Most Important EMS Articles

EAGLES 2017

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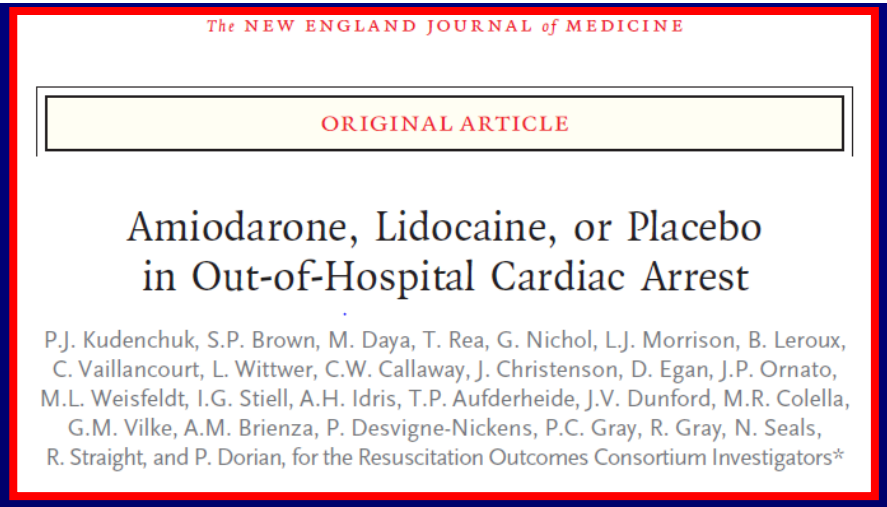
Overview

- Best antiarrhythmic for VF
- What ACLS/BCLS innovations work
- Is early epi better in VF
- When to expect ↓ BP with NTG
- Perfect TOR



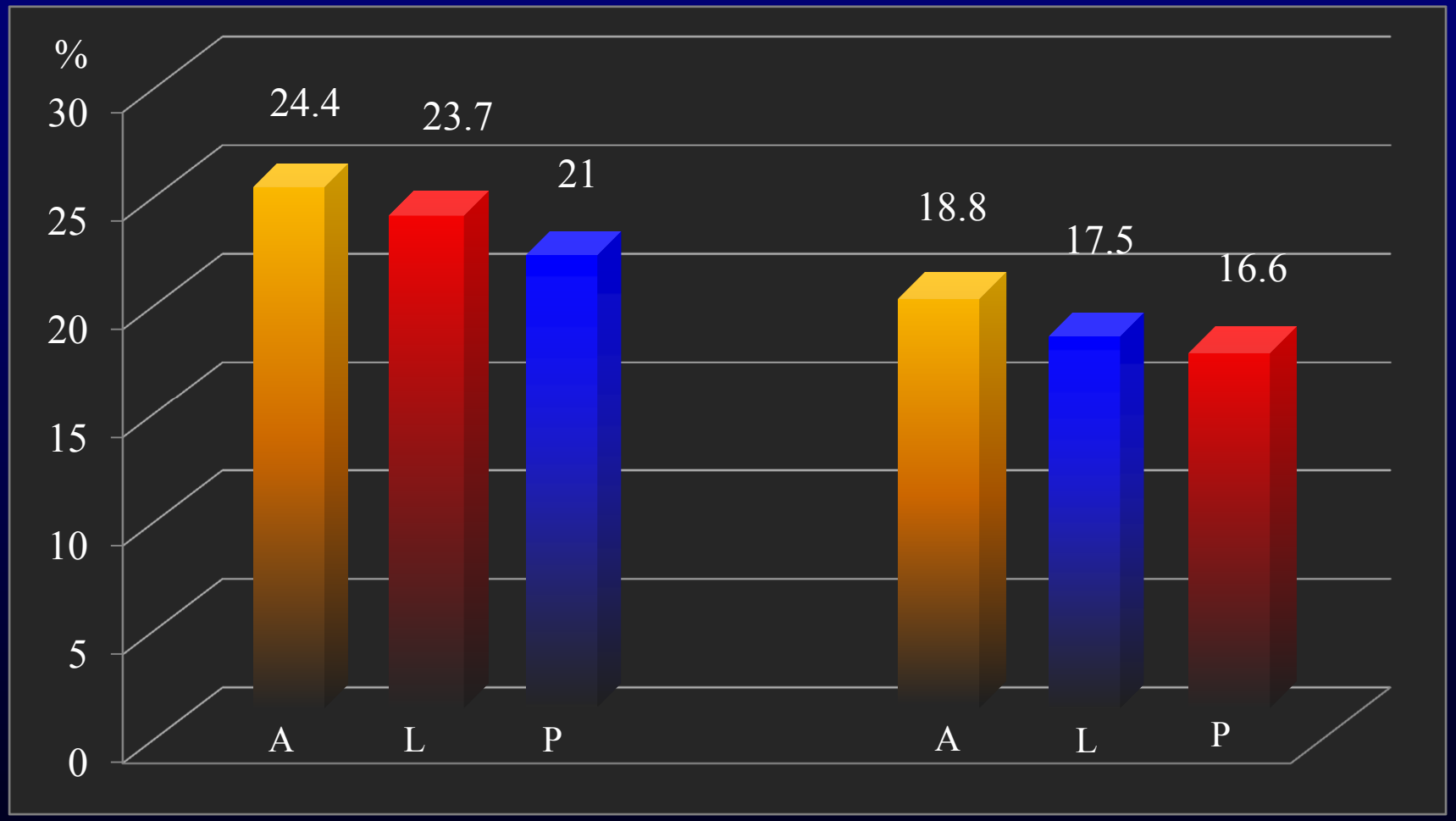
New Engl J Med 2016; 374:1711-22

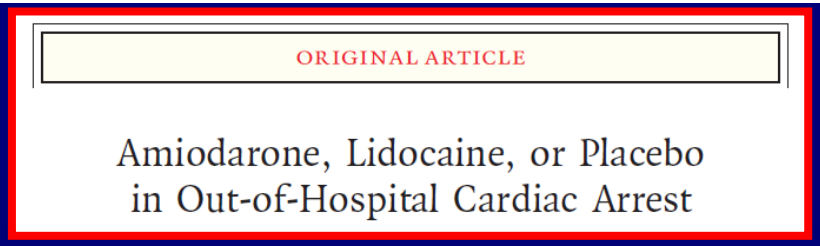
What is the best antiarrhythmic for shock resistant VF/pVT: Amiodarone vs Lidocaine vs Placebo?

- 3,026 pts., 10 ROC sites
- Randomized, double blind, placebo controlled
- VF/pVT, s/p 1 or more shocks, s/p epi
- Only adult medical VF/pVT OOH

Survival to Discharge
Neurologic Outcome

New Engl J Med 2016; 374:1711-22

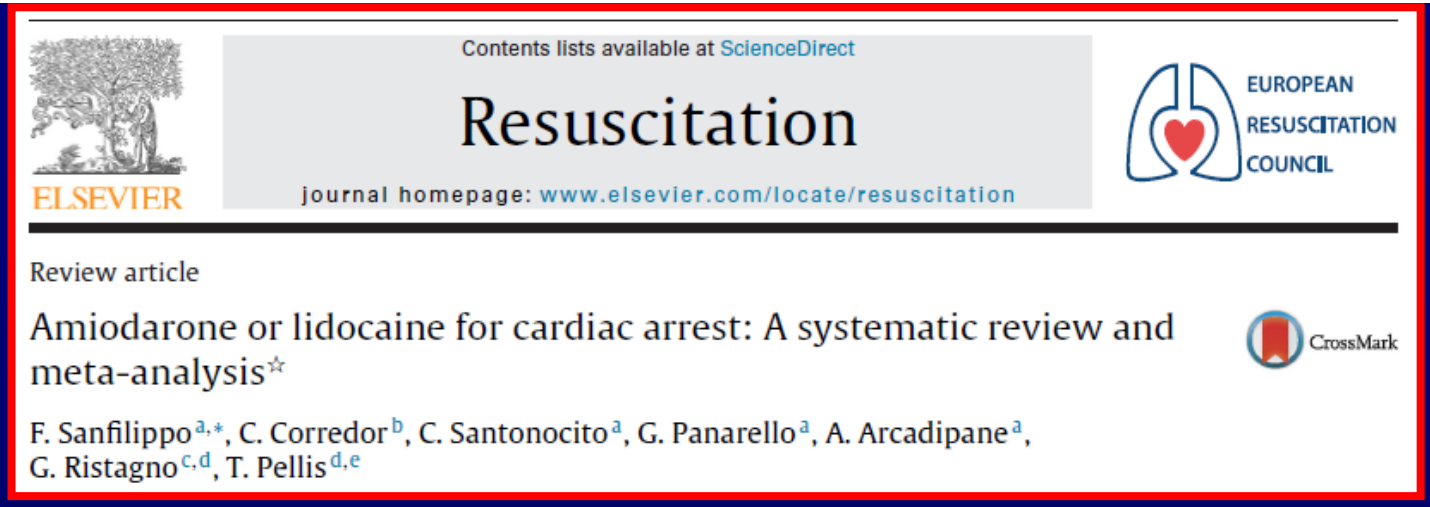




New Engl J Med 2016; 374:1711-22

Percentage Differences

- Amiodarone vs Placebo 3.2% (p=0.08)
- Amiodarone vs Lidocaine 0.7% (p=0.70)
- Lidocaine vs Placebo 2.6% (p=0.16)
- Amiodarone vs Placebo 2.2% (p=0.19)
  Modified Rankin ≤ 3
- Amiodarone vs Lidocaine 1.3% (p=0.44)
  Modified Rankin ≤ 3



Contents lists available at ScienceDirect

Resuscitation

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

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Review article

Amiodarone or lidocaine for cardiac arrest: A systematic review and meta-analysis☆

CrossMark

F. Sanfilippo[a,*], C. Corredor[b], C. Santonocito[a], G. Panarello[a], A. Arcadipane[a], G. Ristagno[c,d], T. Pellis[d,e]

