

Barbara Maliszewski MSN, RN, Madeleine Whalen, MSN/MPH, RN, CEN, Heather Gardner, MSN, RN, Rebecca Sheinfeld, BS

Department of Emergency Medicine, Johns Hopkins University School of Medicine, Baltimore, MD, USA

Introduction

Peripheral venous access is one of the most common procedures performed in Emergency Departments (EDs) across the United States. Successful intravenous (IV) access is critical in providing timely diagnosis and treatments for patients. The literature defines difficult venous access (DVA) as a condition among individuals who require two or more attempts for successful IV cannulation. In our department, DVA patients take three times longer for staff to establish IV access or have blood drawn. During preliminary data collection, 11% of DVA patients waited more than 8 hours for definitive IV access. The literature also suggests that establishing a dedicated, expert DVA team increases efficiency, decreases physician intervention, lessens skin punctures, and improves patient satisfaction among DVA patients.

Objectives

The aim of this study is to determine if the implementation of a dedicated DVA team (the Access in Minutes; AiM team), consisting of expert clinical technicians, can reduce the lab order to lab draw completion time and the number of IV sticks among DVA patients.

Material and Methods

This is a quasi-experimental pre/post study in a Level One, Tertiary Care, Urban Academic Medical Center that sees approximately 70,000 patients per year, where up to 70% of patients require definitive IV access. Researchers performed chart audits of staff-identified DVA patients to gather baseline data. The AiM team was then implemented from 11:00am to 3:00am Monday-Sunday. Members of the team were selected using self-nomination. Post-implementation data is continually recorded by the AiM technician on patients referred to them by the primary clinical technician or nurse. Qualitative and quantitative analysis was performed using Excel and SPSS. Data points include lab-order-to-draw times, patient characteristics and the number of IV attempts.

Results

	Pre AiM	Post AiM
Mean Time (in minutes)	296.90	182.47
Median Time (in minutes)	215.00	87.00
Mean Number of IV Attempts	3.84	3.42
Median Number of IV Attempts	4	3

Figure 1 Descriptive Statistics

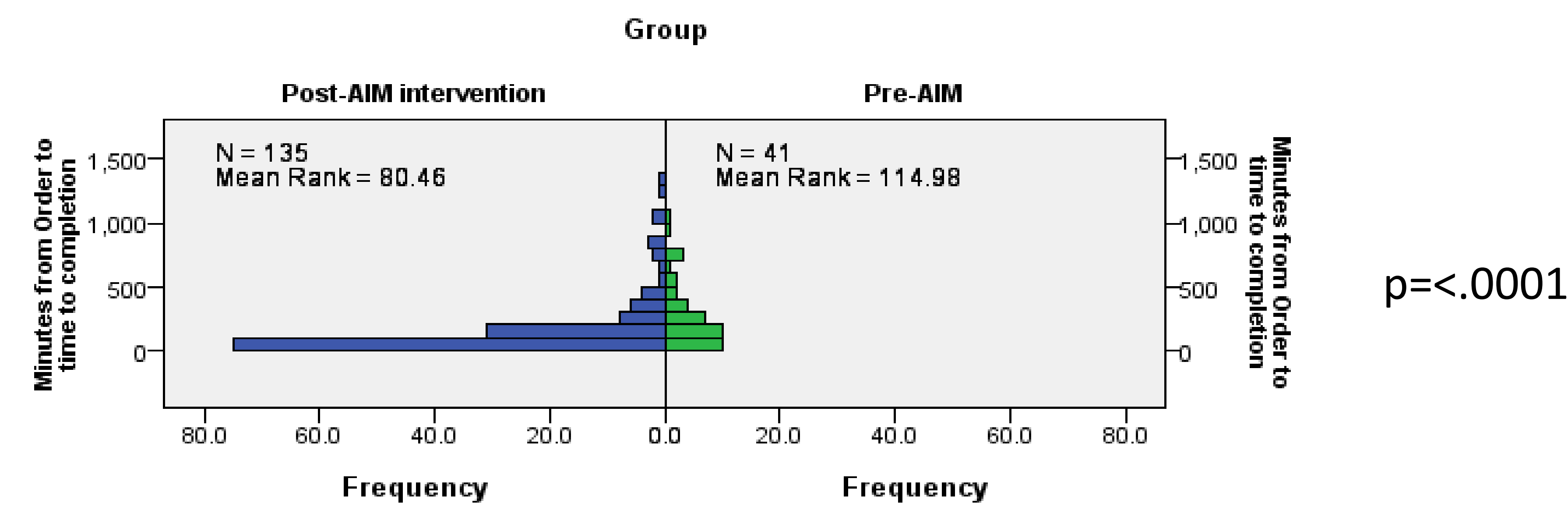


Figure 2 Independent Mann-Whitney U Test

Due to the non-parametric nature of the data set, we ran a Mann-Whitney U test to determine statistical significance among lab draw times in our pre and post intervention groups.

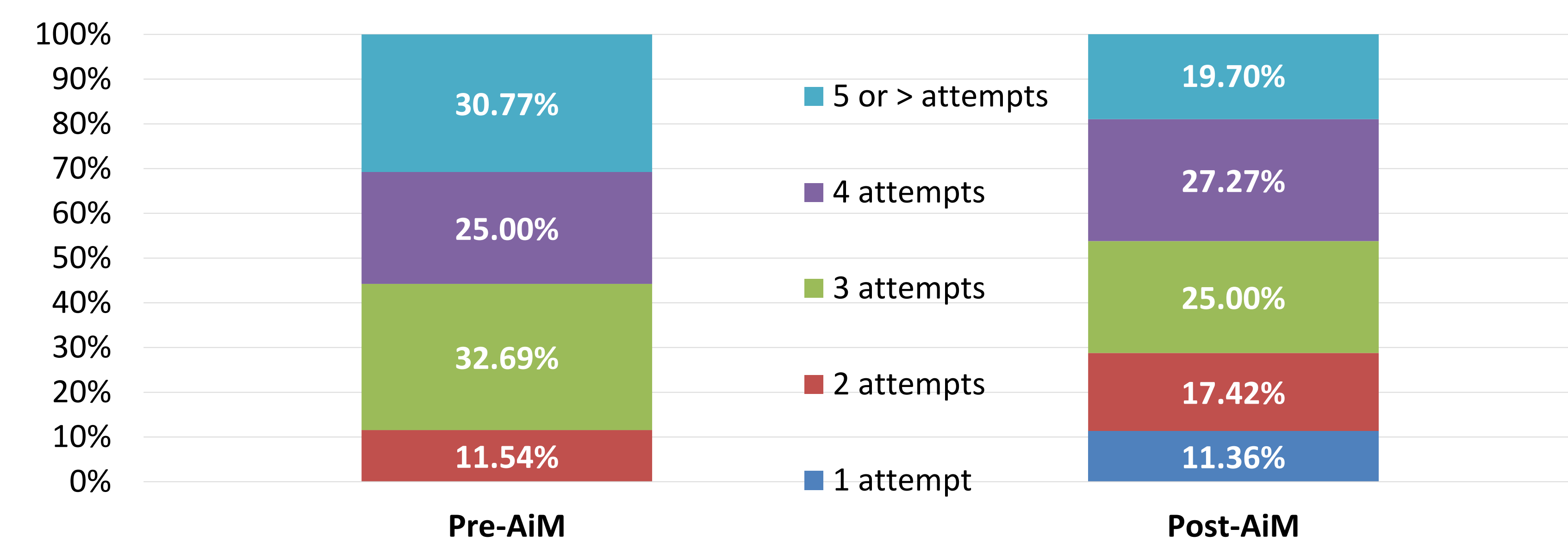


Figure 3 – Distribution of Number of IV Attempts Among DVA Patients

Implementation of the AiM team increased the percentage of patients who required three or fewer attempts to achieve IV access by 22% while decreasing the number of patients who required five or more attempts by 36%.

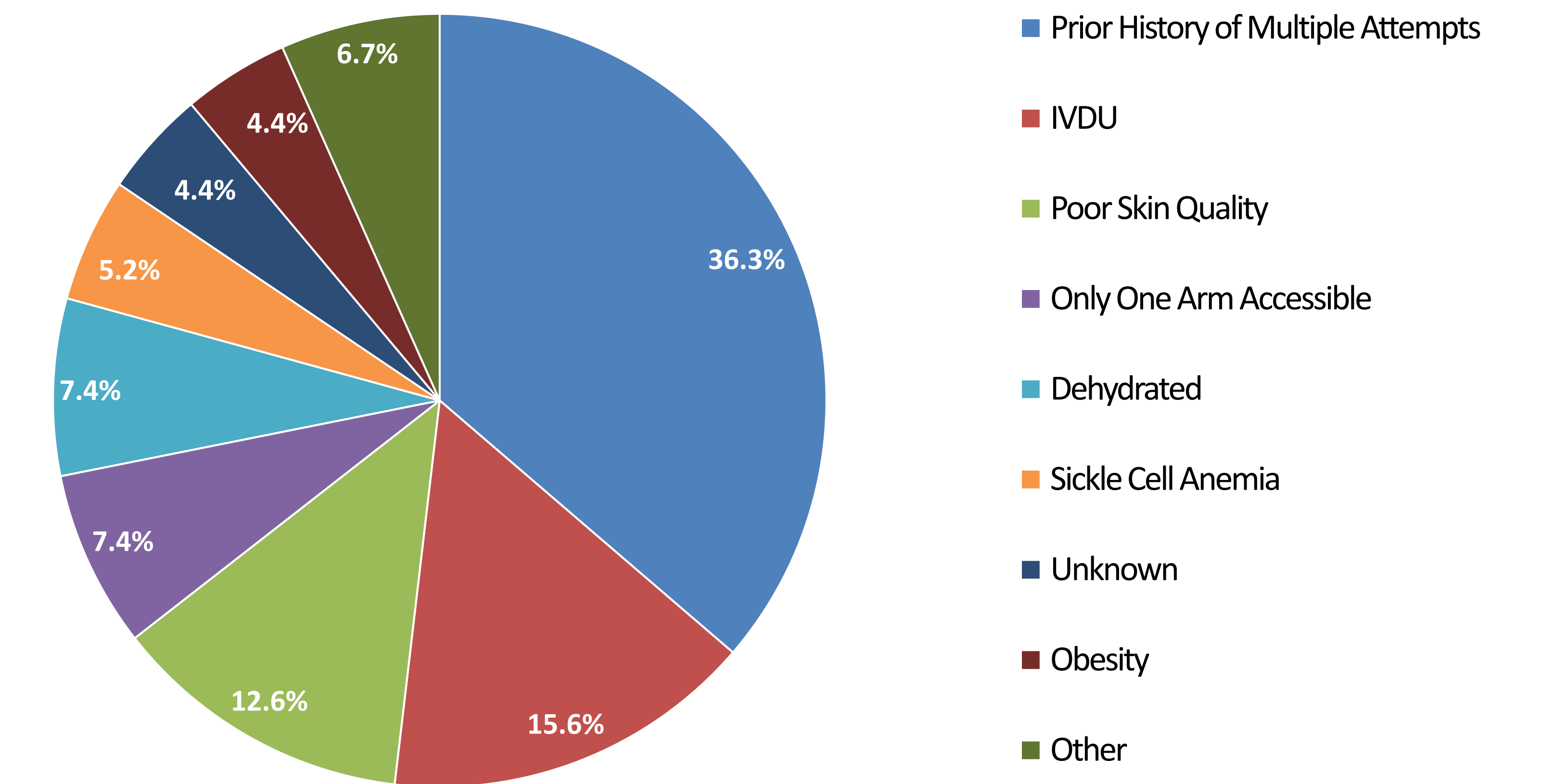


Figure 4 Reasons for Patients to be Considered DVA

Over one-third of patients were classified by the AiM team to be difficult IV access due to prior history of multiple attempts. This category includes people with multiple prior visits to the ED or other facilities, self-identified patients, multiple attempts by other staff before team was called, prior attempts for other IV lines, and infiltration of previous IV lines. This data suggests DVA patients have many characteristics in common and could be categorized prior to multiple failed IV attempts.

