

Research Perspective on Controversies In Prehospital Care

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Introduction

- **What is Research?**
- **Why Do Research?**
- **Research In Prehospital Care**
- **Examples of Controversies in Prehospital Care**
- **Review of Relevant Research**



Why Do Research?

- Determine what is possible
- Determine what is necessary
- Determine what is best practice
- Support expanding scope of practice
- Debunk myths



Research In Prehospital Care



1973 - 2000



1974 -



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Types of Research

- **Case Reports**
- **Retrospective Review**
- **Prospective Review**
 - **Randomized**
 - **Blinded, Double-blinded**
- **Review**
- **Meta-analysis**



Controversies in Prehospital Care

- **Airway Management in Brain Injured Patients**
- **Prehospital Acquisition and Interpretation ECG for STEMI**



Intubation in Brain Injury Background

Out of Hospital Endotracheal Intubation and Outcome After Traumatic Brain Injury

- Wang HE, Peitzman AB, et al
- University of Pittsburgh

Annals of Emergency Medicine
November 2004



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Intubation in Brain Injury Background

- **Controversy about effect of out-of-hospital intubation in traumatic brain injury**
 - Improved survival vs. worse survival
- **Role of RSI in prehospital setting vs. “conservative” management**



Intubation in Brain Injury Research

- Different approaches to performing research in the pre-hospital setting
- Retrospective
- Prospective
- Randomized



Intubation in Brain Injury Methods

- Retrospective analysis
- Pennsylvania Trauma Outcome Study



Intubation in Brain Injury Inclusion

- Age \geq 18
- January 2000 – December 2002
- Abbreviated Injury Scale >3
 - “serious”, “severe”, “critical”, “unsurvivable”
- Transported by ALS
- Intubated by EMS or in ED



Intubation in Brain Injury

Outcome Measures

- **Mortality**
- **Neurologic Outcome**
 - Inferred from discharge diagnosis
- **Functional Outcome**
 - Feeding, locomotion, expression, transfer mobility, social interaction

