Les jeudis du Val - 17 mars 2026

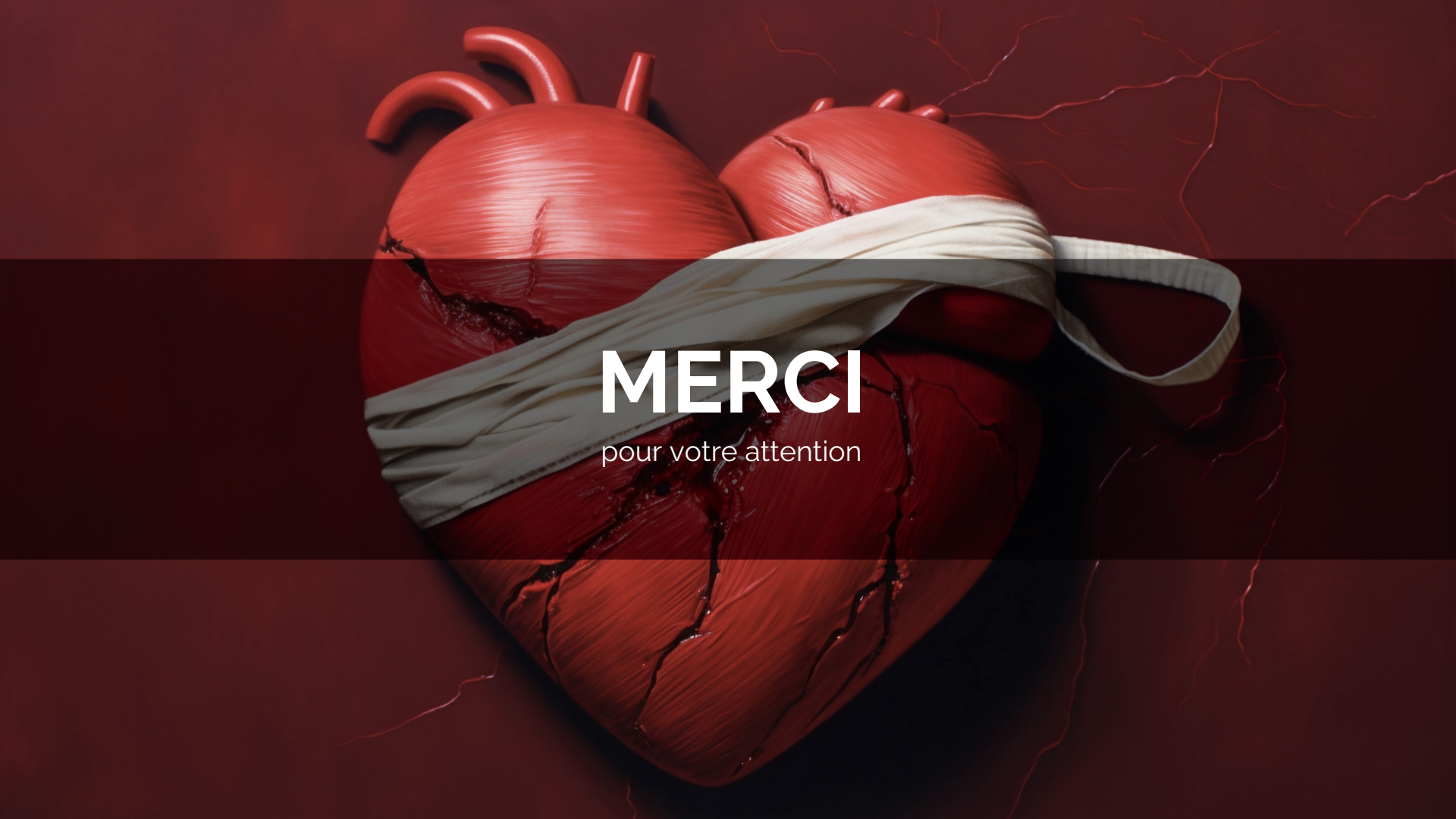
ECHOGRAPHIE DANS L'ARRÊT CARDIAQUE EXTRAHOSPITALIER

CONTRE !

Matthieu HEIDET
SAMU 94 & SAU Mondor

L'ÉCHOGRAPHIE SAUVE-T-ELLE LES PATIENTS EN ARRÊT CARDIAQUE ?


NON.
SAMU


MERCI
pour votre attention


BYSTANDER CPR RATE IN EUROPE : 58 %

Clinical paper

Electrical rhythm degeneration in adults with out-of-hospital cardiac arrest according to the no-flow and bystander low-flow time

Alexis Cournoyer[a,b,c,d,e,*], Jean-Marc Chauny[a,b,c], Jean Paquet[b], Brian Yoan Lamarche[b,i,j,k,l,m], Luc de Montigny[a], Eli Segal[a,n,o], Yiorgios Alexandros Cavayas[f,p,q], Martin Albert[f,p,q], Judy Morris[a,b,c], Justine Lessard[a,b,c], Martin Marquis[b], Sylvie Cossette[k,l,m,n,o,p,q,r], Véronique Castonguay[a,b,c], Raoul Daoust[a,b,c]

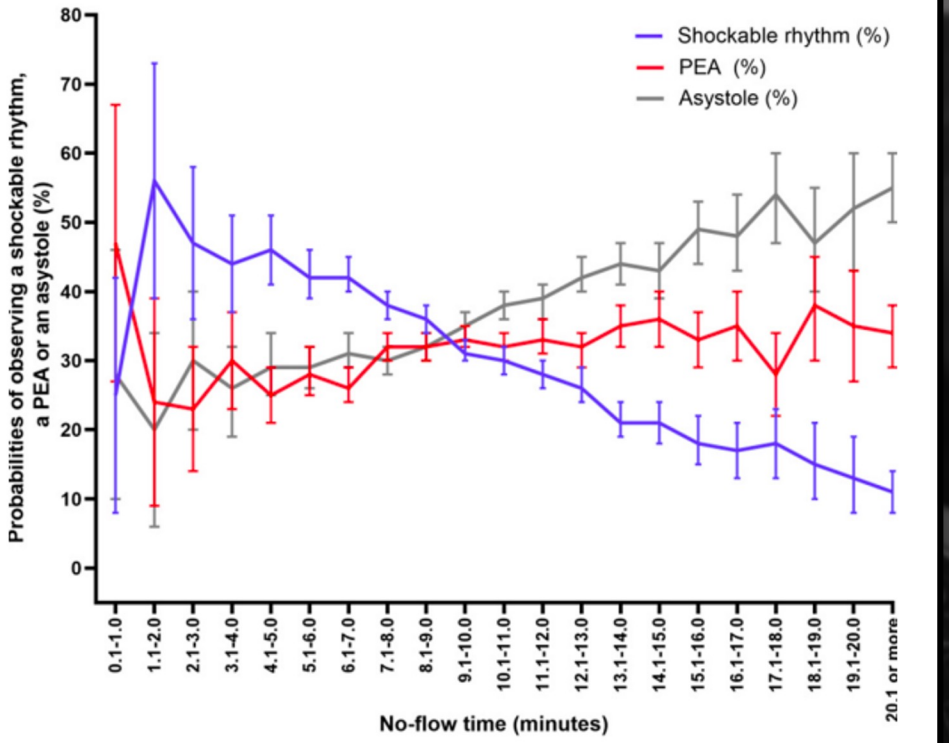
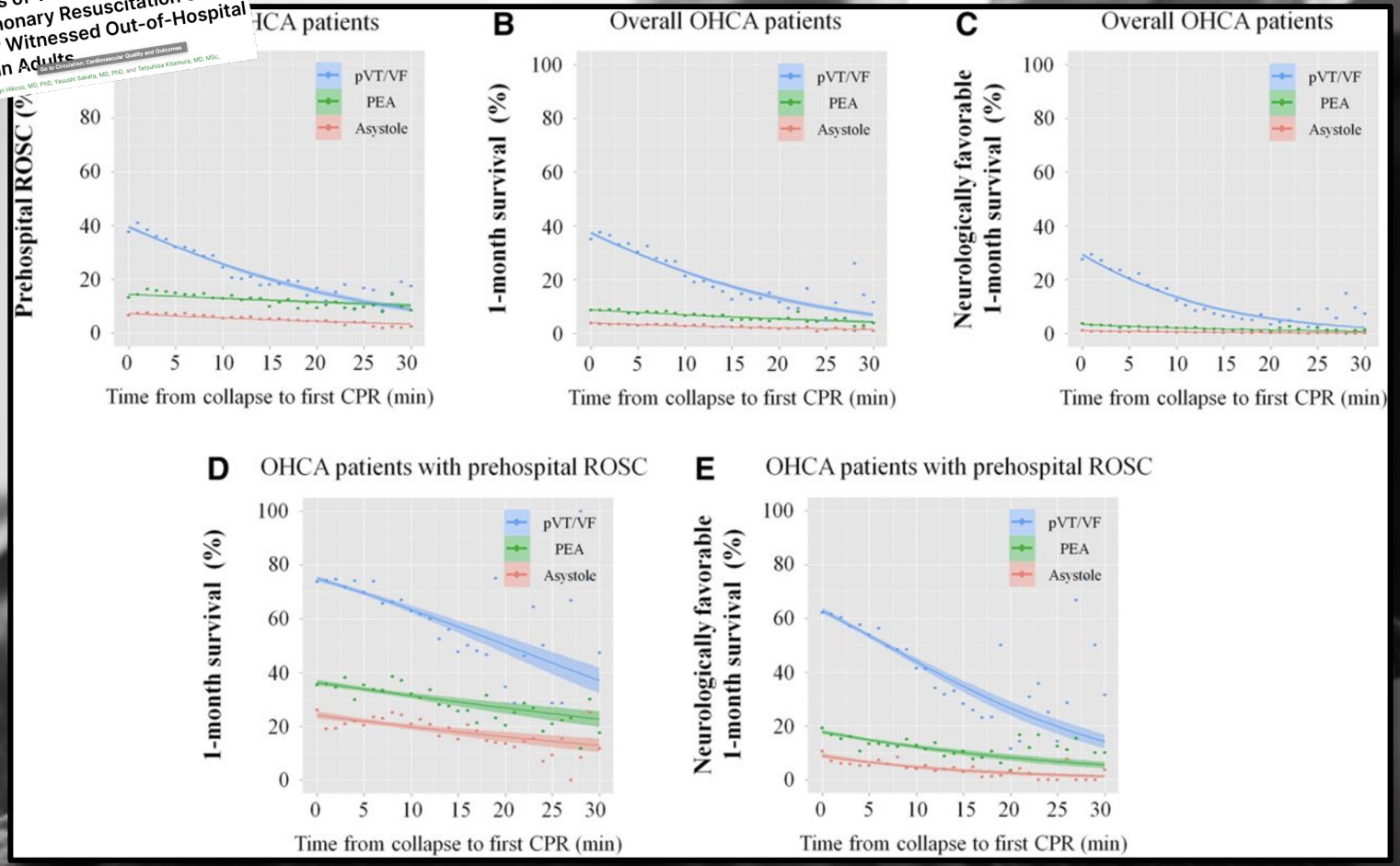


Fig. 2 – Proportions of shockable rhythm, PEA or asystole according to the no-flow time (n = 18,127). PEA: Pulseless electrical activity.

Different Impacts of Time From Collapse to First Cardiopulmonary Resuscitation on Outcomes After Witnessed Out-of-Hospital Cardiac Arrest in Adults

Go to Circulation: Cardiovascular Quality and Outcomes

Masahiko Hara, MD, Kenichi Hayashi, PhD, Shungo Hikosa, MD, PhD, Yasushi Sakata, MD, PhD, and Tetsuhisa Kitamura, MD, MSc.



