

Introduction

- Intravenous (IV) cannulation is an enhanced paramedic skill required for the administration of IV medications and fluids in the prehospital setting
- Despite this, IV proficiency is variable among providers and the factors contributing to IV success have yet to be defined

Objectives

- To determine paramedic factors associated with successful IV cannulation in the pre-hospital environment
- The intent was to develop training parameters that could be used for a paramedic IV proficiency

Methods

- This was a retrospective review of data gathered from 6 emergency medical services (Bruce, Essex, Grey, Middlesex-London, Lambton, and Perth Counties) from the Southwest Ontario Regional Base Hospital Program from April 2011 to March 2012
- Paramedics not certified in IV cannulation and those who attempted less than 3 IV cannulations were excluded
- IV success was defined as successfully catheterizing a patient's vein in 75% of the attempts made over the study period
- Backwards stepwise multivariable logistic regression models determined predictor variables independently associated with successful IV cannulation in the pre-hospital setting

Results

Table 1: Paramedic characteristics included in the multivariable regression model

Paramedic Variables	
Advanced care paramedics (ACP)	n = 85 (24.1%)
Full time	n = 271 (76.8%)
Years since IV certification	Mean = 3 years
IV attempts	Mean = 36 attempts
Error rate	No errors reported n = 86 (24.3%) 1 error reported n = 27 (7.6%) 2 or more errors n = 240 (67.9%)
Location of call	Exclusively Rural n = 29 (8%) Exclusively Urban n = 80 (22.6%)
Proportion (>20% of calls) of high acuity	n = 61 (17.2%)
Proportion (>40%) of patients ≥ 75 years old	n = 298 (84%)

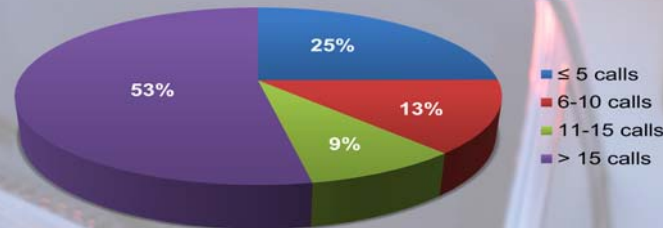


Figure 1: The number of calls completed by paramedics over a 12 month period

- 353 paramedics performed a total of 12,728 IV attempts over the 1-year study period
- 85 (24.1%) were advanced care paramedics (ACPs) and 271 (76.8%) were full time employees
- Paramedic training level, years since IV certification, call volume, error rate, number of IV attempts, proportion of high acuity calls, proportion of older patient (≥ 75 years) calls, and the proportion of calls in an urban setting were variables included in the adjusted model

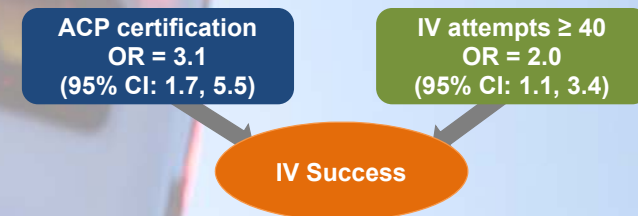


Figure 2: ACP certification and IV attempts ≥ 40 were independently associated with IV success

Conclusions

- Two factors were independently associated with successful IV placement: ACP certification and IV attempts ≥ 40
- These factors should be considered when developing training benchmarks for skill development and maintenance