

Door-to-Balloon Times in Interfacility Transports of STEMI Patients

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Introduction

Current recommendations state that patients who receive percutaneous intervention (PCI) to treat ST-segment-elevation myocardial infarction (STEMI) should receive PCI less than 90 minutes after the initial patient contact with the health system¹. The measurement of the interval between initial patient contact and balloon angioplasty (PCI) is "Door-to-Balloon time". If achieving a Door-to-Balloon time under 90 minutes is not possible, patients with STEMI should receive fibrinolytic therapy within 30 minutes of contact with the health system¹. Evaluation of compliance with these recommendations is largely based on patients who present to an ED in the same hospital that can perform PCI. However, patients who present to an ED at a hospital without PCI capabilities must be transferred to a PCI-capable facility but still must strive to meet the 90-minute Door-to-Balloon time recommendation.

The purpose of this study is to evaluate the Door-to-Balloon times in STEMI patients transferred from non-PCI-capable community hospitals to PCI-capable centers.

Methods

This study was a retrospective chart review of patients transported from five community hospitals to two tertiary care centers within the North Shore-LIJ Health System in the years 2010 and 2011. Only patients who were transferred directly from the community hospital ED and immediately received PCI at the tertiary care center were included in the study, resulting in a total of 180 patients. A Data Collection Tool (DCT) was designed for this study to allow for documentation of several important time intervals from initial presentation to the emergency department, interfacility transport by EMS, to balloon inflation time at the catheterization lab. Meetings were held at the five community hospitals to standardize data collection.

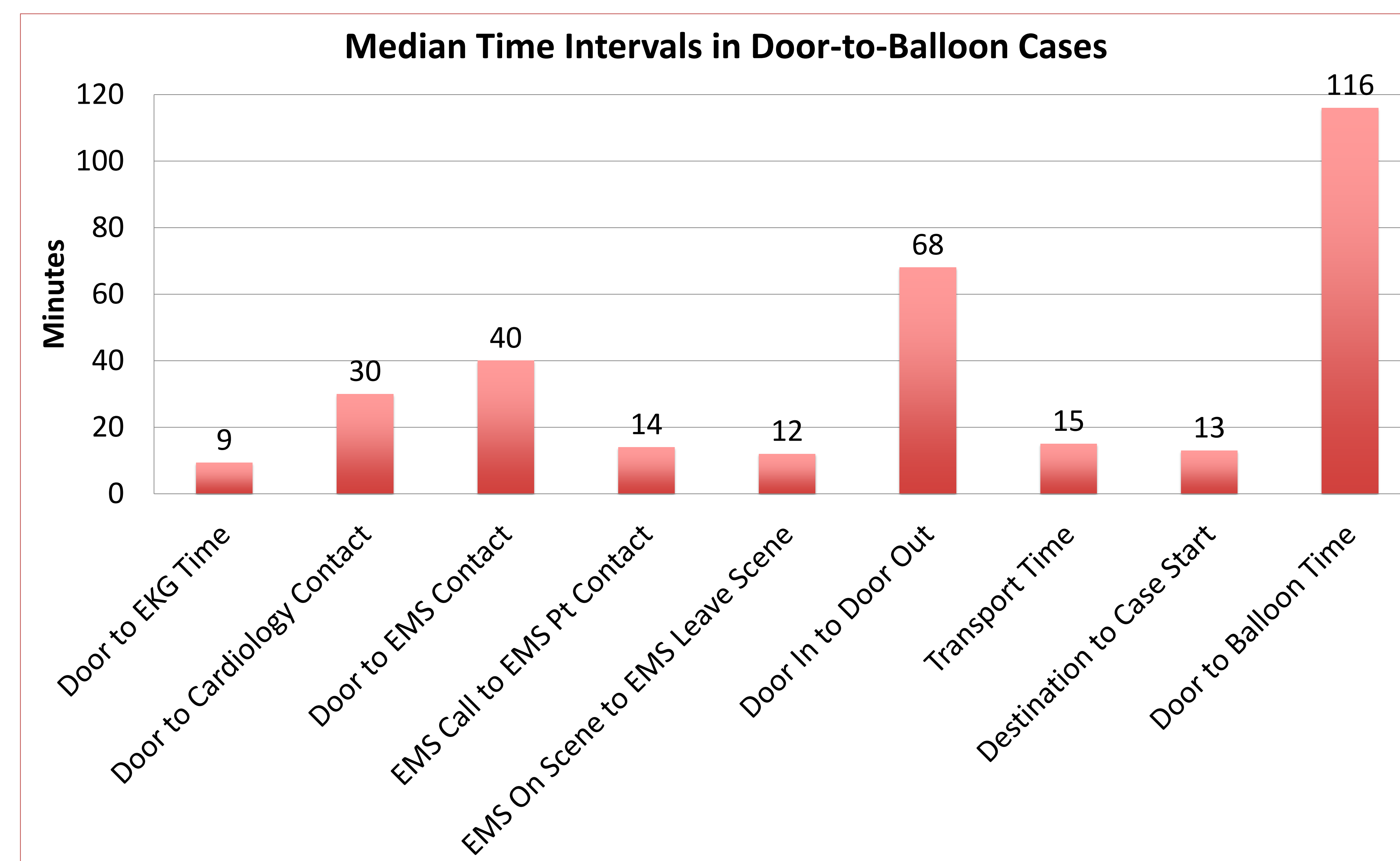


Results

Preliminary analysis was performed by aggregating data from all five community hospitals and both tertiary care centers. The median Door-to-Balloon time for STEMI transfer patients was 116 minutes, with a range of 64 to 328 minutes. Specific time intervals are displayed below. The median total time spent at the community hospital was 68 minutes, with a range of 23 to 263 minutes.