Available online at ScienceDirect
Resuscitation
journal homepage: www.elsevier.com/locate/resuscitation
EUROPEAN RESUSCITATION COUNCIL

Clinical paper

Three-year trends in out-of-hospital cardiac arrest across the world: Second report from the International Liaison Committee on Resuscitation (ILCOR)

	AED use by bystander*, n (%)			First monitored shockable rhythm, n (%)			Pathogenesis, n (%)		
	AED use						Medical		
	2015	2016	2017	2015	2016	2017	2015	2016	2017
United States	2,866 (6.2)	3,511 (6.5)	4,589 (6.9)	10,594 (20.0)	12,217 (19.8)	14,019 (18.4)	45,243 (85.5)	51,763 (84.0)	62,171 (81.6)
Denmark	N/A	N/A	N/A	607 (17.6)	793 (16.3)	837 (16.3)	N/A	N/A	N/A
Norway	256 (12.8)	304 (12.7)	324 (13.7)	575 (25.0)	656 (23.5)	656 (23.7)	1659 (72.2)	2,387 (85.5)	2,389 (86.2)
United Kingdom	443 (2.5)	756 (4.0)	876 (4.5)	5,762 (21.3)	5,521 (20.5)	5,862 (20.9)		21,858 (92.1)	22,244 (91.3)
Australia	N/A	N/A	N/A	1,757	1,875	2,839			
New Zealand	N/A	N/A	N/A			928 (36.3			
Singapore	90 (4.3)	110 (5.0)	178 (7.0)			419 (14.9)		(95.1)	
South Korea	518 (2.0)	581 (2.3)	525 (2.1)	3,591 (13.0)	3,795 (14.0)	3,720 (13.7)		20,329 (75.0)	20,400 (75.3)
Japan	N/A	NA	NA	8,039 (6.5)	8,192 (6.6)	8,209 (6.5)		82,547 (66.8)	85,740 (67.5)
Germany	–	58 (2.7)	80 (3.0)	–	1,230 (23.6)	1,418 (23.4)		4,139 (79.4)	4,780 (78.8)
Ireland	334 (15.5)	386 (17.4)	423 (20.9)	450 (20.9)	501 (22.2)	440 (20.0)	1,898 (88.3)	1,944 (86.2)	1,900 (86.4)
Regional Registries									
Italy	9 (2.2)	8 (2.2)	17 (4.3)	84 (17.1)	83 (18.8)	91 (19.3)	461 (94.1)	410 (93.0)	436 (92.4)
Switzerland	41 (18.5)	39 (19.4)	40 (19.0)	45 (18.2)	47 (21.3)	63 (25.8)	198 (80.2)	193 (87.3)	209 (85.7)
France	35 (2.0)	56 (2.7)	51 (2.2)	552 (27.1)	569 (23.7)	606 (22.5)	N/A	1975 (82.2)	2136 (79.4)
Bosnia and Herzegovina	–	0	0	–	105 (33.3)	114 (33.1)	–	302 (95.9)	306 (89.0)

				ock delivered		
				15	2016	2017
United States	36,733 (69.4)	42,221 (68.5)	53,240 (69.8)	3 9)	1,049 (1.9)	1,199 (1.8)
Denmark	2,691 (75.2)	3,732 (73.5)	3,953 (74.2)	2 6)	395 (8.8)	367 (7.7)
Norway	1,402 (61.0)	1,690 (60.6)	1,735 (62.6)	A	79 (3.3)	86 (3.6)
United Kingdom	N/A	6,756 (77.5)	8,948 (72.3)	A	N/A	N/A
Australia	4,741 (66.6)	5,379 (69.8)	7,818 (71.3)	6)	101 (1.7)	232 (2.5)
New Zealand	1,554 (67.4)	1,644 (69.4)	1,802 (70.5)			
Singapore	1,649 (71.0)	1,828 (74.0)	2,110 (75.2)			
South Korea	16,089 (58.2)	15,457 (57.0)	15,318 (56.6)	5)	(0.5)	(0.5)
Japan	N/A	N/A	N/A	315 6)	1,968 (1.7)	2,102 (1.8)
Germany	–	3,264 (62.6)	3,759 (62.0)		20 (0.9)	37 (1.4)
Ireland	1,483 (69.0)	1,514 (67.1)	1,508 (68.5)	1 0)	134 (6.0)	132 (6.5)
Regional Registries						
Italy	393 (80.2)	360 (81.6)	360 (76.3)	0)	5 (1.4)	6 (1.5)
Switzerland	167 (67.6)	158 (71.5)	150 (61.5)	3)	13 (6.5)	13 (6.2)
France	1,511 (74.1)	1674 (69.7)	1894 (70.4)	A	N/A	N/A
Bosnia and Herzegovina	–	230 (73.0)	219 (63.7)		0	0

IQR denotes interquartile range; EMS: emergency medical
* We excluded EMS-witnessed OHCA from the denomin

tor.

2 - 20%

Nishiyama C et al. Resuscitation 2023;186:109757

The impact of time to defibrillation on return of spontaneous circulation in out-of-hospital cardiac arrest patients with recurrent shockable rhythms

Emad Awad [a,b] · Brent Klapthor [a] · Michael H. Morgan [a] · Scott T. Youngquist [a,c]

The impact of time to defibrillation on return of spontaneous circulation in out-of-hospital cardiac arrest patients with recurrent shockable rhythms

Emad Awad [a,b] · Brent Klapthor [a] · Michael H. Morgan [a] · Scott T. Youngquist [a,c]

Table 2 – Effect of VF/pVT duration on ROSC: GEE model.

Variable	Beta Coeff	OR	(95% CI)	*P* value
VF/ pVT duration	−0.20	0.81	0.72 – 0.93	<0.001
Age	−0.02	0.99	0.97 – 1.02	0.43
Male sex	−0.43	0.65	0.33 – 1.29	0.21
Response time > 7 min	−0.76	0.47	0.23 – 0.97	0.04
Location	0.68	1.98	1.08 – 3.62	0.03
Witness status	0.62	1.86	0.85 – 4.08	0.12
Bystander CPR	1.03	2.81	1.24 – 6.36	0.01
Anti-Arrhythmic	−0.28	0.76	0.40 – 1.41	0.38
Epinephrine	−0.24	0.79	0.59 – 1.05	
Pause duration > 15 sec	−0.28	0.75		

*N = 142 (104 had VF as the initial rhythm, and 38 had pVT).

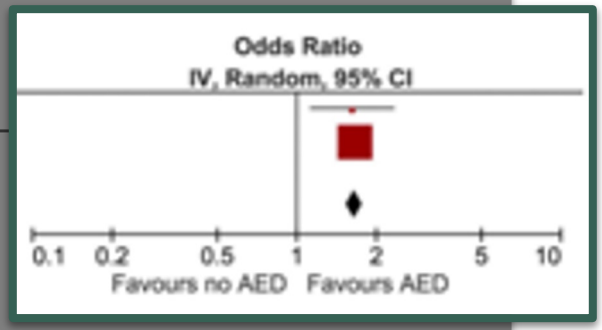
1 minute =
-20% RACS

ET POURTANT !

A Survival to hospital discharge/30 days

Study or Subgroup	Weight	Odds Ratio IV, Random, 95% CI
Lijovic, 2014	4.0%	1.62 [1.12, 2.34]
Kitamura, 2016	96.0%	1.66 [1.54, 1.79]
Total (95% CI)	**100.0%**	**1.66 [1.54, 1.79]**

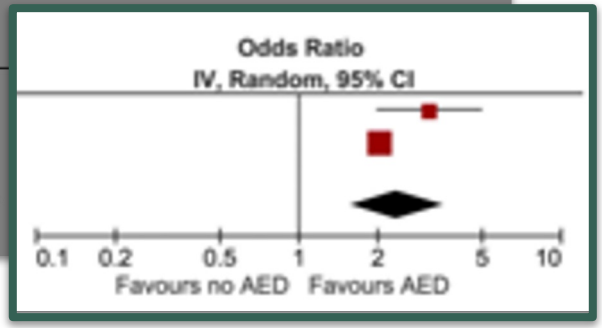
Heterogeneity: Tau² = 0.00; Chi² = 0.02, df = 1 (P = 0.90); I² = 0%
Test for overall effect: Z = 13.42 (P < 0.00001)



B Favorable neurological outcome at hospital discharge/30 days

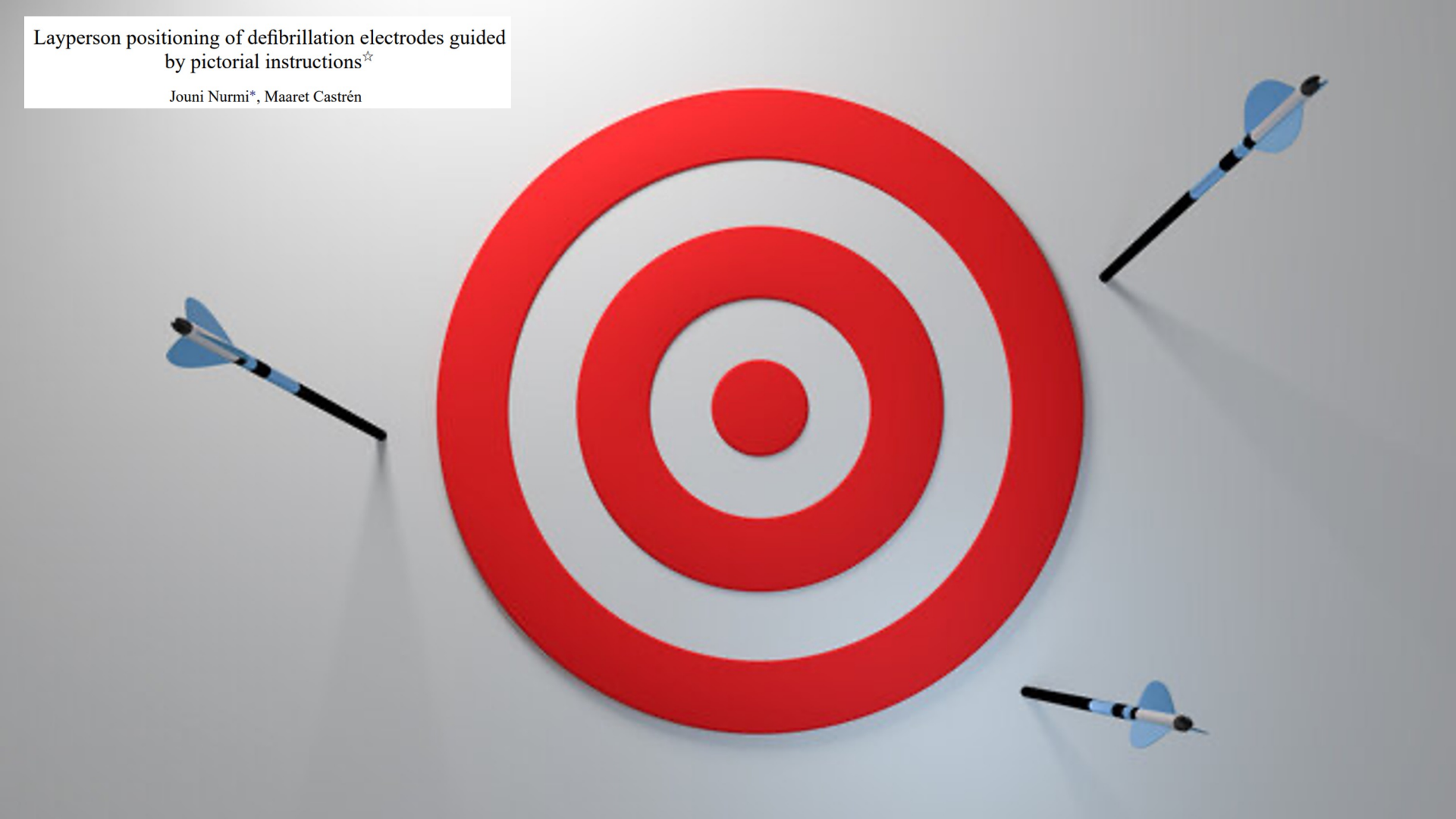
Study or Subgroup	Weight	Odds Ratio IV, Random, 95% CI
Berdowski, 2011	35.8%	3.14 [1.98, 4.99]
Kitamura, 2016	64.2%	2.03 [1.87, 2.20]
Total (95% CI)	**100.0%**	**2.37 [1.58, 3.57]**

Heterogeneity: Tau² = 0.07; Chi² = 3.31, df = 1 (P = 0.07); I² = 70%
Test for overall effect: Z = 4.13 (P < 0.0001)



Layperson positioning of defibrillation electrodes guided by pictorial instructions☆

Jouni Nurmi*, Maaret Castrén



Layperson positioning of defibrillation electrodes guided by pictorial instructions☆

