The Most Common Myths In Emergency Medicine

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What does DOGMA mean?

A point of view or tenet put forth as authoritative without adequate grounds.

Merriam-Webster

Medical Dogma!

Knowledge changes…

Half-life of truth in surgical literature

John C Hall, Cameron Platell

Published: 13 December 1997

- 1935-1994
- Estimated half-life of facts in surgical literature was 45 years

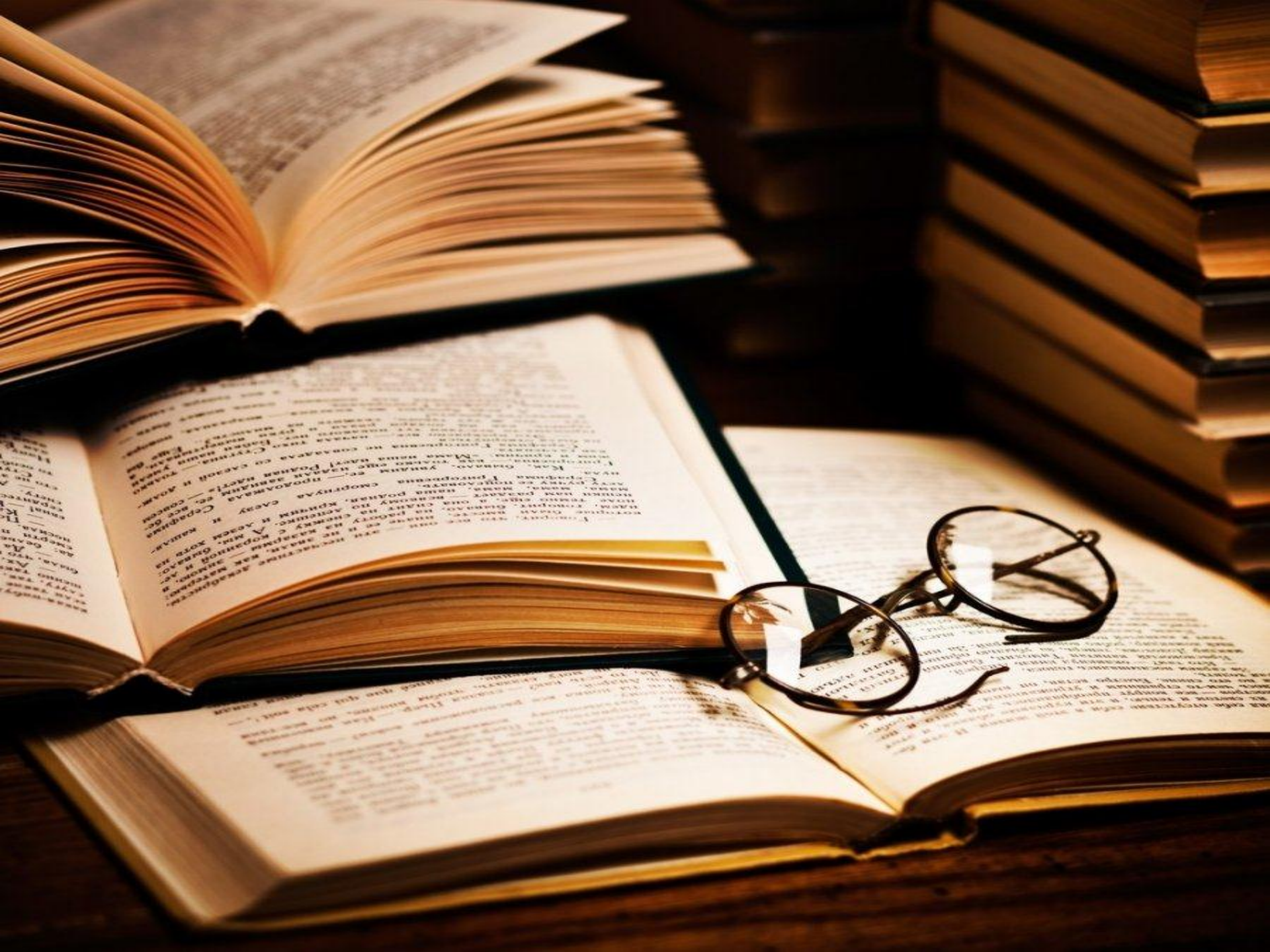
TRANSACTIONS OF THE AMERICAN CLINICAL AND CLIMATOLOGICAL ASSOCIATION, VOL. 122, 2011