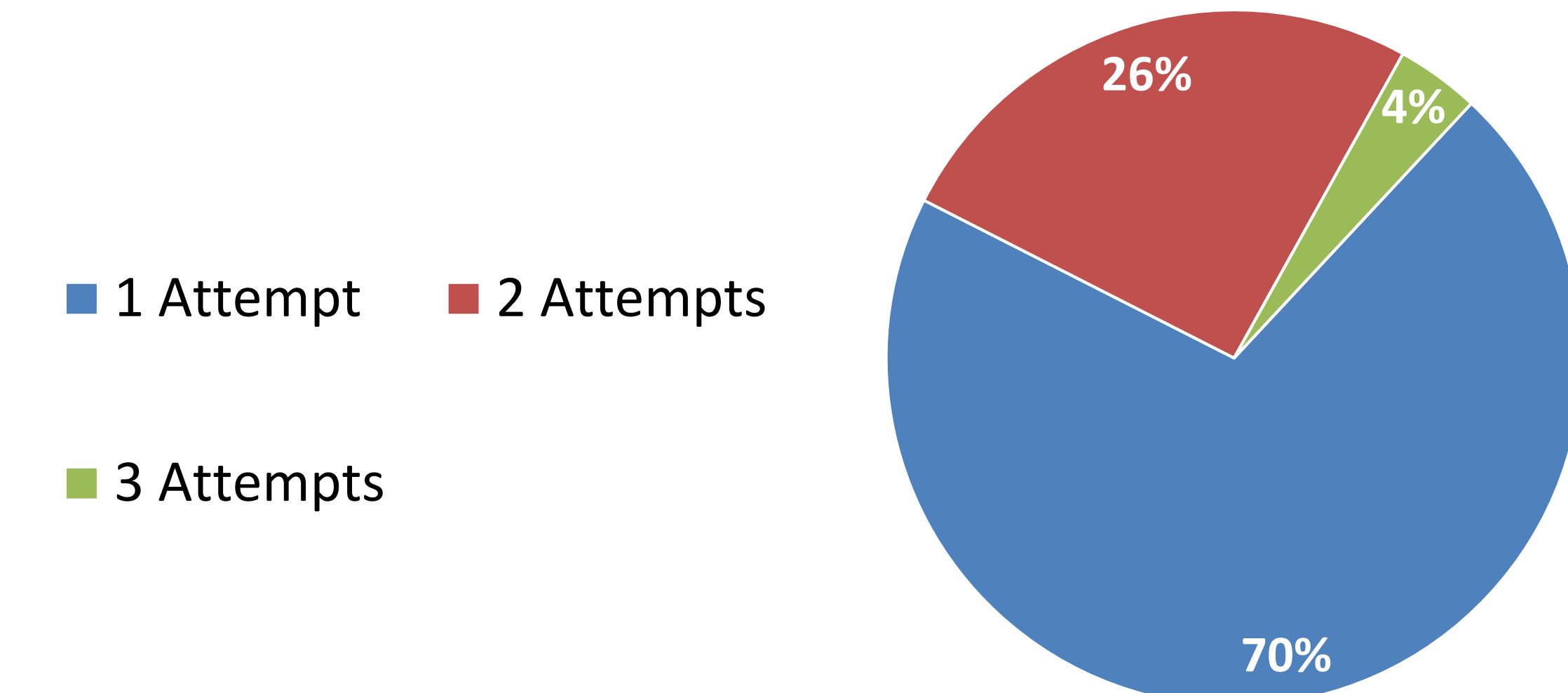


Figure 5 Distribution of Number of Attempts for Successful IV Placement by AiM Team

Conclusion

Implementation of the AiM team significantly reduced the time to successful venous access and the number of IV access attempts these patients experienced (N=135). Patients with DVA also have common characteristics and may be able to be identified earlier in their ED experience to reduce resource utilization and improve outcomes.