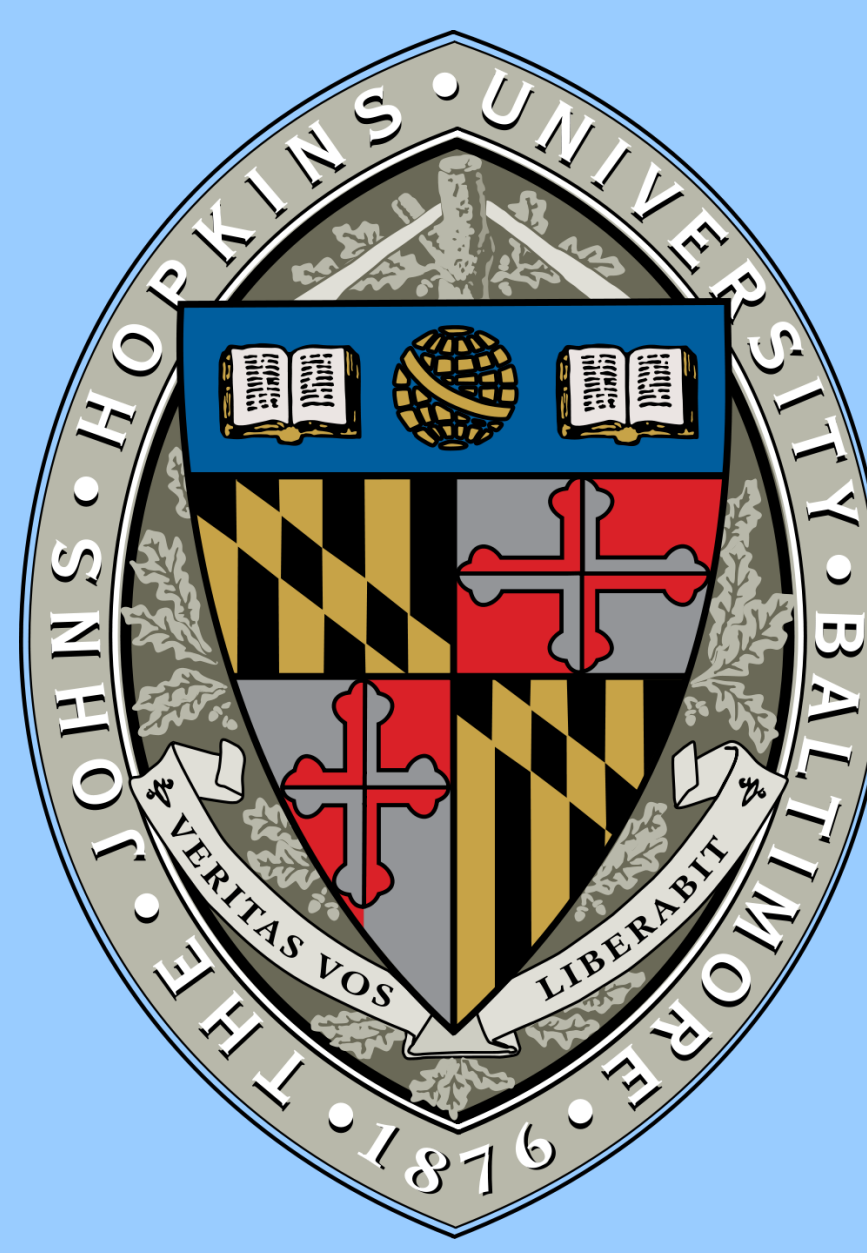


# Implementation of a Difficult Access Team in the Emergency Department

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## 1 Background

- Intravenous cannulation is one of the most common procedures performed in Emergency Departments (EDs) across the United States.
- Successful peripheral 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 the Johns Hopkins Hospital's Adult ED, it takes staff three times longer to establish IV access or to get a blood sample on DVA patients.
- 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.
- As a result, our team decided to establish a DVA or Access in Minutes (AiM) team in the Adult ED.

## 2 Methods

- Quasi-experimental pre/post study
  - Setting: 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
- Baseline data gathered via chart audits of staff-identified DVA patients
- AiM team implemented from 11:00am to 3:00am Monday-Sunday
  - Team Member Selection: Selected using peer and self-nomination
- Post-implementation data continuously recorded by AiM techs on patients referred to them by the primary clinical tech or nurse
- Quantitative analysis was performed using Excel and SPSS®
  - Data points include lab-order-to-draw times, patient characteristics and the number of IV attempts

**Hypothesis:** Will the implementation of an Access in Minutes (AiM) team reduce the order to completion time on difficult access patients as compared to our current practice?