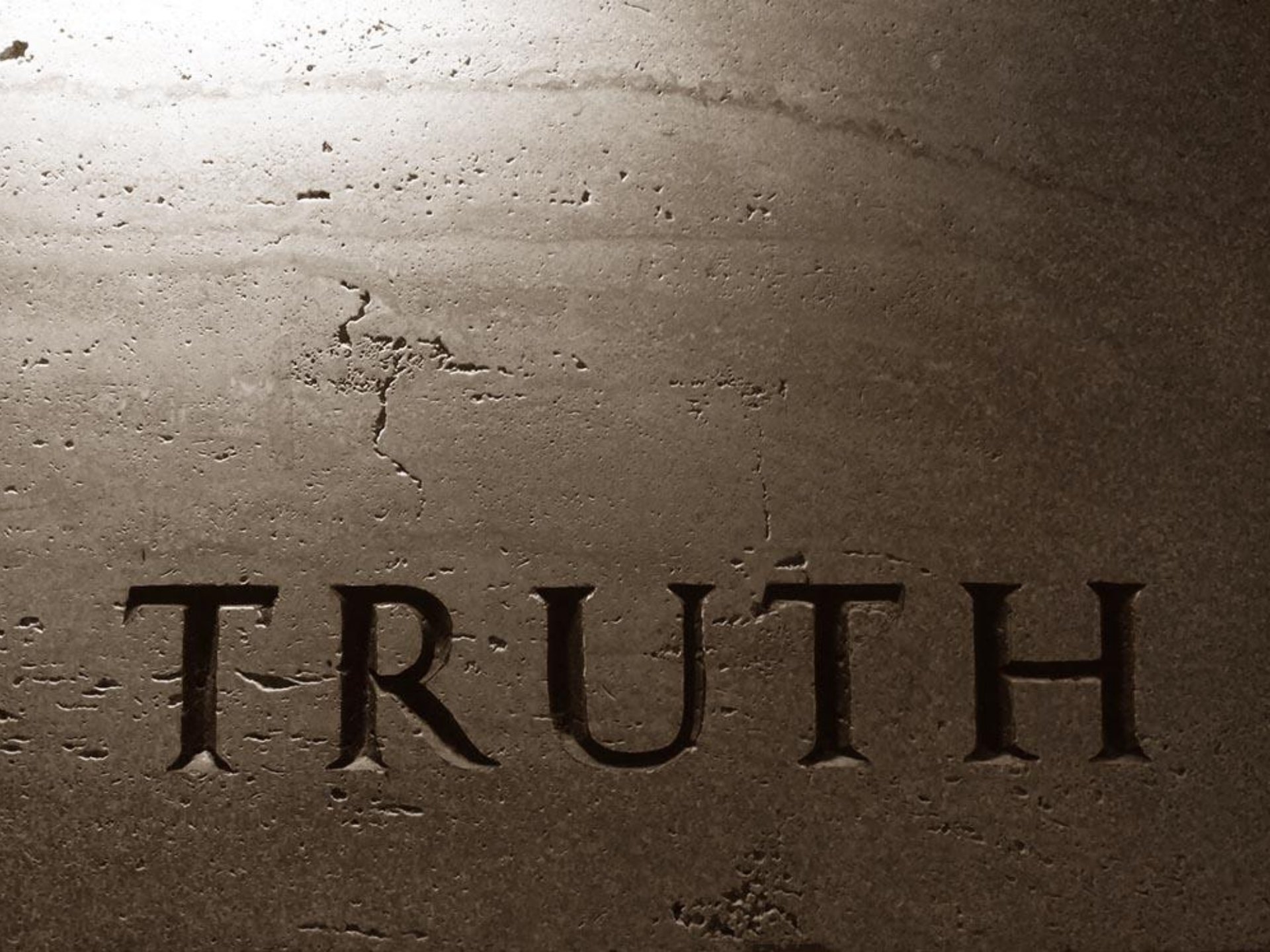
CHALLENGES AND OPPORTUNITIES FACING MEDICAL EDUCATION

PETER DENSEN, MD

IOWA CITY, IOWA

It is estimated that the doubling time of medical knowledge in 1950 was 50 years; in 1980, 7 years; and in 2010, 3.5 years. In 2020 it is projected to be 0.2 years—just 73 days. Students who began medical school in the autumn of 2010 will experience approximately three doublings in knowledge by the time they complete the minimum length of training (7 years) needed to practice medicine. Students who graduate in 2020 will experience four doublings in knowledge. What was learned in the first 3 years of medical school




TRUTH

We have to start somewhere…

#1

1 mL
Epinephrine
Injection, USP
1:1000

Epinephrine

- An endogenous catecholamine
- The evidence for improved outcomes **in humans is virtually nonexistent** (relies on animal studies)
- It **may improve ROSC temporarily (but not to hospital discharge)**
- The primary beneficial effect appears to be peripheral vasoconstriction, which improves cerebral and coronary blood flow (initially, although epinephrine post-ROSC likely diminishes this blood flow).

Class of Recommendations

Class I: Benefit >>> Risk

Class IIa: Benefit >> Risk

ClassIIb: Benefit ≥ Risk

****Procedure/ treatment MAY BE CONSIDERED*

Class III: Risk ≥ Benefit

2015 Recommendation—Updated

American Heart Association

Standard-dose epinephrine (1 mg every 3 to 5 minutes) may be reasonable for patients in cardiac arrest (Class IIb, LOE B-R).

Adrenaline for out-of-hospital cardiac arrest resuscitation: A systematic review and meta-analysis of randomized controlled trials☆

Steve Lin, Clifton W. Callaway[1], Prakesh S. Shah[2], Justin D. Wagner[3], Joseph Beyene[4], Carolyn P. Ziegler[5], Laurie J. Morrison[3]

June 2014 Volume 85, Issue 6, Pages 732–740

- Fourteen RCTs (*n* = 12,246)
- Epi vs placebo (*n* = 534),
- Epi vs High dose epi (*n* = 6174),
- Epi vs Epi/vasopressin combination (*n* = 5202)
- Epi vs Vasopressin (*n* = 336).

There was no benefit of adrenaline in survival to discharge or neurological outcomes

Prehospital Epinephrine Use and Survival Among Patients With Out-of-Hospital Cardiac Arrest

Akihito Hagihara, DMSc, MPH
Manabu Hasegawa, MD
Takeru Abe, MA
Takashi Nagata, MD
Yoshifumi Wakata, MD
Shogo Miyazaki, PhD

Context Epinephrine is widely used in cardiopulmonary resuscitation for out-of-hospital cardiac arrest (OHCA). However, the effectiveness of epinephrine use before hospital arrival has not been established.

Objective To evaluate the association between epinephrine use before hospital arrival and short- and long-term mortality in patients with cardiac arrest.

Design, Setting, and Participants Prospective, nonrandomized, observational propensity analysis of data from 417 188 OHCAs occurring in 2005-2008 in Japan in which patients aged 18 years or older had an OHCA before arrival of emergency medical service (EMS) personnel, were treated by EMS personnel, and were transported to the hospital.

Main Outcome Measures Return of spontaneous circulation before hospital arrival, survival at 1 month after cardiac arrest, survival with good or moderate cerebral performance (Cerebral Performance Category [CPC] 1 or 2), and survival with no, mild, or moderate neurological disability (Overall Performance Category [OPC] 1 or 2).

Results Return of spontaneous circulation before hospital arrival was observed in 2786 of 15 030 patients (18.5%) in the epinephrine group and 23 042 of 402 158 patients (5.7%) in the no-epinephrine group ($P<.001$); it was observed in 2446 (18.3%) and 1400 (10.5%) of 13 401 propensity-matched patients, respectively ($P<.001$). In the total sample, the numbers of patients with 1-month survival and survival with CPC 1 or 2 and OPC 1 or 2, respectively, were 805 (5.4%), 205 (1.4%), and 211 (1.4%) with epinephrine and 18 906 nephrine and long tcome measures (adjusted ORs: 1-month survival, 0.46 [95% CI, 0.42-0.51]; [95% CI, 0.26-0.36]; and OPC 1-2, 0.32 [95% CI, 0.27-0.38]; all $P<.00$ negative associations were observed among propensity-matched patients (a ed ORs: 1-month survival, 0.54 [95% CI, 0.43-0.68]; CPC 1-2, 0.21 [95% CI, 0.10-0.44]; and OPC 1-2, 0.23 [95% CI, 0.11-0.45]; all $P<.001$).