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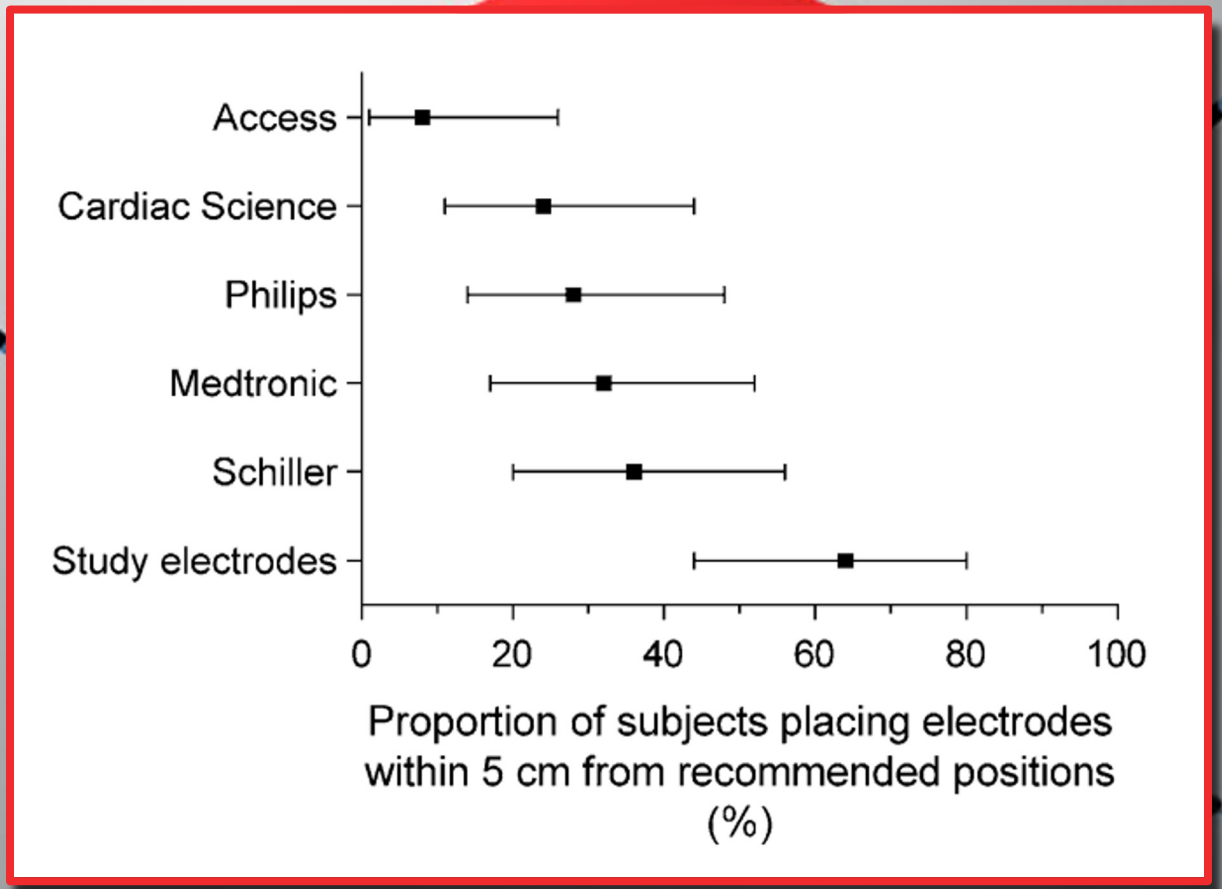


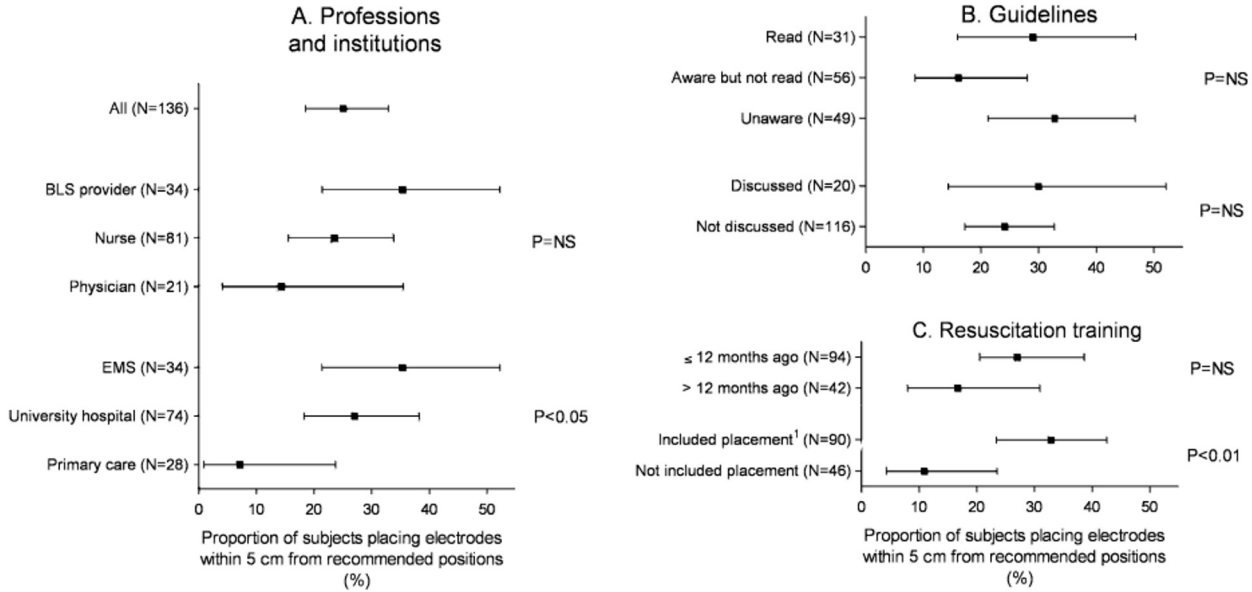
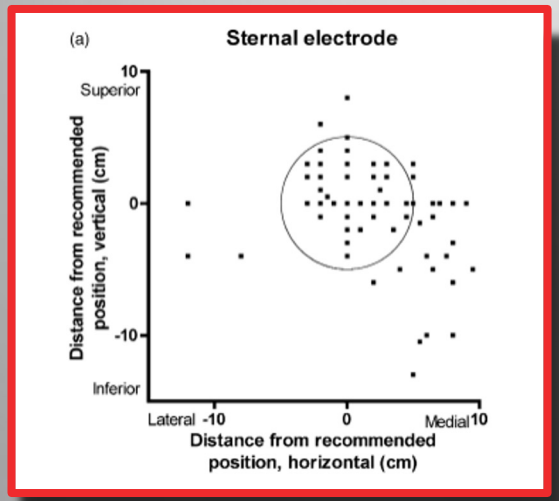
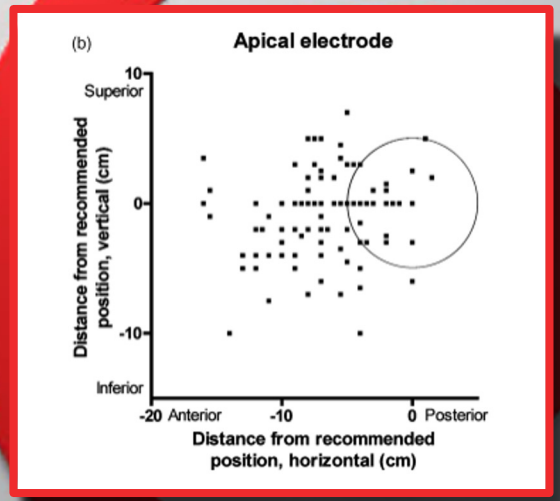
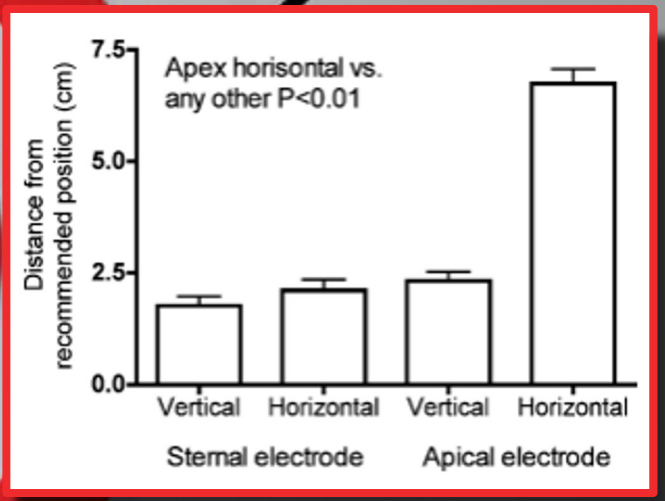
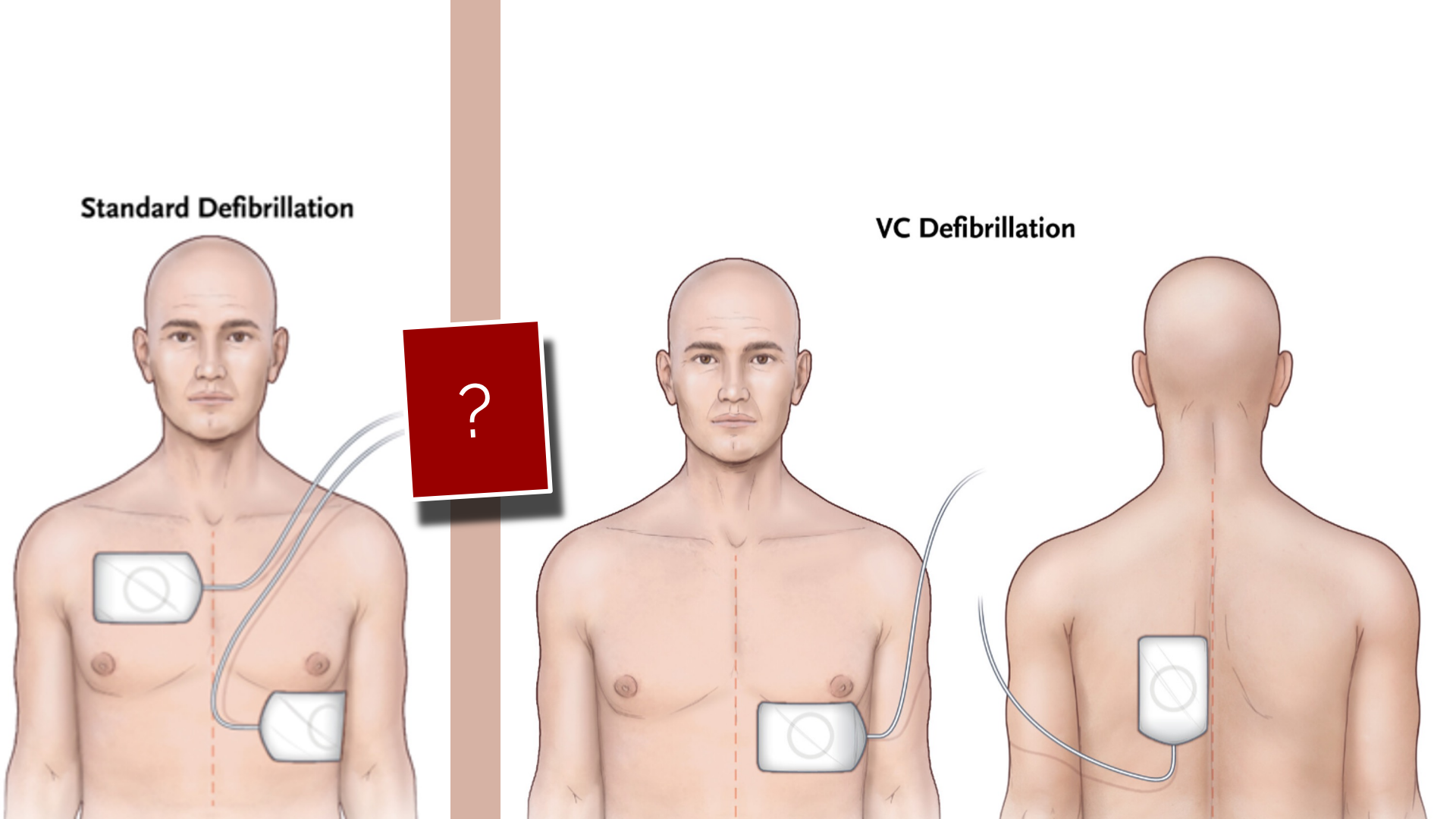


Fig. 1. (A–C) Proportion of correct defibrillation electrode placements in different subgroups with 95% confidence intervals. BLS, basic life support; EMS, emergency medical services. [1]Last defibrillation training included teaching the placement of defibrillation electrodes.


