

The Pentagon Papers:
The Five Most Important
Publications of the Past Year
EAGLES 2015

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Conference Handouts

Shira Kansas 2014

Expert Treatment of Anaphylaxis

Handout for a Presentation by [Corey Slovis, MD](#) for the Shira Kansas Memorial Lectures

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Acid Base Made Easy

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Nashville Fire Department 2014

The Gold Standard in Emergency Care

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5 EAGLES Topics

- Valsalva
- Morphine in AMI
- Epi + Calcium in CPR
- Hands-on Defibrillation
- STEMI ECGs
- *Living Forever*

Valsalva For PSVT

Systematic Review Snapshot

TAKE-HOME MESSAGE

The Valsalva maneuver appears to be a modestly effective intervention, with a low risk of adverse events, but is supported by only a small number of low-quality trials.

METHODS

Valsalva Maneuver for Termination of Supraventricular Tachycardia

EBEM Commentators

Ann Emerg Med 2014;65:27-29

- Valsalva's effectiveness in PSVT is variable
- Works 17 - 54% of the time
- Usually 10 – 20% effective
- “*Usual way*” not optimal
- Article discusses way to increase efficacy

Impact of a modified Valsalva manoeuvre in the termination of paroxysmal supraventricular tachycardia

S Walker, P Cutting

Department of Emergency
Medicine, Leeds Teaching
Hospitals NHS Trust, Leeds,
England

Correspondence to
Dr Simon Walker, Department of

ABSTRACT

Background Paroxysmal supraventricular tachycardia (SVT) is a relatively common problem presented to the emergency department. Most sources advocate the use of vagal manoeuvres as first-line management, including Valsalva manoeuvre. Despite this, there is lack of

re-entry tachycardias: atrioventricular nodal re-entry tachycardia and atrioventricular re-entry/reciprocating tachycardia. If the tachycardia involves the atrioventricular node as part of the re-entry circuit, then methods to increase atrioventricular nodal blockade, that is, vagal manoeuvres,

Emerg Med J 2010;27:287-291

- Response improved from 5.3% to 31.7%
- Sitting up increases sympathetic tone
- Lie patient flat or in reverse Trendelenburg
- Patient to bear down maximally
- At least 15 seconds (*not 5 seconds*)

Is morphine really no longer the best
analgesic in STEMI patients ?

Myocardial Infarction

Morphine Is Associated With a Delayed Activity of Oral Antiplatelet Agents in Patients With ST-Elevation Acute Myocardial Infarction Undergoing Primary Percutaneous Coronary Intervention

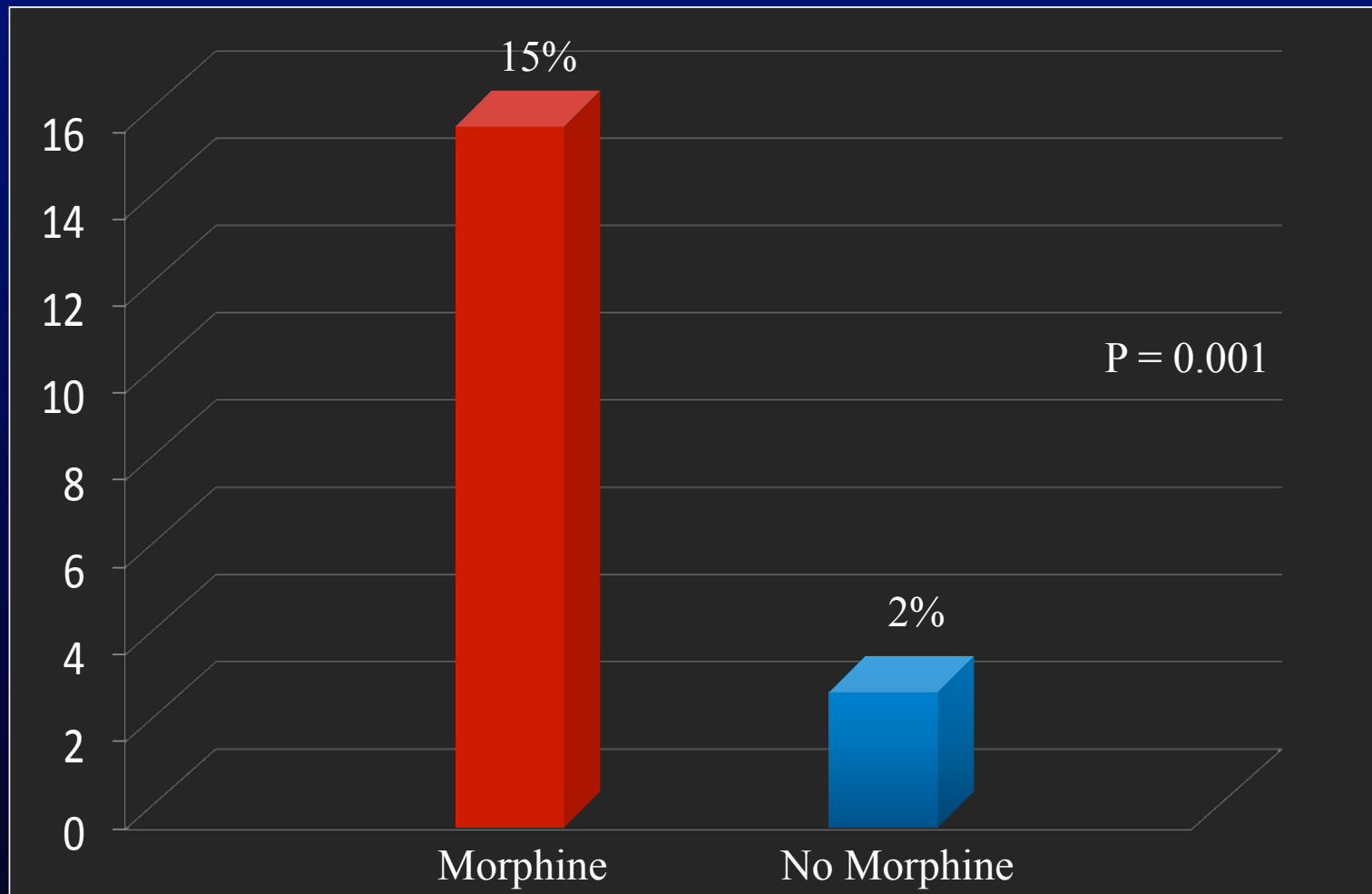
Guido Parodi, MD, PhD; Benedetta Bellandi, MD; Ioanna Xanthopoulou, MD;
Piera Capranzano, MD; Davide Capodanno, MD, PhD; Renato Valenti, MD;
Katerina Stavrou, MD; Angela Migliorini, MD; David Antonucci, MD;
Corrado Tamburino, MD; Dimitrios Alexopoulos, MD