Conclusion Among patients with OHCA in Japan, use of prehospital epinephrine was significantly associated with increased chance of return of spontaneous circulation before hospital arrival but decreased chance of survival and good functional outcomes 1 month after the event.

Epinephrine→ ↑ROSC to hospital **(8,5% & %5,7)**
Neurologically intact survival after 1 month (%5,4 & %4,7)

EPINEPHRINE IS WIDELY USED IN cardiopulmonary resuscitation (CPR) for patients with out-of-hospital cardiac arrest (OHCA).[1-3] However, its effectiveness in CPR has not been established. Epinephrine is associated with increased myocardial oxygen consumption and ventricular arrhythmias during the period after resuscitation.[4] Concern has been raised regarding increased and coronary perfusion by redirected peripheral blood flow has been reported.[10,11]

To verify the effectiveness of epinephrine in CPR, the influences of other factors, such as patients, bystanders, CPR by bystanders, life support by emergency medical service (EMS) personnel, and time from call to the scene or hospital arrival, need to be con-

JAMA. 2012;307(11):1161-1168 www.jama.com

Effect of adrenaline on survival in out-of-hospital cardiac arrest: A randomised double-blind placebo-controlled trial☆

Ian G. Jacobs[a,c,*], Judith C. Finn[a,c], George A. Jelinek[b], Harry F. Oxer[c], Peter L. Thompson[d,e]

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ABSTRACT

Background: There is little evidence from clinical trials that the use of adrenaline (epinephrine) in treating cardiac arrest improves survival, despite adrenaline being considered standard of care for many decades. The aim of our study was to determine the effect of adrenaline on patient survival to hospital discharge in out of hospital cardiac arrest.

Methods: We conducted a double blind randomised placebo-controlled trial of adrenaline in out-of-hospital cardiac arrest. Identical study vials containing either adrenaline 1:1000 or placebo (sodium chloride 0.9%) were prepared. Patients were randomly allocated to receive 1 ml aliquots of the trial drug

Epinephrine→ ↑ROSC to hospital (**8,4%&23,5%**),
No difference in discharge neurologically intact (**1,9%&4%**)

and receiving bystander SC occurred in 22 (8.4%) of patients receiving placebo and 64 (23.5%) who received adrenaline (CI 2.0–5.6). Survival to hospital discharge occurred in 5 (1.9%) and 11 (4.0%) patients receiving p o or adrenaline respectively (OR = 2.2; 95% CI 0.7–6.3). All but two patients (both in the adrenaline group) had a CPC score of 1–2.

Conclusion: Patients receiving adrenaline during cardiac arrest had no statistically significant improvement in the primary outcome of survival to hospital discharge although there was a significantly improved likelihood of achieving ROSC.

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GOAL

Take Home Point

- There is no objective evidence that epi is more effective than placebo
- Epinephrine → ↑ROSC to hospital,

↓Functional neurogical outcome

- High quality BLS!!!
- LONDON STUDY!!!

PARAMEDIC2
The Adrenaline Trial

#2

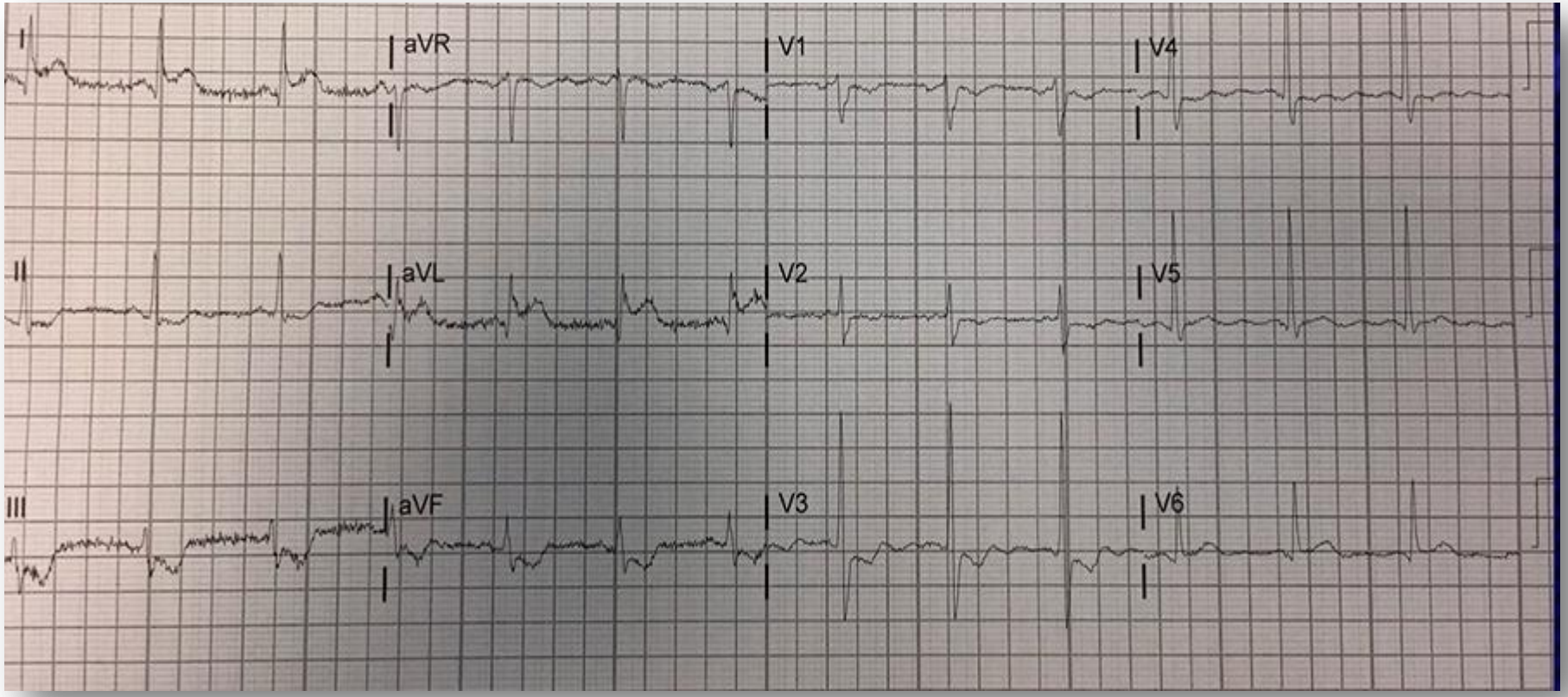
Are recent stress testing and catheterizations predictive of new plaque rupture ?!