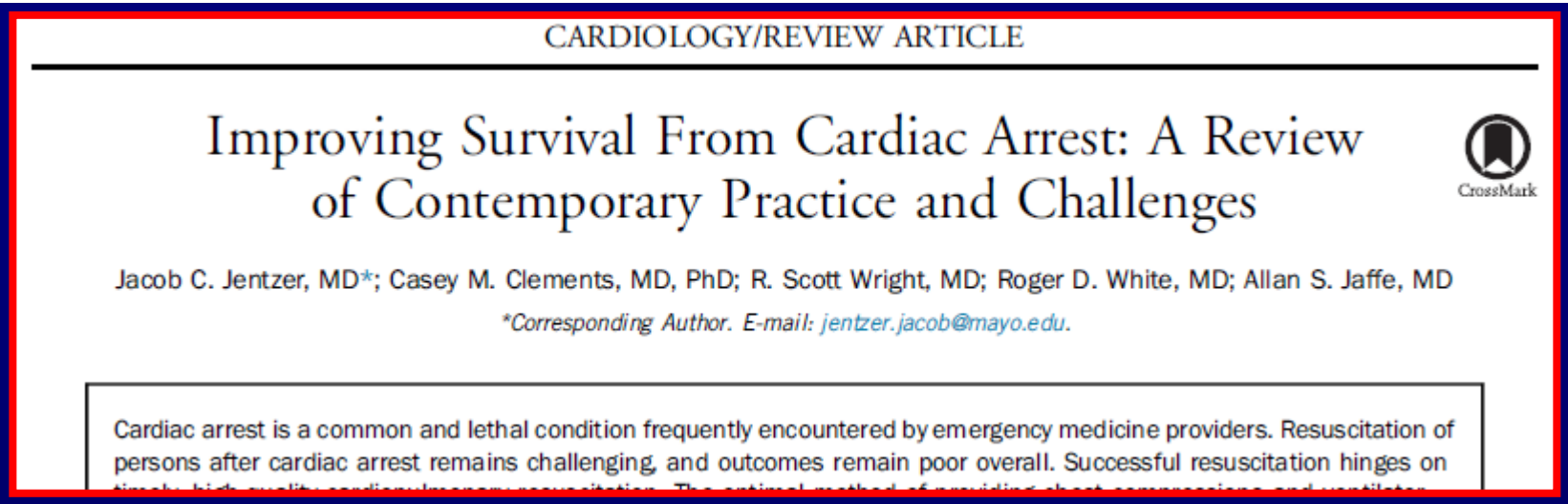
Resuscitation 2016;107:31-7

What do all studies combined tell us about Amiodarone vs Lidocaine in VF/pVT?

- 7 studies: 3 RCTs, 4 non-RCTs
- 3,877 pts in RCTs and 700 in non-RCTs
- Includes 2016 NEJM trial
- Admission and Discharged Alive evaluated

Amiodarone vs Lidocaine vs Placebo
Take Homes

- There is no strong evidence on antiarrhythmic efficacy in VF/pVT
- If 3% superiority of Amiodarone over placebo was true difference (requires larger study) then 1,800 lives would be saved in North America yearly
- The drugs are given 10-20+ minutes into arrest



CARDIOLOGY/REVIEW ARTICLE

Improving Survival From Cardiac Arrest: A Review of Contemporary Practice and Challenges

Jacob C. Jentzer, MD*; Casey M. Clements, MD, PhD; R. Scott Wright, MD; Roger D. White, MD; Allan S. Jaffe, MD

*Corresponding Author. E-mail: jentzer.jacob@mayo.edu.

Cardiac arrest is a common and lethal condition frequently encountered by emergency medicine providers. Resuscitation of persons after cardiac arrest remains challenging, and outcomes remain poor overall. Successful resuscitation hinges on

Annals Emerg Med 2016;68:678-89

- Authoritative and comprehensive review
- What works and what doesn't
- 99 references
- Insightful recs for PEA and Post Resus care

Effect of Intervention on Outcome

Annals Emerg Med 2016;68:678-89

Intervention	Effect on Outcomes
Compressions only CPR	No benefit
Mechanical chest compressions	No benefit
Impedance threshold device	No benefit
Active compression/ decompression	No benefit
Delayed vs immediate CPR	No benefit

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Annals Emerg Med 2016;68:678-89

Article has excellent algorithms for -

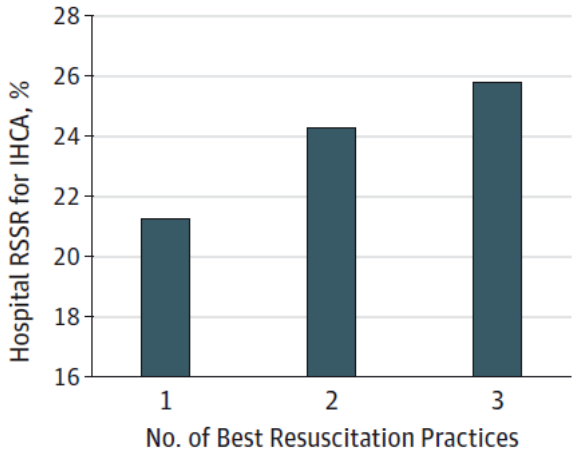
- PEA
- Use of Echo in arrest
- Wide and narrow QRS arrests
- Optimizing outcomes s/p ROSC
- ECLS and ECMO

