Arrêt Cardiaque
et Réanimation Cardio-Pulmonaire
Points essentiels et perspectives

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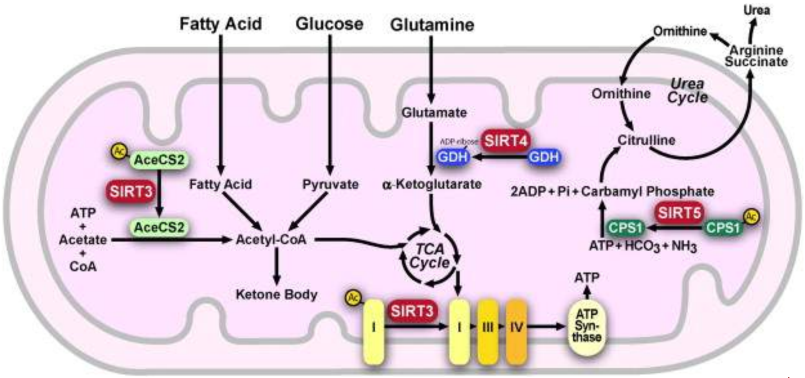
L'arrêt cardiaque en 3 temps

Phase électrique

Phase mécanique

Phase métabolique



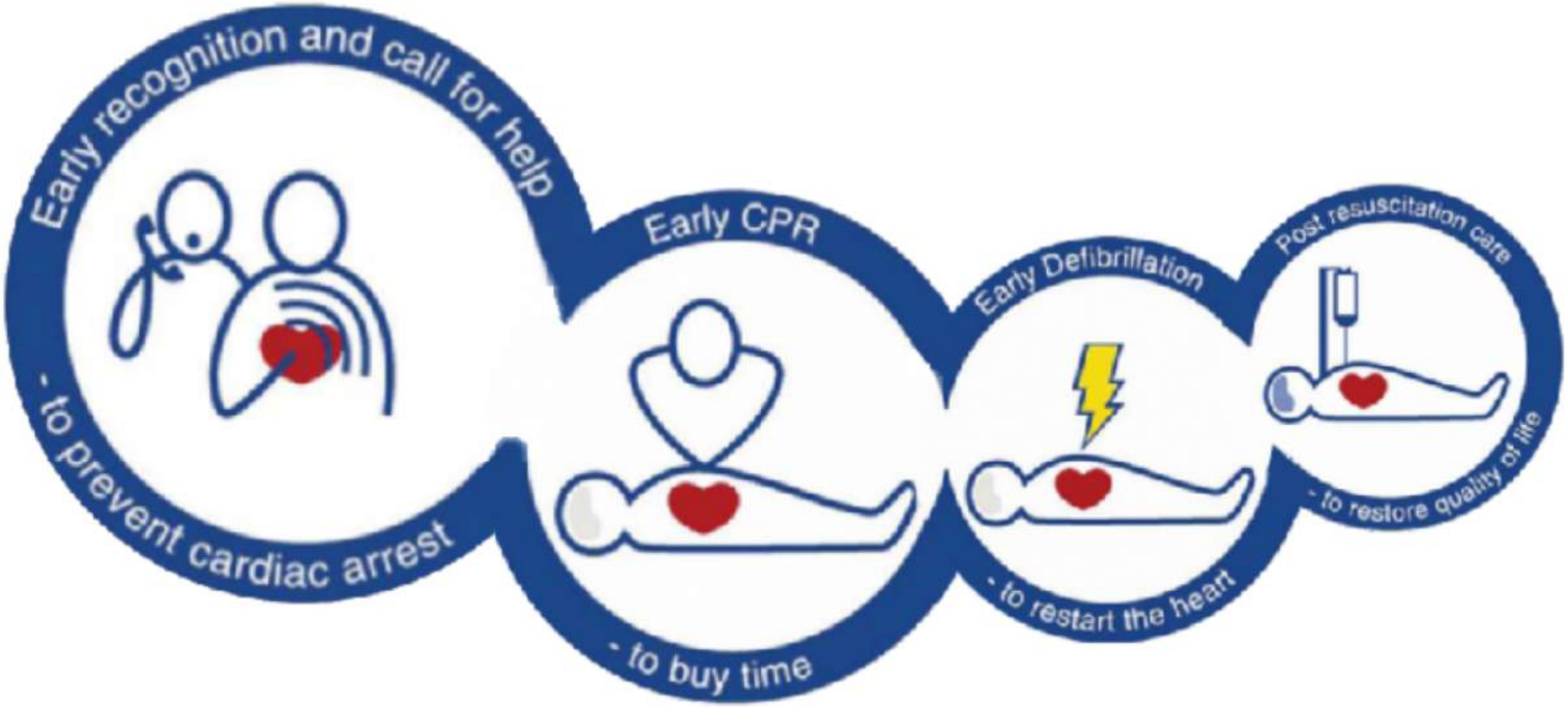
TEMPS

Resuscitation After Cardiac Arrest: A 3-Phase Time-Sensitive Model

Myron L. Weisfeldt; Lance B. Becker

JAMA. 2002;288(23):3035-3038 (doi:10.1001/jama.288.23.3035)

Chaîne de survie

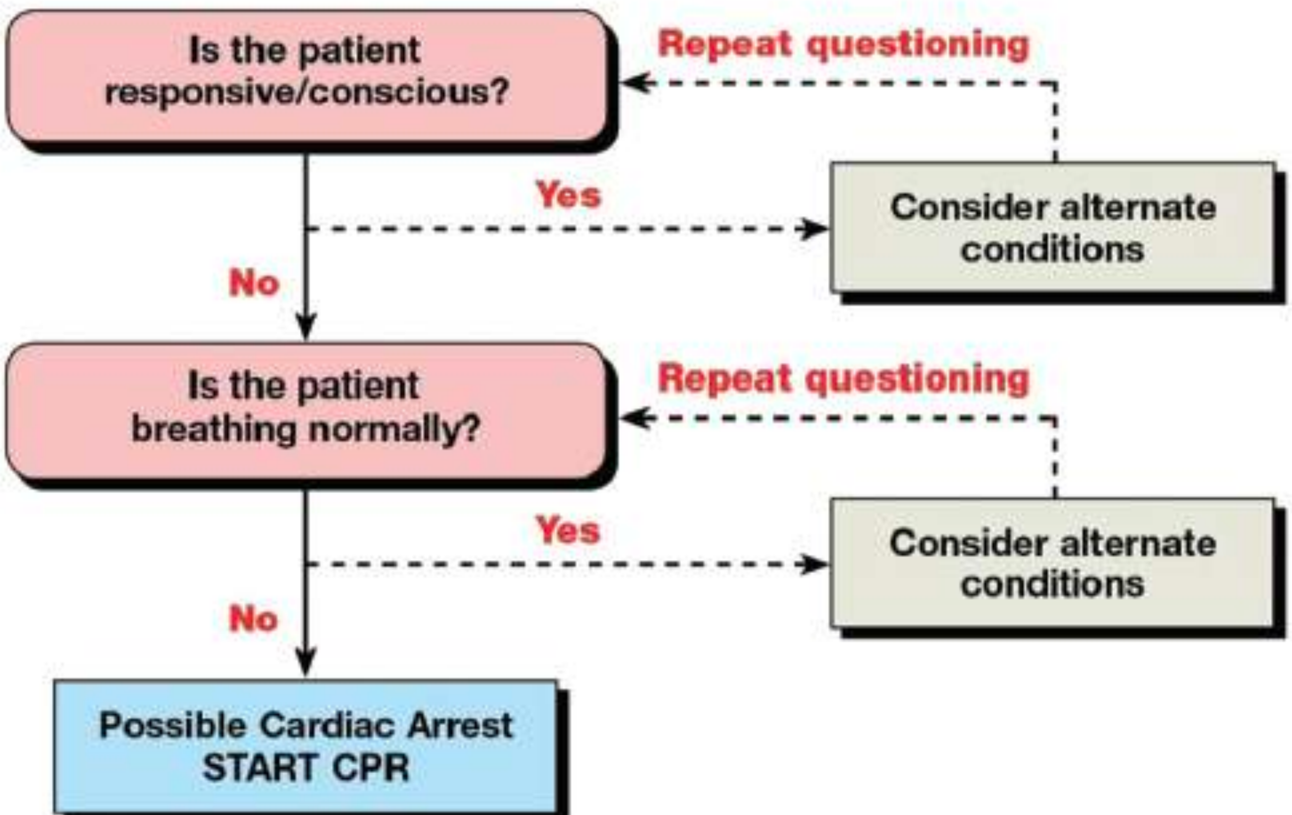


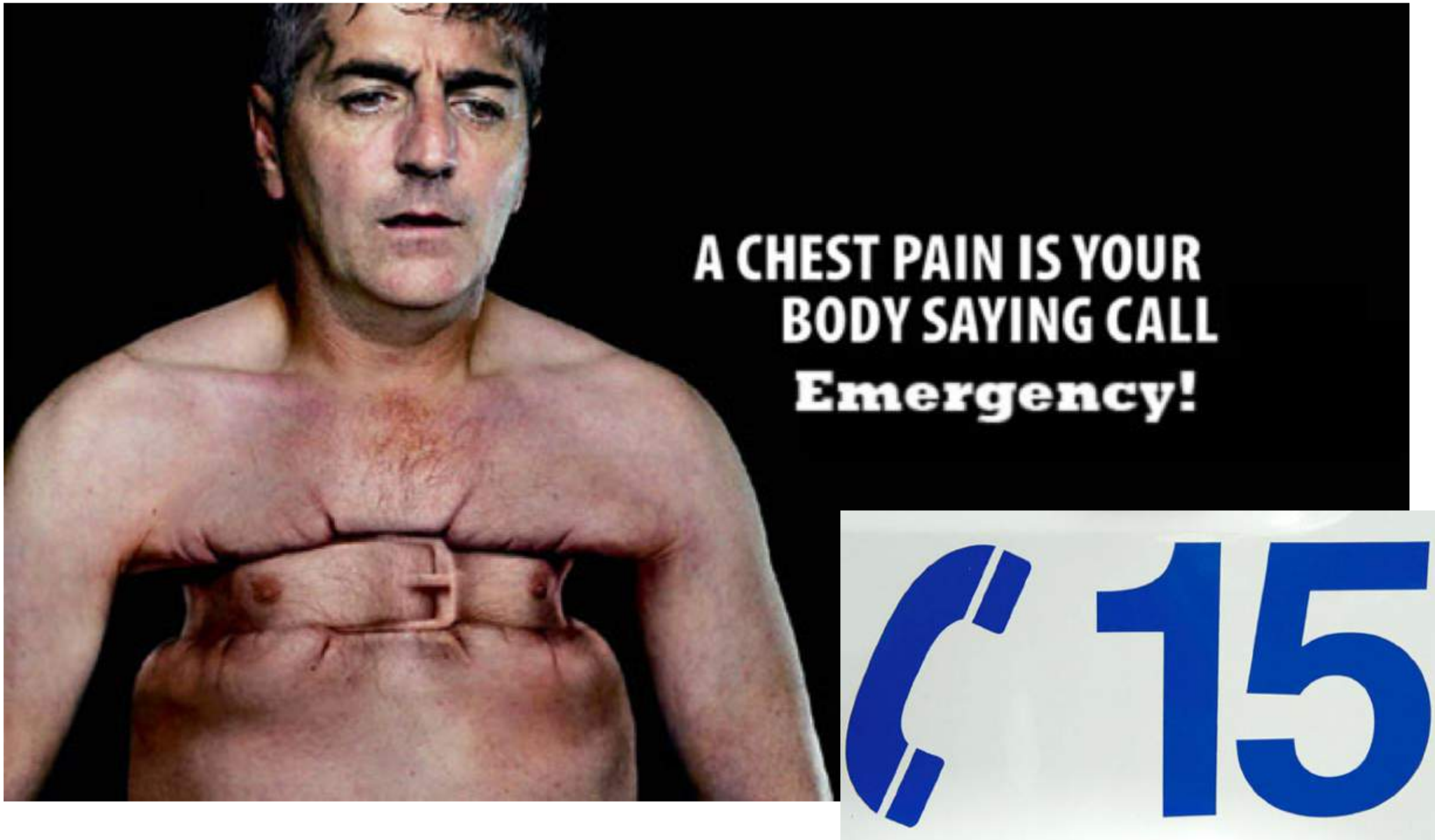
Reconnaître l’arrêt cardiaque

AHA Scientific Statement

Emergency Medical Service Dispatch Cardiopulmonary Resuscitation Prearrival Instructions to Improve Survival From Out-of-Hospital Cardiac Arrest

A Scientific Statement From the American Heart Association




A CHEST PAIN IS YOUR
BODY SAYING CALL
Emergency!
15

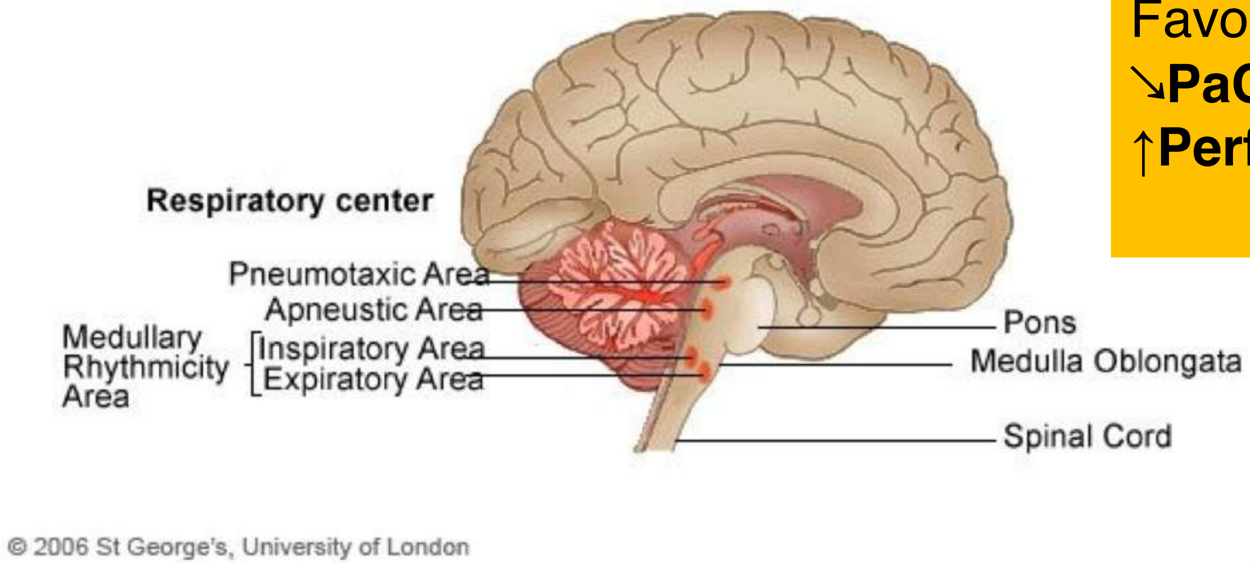
Reconnaître l'arrêt cardiaque

Gasps
Mouvements cloniques initiaux

Au moindre doute sur AC ➔ pratiquer RCP

Karlsten R, Elowsson P. Who calls for the ambulance: implications for decision support. A descriptive study from a Swedish dispatch centre. Eur J Emerg Med 2004;11:125–9.

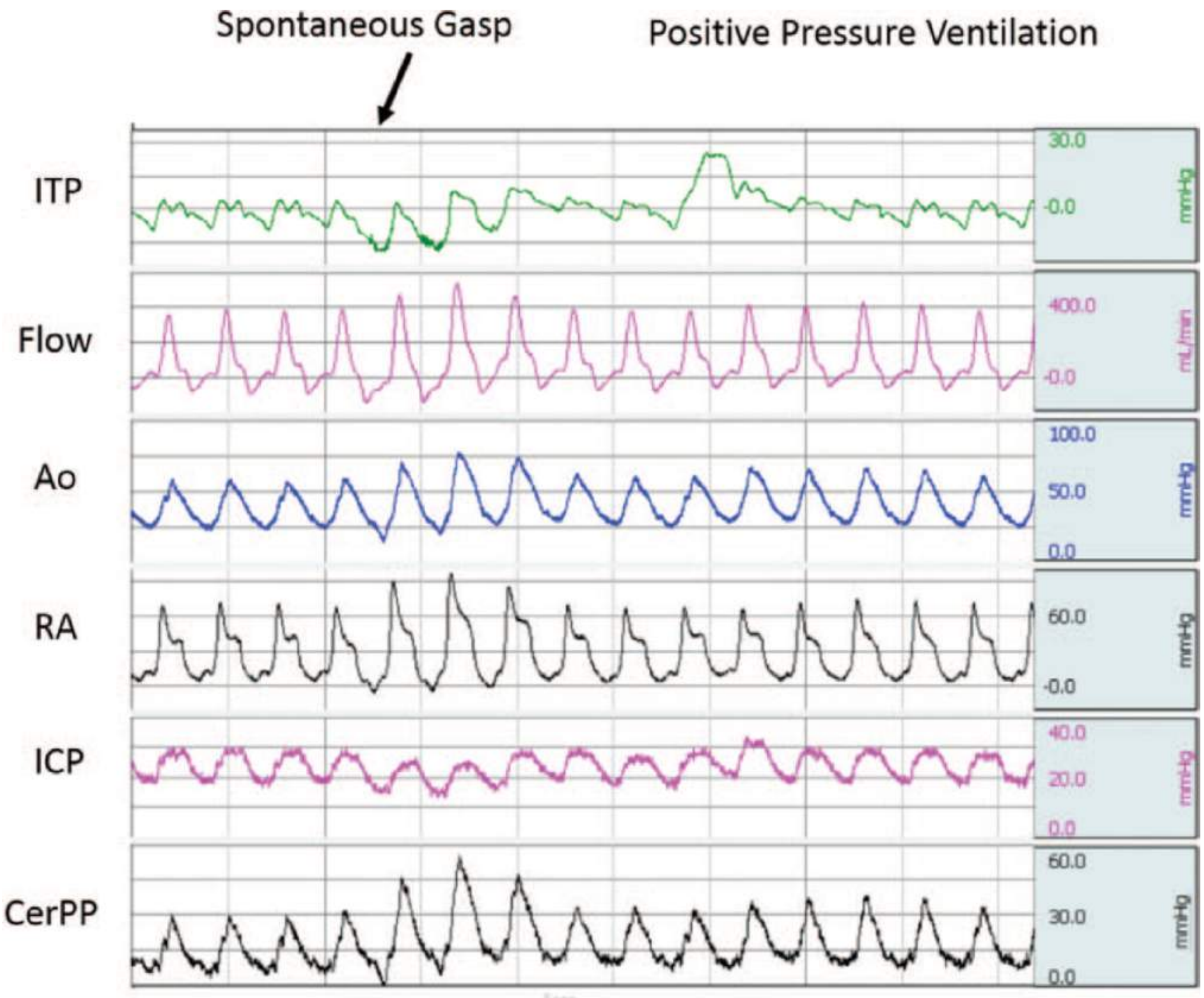
Physiologie des gasps



Déclenchement
↘**PaO_2**
Favorisés
↘**$PaCO_2$**
↑**Perfusion cérébrale**

Définition :
Mouvement inspiratoire et expiratoire rapide avec une pause expiratoire longue (Journal of Applied Physiology,1973)
Rythme lent, +/- irrégulier, large variation de volume mobilisé (de très superficiel à ample)

Gasps = ↗ l'hémodynamique



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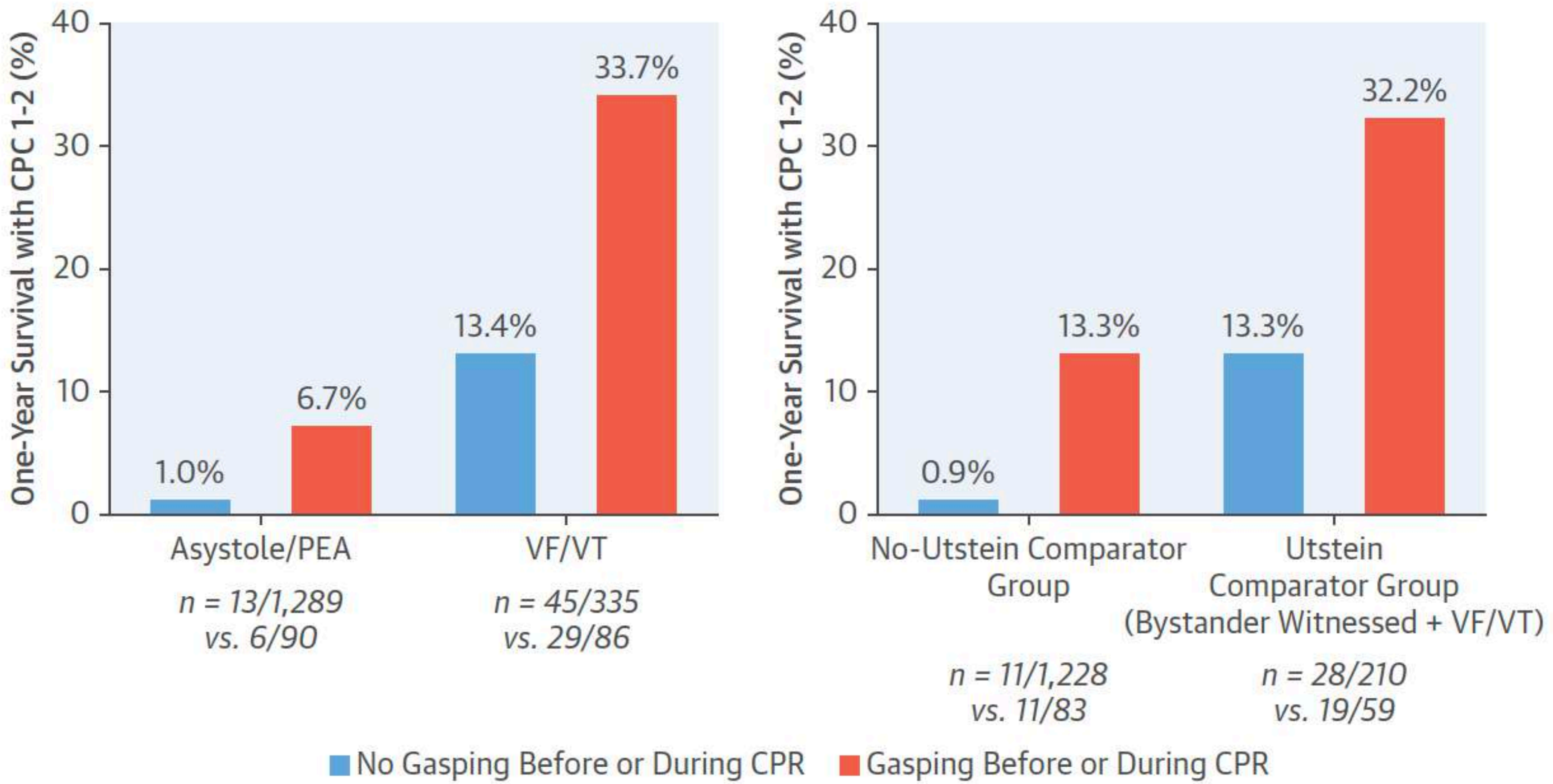
http://dx.doi.org/10.1016/j.jacc.2017.07.782

Long-Term Prognostic Value of Gasping During Out-of-Hospital Cardiac Arrest

Guillaume Debaty, MD, PhD,[a,b] Jose Labarere, MD, PhD,[a,c] Ralph J. Frascone, MD,[d] Marvin A. Wayne, MD,[e] Robert A. Swor, MD,[f] Brian D. Mahoney, MD,[g] Robert M. Domeier, MD,[h] Michael L. Olinger, MD,[i] Brian J. O'Neil, MD,[j] Demetris Yannopoulos, MD,[k] Tom P. Aufderheide, MD,[l] Keith G. Lurie, MD[f]



Debaty, G. et al. J Am Coll Cardiol. 2017;70(12):1467–76.

