13ÈME CARDIO RUN 2021

CONGRÈS DE PATHOLOGIE CARDIO-VASCULAIRE

29-30 SEPTEMBRE & 1 OCTOBRE 2021

HÔTEL SAINT ALEXIS - ÎLE DE LA RÉUNION, FRANCE

Arrêt cardiaque

Ce qui marche ou pas…

Frédéric Lapostolle
SAMU 93, UF Recherche
Hôpital Avicenne &
Université Paris 13, Bobigny

Disclosures

- **Conferences**

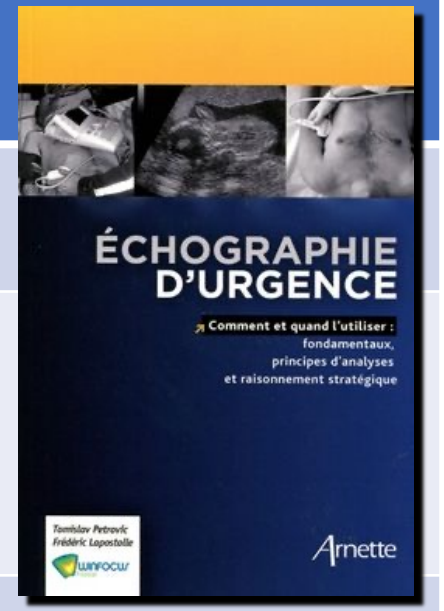
Astra-Zeneca, Bayer, BMS, Boehringer-Ingelheim, Medtronic,

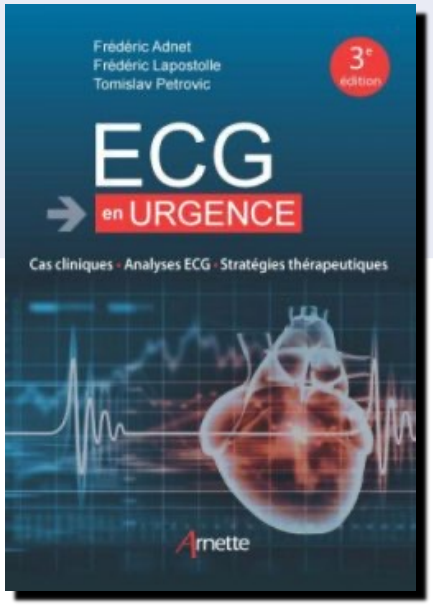
Merck-Serono, Mundipharma, Novartis, Pfizer, Serb, Teleflex

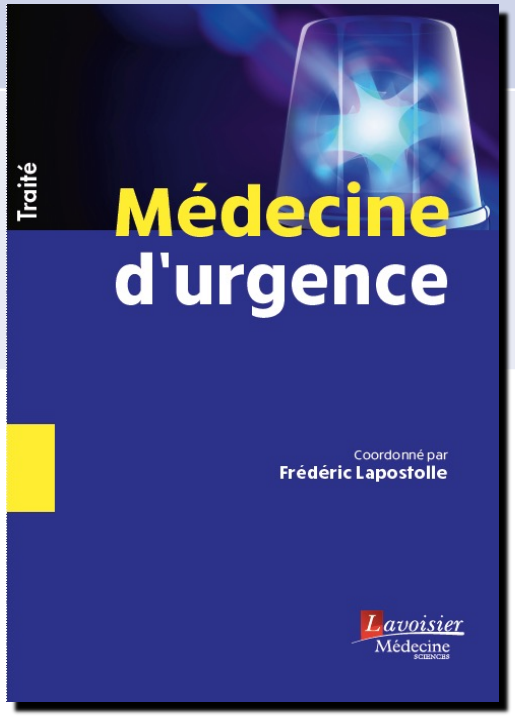
- **Investigator – Researsh**

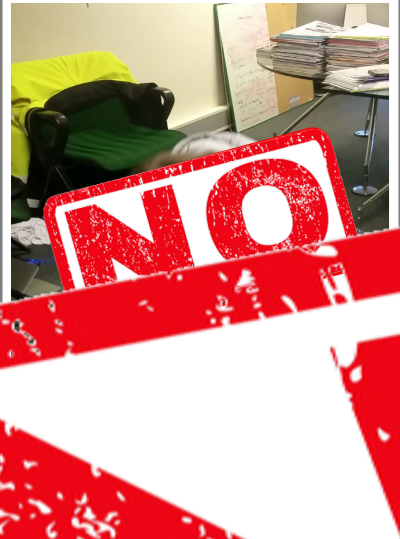
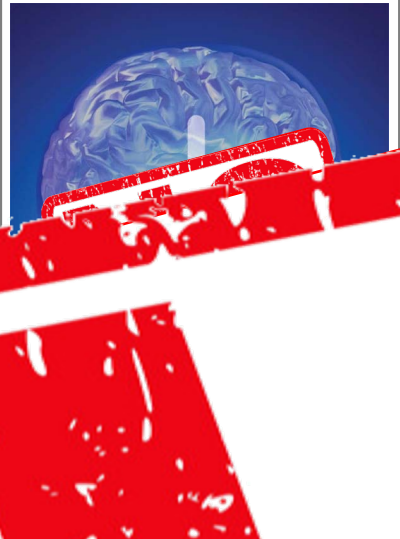
Astra-Zeneca, Boehringer-Ingelheim,

Merck-Serono, Mundipharma, Novartis, Teleflex







DAMC	Education	Hypothermie	Angioplastie	ECMO	bation
					
					


Success

TABLE 1. CHARACTERISTICS OF SUBJECTS WITH CARDIAC ARREST IN CASINOS.*

CHARACTERISTIC	ALL CARDIAC ARRESTS (N=148)	WITNESSED ARRESTS WITH AN INITIAL RHYTHM OF VENTRICULAR FIBRILLATION (N=90)
Age — yr	64±12	65±11
Male sex — %	80	84
CPR administered before arrival of defibrillator — no. (%)	63 (43)	49 (54)
Interval from collapse to CPR — min	—†	2.9±2.8
Initial rhythm of ventricular fibrillation — no. (%)	105 (71)	90 (100)
Interval from collapse to attachment of defibrillator — min	—†	3.5±2.9
Interval from collapse to first defibrillation — min	—†	4.4±2.9
Interval from collapse to arrival of paramedics — min	—†	9.8±4.3
Survival to discharge from hospital — no. (%)	56 (38)	53 (59)

*Plus–minus values are means ±SD. CPR denotes cardiopulmonary resuscitation.

†Intervals from collapse to intervention could not be calculated for unwitnessed arrests.

The New England Journal of Medicine

VOLUME 343 OCTOBER 26, 2000 NUMBER 17

OUTCOMES OF RAPID DEFIBRILLATION BY SECURITY OFFICERS AFTER CARDIAC ARREST IN CASINOS

TERENCE D. VALENZUELA, M.D., M.P.H., DENISE J. ROE, DR.P.H., GRAHAM NICHOL, M.D., M.P.H., LANI L. CLARK, B.S., DANIEL W. SPAITE, M.D., AND RICHARD G. HARDMAN, B.S.

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Family Presence during Cardiopulmonary Resuscitation

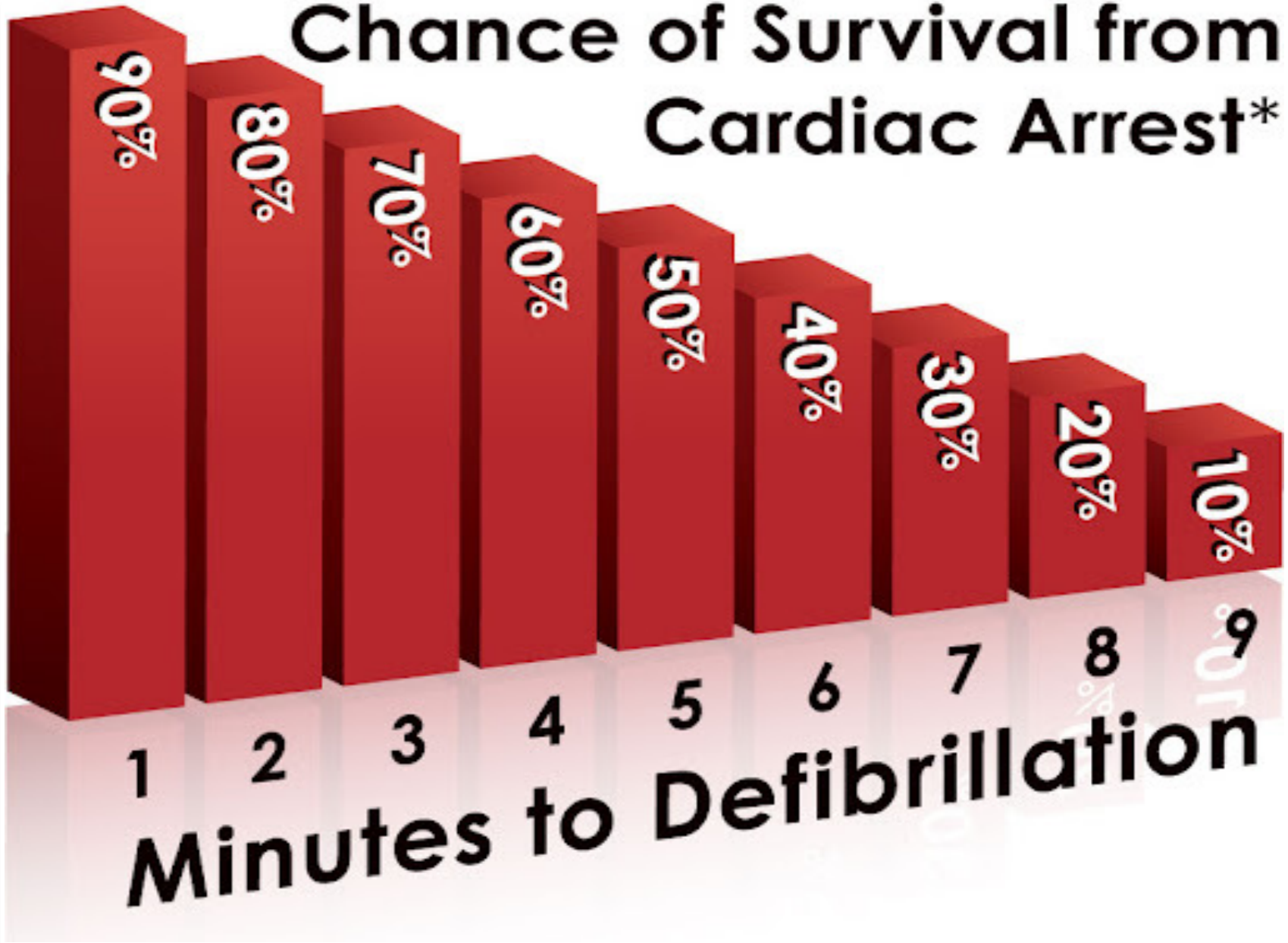
Patricia Jabre, M.D., Ph.D., Vanessa Belpomme, M.D., Elie Azoulay, M.D., Ph.D., Line Jacob, M.D., Lionel Bertrand, M.D., Frederic Lapostolle, M.D., Ph.D., Karim Tazarourte, M.D., Ph.D., Guillem Bouilleau, M.D., Virginie Pinaud, M.D., Claire Broche, M.D., Domitille Normand, M.S., Thierry Baubet, M.D., Ph.D., Agnes Ricard-Hibon, M.D., Ph.D., Jacques Istria, M.D., Alexandra Beltramini, M.D., Armelle Alheritiere, M.D., Nathalie Assez, M.D., Lionel Nace, M.D., Benoit Vivien, M.D., Ph.D., Laurent Turi, M.D., Stephane Launay, M.D., Michel Desmaizieres, M.D., Stephen W. Borron, M.D., Eric Vicaut, M.D., Ph.D., and Frederic Adnet, M.D., Ph.D.

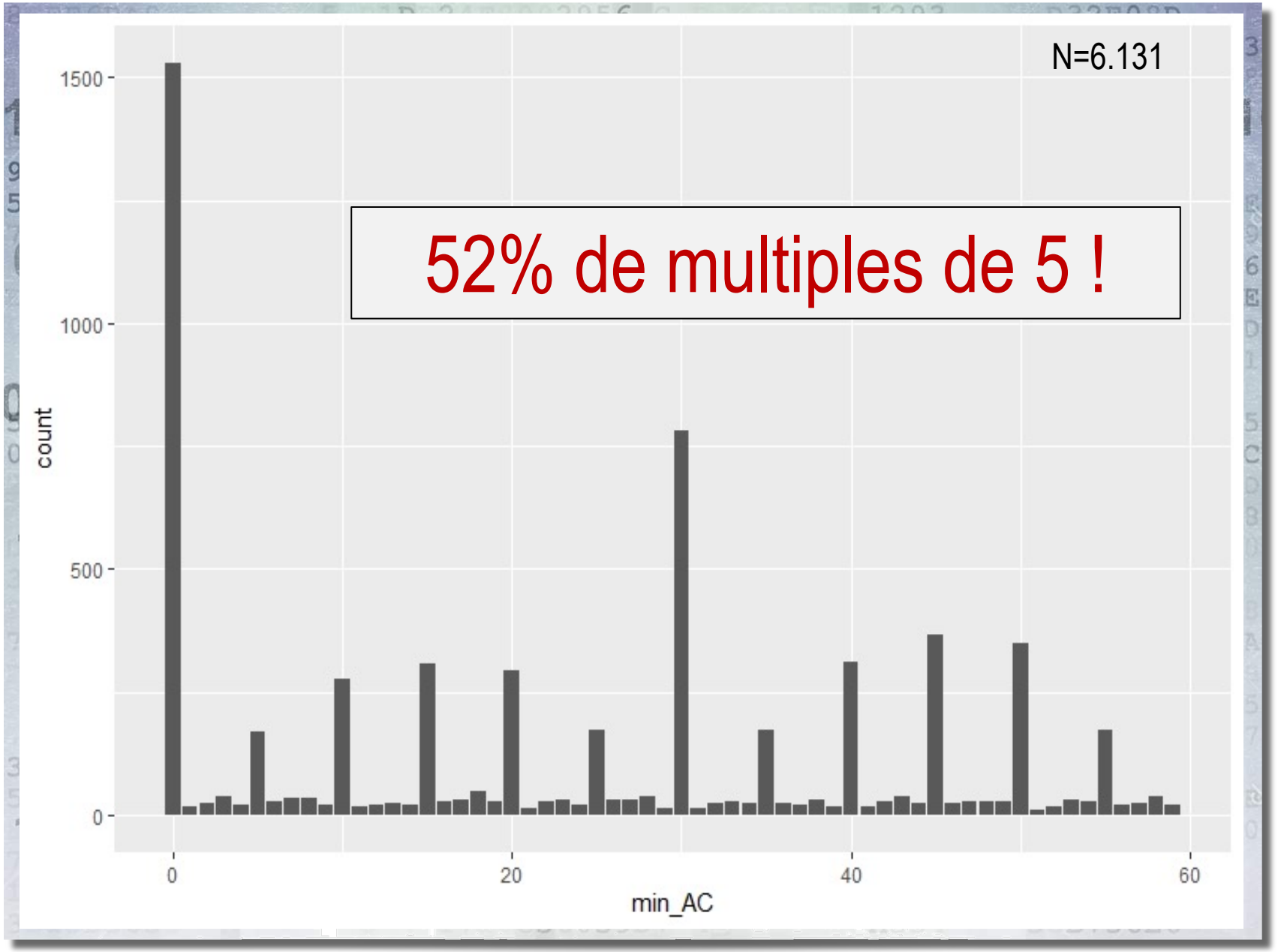
2013

Arrêt Cardiaque

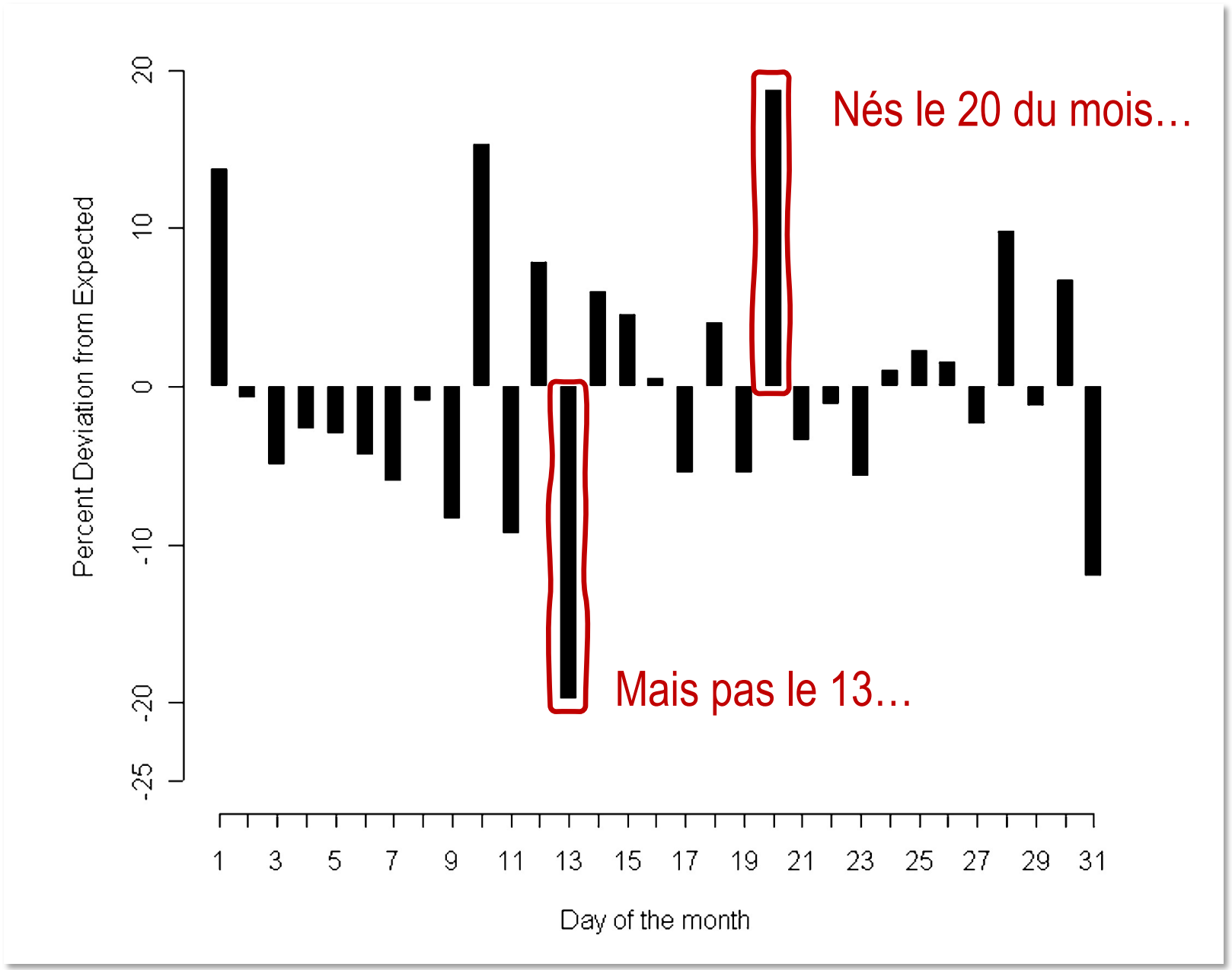
Pourquoi rien ne marche ?