64% of patients arrived via private transportation and 36% arrived by ambulance. Table 1 displays the characteristics of our study population.

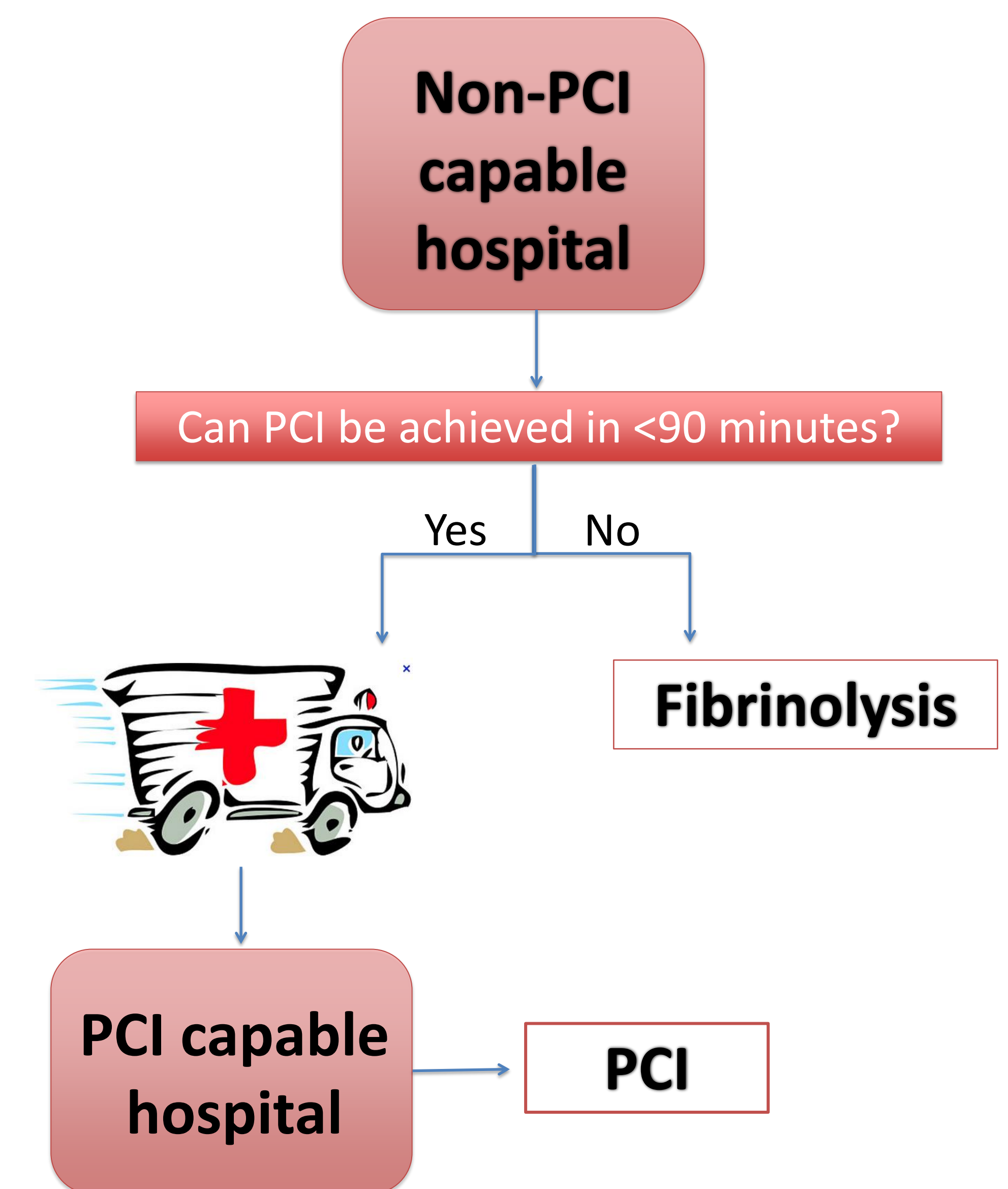
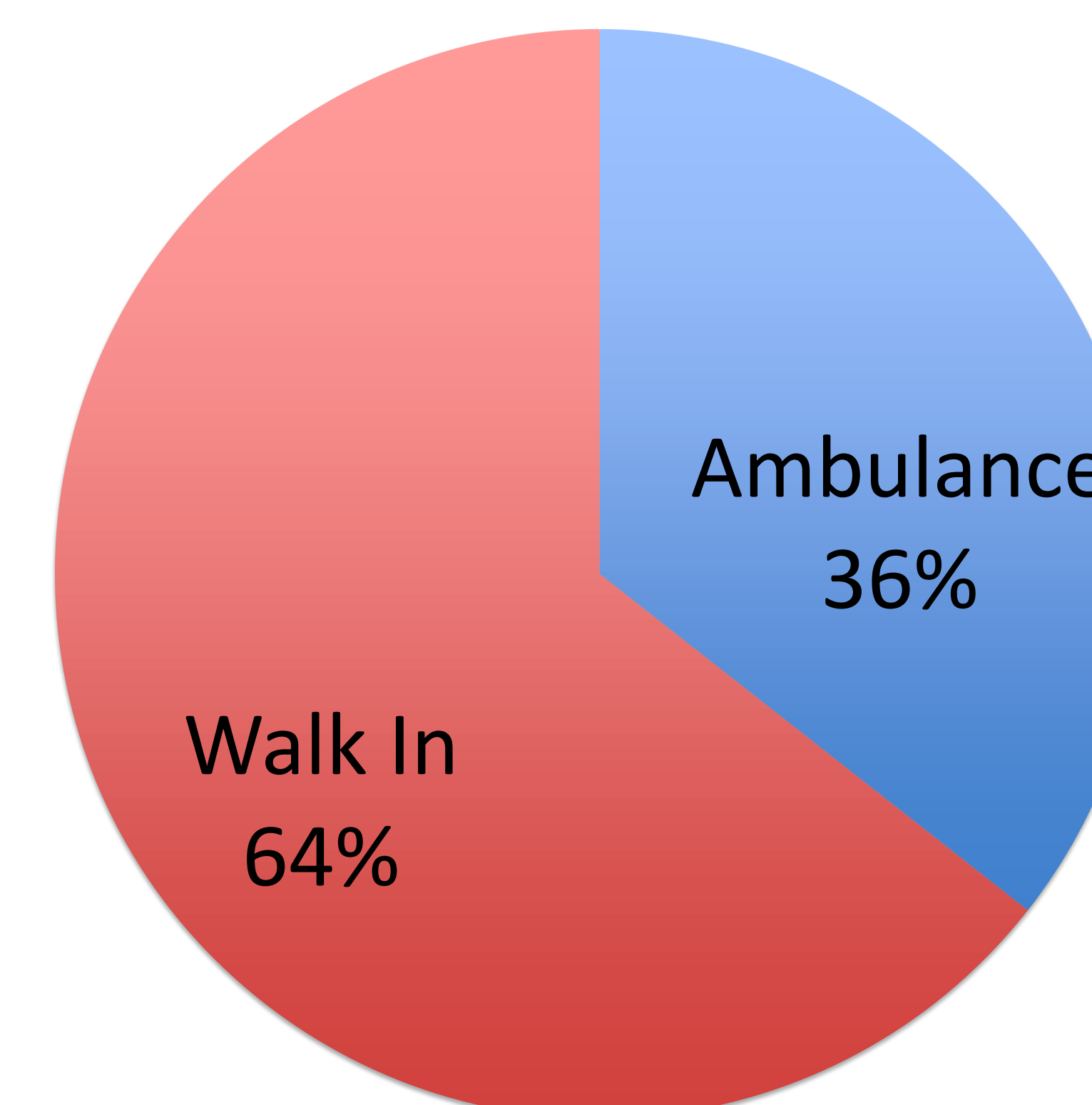
Further data analysis addressing other pre-specified variables is currently ongoing.