Difficultés à reconnaître l'AC

89 AC reconnus sur 126 soit 71%

	AC reconnu	AC non reconnu	p*
Caractéristiques du patient			
Respiration			
Anormale ou gasps (%)	36 (42)	30 (91)	< 0.0001
Non (%)	48 (58)	3 (9)	

Facteurs associés à une non reconnaissance des arrêts cardiaques extrahospitaliers à la régulation d'un SAMU-Centre 15 - M. MOUTOUNAICK, F. RICHARD, FX KOCH, S. OTTAVIANO, L. BESSON, C. MORVAN, D. SAVARY, G. DEBATY, congrès Urgences 2018

ORIGINAL ARTICLE

Early Cardiopulmonary Resuscitation in Out-of-Hospital Cardiac Arrest

Ingela Hasselqvist-Ax, R.N., Gabriel Riva, M.D., Johan Herlitz, M.D., Ph.D., Mårten Rosenqvist, M.D., Ph.D., Jacob Hollenberg, M.D., Ph.D., Per Nordberg, M.D., Ph.D., Mattias Ringh, M.D., Ph.D., Martin Jonsson, B.Sc., Christer Axelsson, R.N., Ph.D., Jonny Lindqvist, M.Sc., Thomas Karlsson, B.Sc., and Leif Svensson, M.D., Ph.D.

Registre suédois

30381 patients avec AC devant témoin

RCP par témoin

=

Survie x 3

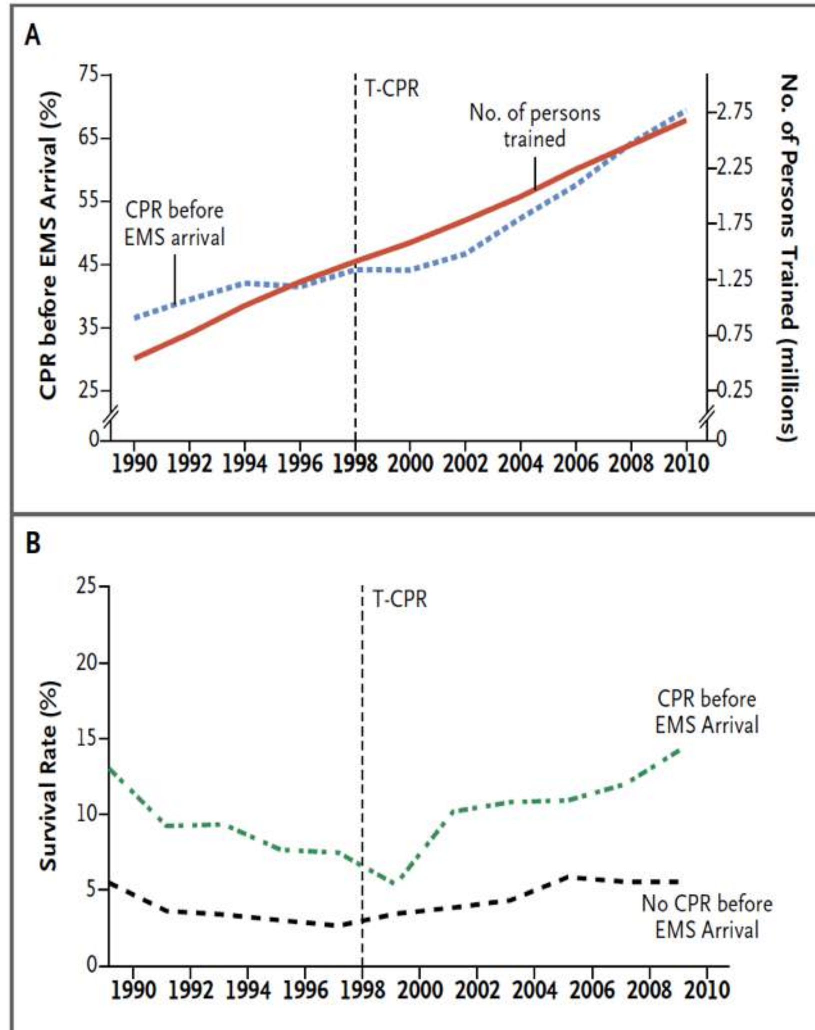


Figure 1. **Changes over Time in CPR Training, the Performance of Early CPR, and Survival Rates.**

ORIGINAL ARTICLE

Mobile-Phone Dispatch of Laypersons for CPR in Out-of-Hospital Cardiac Arrest

Mattias Ringh, M.D., Mårten Rosenqvist, M.D., Ph.D., Jacob Hollenberg, M.D., Ph.D., Martin Jonsson, B.Sc., David Fredman, R.N., Per Nordberg, M.D., Hans Järnbert-Pettersson, Ph.D., Ingela Hasselqvist-Ax, R.N., Gabriel Riva, M.D., and Leif Svensson, M.D., Ph.D.

RCP par témoin
+ 13,9%

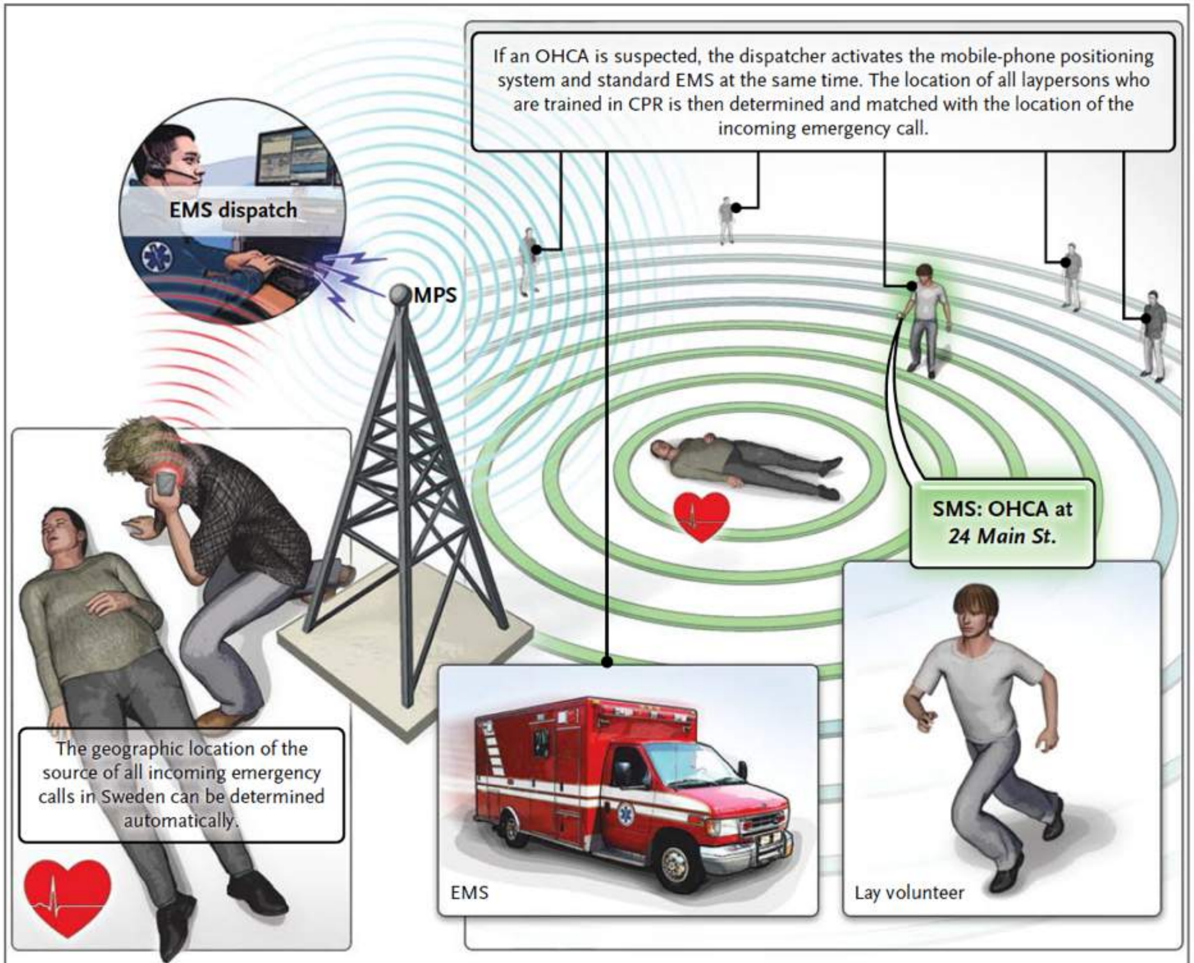
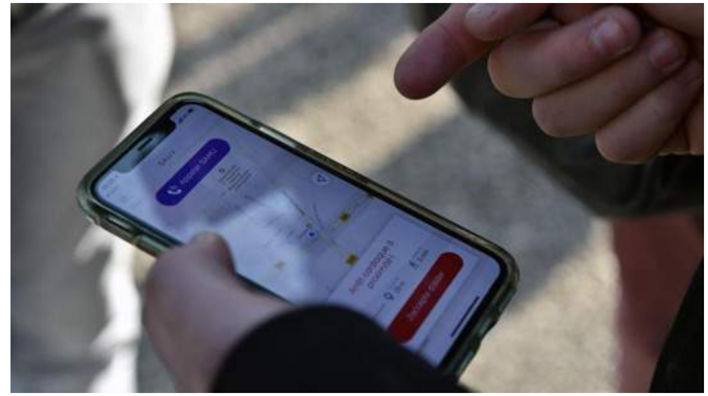
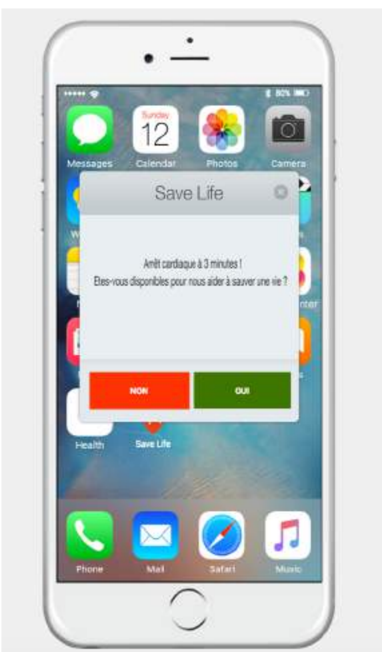
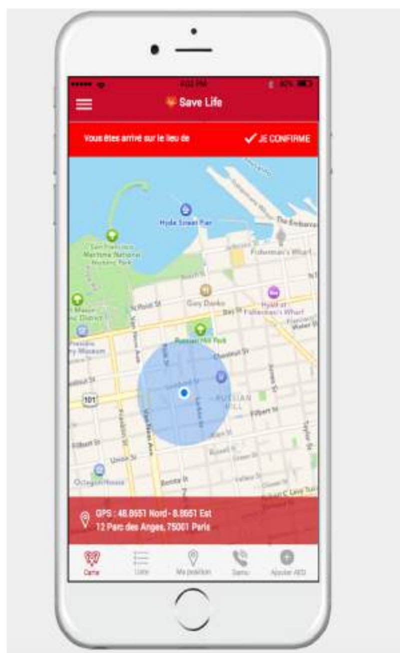


Figure 1. Mobile-Phone Positioning System.

Améliorer la RCP par témoins





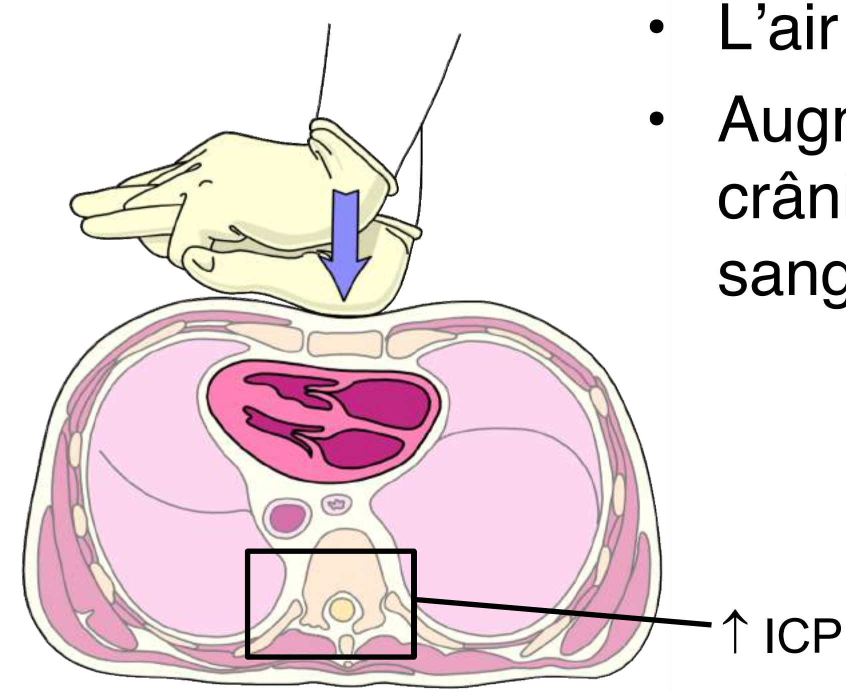


Interactions services de secours et témoins

Compression thoracique

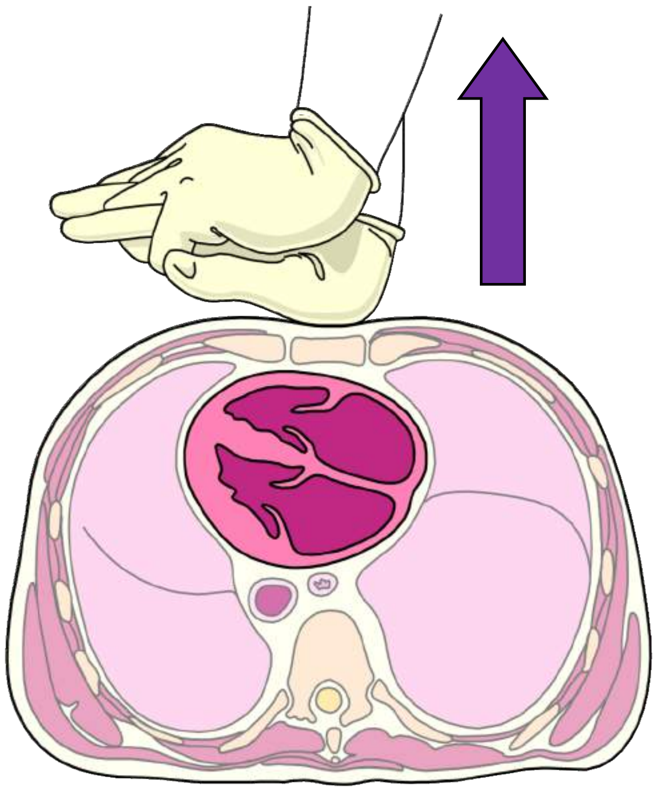
L'AUGMENTATION DE LA PRESSION THORACIQUE ENTRAINE :

- Propulse le sang
  (Débit cardiaque)
- L'air sort des poumons
- Augmentation de la pression intra-crânienne, et donc résistance au flux sanguin



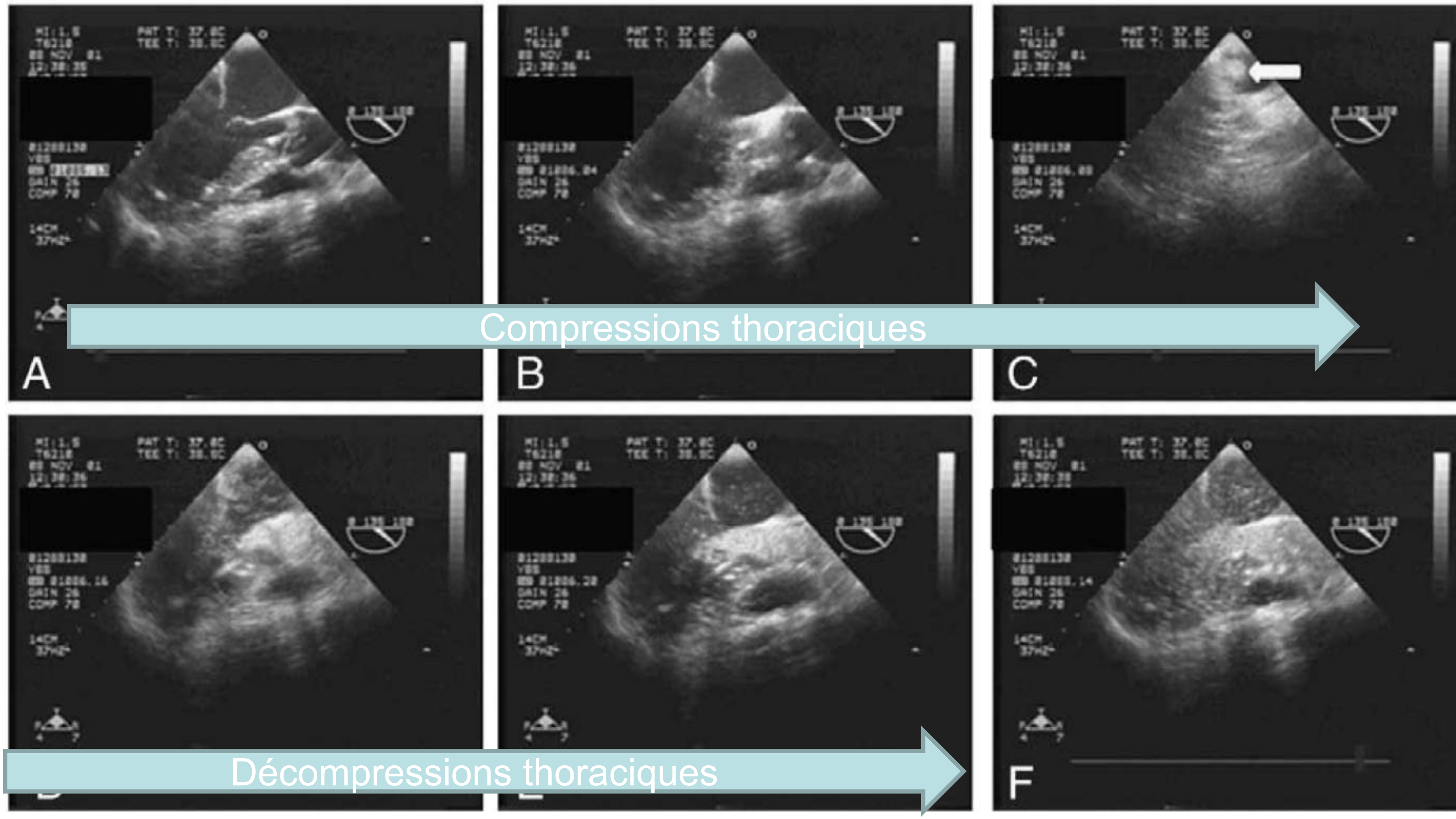
Phase de décompression thoracique

PRESSION NÉGATIVE INTRATHORACIQUE ENTRAINE :