Chance of Survival from Cardiac Arrest*





Lapostolle, *Eur J Emerg Med* (In Press)



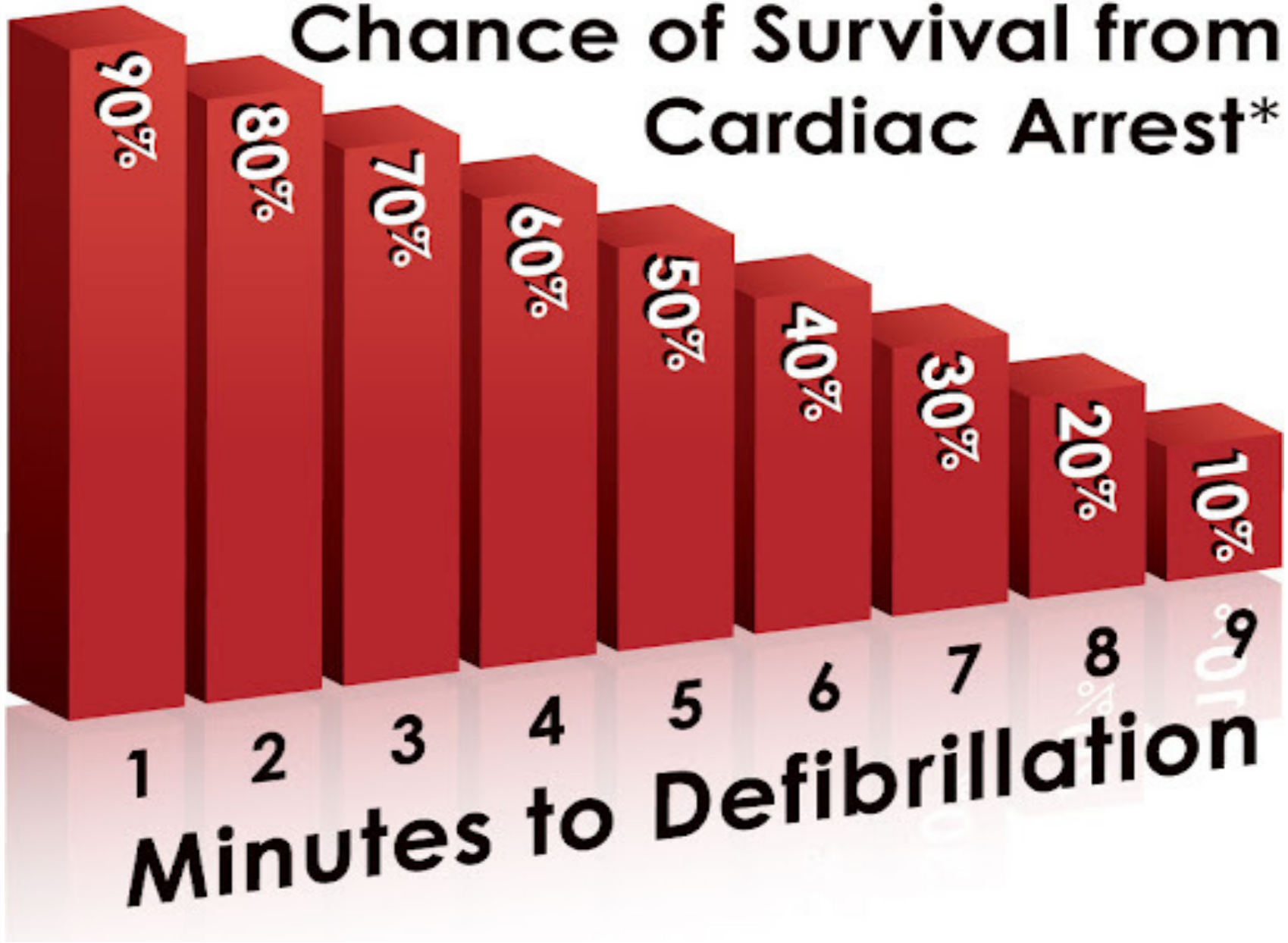
DIGIT PREFERENCE!!!

0123456789

The above ten digits are used to make up figures in most part of the world. During my undergraduate days, I was taught error in age data —one of which is digit preference. It is important to note that most persons have preference for terminal digits ie numbers ending with 0&5, or even numbers(2,4…)
For example, a person who is 49years might report his/her age as 50

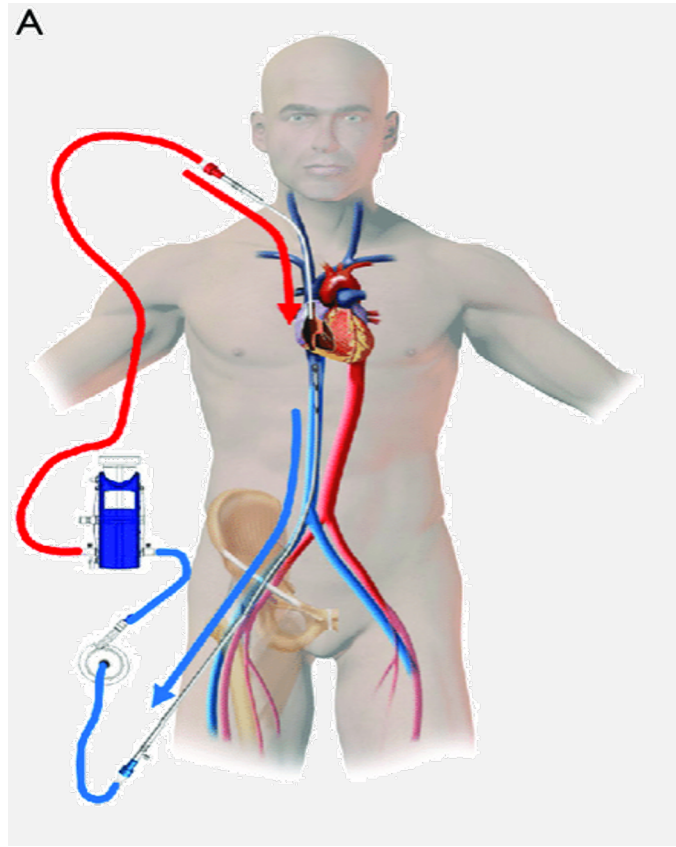
Robinson, *BMC Veterinary Research*, 2006

Chance of Survival from Cardiac Arrest*




LifeBand
LifeBand


NDC 42023-168-01
Adrenalin®
(epinephrine
injection, USP)
1 mg/mL
(30 mg/30 mL)
1:1000
For Intramuscular or
Subcutaneous Use
Not for Ophthalmic Use
30 mL Multiple Dose Vial


A

Réanimation
DOI 10.1007/s13546-016-1210-7

MISE AU POINT / *UPDATE*

F. Lapostollle · J.-M. Agostinucci · F. Adnet

Fig. 1 LUCAS® (Lund University Cardiac Arrest System) de la société Medtronic™. Crédit photo : JMA–Samu 93

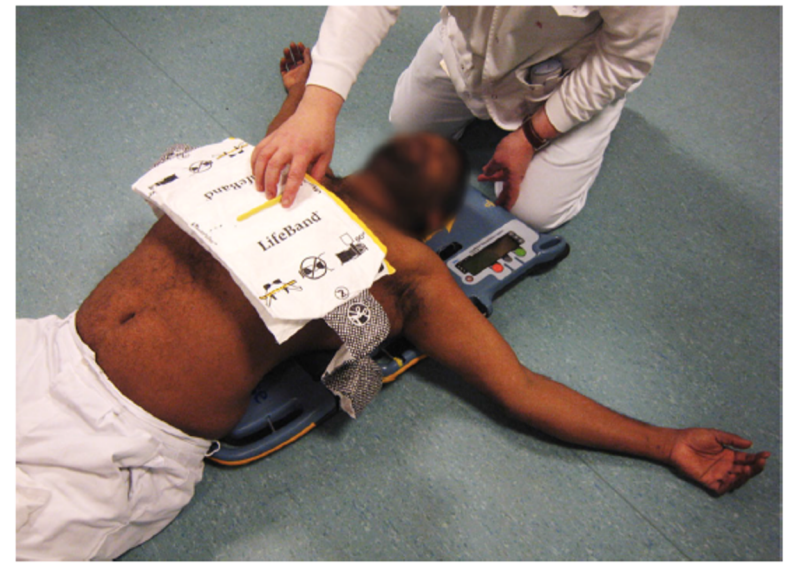
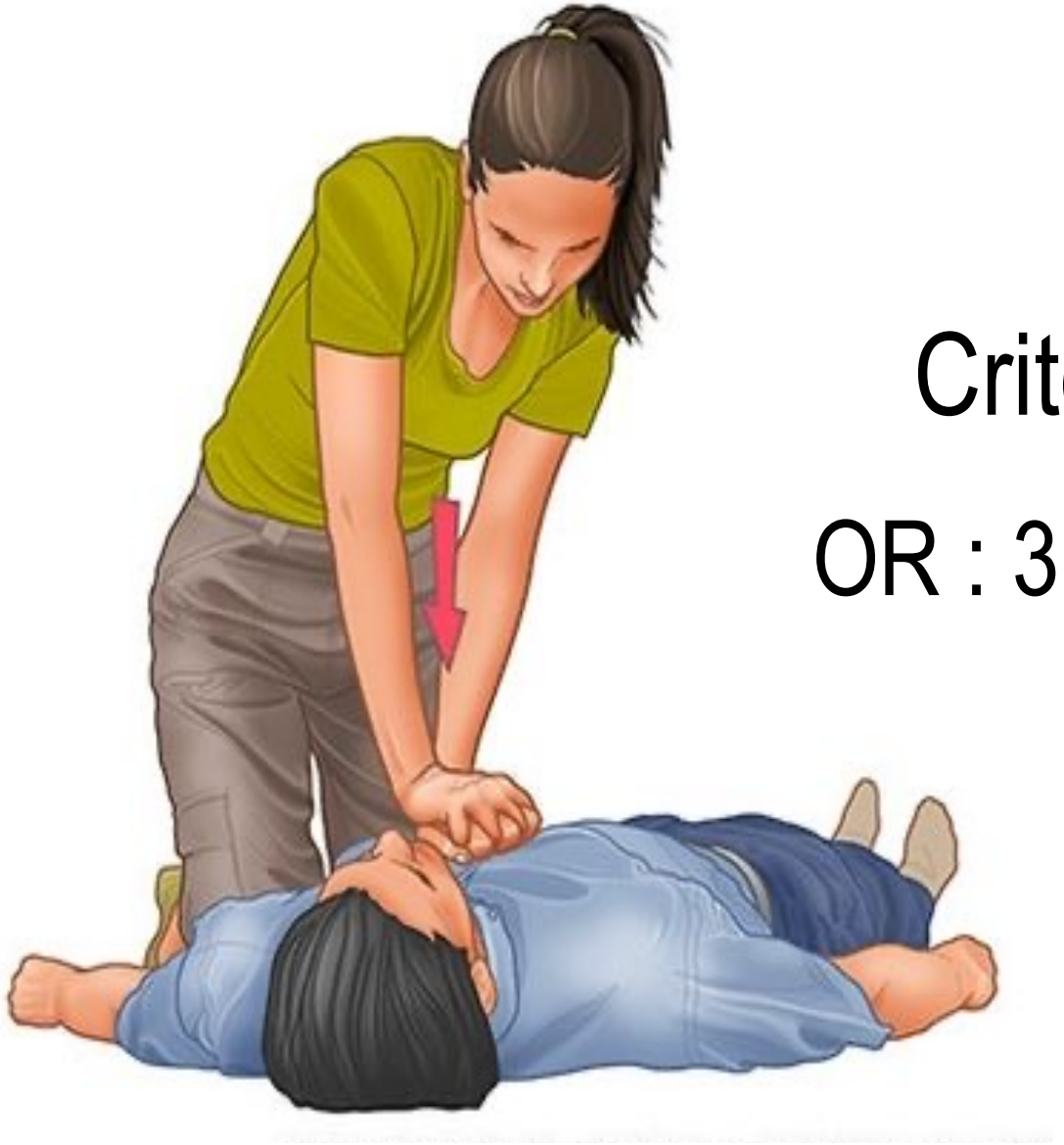


Fig. 2 Autopulse® fabriqué par Zoll™. Crédit photo : JMA–Samu 93

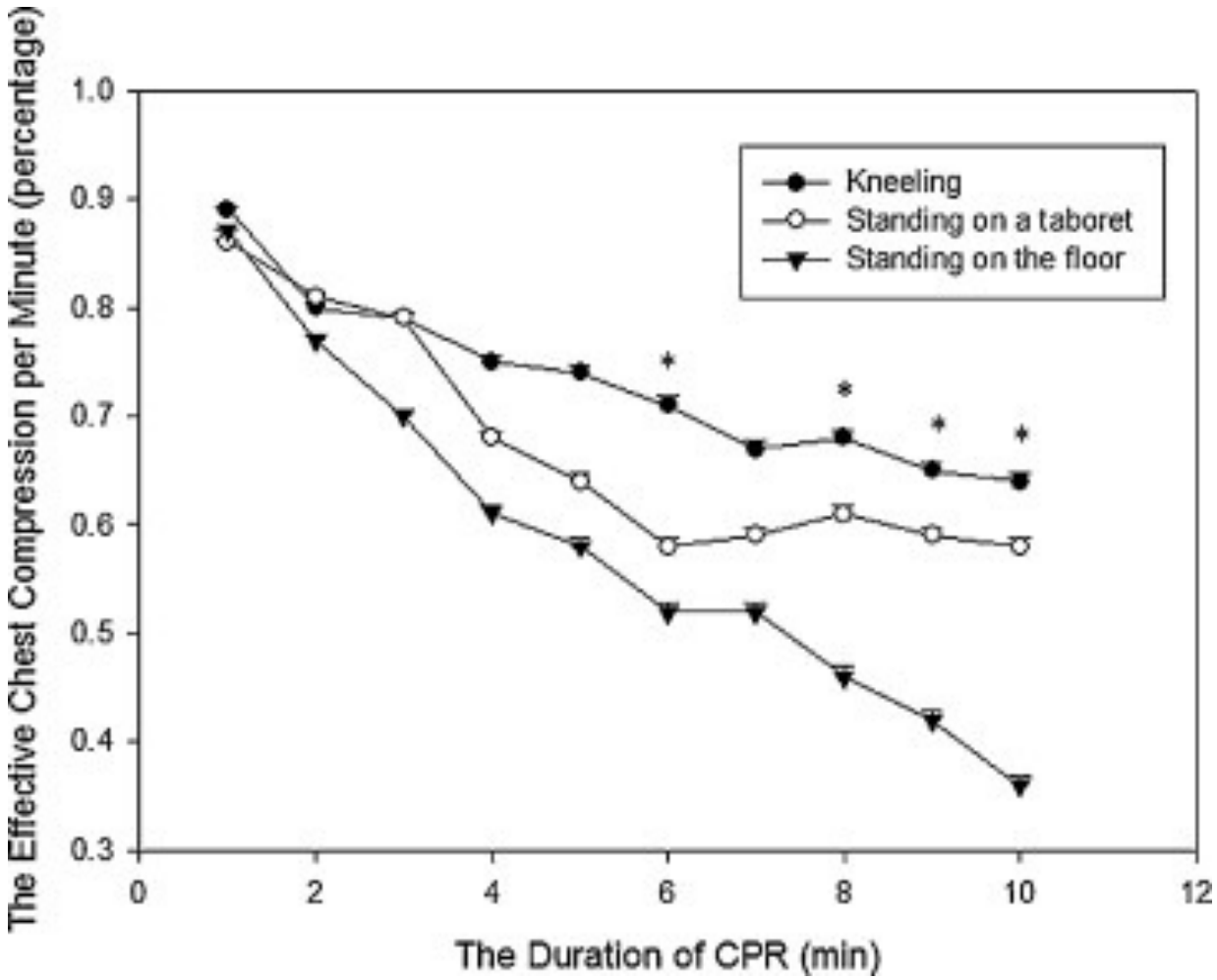


Qualité de la RCP :