(a)
Sternal electrode
10
Superior
0
-10
Inferior
Distance from recommended position, vertical (cm)
Lateral -10
0
Medial 10
Distance from recommended position, horizontal (cm)


(b)
Apical electrode
10
Superior
0
-10
Inferior
Distance from recommended position, vertical (cm)
-20 Anterior
-10
0 Posterior
Distance from recommended position, horizontal (cm)


Apex horisontal vs. any other P<0.01
Distance from recommended position (cm)
7.5
5.0
2.5
0.0
Vertical
Horizontal
Vertical
Horizontal
Sternal electrode
Apical electrode


Standard Defibrillation
?
VC Defibrillation

Original Investigation | Emergency Medicine

Initial Defibrillator Pad Position and Outcomes for Shockable Out-of-Hospital Cardiac Arrest

Joshua R. Lupton, MD, MPH, MPhil; Craig D. Newgard, MD, MPH; David Dennis, BS, EMT-P; Jack Nuttall, MA; Ritu Sahni, MD, MPH; Jonathan Jui, MD; Matthew R. Neth, MD; Mohamud R. Daya, MD, MS

Figure 2. Adjusted Cumulative Incidence of Return of Spontaneous Circulation (ROSC) Throughout the Duration of the Resuscitation Relative to the Time of 911 Call or Arrest

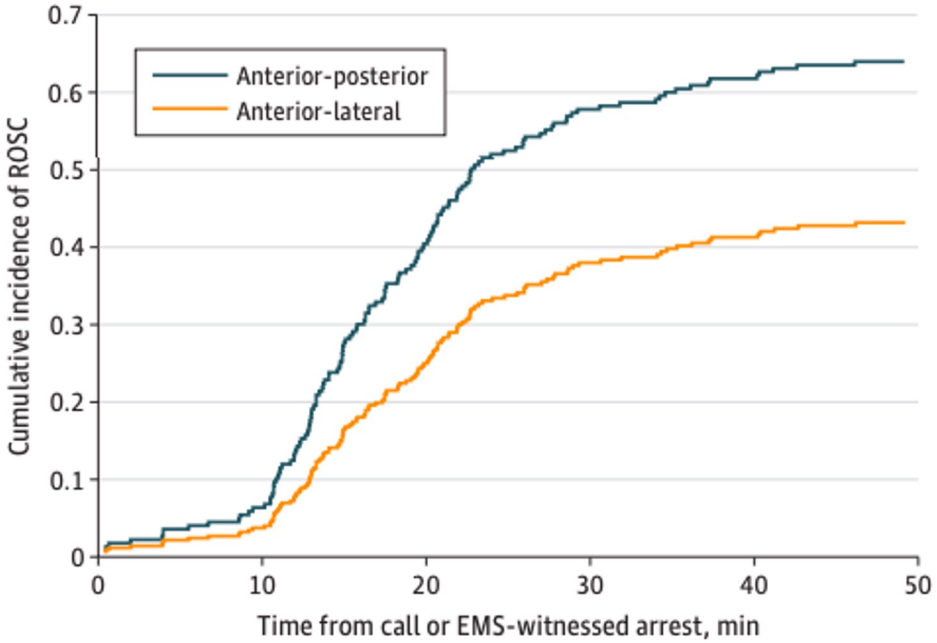
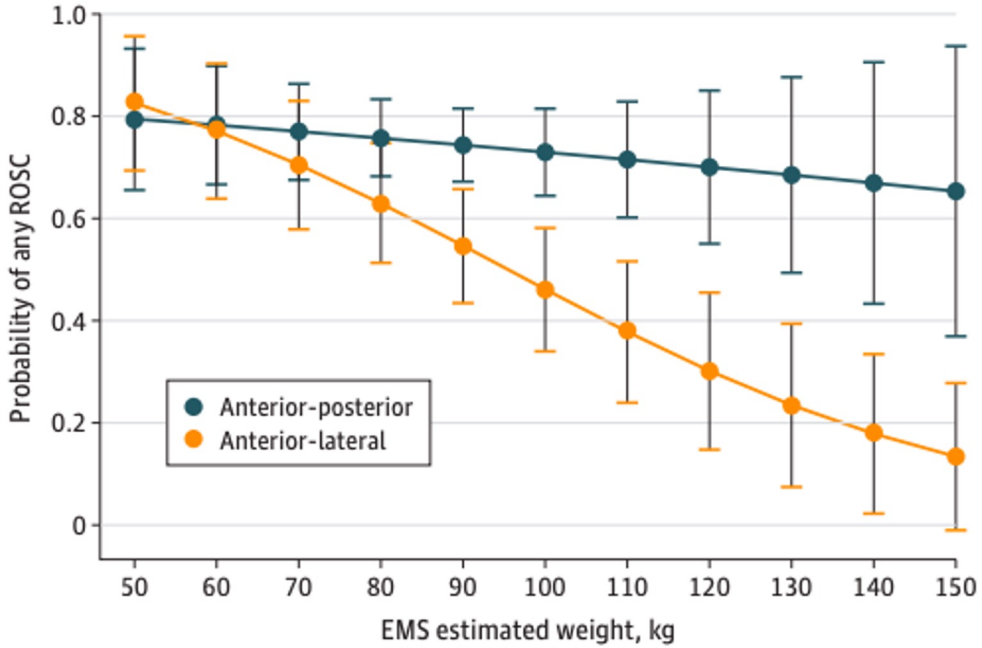


Figure 3. Adjusted Predicted Probabilities of Return of Spontaneous Circulation (ROSC) by Initial Defibrillator Pad Position Over the Range of Emergency Medical Services (EMS)-Estimated Weights



Error bars indicate 95% CIs.

The NEW ENGLAND JOURNAL of MEDICINE
ESTABLISHED IN 1812 AUGUST 12, 2004 VOL. 351 NO. 7

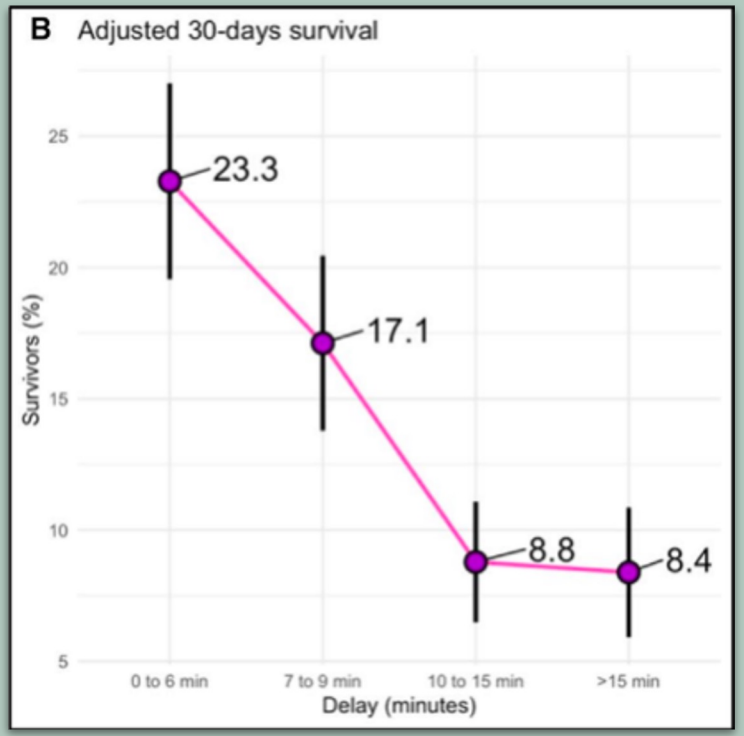
Public-Access Defibrillation and Survival after Out-of-Hospital Cardiac Arrest

The Public Access Defibrillation Trial Investigators*

Table 4. Characteristics of the Definite Out-of-Hospital Cardiac Arrests.*

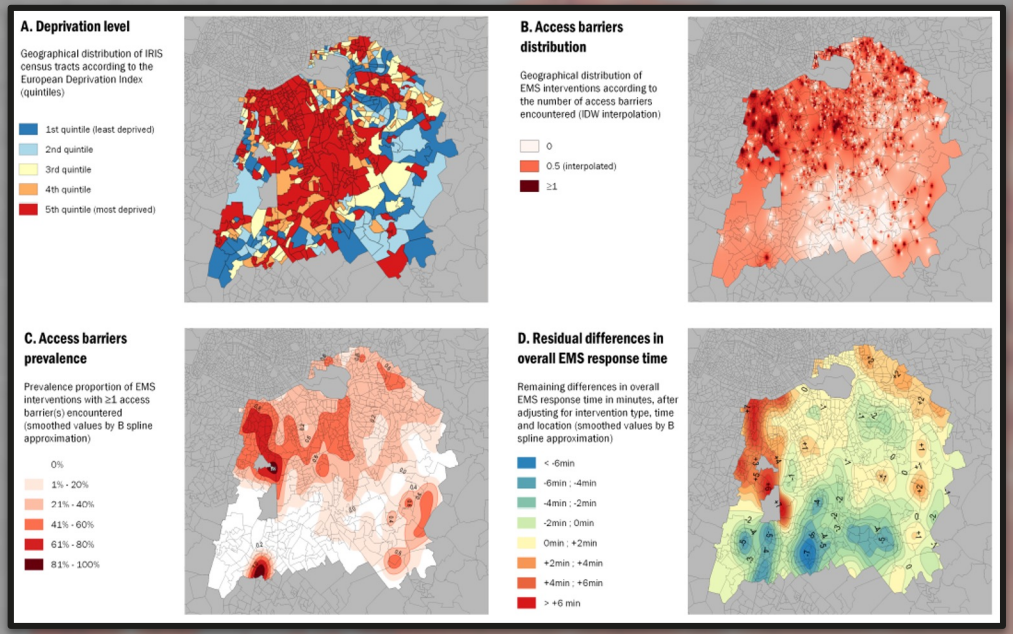
Characteristic	CPR Only (N=107)	CPR plus AED (N=128)	P Value†
Volunteer response activated — no. (%)‡	57 (53.8)	89 (69.5)	0.06
Bystander CPR — no. (%)§	62 (62.0)	81 (64.8)	0.55
Shock delivered with non-EMS AED — no. (%)	2 (1.9)	44 (34.4)	<0.001
Interval between call to EMS and first rhythm assessment — min ¶	8.7±5.5	6.0±4.7	<0.001
Ventricular fibrillation or ventricular tachycardia as first rhythm — no. (%)‖	43 (47.3)	71 (57.7)	0.66
Interval between call to EMS and arrival of EMS — min	5.6±3.4	5.7 (3.3)	0.63
Patient admitted to hospital — no. (%)	29 (27.1)	50 (39.1)	0.07