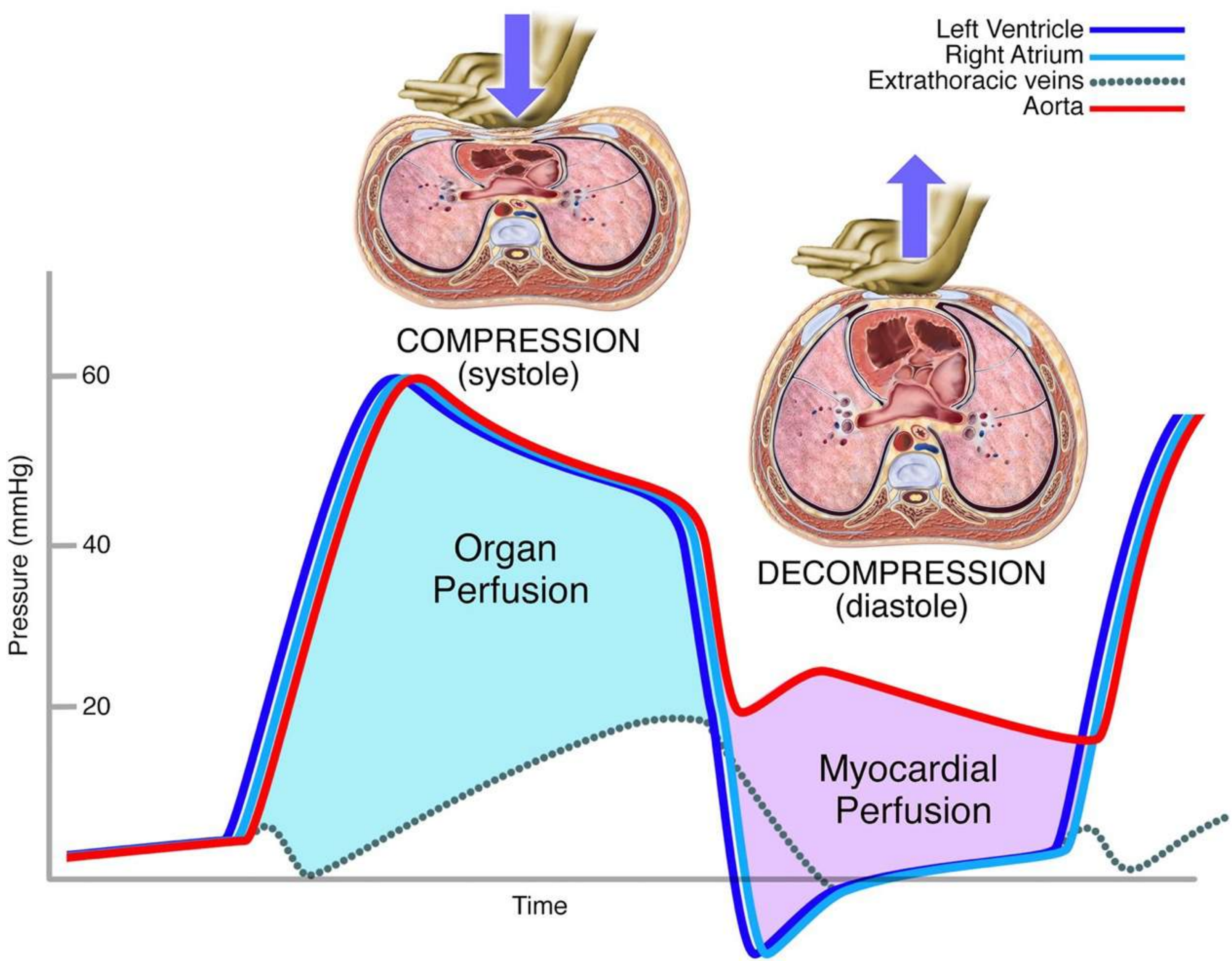


- Retour du sang dans l'oreillette droite (précharge) et aide au remplissage des ventricules
- Air/O_2 entre dans les poumons
- Permet le flux sanguin coronaire
- ↓ Pression intra-crânienne et donc diminue la résistance cérébrale au flux sanguin

Ressemble au
réflexe de gasp

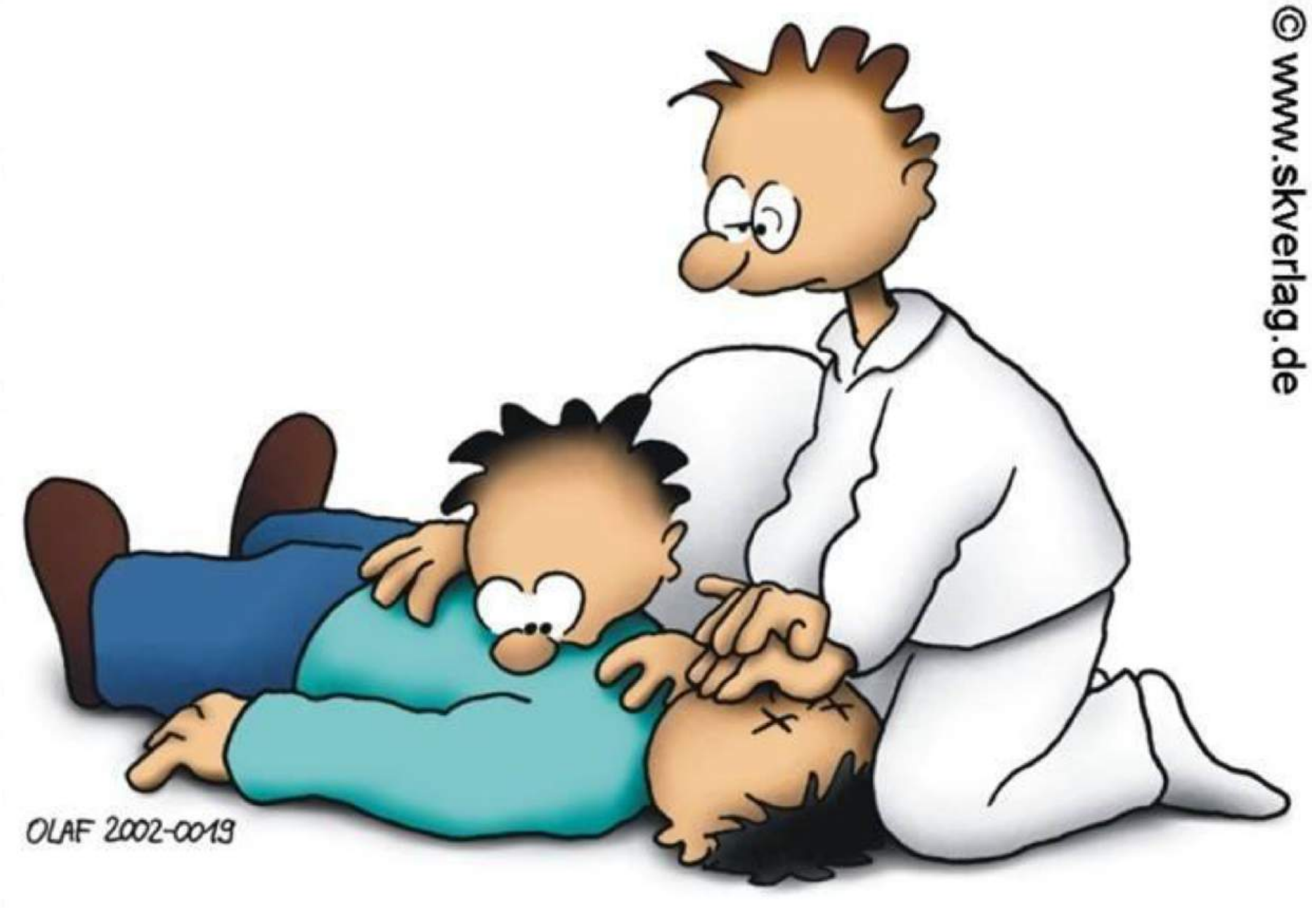


Kim et al. Direction of blood flow from the left ventricle during cardiopulmonary resuscitation in humans: its implications for mechanism of blood flow.American heart journal 2008; 156: 1222.e1221-1227.

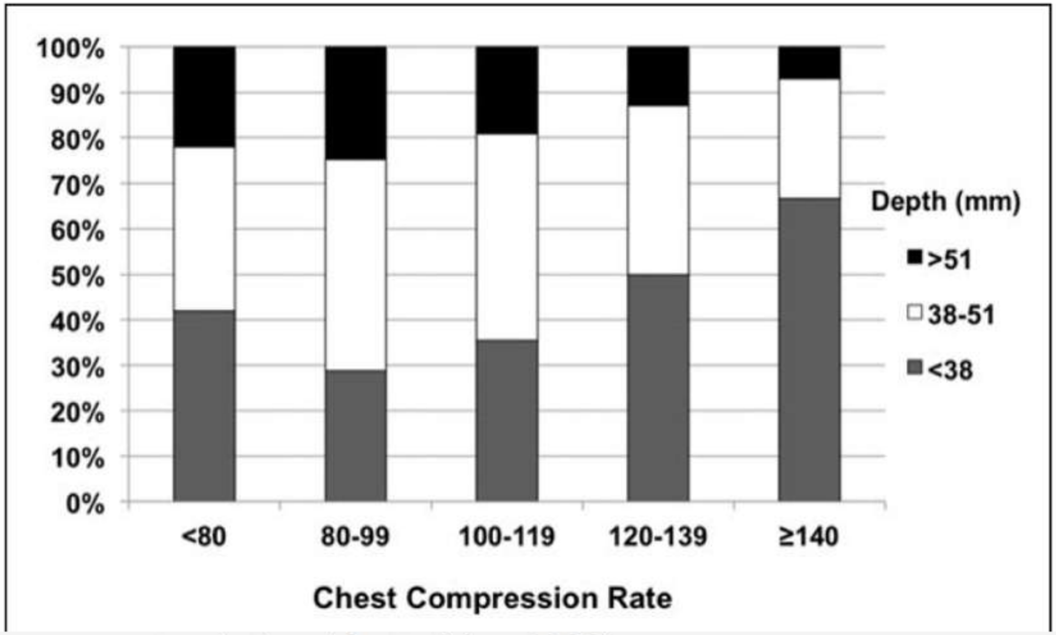


Harris AW, Kudenchuk PJ. *Heart* 2018;**0**:1–6. doi:10.1136/heartjnl-2017-312696

Réanimation cardio-pulmonaire : focus sur la qualité



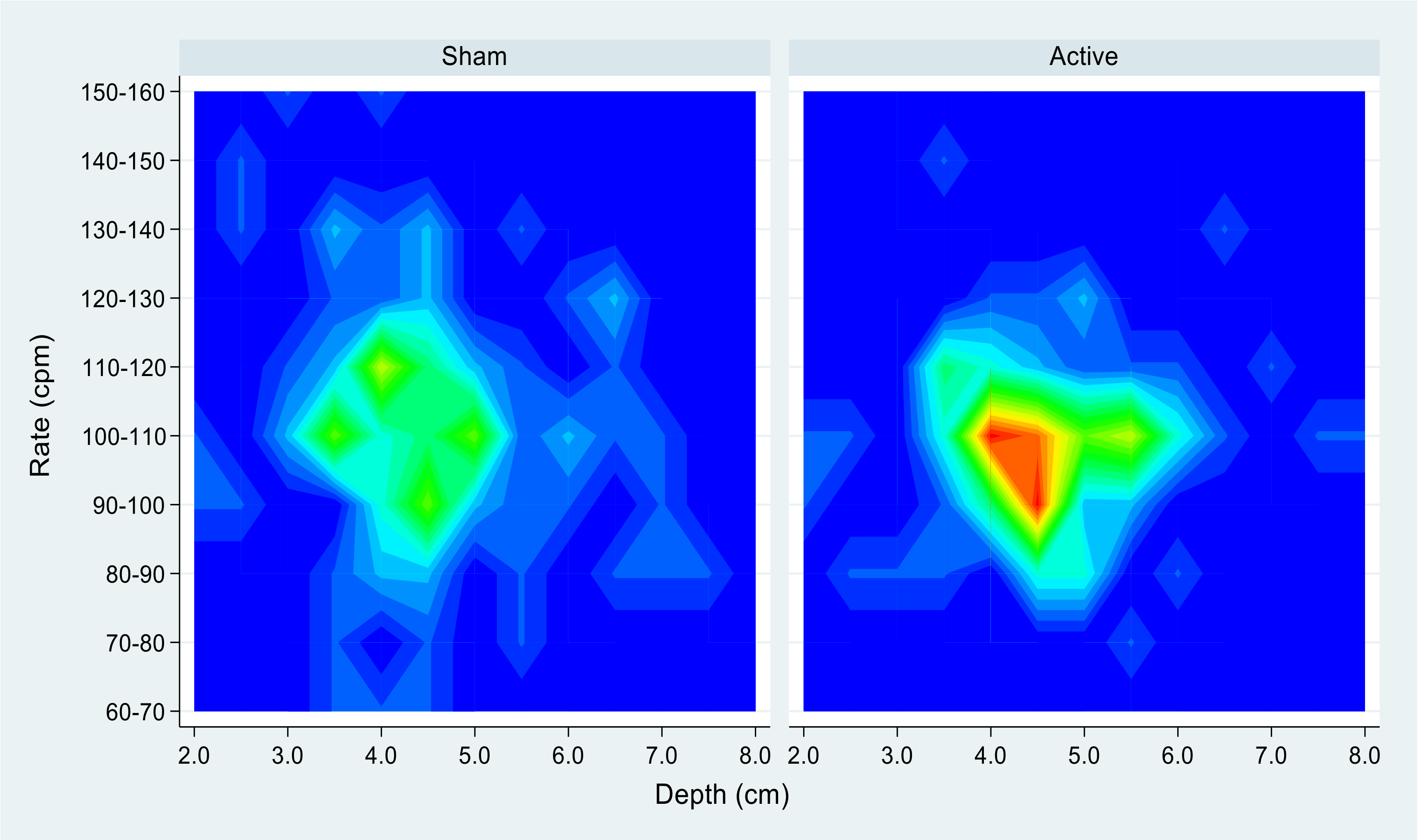
RCP : focus sur la qualité



Adjusted model[c] (including compression depth and fraction) ($n = 6,399$)				
< 80 compressions/min ($n = 335$)	0.97 (0.74–1.27)	0.811	0.89 (0.53–1.50)	0.659
80–99 compressions/min ($n = 1,933$)	0.99 (0.86–1.13)	0.841	0.73 (0.57–0.93)	0.011
100–119 compressions/min ($n = 2,932$)	Reference group		Reference group	
120–139 compression/min ($n = 955$)	0.98 (0.82–1.16)	0.781	0.63 (0.45–0.88)	0.007
≥ 140 compressions/min ($n = 244$)	1.08 (0.79–1.47)	0.640	0.95 (0.53–1.70)	0.864
	Global test for ROSC	0.98	Global test for survival	0.02

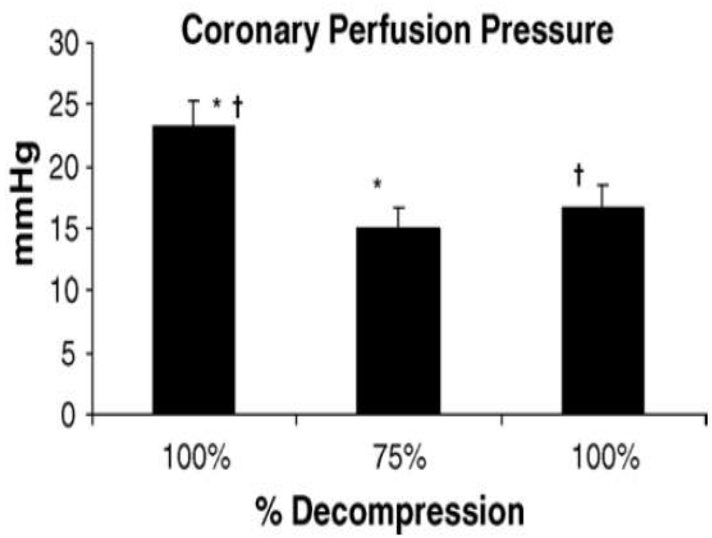
Idris AH, (2015) Chest compression rates and survival following out-of-hospital cardiac arrest. Crit Care Med 43: 840-848

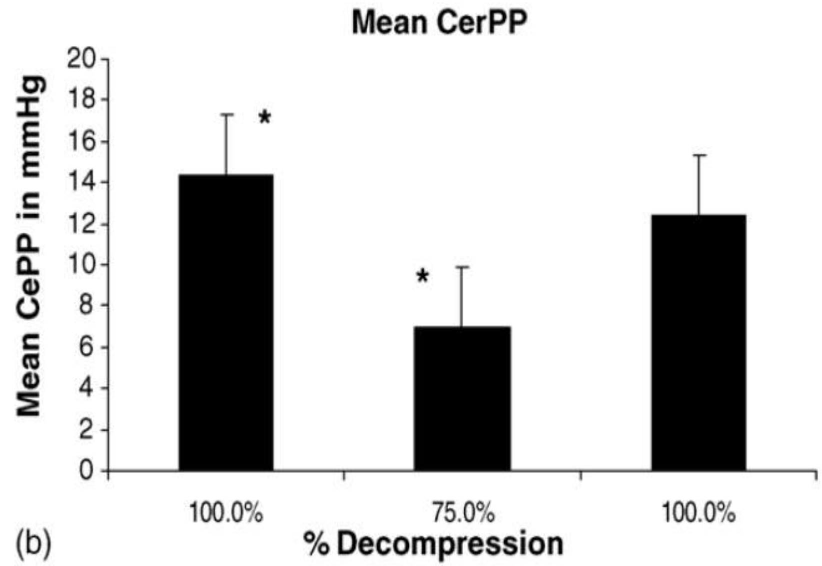
RCP : focus sur la qualité



Optimal Compression Rate and Depth to Improve Survival with Favorable Neurological Function during Cardiopulmonary Resuscitation – S. Duval, P. Pepe, J. Goodloe, G. Debaty et al – JACC en cours de soumission

Qualité des compressions thoracique
Compression = Décompression



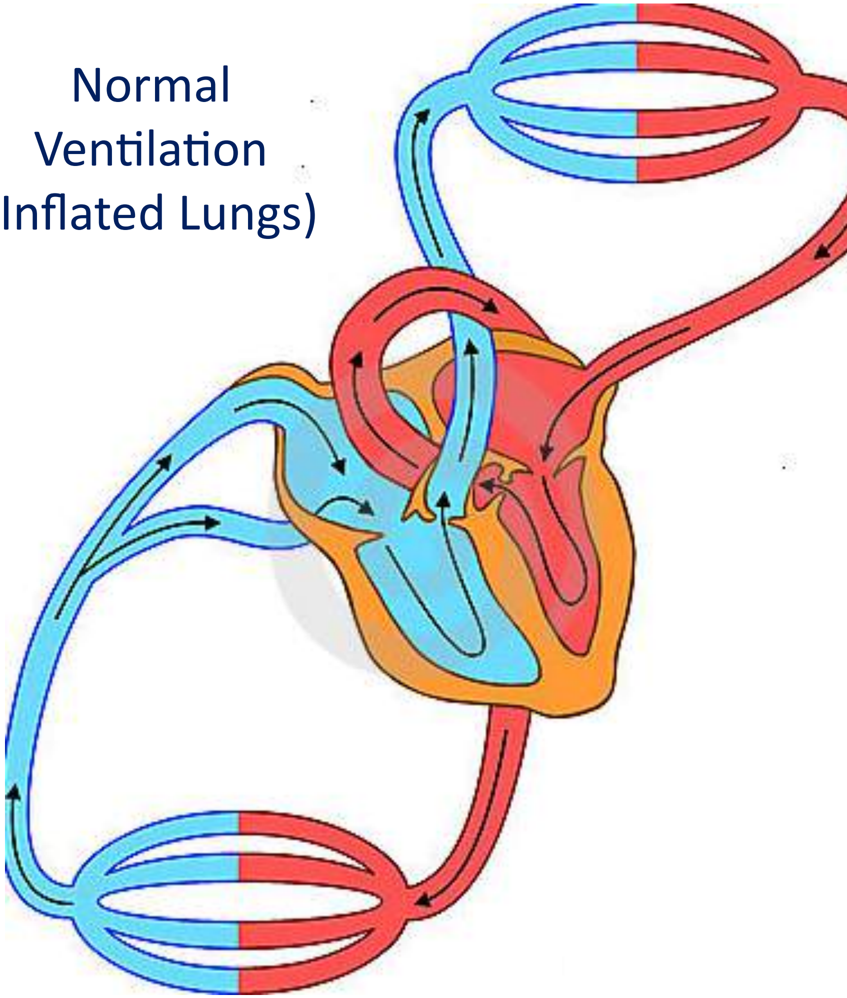


Yannopoulos D, McKnite S, Aufderheide TP, et al. Effects of incomplete chest wall decompression during cardiopulmonary resuscitation on coronary and cerebral perfusion pressures in a porcine model of cardiac arrest. Resuscitation 2005;64:363–72.

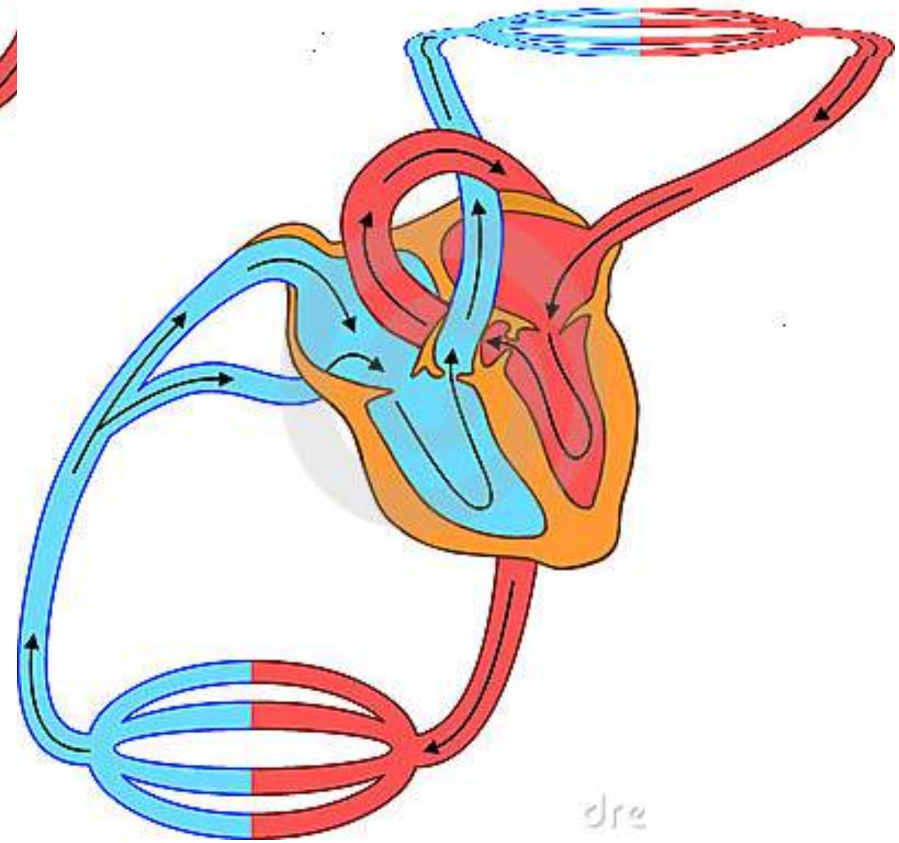
Importance du bouche à bouche ?