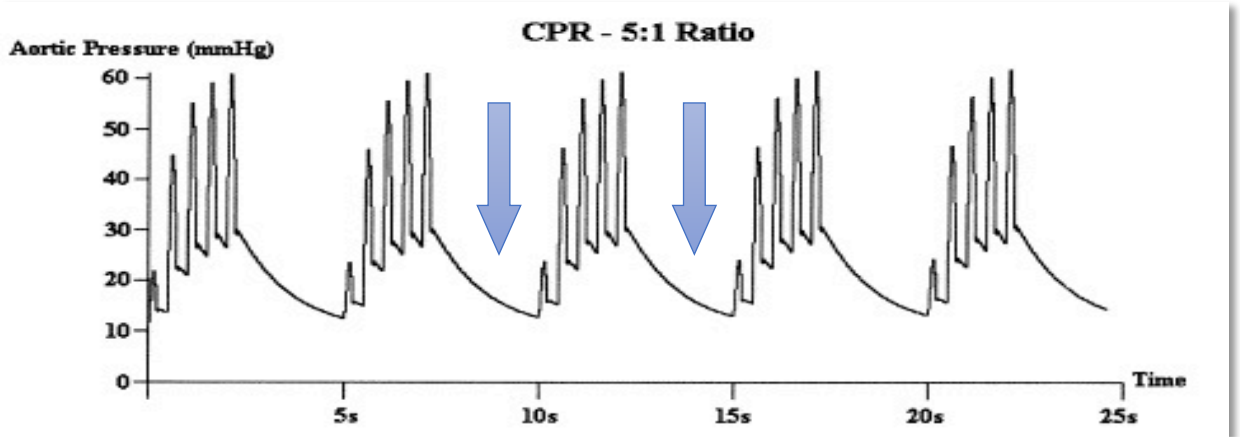
Critère indépendant de survie

OR : 3,9 ; IC95 % : 1,1-14,0 ; p < 0,04

Gallagher, *JAMA*, 1995



Ning-Ping, *Resuscitation*, 2010

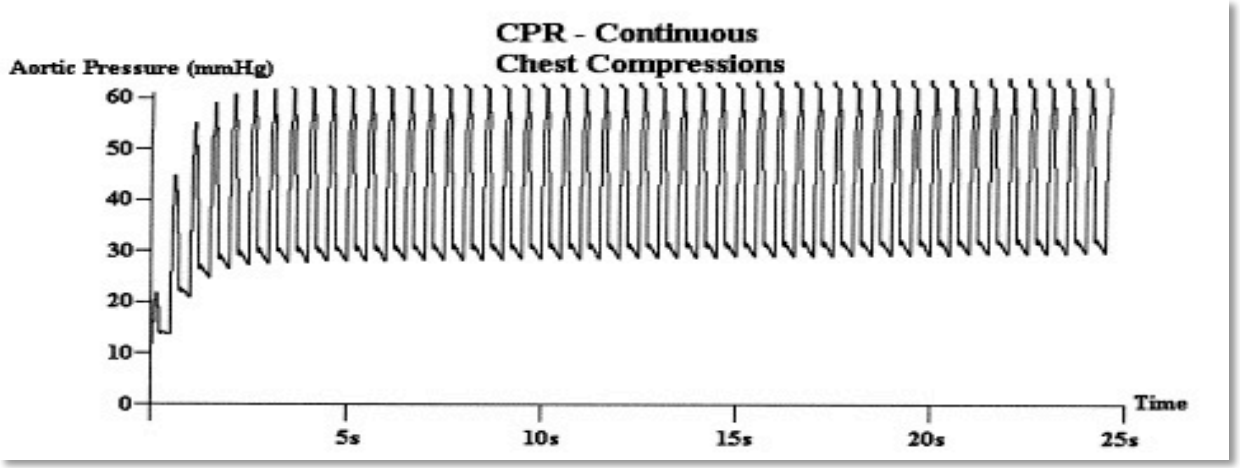

CPR - 5:1 Ratio
Aortic Pressure (mmHg)
60
50
40
30
20
10
0
Time
5s
10s
15s
20s
25s

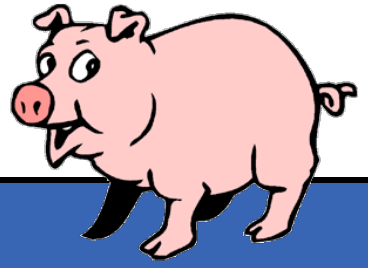
Chest-compression-only versus standard cardiopulmonary resuscitation: a meta-analysis

Michael Hüpfl, Harald F Selig, Peter Nagele

	Chest-compression-only CPR	Standard CPR	Risk ratio (95% CI)	Z value	p value
Hallstrom et al (2000)[14]	35/240 (15%)	29/278 (10%)	1·40 (0·88–2·22)	1·43	0·15
Rea et al (2010)[15]	122/978 (12%)	105/956 (11%)	1·14 (0·89–1·45)	1·02	0·31
Svensson et al (2010)[16]	54/282 (19%)	44/297 (15%)	1·29 (0·90–1·86)	1·39	0·17
Overall	**211/1500 (14%)**	**178/1531 (12%)**	**1·22 (1·01–1·46)**	**2·06**	**0·040**

Hupfl, *Lancet*, 2010

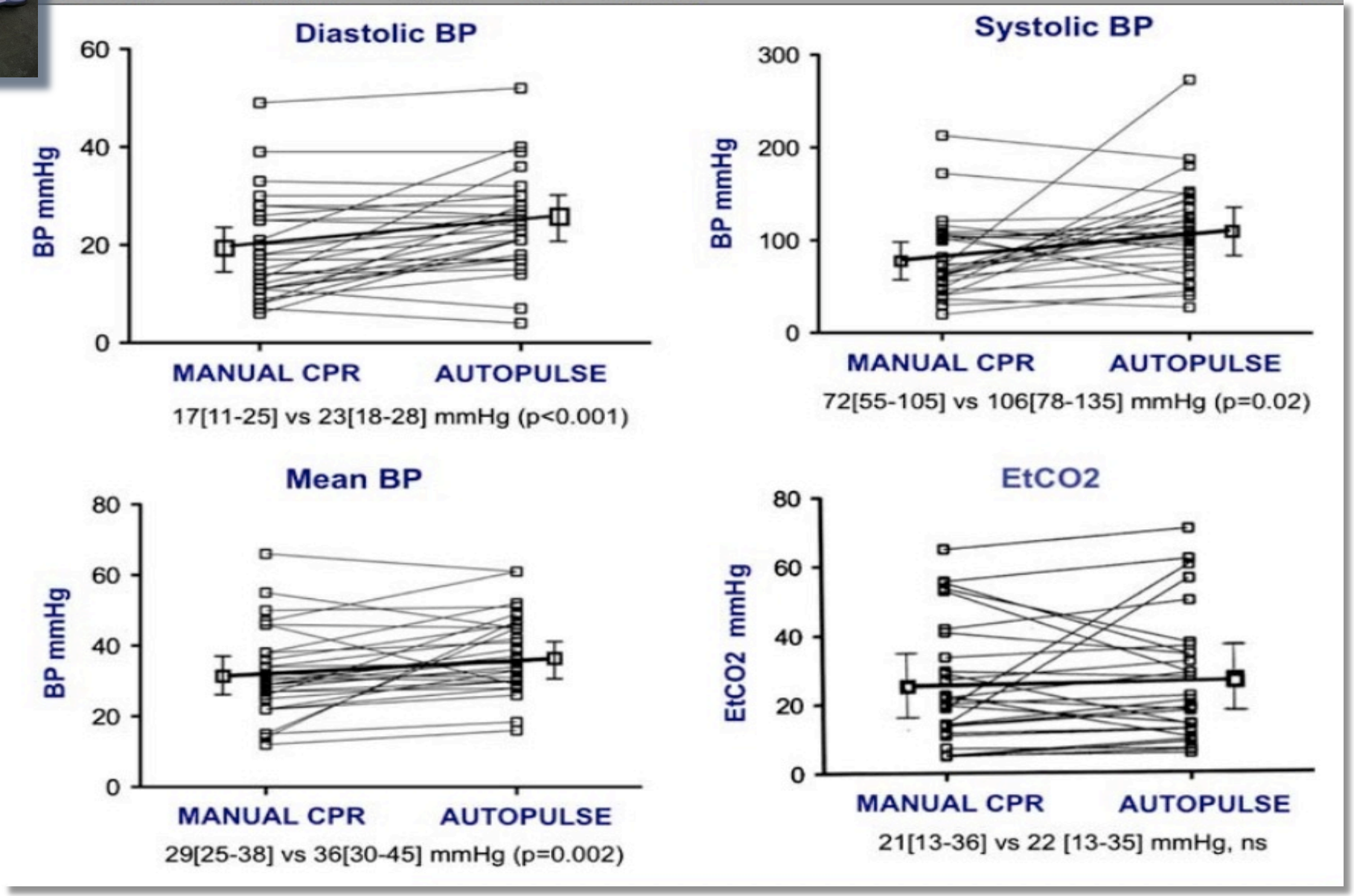




Pression perfusion coronaire	MCE	Ceinture	p
Sans épinéphrine	14±6 mmHg	21±8 mmHg	< 0,0001
Avec épinéphrine	17±6 mmHg	45±11 mmHg	< 0,0001

Halperin, *J Am Coll Cardiol*, 2002

Duchateau, *Intens Care*, 2010



JAMA®
The Journal of the American Medical Association

Use of an Automated, Load-Distributing Band Chest Compression Device for Out-of-Hospital Cardiac Arrest Resuscitation

Marcus Eng Hock Ong, MD, MPH
Joseph P. Ornato, MD
David P. Edwards, MBA, EMT-P
Harinder S. Dhindsa, MD, MPH
Al M. Best, PhD
Caesar S. Ines, MD, MS
Scott Hickey, MD
Bryan Clark, DO
Dean C. Williams, MD
Robert G. Powell, MD
Jerry L. Overton, MPA
Mary Ann Peberdy, MD

Context Only 1% to 8% of adults with out-of-hospital cardiac arrest survive to hospital discharge.

Objective To compare resuscit
gency medical services (EMS) syst
citation (CPR) to load-distributing

Design, Setting, and Patients
tention-to-treat analysis of 783 a
rest. A total of 499 patients were i
to March 31, 2003) and 284 patie
March 31, 2005); of these patient

Intervention Urban EMS syster

Main Outcome Measures Re
ondary outcome measures of sur
and neurological outcome at disch

Results Patients in the manual C
a faster response time interval (me
arrests (18.7% vs 12.6%) with LD
LDB-CPR compared with manual C
29.2%-40.3% vs 20.2%; 95% CI,
CI, 1.38-2.72; for survival to hospita

APPROXIMATELY 400 TO 460 000 individuals die every year from out-of-hospital cardiac arrest (OHCA),[1]

Manual Chest Compression vs Use of an Automated Chest Compression Device During Resuscitation Following Out-of-Hospital Cardiac Arrest

A Randomized Trial

Al Hallstrom, PhD
Thomas D. Rea, MD, MPH
Michael R. Sayre, MD
James Christenson, MD
Andy R. Anton, MD
Vince N. Mosesso, Jr, MD
Lois Van Ottingham, BSN
Michele Olsufka, RN
Sarah Pennington, RN
Lynn J. White, MS
Stephen Yahn, EMT-P
James Husar, EMT-P
Mary F. Morris
Leonard A. Cobb, MD

Context High-quality cardiopulmonary resuscitation (CPR) may improve both cardiac and brain resuscitation following cardiac arrest. Compared with manual chest compression, an automated load-distributing band (LDB) chest compression device produces greater blood flow to vital organs and may improve resuscitation outcomes.

Objective To compare resuscitation outcomes following out-of-hospital cardiac arrest when an automated LDB-CPR device was added to standard emergency medical services (EMS) care with manual CPR.

Design, Setting, and Patients Multicenter, randomized trial of patients experiencing out-of-hospital cardiac arrest in the United States and Canada. The a priori primary population was patients with cardiac arrest that was presumed to be of cardiac origin and that had occurred prior to the arrival of EMS personnel. Initial study enrollment varied by site, ranging from late July to mid November 2004; all sites halted study enrollment on March 31, 2005.

Intervention Standard EMS care for cardiac arrest with an LDB-CPR device (n=554) or manual CPR (n=517).

Main Outcome Measures The primary end point was survival to 4 hours after the 911 call. Secondary end points were survival to hospital discharge and neurological status among survivors.

Results Following the first planned interim monitoring conducted by an independent data and safety monitoring board, study enrollment was terminated. No difference existed in the primary end point of survival to 4 hours between the manual CPR group and the LDB-CPR group overall (N=1071; 29.5% vs 28.5%; *P*=.74) or among the pri-

OUT-OF-HOSPITAL CARDIAC arrest claims hundreds of thousands of lives annually in North America. Suc-

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Table 3. Outcome by Treatment Group Overall and by Rhythm Subgroup Among Primary Comparison Population*

	VF/Pulseless VT		Pulseless Electrical Activity		Asystole		All Primary Cases†	
	Manual CPR (n = 119)	LDB-CPR (n = 122)	Manual CPR (n = 100)	LDB-CPR (n = 98)	Manual CPR (n = 154)	LDB-CPR (n = 174)	Manual CPR (n = 373)	LDB-CPR (n = 394)
Survived ≥4 h after 911 call	49 (41.2)	53 (43.4)	27 (27.0)	21 (21.4)	16 (10.4)	30 (17.2)	92 (24.7)	104 (26.4)
Died at scene	27 (22.7)	20 (16.4)	30 (30.0)	28 (28.6)	73 (47.4)	85 (48.9)	130 (34.9)	133 (33.8)
Died in emergency department	44 (37.0)	49 (40.2)	44 (44.0)	49 (50.0)	66 (42.9)	61 (35.1)	14 (41.3)	159 (40.4)
Died in hospital	21 (17.6)	36 (29.5)	17 (17.0)	18 (18.4)	14 (9.1)	25 (14.4)	52 (13.9)	79 (20.1)
Discharged alive from hospital	27 (22.7)	17 (13.9)	9 (9.0)	3 (3.1)	1 (0.6)	3 (1.7)	37 (9.9)	23 (5.8)
CPC score								
1, Conscious and alert	23 (19.3)	5 (4.1)	2 (2.0)	0	0	1 (0.6)	25 (6.7)	6 (1.5)
2, Conscious	2 (1.7)	5 (4.1)	0	1 (1.0)	1 (0.6)	0	3 (0.8)	6 (1.5)
3, Dependent	2 (1.7)	6 (5.0)	3 (3.1)	0	0	1 (0.6)	5 (1.3)	7 (1.8)
4, Unconscious	0	0	2 (2.0)	0	0	1 (0.6)	2 (0.5)	1 (0.3)
5, Circulatory death	92 (77.3)	105 (86.8)	91 (92.9)	95 (99.0)	153 (99.4)	171 (98.3)	336 (90.6)	371 (94.9)

Abbreviations: CPC, cerebral performance category; CPR, cardiopulmonary resuscitation; LDB, load-distributing band; VF, ventricular fibrillation; VT, ventricular tachycardia.
*Values are expressed as number (percentage).
†Neurological data were incomplete for 5 survivors.

Hallstrom, *JAMA*, 2006

Table 3
Comparison of outcome by treatment arm.

Outcomes	M-CPR ($n = 2132$)	iA-CPR ($n = 2099$)	Covariate adjusted odds ratio (95% CI)	Covariate and interim analyses adjusted odds ratio (95% CI)[b]
Survival to Hospital Discharge	233 (11.0%) (7 cases unknown)	196 (9.4%) (5 cases unknown)	0.89 (0.72–1.10)	1.06 (0.83–1.37)[a]
Survival to 24 h	532 (25.0%) v	456 (21.8%) (10 cases unknown)	0.86 (0.74–0.998)[b]	
Sustained ROSC	689 (32.3%)	600 (28.6%)	0.84 (0.73–0.96)[b]	
Discharge mRS	($n = 233$)	($n = 196$)		
Score of 0–3	112 (48.1%)	87 (44.4%)	0.80 (0.47–1.37)[b]	
Score of 4–5	61 (26.2%)	50 (25.5%)		
Unknown score	60 (25.8%)	59 (30.1%)		

[a] Adjusted for covariates and interim analyses.
[b] Secondary outcomes can only be adjusted for the covariates, not the interim analyses.

