Original Contributions

EVALUATION OF THE CHEST PAIN PATIENT: SURVEY OF CURRENT PRACTICE PATTERNS

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□ **Abstract—The objective of this study was to measure the prevalence of chest pain centers, and describe the associated protocols most commonly used to rapidly risk-stratify patients in these units. This study is a survey conducted from May to July 2003 via direct mail. A questionnaire was mailed to 4653 hospitals in the United States. A total of 462 questionnaires were returned, representing a return rate of approximately 10%. This survey revealed that approximately 64% of all hospitals have a protocol for the evaluations of patients who present with chest pain, and 38% of all hospitals reported a designated area for the evaluation of these patients. The majority of hospitals responding to this survey have a protocol for the evaluation of patients presenting with chest pain, however, the presence of a chest pain unit exists in only 38% of all responding institutions. © 2010 Elsevier Inc.**

□ **Keywords**—chest pain; observation unit; protocol

INTRODUCTION

The diagnosis of acute coronary syndrome (ACS) such as acute myocardial infarction (AMI) and unstable angina (UA) can be extremely challenging for the Emergency Physician. The evaluation of patients who present with chest discomfort suspicious for ACS requires careful examination of patients' symptoms and clinical presentation. In addition, more than half of the patients who present to the Emergency Department (ED) with ACS do not have a diagnostic electrocardiogram on presentation (1).

The Emergency Physician typically attempts to hospitalize any patient in the ED with suspected ACS. Despite this intention, 2% of Medicare patients in the United States with chest discomfort and AMI are unintentionally released from the ED each year (2). Due to this, more than 20% of all dollars awarded for malpractice claims against Emergency Physicians are based on failure to diagnose and treat AMI (1).

The medical and financial consequences of misdiagnosis have forced Emergency Physicians to evaluate their management of patients who present with chest pain. An estimated 7.5–8 million patients with chest pain present annually to the ED; approximately 5 million of these patients are admitted to the hospital for further evaluation. Only 12–16% are subsequently "ruled in" for AMI, and an equal number are found to have UA (3,4). Financial pressures have led to the need for a more cost-effective and clinically efficient way of diagnosing ACS in the ED setting (5,6).

Additionally, advances in treatment for ACS have led to increased pressure for rapid diagnosis in the ED. Data advocating the use of powerful anti-platelet and anti-thrombin agents such as glycoprotein IIb/IIIa inhibitors and low-molecular-weight heparins have led to new

treatment options for patients with ACS who do not meet the eligibility requirements for thrombolysis (7). This has led to a threefold approach to evaluating chest pain. The Emergency Physician must rapidly identify: 1) patients with AMI and ST segment elevation who would benefit from early reperfusion with thrombolysis or primary percutaneous transluminal coronary angioplasty, 2) patients with ACS who may benefit from aggressive medical management, and 3) patients with chest pain in need of further risk stratification who might benefit from hospitalization or evaluation in a specific short-stay unit. In addition, recent American Heart Association/American College of Cardiology guidelines recommend further risk stratification with additional diagnostic testing in all patients with possible ACS who have a normal evaluation in the ED (7).

In response to these pressures, institutions have increasingly developed specific chest pain centers (CPC) or rapid diagnosis and treatment centers (RDTC). However, the cost benefits of such units are debatable (8). The purpose of this study was to measure the prevalence of CPC/RDTC, and describe the associated protocols most commonly used to rapidly risk-stratify patients in these units.

METHODS

This study is a survey conducted from May to July 2003 via direct mail. A questionnaire (Appendix) was mailed to 4653 hospitals in the United States. Questionnaires were directed to hospitals reported to have Emergency Rooms/Departments. The list included the specific name of the Director of Cardiology (or closest title available). The list was purchased from a licensed American Medical Association list broker.

Enclosed with the questionnaire was a letter explaining the goals of the study, and describing an incentive to encourage responses. A cardiology text (shelf value approximately $95.00) was sent to each respondee. The letter also stated that the survey could be completed in less than 10 min. Questionnaires were mailed out all at once and responses collected for 2 months.

A total of 462 questionnaires were returned, representing a return rate of approximately 10%. The survey consisted of 12 questions, four of which had multiple parts. Questions covered basic demographics of the institution, category of person completing the survey, current practice for the evaluation of patients with chest pain, future plans for the development of a pathway to care for chest pain patients, and proportion of patients qualifying for the evaluation and management in a chest pain evaluation unit. Responses were collated and reported with summary descriptive statistics. The overall

response rate on the initial mailing met the survey goal, so a second mailing was not performed.

Categorical variables were analyzed with Fisher's exact test. Ninety-five percent confidence intervals (CI) are given for odds ratios (OR) for categorical variables. Differences were considered significant for p values < 0.05. Statistical analysis was performed using Stata software (version 5.0; Stata Corporation, College Station, TX).

RESULTS

A total of 462 (10%) questionnaires were returned. The surveys were completed by the Director/Chair of the Cardiology Department (62%), Director/Chair of another department (19%), physician/staff (11%), director of nuclear medicine (3%), and other (3%). The distribution of the responders was very similar to that of the universe that received the mailing. Of the responding hospitals, 365 (79%) identified themselves as a community hospital, 51 (11%) as government based, 32 (7%) as University affiliated, 5 (1%) as non-University affiliated, and 9 (2%) as other. A total of 134 (29%) identified themselves as having < 100 beds, 140 (30%) as having 101–200 beds, and 177 (41%) as having > 200 beds. Hospitals with < 100 beds reported seeing 7.8 patients per day with possible ACS, 101–200 beds 11.8 patients per day, and > 200 beds 15.2 patients per day with possible ACS. As a composite group of all hospital sizes of the mean 11.9 patients seen each day, 6.9 (58%) are observed and released (Table 1).

The prevalence of CPC and chest pain protocols is summarized in Table 2. A specified unit for the evaluation of chest pain patients was documented in 177 (38%) of all hospitals. These units varied in size from 2 to > 10 beds. In general, the size of the units increased proportionately with hospital bed capacity; for example, 5.3 CPC beds for hospitals of < 100 beds, 9.6 for 100–200 beds, and 10.7 for hospitals of > 200 beds. A majority (61%) of those that do not currently have a designated area for chest pain do not expect to have one in the future. A total of 297 (64%) reported an institutional

Table 1. Mean Number of Patients with Chest Pain Evaluated and Reported Disposition by Hospital Size

Hospital Size in Beds	Total Mean Number of Chest Pain Patients per Day	Mean Number of Patients Observed and Released n (%)	Mean Number of Patients Admitted n (%)
<10	7.8	5.0 (64)	2.8 (36)
101–200	11.8	6.8 (58)	5.0 (42)
201 +	15.2	8.3 (55)	6.9 (45)