Maximizing In-Hospital Survival

JAMA Cardiol 2016;1:189-97

- Minimizing interruptions
- Frequent review of CPR cases
- High quality CPR training

Figure 2. Risk-Standardized Survival Rates (RSSRs) for In-Hospital Cardiac Arrest (IHCA) for Hospitals Using 1, 2, or All 3 Resuscitation Practices



Early administration of epinephrine (adrenaline) in patients with cardiac arrest with initial shockable rhythm in hospital: propensity score matched analysis

Lars W Andersen,[1,2,3] Tobias Kurth,[4] Maureen Chase,[1] Katherine M Berg,[5] Michael N Cocchi,[1,6] Clifton Callaway,[7] Michael W Donnino[1,5] for the American Heart Association's Get With The Guidelines-Resuscitation Investigators

ABSTRACT

OBJECTIVES

To evaluate whether patients who experience cardiac arrest in hospital receive epinephrine (adrenaline) within the two minutes after the first defibrillation (contrary to American Heart Association guidelines) propensity score with patients who were "at risk" of receiving epinephrine within the same minute but who did not receive it.

RESULTS

2978 patients were matched on the propensity score, and the groups were well balanced. 1510 (51%) patients

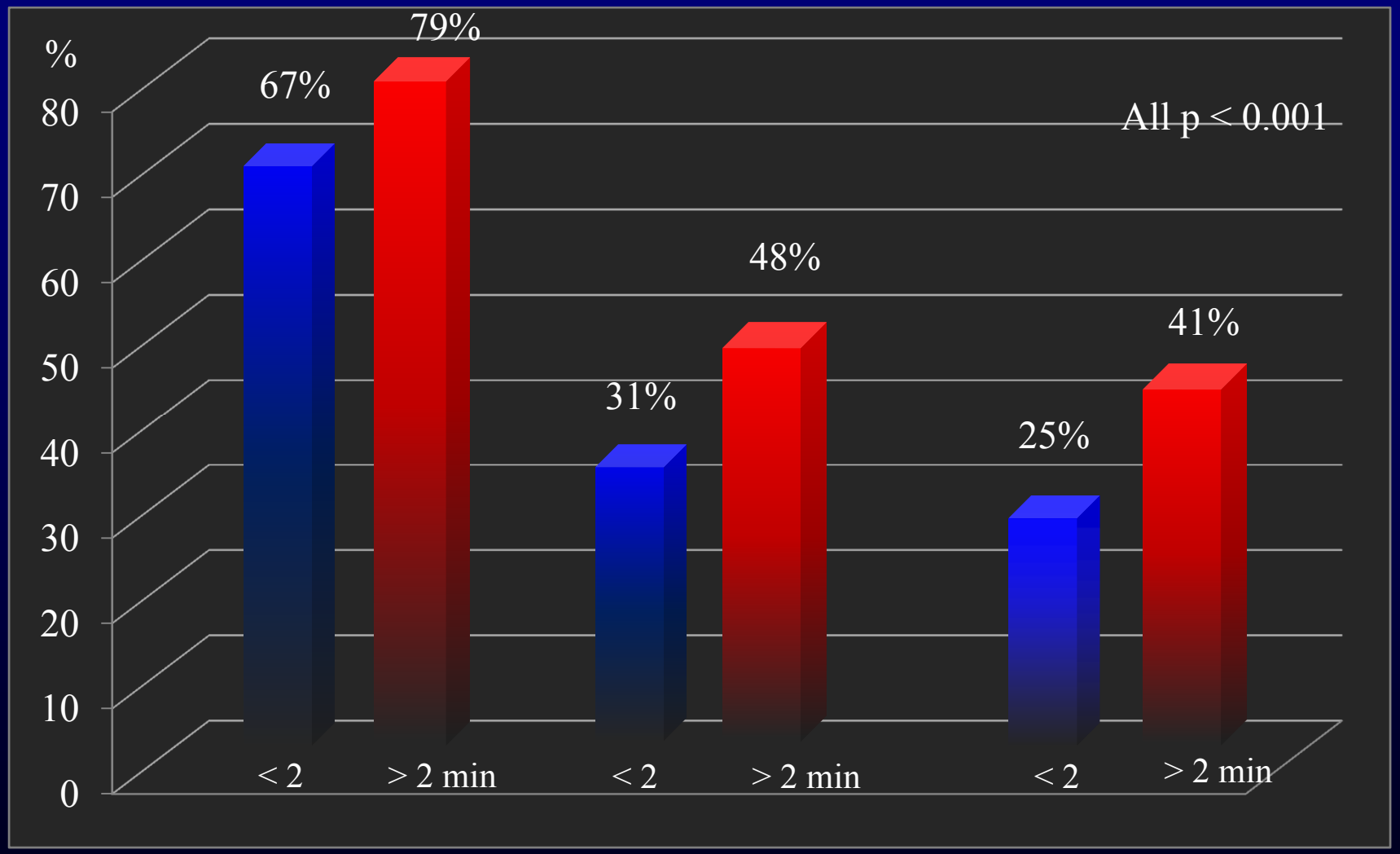
BMJ 2016;353:1577-87

Does giving epinephrine before 2nd shock help or hinder resuscitation?