Wik, *Resuscitation*, 2014

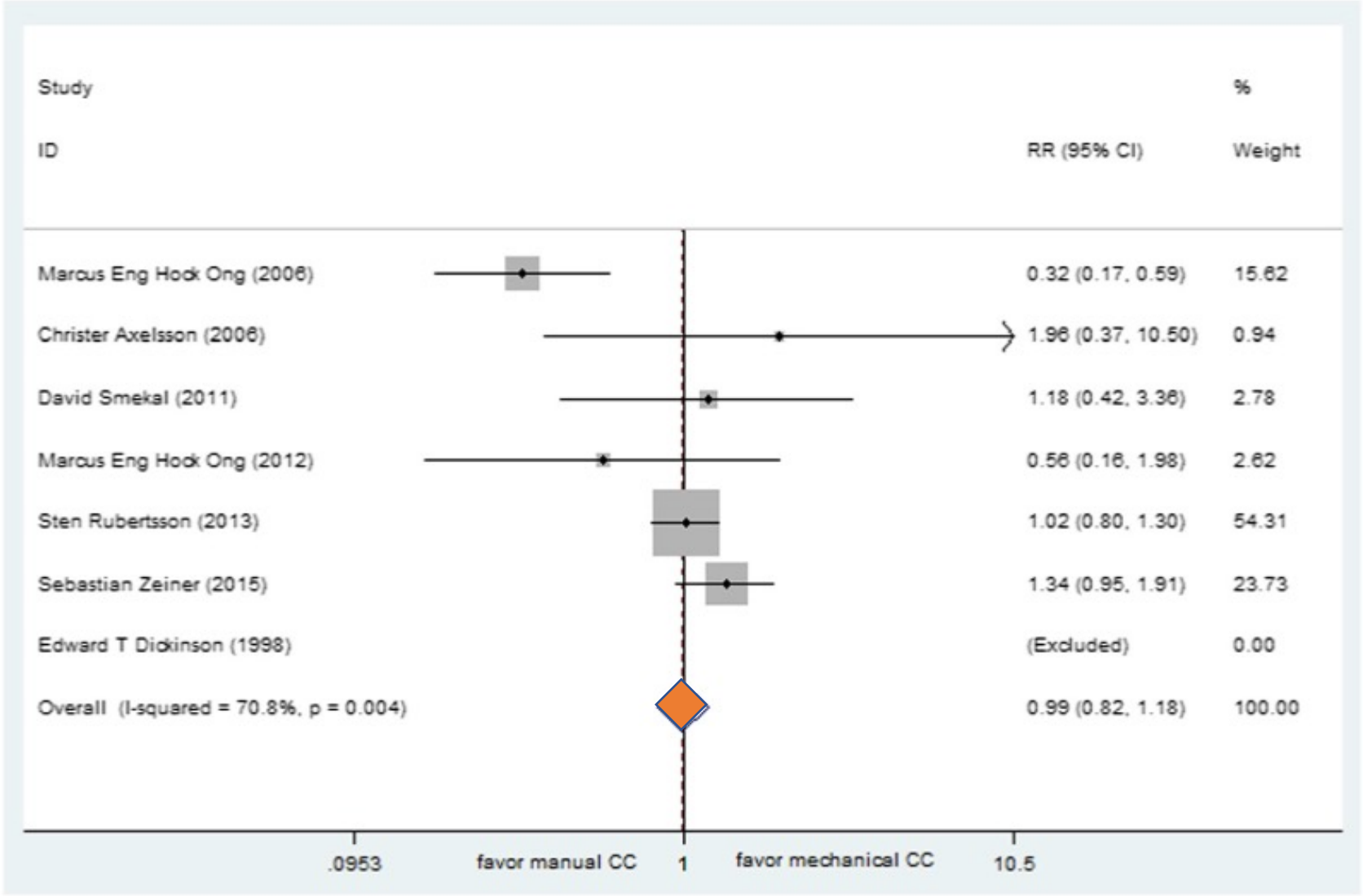

Fig. 5 Effect of manual chest compression and mechanical chest compression on survival to hospital discharge for OHCA patients

Li, *Scand J Emerg Med*, 2016

Réanimation
DOI 10.1007/s13546-016-1210-7

MISE AU POINT / *UPDATE*

F. Lapostollle · J.-M. Agostinucci · F. Adnet

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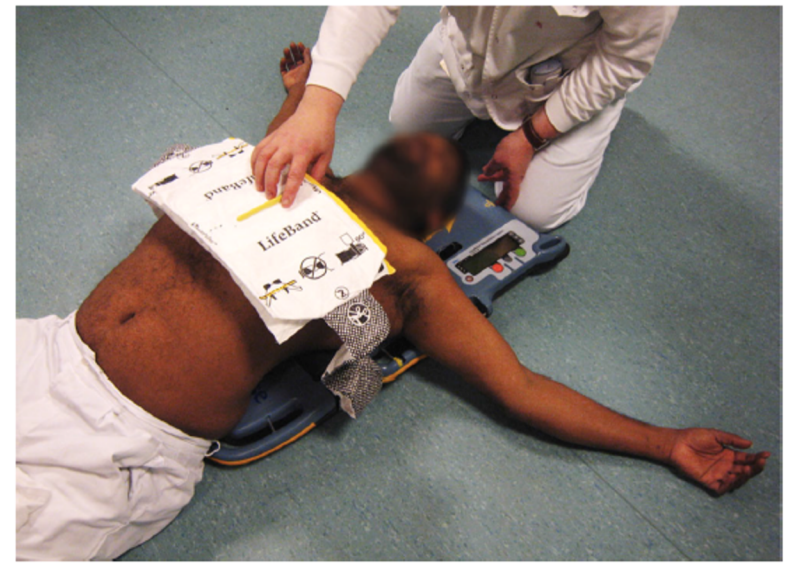

Fig. 2 Autopulse® fabriqué par Zoll™. Crédit photo : JMA–Samu 93

Manual vs Device-Assisted CPR

Reconciling Apparently Contradictory Results

Roger J. Lewis, MD, PhD
James T. Niemann, MD

come.[10] Most individuals who sustain cardiac arrest probably receive suboptimal CPR, especially during extended resuscitation efforts.

On April 5, 2006, the manufacturer of the AutoPulse LDB-CPR device published a press release in which they "reported that a growing number of EMS agencies in the State of Virginia are deploying the AutoPulse to help better manage cardiac arrest."[20] The press release includes quotations from EMS personnel, demonstrating their belief that this device improves outcome from cardiac arrest, and also provides summary information from one of the studies reported in this issue.[13] The press release also notes that "more than 235 EMS agencies and hospitals worldwide employ the AutoPulse." Second quarter financial results for Zoll Medical Corporation released April 28, 2006, demonstrate an 8% increase in revenues and an 11% increase in sales in North America compared with the same quarter of the previous year.[21] Furthermore, deliveries of the AutoPulse device increased 50% during the prior year (representing $2.4 million this quarter vs $1.6 million in the same quarter last year).[21] It now seems this enthusiasm is premature, given that the effectiveness of the device likely depends on still-to-be-defined factors independent of the mechanical capabilities of the device. This illustrates the uneasy balance between forces promoting early adoption, including EMS personnel and perhaps physician enthusiasm unrelated to outcomes-based demonstration of efficacy as well as marketing efforts and business strategies, and the principle that new therapies should not be


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NDC 42023-168-01
Adrenalin®
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injection, USP)
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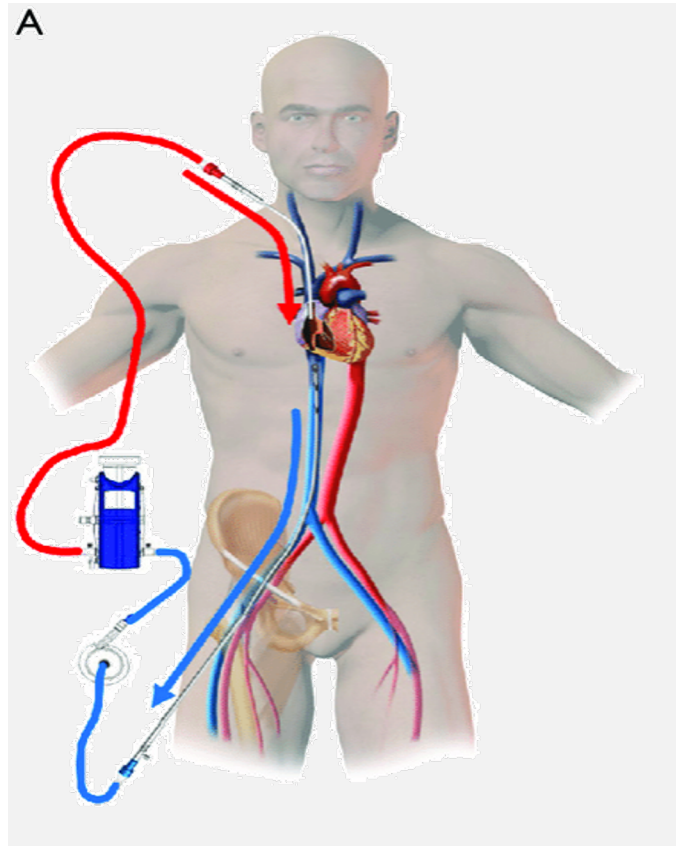
(30 mg/30 mL)
1:1000
For Intramuscular or
Subcutaneous Use
Not for Ophthalmic Use
30 mL Multiple Dose Vial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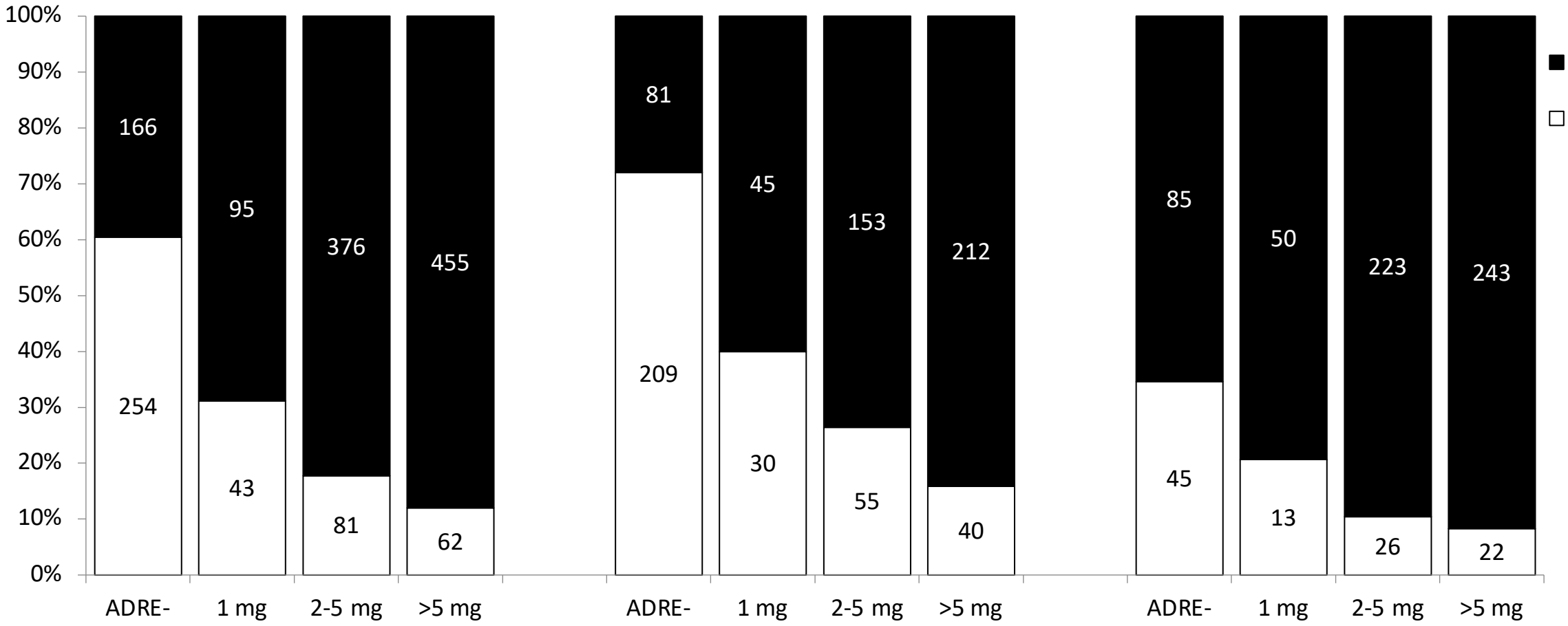
Independent factors for survival to 1 month in a logistic regression analysis for all patients with time intervals included ($n = 6408$)

	OR	95% CI
Adrenaline (yes/no)	0.50	0.31–0.79
Time: call-first ECG (yes/no)	0.86	0.83–0.87
Place of CA (not at home/home)	2.16	1.67–2.82
Witnessed (yes/no)	0.47	0.33–0.65
Gender (male/female)	1.46	1.10–1.92
VT/VF (yes/no)	5.00	3.64–6.97
B-CPR (yes/no)	2.45	1.88–3.19
Age (> 71/ < 71)	0.98	1.60–2.66

Values beneath 1.0 indicates negative effect.

Holmberg, *Resuscitation*, 2002



	Odds Ratio	[95%CI]	p-value	Odds Ratio	[95%CI]	p-value	Odds Ratio	[95%CI]	p-value
ADRE-	1			1			1		
1 mg	0.48	[0.27-0.84]	0.01	0.38	[0.18-0.78]	0.008	0.60	[0.23-1.60]	0.31
2-5mg	0.30	[0.20-0.47]	<0.001	0.25	[0.14-0.44]	<0.001	0.40	[0.19-0.84]	0.02
>5 mg	0.23	[0.14-0.37]	<0.001	0.16	[0.08-0.30]	<0.001	0.36	[0.16-0.82]	0.01

Dumas, *JACC*, 2014

431 968 Out-of-hospital cardiac arrest cases in Japan between January 1, 2005, and December 31, 2008

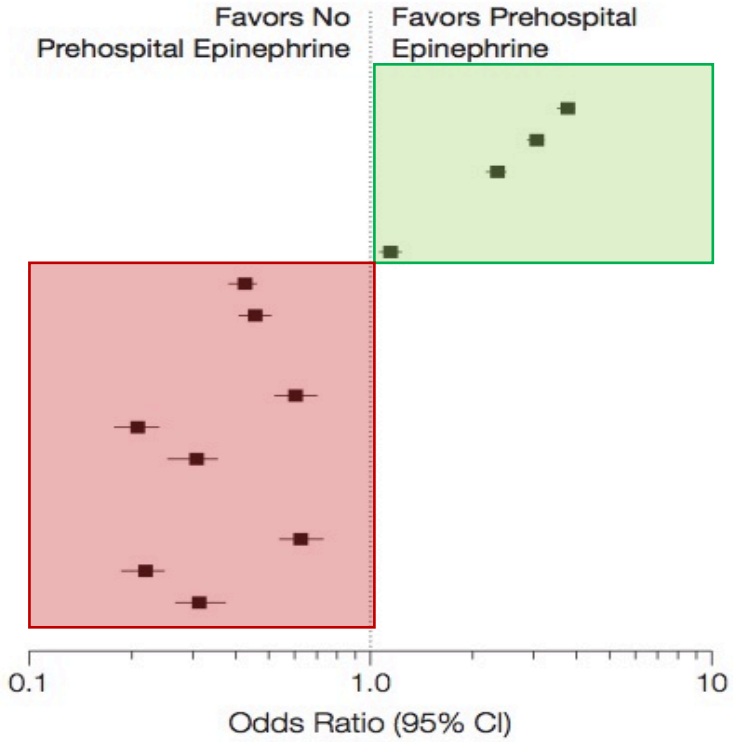
14 780 Excluded
- 7991 Younger than 18 years
- 5951 Missing data on epinephrine administration
- 390 More than 60 min elapsed from call to scene arrival
- 386 More than 480 min elapsed from call to hospital arrival
- 62 Missing age data

417 188 Cases included in analysis
- 15 030 Received epinephrine
- 402 158 Did not receive epinephrine