Circ Cardiovasc Inter 2015;8 epub Jan

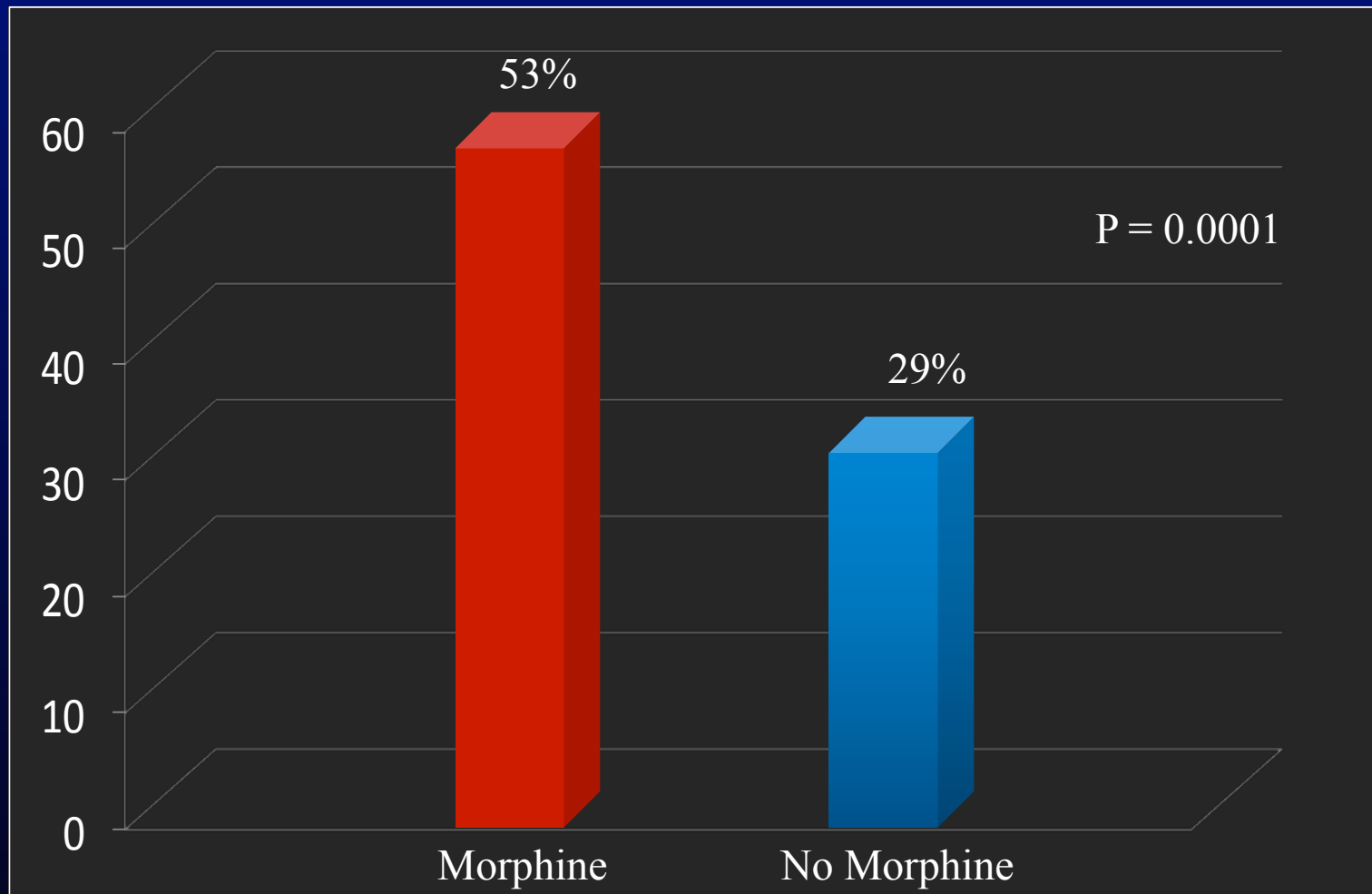
- 300 PCI patients with STEMI
- 95 patients (32%) received morphine
- Evaluated incidence of vomiting
- Measured platelet inhibition