- 2,974 VF/pVT arrests, 1,510 with epi < 2 min
- Inpatient data from 300 GWTG-R hospitals
- Propensity matched cardiac arrest pts
- Compared epi before vs after 2nd shock

Epi Before vs After 2nd Shock

BMJ 2016;353:1577-87



Early Epinephrine Administration Take Homes

- Wait for second shock before administering epinephrine
- The role of epi is still not clearly defined… but wait to administer it
- Epinephrine is the most potent cardiac stimulant – wait to give it during VF

Prehospital Nitroglycerin Safety in Inferior ST Elevation Myocardial Infarction

Laurie Robichaud, MDCM, Dave Ross, MD, Marie-Hélène Proulx, PCP, MSc, Sébastien Légaré, PCP, Charlene Vacon, AEMT-CC, PhD, Xiaoqing Xue, MSc, Eli Segal, MD, FRCP, CSPQ, FACEP

Abstract

Patients with inferior ST elevation myocardial infarction (STEMI), associated with right ventricular infarction, are thought to be at higher risk of developing hypotension when administered nitroglycerin (NTG). However, current basic while controlling for various factors. Over a 29-month period, we identified 1,466 STEMI cases. Of those, 821 (56.0%) received NTG. We excluded 16 cases because of missing data. Hypotension occurred post NTG in 38/466 inferior STEMIs and 30/339 non-inferior STEMIs, 8.2% vs. 8.9%, $p = 0.73$. A