Hagihara,

JAMA, 2012

Model	Total No. of Cases	No. (%) With Outcome		Odds Ratio (95% CI)
		Epinephrine	No Epinephrine	
ROSC				
Unadjusted	417 155	2786 (18.5)	23 042 (5.7)	3.75 (3.59-3.91)
Adjusted for selected variables[a]	412 078	2692 (18.6)	22 804 (5.7)	3.06 (2.93-3.21)
Adjusted for all covariates[b]	391 046	2556 (18.6)	21 629 (5.7)	2.36 (2.22-2.50)
1-Month survival				
Unadjusted	417 186	805 (5.4)	18 906 (4.7)	1.15 (1.07-1.23)
Adjusted for selected variables[a]	412 078	772 (5.3)	18 637 (4.7)	0.43 (0.39-0.46)
Adjusted for all covariates[b]	391 046	733 (5.3)	17 677 (4.7)	0.46 (0.42-0.51)
CPC 1 or 2				
Unadjusted	417 187	205 (1.4)	8903 (2.2)	0.61 (0.53-0.70)
Adjusted for selected variables[a]	412 078	197 (1.4)	8781 (2.2)	0.21 (0.18-0.24)
Adjusted for all covariates[b]	391 046	187 (1.4)	8329 (2.2)	0.31 (0.26-0.36)
OPC 1 or 2				
Unadjusted	417 187	211 (1.4)	8831 (2.2)	0.63 (0.55-0.73)
Adjusted for selected variables[a]	412 078	202 (1.4)	8710 (2.2)	0.22 (0.19-0.25)
Adjusted for all covariates[b]	391 046	192 (1.4)	37 732 (2.2)	0.32 (0.27-0.38)



Hagihara, *JAMA*, 2012

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 AUGUST 23, 2018 VOL. 379 NO. 8

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Table 3. Primary and Secondary Outcomes.*

Outcome	Epinephrine	Placebo	Odds Ratio (95% CI)†	
			Unadjusted	Adjusted
Primary outcome				
Survival at 30 days — no./total no. (%)‡	130/4012 (3.2)	94/3995 (2.4)	1.39 (1.06–1.82)	1.47 (1.09–1.97)

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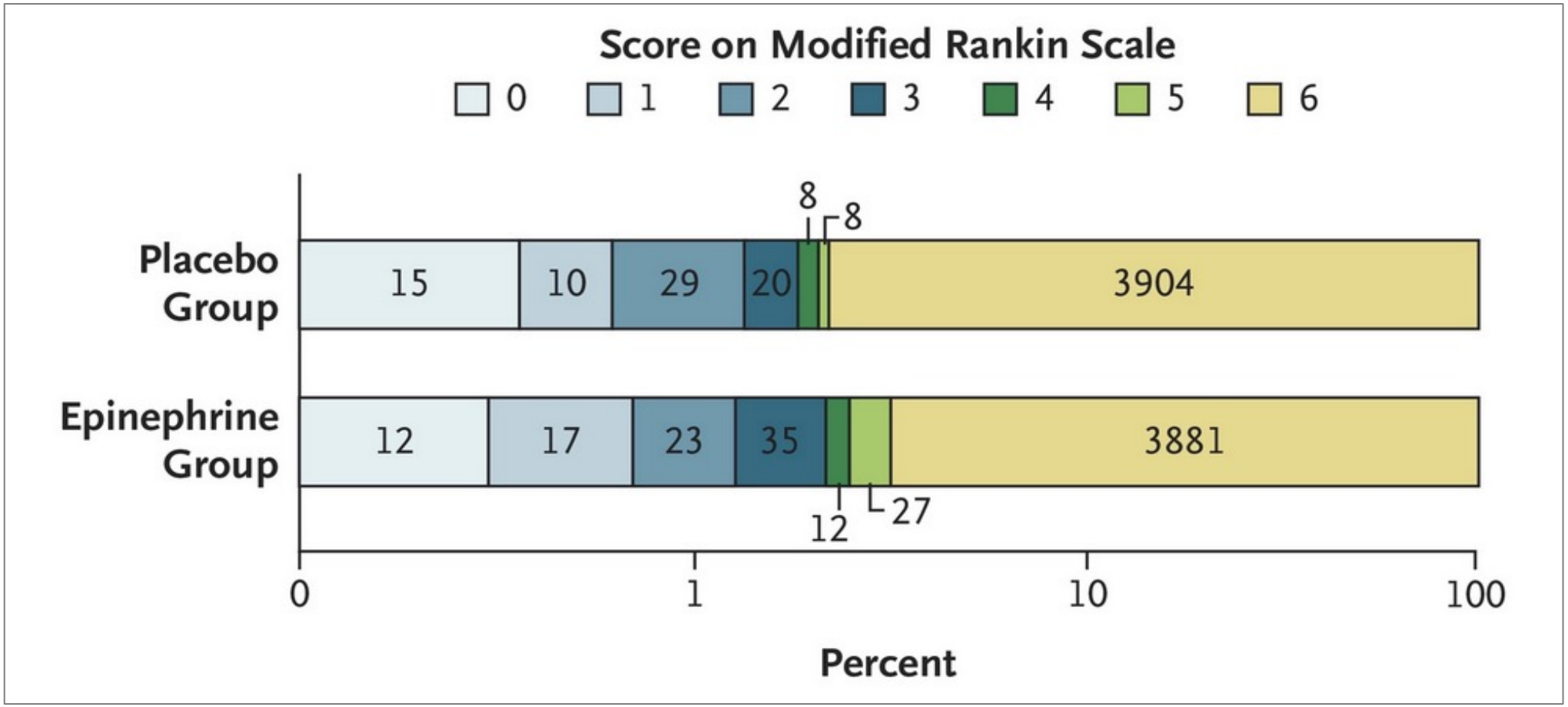

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Survival at 30 days — no./total no. (%)‡	130/4012 (3.2)	94/3995 (2.4)	1.39 (1.06–1.82)	1.47 (1.09–1.97)
Secondary outcomes				
Survival until hospital admission — no./total no. (%)§	947/3973 (23.8)	319/3982 (8.0)	3.59 (3.14–4.12)	3.83 (3.30–4.43)
Median length of stay in ICU (IQR) — days				
Patients who survived	7.5 (3.0–15.0)	7.0 (3.5–12.5)	NA	NA
Patients who died¶	2.0 (1.0–5.0)	3.0 (1.0–5.0)	NA	NA
Median length of hospital stay (IQR)				
Patients who survived	21.0 (10.0–41.0)	20.0 (9.0–38.0)	NA	NA
Patients who died‖	0	0	NA	NA
Survival until hospital discharge — no./total no. (%)	128/4009 (3.2)	91/3995 (2.3)	1.41 (1.08–1.86)	1.48 (1.10–2.00)
Favorable neurologic outcome at hospital discharge — no./total no. (%)	87/4007 (2.2)	74/3994 (1.9)	1.18 (0.86–1.61)	1.19 (0.85–1.68)
Survival at 3 mo — no./total no. (%)	121/4009 (3.0)	86/3991 (2.2)	1.41 (1.07–1.87)	1.47 (1.08–2.00)
Favorable neurologic outcome at 3 mo — no./total no. (%)	82/3986 (2.1)	63/3979 (1.6)	1.31 (0.94–1.82)	1.39 (0.97–2.01)

Adrénaline

Une erreur de paradigme ?


ACR

ACR


Adrenalin®
(epinephrine
injection, USP)
1 mg/mL
(30 mg/30 mL)
1:1000
For Intramuscular or
Subcutaneous Use
Not for Ophthalmic Use

Survie

ACR

RACS

Survie

ACR

RACS

Survie

ACR

RACS

Survie

Cook, *BMJ*, Mars 2019

thebmj

PRACTICE

NIHR SIGNALS

Adrenaline can restart the heart, but is no good for the brain

Editorial

Rethinking the role of epinephrine in cardiac arrest: the PARAMEDIC2 trial

Julianna Jung, Julie Rice, Sharon Bord

Jung, *Ann Transl Med*, Dec 2018

Indispensable

Alternative ou association

Délétère

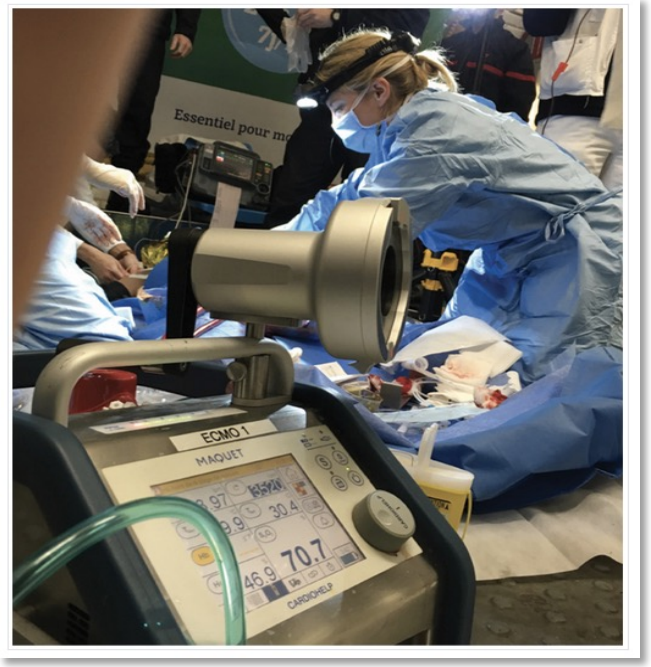
Des raisons d’espérer

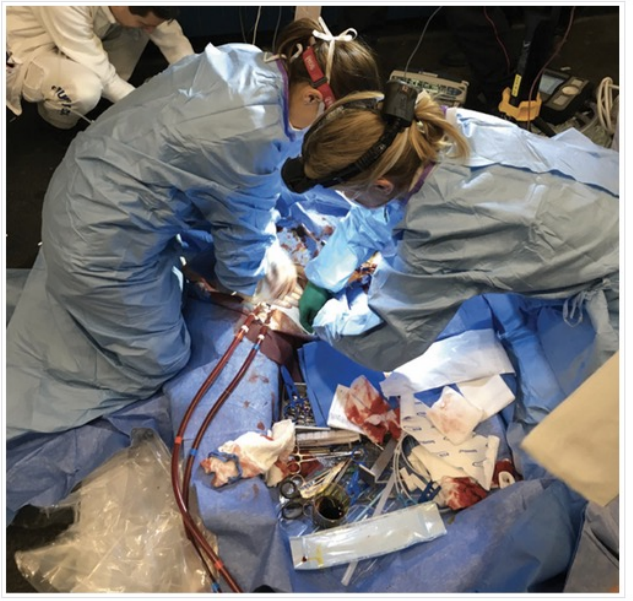
Life signs in ”dead” patient

Lapostolle, *Resuscitation*, 2012

How Physicians Perform Prehospital ECMO on the Streets of Paris

Sat, Dec 2, 2017 | By Alice Hutin, MD, MSc , Romain Corrocher, MD , Floriant Loosli, CRNA , Barbara Mantz, CRNA , Lionel Lamhaut, MD, PhD





The Conscience of EMS JEMS JOURNAL OF EMERGENCY MEDICAL SERVICES ®

Hutin, *JEMS*, 2017

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Resuscitation

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

Clinical paper

A Pre-Hospital Extracorporeal Cardio Pulmonary Resuscitation (ECPR) strategy for treatment of refractory out hospital cardiac arrest: An observational study and propensity analysis

Lionel Lamhaut[a,b,*], Alice Hutin[a,c], Etienne Puymirat[d,e], Jérome Jouan[f], Jean-Herlé Raphalen[a], Romain Jouffroy[a], Murielle Jaffry[g], Christelle Dagron[a], Kim An[a], Florence Dumas[b,e,h], Eloi Marijon[b,d,e], Wulfran Bougouin[c,d], Jean-Pierre Tourtier[i], Frédéric Baud[a], Xavier Jouven[b,d,e], Nicolas Danchin[d,e], Christian Spaulding[b,d,e], Pierre Carli[a,e]

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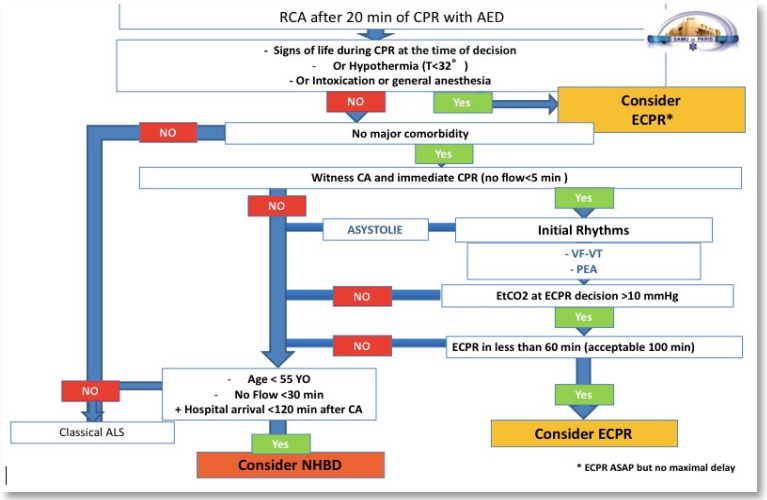
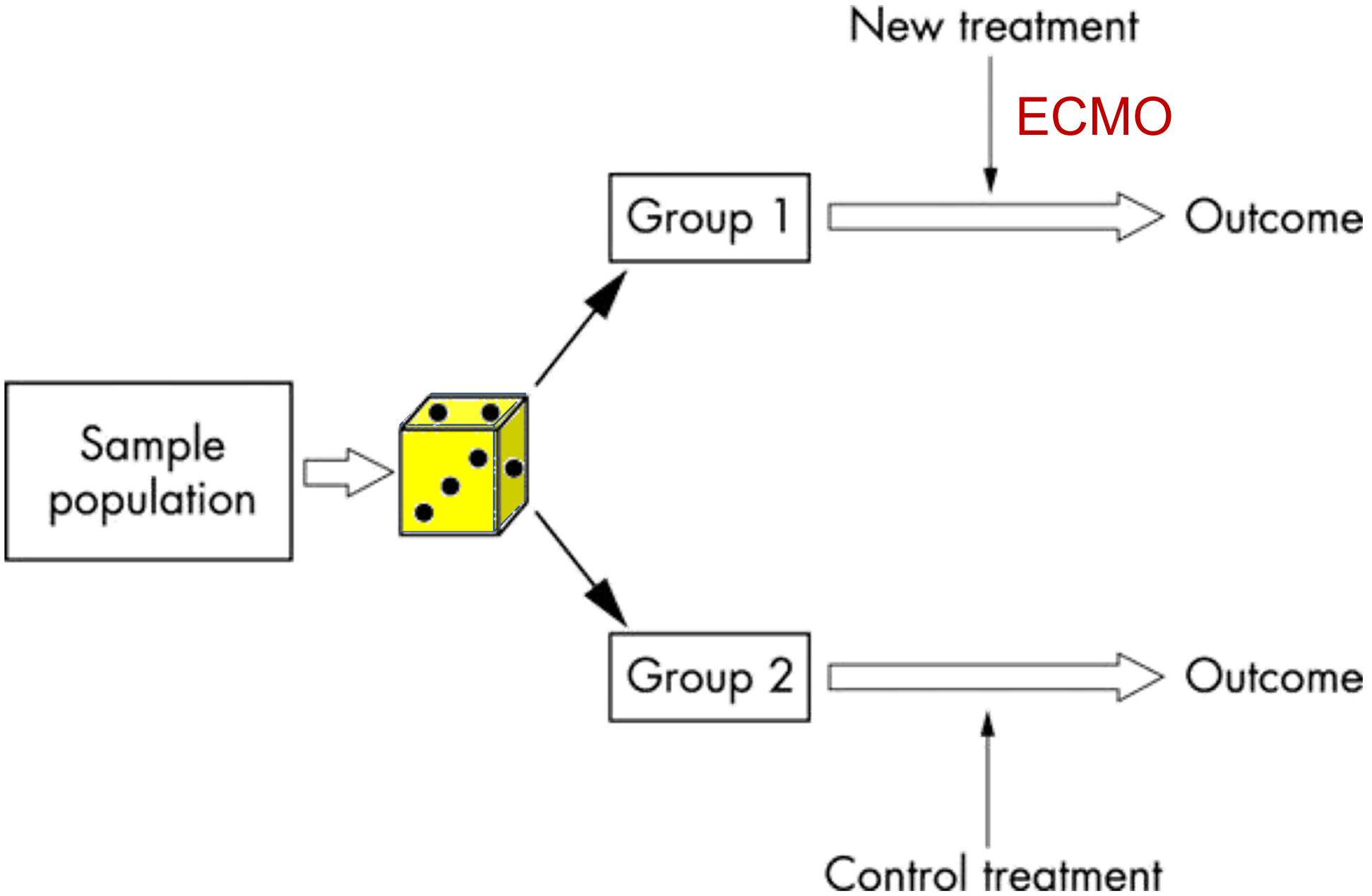


Variables	Period 1 N = 26
Pre-hospital ECPR n (%)	18 (69.2)