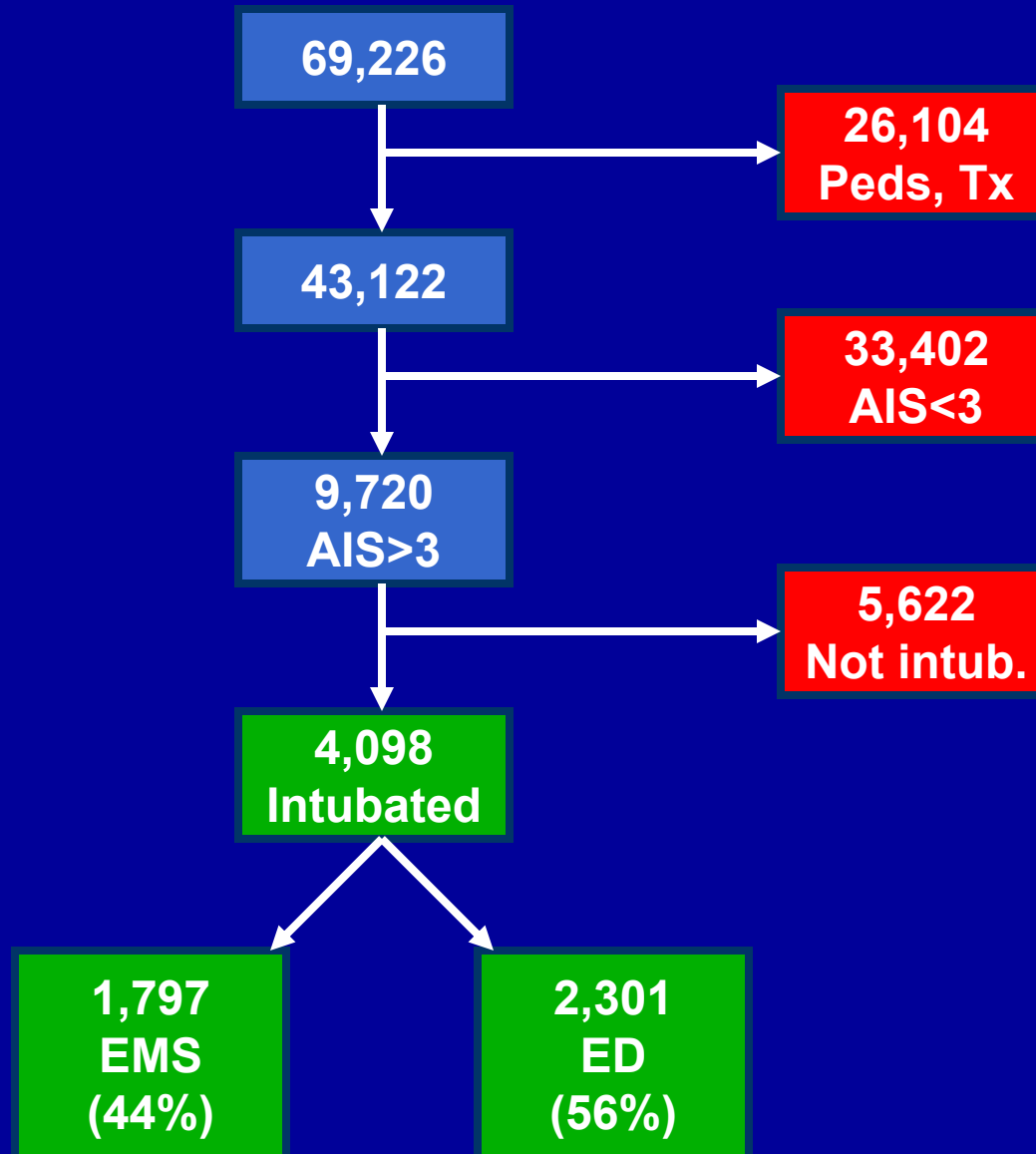


Intubation in Brain Injury

Data Analysis

- **Covariates to adjust for severity of clinical presentation**
 - Age, gender
 - Head/neck AIS, Injury Severity Score
 - Admission systolic blood pressure
 - Mechanism of injury
 - Mode of transport
 - +/- neuromuscular blocking agent
 - Propensity score





Intubation in Brain Injury Results

- Overall unadjusted mortality 37%
- Prehospital Group
 - Slightly younger
 - Slightly lower SBP
 - More severely injured



Intubation in Brain Injury

Results

- “Out-of-hospital endotracheal intubation patients had a more than three-fold odds of mortality after adjustment for the potential confounders (OR 3.99, 95% CI 3.21 - 4.93)”
- Increased odds of poor neurologic outcome (OR 1.61)
- Increased odds of moderate or severe functional impairment (OR 1.92)



Intubation in Brain Injury

Conclusion

“Out-of-hospital endotracheal intubation was associated with adverse outcomes after severe traumatic brain injury. The implications for current clinical care remain undefined.”



Intubation in Brain Injury

Discussion

- Regression and adjusting for confounders
- Why worse outcomes?
- What next?



Prehospital ECG for STEMI Background

Reduction in treatment delay by
paramedic ECG diagnosis of
myocardial infarction with direct
CCU admission

- Millar-Craig MW, Joy AV et al
- Derbyshire Royal Infirmary NHS Trust, Derby, England