Let’s give a real case

- 50 yo man had outpatient excercise stress test in the morning
- Test was normal
- Doc sent him home

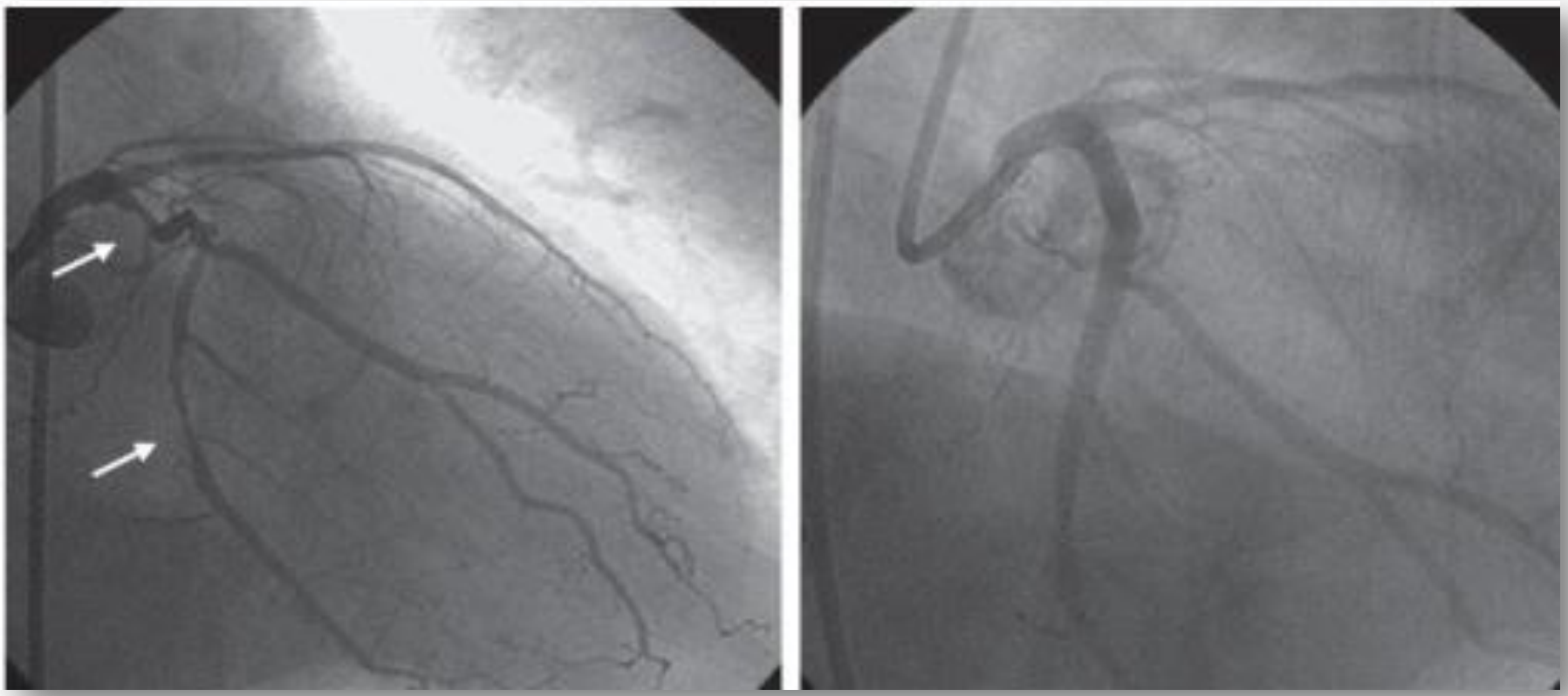
Emergency

Obtained ECG …



www.ecgweekly.com

PCI..



https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4578018/

Review Article

An approach to the classificatio[illegible]nagement of vulnerable plaque

T.K. Mishra [a,*], Chandrakant [illegible]

[a] Prof & HOD, Department of Cardiology, S[illegible]
[b] Assistant Professor, Department of Car[illegible]

ARTICLE INFO

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Received 9 September 2012
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Keywords:
Plaque
Atherosclerosis
Coronary artery disease

[illegible]s to be able [illegible]cute coronary [illegible]e coronary event is [illegible]ent, hence vulnerable [illegible]s not only led to the standa[illegible]n, but it has also been possible [illegible] and non-invasive means, basing upon specific charac[illegible]. Prog[illegible]e in understanding of diagnostic criteria has been proposed based upon p[illegible]ical features. Therapeutic options at present are limited but promising new modalities are being explored.