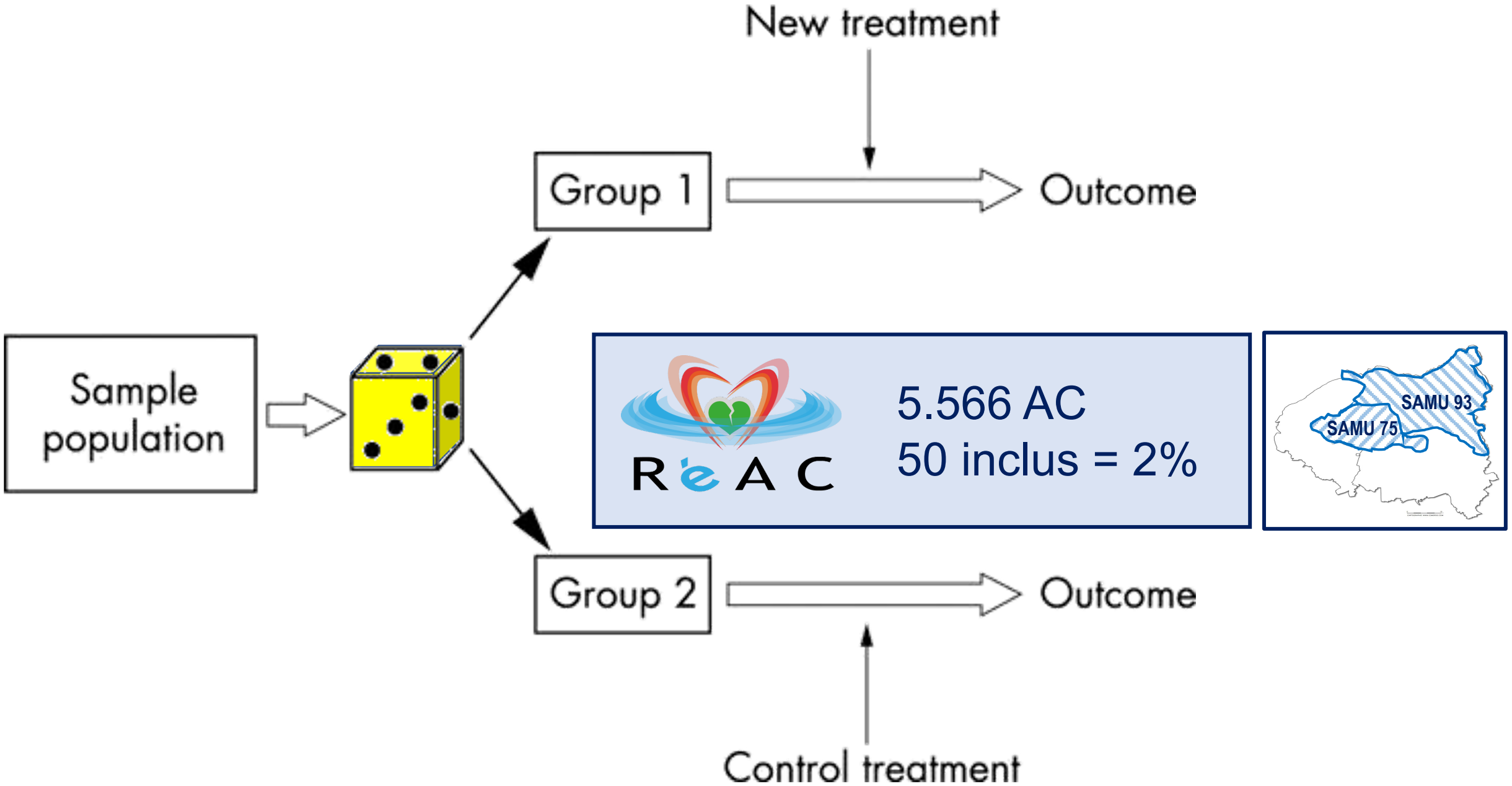
Evolution and complications	
Mortality n(%)	24 (92.3)

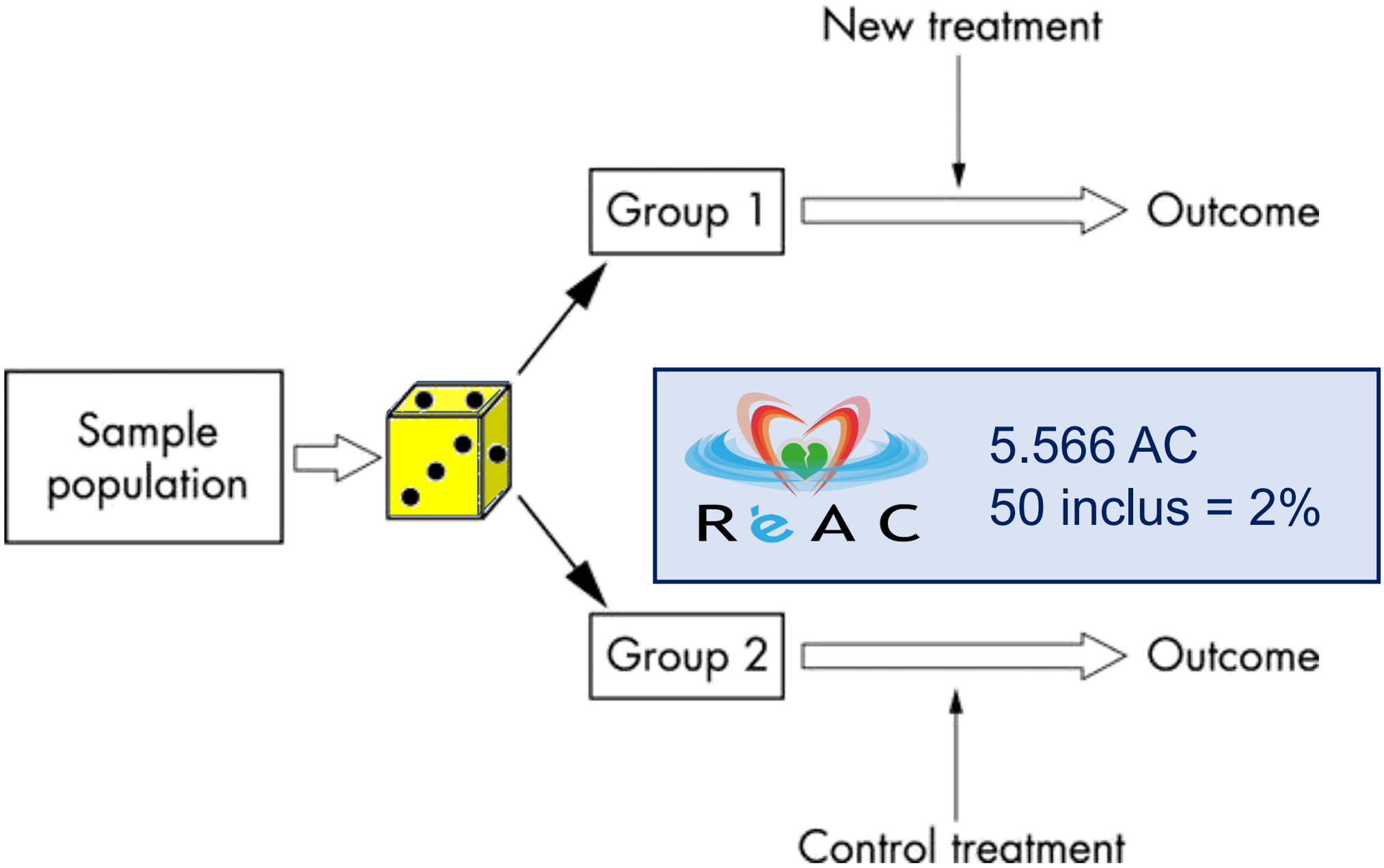
Période de 4 ans : 15.680 AC => 156 patients inclus = 1%

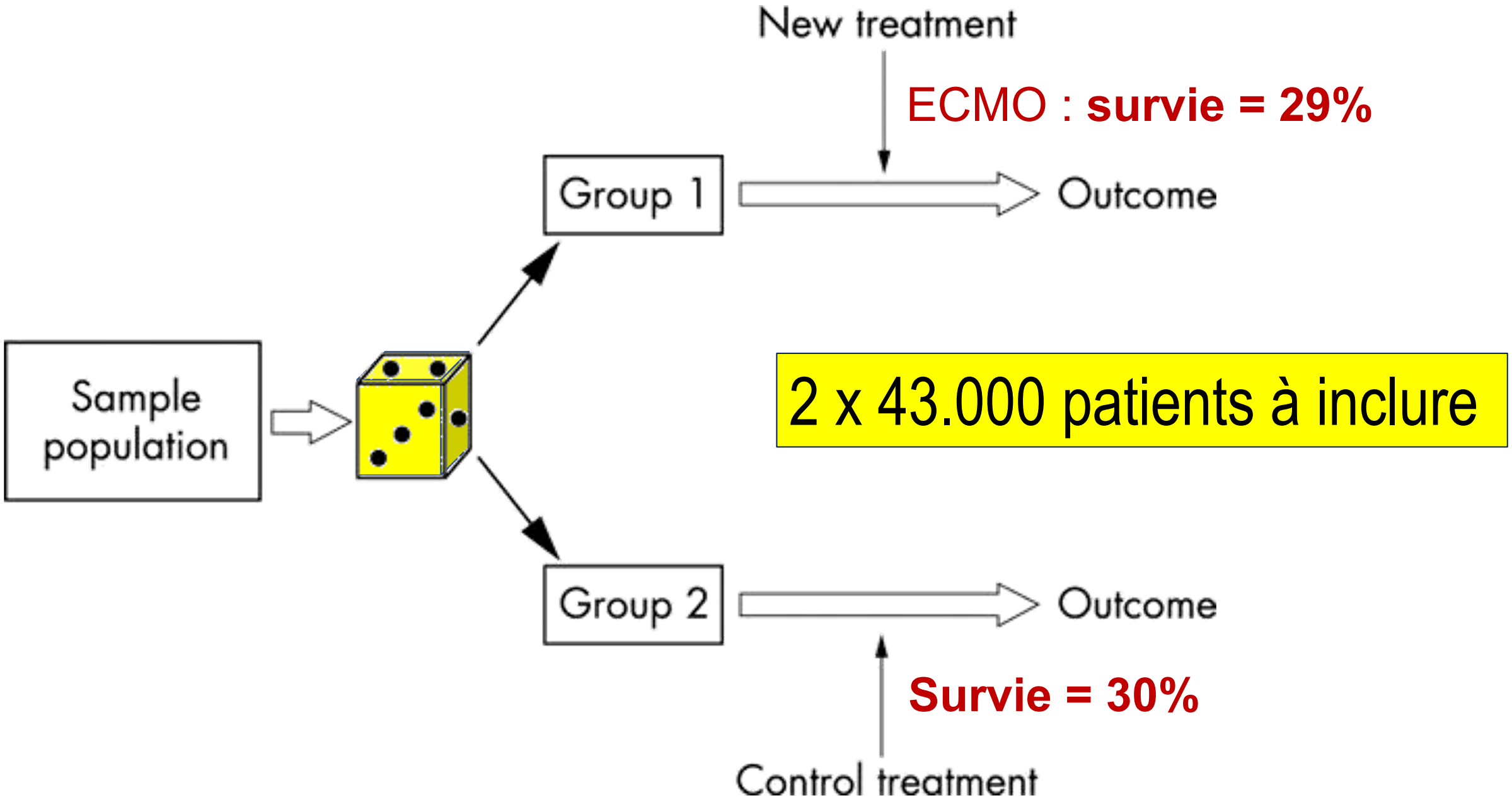

New treatment
ECMO
Group 1
Outcome
Sample population
Group 2
Outcome
Control treatment

Survie

29%


New treatment
Group 1
Outcome
Sample population
R'e A C
5.566 AC
50 inclus = 2%
SAMU 93
SAMU 75
Group 2
Outcome
Control treatment


New treatment
Group 1
Outcome
Sample population
5.566 AC
50 inclus = 2%
Survie
Group 2
Outcome
30%
Control treatment

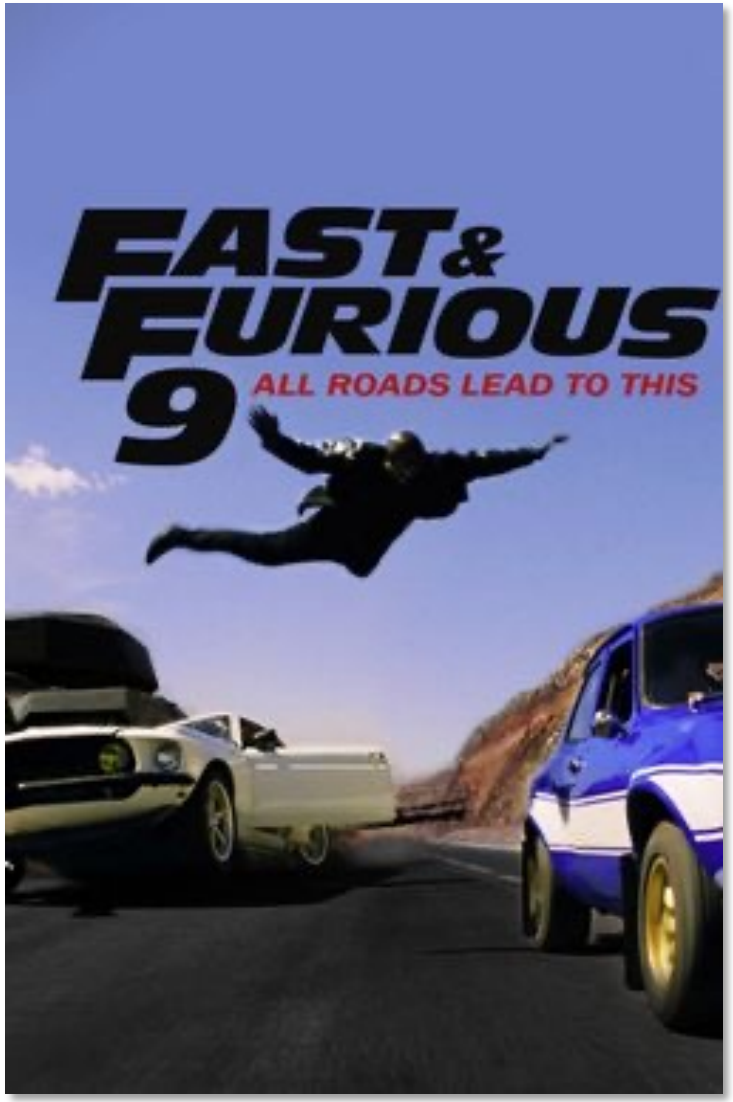


Petrovic, *Eur J Emerg Med, 2021*

EMJ, 2017

Extracorporeal cardiopulmonary resuscitation probably good, but adoption should not be too fast and furious!

Clifton W Callaway,[1] Kjetil Sunde[2]




LifeBand
LifeBand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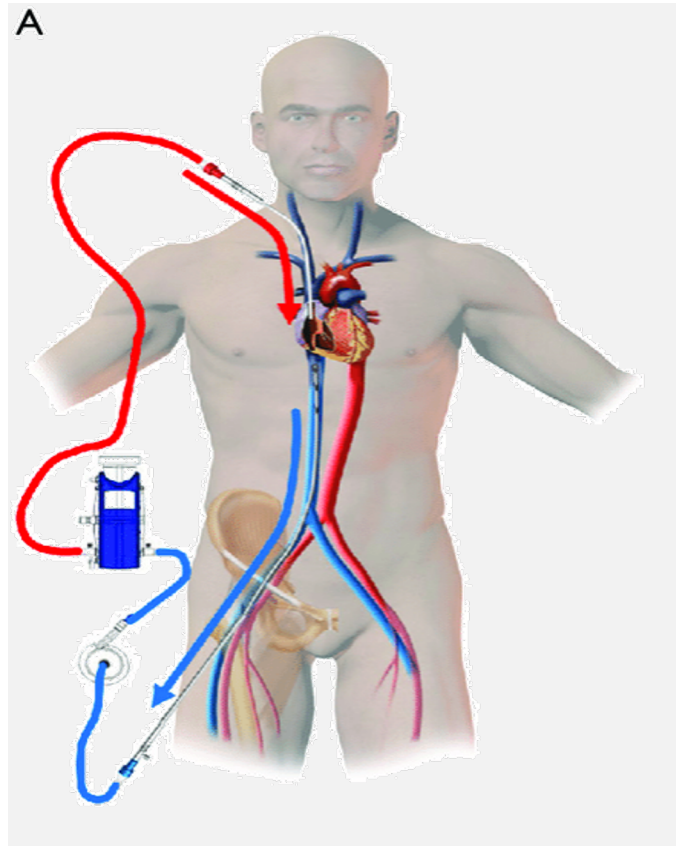
1 mg/mL
(30 mg/30 mL)
1:1000
For Intramuscular or
Subcutaneous Use
Not for Ophthalmic Use
30 mL Multiple Dose Vial


A

Des raisons d'espérer

Fig. 2.2. The chain of survival.