Effect of No Ventilation

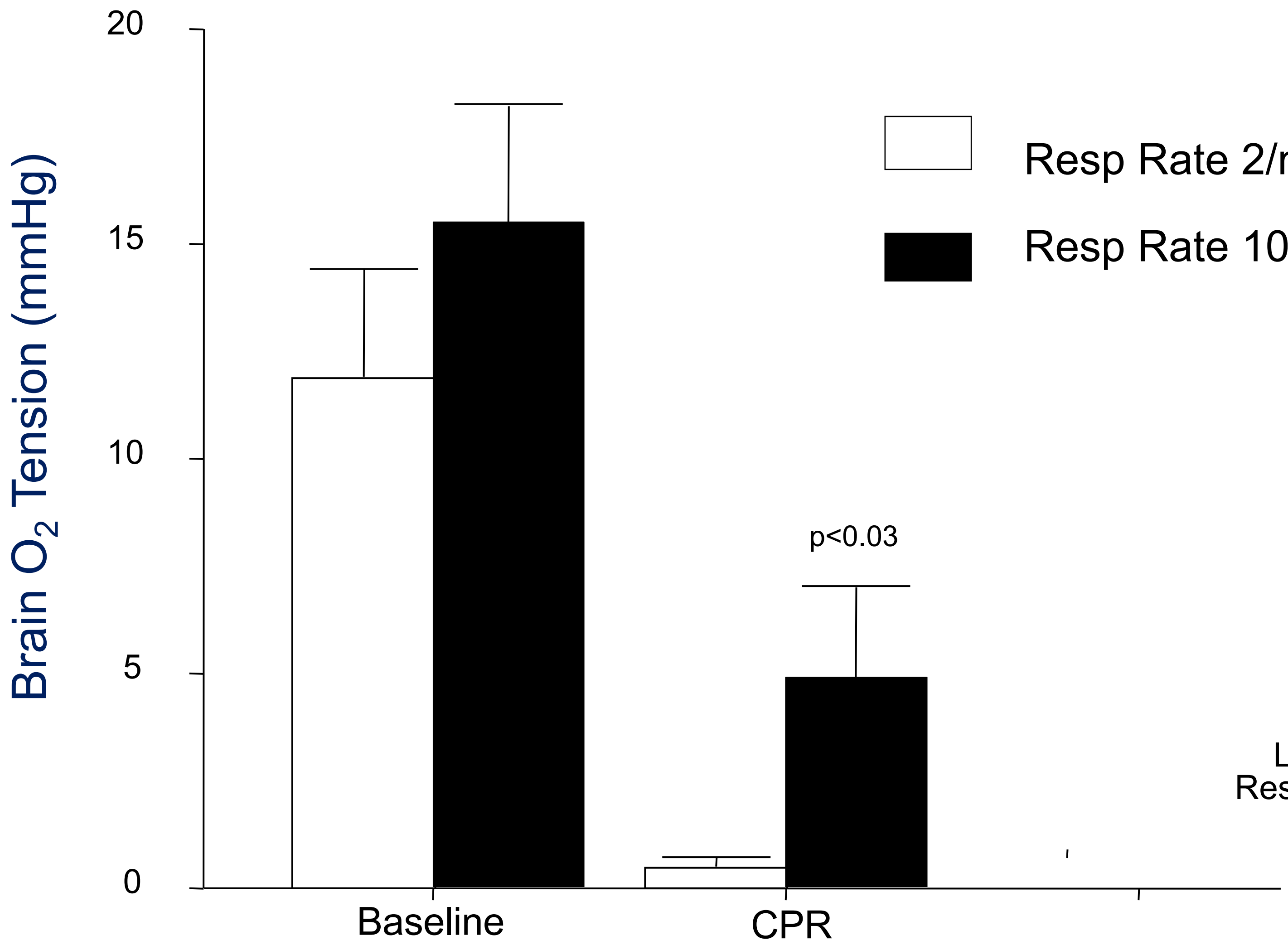
Normal
Ventilation
(Inflated Lungs)



No
Ventilation
(Deflated lungs)



2 vs 10: Effect on Brain Oxygen Tension

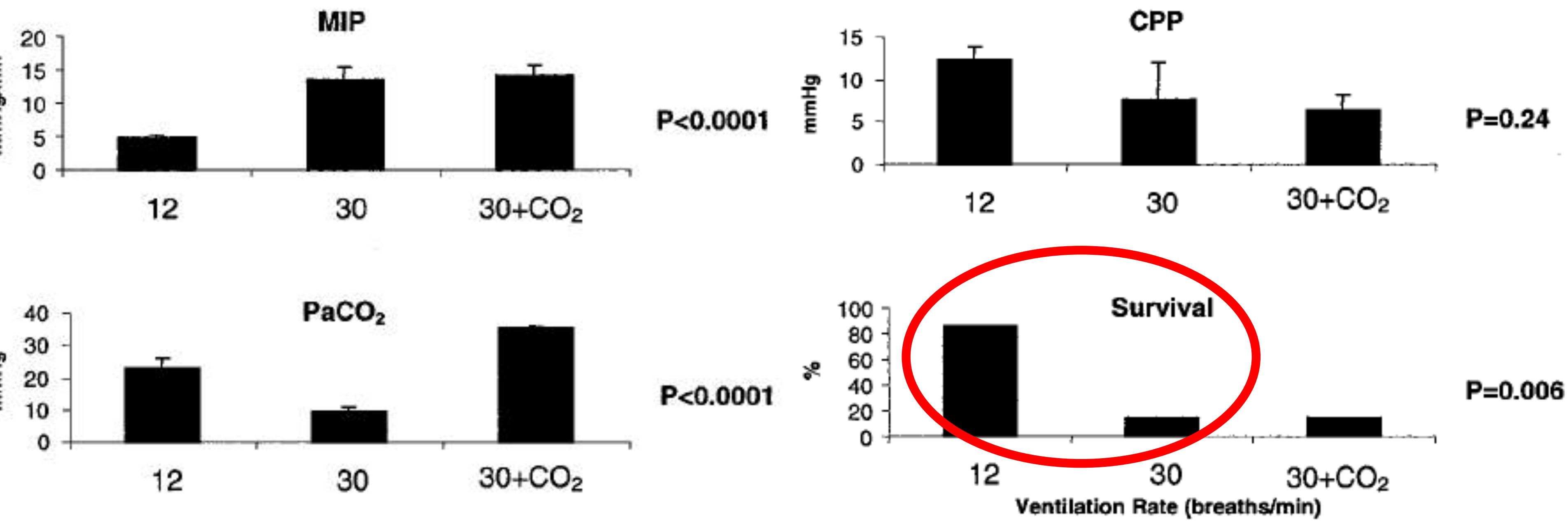


Lurie et al -
Resp Care 2008

Décès par hyperventilation

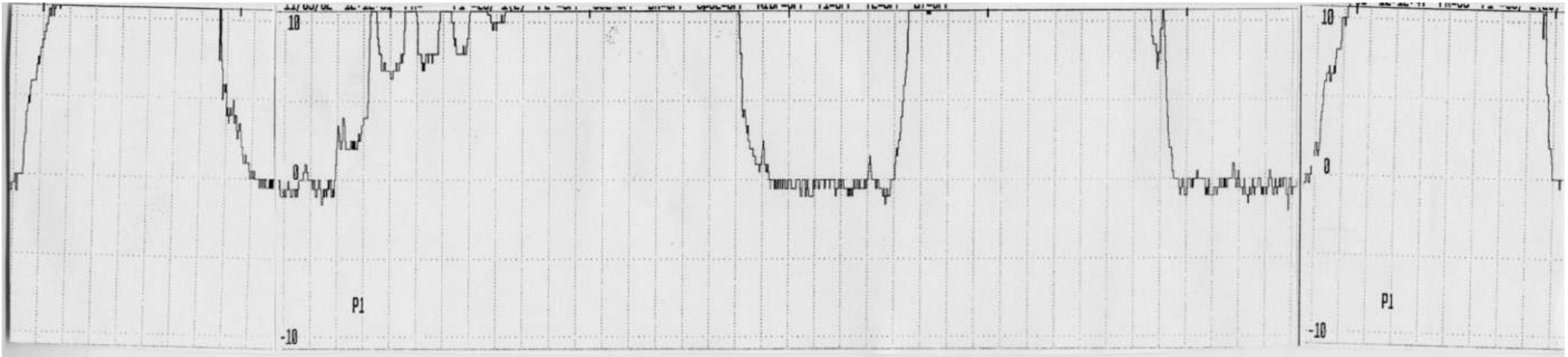
Ventilation rate:
47/min

Effet délétère de l'hyperventilation



Aufderheide TP et al. Hyperventilation-induced hypotension during cardiopulmonary resuscitation. Circulation. 2004;109:1960-5

Exemple : Ventilations prolongées



Durée de ventilation : 4.36 sec / ventilation

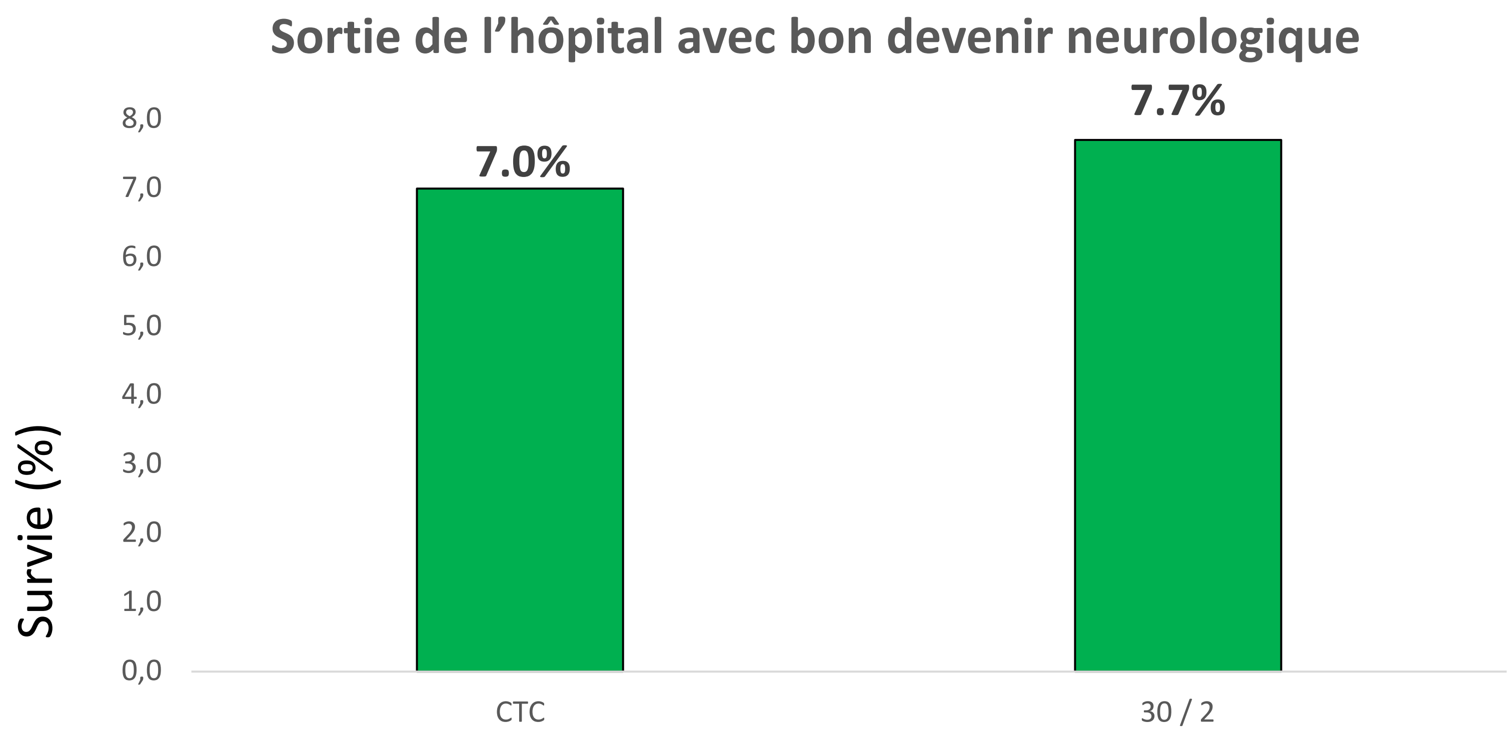
Fréquence : 11 ventilations / minute

% Positive Pressure: 80%

30:2 vs Compressions thoraciques continues (CTC) pour la RCP de base ?

Nichol et al, NEJM 2015

Intervention: CTC avec ventilation asynchrone à 10/min
Contrôle: 30 compressions puis 2 insufflations
Pas de différence statistiquement significative rapporté dans les résultats (p=0.09)



Résultats chez les patients inclus dans l'analyse primaire

Table 3. Outcomes in Patients Included in the Primary Analysis.*

Outcome	Intervention Group (N=12,653)	Control Group (N=11,058)	Adjusted Difference (95% CI)	P Value
Effectiveness population				
Primary outcome: survival to discharge — no./total no. (%)	1,129/12,613 (9.0)	1072/11,035 (9.7)	−0.7 (−1.5 to 0.1)	0.07
Transport to hospital — no. (%)	6686 (52.8)	6066 (54.9)	−2.0 (−3.6 to −0.5)	0.01
Return of spontaneous circulation at ED arrival — no./total no. (%)	3,058/12,646 (24.2)	2799/11,051 (25.3)	−1.1 (−2.4 to 0.1)	0.07
Admission to hospital — no./total no. (%)	3,108/12,653 (24.6)	2860/11,058 (25.9)	−1.3 (−2.4 to −0.2)	0.03
Survival to 24 hr — no./total no. (%)	2,816/12,614 (22.3)	2569/11,031 (23.3)	−1.0 (−2.1 to 0.2)	0.10
Hospital-free survival — days†	1.3±5.0	1.5±5.3	−0.2 (−0.3 to −0.1)	0.004
Discharge home — no./total no. (%)	844/12,613 (6.7)	794/11,034 (7.2)	−0.5 (−1.2 to 0.2)	0.15
Modified Rankin scale score‡				
≤3 — no./total no. (%)	883/12,560 (7.0)	844/10,995 (7.7)	−0.6 (−1.4 to 0.1)	0.09
Mean	5.63±1.29	5.60±1.35	0.04 (0.0 to 0.08)	0.04
Distribution — no./total no. (%)				
0	320/12,560 (2.5)	336/10,995 (3.1)	—	—
1	271/12,560 (2.2)	222/10,995 (2.0)	—	—
2	147/12,560 (1.2)	161/10,995 (1.5)	—	—
3	145/12,560 (1.2)	125/10,995 (1.1)	—	—
4	97/12,560 (0.8)	103/10,995 (0.9)	—	—
5	98/12,560 (0.8)	87/10,995 (0.8)	—	—
6	11,482/12,560 (91.4)	9961/10,995 (90.6)	—	—
Adjusted analyses of primary outcome				
Adjusted for study site	—	—	−0.6 (−1.3 to 0.1)	0.09
Adjusted for age	—	—	−0.7 (−1.5 to 0.1)	0.07
Adjusted for sex	—	—	−0.7 (−1.5 to 0.1)	0.07
Adjusted for public location	—	—	−0.7 (−1.4 to 0.1)	0.09
Adjusted for bystander-witnessed	—	—	−0.6 (−1.4 to 0.3)	0.18
Adjusted for bystander-initiated CPR	—	—	−0.7 (−1.5 to 0.0)	0.07
Adjusted for duration until EMS arrival	—	—	−0.7 (−1.5 to 0.0)	0.07
Adjusted for all the above covariates	—	—	−0.3 (−1.1 to 0.4)	0.38
Additional analyses of primary outcome				
Analysis including multiple imputation — %	9.0	9.8	−0.7 (−1.5 to 0.1)	0.07
Prespecified per-protocol analysis				
Treatment determined by automated algorithm — no./total no. (%)	497/6529 (7.6)	353/3678 (9.6)	−2.0 (−2.9 to −1.1)	<0.001
Adjusted analysis§	—	—	−1.3 (−2.5 to −0.1)	0.04
Post hoc per-protocol analysis: treatment determined by coordinator assessment — no./total no. (%)	834/9649 (8.6)	606/6156 (9.8)	−1.2 (−2.0 to −0.4)	<0.01

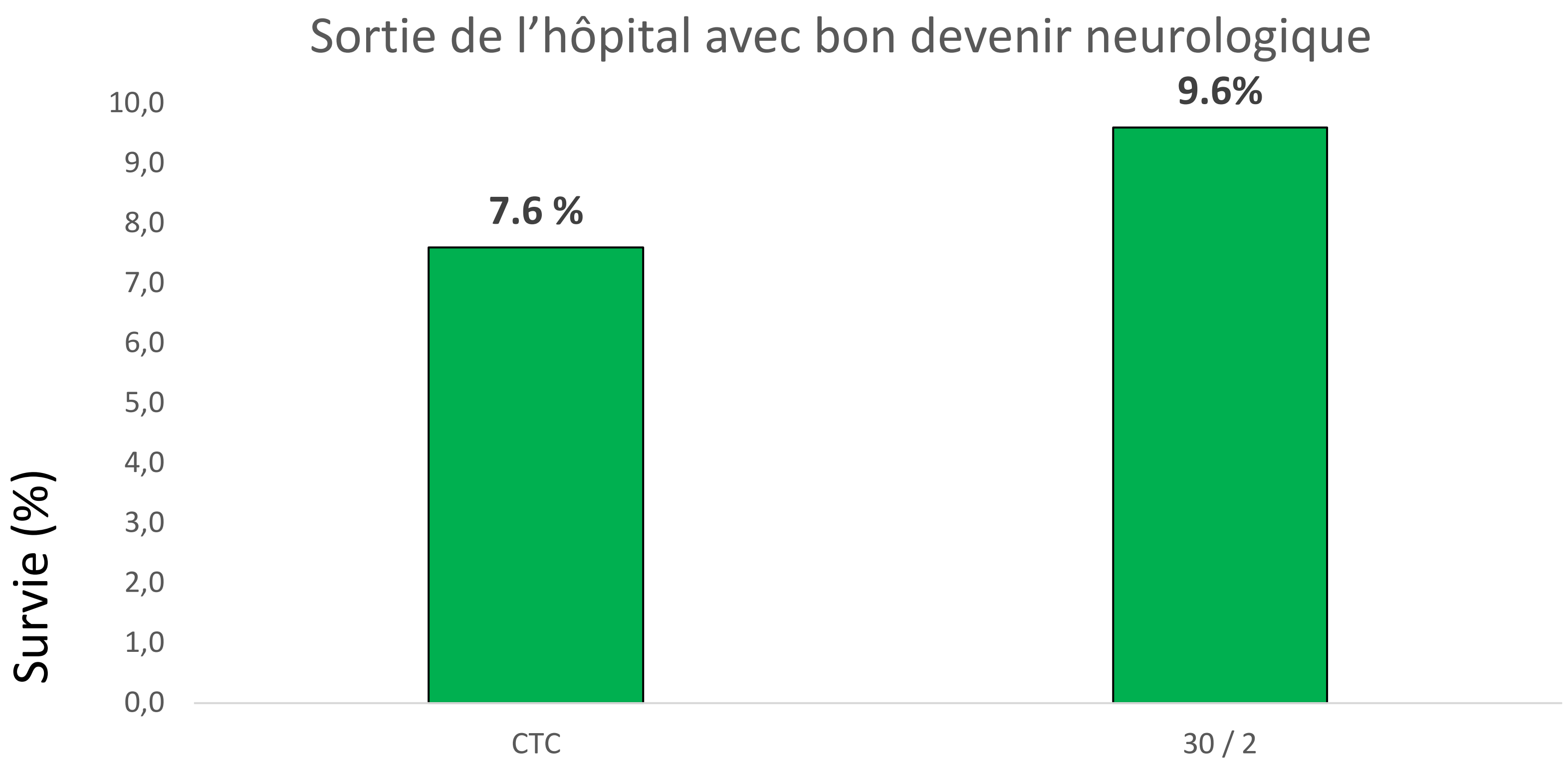
Nichol G et al.
N Engl J Med 2015;373:2203-2214.

30:2 vs Compressions thoraciques continues (CTC) pour la RCP de base ?

