Printemps des urgences 2021

Optimiser l'utilisation de l'adrénaline dans la prise en charge de l'arrêt cardiaque ?

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Centre d'Investigation Clinique Plurithématique
UMR_S 1116: Défaillance Cardio-vasculaire Aigues et Chroniques

Conflits d’intérêts

Novartis, