

Eagles 2007

Focused Quality in EMS

The Five Required Actions

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Prior Major Quality and EMS Practice Concerns

- Valium vs. Ativan in Seizures
- 6 mg vs. 12 mg of Adenosine for PSVT
- Diltizem or not in Afib with RVR
- Amiodarone or Lidocaine in VF
- Morphine or Fentanyl for Pain

Help the most people with
therapies and medications
proven to make a difference

Mastering Emergency Medicine

- Secure the ABC's
 - Consider or give NGT
 - Five Causes
 - Five Steps
 - Five Reasons
- for almost everything

Five Required Actions

Unless limited by scope of practice, any exceptions must be discussed and approved by Medical Control and documented.

Corey M. Slovis, M.D.
Medical Director

Deputy Chief EMS
Steve Meador

Deputy Chief Supression
Buddy Curran

Five Required Actions

All patients with chest pain, shortness of breath or altered mental status should be placed on **oxygen** and have a complete set of **vital signs documented**.

Five Required Actions

All patients with altered mental status
and/or signs of stroke should have a
blood glucose estimation

Five Required Actions

All adult patients with non-traumatic chest pain should receive

324 mgs of aspirin

Five Required Actions

All adult patients with chest pain, shortness of breath, syncope or near syncope, a heart rate less than 50 or greater than 120 and/or an irregular pulse, should be placed on an ECG monitor

Five Required Actions

All adult patients with the acute onset of non-traumatic chest pain should have a **12 lead ECG performed** unless 5 minutes or less from receiving hospital

Aspirin in AMI

Lancet Aug. 13, 1988

RANDOMISED TRIAL OF INTRAVENOUS STREPTOKINASE, ORAL ASPIRIN, BOTH, OR NEITHER AMONG 17 187 CASES OF SUSPECTED ACUTE MYOCARDIAL INFARCTION: ISIS-2

ISIS-2 (SECOND INTERNATIONAL STUDY OF INFARCT SURVIVAL) COLLABORATIVE GROUP*

Summary 17 187 patients entering 417 hospitals up to 24 hours (median 5 hours) after the onset of

0.2%) and of confirmed cerebral haemorrhage (0.1% vs 0.0%), but with fewer other strokes (0.6% vs 0.8%). These "other" strokes may have included a few undiagnosed cerebral haemorrhages, but still there was no increase in total strokes (0.7% streptokinase vs 0.8% placebo infusion). Aspirin significantly reduced non-fatal reinfarction (1.0% vs 2.0%) and non-fatal stroke (0.3% vs 0.6%), and was not associated with any significant increase in cerebral haemorrhage or in bleeds requiring transfusion. An excess of non-fatal reinfarction was reported when streptokinase was used alone, but this appeared to be entirely avoided by

Circulation 2000;102:1193-1209

ACC/AHA Practice Guidelines

ACC/AHA Guidelines for the Management of Patients With Unstable Angina and Non-ST-Segment Elevation Myocardial Infarction: Executive Summary and Recommendations

A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on the Management of Patients With Unstable Angina)

J Am Coll Cardiol 1992;19:671-677

Effects of Aspirin on Coronary Reocclusion and Recurrent Ischemia After Thrombolysis: A Meta-Analysis

SÉBASTIEN ROUX, MD, SILVIO CRISTELLER, ERIC LÜDIN, PhD

Basel, Switzerland

Reocclusion of infarct-related coronary arteries within 2 weeks of thrombolytic therapy varies from 5% to 45% and neither clinical nor angiographic variables have been proved to be predictive of reocclusion. The goal of the present study was to evaluate whether

treated with aspirin was 11% compared with 25% in 513 patients without aspirin therapy ($p < 0.001$). Recurrent ischemic events were present in 25% of 2,977 patients treated with aspirin and 41% of 721 patients treated without aspirin ($p < 0.001$). The effect

Aspirin in AMI and ACS

- Aspirin 165-325 mg is ACC-AHA Class I
- Decreases short-term mortality in AMI by 23%
- Decrease post-AMI events by almost 50%
- Only contraindication is allergy

How Important Is A Pre-hospital 12 Lead?