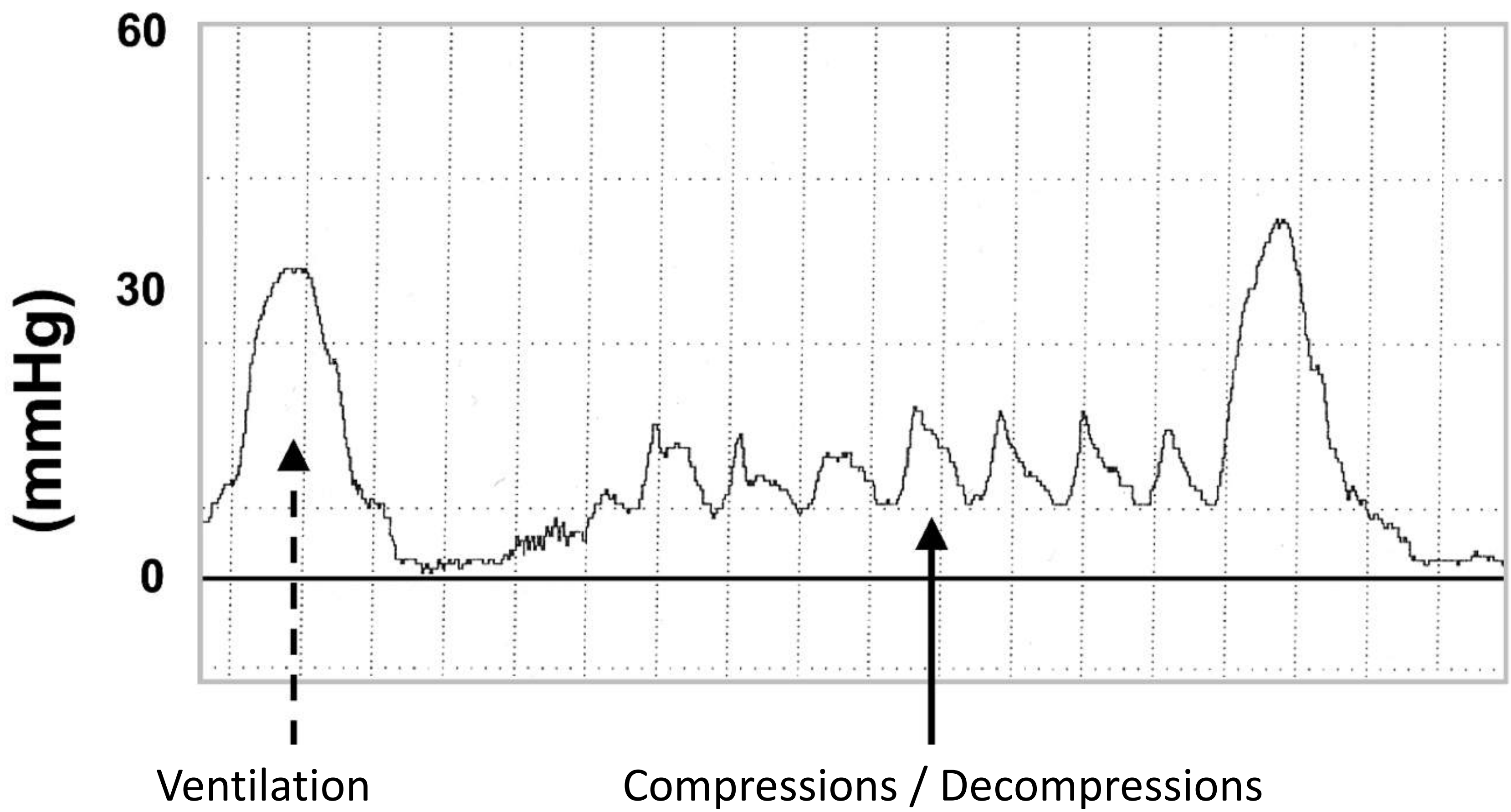
Nichol et al, NEJM 2015

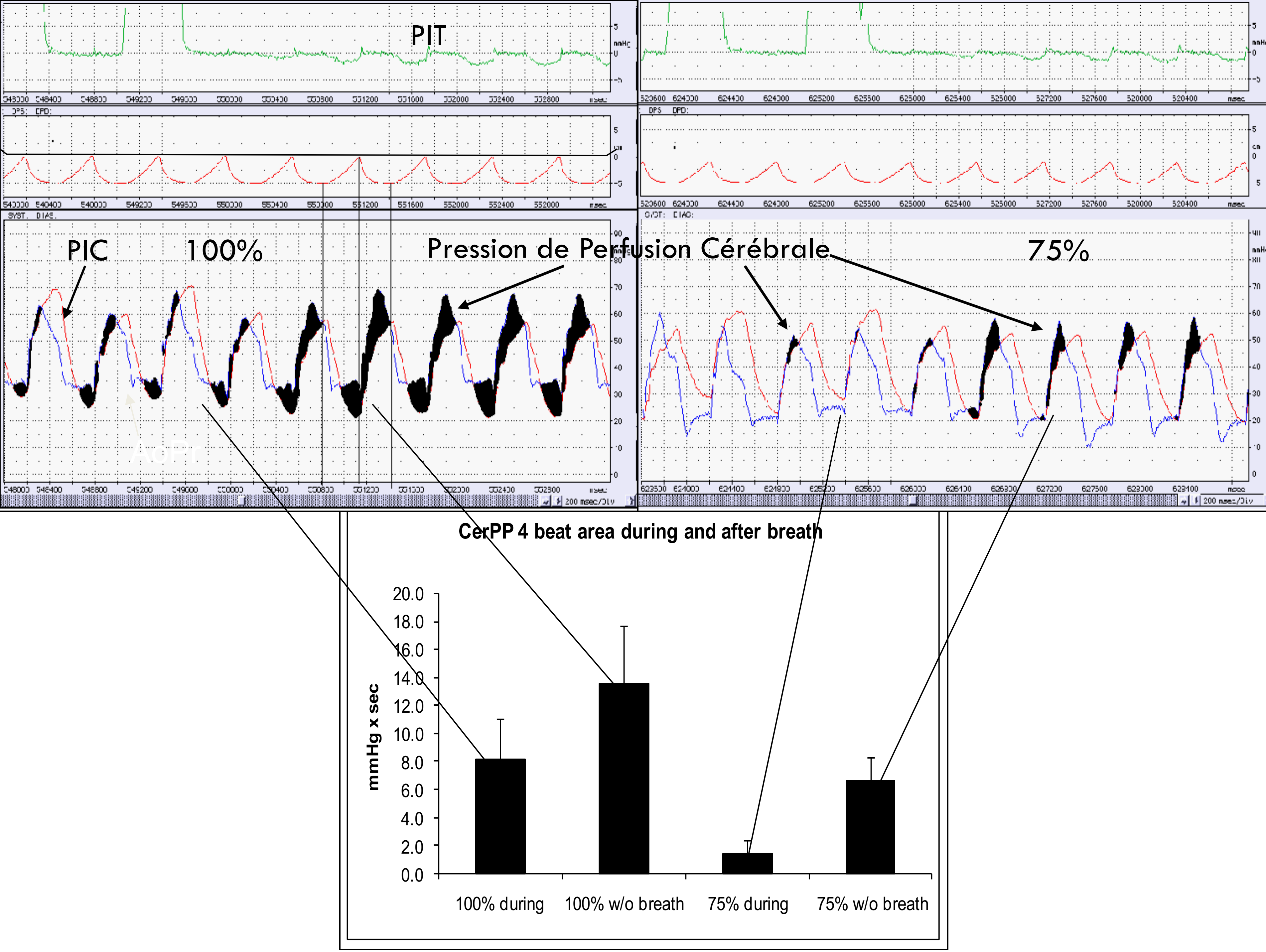
<u>Analyse Per Protocole :</u>

30:2 permet d'obtenir une augmentation du nombre de patient avec un bon devenir neurologique (p<0.001)



Importance d'une relaxation complète du thorax



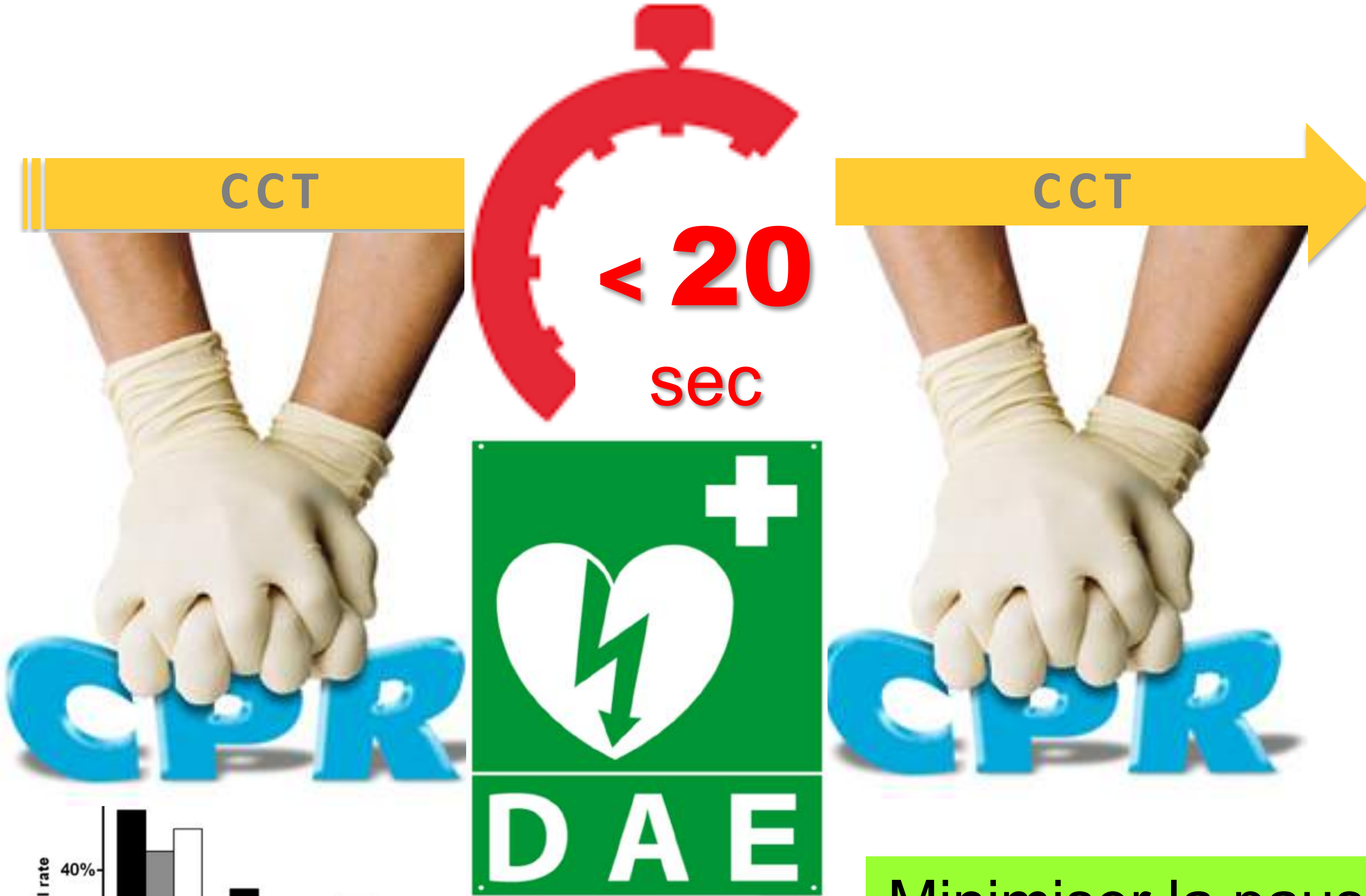

PIT
PIC
100%
Pression de Perfusion Cérébrale
75%
200 msec/Div
CerPP 4 beat area during and after breath
mmHg x sec
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
100% during
100% w/o breath
75% during
75% w/o breath

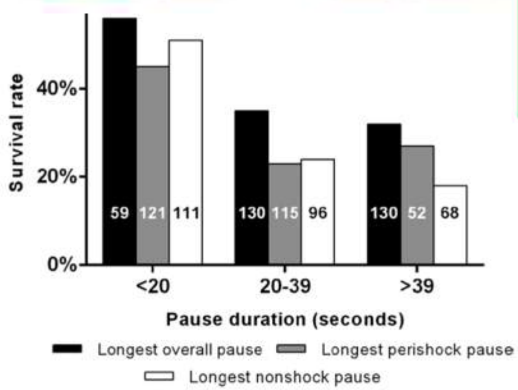
Impact des défibrillateurs

Table 5. Studies Reporting Out-of-Hospital Cardiac Arrest Survival for Automated External Defibrillator Attached and Automated External Defibrillator Defibrillated According to Type of Automated External Defibrillator User

AED Intervention*	User†	Median Survival, %‡	Range	Interquartile Range	No. of Studies
AED attached	Both	22.3	4.0–78.0	0.12–0.37	22
AED attached	Police/firefighter	11.5	4.0–21.1	0.09–0.13	9
AED attached	Layperson	32.0	14.0–78.0	0.25–0.42	13
AED defibrillated	Both	40.0	9.0–76.0	0.26–0.56	36
AED defibrillated	Police/firefighter	28.6	9.0–76.0	0.20–0.42	21
AED defibrillated	Layperson	53.0	26.0–72.0	0.26–0.56	15

The Effects of Public Access Defibrillation on Survival After Out-of-Hospital Cardiac Arrest. A Systematic Review of Observational Studies
Circulation. 136(10):954-965, September 5, 2017.



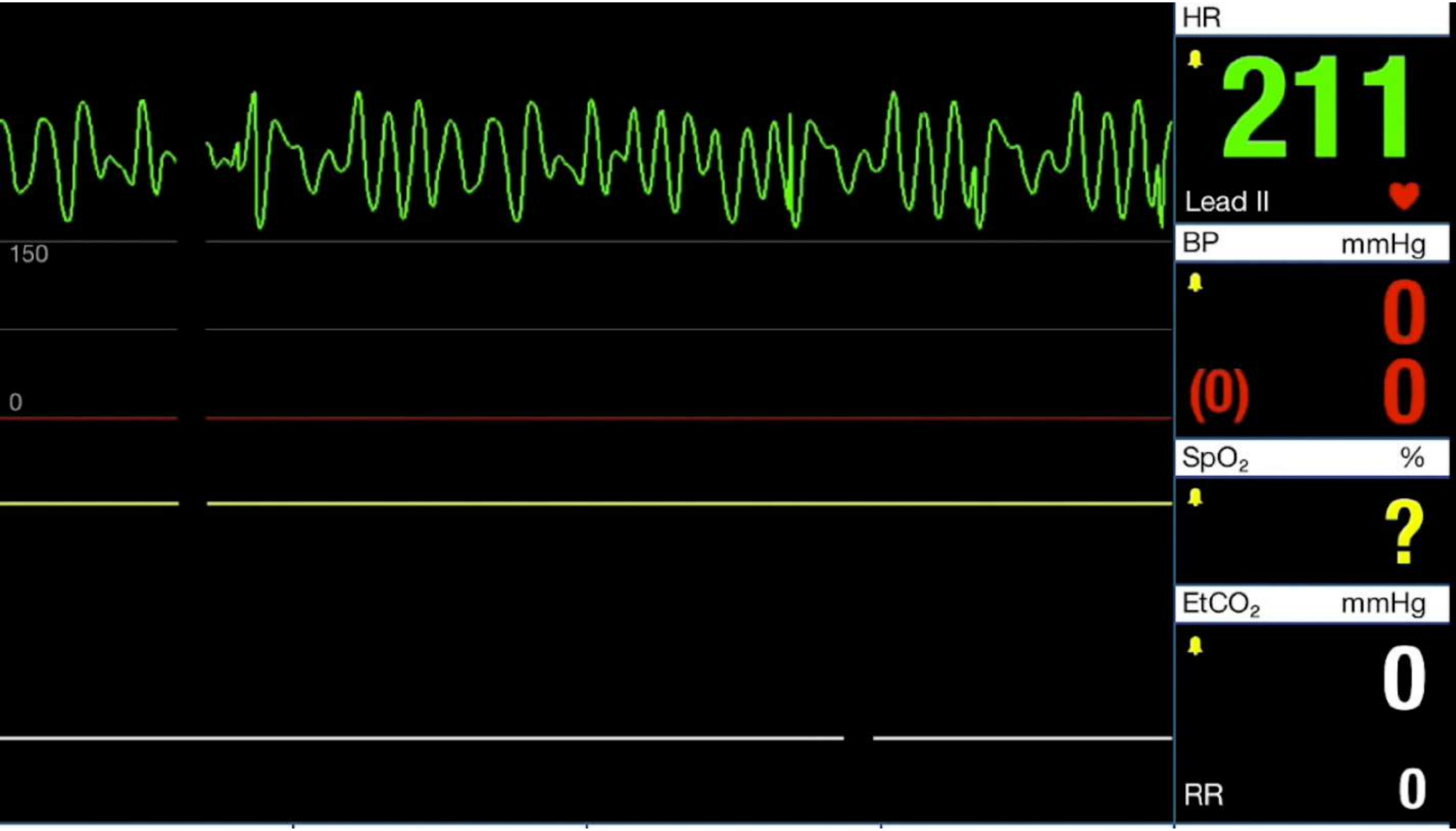


Minimiser la pause
péri-choc
=
↗ la survie

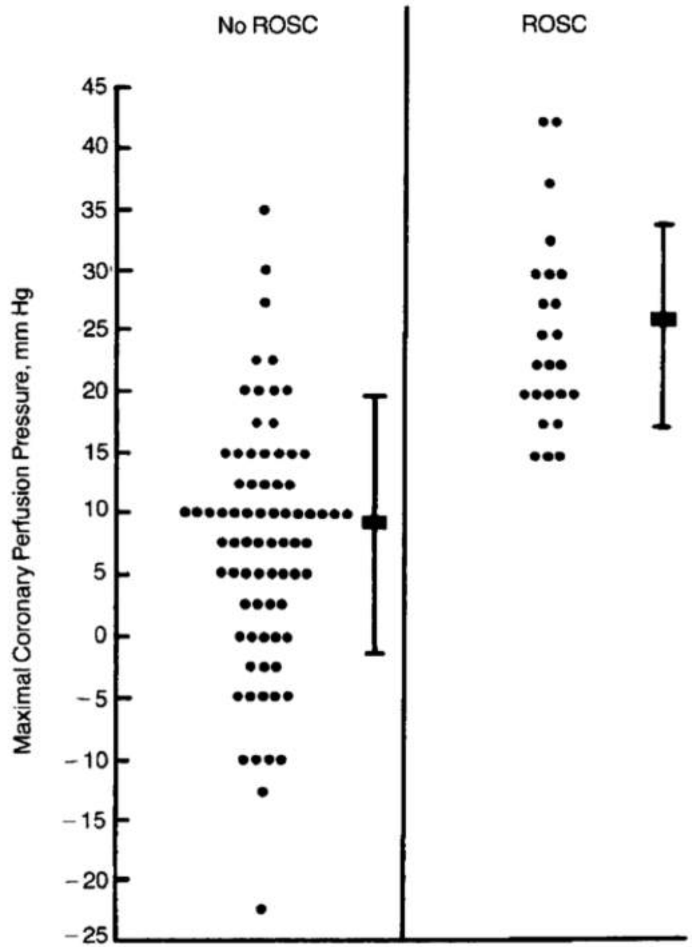
Association Between Chest Compression Interruptions and Clinical Outcomes of Ventricular Fibrillation Out-of-Hospital Cardiac Arrest – Circulation. 2015 Sep 15;132(11):1030-7