Vomiting With and Without Morphine

Circ Cardiovasc Inter 2015;8 epub Jan



High Residual Platelet Activity ($P2Y_{12} > 208$)



Morphine in AMI

Take Homes

- Morphine increases vomiting in AMI
- Decreases platelet inhibitor absorption
- Platelet aggregation affected by morphine
- Try to use fentanyl and antiemetics
- If you use morphine – less and antiemetics



Resuscitation 2014;85:732-40

- Does Epinephrine use have true benefits in CPR?
- Meta analysis, 14 RCTs, 12,246 patients
- Studies were:
 - Epi vs placebo (1) n = 534
 - Epi vs high does Epi (6) n = 6,174
 - Epi vs Vasopression (1) n = 336
 - Epi vs Epi + Vasopressin (6) n = 5,202

Results

Resuscitation 2014;85:732-40

- **Epi vs placebo (1) n = 534 ↑ROSC**
 - *No differences in survival or neuro outcome*
- **Epi vs High dose Epi (6) n = 6,174**
 - *No differences in survival or neuro outcome*
- **Epi vs Epi + Vasopressin (6) n = 5,202**
 - *No differences in ROSC, admit, survival or neuro*
- **Epi vs Vasopressin (1) n = 336**
 - *No differences in ROSC, admit, survival or neuro*

Benefits of Epinephrine in CPR

Conclusions and Take Homes

- *Very hard to prove efficacy*
- Very hard to stop using it
- Epi + Vasopressin + steroids??
- Future studies will hopefully help us define its role or lack there of

Systematic Review Snapshot

TAKE-HOME MESSAGE

Irrespective of presenting rhythm, in patients with cardiac arrest there is no conclusive evidence that administration of calcium during cardiopulmonary resuscitation (CPR) improves survival.

METHODS

DATA SOURCES

A literature search using PubMed,
National Library of Medicine.

Does Calcium Administration During Cardiopulmonary Resuscitation Improve Survival for Patients in Cardiac Arrest?

EBEM Commentators
Adaira Landry, MD
Mark Foran, MD, MPH

Ann Emerg Med 2014; 64:187-189

Is Calcium Beneficial in Cardiac Arrest?

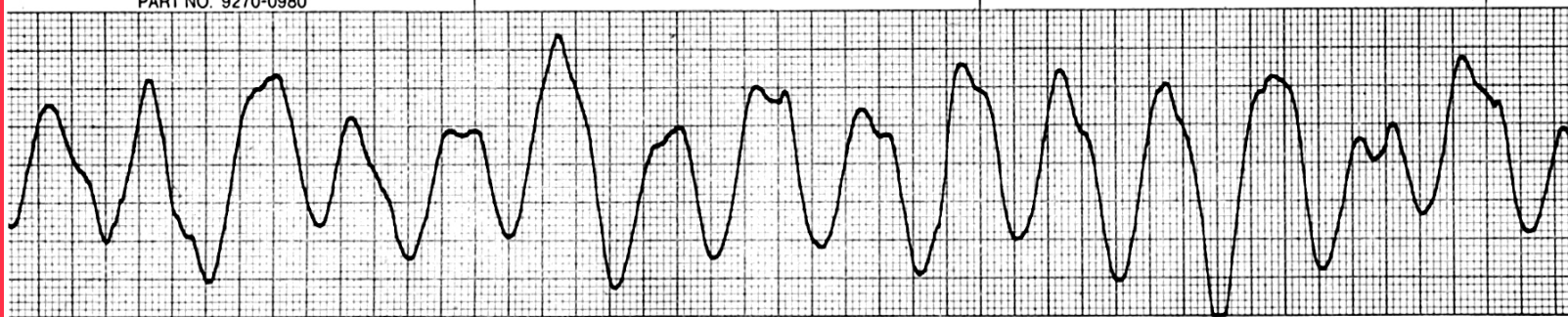
- Systematic Review Snapshot
- 14 studies, 10 reported ROSC/Survival
- Only 2 were blinded
- 70% were human trials