SPECIAL CONTRIBUTIONS

Prehospital 12-lead Electrocardiography Impact on Acute Myocardial Infarction Treatment Times and Mortality: A Systematic Review

Laurie J. Morrison, MD, FRCPC, MSc, Steven Brooks, MD, Bruce Sawadsky, MD, CCFP-EM, Andrew McDonald, MD, FRCPC, MHSc, P. Richard Verbeek, MD, FRCPC

Abstract

Objectives: Prehospital 12-lead electrocardiogram (PHECG) interpretation and advance emergency department (ED) notification may improve time-to-treatment intervals for a variety of treatment strategies to improve outcome in acute myocardial infarction. Despite consensus guidelines recommending this intervention, few emergency medical services (EMS) employ this. The authors systematically reviewed the literature to report whether mortality or treatment time intervals improved when compared with

- 5 Studies evaluated (done 1990-1997)
- Prehospital ECGs added only 1.19 minutes
- Only one study looked at mortality
- Door to Needle Time ↓ by up to 36.1 minutes
 - (22-48 minutes vs. 50-97 minutes)
- Prehospital ECGs ↓ mortality by
 - (8.4% vs. 15.6%; p = NS)

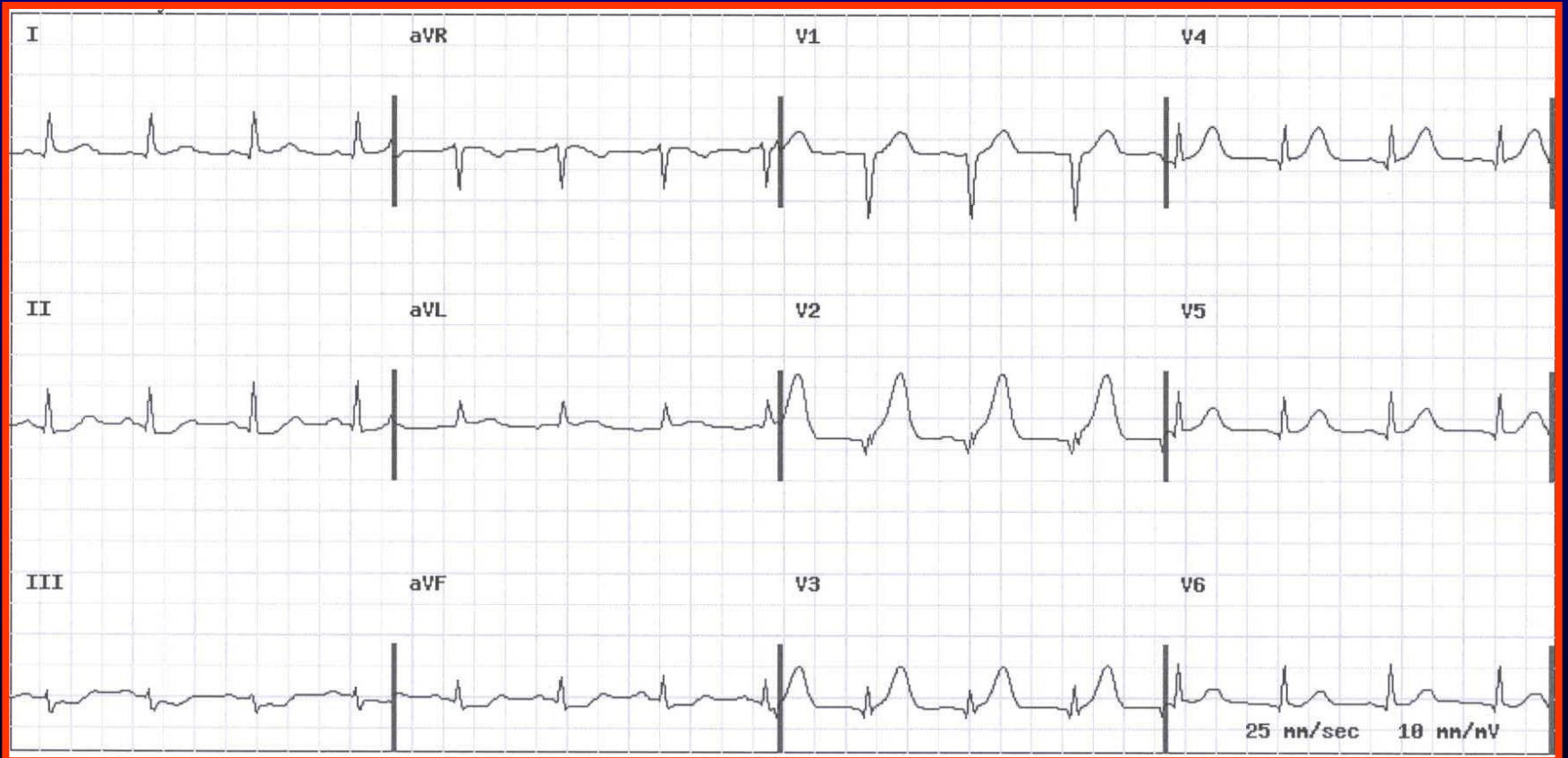
Pre-Hospital Synthesized 12-Lead ECG Ischemia Monitoring With Trans- Telephonic Transmission in Acute Coronary Syndromes

