediterranean diet, and regular physical activity (Kleindorfer et al., 2021).

### 8. Recent Guideline Updates

The 2026 AHA/ASA guideline on early management of acute ischemic stroke further emphasizes rapid neuroimaging, early secondary prevention initiation, and systems-based stroke care improvements (Prabhakaran et al., 2026).

### 9. Conclusion

TIA must be treated as a medical emergency. Early evaluation, appropriate imaging, timely initiation of antithrombotic therapy, vascular intervention when indicated, and aggressive risk factor control significantly reduce the risk of subsequent ischemic stroke.

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