CPR ONLY BEFORE EMS



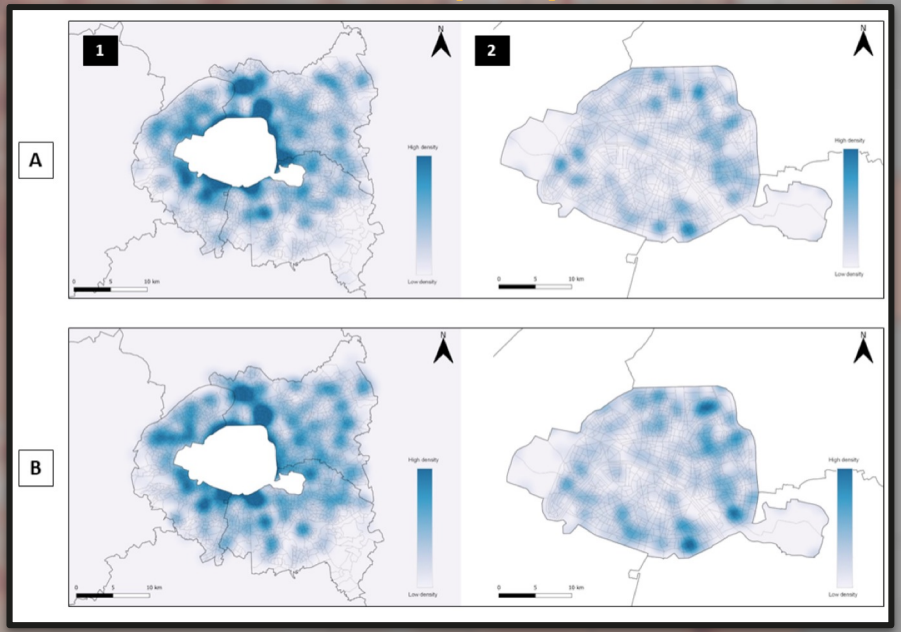
CPR only before EMS arrival

Deakin CD, Anfield S, Hodgetts GA. Heart 2018;104:1339–1343



TRAJET PIÉTON (SMUR) : OBSTACLES & DÉLAIS

TRAJET PIÉTON (VSAV) : DÉLAIS



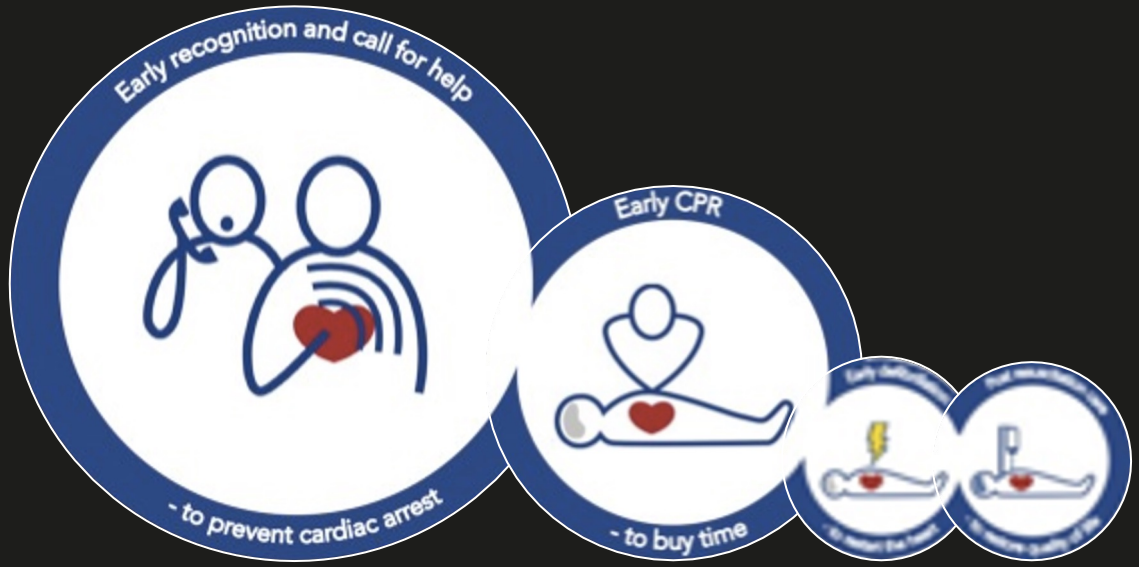
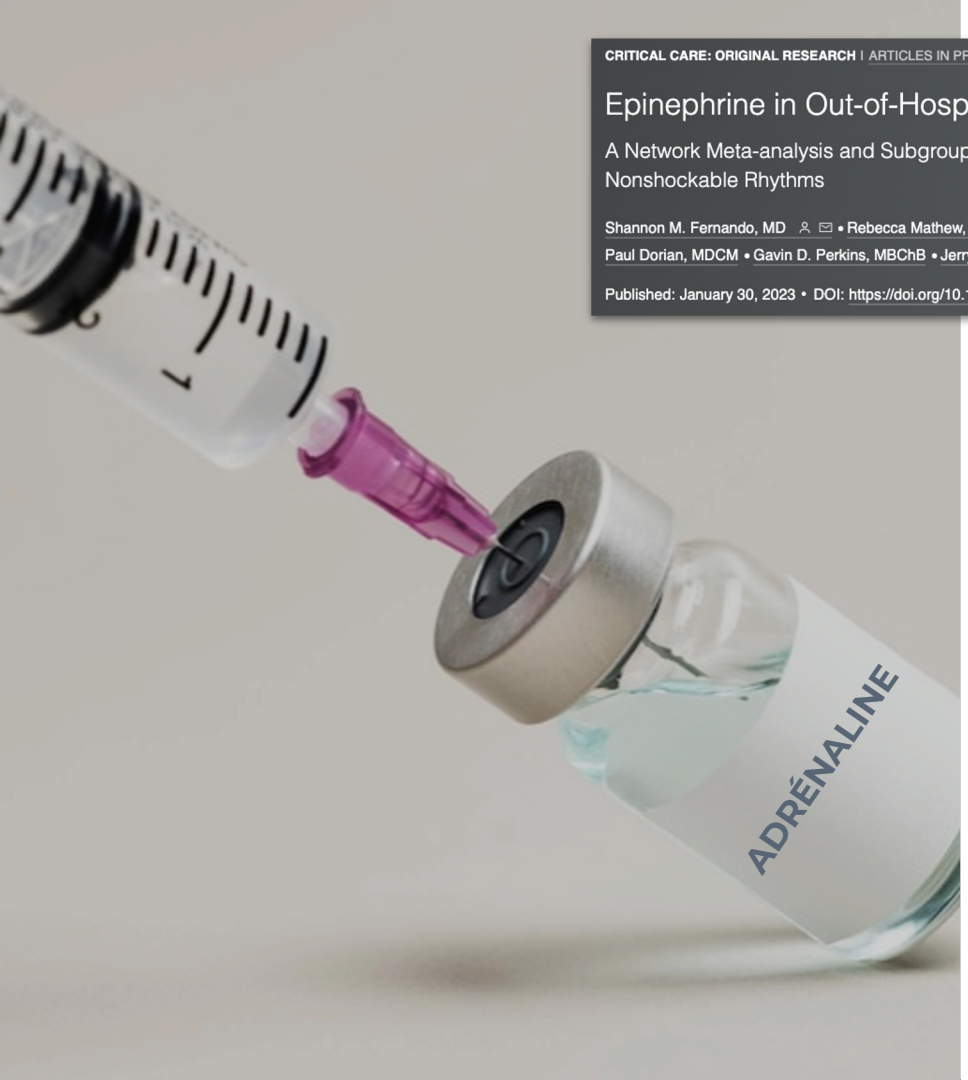


Fig. 1. Chain of survival for out-of-hospital cardiac arrest (Area ratios 1.0, 0.47, **0.12, 0.12**)

C.D.Deakin. Resuscitation 2018;126,80-82


ADRÉNALINE



CRITICAL CARE: ORIGINAL RESEARCH | ARTICLES IN PRESS

Epinephrine in Out-of-Hospital Cardiac Arrest

A Network Meta-analysis and Subgroup Analyses of Shockable and Nonshockable Rhythms

Shannon M. Fernando, MD • Rebecca Mathew, MD • Behnam Sadeghirad, PharmD, MPH, PhD • ... Paul Dorian, MDCM • Gavin D. Perkins, MBChB • Jerry P. Nolan, MBChB • Show all authors

Published: January 30, 2023 • DOI: https://doi.org/10.1016/j.chest.2023.01.033

ROSC et vivant à l'arrivée

Survie et CPC


PROCHAIN BUENO
DANS 1 MINUTE


00:07:28
QUIET
PLEASE
Timer and
Screen
Information
LUCAS CPR
Checklists
Timer

Original Article

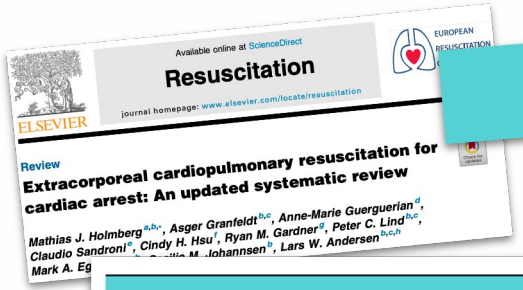
Prehospital Extracorporeal Cardiopulmonary Resuscitation for Out-of-Hospital Cardiac Arrest: A Systematic Review and Meta-Analysis

Natalie Kruit, MBBS (Hons), FANZCA[*,†,‡,§,1],
Nivedita Rattan, BMed, MD[1], David Tian, MD, PhD[§,‖],
Stefan Dieleman, MD, PhD, FANZCA[§,¶],
Aidan Burrell, MBBS, FCICM, PhD[#,**],
Mark Dennis, MBBS, FRACP, PhD[††,‡‡]

Table 4
Low-Flow Times, Survival, and Neurologic Outcomes for All Studies Included in the Meta-Analysis

Study	Low-Flow Time	Survival, n/N (%)	Neurologic Outcomes, n/N (%)
Petermichl et al. (2021)[14]	CPC 1-2: 40 min (IQR 30-47) CPC 3-4: 56 min (IQR 27-64) Non-survivors: 49 min (IQR 38-64)	21/63 (33)	CPC 1-2: n = 17/63 (27) CPC 3-4: n = 4/63 (6)
Hilker et al. (2013)[15]	61 min (SD ± 14.3)	2/6 (33)	CPC 3-4: n = 1/6 (16)
Bougouin et al. (2020)[13]	90 min (IQR 70-110)	19/123 (15)*	Not reported
Pozzi et al. (2022)[16]	71.1 min (SD ± 15.4)	7/30 (23.3)	CPC 1-2: n = 7/30 (23.3)