Pilot Study Results of the *ST SMART* Trial

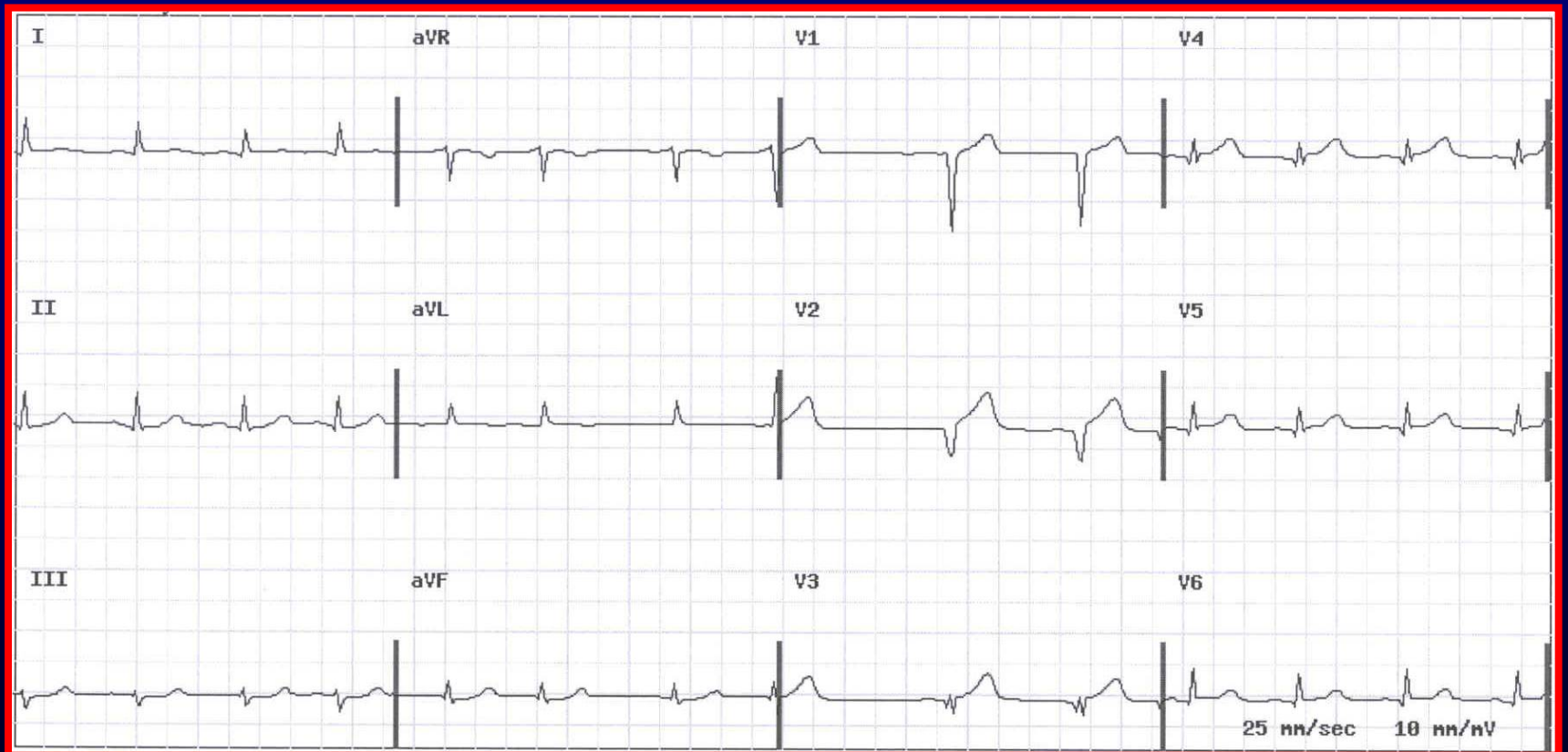
- Prehospital 12 leads sent to hospital via telephone in 192 pts.
- Also used continuous ST trend monitors via Lifepak 12
- Increased on scene time by 1.84 minutes
- **26% of patients had ischemia by ECG in the field that was not present on arrival to the ED**