Réanimation cardiopulmonaire spécialisée

Monitoring durant la RCP



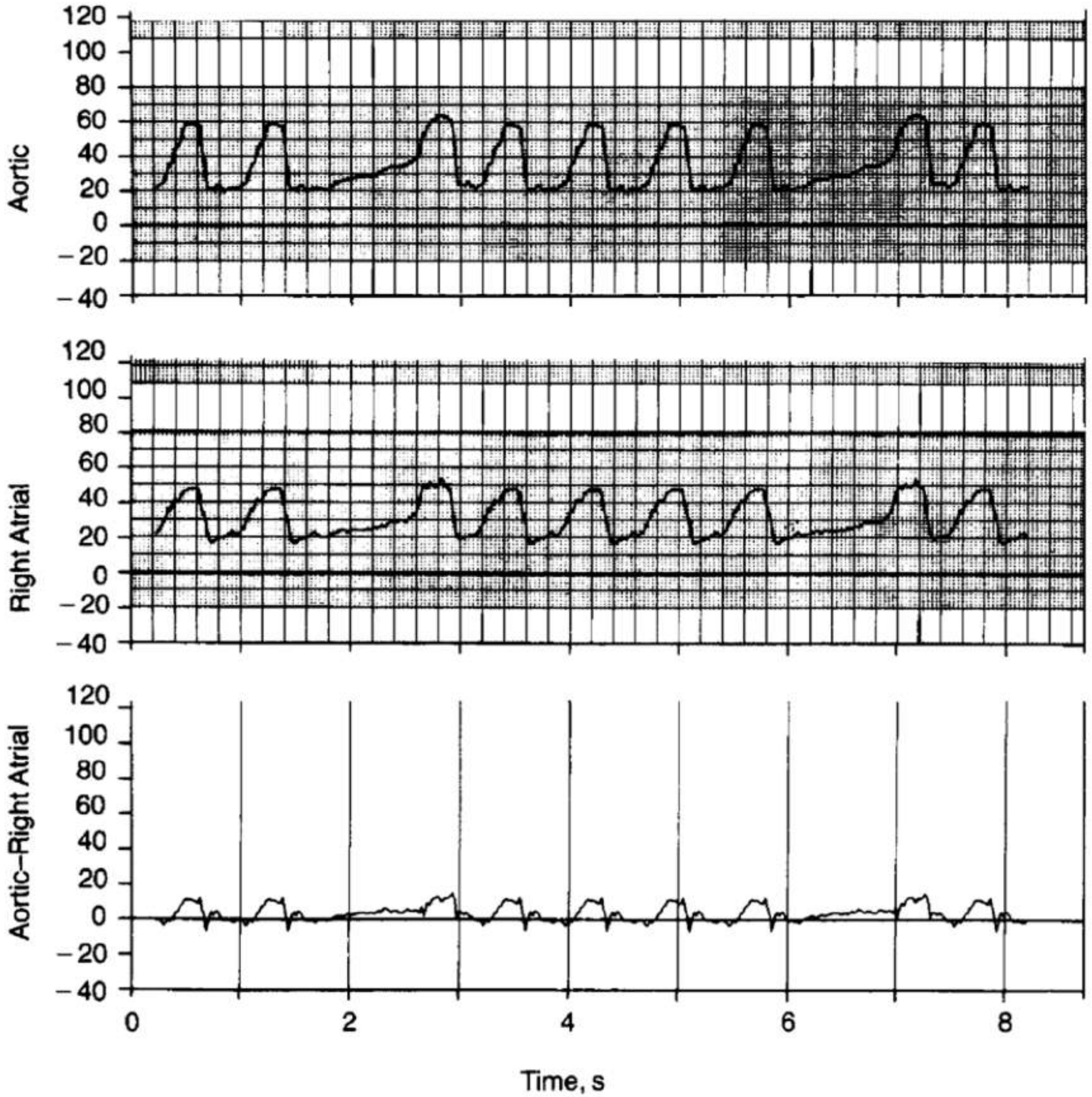
Pression de perfusion coronaire



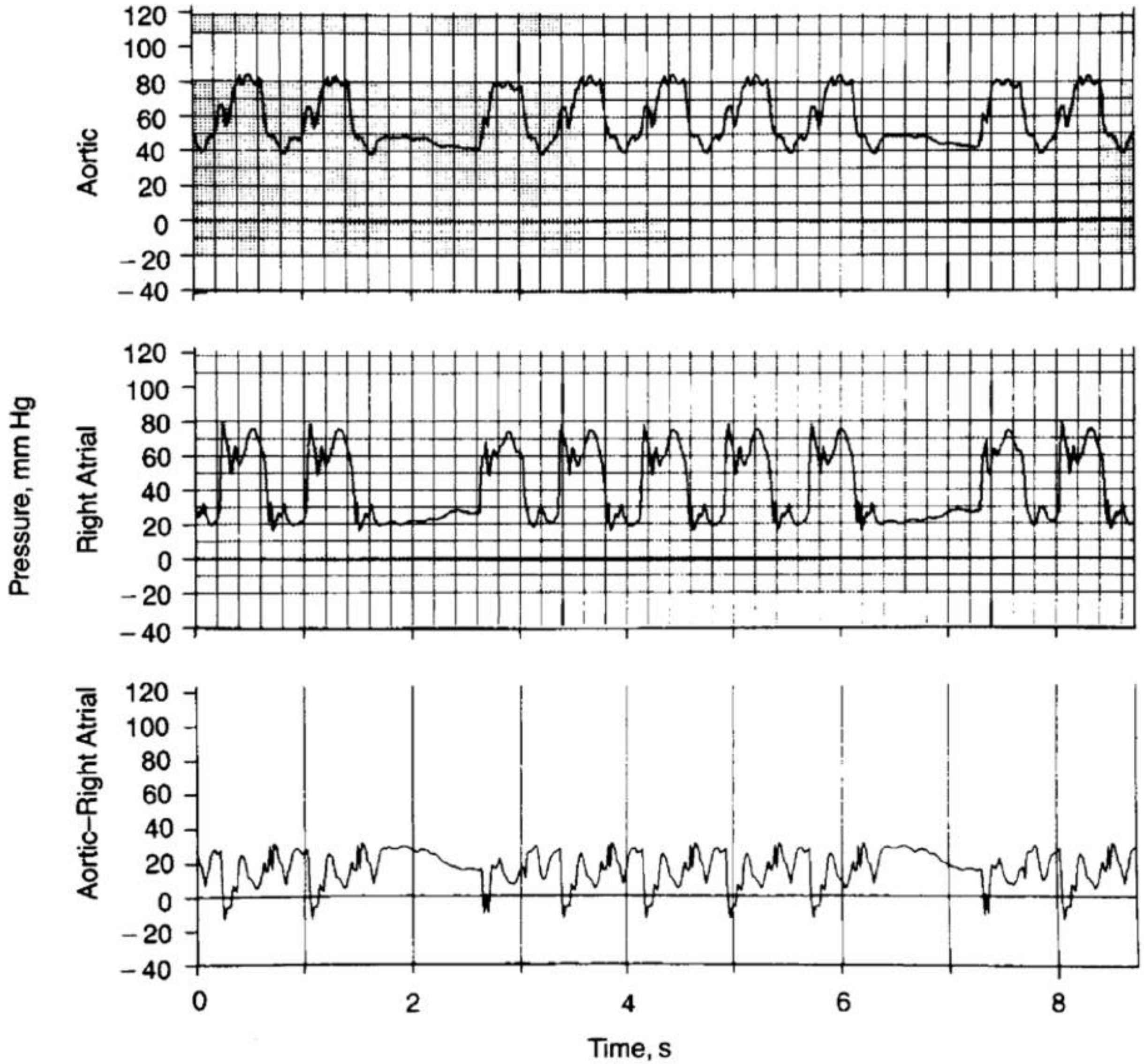
CPP > 15 mmHg nécessaire pour obtenir une RACS

*Paradis NA, Martin GB, Rivers EP, et al. Coronary perfusion pressure and the return of spontaneous circulation in human cardiopulmonary resuscitation.JAMA1990;**263**(8): 1106-13.*

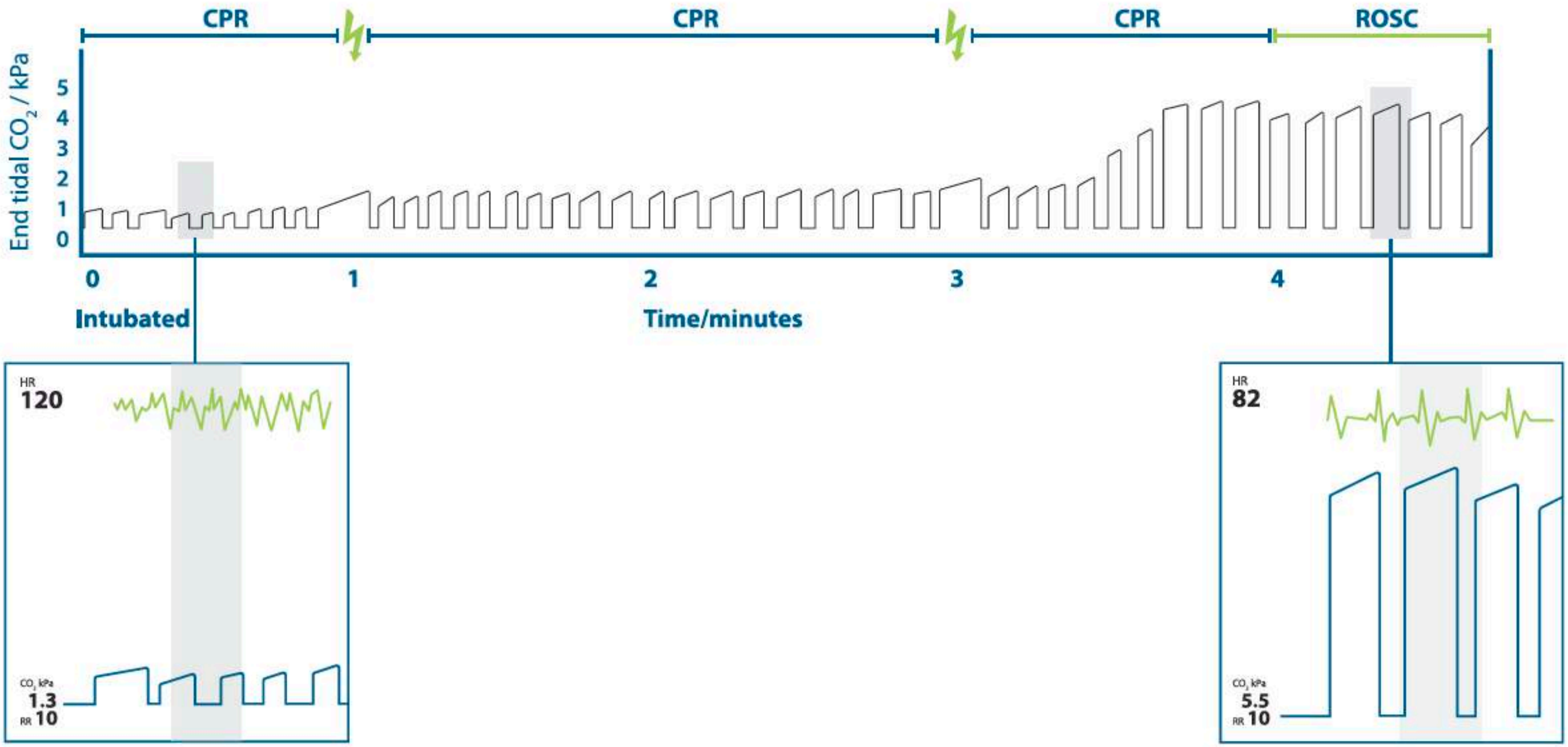
Pression de perfusion coronaire



Pression de perfusion coronaire



Capnographie : RCP



Capnographie : RCP

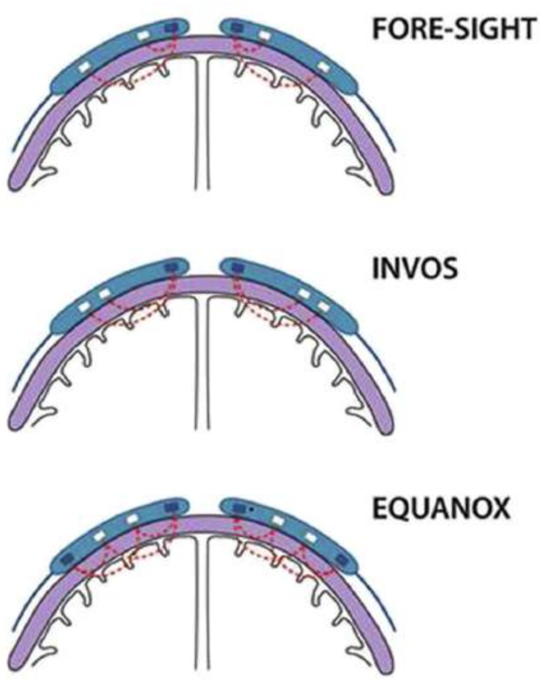
1. Assurer le positionnement de la sonde
2. Monitorer la fréquence ventilatoire

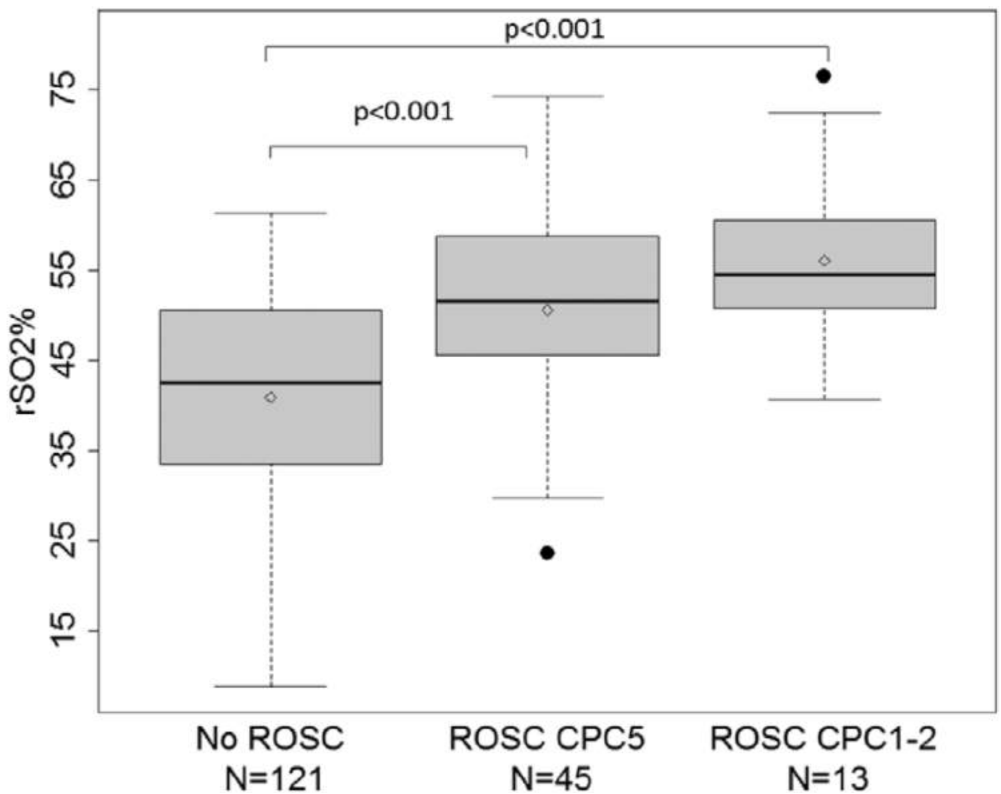
need for an advanced airway to measure end-tidal CO_2 reliably limits our confidence in its use for prognostication. Thus, we recommend that a specific end-tidal CO_2 value at any time during CPR should not be used alone to stop CPR efforts. End-tidal CO_2 values should be considered only as part of a multi-modal approach to decision-making for prognostication during CPR.

pronostic

Perspectives monitoring

- Non invasive regional saturation





Parnia S, et al. Cerebral Oximetry During Cardiac Arrest: A Multicenter Study of Neurologic Outcomes and Survival. Crit Care Med. 2016;44:1663-74.

Intubation

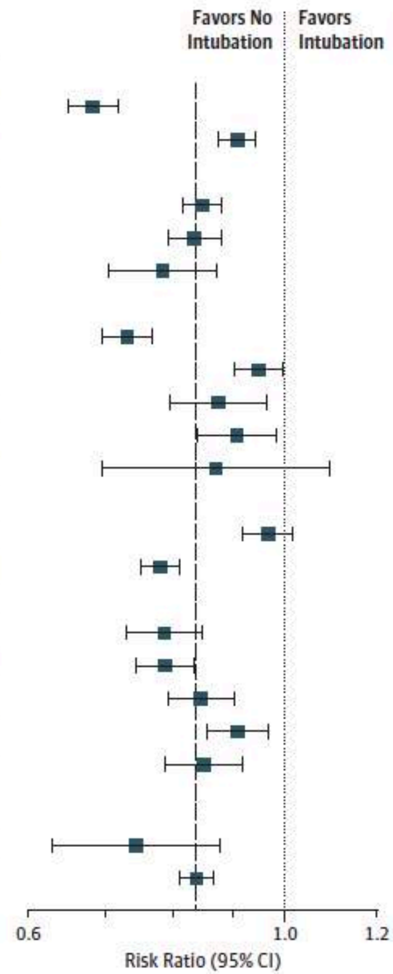
JAMA | Original Investigation | CARING FOR THE CRITICALLY ILL PATIENT

Association Between Tracheal Intubation During Adult In-Hospital Cardiac Arrest and Survival

Lars W. Andersen, MD, MPH, PhD; Asger Granfeldt, MD, PhD, DMSc; Clifton W. Callaway, MD, PhD; Steven M. Bradley, MD, MPH; Jasmeet Soar, FRCA, FFICM, FRCP; Jerry P. Nolan, FRCA, FRCP, FFICM, FCEM (Hon); Tobias Kurth, MD, ScD; Michael W. Donnino, MD; for the American Heart Association's Get With The Guidelines-Resuscitation Investigators

JAMA. 2017;317(5):494-506.

Subgroup	Survival to Hospital Discharge, No. of Patients With Outcome/Total Patients (%) Intubation	No Intubation	Risk Ratio (95% CI)	P Value for Interaction
Initial rhythm				
Shockable	1786/6675 (26.8)	2608/6646 (39.2)	0.68 (0.65-0.72)	<.001
Nonshockable	5266/36 639 (14.4)	5799/36 668 (15.8)	0.91 (0.88-0.94)	
Time of matching, min[a]				
0-4	4321/25 219 (17.1)	5098/25 219 (20.2)	0.85 (0.82-0.88)	
5-9	2248/14 937 (15.0)	2693/14 937 (18.0)	0.84 (0.79-0.88)	.38
10-15	483/3158 (15.3)	616/3158 (19.5)	0.78 (0.70-0.87)	
Illness category				
Medical cardiac	2697/15 716 (17.2)	3710/15 779 (23.5)	0.73 (0.70-0.77)	
Medical noncardiac	2695/20 017 (13.5)	2834/19 979 (14.2)	0.95 (0.91-1.00)	
Surgical cardiac	632/2197 (28.8)	747/2274 (32.8)	0.88 (0.80-0.96)	<.001
Surgical noncardiac	910/4708 (19.3)	984/4623 (21.3)	0.91 (0.84-0.98)	
Trauma	118/676 (17.5)	132/659 (20.0)	0.87 (0.79-1.09)	
Respiratory insufficiency[b]				
Yes	2546/14 845 (17.2)	2630/14 822 (17.7)	0.97 (0.92-1.02)	<.001
No	4506/28 469 (15.8)	5777/28 492 (20.3)	0.78 (0.75-0.81)	
Location				
Emergency department	914/4546 (20.1)	1131/4422 (25.6)	0.79 (0.73-0.85)	
Floor with telemetry	1570/9373 (16.8)	1987/9342 (21.3)	0.79 (0.74-0.83)	
Floor without telemetry	1432/12 331 (11.6)	1684/12 263 (13.7)	0.85 (0.79-0.90)	
Intensive care unit	2161/13 384 (16.1)	2406/13 556 (17.7)	0.91 (0.86-0.97)	.002
Operating room, postanesthesia care unit, or interventional unit	758/2550 (29.7)	903/2585 (34.9)	0.85 (0.79-0.92)	
Other	217/1130 (19.2)	296/1146 (25.8)	0.74 (0.63-0.88)	
Overall	7052/43 314 (16.3)	8407/43 314 (19.4)	0.84 (0.81-0.87)	



RCP spécialisée : Intubation

JAMA | Original Investigation

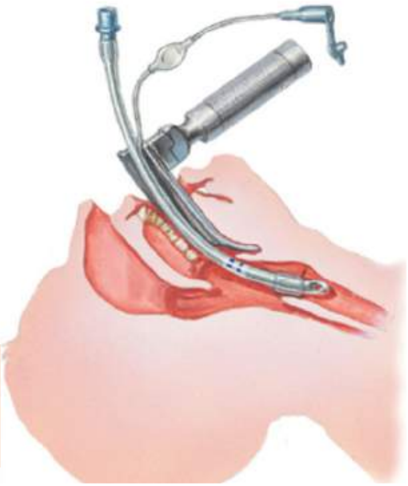
Effect of Bag-Mask Ventilation vs Endotracheal Intubation During Cardiopulmonary Resuscitation on Neurological Outcome After Out-of-Hospital Cardiorespiratory Arrest

A Randomized Clinical Trial

Patricia Jabre, MD, PhD; Andrea Penaloza, MD, PhD; David Pinero, MD; Francois-Xavier Duchateau, MD; Stephen W. Borron, MD, MS; Francois Javaudin, MD; Olivier Richard, MD; Diane de Longueville, MD; Guillem Bouilleau, MD; Marie-Laure Devaud, MD; Matthieu Heidet, MD, MPH; Caroline Lejeune, MD; Sophie Fauroux, MD; Jean-Luc Greingor, MD; Alessandro Manara, MD; Jean-Christophe Hubert, MD; Bertrand Guihard, MD; Olivier Vermylen, MD; Pascale Lievens, MD; Yannick Auffret, MD; Celine Maisondieu, MD; Stephanie Huet, MD; Benoît Claessens, MD; Frederic Lapostolle, MD, PhD; Nicolas Javaud, MD, PhD; Paul-Georges Reuter, MD, MS; Elinor Baker, MD; Eric Vicaut, MD, PhD; Frédéric Adnet, MD, PhD

JAMA. 2018;319(8):779-787. doi:10.1001/jama.2018.0156

RCP spécialisée : Intubation



CPC 1-2 à 28j

43/1022 (4,2%)

44/1018 (4,3%)

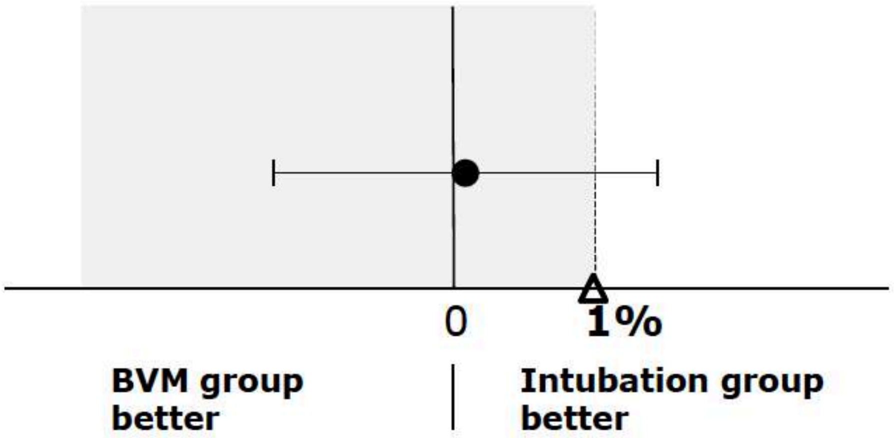


Table 2. Secondary Outcomes in Patients Included in the Study

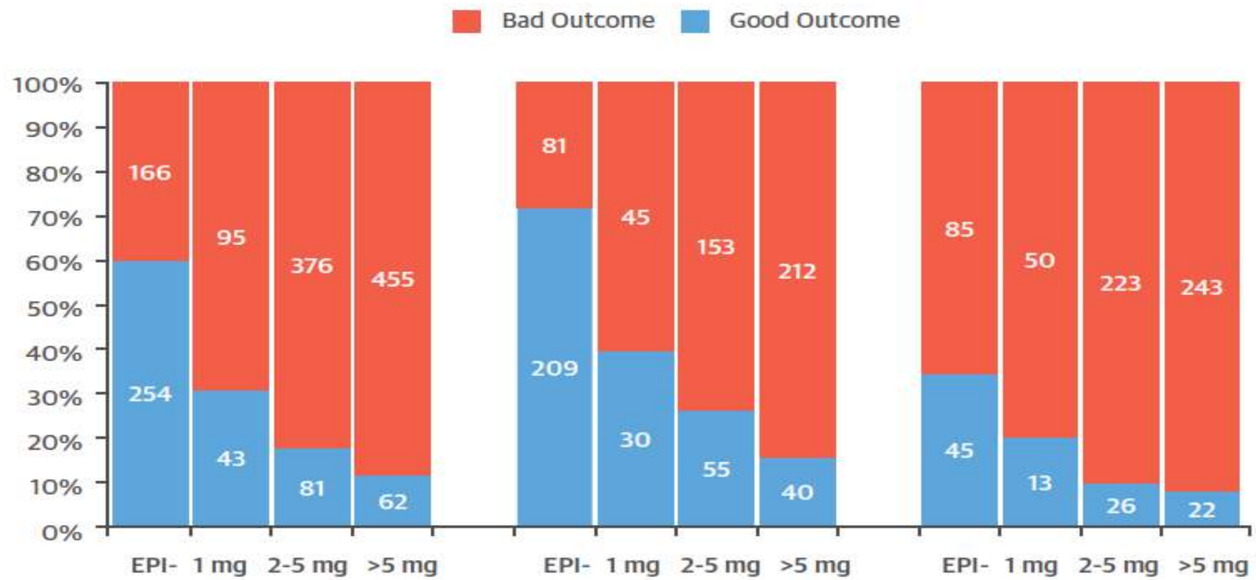
Outcome	No. of Patients (%)		Proportion Difference, BMV(%) − ETI(%) (95% CI)	*P* Value[a]
	BMV Group	ETI Group		
Intention-to-Treat Population	n = 1018	n = 1022		
Survival at 28 d	55 (5.4)	54 (5.3)	0.1 (−1.8 to 2.1)	.90
CPCs[b]				
1, Good cerebral performance	35 (3.4)	37 (3.6)		.68
2, Moderate cerebral disability	9 (0.9)	6 (0.6)		
3, Severe cerebral disability	4 (0.4)	7 (0.7)		
4, Coma or vegetative state	7 (0.7)	4 (0.4)		
5, Death	963 (94.6)	968 (94.7)		
Survival to hospital admission	294 (28.9)	333 (32.6)	−3.7 (−7.7 to 0.3)	.07
Return of spontaneous circulation	348 (34.2)	397 (38.9)	−4.7 (−8.8 to −0.5)	.03
Per-Protocol Analysis	n = 995	n = 943		
Survival at 28 d	54 (5.4)	51 (5.4)	0.1 (−10 to 9.7)	.99
CPCs[b]				
1, Good cerebral performance	35 (3.5)	34 (3.5)		.76
2, Moderate cerebral disability	8 (0.8)	6 (0.6)		
3, Severe cerebral disability	4 (0.4)	7 (0.7)		
4, Coma or vegetative state	7 (0.7)	4 (0.4)		
5, Death	941 (94.6)	892 (94.6)		
Survival to hospital admission	289 (29.1)	312 (33.1)	−4.0 (−7.6 to 0.6)	.055
Return of spontaneous circulation	342 (34.4)	377 (30.0)	−5.6 (−9.9 to −1.3)	.01

Thérapeutiques : Adrénaline

?