OBJECTIF LOW-FLOW
< 60 MIN



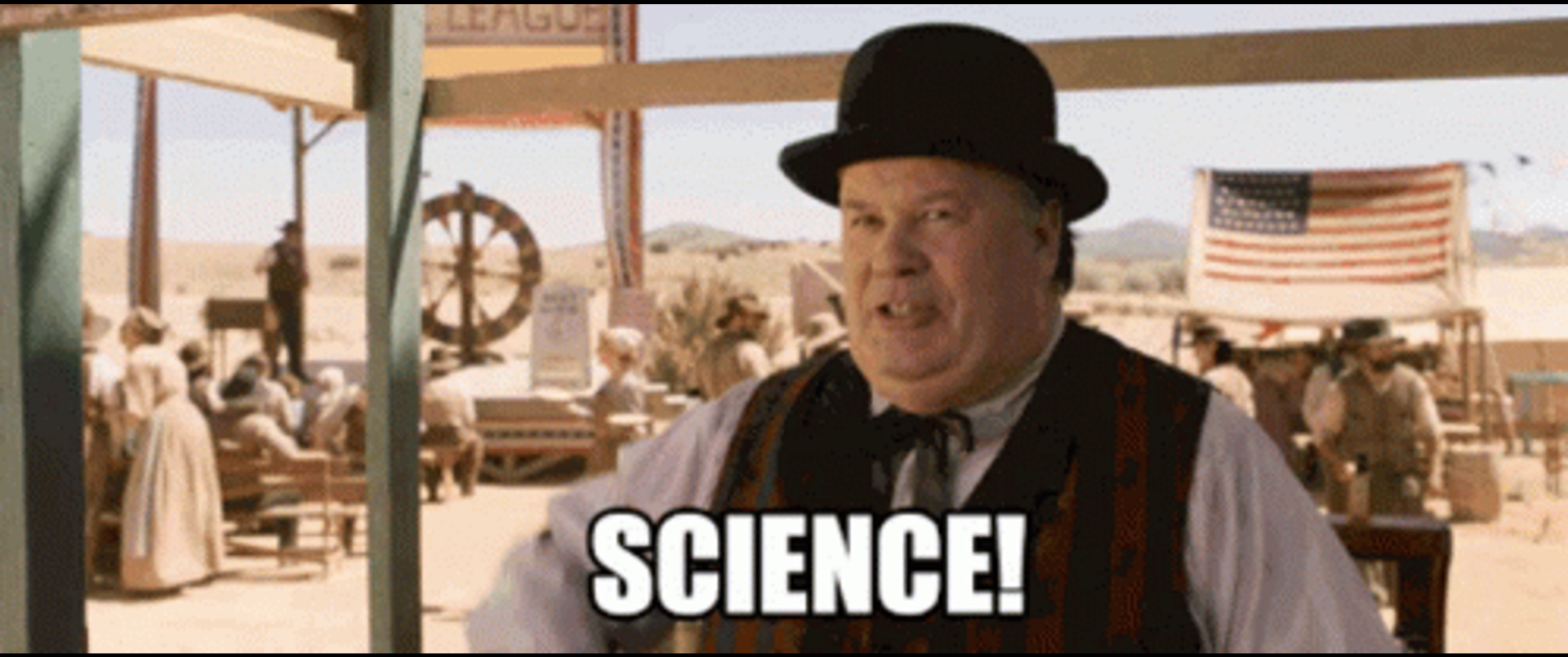
ECMO

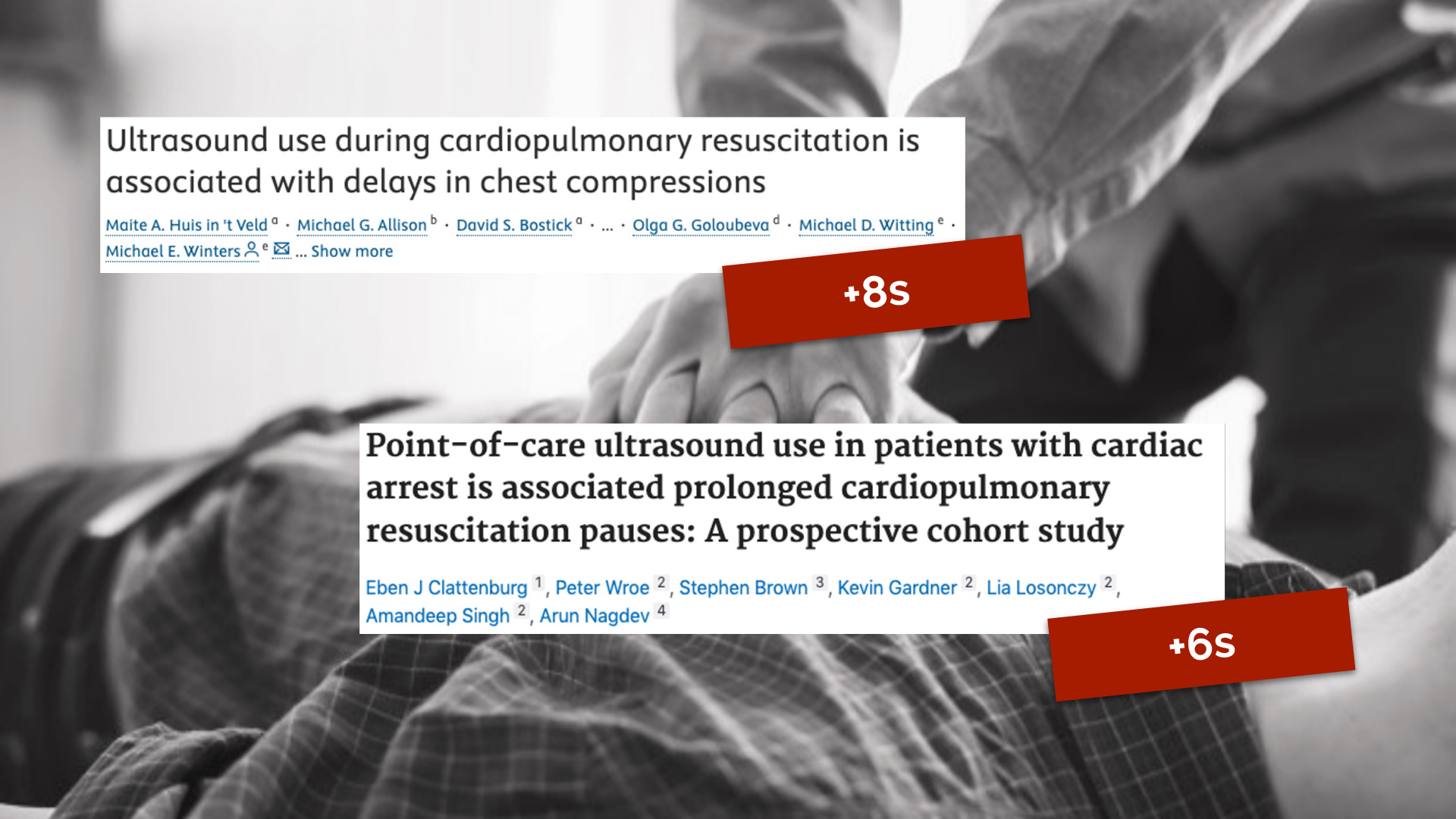
Table 4 – Certainty of evidence for randomized trials in adults with out-of-hospital cardiac arrest.

Outcomes	Studies	Risk of Bias	Inconsistency	Indirectness	Imprecision	Other[a]	Overall
Survival to hospital discharge or 30 days	3 studies[11–13]	Not serious	Serious[b]	Not serious	Serious[c]	None	**Low**
Survival to 3 months or 6 months	3 studies[11–13]	Not serious	Serious[b]	Not serious	Serious[c]	None	**Low**
Favorable neurological outcome at hospital discharge or 30 days	3 studies[11–13]	Not serious	Serious[b]	Not serious	Serious[c]	None	**Low**
Favorable neurological outcome at 3 months or 6 months	3 studies[11–13]	Not serious	Serious[b]	Not serious	Serious[c]	None	**Low**

[a] Includes assessment of publication bias and magnitude of the effect
[b] Some inconsistencies in effect sizes
[c] Although no pooled estimate was calculated, the small sample sizes led to wide confidence intervals


ET L'ÉCHOGRAPHIE ?


SCIENCE!


Ultrasound use during cardiopulmonary resuscitation is associated with delays in chest compressions
Maite A. Huis in 't Veld [a] · Michael G. Allison [b] · David S. Bostick [a] · ... · Olga G. Goloubeva [d] · Michael D. Witting [e] · Michael E. Winters [e] ... Show more
+8s
Point-of-care ultrasound use in patients with cardiac arrest is associated prolonged cardiopulmonary resuscitation pauses: A prospective cohort study
Eben J Clattenburg [1], Peter Wroe [2], Stephen Brown [3], Kevin Gardner [2], Lia Losonczy [2], Amandeep Singh [2], Arun Nagdev [4]
+6s

Variability in Interpretation of Cardiac Standstill Among Physician Sonographers

Kevin Hu, MD · Nachi Gupta, MD, PhD · Felipe Teran, MD · Turandot Saul, MD · Bret P. Nelson, MD · Phillip Andrus, MD

Variability in Interpretation of Cardiac Standstill Among Physician Sonographers

Kevin Hu, MD · Nachi Gupta, MD, PhD · Felipe Teran, MD · Turandot Saul, MD · Bret P. Nelson, MD · Phillip Andrus, MD

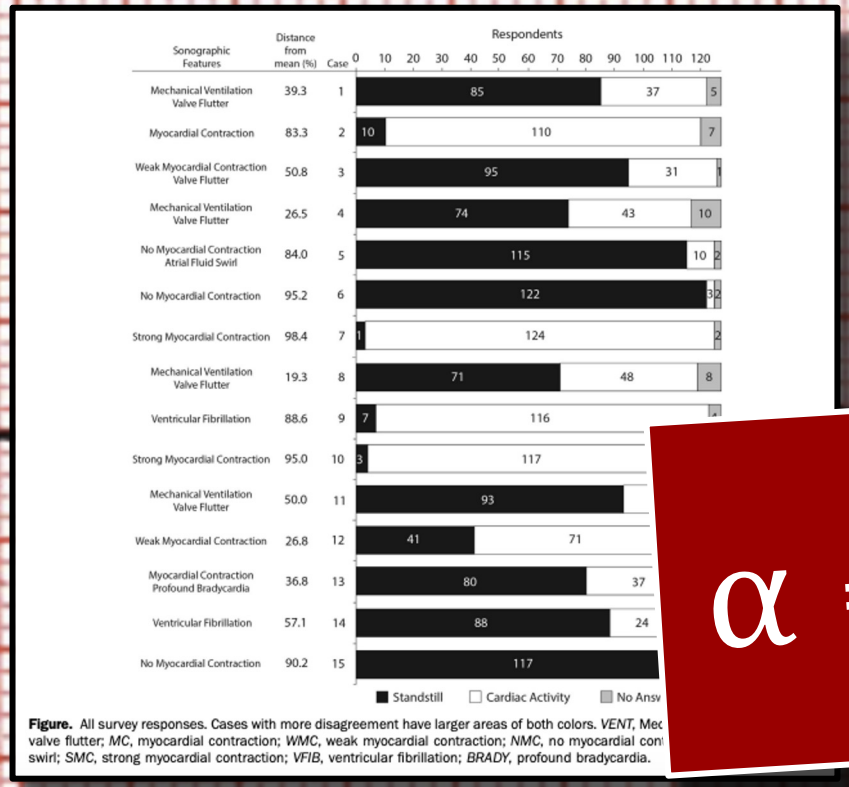


Figure. All survey responses. Cases with more disagreement have larger areas of both colors. *VENT*, Mec
valve flutter; *MC*, myocardial contraction; *WMC*, weak myocardial contraction; *NMC*, no myocardial cont
swirl; *SMC*, strong myocardial contraction; *VFIB*, ventricular fibrillation; *BRADY*, profound bradycardia.

$\alpha = 0.47$

Diagnostic test accuracy of point-of-care ultrasound during cardiopulmonary resuscitation to indicate the etiology of cardiac arrest: A systematic review

Joshua C Reynolds [a,], Tonia Nicholson [b], Brian O'Neil [c], Ian R Drennan [d], Mahmoud Issa [e], Michelle Welsford [f], On behalf of the Advanced Life Support Task Force at the International Liaison Committee on Resuscitation ILCOR [1]*

Table 2 – Risk of bias assessment using the Quality Assessment of Diagnostic Accuracy Studies (QUADAS-2) framework.

Study (Author Year)	Risk of Bias				Applicability		
	Subject Selection	Index Test	Reference Standard	Flow and Timing	Subject selection	Index Test	Reference Test
Chua 2017 [21]	Unclear [a]	Low	Unclear [b]	High [c]	Low	Low	Low
Hilberath 2014 [22]	Unclear [d]	Unclear [e]	High [b f]	High [c]	Low	Low	Low
Jung 2020 [23]	High [d g]	Unclear [e]	High [b f]	Low	Low	Low	Low
Lien 2018 [24]	Unclear [a]	Low	High [b f h]	Low	Low	Low	Low
Lin 2006 [25]	Unclear [d]	Unclear [e]	Unclear [b]	High [c]	Low	Low	Low
Memtsoudis 2006 [26]	Unclear [d]	Unclear [e]	Unclear [b]	High [c]	Low	Low	Low
Shillcutt 2012 [27]	Unclear [d]	Unclear [e]	High [b h]	Low	Low	Low	Low
Tayal 2003 [28]	Unclear [i]	Low	Unclear [b]	High [c]	Unclear [j]	Low	Low
van der Wouw 1997 [29]	Unclear [i]	Low	Unclear [b]	High [c]	Unclear [k]		
Varriale 1997 [30]	High [a g l]	Low					
Zengin 2012 [31]	High [a g]	Lo					
Zengin 2016 [32]	Unclear [a]	Lo					

Meta-analyses and certainty of evidence

The overall certainty of evidence was very low for all outcomes primarily due to risk of bias, inconsistency, and imprecision (Supplemental Appendix). Individual studies have high risk of bias due to selection, ascertainment, and verification. Because of this and a high degree of heterogeneity, no meta-analyses could be performed and individual studies are difficult to interpret.

Table. Point-of-care ultrasound protocols in cardiac arrest.

Protocol	Components
Cardiac Arrest Sonographic Assessment (CASA)[6,151]	• Cardiac (cardiac tamponade, right heart strain, cardiac activity) • Lung (pneumothorax) • FAST
Cardiac Arrest Ultrasound Examination (CAUSE)[152]	• Cardiac (cardiac tamponade, hypovolemia, and massive PE) • Lung (pneumothorax)
Core Ultrasound in Resuscitation (CURE)[153]	• Noncardiac (FAST, AAA, DVT, confirm ETT position, and pneumothorax) • Cardiac TTE (cardiac contractility, ventricular arrhythmia, aortic emergency, intracardiac thrombus, maximal compression site, and hypovolemia) • Post-ROSC TEE (preload, cardiac and valvular function, procedural guidance)
Focused Echocardiographic Evaluation in Life Support (FEEL)[154]	• Cardiac (cardiac activity, ventricular function, right ventricular dilatation, and pericardial effusion)
Focused Echocardiographic Evaluation in Resuscitation (FEER)[155]	• Cardiac (cardiac activity, pericardial effusion/cardiac tamponade, hypovolemia, and massive PE)
Pulseless Electrical Activity or Pulmonary-Epigastric-Abdominal[156]	• Cardiac (pericardial effusion, cardiac activity, left ventricular size/hypertrophy/contractility, right ventricular size/contractility, and IVC filling) • Lung (pneumothorax, pleural effusion, and pulmonary edema) • Abdomen and other (thoracic and abdominal aortic aneurysm or dissection, peritoneal effusion, bowel ob… …and DVT)
Point-of-Care Ultrasound in Cardiorespiratory Arrest (POCUS-CA)[157]	• Cardi… …pericardial effusion/
Rapid Cardiac POCUS	…(contractility, pericardial effusion, right ventricular dilation with small dynamic left ventricle, underfilled right ventricle with the small dynamic left ventricle)
Reversible Causes in Cardiovascular Collapse at the Emergency Department Using Ultrasonography (REVIVE-US)[159]	• Cardiac (cardiac activity and cardiac tamponade) • FAST • Aorta (dissection or aneurysm) • DVT • Lung (pneumothorax) • Post-ROSC Cardiac (contractility, right ventricular dilation, and regional wall motion abnormalities)
Sequential Emergency Scanning Assessing Mechanism or Origin of Shock of Indistinct Cause (SESAME)[160,161]	• Lung (pulmonary edema and pneumothorax) • DVT • Abdomen (peritoneal effusion) • Cardiac (cardiac tamponade, contractility, right ventricular dilatation, and ventricular fibrillation)
Sonography in Hypotension and Cardiac Arrest (SHoC)[162-164]	• Cardiac (cardiac tamponade, right ventricular dysfunction, cardiac activity, and ventricular size) • Lung (pneumothorax and pleural effusion) • IVC (diameter and respiratory variation) • Airway (ETT confirmation) • DVT • Abdomen (AAA and peritoneal effusion)
Ultrasound Circulation-Airway-Breathing (US-CAB)[165,166]	• Cardiac (contractility, cardiac tamponade, right ventricular dilatation, septal dyskinesia, and right-sided chamber flattening suggestive of hypovolemia) • IVC (diameter and respirophasic collapsibility) • Trachea (ETT confirmation) • Lung (pneumothorax and single lung intubation)

AAA, abdominal aortic aneurysm; *BLS*, basic life support; *DVT*, deep venous thrombosis; *ETT*, endotracheal tube; *FAST*, focused assessment with sonography in trauma; *I*… inferior vena cava; *PE*, pulmonary embolism; *ROSC*, return of spontaneous circulation; *TEE*, transesophageal echocardiogram; *TTE*, transthoracic echocardiogram.