One ECG Begets Another

Are These Hyper-Acute T Waves?



Evolutionary Change 1 vs. Change 2



SPECIAL ARTICLE

Strategies for Reducing the Door-to-Balloon Time in Acute Myocardial Infarction

Elizabeth H. Bradley, Ph.D., Jeph Herrin, Ph.D., Yongfei Wang, M.S.,
Barbara A. Barton, R.N., Tashonna R. Webster, M.P.H., Jennifer A. Mattera, M.P.H.,
Sarah A. Roumanis, R.N., Jephtha P. Curtis, M.D., Brahmajee K. Nallamothu, M.D.,
David J. Magid, M.D., M.P.H., Robert L. McNamara, M.D., M.H.S.,
Janet Parkosewich, R.N., M.S.N., Jerod M. Loeb, Ph.D., and Harlan M. Krumholz, M.D.

6 Strategies Significantly Reduced Door to Balloon Time

- EM MDs activating Cath Lab
- Single call for activation
- Attending Cardiologist in-House
- Cath Lab ready within 20 minutes
- Real time feedback
- EMS 12 leads ECGs for pre-arrival activation

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EMS 12 Leads Allowing Activation

- Rarely Causes False Alarms
- Saves at least 15.4 minutes
- Is second best suggested practice improvement

Can Highly Trained Paramedics Read 12 Lead ECGs Accurately?

Am J Emerg Med 2005;23:443-448

Real-time paramedic compared with blinded physician identification of ST-segment elevation myocardial infarction: results of an observational study[☆]

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^b*Department of Cardiology, Boston Medical Center, Boston University School of Medicine, Boston, MA 02118, USA*

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ACCURACY

Paramedic

94%

ER MD

93%

Cardiologist

95%

PREHOSPITAL 12-LEAD ECG: EFFICACY OR EFFECTIVENESS?

Robert Swor, DO, Stacey Hegerberg, RN, Ann McHugh-McNally, Mark Goldstein, RN, EMT-P,
Christine C. McEachin, RN, EMT-P

ABSTRACT

Introduction. Previous literature has documented that pre-hospital 12-lead electrocardiography (ECG) decreases the time to reperfusion in patients with an acute ST-segment elevation myocardial infarction (STEMI). **Objective.** To compare time to ECG, time to angioplasty suite (laboratory), and time to reperfusion in emergency medical services (EMS)

