

HOSPITAL PHYSICIAN®

NEUROLOGY BOARD REVIEW MANUAL

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The *Hospital Physician Neurology Board Review Manual* is a peer-reviewed study guide for residents and practicing physicians preparing for board examinations in neurology. Each manual reviews a topic essential to the current practice of neurology.

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Ischemic Stroke: Evaluation, Treatment, and Prevention

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Ischemic Stroke: Evaluation, Treatment, and Prevention

Matthew Brandon Maas, MD, and Joseph E. Safdieh, MD

INTRODUCTION

This manual is the second half of a 2-part review of ischemic stroke. In part 1, the pathophysiology of stroke was reviewed from both a cellular and systemic perspective. An organized framework was developed to discuss the important characteristics of diseases implicated in causing ischemic stroke based on their mechanism of injury. Part 2 of this review provides an overview of the evaluation and management of ischemic stroke. Because of the broad heterogeneity of stroke mechanisms, strategies are presented to systematically screen for contributory risk factors. Management techniques are presented from acute stabilization to secondary prevention, covering important topics such as vascular reperfusion therapies, in-hospital care, relevant surgical procedures, and rehabilitation. This manual concludes with a series of case-based questions that apply the concepts presented throughout parts 1 and 2.

STROKE EVALUATION AND MANAGEMENT

Stroke care is commonly divided into 2 phases. The initial phase is the urgent time period that begins when the patient first presents to clinical attention. Because the brain is poorly resilient to deprivation of oxygen and metabolic substrates, time to intervention is critically important. The organizing principle of the initial phase of stroke care is to perform a limited evaluation with a focus on obtaining data necessary for making decisions about time-sensitive treatments. This includes an abbreviated history of the patient's presenting symptoms and past medical history, a focused general and neurologic examination, basic laboratory studies, and rapid baseline neuroimaging. Stabilization and therapeutic interventions ensue during this phase of care.

In the second phase, care started during the initial phase continues on an inpatient basis as a thorough evaluation of the patient is undertaken. The accumulation of additional data allows for a more accurate determination

of the etiology of the ischemic event and further exploration of risk factors. Patients presenting with transient ischemic attack (TIA) are at significant risk for stroke¹ and should undergo the same evaluation as patients admitted for stroke, with the intent of identifying risk factors for primary prevention.² A multidisciplinary approach is required to avoid further medical consequences of stroke (eg, aspiration pneumonia) and to establish a plan for rehabilitation. Outpatient care supports continuing rehabilitation efforts and ongoing risk factor modification.

ACUTE EVALUATION AND STABILIZATION

Several basic evaluation and management procedures should be rapidly undertaken for every patient presenting with suspected acute ischemic stroke.³ The extent of the evaluation depends on the likelihood of encountering a positive finding, the pretest probability. For example, the pretest probability of a significant finding on a hypercoagulability panel for a stroke patient is high for a young woman with a history of thrombosis and multiple spontaneous fetal losses but low for an elderly patient with poorly controlled risk factors and a severe ipsilateral carotid stenosis.

Stabilization

The first step in acute stroke management is to ensure that the patient is stabilized, brought promptly to an appropriate emergency department (ED), and rapidly evaluated. It has been demonstrated that outcomes are better for patients treated at designated stroke centers.³ As in all emergency situations, the initial approach to the patient requires a survey of the patient's airway, breathing, and circulatory function. Severe dysphasia and diminished level of arousal are not rare in acute stroke, and some patients may require intubation to protect their airway and minimize aspiration. An abbreviated examination will consist of assessment of vital signs, survey for evidence of trauma, and a focused cardiovascular system assessment.

History and Neurologic Assessment

A neurologic assessment should be sufficiently thorough to identify major deficits. Use of a standardized