Quel algorithme ?

Managing Cardiac Arrest Using Ultrasound

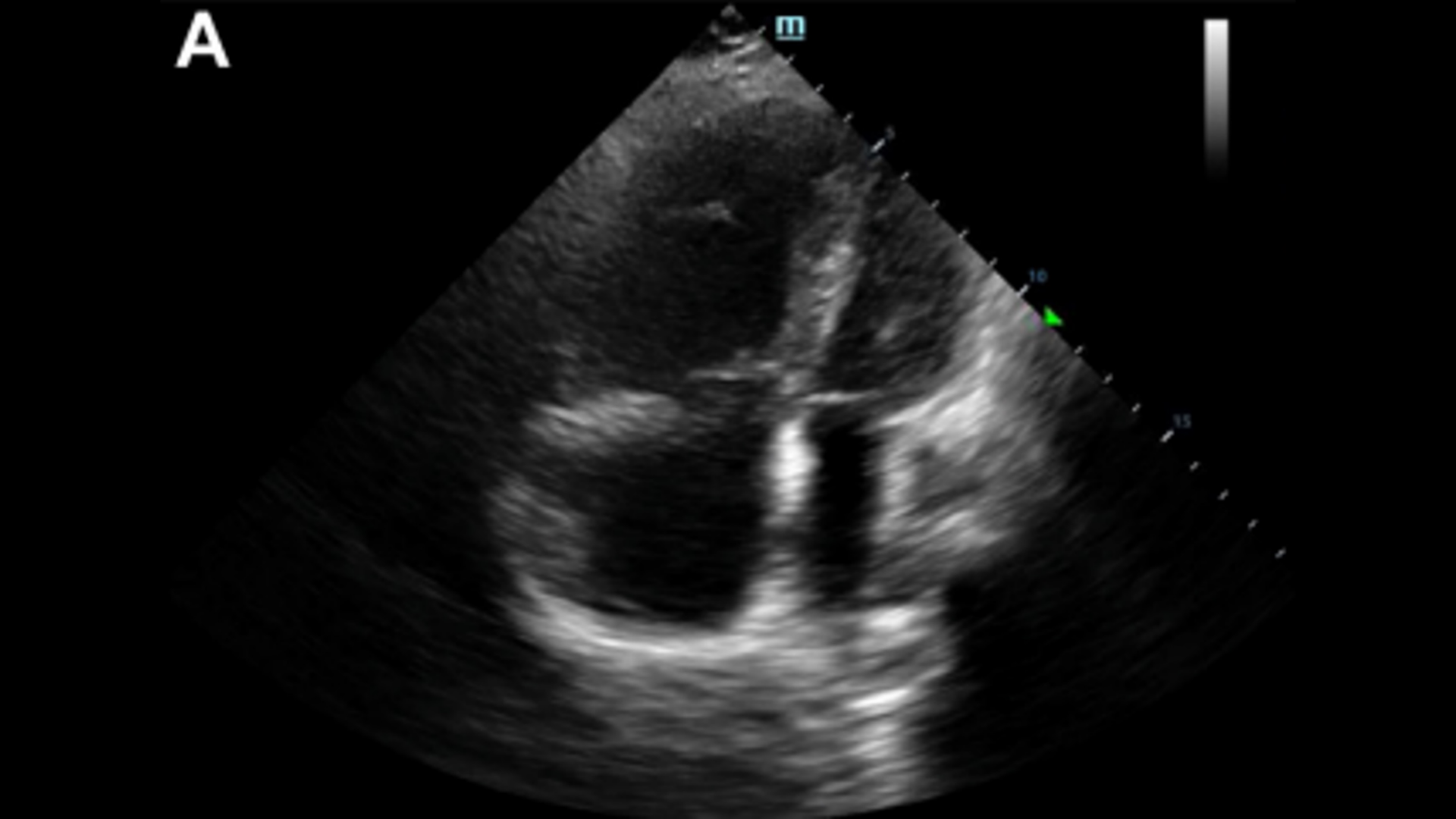
Michael Gottlieb, MD*; Stephen Alerhand, MD

[Ann Emerg Med. 2023;81:532-542.]

1. Have the most experienced sonographer perform the scan.
2. Someone besides the team leader should perform the scan (when possible).
3. Perform non-cardiac applications (e.g., lung, airway, deep venous thrombosis) while compressions are ongoing.
4. Place the transducer on the chest to identify the optimal cardiac window prior to pausing compressions.
5. Focus on recording the clip, then wait to analyze the clip until after compressions have resumed.
6. Keep a towel nearby to wipe off ultrasound gel immediately after the scan.
7. Have a designated timer count down from 10 seconds to avoid prolonged scanning time.

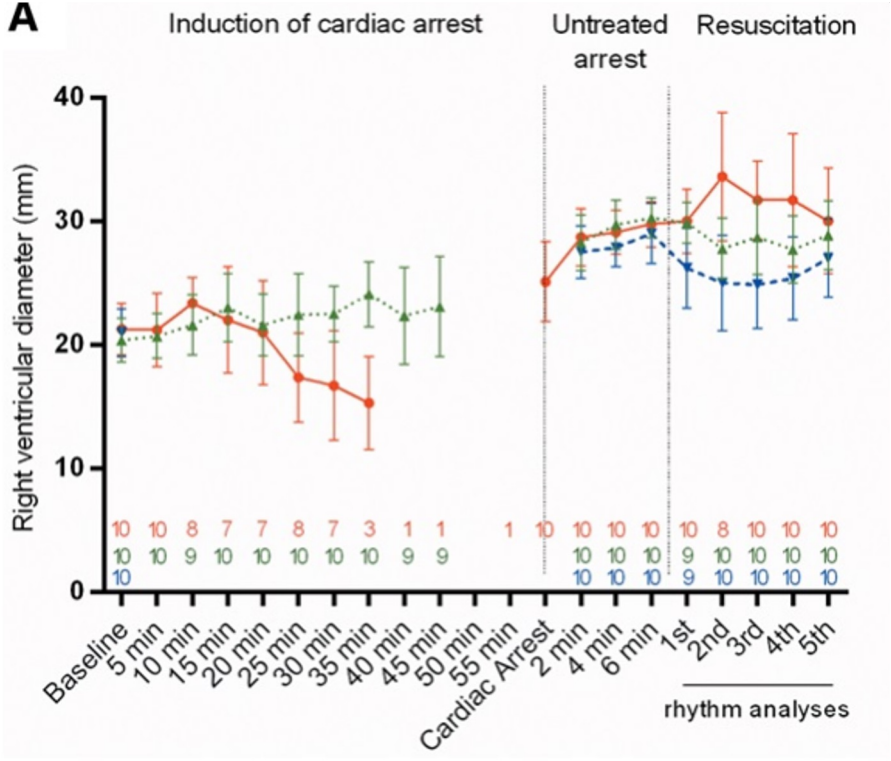
Figure 1. Strategies to minimize the duration of chest compression pauses during cardiac arrest.

Quel protocole ?


A

The Right Ventricle Is Dilated During Resuscitation From Cardiac Arrest Caused by Hypovolemia: A Porcine Ultrasound Study*

Aagaard, Rasmus MD[1,2]; Granfeldt, Asger MD, PhD, DMSc[3]; Bøtker, Morten T. MD, PhD[3,4]; Mygind-Klausen, Troels MB[1]; Kirkegaard, Hans MD, PhD, DMSc[1,4]; Løfgren, Bo MD, PhD, FESC, FAHA[1,5]



- Hypovolémie
- Hyperkaliémie
- Arythmie

Right ventricular diameter during cardiac arrest induction, untreated cardiac arrest, and resuscitation. *Red circles* represent the hypovolemia group. *Green triangles* represent the hyperkalemia group. *Blue triangles* represent the primary arrhythmia group. **A**, Means and 95% CI intervals. Ten pigs were included in each group. Numbers represent the number of images successfully obtained at each time point. Mean values with error bars are only plotted for time points containing three or more measurements. **B**, Scatter plot showing each right ventricular diameter measurement performed in the study.


UN PRONOSTIC ?

REVIEW ARTICLE

Does Point-of-care Ultrasound Improve Survival when Used During Cardiac Arrest? A Systematic Review and Meta-analysis

Simon Ventorp[1], Henrik Wagner[2,3], and Bjarne Madsen Härdig[2,3*]

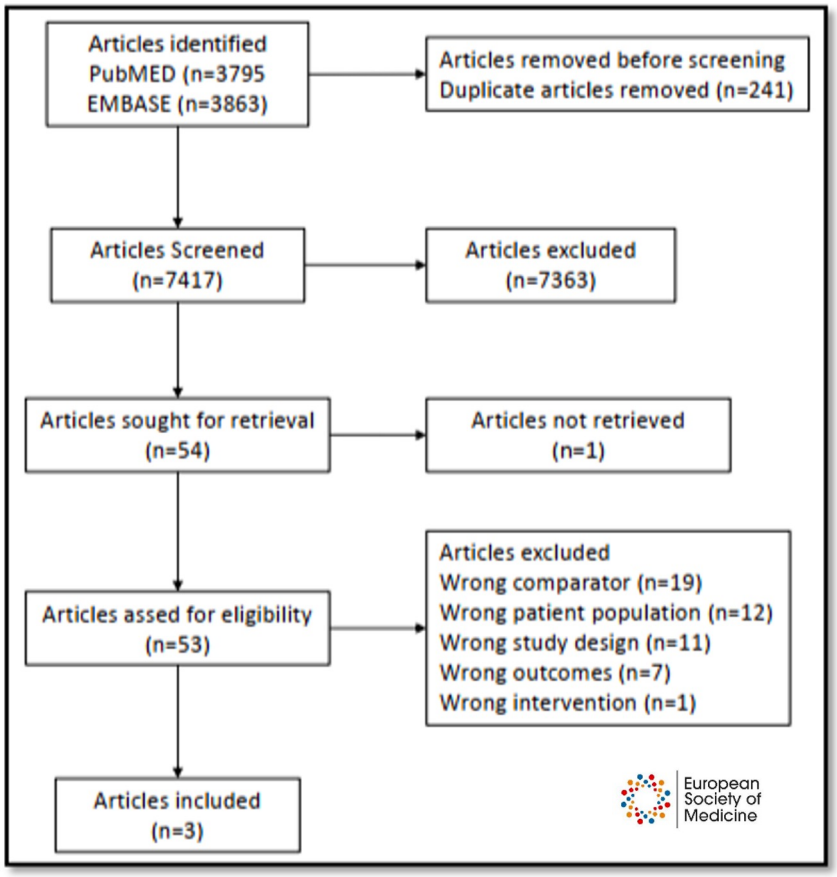


Figure 1. A summarised flow diagram of the results of the literature search

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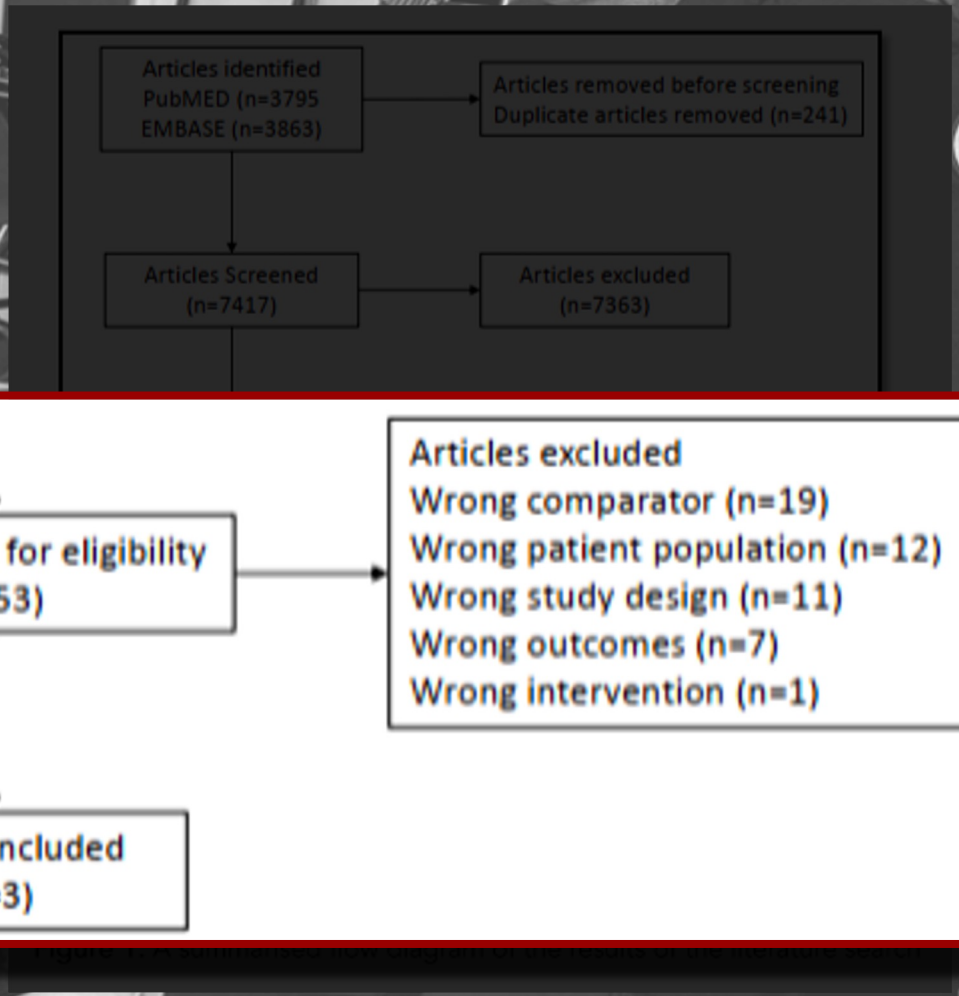