**Practice:** Any staff member (e.g. Tech/Nurse) can make 2 attempts at phlebotomy/IV cannulation, then should call the AiM tech.

## 3 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

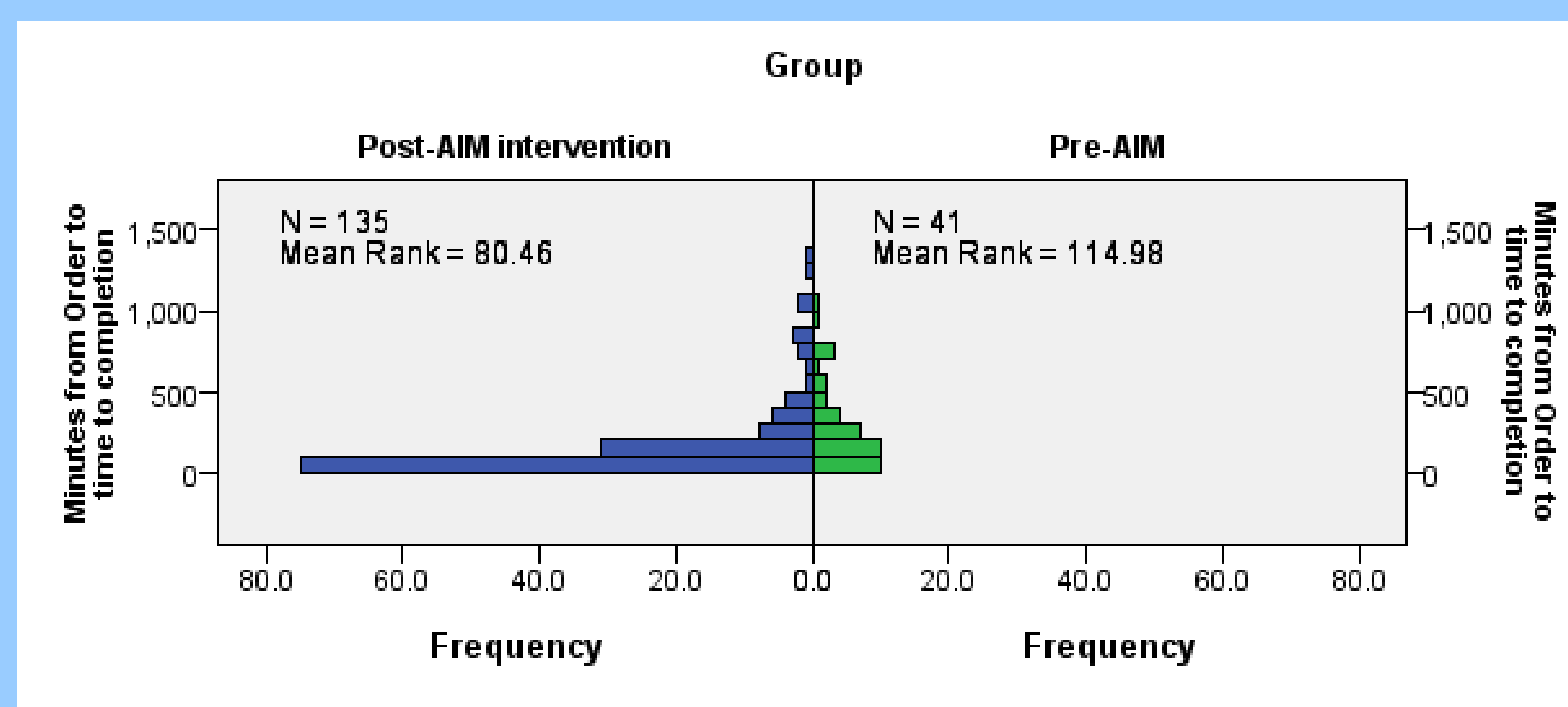


Figure 2: Independent Mann-Whitney U Test

There was evidence of difference in distribution of time from order to access completion (in total minutes) between the pre-AiM group and the post-AiM group ( $U=3,853.00$ ,  $p < 0.0001$ ) with longer order to access completion times with the Pre-AiM group than the Post-AiM group.