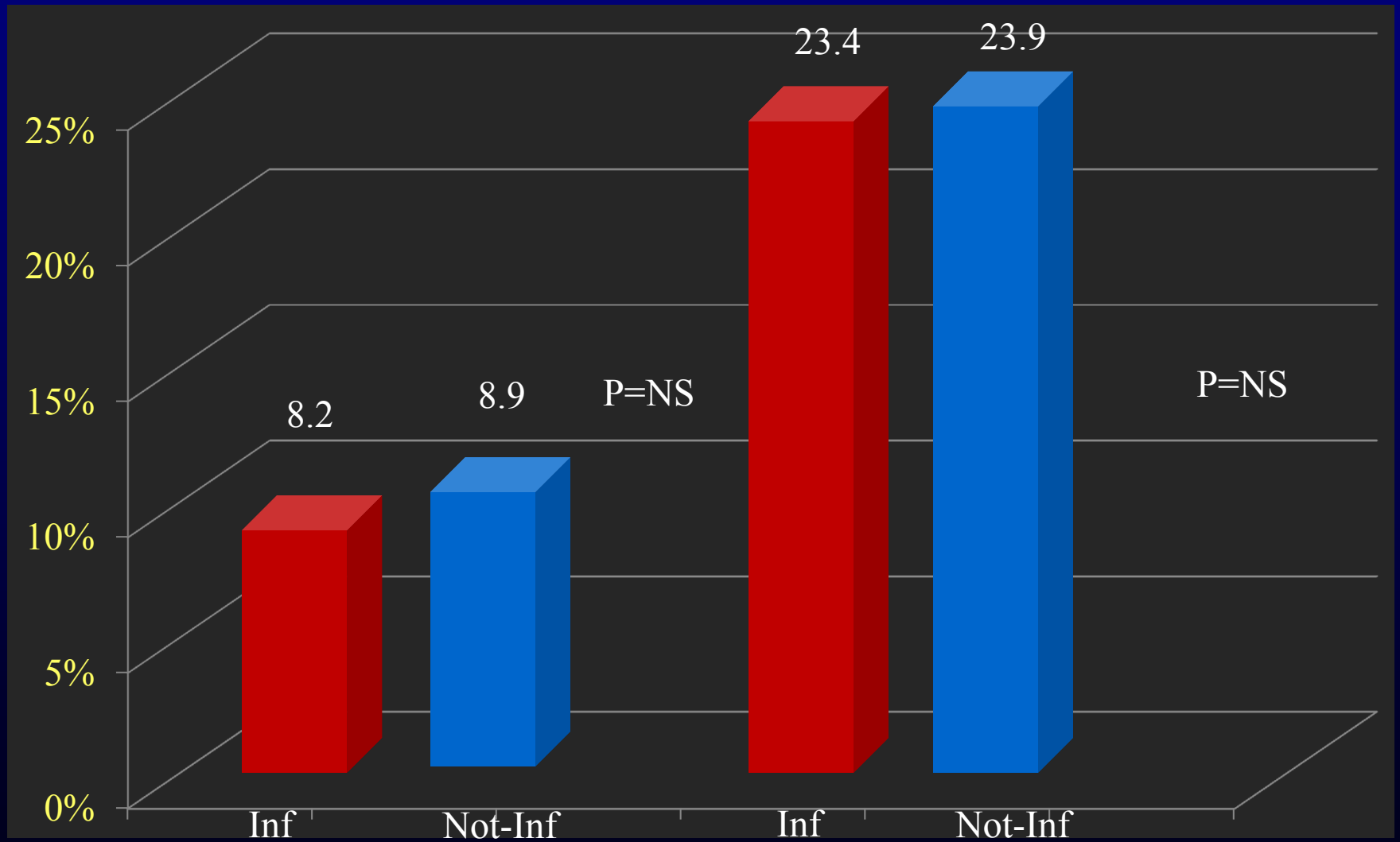
Prehosp Emerg Care 2016;20:76-81

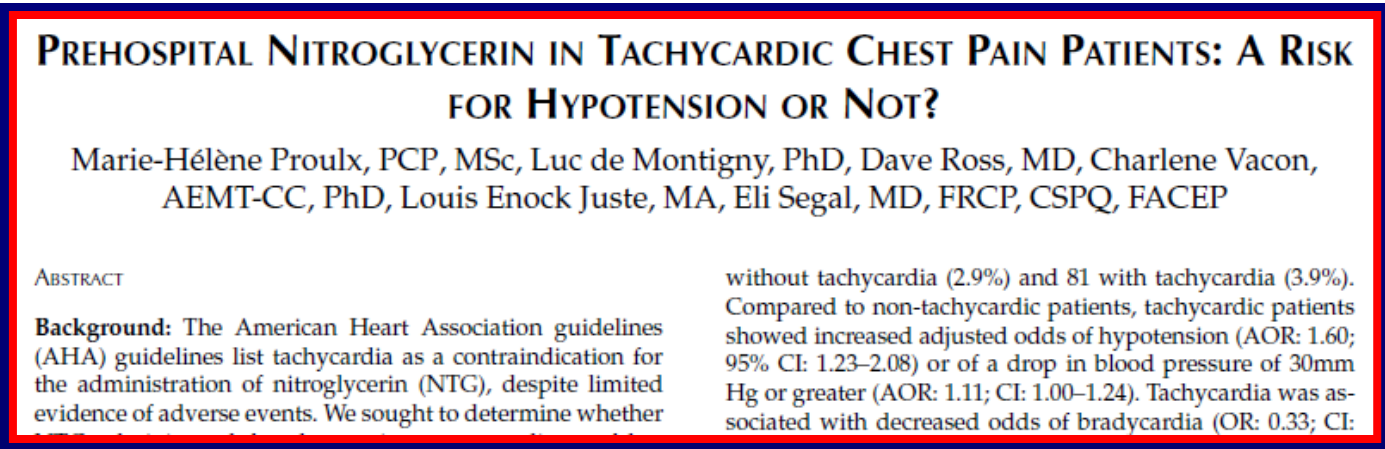
How dangerous is NTG in Inferior AMI?

- 1,466 STEMIs, 56% received NTG
- Montreal Quebec EMS 2010-2012
- Evaluated BP changes in Inf vs Non-Inf AMIs
- BP < 90 or BP↓ > 30mm Hg s/p NTG

STEMI BP Changes Post NTG

Prehosp Emerg Care 2016;20:76-81





Prehospital Nitroglycerin in Tachycardic Chest Pain Patients: A Risk for Hypotension or Not?

Marie-Hélène Proulx, PCP, MSc, Luc de Montigny, PhD, Dave Ross, MD, Charlene Vacon, AEMT-CC, PhD, Louis Enock Juste, MA, Eli Segal, MD, FRCP, CSPQ, FACEP

Abstract

Background: The American Heart Association guidelines (AHA) guidelines list tachycardia as a contraindication for the administration of nitroglycerin (NTG), despite limited evidence of adverse events. We sought to determine whether

without tachycardia (2.9%) and 81 with tachycardia (3.9%). Compared to non-tachycardic patients, tachycardic patients showed increased adjusted odds of hypotension (AOR: 1.60; 95% CI: 1.23–2.08) or of a drop in blood pressure of 30mm Hg or greater (AOR: 1.11; CI: 1.00–1.24). Tachycardia was associated with decreased odds of bradycardia (OR: 0.33; CI:

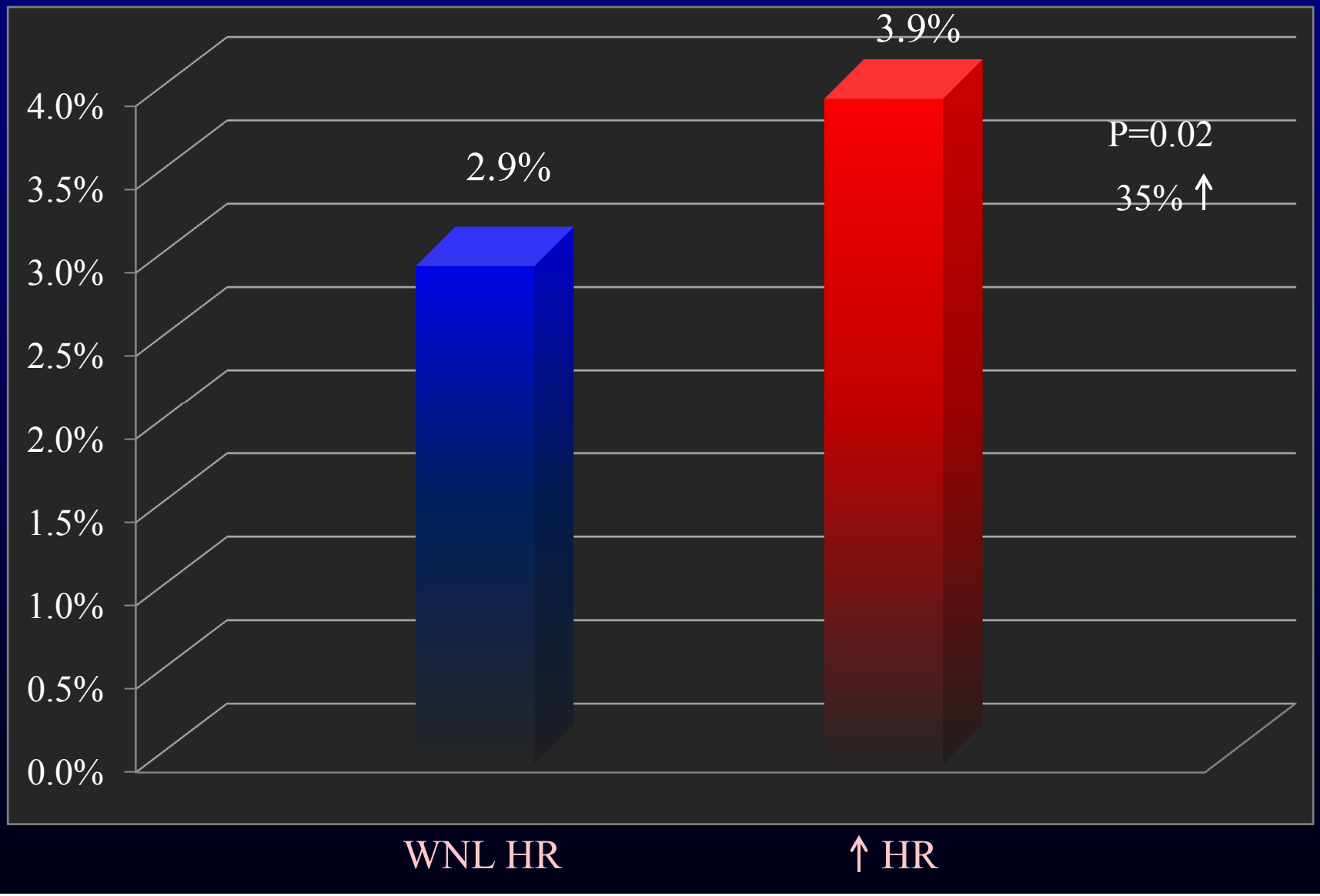
Prehosp Emerg Care 2017;21:68-73

Does the ↑HR predict ↓BP in chest pain pts treated with nitroglycerin?

- 10,308 pts from Montreal EMS
- 20% of pts (2,057) were tachycardic pre-NTG
- NTG dose was 0.4 mg spray
- NTG repeated Q5 if CP persisted
- 3.1% of all pts had hypotension