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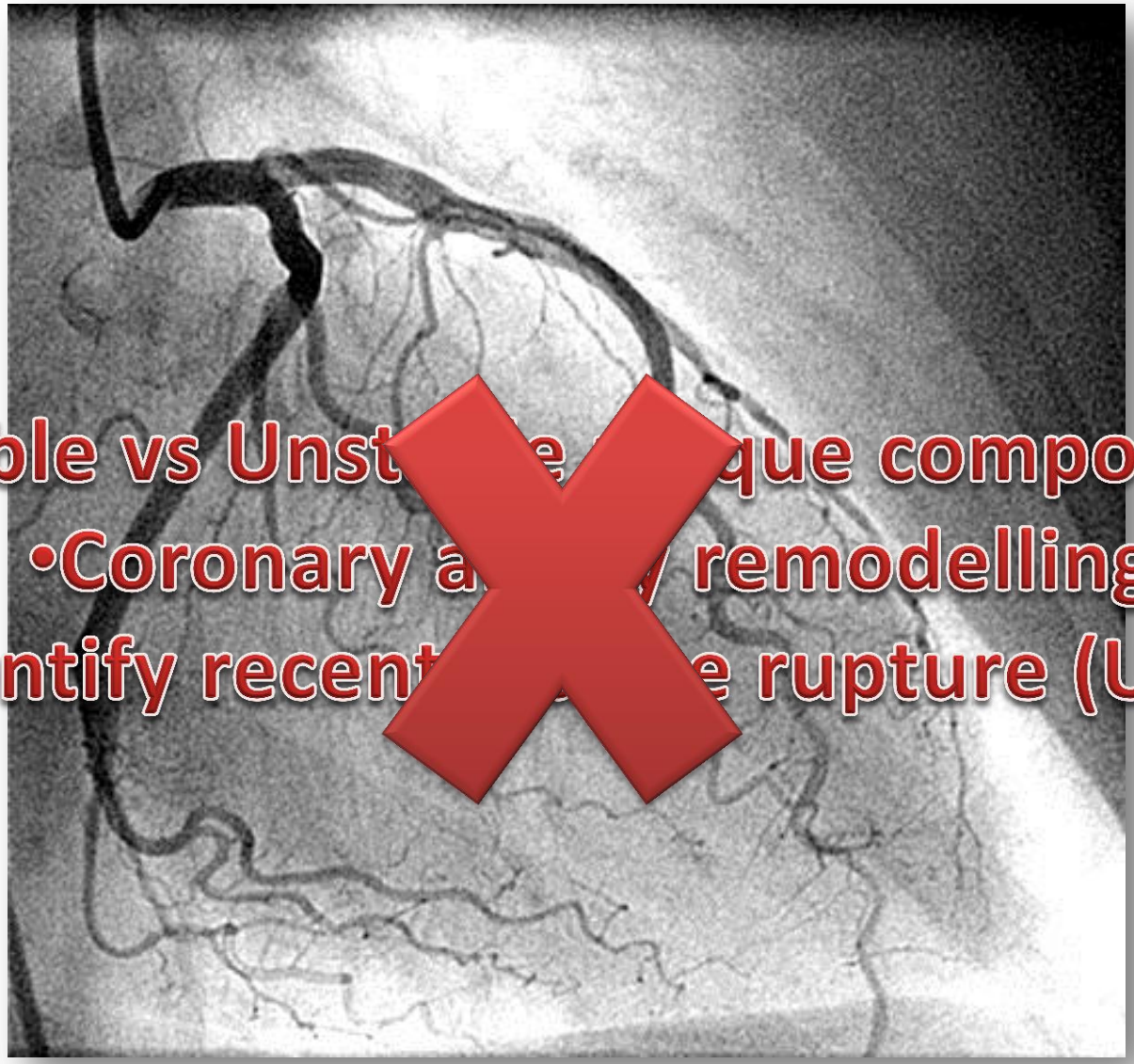
Stenosis size doesn't matter.
Plaque vulnerability!!!

Gold Standard



- Stable vs Unst[illegible]que composition
- Coronary a[illegible] remodelling
- Identify recent[illegible]e rupture (USAP)

If so, why do we use stress test and cath for the patients?

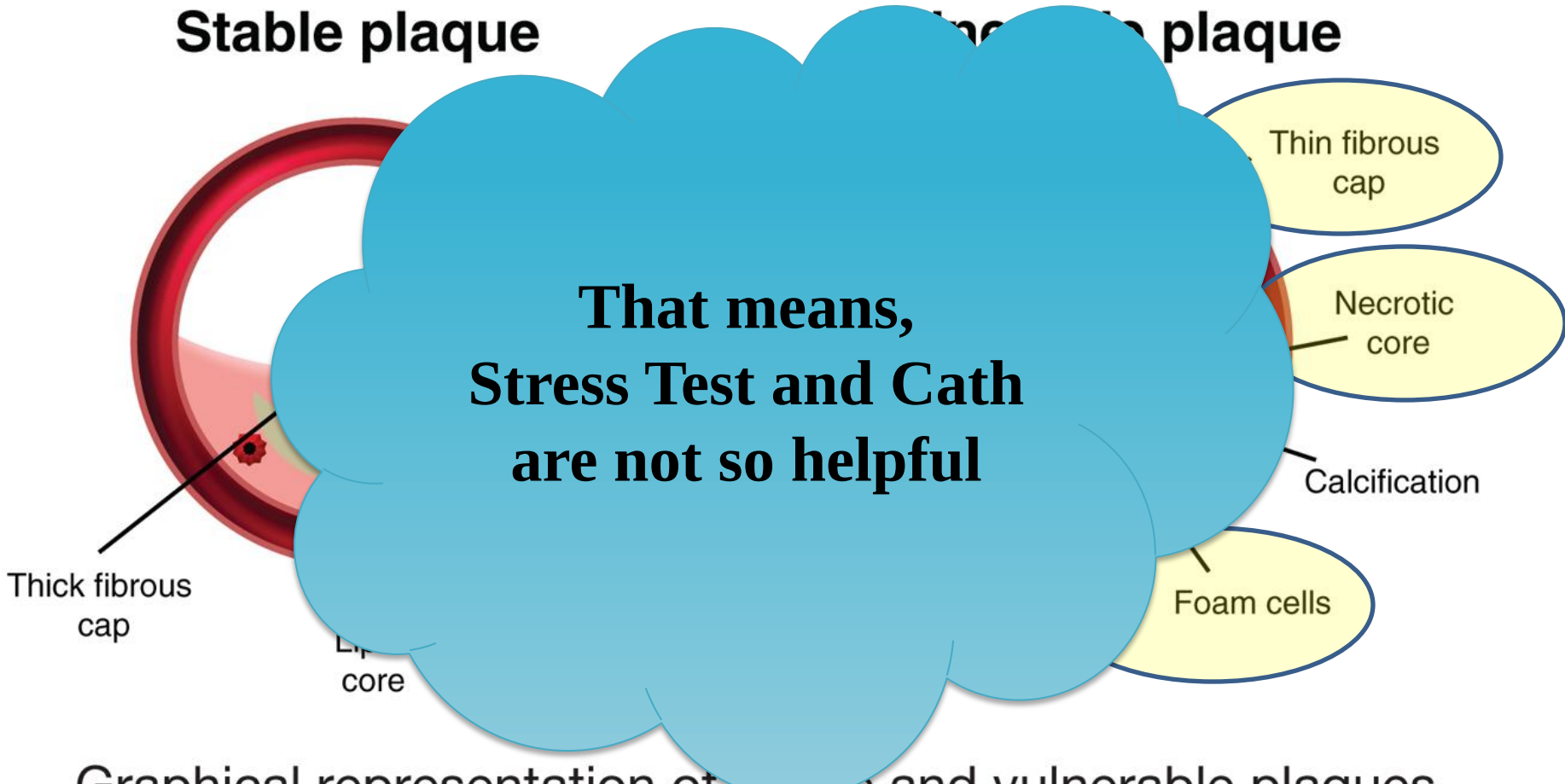
West J Emerg Med. 2010 Sep; 11(4): 384–388. PMCID: PMC2967694