Heart

November 1997

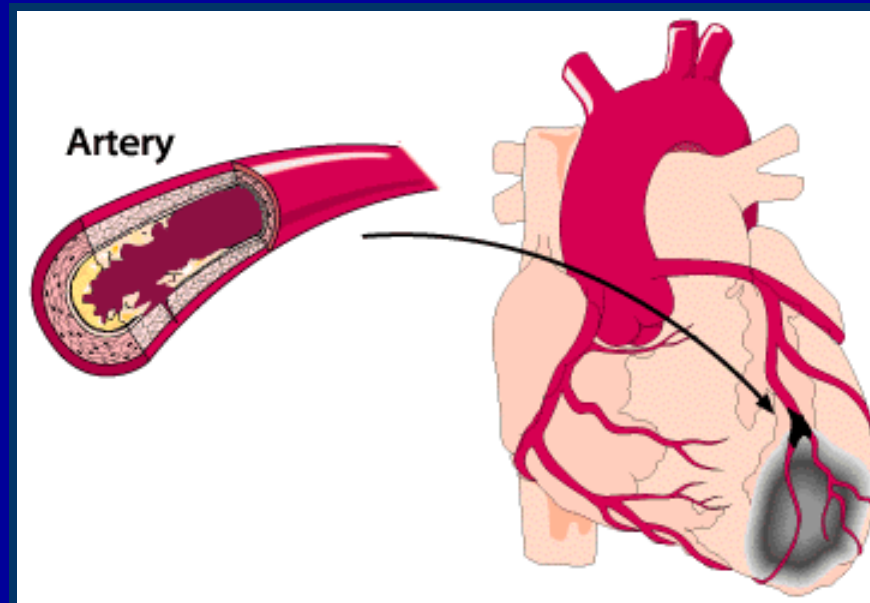


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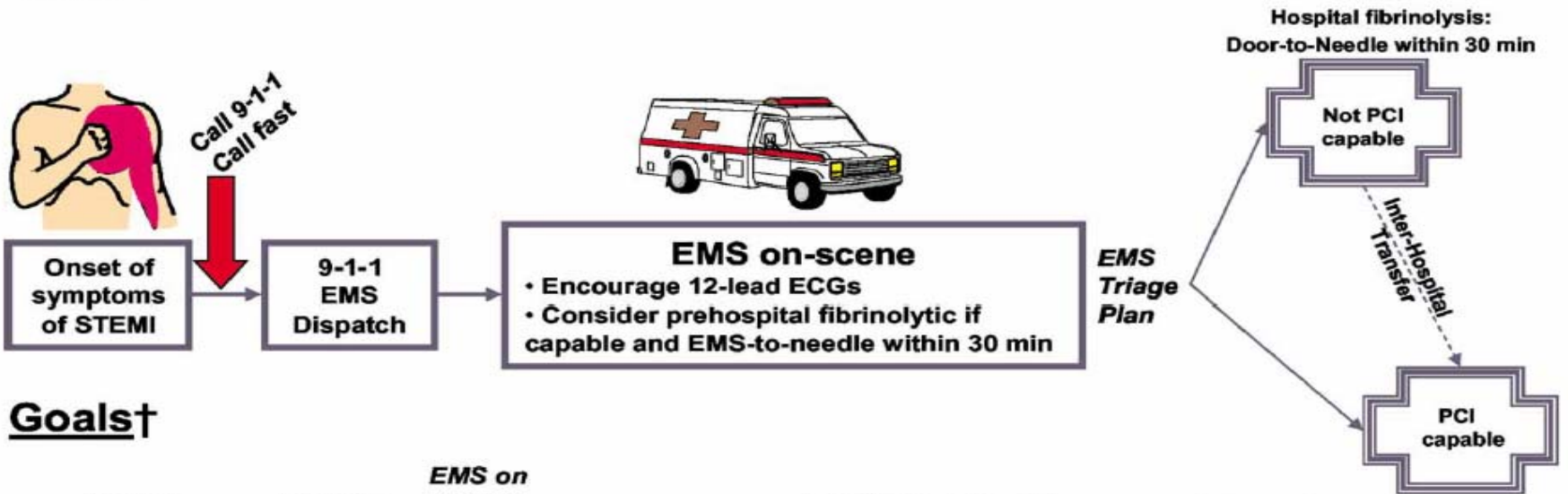
Prehospital ECG for STEMI Background

- Thrombolysis or PCI has proven benefit
- Benefit is time- dependent

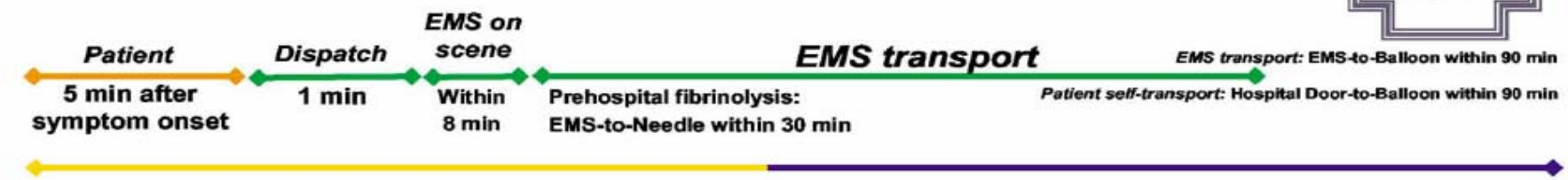


Prehospital ECG for STEMI Background

Panel A



Goals†



Total ischemic time: Within 120 min*

*Golden Hour = First 60 minutes

ACC/AHA STEMI Guidelines 2004—Executive Summary
Journal of American Cardiology 2004; 44(3): 676