NTG and Hypotension

Prehosp Emerg Care 2017;21:68-73

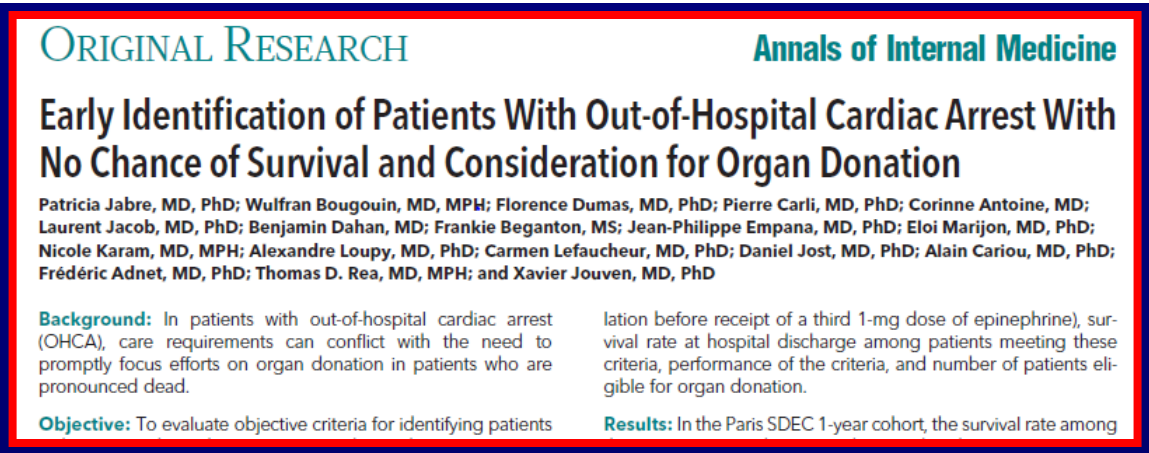


Probability of Hypotension

Hypotension decreased by 36% for every 10 mm Hg ↑ of systolic BP

NTG and Hypotension Take Homes

- Inferior and Anterior AMI hypotension equal
- Beware borderline BPs
- Especially if the pt is tachycardic
- EMS and hospital personnel should be prepared for ↓ BP especially in those who are tachycardic, regardless of Inf AMI or Ant AMI



ORIGINAL RESEARCH

Annals of Internal Medicine

Early Identification of Patients With Out-of-Hospital Cardiac Arrest With No Chance of Survival and Consideration for Organ Donation

Patricia Jabre, MD, PhD; Wulfran Bougouin, MD, MPH; Florence Dumas, MD, PhD; Pierre Carli, MD, PhD; Corinne Antoine, MD; Laurent Jacob, MD, PhD; Benjamin Dahan, MD; Frankie Beganton, MS; Jean-Philippe Empana, MD, PhD; Eloi Marijon, MD, PhD; Nicole Karam, MD, MPH; Alexandre Loupy, MD, PhD; Carmen Lefaucheur, MD, PhD; Daniel Jost, MD, PhD; Alain Cariou, MD, PhD; Frédéric Adnet, MD, PhD; Thomas D. Rea, MD, MPH; and Xavier Jouven, MD, PhD

Background: In patients with out-of-hospital cardiac arrest (OHCA), care requirements can conflict with the need to promptly focus efforts on organ donation in patients who are pronounced dead.

Objective: To evaluate objective criteria for identifying patients

lation before receipt of a third 1-mg dose of epinephrine), survival rate at hospital discharge among patients meeting these criteria, performance of the criteria, and number of patients eligible for organ donation.

Results: In the Paris SDEC 1-year cohort, the survival rate among

Annals Int Med 2016;165:770-8

Can we have a TOR criteria that gives us 100% specificity and a PPV of 100% for non-survival?

- Prospective French trial, the PRESENCE Study
- 1,771 pts from Paris' Sudden Death Expertise Center
- Tested and applied 3 criteria
- Used prospective data from Paris & King County
- Prospectively tested in 5,192 patients

Paris TOR Criteria

- Not witnessed by FF/EMS First Responders
- Non-shockable rhythm
- No ROSC after 2 doses of epinephrine

2,799 Patients Meeting All 3 Criteria

Not witnessed, no shock, 2 doses epi

Study	N	Survived
Paris 1 year cohort	772	0
Paris validation cohort	1569	1*
PRESENCE Trial	285	0
King County, USA	173	0

**Persistent vegetative state*

Paris TOR Criteria

- Not witnessed by FF/EMS First Responders
- Non-shockable rhythm
- No ROSC after 2 doses of epinephrine

100% predictive of who to terminate and not transport

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Clinical paper

Out-of-hospital cardiac arrest without return of spontaneous circulation in the field: Who are the survivors?☆

CrossMark

Yan Xiong[a,b,**,1], Hong Zhan[a,1], Yuanzheng Lu[a,b], Kaipan Guan[a,1], Ngozi Okoro[b], Denise Mitchell[b], Megan Dwyer[b], Auna Leatham[b], Gilberto Salazar[b], Xiaoxing Liao[a], Ahamed Idris[b,*]

Resuscitation 2016;112:28-33

"We suggest that all treated non-traumatic OHCA patients should be transported to the hospital"

- 2,827 TOR pts still transported
- Dallas – Ft. Worth ROC site data (2006-11)
- 1.1% (31 pts) discharged
- Neuro status unknown

PREHOSPITAL DEXTROSE EXTRAVASATION CAUSING FOREARM COMPARTMENT SYNDROME: A CASE REPORT

Matthew Chinn, MD, M. Riccardo Colella, DO, MPH

The TOR Group

Resuscitation 2016;112:28-33

- 2/31 had VF/VTp
- 11/31 had ?? Rhythm; % AS vs PEA??
- Use of epi unclear, as is # of doses
- CPR time not included
- Incidence of narrow/rapid PEA not included

TOR Take Homes

- Dallas-Ft. Worth ROC data is very discordant
- I believe that unwitnessed AS and slow wide PEA that does not respond to epi and has low end tidal values less than 10 should be called
- Only rapid and narrow PEA might have a small chance

5 Summary Points

VF antiarrhythmics of questionable value

Know what improves CPR outcomes

Wait for second shock to give epi

NTG causes hypotension, especially if ↑ HR

TOR rules may work 100%, or not


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