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Original Contributions

COMPARISON OF 1-DAY EMERGENCY DEPARTMENT OBSERVATION AND INPATIENT WARD FOR 1-DAY ADMISSIONS IN SYNCOPE PATIENTS

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☐ **Abstract—Background: In an era of increasing health care costs, the need for hospitalization is being scrutinized. In particular, 1-day hospitalizations are thought to be especially costly and unnecessary, and, increasingly, emergency department observation units (EDOUs) are being used as alternatives. Objective: Our aim was to determine the differences in outcomes and diagnoses between 1-day inpatient and EDOU stays for syncope. Methods: We retrospectively reviewed a cohort of patients with syncope who were seen in an urban ED with 1-day admission to an inpatient ward, EDOU, or full hospitalization. Etiology of syncope was classified as benign (vasovagal, dehydration), serious (dysrhythmia, sepsis, stroke/intracranial bleed, hemorrhage, valvular, ischemia, pulmonary embolism), or unknown. Data were analyzed using Fisher's exact test and *t*-test. Results: One hundred and seventy-two of 351 patients were >1-day admissions, 152 (85%) were admitted for 1 day, and 27 (15%) were admitted to EDOU. The mean (standard deviation [SD]) age when admitted to the hospital was significantly higher at 72 (18.4) years for > 1-day admissions and 68.8 (19.6) years for 1-day admissions vs. 53.0 (18.9) years for EDOU patients ($p < 0.01$). For fully admitted patients, 36% had benign etiologies of syncope and 38% had serious causes of syncope; in 1-day admitted patients, 48% had benign etiologies and 14% had serious causes. Among EDOU patients, 44% had benign etiologies and none were serious. One-day patients were more likely to have unknown causes of syncope at discharge (36%; 95% confidence interval 0.28 to 0.43) when compared with admitted patients (26%; 95% CI 0.2 to 0.33); similarly, observation patients were more likely to be discharged without a diagnosis (56%; 95% CI 0.37 to 0.74; $p \leq 0.05$). Conclusions: EDOU patients were less likely than patients admitted to the hospital to be discharged with an etiology of their syncope. Future EDOU protocols can benefit from set admission criteria and standardized evaluation protocols to facilitate maximal use of EDOU for syncope.** © 2015 Elsevier Inc.

☐ **Keywords—observation; admission; syncope; one; day**

INTRODUCTION

Syncope accounts for up to 3% of all ED visits, with an overall admission rate of 30% to 70%, representing at least 2% of all hospital admissions from the ED and 460,000 hospitalizations annually in the United States (1–3). This high incidence and the significant percentage of admission reflect the broad spectrum of diseases that syncopal etiologies span, from potentially life-threatening to low-risk diagnoses. A growing body of literature has developed discerning high-risk syncope from syncope of benign etiology (4–8). Although recent studies address which patients

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require admission and which are safe for discharge, few have addressed what to do with patients once the emergency department (ED) recognizes the need for admission or further testing (9−15).

Health care costs associated with syncope are significant, with the total cost of syncope-related admissions totaling > $2 billion per year in the United States; each hospital admission of syncope patients averages $5300 (1−3,16−21). A large portion of these costs is directly related to the broad diagnostic testing performed to discover the etiologies of syncope (20). Efforts to reduce unnecessary and expensive admissions have generated clinical decision guidelines regarding the decision to admit, but have only begun to assess the value and yield of testing in syncope, and have not assessed the utility of expedited care in an observation unit. In the current era of increasing health care costs, greater scrutiny is being applied to the need for inpatient hospitalization.

Yet, syncope was recently noted to be the leading diagnosis associated with payment denials by the Centers for Medicare and Medicaid Services (22). In particular, 1-day hospitalizations are often thought to be particularly costly and unnecessary (22). As 1-day hospital admissions continue to undergo increased scrutiny, ED observation units (EDOUs) are being increasingly used as an alternative to inpatient hospital admissions.

The objective of this study was to determine the current patient selection and diagnostic approach in ED observation vs. 1-day admission patients and patients admitted to the hospital for > 1 day.

METHODS

Study Design and Setting

This was a prospective, observational, cohort study conducted in a large, urban teaching hospital with an annual ED census of 55,000 and an annual ED observation volume of approximately 6000 visits. From September 2003 to June 2006, we studied consecutive patients presenting to the ED with syncope. Institutional Review Board approval was obtained before initiation of the study.

Selection of Participants

Inclusion criteria were age 18 years or older and ED patients presenting with syncope and admitted by the ED team to either an inpatient ward or EDOU. Syncope was defined as a sudden and transient (< 5 min) loss of consciousness producing a brief period of unresponsiveness and a loss of postural tone, ultimately resulting in spontaneous recovery requiring no resuscitation measures (22,23). Exclusion criteria were patients discharged directly home from the ED without an observation stay, patients with persistent altered mental status, alcohol or illicit drug-related loss of consciousness, seizure, coma, hypoglycemia, transient loss of consciousness caused by head trauma, or near syncope. Patients with near syncope, including all patients without transient loss of consciousness, were excluded due to a lack of consensus regarding the definition of this entity.

Outcome Measures

The primary outcome was the rate of diagnosis of benign and serious etiology of syncope. The etiologies were classified as benign, serious, or unknown. Benign etiologies were defined as vasovagal or dehydration. Serious etiologies included pulmonary embolus, severe infection/sepsis, ventricular dysrhythmia, atrial dysrhythmia (including supraventricular tachycardia and atrial fibrillation with rapid ventricular response), stroke/intracranial bleed, hemorrhage, valvular disease, and myocardial infarction. Secondary comparisons were made for patient demographics, comorbidities, and other features of their clinical presentation based on inpatient vs. EDOU admission.

Data Collection and Processing

A trained research assistant available 16 h per day prospectively screened patients with complaints of syncope or loss of consciousness and reviewed daily patient logs to ensure completion of documentation and to identify missed off-hour patients. A chart review was then performed of these patients' ED and EDOU or hospital courses. Finally, the etiology of the syncope as documented in the patient's discharge summary was recorded.

Primary Data Analysis

Data were entered into a Microsoft Excel 2003 (Redmond, WA) database. Data were analyzed using Fisher's exact test and *t*-test. Results are reported as percentages. The operating characteristics (sensitivities, specificities, and positive and negative predictive values) are described along with 95% confidence intervals around the point estimates, when relevant.

RESULTS

There were a total of 351 patients who presented to the ED with syncope and then were admitted to the hospital or to the EDOU; 324 (92%) were admitted to inpatient beds. Of these 324 patients, 152 (47%) were hospitalized for 1 day only. In contrast, 27 of 351 (8%) were admitted to the EDOU with syncope. Mean (standard deviation [SD]) age of patients admitted to the hospital was