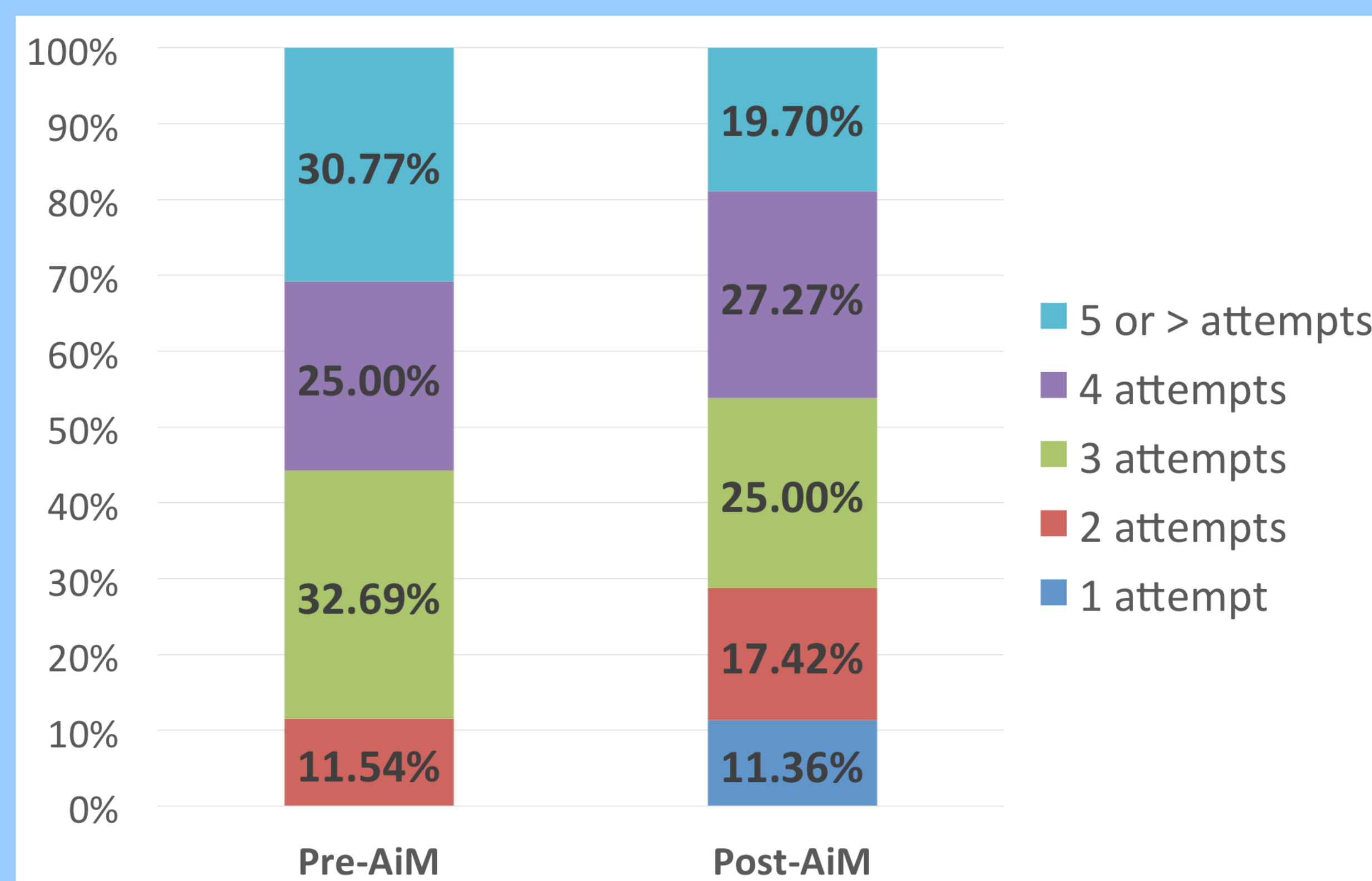


Figure 3: Distribution of # of IV Attempts for DVA Patients

Implementation of the AiM team decreased the number of patients who required five or more attempts by 10%, and increased the percentage of patients requiring 3 (or fewer) attempts by 10%, with more than 28% requiring two or fewer attempts.