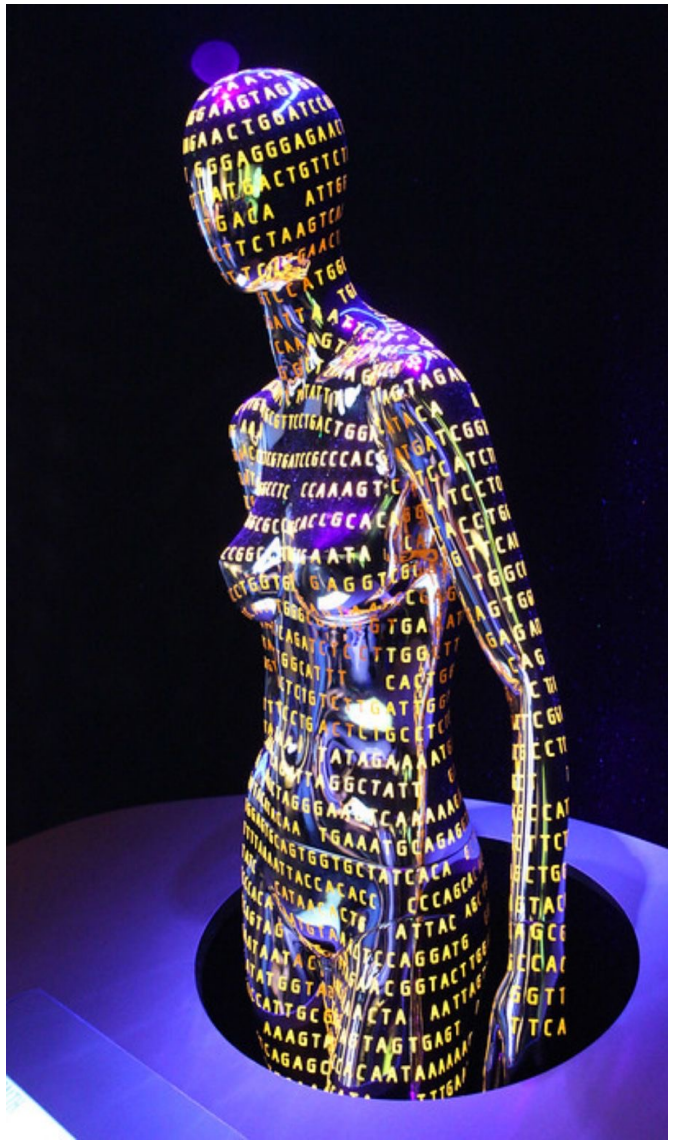


Foto FLapo

SAUV life

La Communauté des Citoyens Volontaires auprès des SAMU

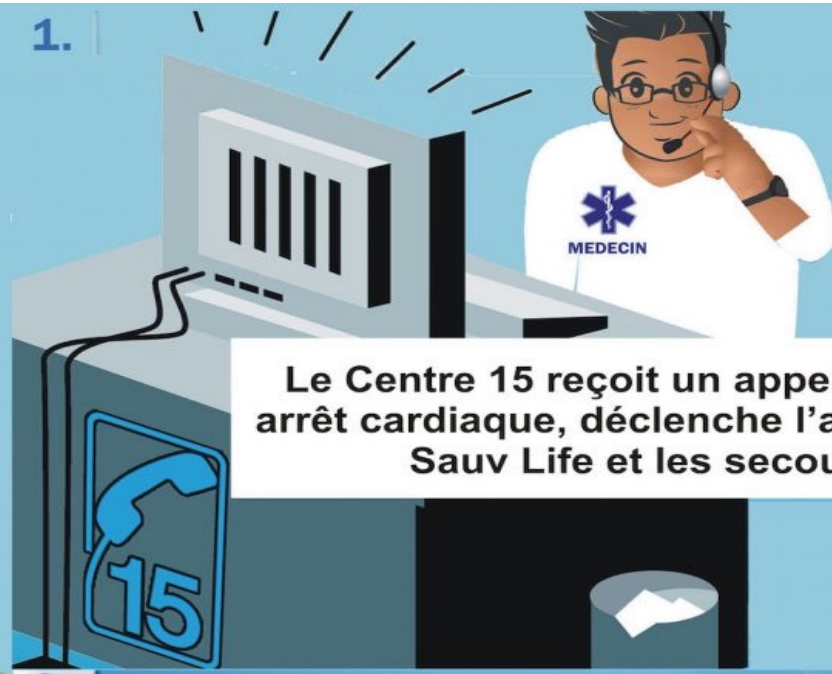
FLASHEZ-MOI

Disponible sur App Store

DISPONIBLE SUR Google play

www.sauv-life.fr

1.



Le Centre 15 reçoit un appel pour un arrêt cardiaque, déclenche l'application Sauv Life et les secours

2.

Sauv Life géolocalise la victime, alerte et guide les volontaires vers un défibrilateur et la victime

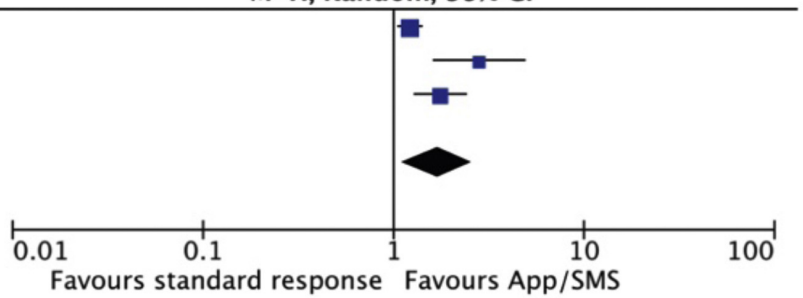
3.

Sauv Life aide les volontaires (vidéoconférence avec le Samu, vidéos explicatives des gestes d'urgences ...) Jusqu'à l'arrivée des secours.

A

Study or Subgroup	App/SMS Events	App/SMS Total	Conventional response Events	Conventional response Total	Weight	Odds Ratio M-H, Random, 95% CI
Lee 2019	1014	1696	823	1498	40.6%	1.22 [1.06, 1.40]
Pijls 2016	261	291	99	131	24.8%	2.81 [1.62, 4.87]
Ringh 2015	188	305	172	360	34.6%	1.76 [1.29, 2.39]
Total (95% CI)		**2292**		**1989**	**100.0%**	**1.70 [1.11, 2.60]**
Total events	1463		1094			

Heterogeneity: $Tau^2 = 0.11$; $Chi^2 = 11.64$, df = 2 (P = 0.003); $I^2 = 83\%$
Test for overall effect: Z = 2.46 (P = 0.01)

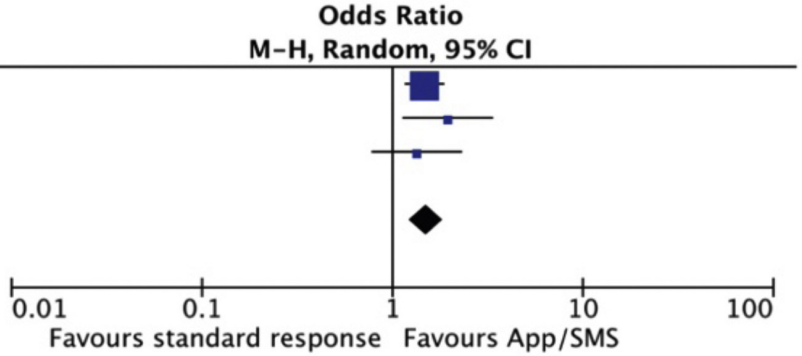


RCP témoins

B

Study or Subgroup	App/SMS Events	App/SMS Total	Conventional response Events	Conventional response Total	Weight	Odds Ratio M-H, Random, 95% CI
Lee 2019	216	1696	135	1498	73.4%	1.47 [1.17, 1.85]
Pijls 2016	79	291	21	131	13.3%	1.95 [1.14, 3.33]
Ringh 2015	32	286	28	326	13.3%	1.34 [0.79, 2.29]
Total (95% CI)		**2273**		**1955**	**100.0%**	**1.51 [1.24, 1.84]**
Total events	327		184			

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 1.12$, df = 2 (P = 0.57); $I^2 = 0\%$
Test for overall effect: Z = 4.15 (P < 0.0001)

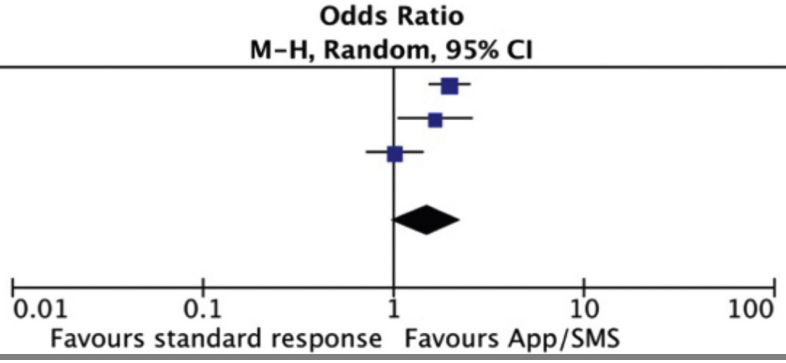


Survie J30

C

Study or Subgroup	App/SMS Events	App/SMS Total	Conventional response Events	Conventional response Total	Weight	Odds Ratio M-H, Random, 95% CI
Lee 2019	223	1696	107	1498	37.3%	1.97 [1.55, 2.51]
Pijls 2016	120	291	39	131	29.1%	1.66 [1.06, 2.57]
Ringh 2015	90	306	105	361	33.6%	1.02 [0.73, 1.42]
Total (95% CI)		**2293**		**1990**	**100.0%**	**1.50 [0.98, 2.30]**
Total events	433		251			

Heterogeneity: $Tau^2 = 0.11$; $Chi^2 = 9.90$, df = 2 (P = 0.007); $I^2 = 80\%$
Test for overall effect: Z = 1.86 (P = 0.06)



RACS

Scquizzato, *Resuscitation*, 2020

ORIGINAL RESEARCH Open Access

Virtual reality as a teaching method for resuscitation training in undergraduate first year medical students: a randomized controlled trial

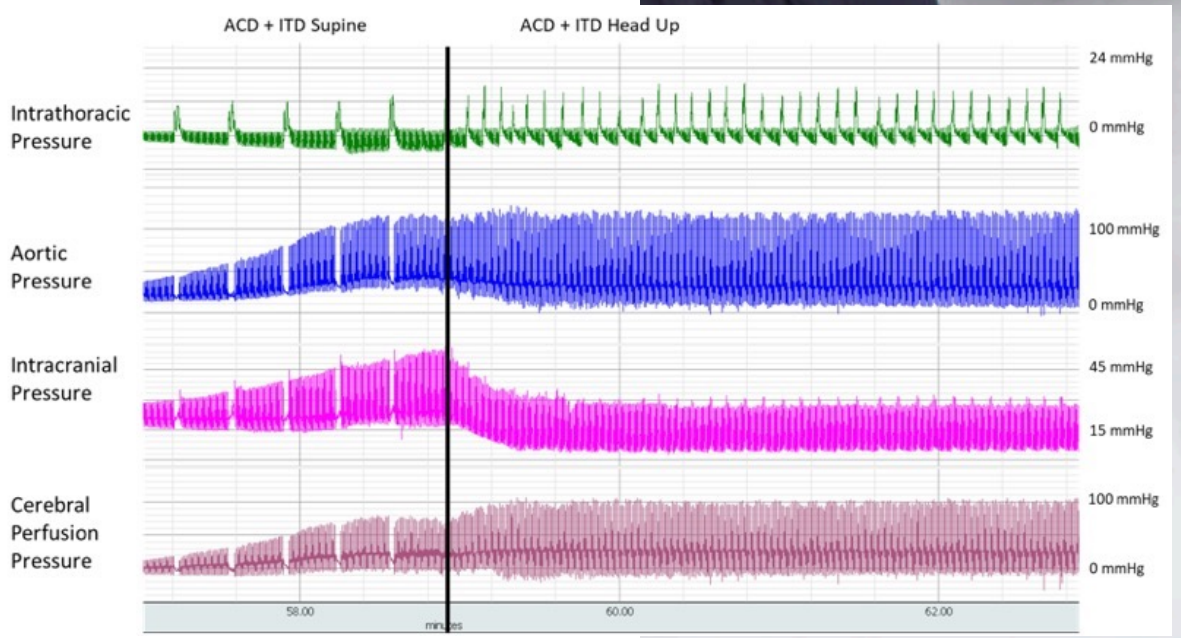
Issleib, *Scand J Trauma Emerg Med*, 2021

Fig. 2 BLS real time scenario

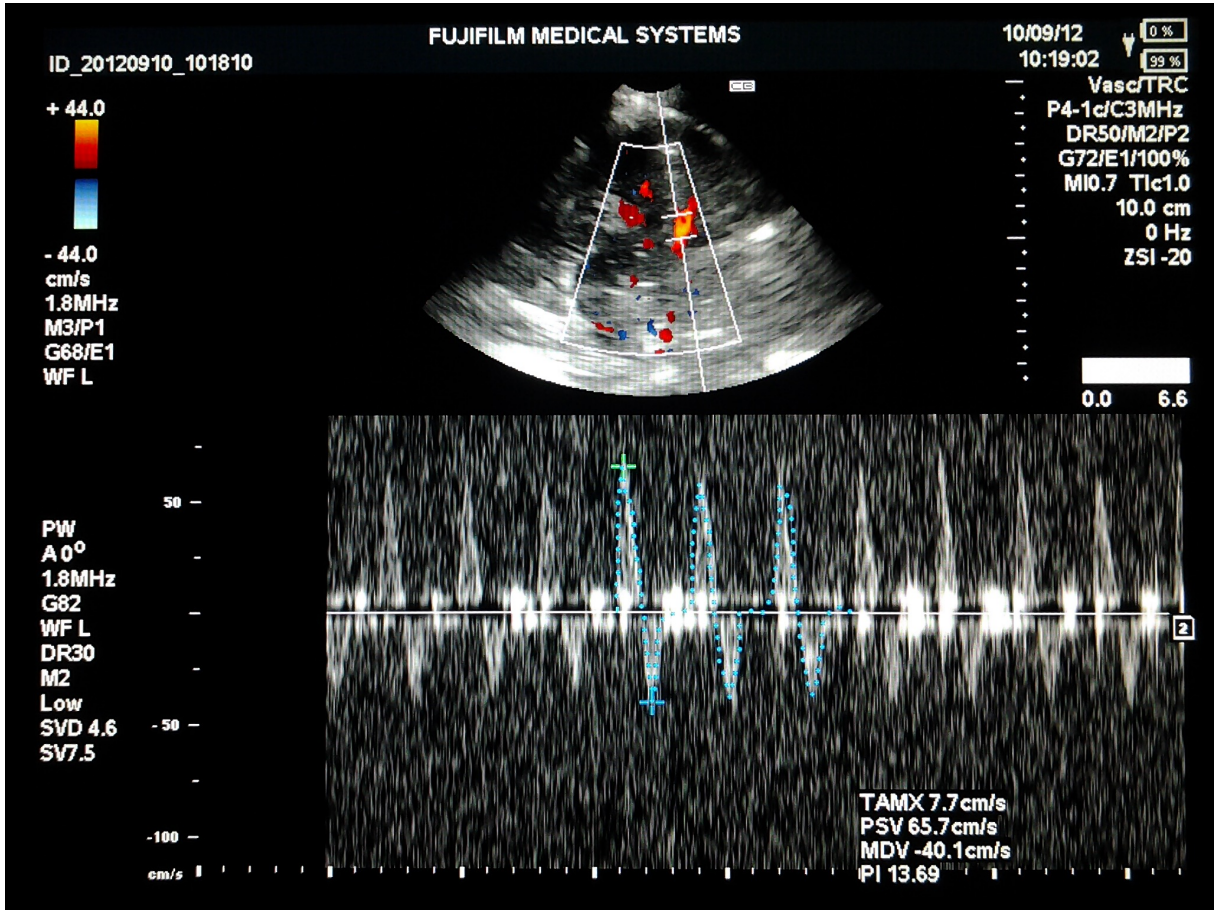
No-flow : 92 vs 82 sec (-12%)
p=0.0001

Items	intervention/ Control n=165	mean learning gain in points	mean learning gain in percent	p (difference in points)	p (difference in percent)
Item 1: I feel confident to provide basic life support	Intervention	3,56	97,04	0,110	0,078
	control	3,41	85,77		
Item 2*: I Feel confident to detect an irregular breathing	intervention	3,37	94,89	0,000	0,001
	control	2,96	70,58		
Item 3*: I feel confident to detect a cardiac arrest	intervention	3,21	88,70	0,007	0,014
	control	2,89	70,85		
Item 4*: I feel confident to clear the patients airway	intervention	3,23	85,97	0,005	0,037
	control	2,85	69,47		
Item 5*: I feel confident to provide mask ventilation	intervention	3,37	80,07	0,002	0,126
	control	2,98	70,13		
Item 6: I feel confident to performe high quality chest compressions	intervention	3,14	75,99	0,463	0,364
	control	3,22	82,05		
Item 7*: I feel confident with the use of the AED	intervention	3,31	81,36	0,024	0,410
	control	3,57	86,10		
Item 8: I feel confident about the correct sequence of treatments of the BLS	intervention	3,20	86,65	0,727	0,302
	control	2,23	79,99		
Item 9*: A Person lies motionless on the street. I feel confident being able to provide BLS	intervention	3,07	79,98	0,012	0,030
	control	2,81	67,67		
Item 10*: The patient lies motionless in his bed. I feel confident being able to provide BLS	intervention	3,11	81,13	0,000	0,000
	control	2,57	59,82		
Item 11: I feel able to lead BLS in a team	intervention	2,85	70,00	0,185	0,416
	control	2,66	65,24		

