

## **Quantifying Time Savings Using Point-of-Care Emergency Department Cardiac Marker Testing: Is it Really Faster?**

Erin M. Smith, BA  
Alan B. Storrow, MD  
Janet M. Williams, RN, MSN  
Sean P. Collins, MD

University of Cincinnati College of Medicine, Department of Emergency Medicine,  
Cincinnati, OH

### **Introduction:**

The measurement of cardiac markers is a powerful and widely used diagnostic tool in the treatment of chest pain patients in emergency departments (ED). Making serum cardiac marker results available to treating physicians more quickly could improve the efficiency of chest pain management, and facilitate more rapid treatment decisions. Bedside point-of-care (POC) testing may prove to be significantly quicker than central hospital laboratories at providing cardiac marker results.

### **Objectives & Hypothesis:**

To compare the time to results for presentation ED cardiac marker testing using a POC platform versus the central laboratory. Our hypothesis is that POC platforms for cardiac marker testing are faster at providing results to ED treating physicians as compared to the central laboratory.

### **Methods:**

Patients presenting to the ED with a chief complaint of chest pain were screened for eligibility in the study. Patients were excluded if they had an ECG with ST segment elevation or left bundle branch block, if they required emergent angioplasty or if they had been hospitalized in the previous four weeks for acute coronary syndrome. Patients under 21 years of age who had not used cocaine in the previous 72 hours were also excluded. A 5 ml blood sample was obtained upon enrollment and the cardiac markers, myoglobin and troponin-T, were measured using the POC platform. The cardiac markers, creatine kinase-MB and troponin T were measured in the central laboratory. The time to results was recorded for the POC testing and the central laboratory. The mean  $\pm$  SD time to results was compared for POC testing and central laboratory testing utilizing t testing.

### **Results:**

The mean time  $\pm$  SD for the central laboratory obtained creatine kinase-MB and troponin T was 90.1  $\pm$  38.9 minutes and 99.1  $\pm$  38.8 minutes respectively. The mean time  $\pm$  SD for the POC obtained myoglobin and troponin T was 18.8  $\pm$  4.9 minutes and 20.8  $\pm$  4.9 minutes respectively. Two-sided t testing comparing the central creatine kinase-MB with the POC myoglobin, and the central troponin T with the POC troponin T, revealed  $P < .05$  for both comparisons.

### **Conclusion:**

Utilizing a point-of-care platform for the measurement of presentation cardiac markers results in significant time savings over the central hospital laboratory in providing results to ED treating physicians.