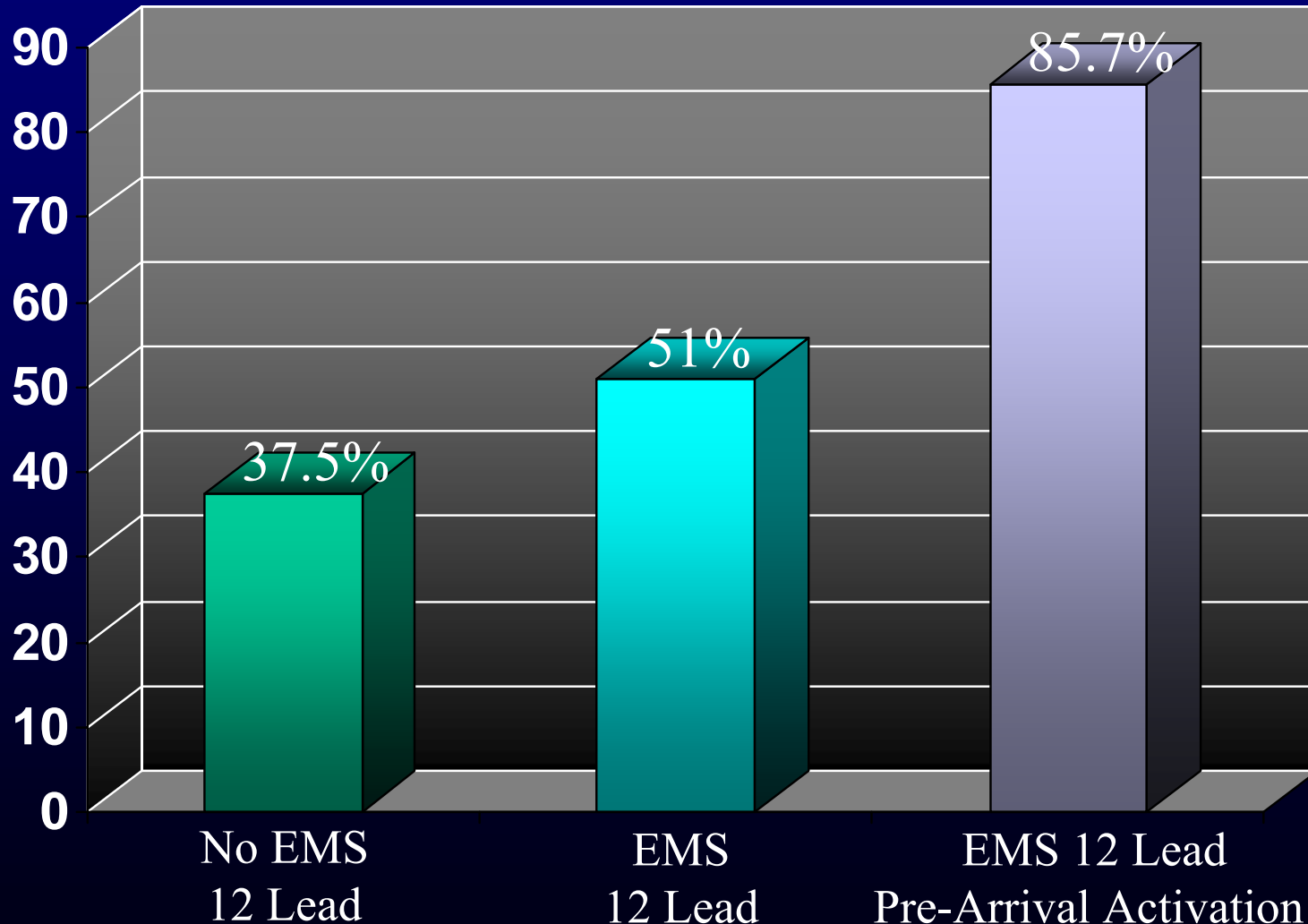
those who received EMS transport alone. **Conclusions.** A minority of patients with EMS ECGs had prearrival AMI team activation. EMS ECGs combined with systems that activate hospital resources, but not EMS ECGs alone, decrease time to laboratory and reperfusion. **Key words:** emergency medical services; acute myocardial infarction; reperfusion; ECG.

PREHOSPITAL EMERGENCY CARE 2006;10:374-377

- 164 STEMIs transported by EMS
- 56.7% had Prehospital 12 leads
- 31/164 had ACS Team Activation pre-arrival

Door to Balloon Time < 90 min.