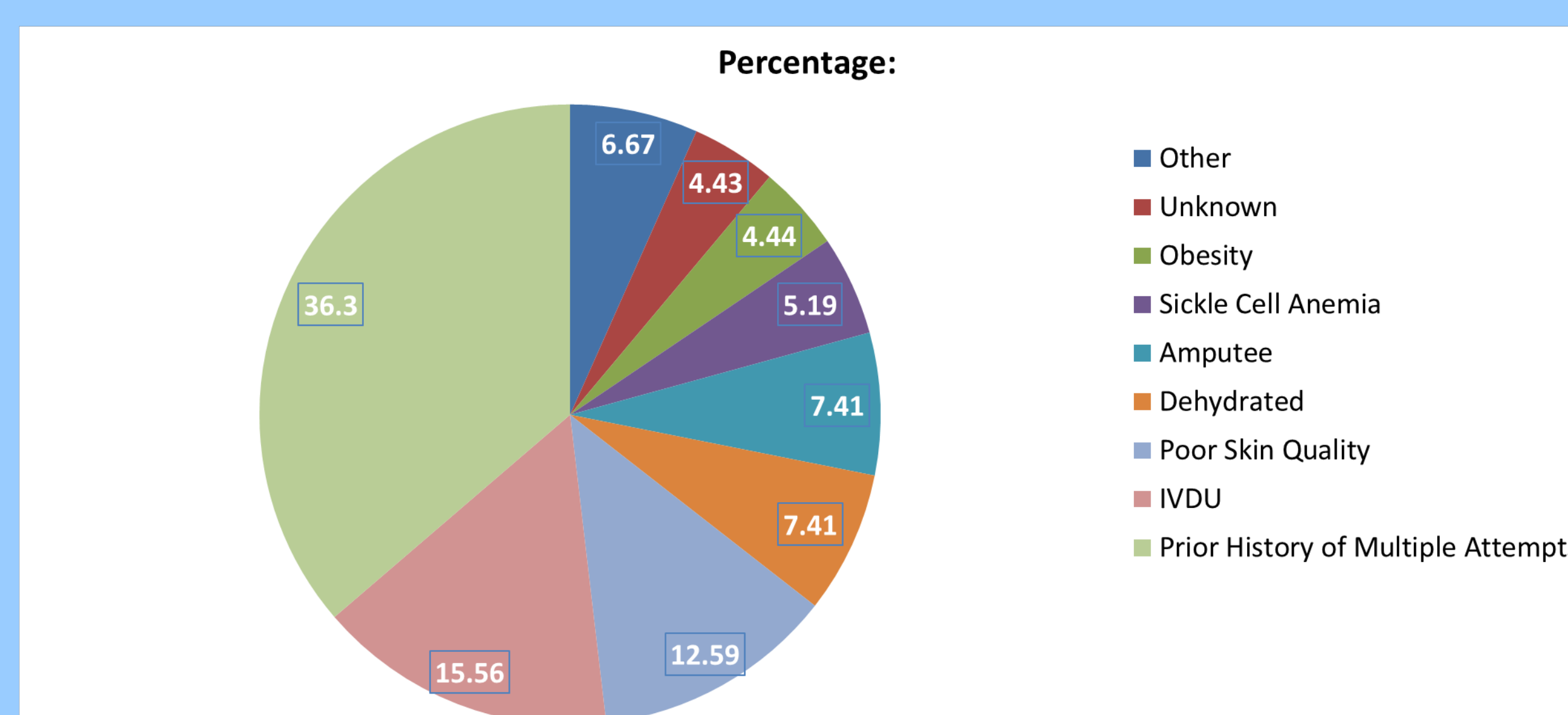


Figure 4: Reasons why Patients were Considered to be DVA

Over one-third of patients were classified by the AiM team to be difficult IV access due to prior history of multiple attempts. This includes people with multiple prior visits to the ED or other facilities, self-identified patients, multiple attempts by other staff before AiM 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.

## 4 Conclusions

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

## 5 Future Directions

- The team plans to develop a predictive scale for DVA patients.
- This tool can be used earlier in the ED experience to identify DVA patients and further reduce the number of phlebotomy or cannulation attempts, as well as to further reduce the order to lab draw times for DVA patients.
- Reducing the number of "sticks," and the length of time it takes to get lab results should increase both patient safety and satisfaction.

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