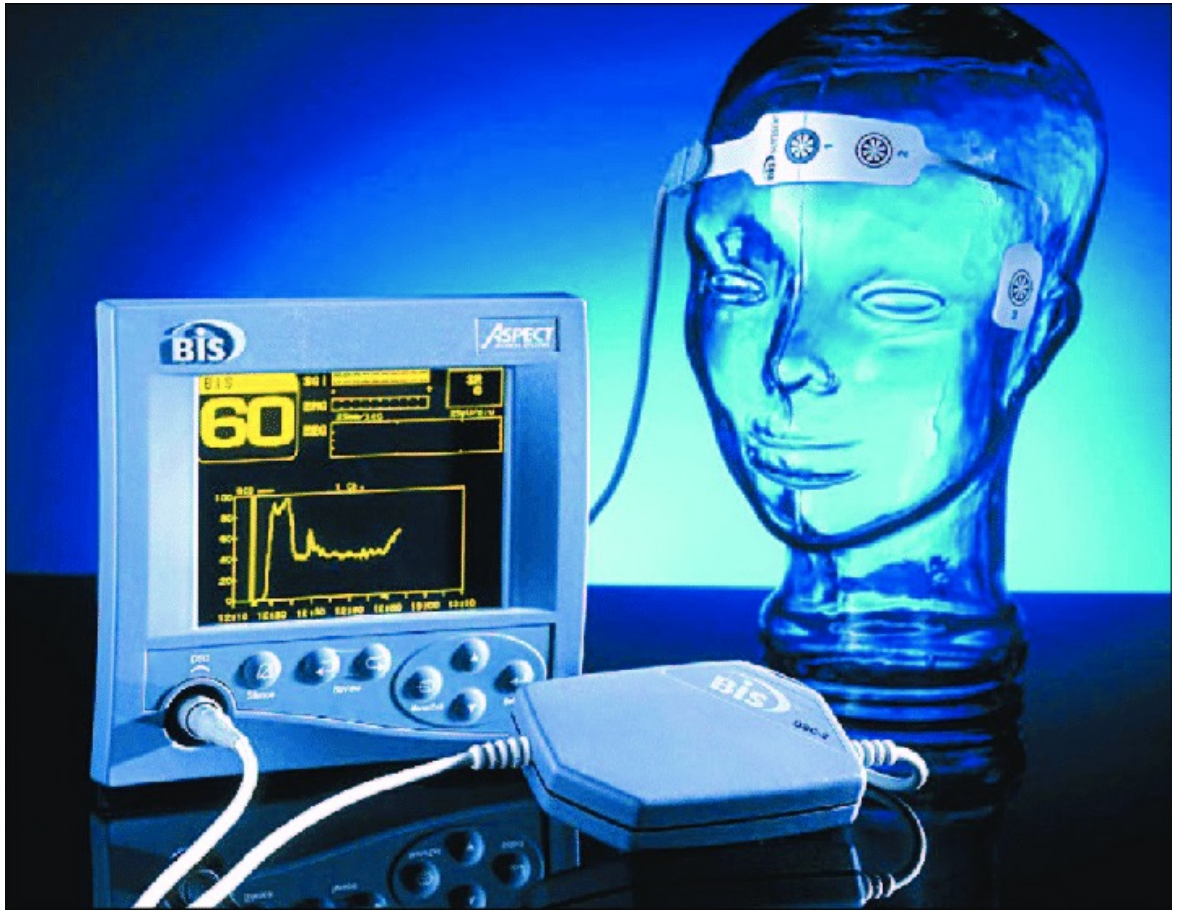
Carrillo-Larco, *Glob Health Epidemiol Genom*, 2018 & Claesson, *JAMA*, 2017



Debaty,
Resuscitation, 2015



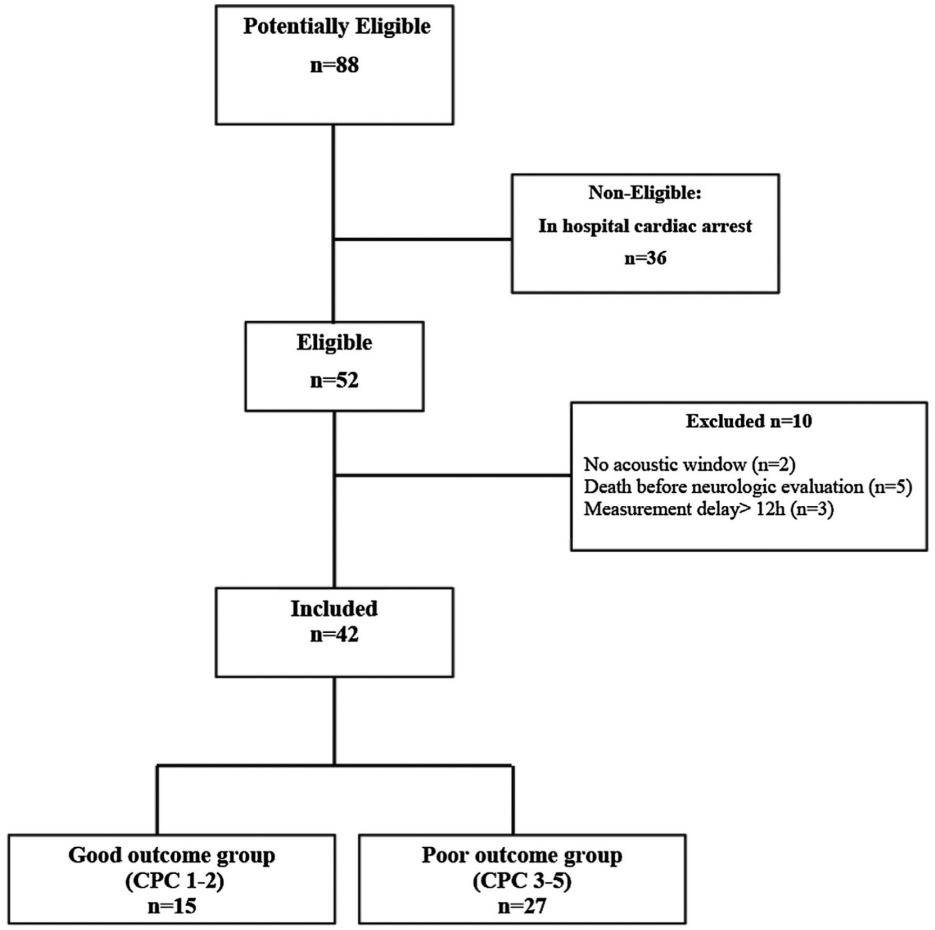
Petrovic, *Resuscitation*, 2010

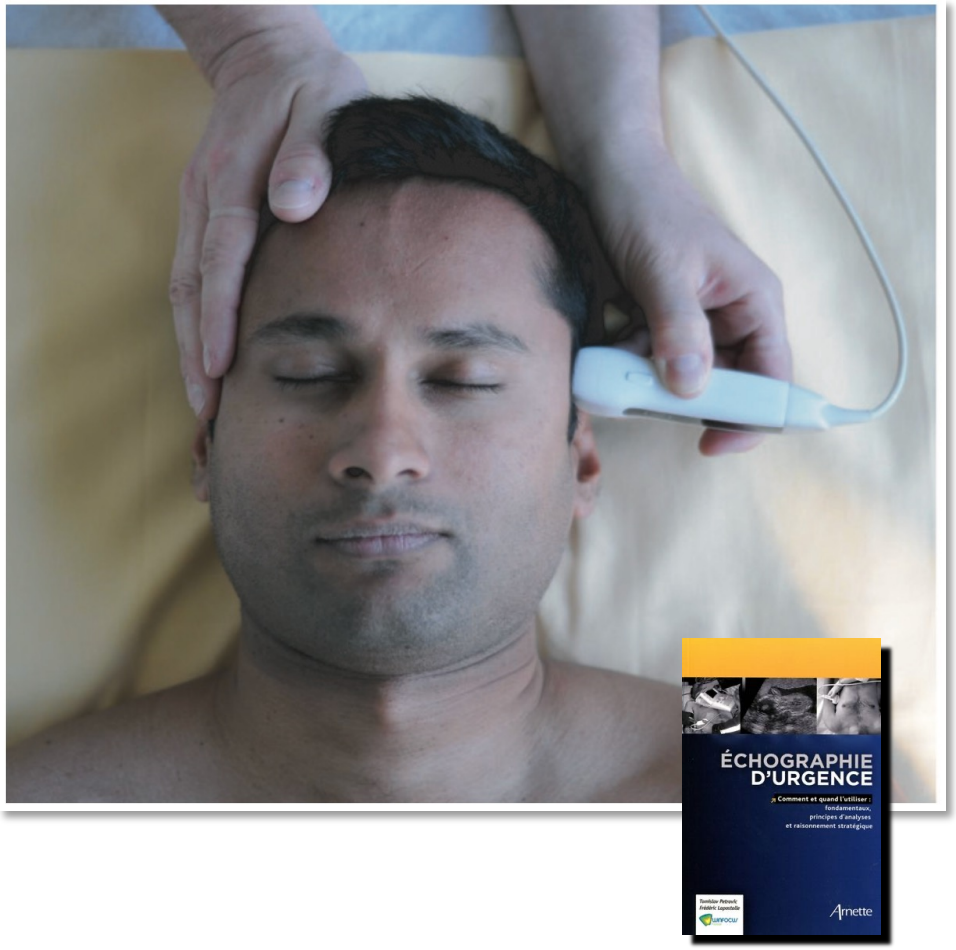


Baloglu Kaya, *Am J Emerg Med*, 2020

Table 2 – Characteristics of patients by neurologic outcomes.

Variables	Good outcomes CPC 1–2	Bad outcomes CPC 3–5	p-Value
TCD measurements			
Right Systolic Flow Velocity (cm s⁻1)	67 (53.1–96.6)	71.5 (59.4–90.2)	0.93
Left Systolic Flow Velocity (cm s⁻1)	69.1 (58–83.2)	65 (56.7–84.7)	0.90
Right Mean Flow Velocity (cm s⁻1)	42.2 (35.2–50)	43.7 (27.6–51.7)	0.69
Left Mean Flow Velocity (cm s⁻1)	43.8 (35.5–51.2)	38.8 (46.4)	0.23
Diastolic Flow Velocity (cm s⁻1)	26	17.3	0.01
Pulsatility Index	1.12	1.49	0.01





Baloglu Kaya, *Am J Emerg Med*, 2020

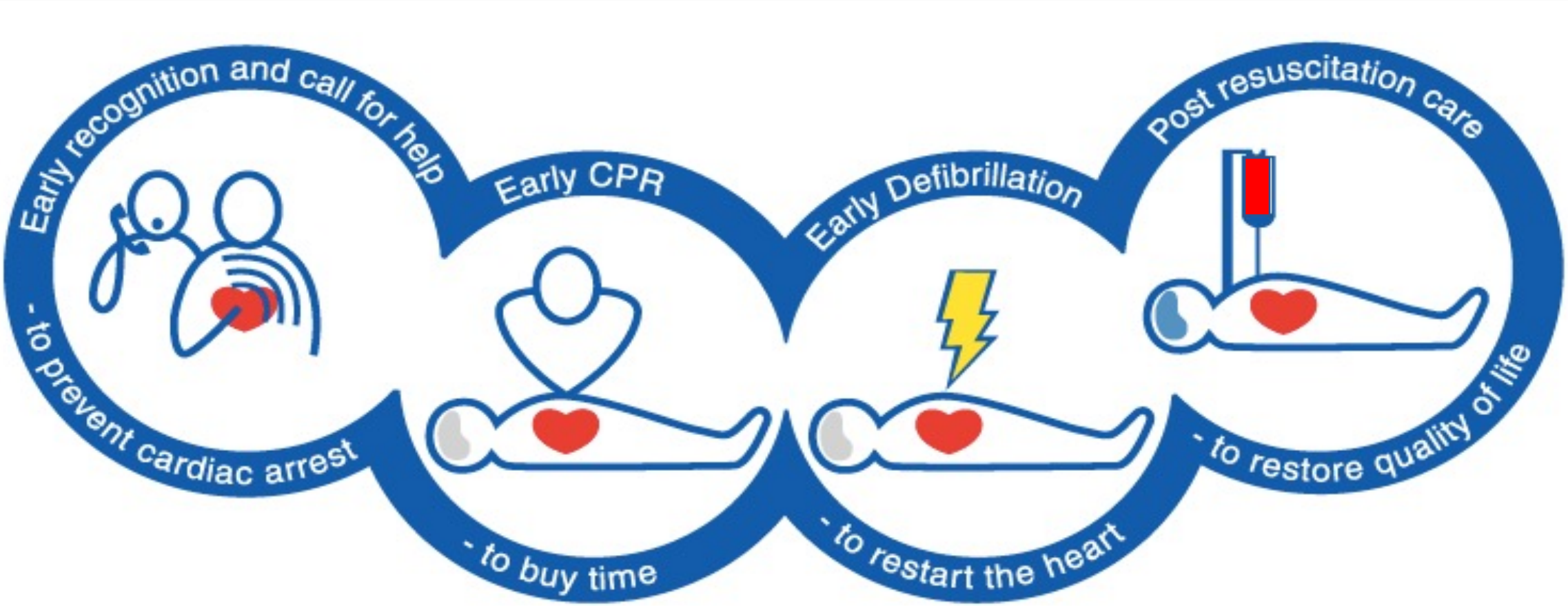
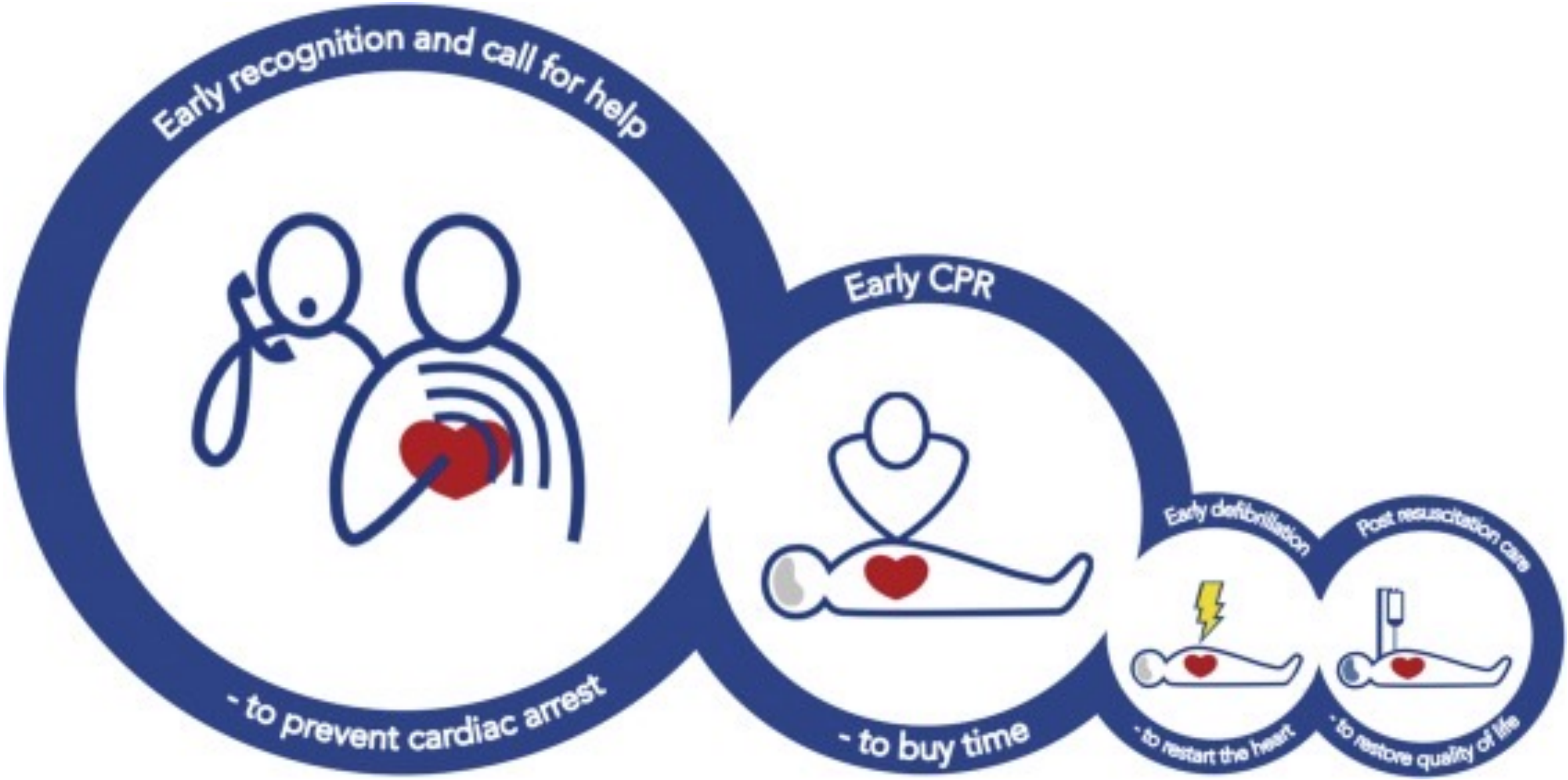


Fig. 2.2. The chain of survival.


Early recognition and call for help
- to prevent cardiac arrest
Early CPR
- to buy time
Early defibrillation
- to restart the heart
Post resuscitation care
- to restore quality of life