Coronary Disease in Emergency Department Chest Pain Patients with Recent Negative Stress Testing

Jonathan Walker, DO, Michael Galuska, MD, and David Vega, MD

Author information ▶ Article notes ▶ Copyright and License information ▶

A previous negative stress test cannot be used alone to rule out CAD in patients presenting to the ED with chest pain. In this study, 20.7% of patients with negative stress tests within three years prior to presentation had significant CAD within 30 days of admission. Further studies are needed to determine the role that previous stress testing should play in determining the disposition of chest pain patients.



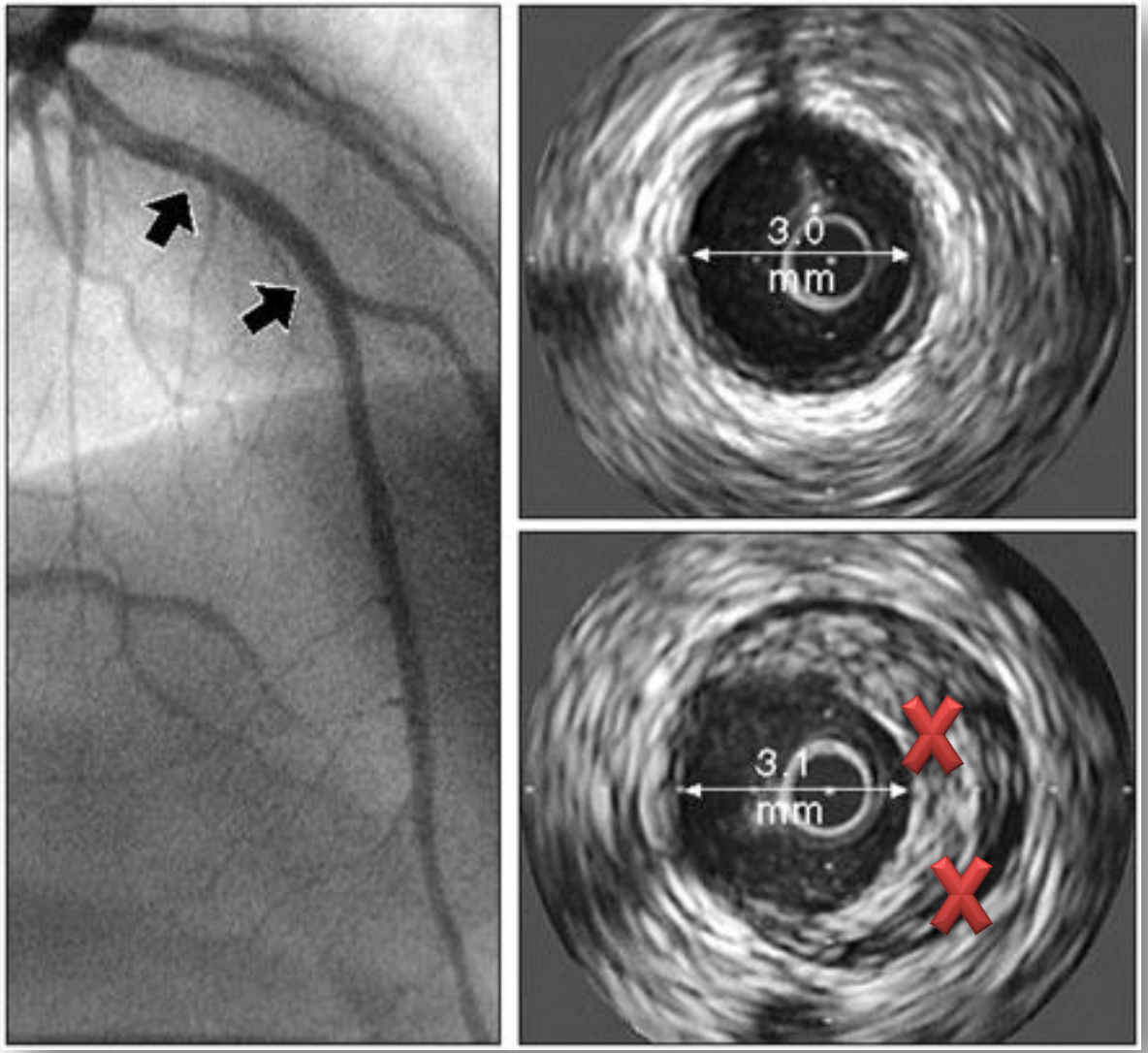
That means,
Stress Test and Cath
are not so helpful

Graphical representation of and vulnerable plaques

Expert Reviews in Molecular Medicine © 2016 Cambridge University Press

IVUS Method

Example of coronary remodeling



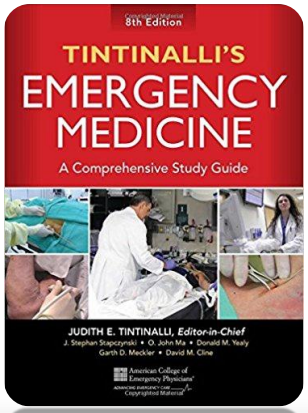
http://circ.ahajournals.org/content/103/4/604#ref-28

Take Home Point

- Recent stress testing and catheterizations are not predictive of new plaque rupture!
- **HISTORY**
- ECG
- Hs Troponin
- TIMI score

#3

Sterile & Nonsterile Gloves



STERILE TECHNIQUE

Although observing sterile technique has been well demonstrated to have a beneficial effect on patient outcomes in several settings, the extent to which its routine employment in the ED treatment of traumatically contaminated wounds reduces infection rates is unclear. Adherence to full aseptic methods (cap, gown, mask, and gloves) does not appear to be of substantial benefit,[39] nor does hand antisepsis prior to initiation of wound repair.[40] Although recommendations exist for the use of sterile gloves in the repair of uncomplicated lacerations, supportive evidence is lacking, if not refutative.[41] These findings suggest that aspects of the sterile technique may be curbed, leading to time and cost savings per laceration by using common-sense cleanliness.