Prehosp Emerg Care 2006;10:374-377



Feasibility and benefit of prehospital diagnosis, triage, and therapy by paramedics only in patients who are candidates for primary angioplasty for acute myocardial infarction

Arnoud W.J. van 't Hof, MD, PhD, Saman Rasoul, MD, Henri van de Wetering, Ma-ANP, Nicolette Ernst, MD, PhD, Harry Suryapranata, MD, PhD, Jan C.A. Hoorntje, MD, PhD, Jan-Henk E. Dambrink, MD, PhD, Marcel Gosselink, MD, PhD, Felix Zijlstra, MD, PhD, Jan Paul Ottervanger, MD, PhD, and Menko-Jan de Boer, MD, PhD, on behalf of the On-TIME study group^a *The Netherlands*

- EMS triage vs. in ED group
- EMS correct 95% vs. 99% for ED MDs
- 59% EMS pts. Rx < 90 min. vs. 43% in ED (p < 0.01)
- Significantly better EF if EMS did triage
- EMS Triage of STEMI pts. better than triage inside ED

Coronary Heart Disease

Implementation of Guidelines Improves the Standard of Care

The Viennese Registry on Reperfusion Strategies in ST-Elevation Myocardial Infarction (Vienna STEMI Registry)

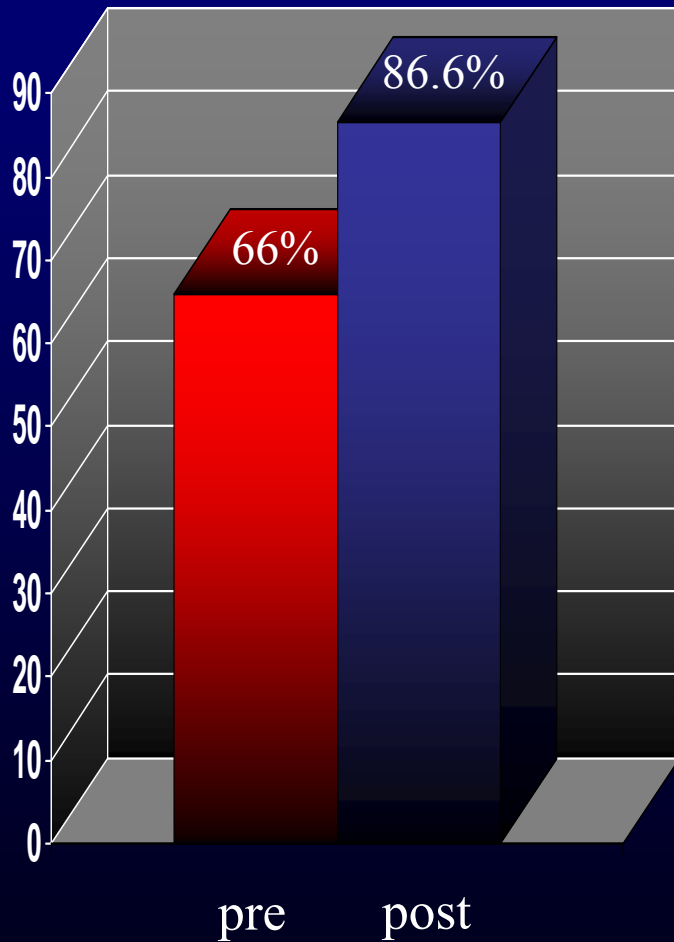
Karim Kalla, MD; Günter Christ, MD; Ronald Karnik, MD; Reinhard Malzer, MD; Georg Norman, MD; Herbert Prachar, MD; Wolfgang Schreiber, MD; Gerhard Unger, MD; Helmut D. Glogar, MD; Alfred Kaff, MD; Anton N. Laggner, MD; Gerald Maurer, MD; Johannes Mlczoch, MD; Joerg Slany, MD; Heinrich S. Weber, MD; Kurt Huber, MD; for the Vienna STEMI Registry Group

- EMS coordinated with 5 Heart Hospitals
- Rotated 24 hr PCI availability
- Evaluated frequency of PCI and Lytics
- Evaluated Mortality