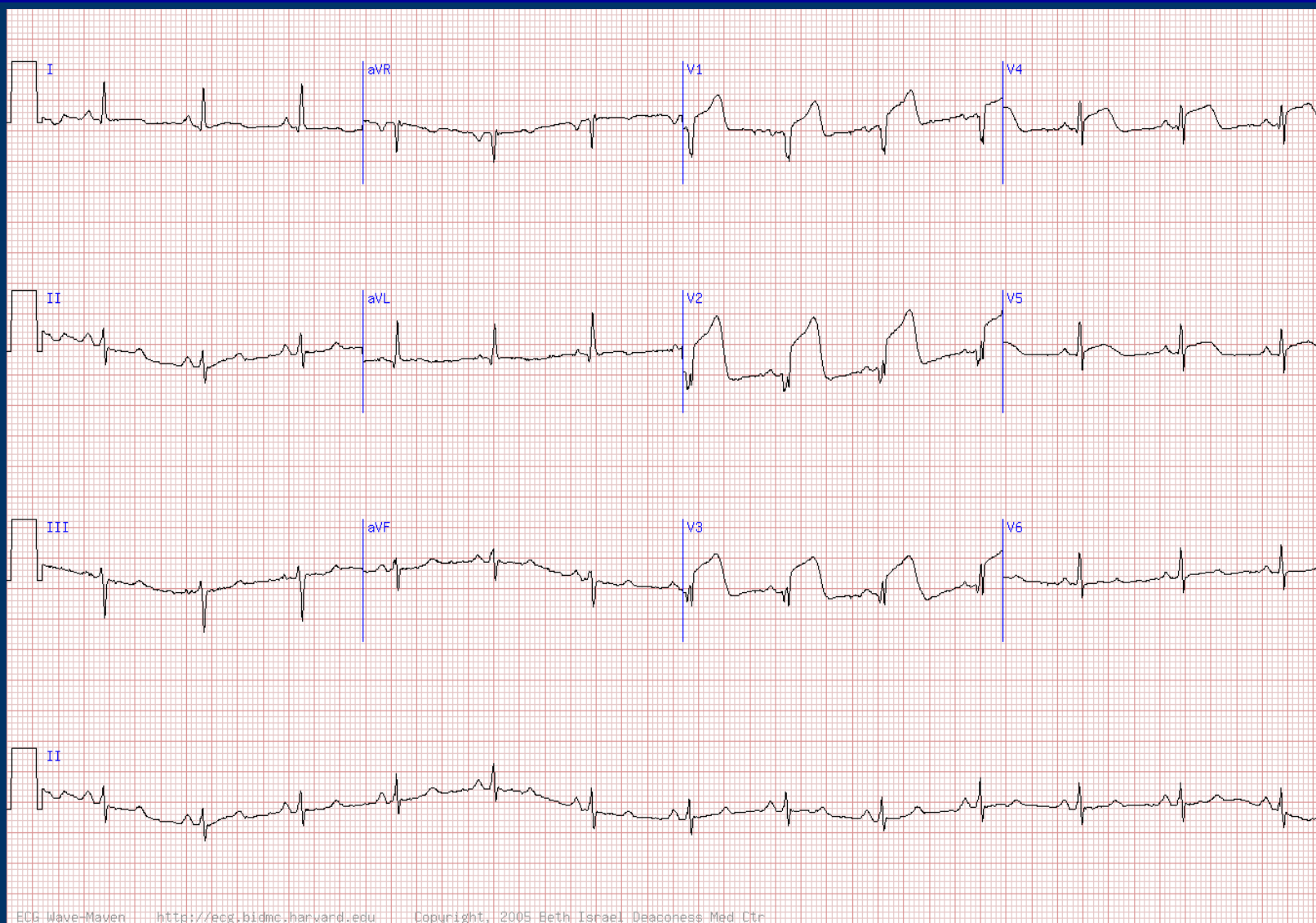


Prehospital ECG for STEMI

Methods/Inclusion

- ALS providers given instruction in ECG acquisition and interpretation
- Phased implementation
- All patients with suspected MI
- Direct admission to CCU for suspected STEMI at the discretion of the paramedic