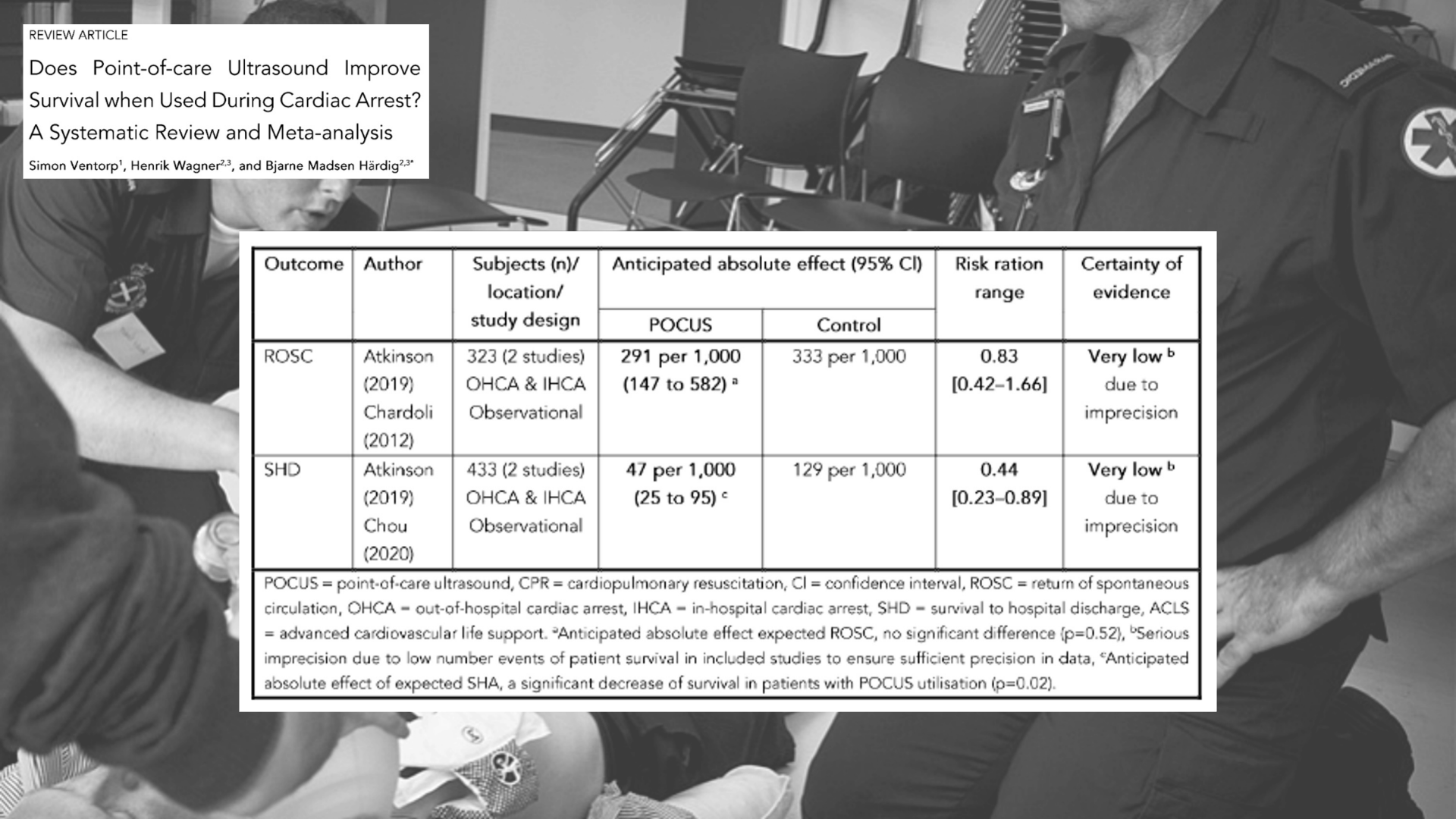

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Outcome	Author	Subjects (n)/ location/ study design	Anticipated absolute effect (95% CI)		Risk ration range	Certainty of evidence
			POCUS	Control		
ROSC	Atkinson (2019) Chardoli (2012)	323 (2 studies) OHCA & IHCA Observational	**291 per 1,000 (147 to 582) [a]**	333 per 1,000	**0.83 [0.42–1.66]**	**Very low [b]** due to imprecision
SHD	Atkinson (2019) Chou (2020)	433 (2 studies) OHCA & IHCA Observational	**47 per 1,000 (25 to 95) [c]**	129 per 1,000	**0.44 [0.23–0.89]**	**Very low [b]** due to imprecision

POCUS = point-of-care ultrasound, CPR = cardiopulmonary resuscitation, CI = confidence interval, ROSC = return of spontaneous circulation, OHCA = out-of-hospital cardiac arrest, IHCA = in-hospital cardiac arrest, SHD = survival to hospital discharge, ACLS = advanced cardiovascular life support. [a]Anticipated absolute effect expected ROSC, no significant difference (p=0.52), [b]Serious imprecision due to low number events of patient survival in included studies to ensure sufficient precision in data, [c]Anticipated absolute effect of expected SHA, a significant decrease of survival in patients with POCUS utilisation (p=0.02).

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RACS

SURVIE

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RESEARCH ARTICLE | Originally Published 22 October 2025 |

Check for updates

Advanced Life Support: 2025 International Liaison Committee on Resuscitation Consensus on Science With Treatment Recommendations

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Circulation • Volume 152, Number 16_suppl_1 • https://doi.org/10.1161/CIR.0000000000001360

Pronostic

Treatment Recommendations (2020)

We suggest against using point-of-care echocardiography for prognostication during CPR (weak recommendation, very low–certainty evidence).

RESEARCH ARTICLE | Originally Published 22 October 2025 |

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Circulation • Volume 152, Number 16_suppl_1 • https://doi.org/10.1161/CIR.0000000000001360

Etiologie

Treatment Recommendations (2022)

We suggest against routine use of point-of-care ultrasound during CPR to diagnose reversible causes of cardiac arrest (weak recommendation, very low–certainty evidence).

RESEARCH ARTICLE | Originally Published 22 October 2025 |

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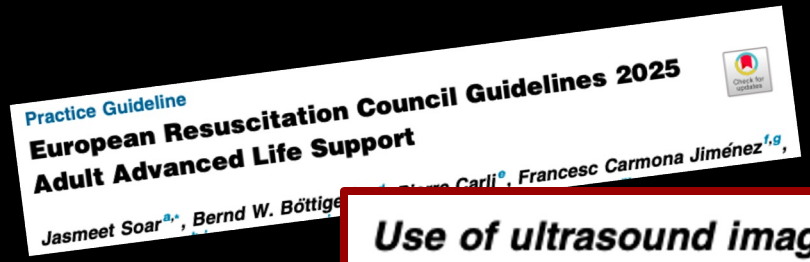
Etiologie

We suggest that if point-of-care ultrasound can be performed by experienced personnel without interrupting CPR, it may be considered as an additional diagnostic tool when clinical suspicion for a specific reversible cause is present (weak recommendation, very low–certainty evidence).

Any deployment of diagnostic point-of-care ultrasound during CPR should be carefully considered and weighed against the risk of interrupting chest compressions and misinterpreting the sonographic findings (good practice statement).



Practice Guideline

European Resuscitation Council Guidelines 2025
Adult Advanced Life Support

Jasmeet Soar[a,*], Bernd W. Böttiger[b], Pierre Carli[e], Francesc Carmona Jiménez[f,g],

Use of ultrasound imaging during advanced life sup

- Only skilled operators should use intra-arrest point-of-care ultrasound (POCUS).
- POCUS must not cause additional or prolonged interruptions in chest compressions.
- POCUS may help identify treatable causes of cardiac arrest such as cardiac tamponade and tension pneumothorax.
- Right ventricular dilation in isolation during cardiac arrest should not be used to diagnose pulmonary embolism.
- Do not use POCUS for assessing contractility of the myocardium as a sole indicator for terminating CPR.

Skilled operators

Practice Guideline

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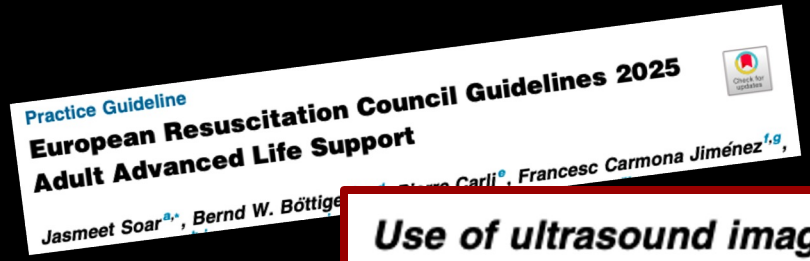
Skilled operators

Interruptions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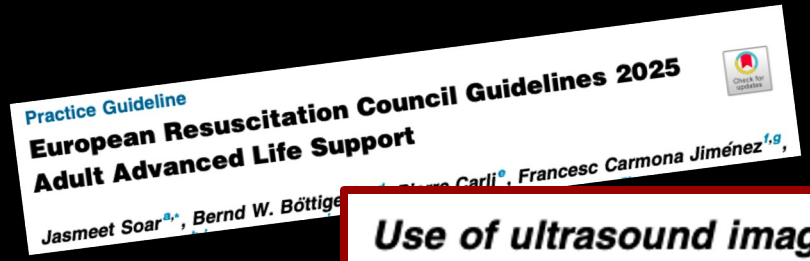
Skilled operators

Interruptions

RV dilation should not be used



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Skilled operators

Interruptions

RV dilation should not be used

Not for TOR

Médecin SMUR

- Team leader
- Analyse du rythme / 2 minutes
- Recherche cause réversible– Echographie
- Recherche critères éligibilité ECPR
- Intubation
- Information à la famille

Kit d'intubation
Respirateur

Aspirateur à mucosité

Secouriste 1
Insufflations manuelles continues 10 cycles/ min si IOT

DSA
Double défibrillation séquentielle par le même opérateur si FV réfractaire

Insufflateur manuel de type BAVU
Ventilation à 4 mains avec secouriste **2** ou **3**

Oxygène

Secouriste 3
Compressions thoraciques continues si IOT

Secouriste 2
Compressions thoraciques continues si IOT

Ambulancier SMUR
Volontiers mobile, rôle pivot

- Monitorage
- Montage de la ligne de perfusion
- Défibrillation
- Aide à l'intubation
- Gestion du sac d'intervention
- Interface matériel UMH
- Anticipation brancardage et évacuation
- Accompagnement de la famille

Kit perfusion
Médicaments injectables

Infirmier(e) SMUR

- *Time keeper*
- Défibrillation
- Administration des traitements
- Si DIO se positionne entre Secouriste 1 et 2
- Accompagnement de la famille

Scope multiparamétrique à la vue de tous

- Analyse du rythme / 2 minutes
- EtCO2 : bon positionnement de la SIT, guide la qualité des CT et identification RACS
- FR : guide la fréquence des insufflations 10 cycles/ min
- Oxymètre de pouls : identifier une onde de pouls lors de l'analyse
- Rapprocher le DSA si double défibrillation séquentielle

Famille ou p

SFMU
Société Française de Médecine d'Urgence


NOWTHIS
NT

MERCI

pour votre attention

matthieu.heidet@aphp.fr