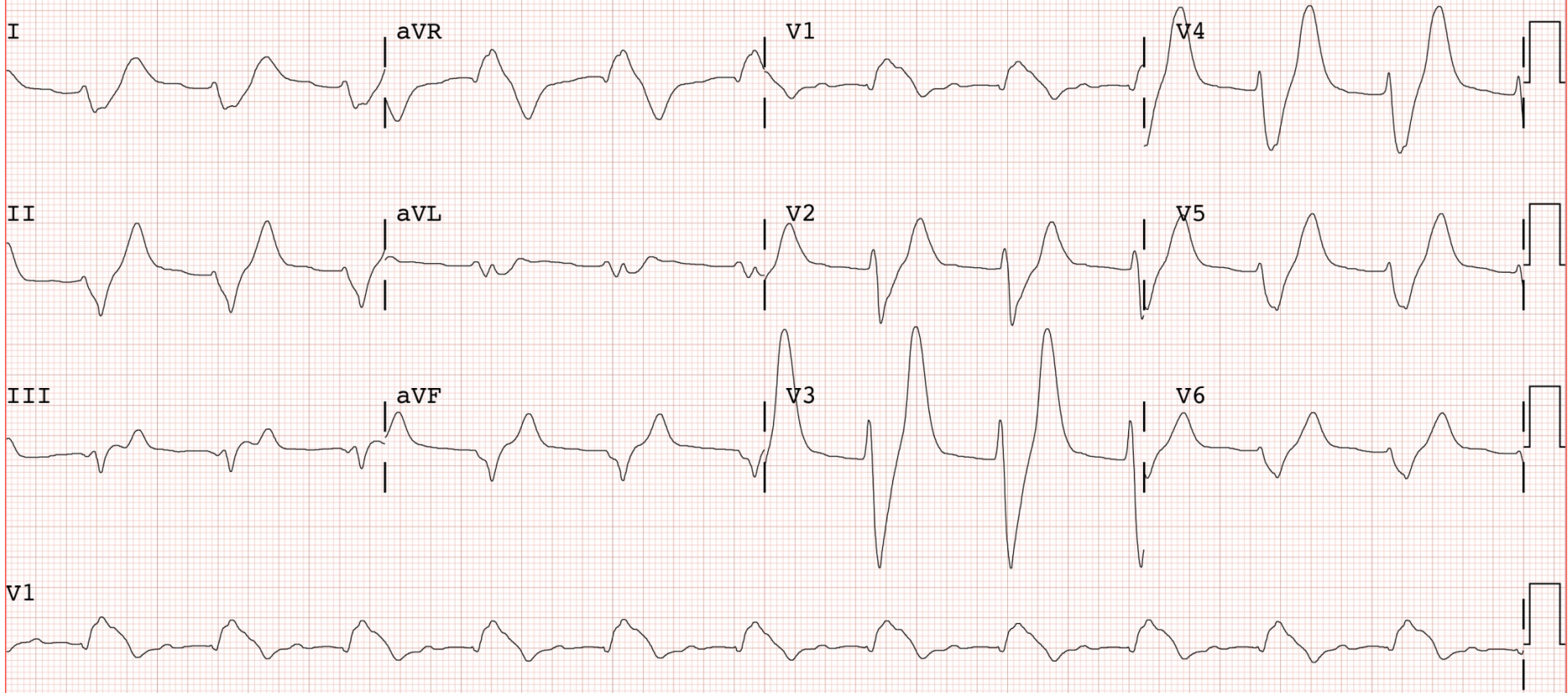
“There is no conclusive evidence that administration of calcium during CPR improves survival”

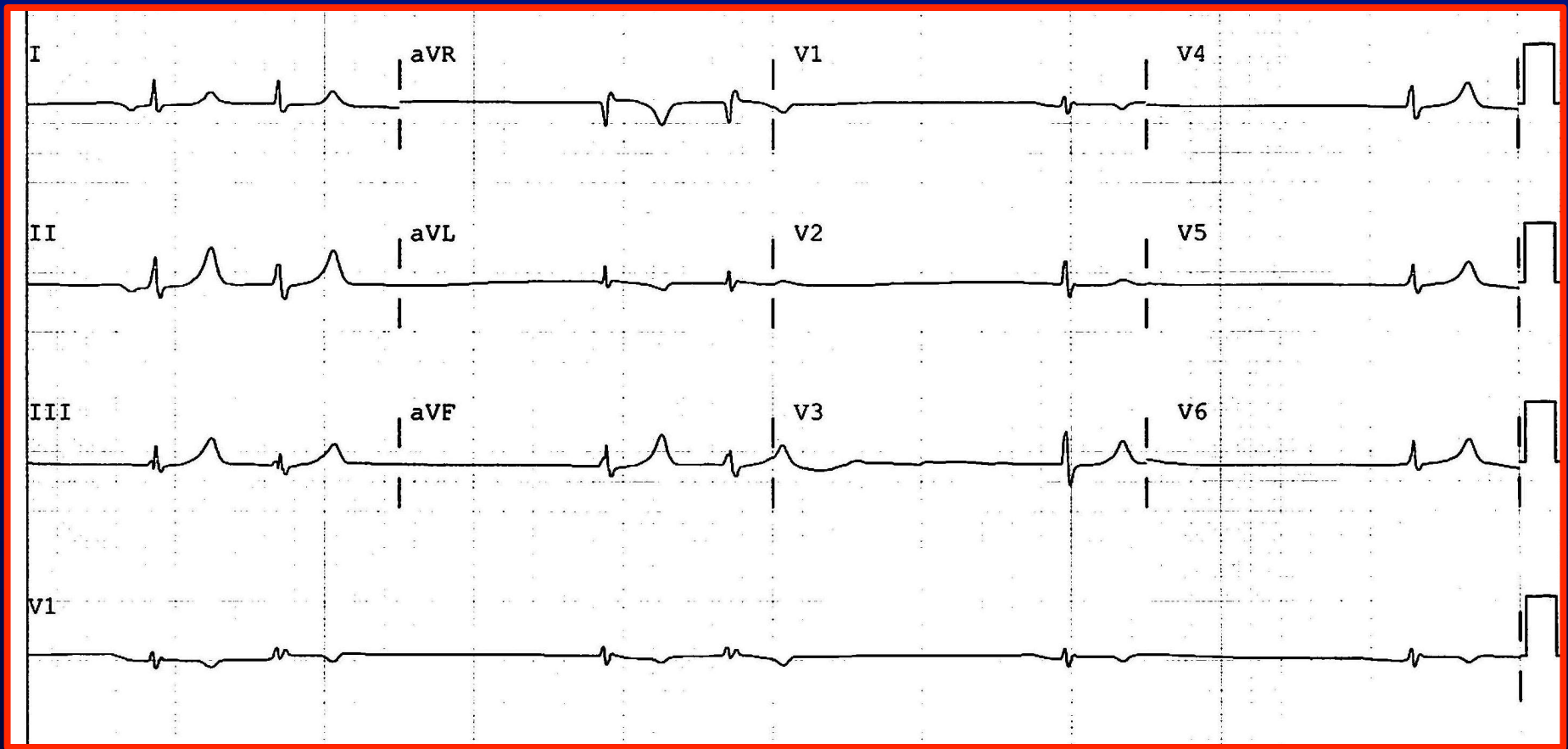
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HR 0