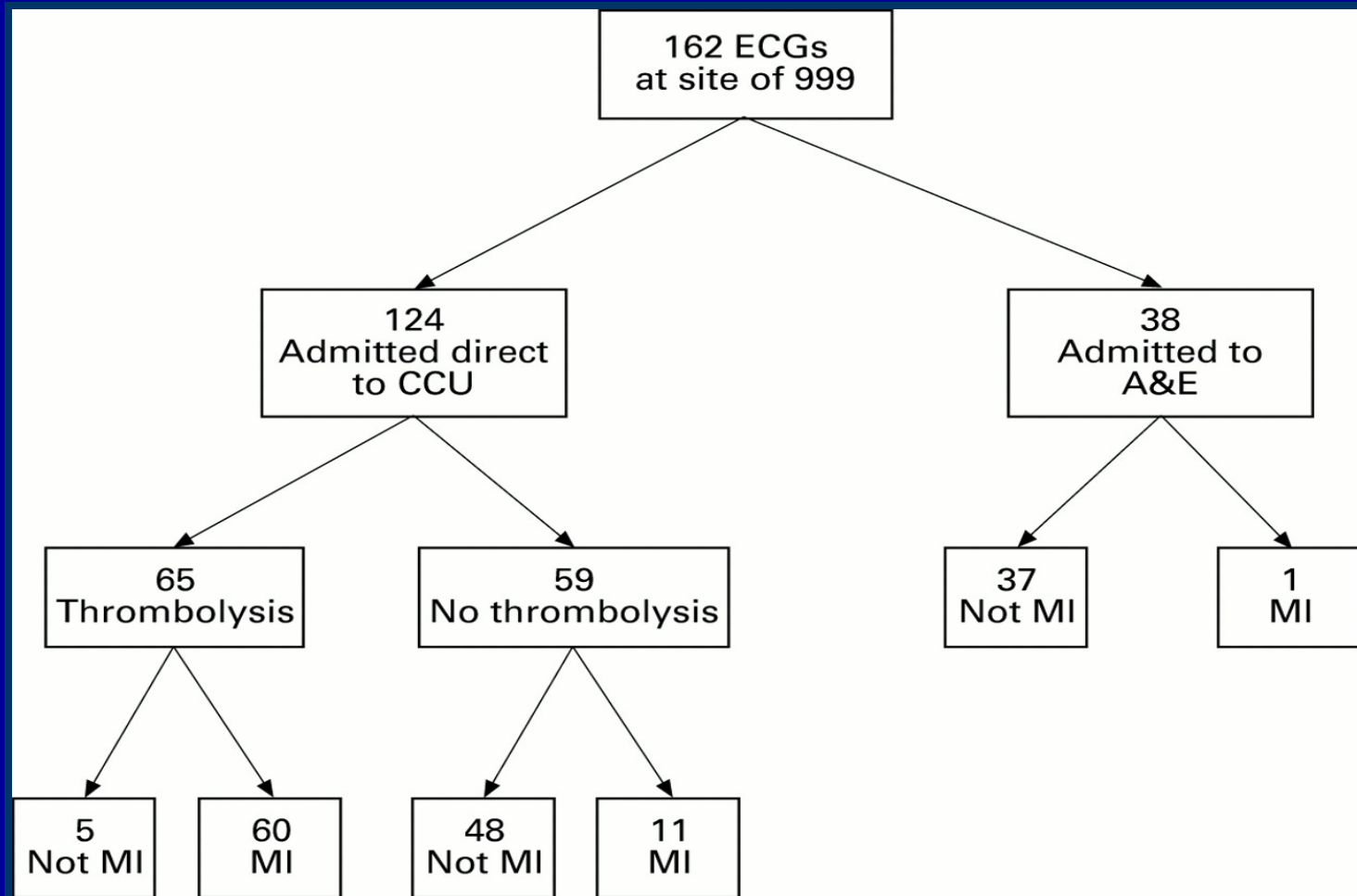




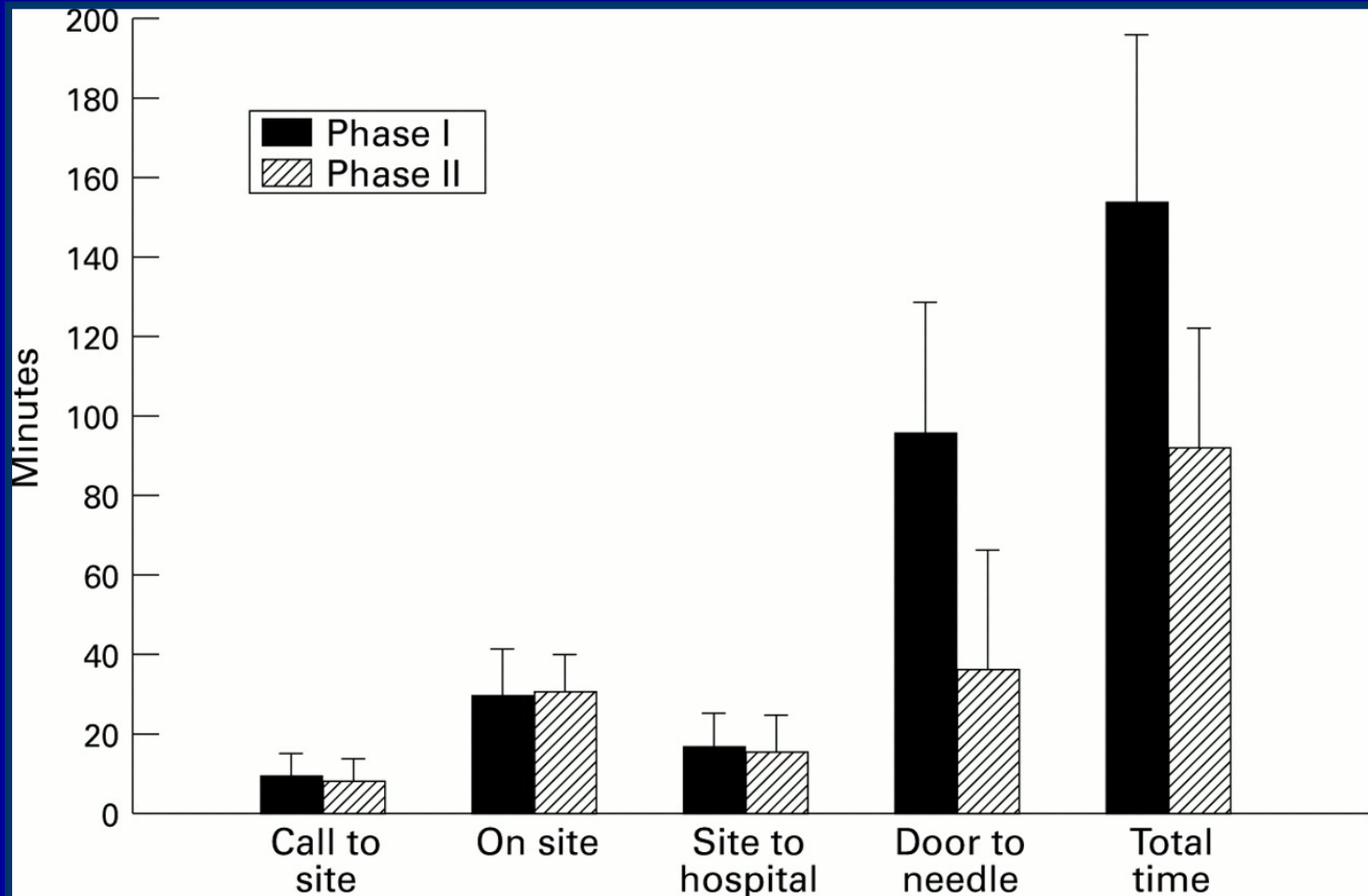
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Prehospital ECG for STEMI Results



Prehospital ECG for STEMI Results



Prehospital ECG for STEMI

Conclusion

“Interval duration between a patient calling the emergency services and subsequently receiving thrombolytic treatment after ECG confirmation of myocardial infarction may be reduced by the provision of a specially trained paramedic service.”



Prehospital ECG for STEMI

Discussion

- What next?
- Prehospital thrombolytics?
- “STEMI Code” initiated by EMS?



References

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