Sterile versus nonsterile gloves for repair of uncomplicated lacerations in the emergency department☆

A randomized controlled trial

Vsevolod S. Perelman, MD, MSc, Gregory J. Francis, MD, BSc, Tim Rutledge, MD, John Foote, MD, Frank Martino, MD, George Dranitsaris, MSc(Pharm)

Abstract

Study objective

Although sterile technique for laceration management continues to be recommended, studies supporting this practice are lacking. Using clean nonsterile gloves rather than individually packaged sterile gloves for uncomplicated wound repair in the emergency department may result in cost and time savings. This study is designed to determine whether the rate of infection after repair of uncomplicated lacerations in immunocompetent patients is comparable using clean nonsterile gloves versus sterile gloves.

Methods

A prospective multicenter trial enrolled 816 individuals who were randomized to have their wounds repaired by using sterile or clean nonsterile gloves. The attending physician or resident completed a checklist describing patient, wound, and management characteristics. The patients were provided with a questionnaire to be completed by the physician who removed their sutures at the prescribed time and indicated the presence or

No difference in infection rates between using sterile & non-sterile

sterile gloves group was 6.1% (95% confidence inte 3.8% to 8.4%) and was 4.4% in the clean gloves group (95% CI 2.4% to 6.4%). The relative risk 6 .37 (95% CI 0.75 to 2.52).

Conclusion

This study demonstrated that there is no clinically important difference in infection rates between using clean nonsterile gloves and sterile gloves during the repair of uncomplicated traumatic lacerations.

Ned Tijdschr Geneeskd. 2011;155(18):A3341.

[Sterile gloves are necessary in minor surgery].

[Article in Dutch]

van den Broek PJ[1].

Author information

1 Leids Universitair Medisch Centrum, afd. Infectieziekten, Leiden, the Netherlands. p.j.van_den_broek@lumc.nl

Abstract

The use of sterile gloves as part of asepsis during surgery goes back to the end of the nineteenth century, but now the preventive value of this measure during minor surgery is questioned. One randomized study showed no difference in wound infection rates whether sterile or nonsterile gloves were used for repair of uncomplicated lacerations of the skin. An observational and a retrospective study in minor dermatological surgery confirm that the use of sterile or nonsterile gloves makes no difference for excisions of tumours as long as no reconstructions of the skin are performed. However, in more complicated minor dermatological surgery, 80% less wound infections were observed when sterile gloves were used. In conclusion, the available evidence is too limited to change the recommendation to use sterile gloves for minor surgery.

JAMA Dermatol. 2016 Sep 1;152(9):1008-14. doi: 10.1001/jamadermatol.2016.1965.

Comparison of Sterile vs Nonsterile Gloves in Cutaneous Surgery and Common Outpatient Dental Procedures: A Systematic Review and Meta-analysis.

Brewer JD[1], Gonzalez AB[2], Baum CL[1], Arpey CJ[1], Roenigk RK[1], Otley CC[1], Erwin PJ[3].

Author information

Abstract

IMPORTANCE: Whether the use of sterile vs nonsterile gloves in outpatient cutaneous procedures affects the rate of postoperative wound infection is unknown.

OBJECTIVE: To explore rates of surgical site infection (SSI) with the use of sterile vs nonsterile gloves in outpatient cutaneous surgical procedures.

DATA SOURCES: This systematic review and meta-analysis identified studies from Ovid MEDLINE (1946 to present), Ovid Cochrane Central Register of Controlled Trials (1991 to present), Ovid EMBASE (1988 to present), EBSCO Cumulative Index to Nursing and Allied Health Literature (1980 to present), Scopus (1996 to present), and Web of Science (1975 to present).

STUDY SELECTION: Studies with information on sterile vs nonsterile gloves in outpatient surgical procedures were retrieved. Only randomized clinical trials and comparative studies were included for final analysis.

DATA EXTRACTION: Data of trial design, surgery characteristics, and outcomes from published manuscripts and unpublished data were independently extracted.

MAIN OUTCOMES AND MEASURES: Randomized clinical trials were considered high quality if randomization, allocation concealment, blinding, and follow-up completeness were appropriate. Relative risk and 95% CIs were derived for postoperative wound infections.

RESULTS: Fourteen articles met eligibility and inclusion criteria for systematic review; they included 12 275 unique patients who had undergone 12 275 unique outpatient procedures with sterile or nonsterile gloves and had follow-up regarding SSI. With the exclusion of 1 single-arm observational study of 1204 patients, 11 071 patients from 13 studies remained in the meta-analysis. Of these, 228 patients were documented as having postoperative SSI (2.1%), including 107 of 5031 patients in the nonsterile glove group (2.1%) and 121 of 6040 patients in the sterile glove group (2.0%). Overall relative risk for SSI with nonsterile glove use was 1.06 (95% CI, 0.81-1.39).

CONCLUSIONS AND RELEVANCE: No difference was found in the rate of postoperative SSI between outpatient surgical procedures performed with sterile vs nonsterile gloves.

Am Fam Physician. 2017 May 15;95(10):628-636.

Laceration Repair: A Practical Approach.

Forsch RT[1], Little SH[1], Williams C[2].

Author information

Abstract

The goals of laceration repair are to achieve hemostasis and optimal cosmetic results without increasing the risk of infection. Many aspects of laceration repair have not changed over the years, but there is evidence to support some updates to standard management. Studies have been unable to define a "golden period" for which a wound can safely be repaired without increasing risk of infection. Depending on the type of wound, it may be reasonable to close even 18 or more hours after injury. The use of nonsterile gloves during laceration repair does not increase the risk of wound infection compared with sterile gloves. Irrigation with potable tap water rather than sterile saline also does not increase the risk of wound infection. Good evidence suggests that local anesthetic with epinephrine in a concentration of up to 1:100,000 is safe for use on digits. Local anesthetic with epinephrine in a concentration of 1:200,000 is safe for use on the nose and ears. Tissue adhesives and wound adhesive strips can be used effectively in low-tension skin areas. Wounds heal faster in a moist environment and therefore occlusive and semiocclusive dressings should be considered when available. Tetanus prophylaxis should be provided if indicated. Timing of suture removal depends on location and is based on expert opinion and experience.