15 FEB 2001:00







Take Homes

Calcium in CPR

- Do not use routinely
- Consider if hyperkalemia a possibility
- Wide QRS, Renal Failure
- Heart Block/Bradycardia with peaked T waves



ELSEVIER

Contents lists available at [ScienceDirect](#)

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation



1 Clinical Paper

2 Electrical exposure risk associated with hands-on defibrillation[☆]

3 Q1 Daniel L. Lemkin^{a,*}, Michael D. Witting^a, Michael Allison^b, Ali Farzad^a, Michael C. Bond^a,
4 Mark A. Lemkin^c

5 Q2 ^a Department of Emergency Medicine, University of Maryland School of Medicine, Baltimore, MD, United States

6 ^b Department of Emergency Medicine, University of Maryland Medical Center, Baltimore, MD, United States

7 ^c Linear Technology, Hayward, CA, United States

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Resuscitation 2014;85:1330-6

- Is hands-on defibrillation safe?
- Cadaver study; 6 cadavers used
- Used A-P defibrillator pad placement
- Defibrillated cadavers at 360 joules

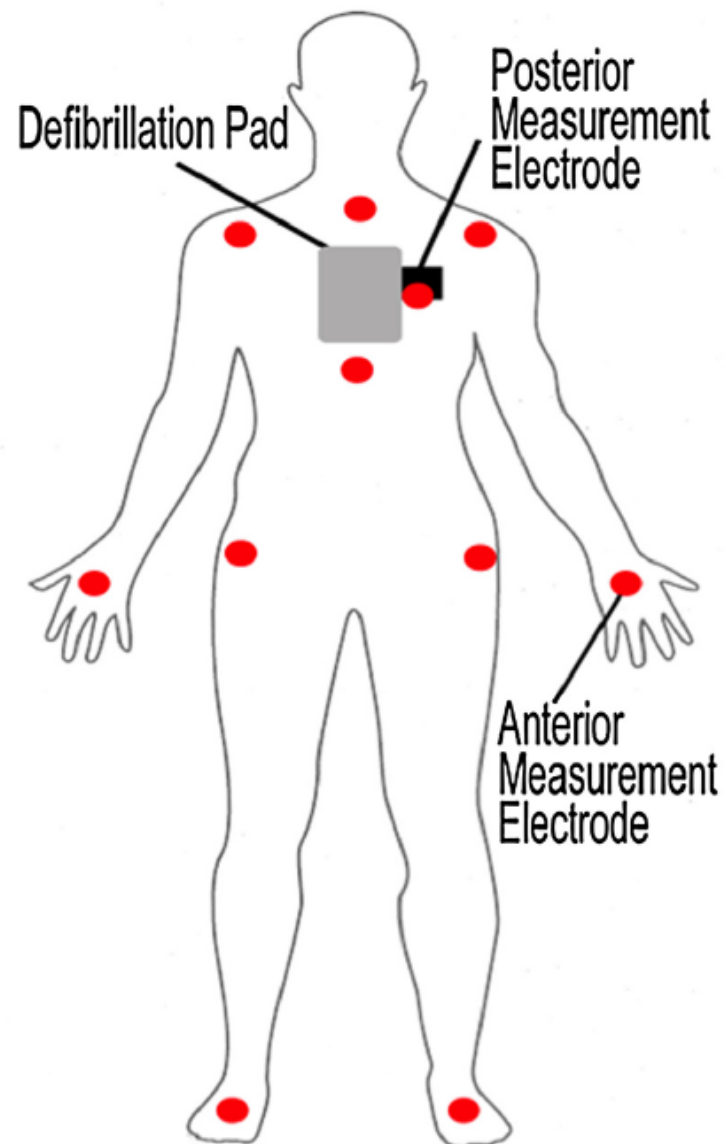


Fig. 1. The red does denote anatomic sites that the defibrillation voltage measurements were obtained. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of the article.) Q5