Thérapeutiques : Adrénaline

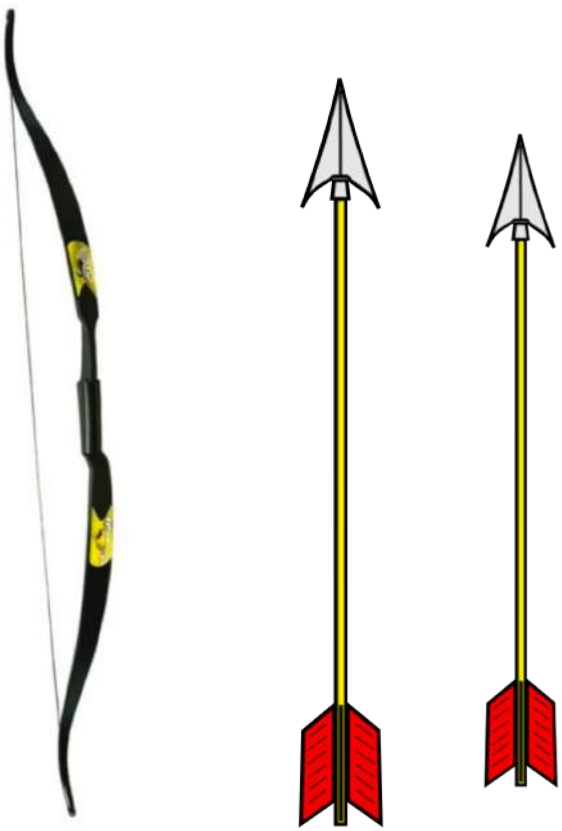
FIGURE 3 **Association Between Outcome and Early Dose of EPI and According to the Initial Rhythm**



	Overall			Shockable			Non-Shockable		
	Odds Ratio	[95%CI]	p-value	Odds Ratio	[95%CI]	p-value	Odds Ratio	[95%CI]	p-value
EPI-	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
2-5 mg	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 F, (2014) Is epinephrine during cardiac arrest associated with worse outcomes in resuscitated patients? J Am Coll Cardiol 64: 2360-2367

Thérapeutiques : Adrénaline



1. Pas d'injection sans regarder le scope !
2. Asystolie
3. Après 2 ou 3 CEE si persistance FV
4. Respect pharmacocinétique +++

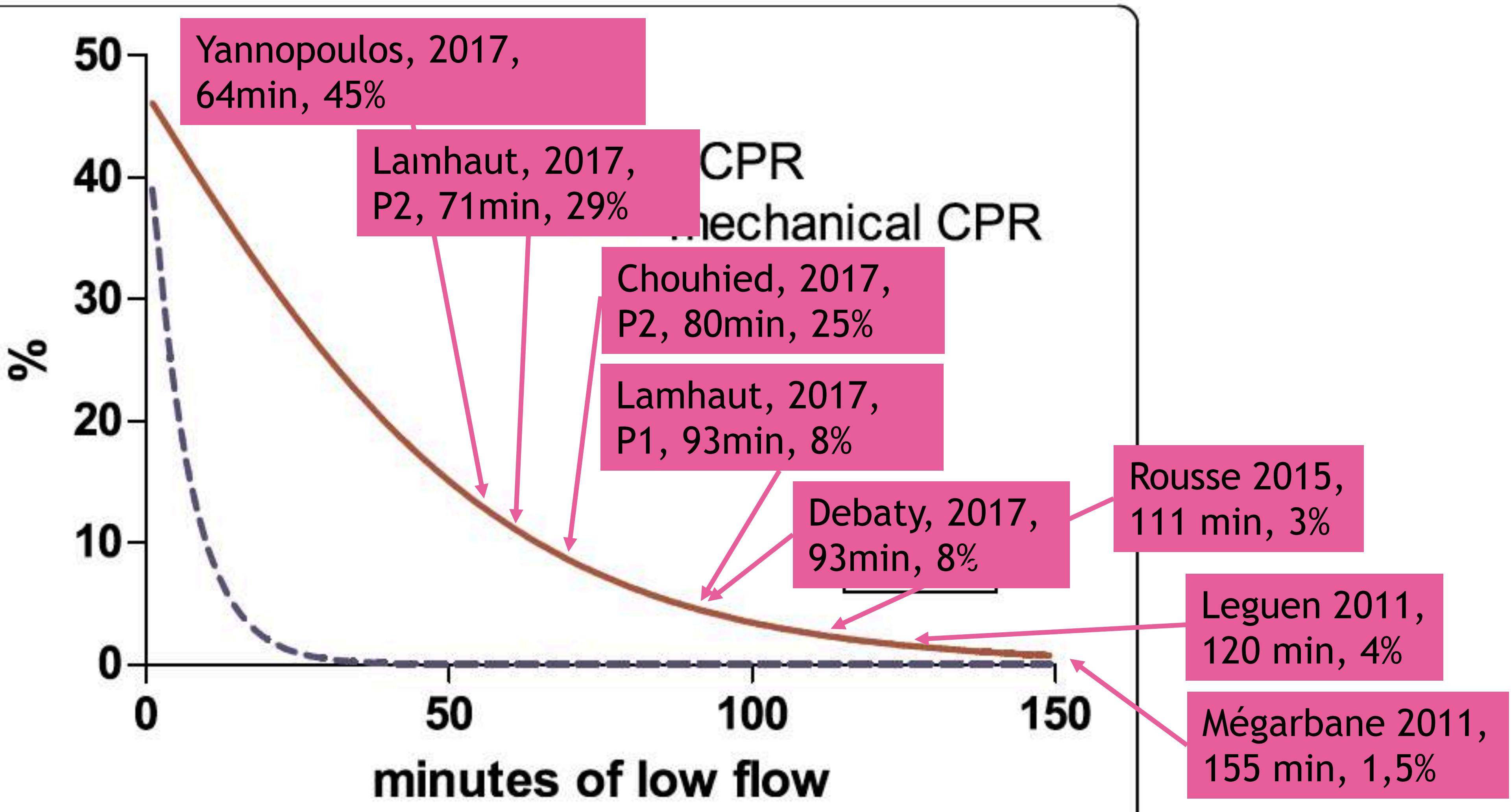
ECPR

Wengenmayer *et al. Critical Care* (2017) 21:157
DOI 10.1186/s13054-017-1744-8

Critical Care

RESEARCH Open Access

Influence of low-flow time on survival after extracorporeal cardiopulmonary resuscitation (eCPR)

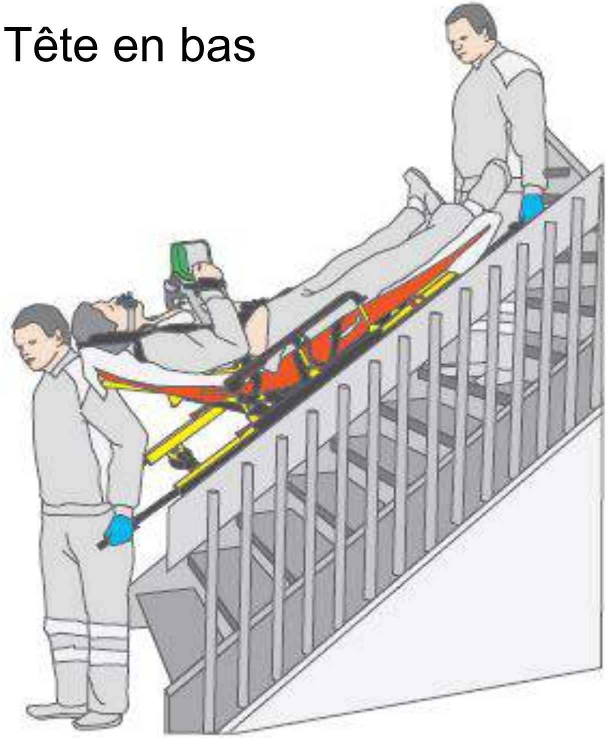


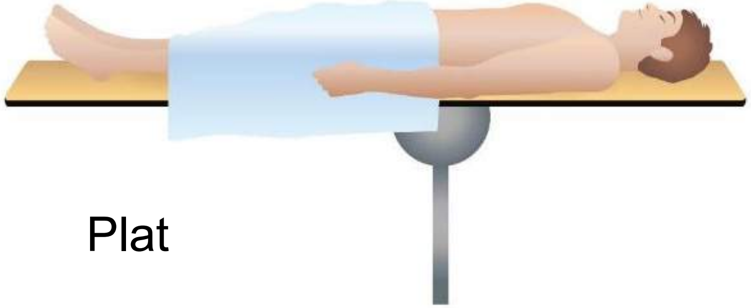
Améliorer la biophysique de la RCP

Inspiration: Un Problème en Corée du Sud

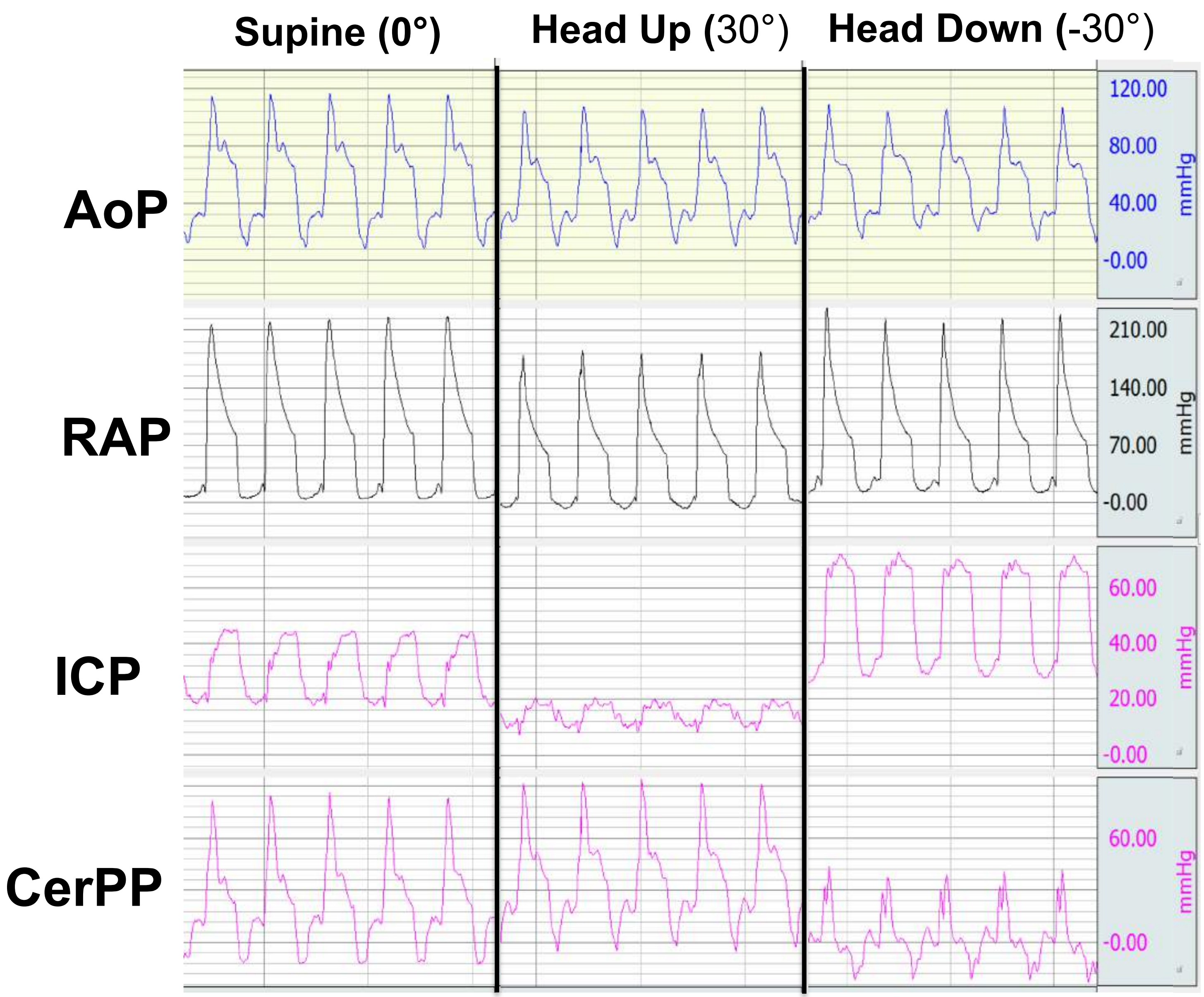
Quelle position pour la perfusion ?

Tête en bas

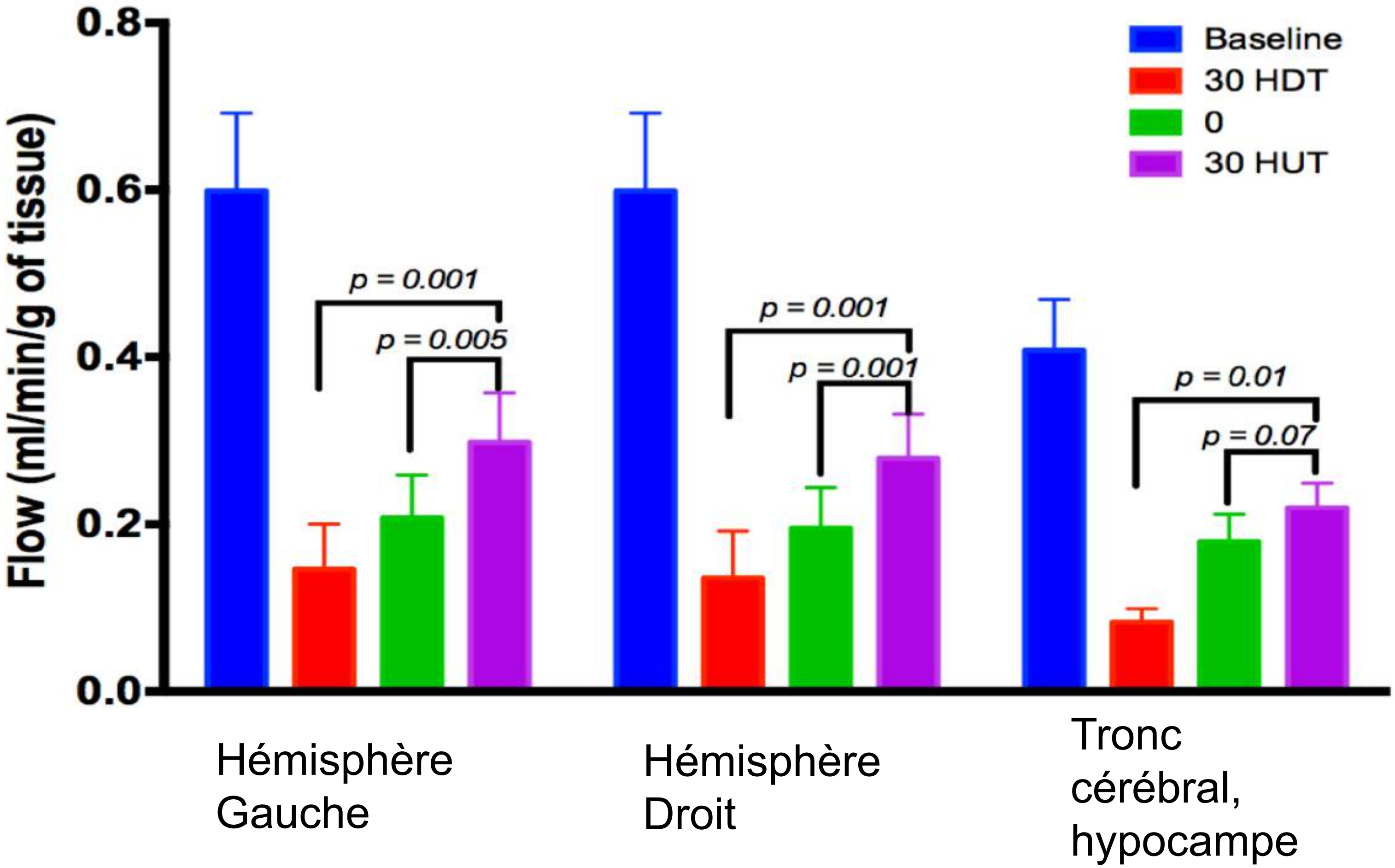




Plat



Debaty et al, Resuscitation 2014



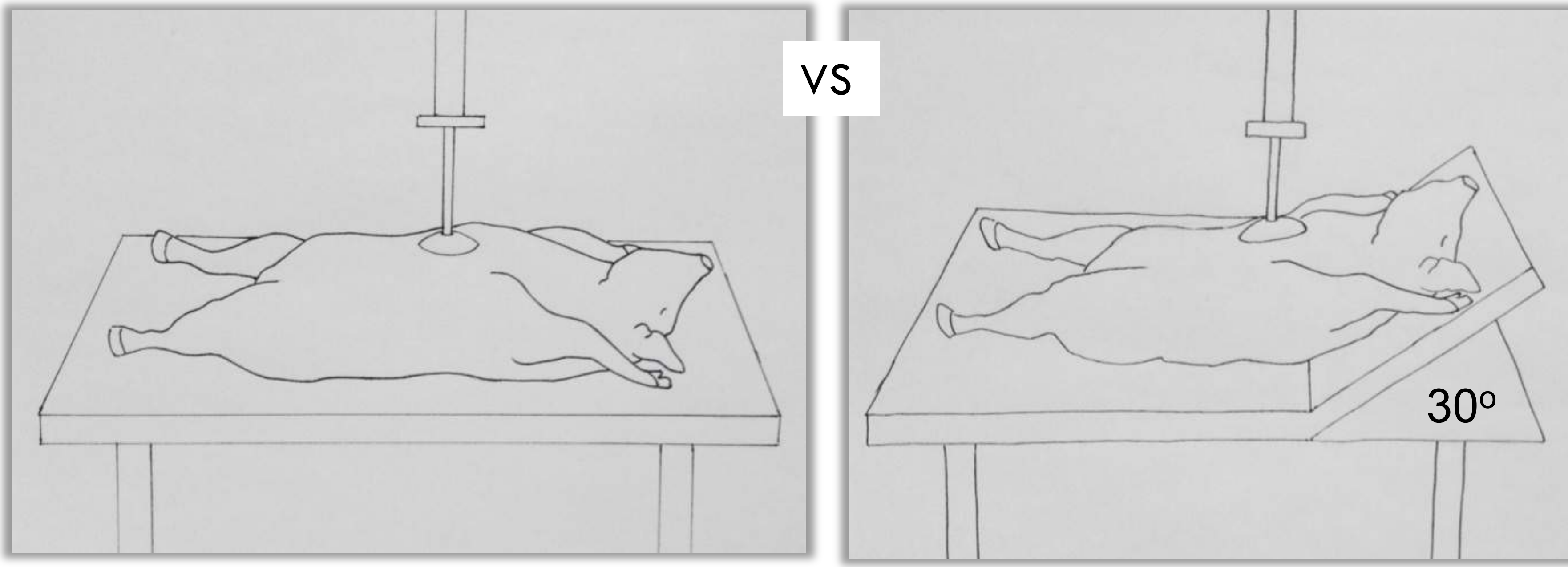
Pendant la RCP le débit cérébral est augmenté tête surélevée.