Median Age	58.5 years	
Gender(%)	Male (142)	78.9%
Race(%)	Asian(3)	1.6%
	Black(19)	10.5%
	Hispanic(12)	6.7%
	White(121)	67.2%
	Other(15)	8.3%
	No data(10)	5.6%
Chief Complaint (%)	Chest Pain(155)	86.1%
	No Chest Pain(25)	13.9%

Table 1

Arrival Mode



Conclusions

This retrospective analysis suggests that there are opportunities for improvement for STEMI patients who require interfacility transport to a STEMI center. Ongoing analysis will specify Door-to-Balloon time intervals by individual hospital in order to better understand barriers encountered by each facility in achieving recommended Door-to-Balloon times. Our goal is to work with each hospital to develop hospital-specific and health system-wide interventions to reduce the Door-to-Balloon times in STEMI interfacility transfers. We also intend to perform a prospective study after the interventions are implemented to evaluate improvement in Door-to-Balloon time.

Additionally, the data regarding arrival mode of STEMI patients reveals that continued community education and awareness is important to encourage the early use of EMS in cardiac emergencies instead of using private transportation to the ED (walk-in). This is especially important in light of EMS specialty designation of hospitals as STEMI Centers.

Bibliography

1. ACC/AHA Guidelines for the Management of Patients with ST-Elevation Myocardial Infarction – Executive Summary : A Report of the ACC/AHA Task Force on Practice Guidelines. *Circulation*. 2004; 110:588-636.