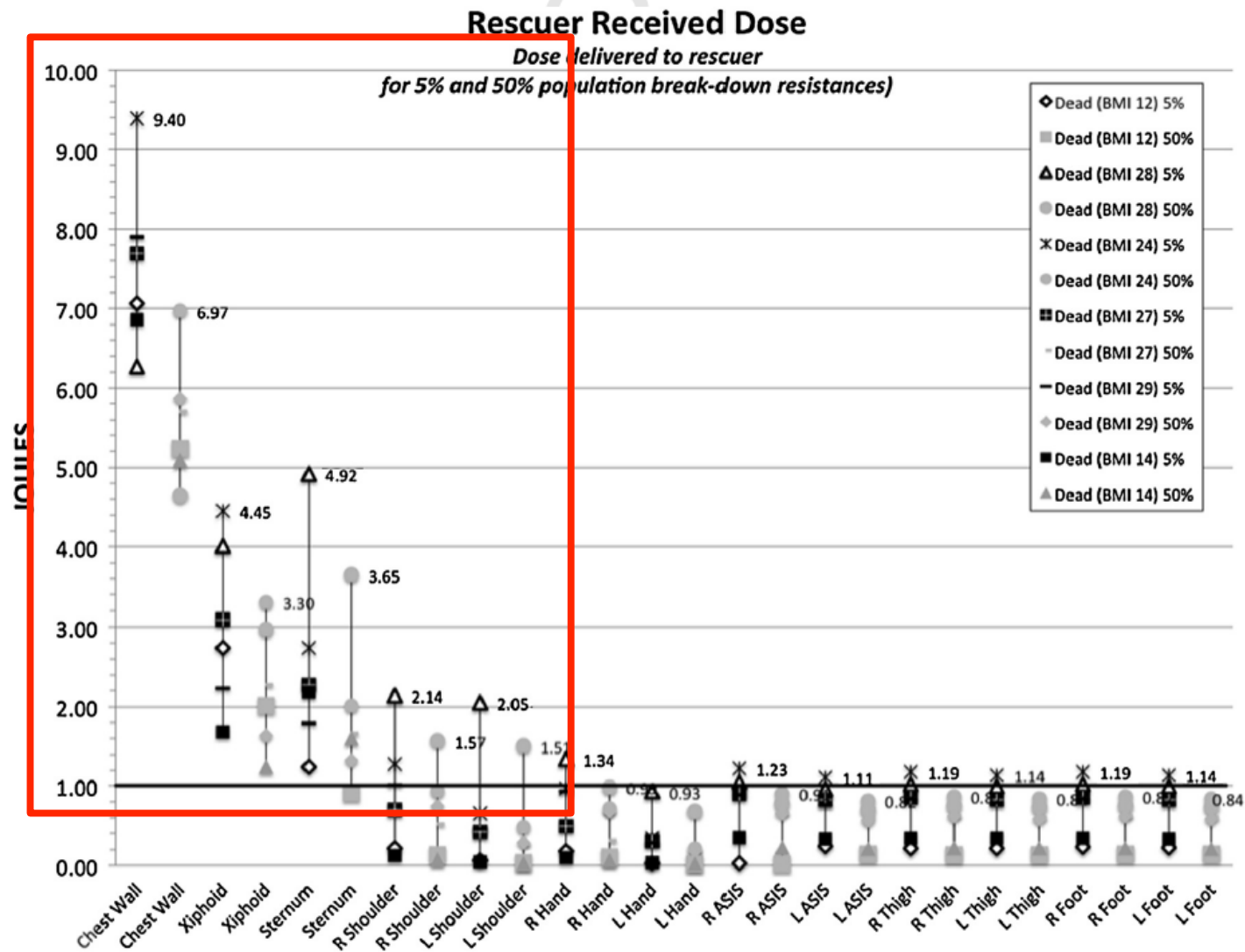


Fig. 6. The rescuer-received dose is noted at the various measurement points using published rescuer skin resistances for both 5% and 50% population thresholds. The horizontal line at 1J indicates the minimum energy level that is able to cause ventricular fibrillation in a susceptible individual.¹⁵ On the anterior chest wall, where contact would be made with HOD, the energy level is 6–10 times the level needed to cause fibrillation.

Conclusions

Resuscitation 2014;85:1330-6

Based on this study, hands-on defibrillation
is dangerous and should not be done

Or

Based on this study, cadavers should not
defibrillate themselves



Contents lists available at [ScienceDirect](#)

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation



Clinical Paper

Electrical exposure risk associated with hands-on defibrillation[☆]

Daniel L. Lemkin^{a,*}, Michael D. Witting^a, Michael Allison^b, Ali Farzad^a, Michael C. Bond^a,
Mark A. Lemkin^c

Resuscitation 2014; epub ahead of print

This is the first hands-on defibrillation
study not to use hands-on defibrillation

Take Homes on Hands-On Defibrillation (HOD)

- The safety of hand-on defibrillation (HOD) is not fully known
- Use gloves if you do HOD
- Do not put your hands on the pad(s)
- Large “real life” study needed
- HOD or not, minimize pre-shock pause