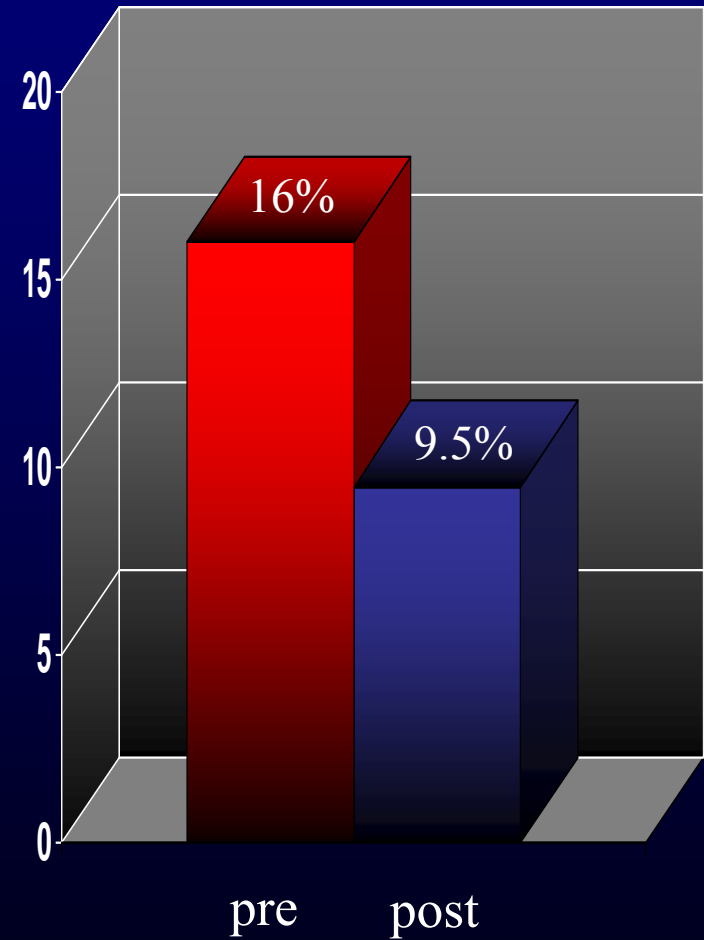
Heart Hospitals

Circulation 2006;113:2398-2405

Reperfusion Therapy



Mortality



The Prehospital 12-Lead Electrocardiogram: Impact on Management of the Out-of-Hospital Acute Coronary Syndrome Patient

JEFFREY D. FERGUSON, EMT-ST,*† WILLIAM J. BRADY, MD,*†
ANDREW D. PERRON, MD,* NICOLE D. KIELAR, NREMT-P,*† JOHN P. BENNER, EMT,†
SCOTT B. CURRANCE, EMT,† SABINA BRAITHWAITE, MD,*
AND TOM P. AUFDERHEIDE, MD‡

There is no reason not to do Prehospital 12 Leads

Prehospital ECG's

- Adds only 1-2 minutes to in-field time
- ECGs High quality equal to hospitals
- Increases early diagnosis of AMI by about 25%
- Make the paramedic a truly essential part of ACS team

Editorial

Reperfusion Therapy Starts in the Ambulance

Freek W.A. Verheugt, MD

Reperfusion therapy for ST-elevation acute coronary syndromes aims at early and complete recanalization of the infarct-related artery in order to salvage myocardium and improve both early and late clinical outcomes. The benefit rises exponentially the earlier therapy is initiated. The highest number of lives saved is within the first hour after symptom onset: the “golden hour.” The exponential form of

and/or glycoprotein IIB/IIIa antagonists.⁷ Finally, the ambulance is the almost ideal place for triage for primary coronary angioplasty for ST-elevation acute myocardial infarction. Prehospital diagnosis followed by direct transfer to a hospital with percutaneous coronary intervention (PCI) facilities reduces time-to-treatment with at least 1 hour in Denmark.⁸ This may also be attractive in the United States, where nearly

- EMS must be STEMI ready
- Rapid response to CP patients
- O₂, ASA, NTG, 12 Lead ECG, Prehospital Alert
- Rapid Transport to Heart Hospital
- Re-evaluate: Pre-hospital lytics, Beta Blockers, Plavix

ALL High Quality EMS Systems Will:

- Do 12 Lead ECGs
- Transmit the ECG
- Provide Pre-Hospital Alerts

Time is Muscle



NASHVILLE
MUSIC CITY
FIRE RESCUE
EMS
FIRE DEPT.