

The Cost-Effective Evaluation of Syncope



Steven Angus, MD

KEYWORDS

• Syncope • Classification • Cost-effective • Risk-stratification

KEY POINTS

- Syncope is a common occurrence with a lifetime incidence of 40% and leads to a significant cost-burden on the US health system.
- A meticulous history and physical examination, including orthostatics and electrocardiogram, are the most cost-effective tools in diagnosing syncope.
- Routine blood tests, neuroimaging with computed tomography scans, MRIs, carotid Doppler, echocardiography, and inpatient telemetry monitoring rarely contribute to the diagnosis but add substantial cost.
- There are multiple risk stratification tools that help identify high-risk patients and guide management.
- Applying these tools can reduce syncope-related costs substantially without increasing risks to patients.

INTRODUCTION

Syncope is defined as the transient loss of consciousness associated with the inability to maintain postural tone.¹ Cohort studies suggested a lifetime prevalence of 40% in the adult population, though the exact incidence is difficult to define because many patients with syncope do not seek medical attention. The incidence is higher with advancing age, potentially related to an increase in prescription of vasoactive drugs and increasing incidence of cardiac arrhythmias in the elderly population.²

Studies estimated that syncope accounts for 3% of all the emergency department visits and that approximately one-third of these visits result in hospitalization.^{1,3} Thus, syncope accounts for anywhere from between 1% to 6% of all hospital admissions.¹

Data from 2001 through 2010 show that the proportion of patients presenting to the emergency department with syncope and then admitted to the hospital has remained stable despite the publication of multiple clinical guidelines and strategies for optimizing resource utilization in the emergency department.³ More worrisome, the rate

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Department of Medicine, University of Connecticut School of Medicine, 263 Farmington Avenue, Farmington, CT 06030, USA

E-mail address: angus@uchc.edu

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of utilization of advanced imaging for syncope patients has increased significantly from 20% to 45% over this same time frame.³

Syncope has a considerable direct and indirect socioeconomic burden. The cost of syncope remains quite substantial with the in-hospital expenses making up most of these costs. The estimated costs for syncope-related hospitalizations in 2000 approached \$2.5 billion and were driven the high admission rate and by testing. Despite the development of tools for risk stratifying patients presenting with syncope, many patients continue to be admitted at an estimated cost of \$5400 per admission.⁴ Considering that admission and additional inpatient workup rarely leads to a more specific cause of syncope, it has been estimated that the average cost per clear etiologic diagnosis of syncope approaches \$78,000.⁴

PATHOPHYSIOLOGY OR CLASSIFICATION

Syncope is secondary to a brief decrease in cerebral blood flow that spontaneously and completely resolves and requires no resuscitation.¹ In most cases, diminished cerebral perfusion is caused by a transient decrease in systemic blood pressure.^{5,6} Mechanistically, systemic blood pressure is determined by cardiac output and peripheral vascular resistance, and a decrease in either can cause syncope. More often than not, a combination of both mechanisms is present.

The causes of transient low cardiac output include reflex bradycardia, cardiac arrhythmias, structural heart disease, and inadequate venous return due to volume depletion or venous pooling.⁶ Decreased peripheral vascular resistance may be caused by primary or secondary impairments in the autonomic nervous system.

Classification of syncope based on pathophysiologic mechanisms allows for grouping of entities with common presentations based on the cause of the drop in systemic blood pressure (**Table 1**). Syncope is typically classified into neurally mediated syncope (including vasovagal syncope, carotid sinus hypersensitivity, and situational syncope), orthostatic syncope, and cardiac syncope. Neurally mediated syncope is the most common form of syncope when all age groups are considered; it is a particularly common cause of syncope in young healthy adults without a history of structural cardiac disease. Vasovagal syncope has a lifetime incidence of 20% in the general population.^{1,6} It is often seen in young, otherwise healthy patients but may occur in all age groups.

Type	Pathophysiology	Subtypes
Neurally Mediated (reflex)	Inappropriate increase in sympathetic or parasympathetic tone leading to vasodepressor symptoms (hypotension), cardioinhibitory symptoms (bradycardia), or both	Vasovagal Carotid sinus syndrome Situational syncope
Cardiac	Decreased cardiac output	Arrhythmia Structural heart disease Ischemia
Orthostatic Hypotension	Insufficient vasoconstriction in response to orthostatic stress (standing)	Primary autonomic failure Secondary autonomic failure Drug-induced Volume depletion

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