ORIGINAL CONTRIBUTIONS

PREVALENCE AND INTERVENTIONAL OUTCOMES OF PATIENTS WITH RESOLUTION OF ST-SEGMENT ELEVATION BETWEEN PREHOSPITAL AND IN-HOSPITAL ECG

Micah Ownbey, MD, Brian Suffoletto, MD, MS, Adam Frisch, MD, Francis X. Guyette, MD,
MS, Christian Martin-Gill, MD, MPH

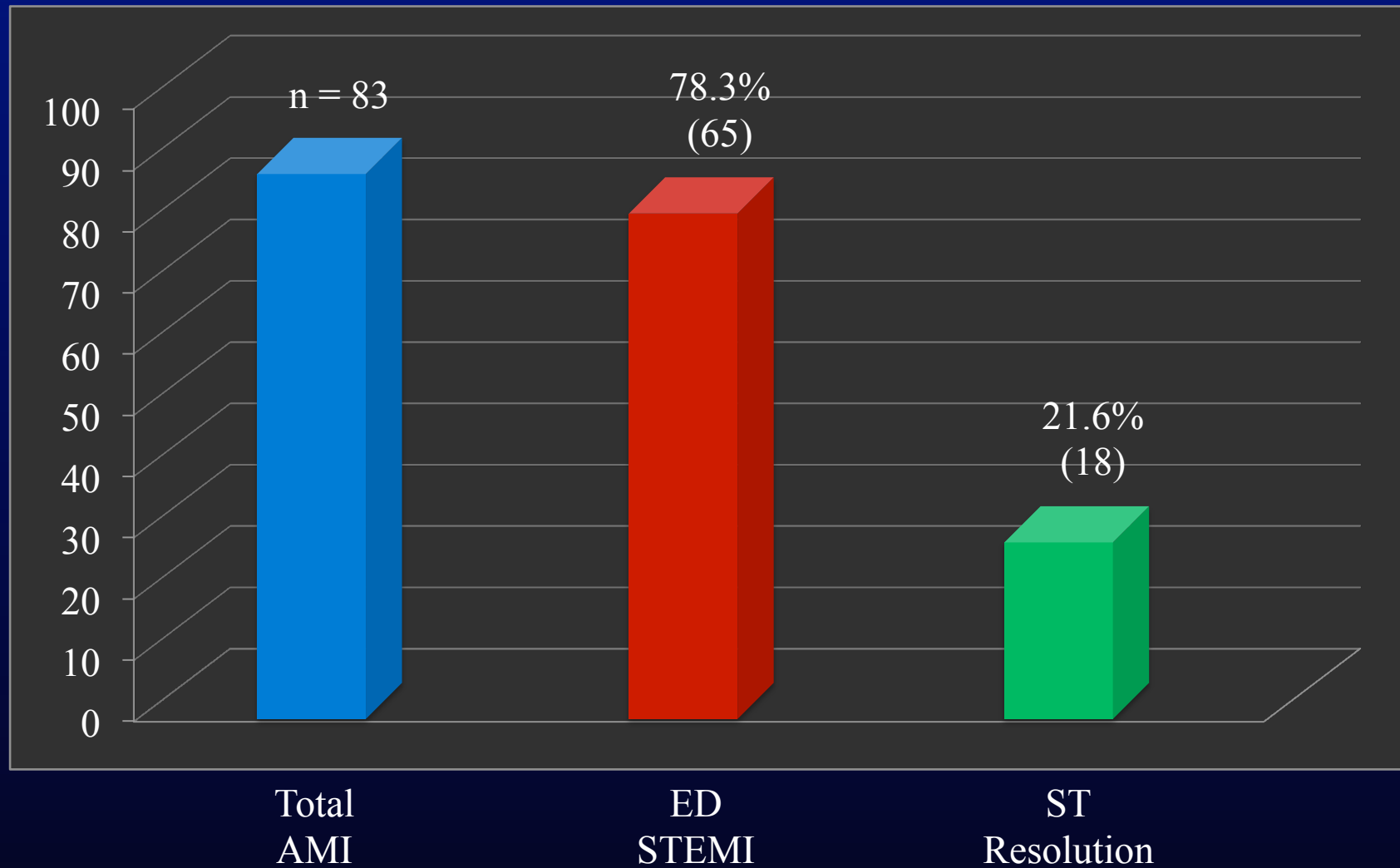
Prehosp Emerg Care 2014;18:174-179

How often does a prehospital STEMI arrive
with a resolved ECG?

- 83 prehospital ECGs with STEMI
- 217 EMS agencies; UPMC Medical Control
- All patients went to cath lab

STEMI Resolution

Prehosp Emerg Care 2014;18:174-179



**PREVALENCE AND INTERVENTIONAL OUTCOMES OF PATIENTS
WITH RESOLUTION OF ST-SEGMENT ELEVATION BETWEEN PREHOSPITAL
AND IN-HOSPITAL ECG**

Micah Ownbey, MD, Brian Suffoletto, MD, MS, Adam Frisch, MD, Francis X. Guyette, MD,
MS, Christian Martin-Gill, MD, MPH

Prehosp Emerg Care 2014;18:174-179

- 1 in 5 prehospital STEMIs have ECG changes that resolve prior to ED arrival
- There was no difference in % occlusion in those with and without ST resolution of STEMI ECG changes
- Patients without STEMI resolution are more likely to have multivessel disease

