

The Utility of the Prehospital ECG in the Emergency Department

M. Davis^{1,2}, A. Dukelow^{1,2}, M. Lewell^{1,2}, S. McLeod¹, S. Rodriguez²

¹Southwest Ontario Regional Base Hospital Program, London Health Sciences Centre, London, Canada ²Division of Emergency Medicine, Faculty of Medicine, The University of Western Ontario, London, Canada



Introduction

- Prehospital 12 lead electrocardiogram (pECG) acquisition is becoming an important component of the paramedic scope of practice in Ontario
- Valuable information can be captured with a pECG prior to any pre-hospital treatments
- By the time patients are assessed by an emergency department (ED) physician, symptoms may have resolved
- As a result, the initial ED electrocardiogram (ECG) may be normal

Objectives

Primary Objective

 To determine if the pECG can potentially influence the ED management of patients not experiencing a STEMI

Secondary Objective

 To determine how many pECGs are available and/or reviewed by the ED physician

Methods

- A medical record review was conducted for a random sample of 110 patients ≥ 18 years of age who had a pECG between November 1, 2008 and September 31, 2009
- Exclusion criteria: STEMI, VSA
- Prehospital ECGs were independently reviewed by 3 investigators trained in ECG interpretation
- Prehospital ECGs were compared to their first ED ECG to determine if there were any clinically significant abnormalities not present in the ED ECG
- If there were clinically significant ECG abnormalities present on the pECG and not on the ED ECG, reviewers determined if it had the potential to change their management
- Inter-rater agreement measured using Cohen's Kappa statistic

Results

2203 pECGs performed between Nov 1st 2008 and Oct 31st 2009

115 charts randomly selected

5 charts excluded:

1 STEMI

1 Cardiac Arrest

3 ACRs missing

110 charts included in analysis

47/110 (43.7%) did not have pECG in chart

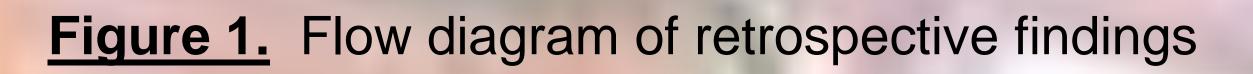
63 pECGs reviewed 17 (27%) were of poor quality k = 1.00

16/63 (25.4%) showed clinically significant abnormalities not present on the initial ED ECG k = 0.83; 95% CI 0.74-0.93

12/16 (19%) pECGs would influence ED management k = 0.76; 95% CI 0.72-0.82

10/12 discharged home
(1 admitted to cardiology within 8 days of ED discharge)

2/12 admitted to hospital



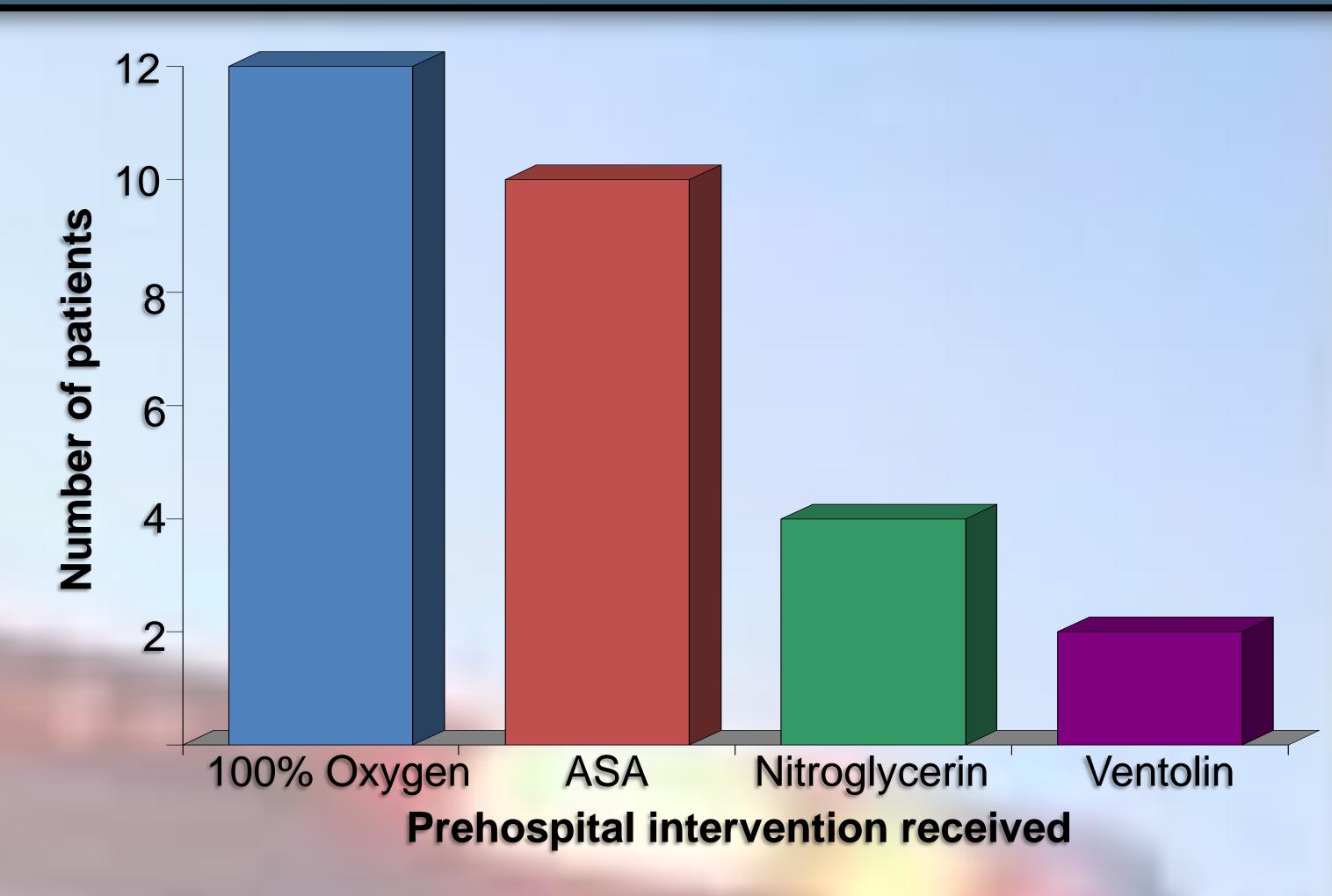


Figure 2. Prehospital interventions received for the 12 patients whose pre-hospital ECG had the potential to influence ED management

Limitations

- Prehospital ECGs may be reviewed by ED physicians and influencing management, but not documented
- Mechanistic approach to "influencing" management

Future Directions

- Develop a system to ensure the pECG makes it to the bedside and becomes part of permanent patient chart
- Prospective, quality assurance study to look at utility of the pECG

Conclusions

- Prehospital ECGs have the potential to influence ED management
- Improvement in paramedic and ED physician documentation can be made