Debaty G et al. Relationship Between Hemodynamic Parameters and Brain Blood Flow During Cardiopulmonary Resuscitation. *Circulation* 2016; 134(Suppl 1): A14861-A.

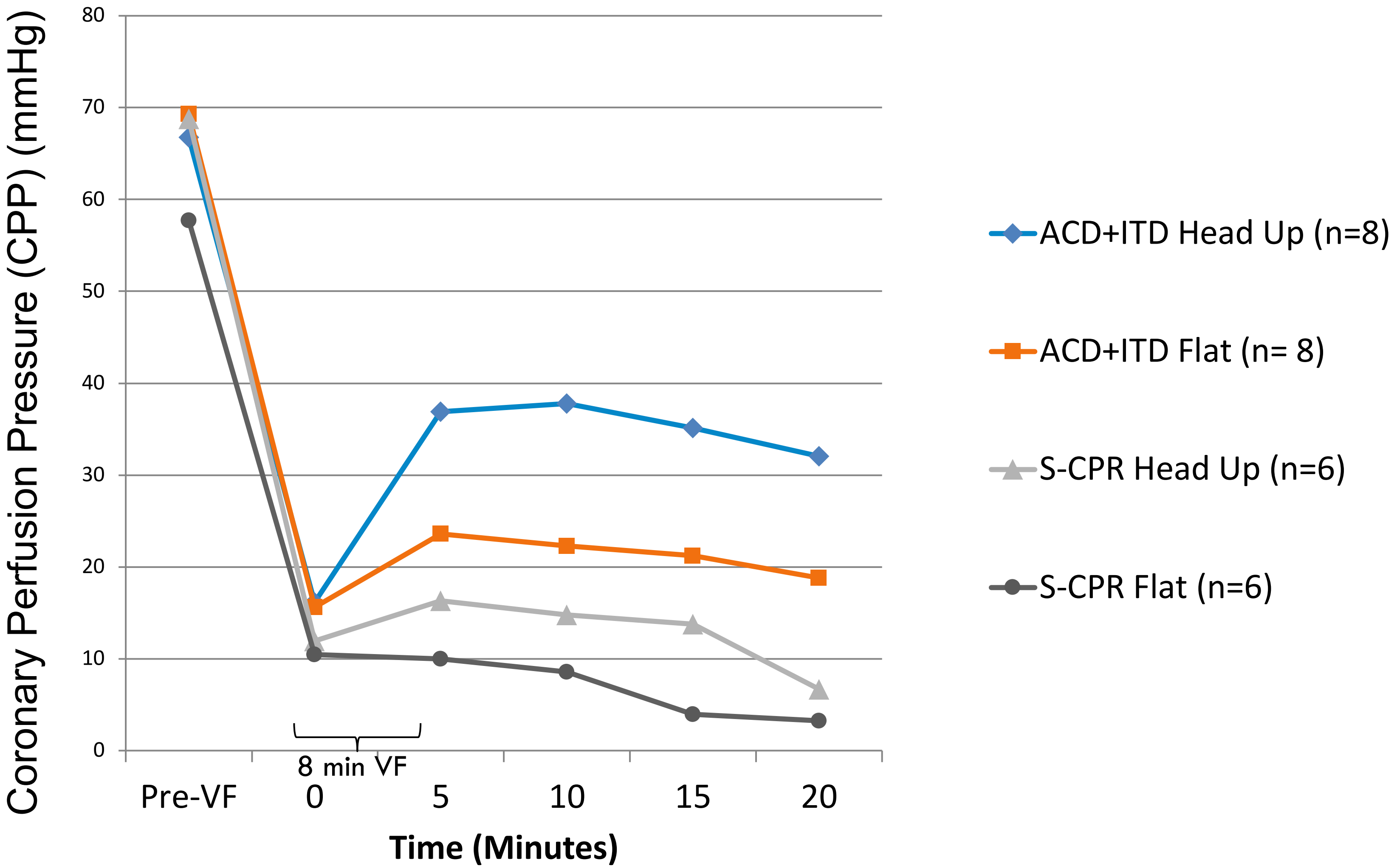
Tilt de l'ensemble du corps
vs.
Élévation de la tête et du thorax?

Un simple changement de position

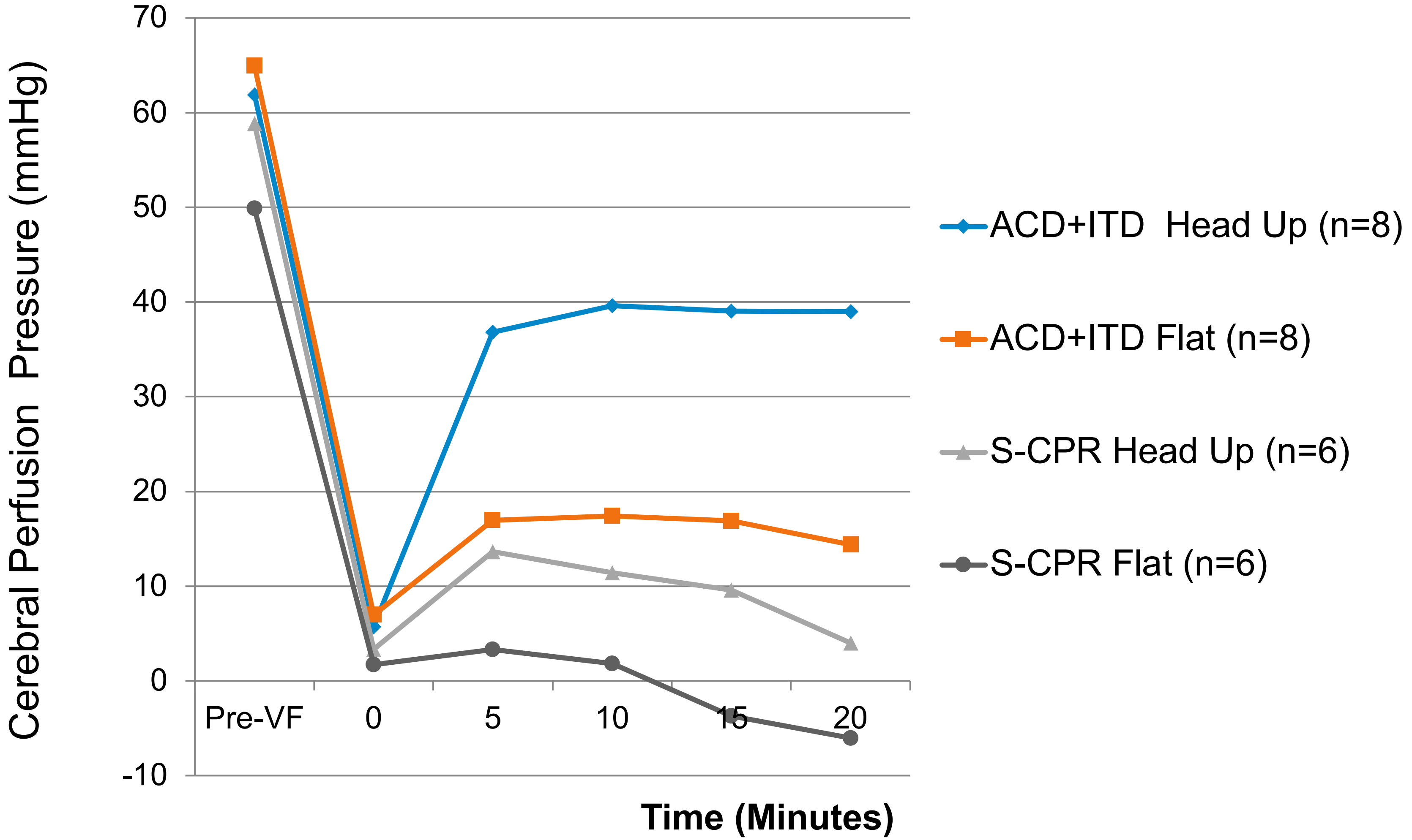
CDA+VII et RCP conventionnelle



FV non traité pendant 8 minutes
RCP standard à plat pendant 2 minutes
Randomisation entre RCP à plat vs. élévation de la tête et thorax pendant 20 min

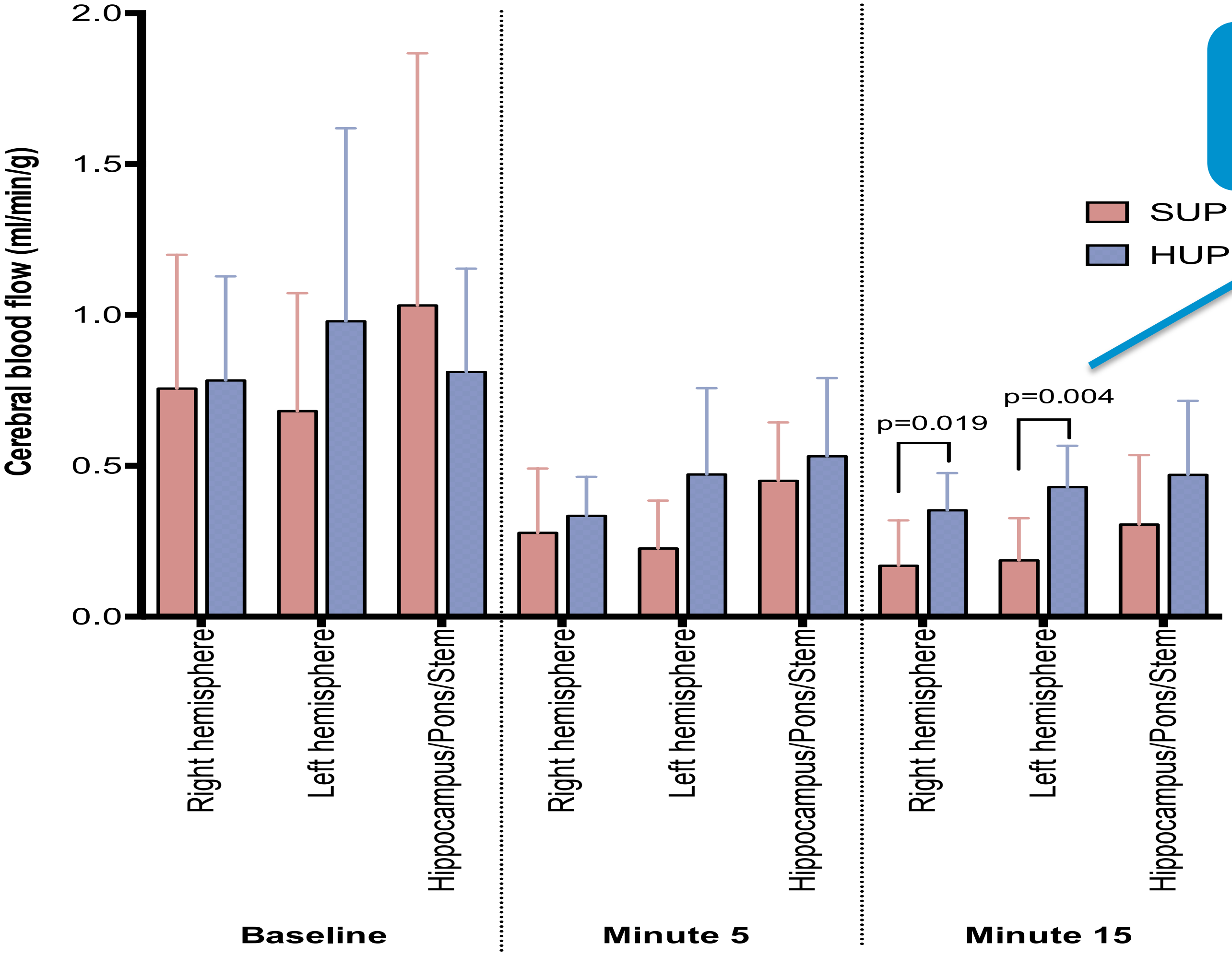


Ryu et al – Resuscitation 2016



Ryu et al – Resuscitation 2016

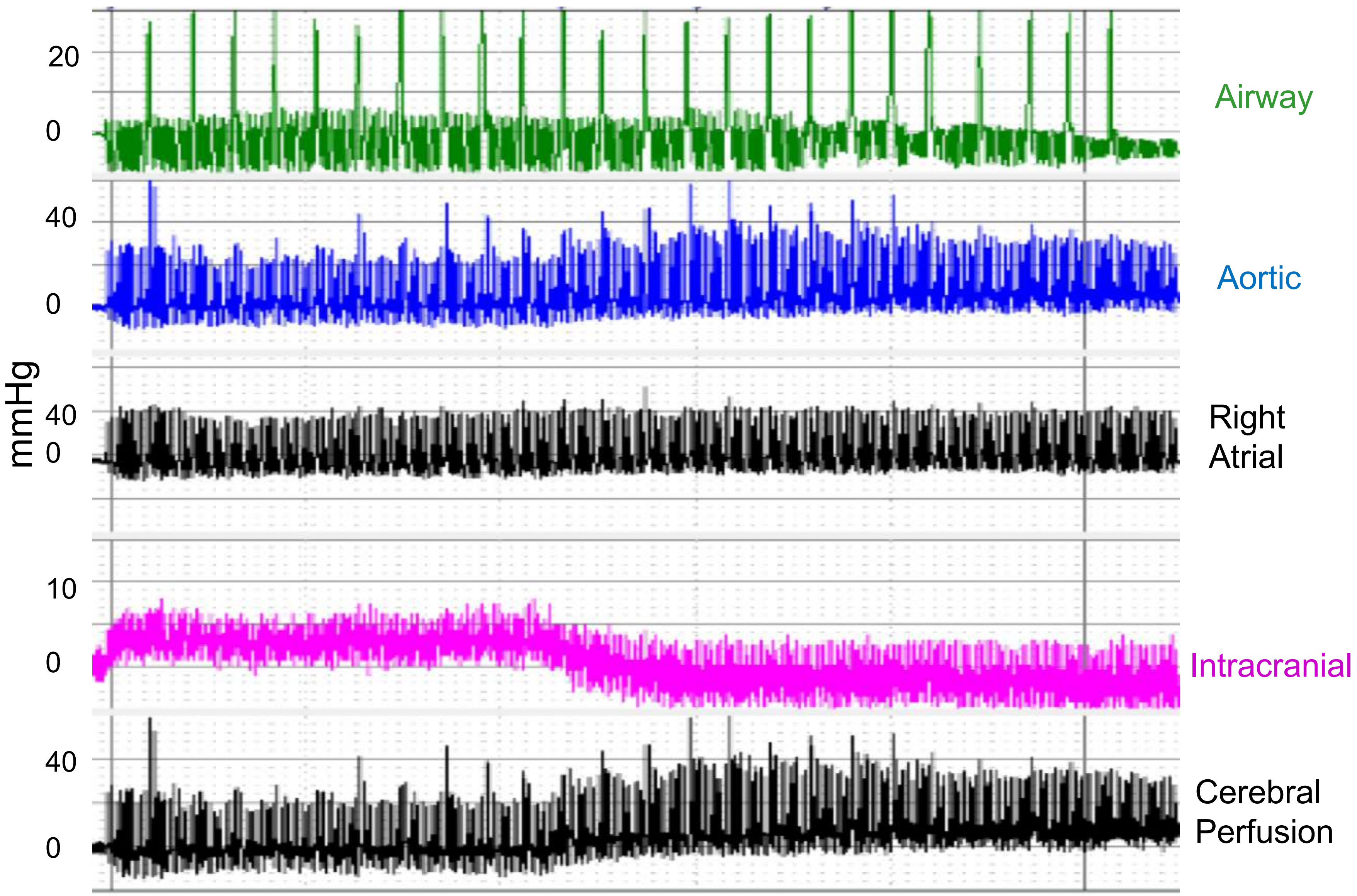
Augmentation de la perfusion cérébrale lors d'une RCP prolongée



25% vs. 50% du débit sanguin normal

Moore, et al 2017). Head and thorax elevation during active compression decompression cardiopulmonary resuscitation with an impedance threshold device improves cerebral perfusion in a swine model of prolonged cardiac arrest. *Resuscitation*, *121*, 195–200.

Pression : étude de RCP sur cadavre



Palm Beach County Florida
Expérience avec une RCP tête surélevée (2014-2015)

Changement de protocole en 2015

1) S’assurer de la bonne utilisation de la RCP automatisée
2) Oxygénation passive pendant les 1res 6 min
3) Utilisation de la VII
4) Surélever le brancard de 30° (élévation de la tête et du thorax

Pepe et al. How Would Use of Flow-Focused Adjuncts, Passive Ventilation and Head-Up CPR Affect All-Rhythm Cardiac Arrest Resuscitation Rates in a Large, Complex EMS System? Circulation. 2016;134:A15255-A15255.

Résultats du changement de protocole

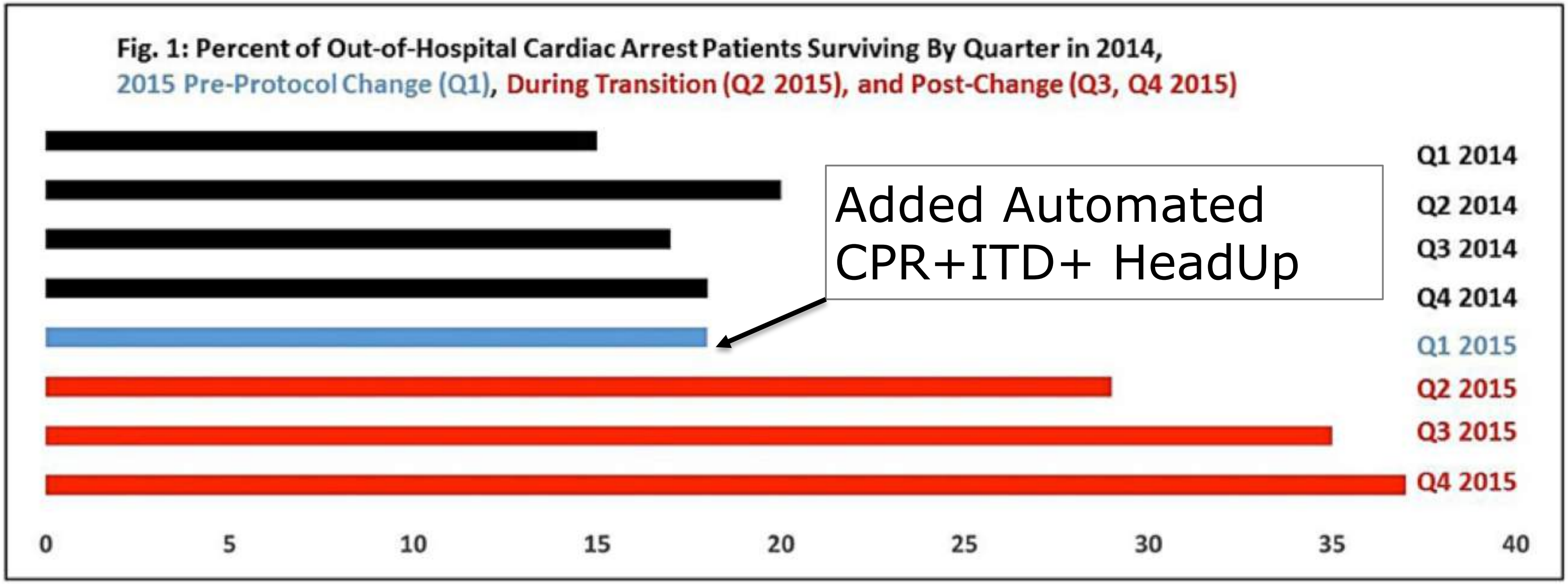
1,304 AC extra-hospitalier consécutif en 2014-15

La survie à l'admission à l'hôpital était stable en 2014 (**17.4%, range 15-20%**)

Avec le changement de protocole, Survie x 2 **(36.0%; range 35-37%).**

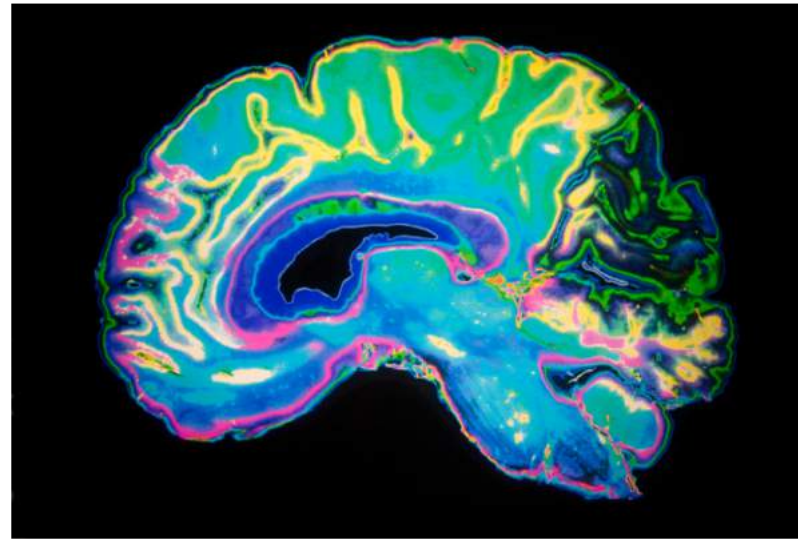
Amélioration dans tous les sous-groupes alors que les délais de réponse, la RCP par les témoins restaient inchangés.

"How Would Use of Flow-focused Adjuncts, Passive Ventilation and Head-Up CPR Affect All Rhythm Cardiac Arrest Resuscitation Rates in a Large, Complex EMS System?"



Pepe et al. How Would Use of Flow-Focused Adjuncts, Passive Ventilation and Head-Up CPR Affect All-Rhythm Cardiac Arrest Resuscitation Rates in a Large, Complex EMS System? Circulation. 2016;134:A15255-A15255.

Conclusion



Réanimation cardio-cérébrale