ST segment resolution of a STEMI still equals a STEMI and mandates rapid transport to coronary catheterization

ST Segment Resolution \neq NO STEMI

Take Homes

EMS 12 Leads

- Prehospital ECGs are essential to decrease D₂B and to improve survival
- Decrease D₂B by 21 – 78 minutes and decreased mortality by 39%
- My bias is paramedic + machine read + ED MD read to minimize false activations
- All benefits are lost if systems wait for ED MD read in the ED to activate at night/weekends

Living Forever

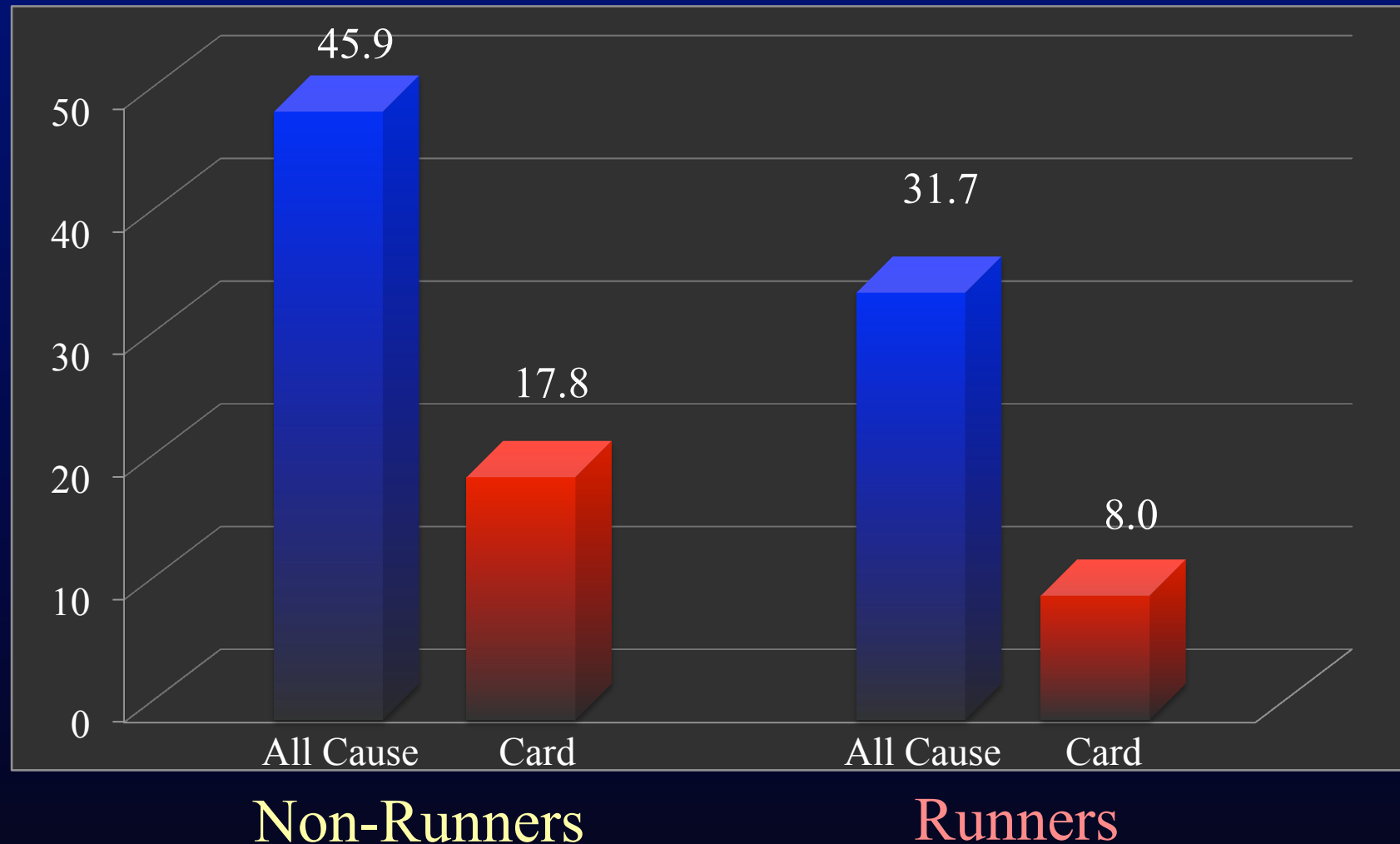
Living Forever

- Eat more fish, less red meat
- Drink 1 – 2 glasses of wine or ETOH
- Consume less saturated fats and fried foods
- Eat more nuts
- Exercise?

Runners vs Non-Runners

Death Rate (Deaths/yr/10,000 patients)

JACC 2014;64:472-81



Take Homes

- Running reduces all cause mortality by 30%
- Running reduces cardiac mortality by 45%
- Findings consistent even if running just 51 min/week
- Can run 1-2x/week slowly for benefits (< 10 min miles)

Benefits overcame smoking, HT, HL, obesity

Average ↑ in lifespan = 3 years

Summary

Lie flat for Valsalva

No morphine for STEMI

Epi and CaCl unproven in arrest

EMS STEMI may “resolve”

Exercise saves lives – yours!

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