Take Home Point

No Benefit

#4

VS

500 ml
Normal Saline
0.9% w/v Sodium Chloride
Intravenous Infusion BP
One litre contains:
Sodium Chloride ..... 9.0 g
Water for injection to ..... 1000 ml
Equivalent to approx.
Na+ ..... 150 mmol/L
Cl- ..... 150 mmol/L
Theor. Osmolarity ..... 308 mOsm/L
pH ..... 4.5 - 7.0
See enclosed directions for dosage & use.
Caution:
SINGLE DOSE CONTAINER
Discard unused portion.
Do not store above 25°C.
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Cat. No. LP141
B.N. 105509
MFG. 02 02 11
EXP. 31 01 16

Am Fam Physician. 2015 Jan 15;91(2):86-92.

Common questions about wound care.

Worster B[1], Zawora MQ[1], Hsieh C[1].

Author information

1 Thomas Jefferson University, Philadelphia, PA, USA.

Abstract

Lacerations, abrasions, burns, and puncture wounds are common in the outpatient setting. Because wounds can quickly become infected, the most important aspect of treating a minor wound is irrigation and cleaning. There is no evidence that antiseptic irrigation is superior to sterile saline or tap water. Occlusion of the wound is key to preventing contamination. Suturing, if required, can be completed up to 24 hours after the trauma occurs, depending on the wound site. Tissue adhesives are effective for low-tension wounds with linear edges that can be evenly approximated. Although patients are often instructed to keep the wounds covered and dry after suturing, they can get wet within the first 24 to 48 hours [illegible] for most simple wounds. Tetanus [illegible] 10 years. Superficial mild wounds [illegible] with oral antibiotics. Most se[illegible] and wounds that cover large [illegible] care specialists.

There is no evidence that antiseptic irrigation is superior to sterile saline or tap water

BMJ Open. 2013 Jan 16;3(1). pii: e001504. doi: 10.1136/bmjopen-2012-001504.

Water is a safe and effective alternative to sterile normal saline for wound irrigation prior to suturing: a prospective, double-blind, randomised, controlled clinical trial.

Weiss EA[1], Oldham G, Lin M, Foster T, Quinn JV.

Author information

1 Division of Emergency Medicine, Stanford University School of Medicine, Stanford, California, USA.

MAIN OUTCOME MEASURES: The primary outcome measured was the difference in wound infection rates between the two randomised groups.

RESULT ... ded; 29 patients ... ent. Of the 631 rem ... S, 1 TW). A total of 629 patients were included in the statistical analysis. The ... no differences in the demographic and clinical characteristics of the two groups. There were 20 infections 6.4% (95% CI 9.1% to ... SS group compared with 11 infections 3.5% (95% CI 5.5% to 1.5%) in the TW group, a difference of 2.9% (95% CI -0.4% to 5.7%).

No difference in the infection rate of wounds irrigated with TW or SS solution

CONCLUSIONS: There is no difference in the infection rate of wounds irrigated with either TW or SS solution, with a clinical trend towards fewer wound infections in the TW group, making it a safe and cost-effective alternative to SS for wound irrigation.

Cochrane Library

Cochrane Database of Systematic Reviews

Water for wound cleansing (Review)

Fernandez R, Griffiths R

Authors' conclusions

There is no evidence that using tap water to cleanse acute wounds in adults or children increases or reduces infection. There is not strong evidence that cleansing wounds per se increases healing or reduces infection. In the absence of potable tap water, boiled and cooled water as well as distilled water can be used as wound cleansing agents.

J Wound Ostomy Continence Nurs. 2016 Mar-Apr;43(2):140-7. doi: 10.1097/WON.0000000000000213.

Tap Water Versus Sterile Normal Saline in Wound Swabbing: A Double-Blind Randomized Controlled Trial.

Chan MC[1], Cheung K, Leung P.

Author information

1 Mun Che Chan, MSc, Community Nursing Services, Kwong Wah Hospital, Hong Kong. Kin Cheung, PhD, School of Nursing, The Hong Kong Polytechnic University, Hong Kong. Polly Leung, PhD, Department of Health Technology and Informatics, The Hong Kong Polytechnic University, Hong Kong.

Abstract

PURPOSE: The use of tap water as a wound-cleansing agent is becoming more common in clinical practice, especially in community settings. The aim of this study was to test whether there are differences in wound infection and wound healing rates when wounds are cleansed with tap water or sterile normal saline.

DESIGN: Double-blinded randomized controlled trial.

SUBJECTS AND SETTING: Subjects were recruited from the community nursing service of a local hospital in Hong Kong. The target sample included subjects who were aged 18 years or more, and receiving chronic or acute wound care treatment.

METHODS: Subjects were randomly assigned to wound cleansing with tap water (experimental group) or sterile normal saline (control group). Wound assessment was conducted at each home visit, and an assessment of wound size was conducted once a week. The main outcome measures, occurrence of a wound infection and wound healing, were assessed over a period of 6 weeks.

RESULTS: Twenty-two subjects (11 subjects in each group) with 30 wounds participated in the study; 16 wounds were managed with tap water cleansing and 14 were randomly allocated to management with the sterile normal saline group. Analysis revealed no significant difference between the experimental and control groups in the proportions of wound infection and wound healing.

CONCLUSIONS: Study findings indicate that tap water is a safe alternative to sterile normal saline for wound cleansing in a community setting.

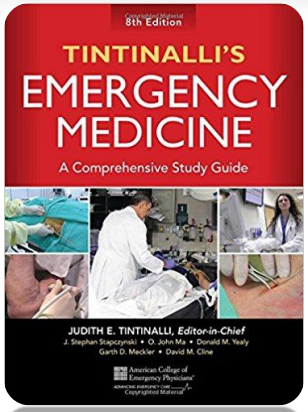
Take Home Point

No Benefit

References

PubMed

American Heart Association®



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THANKS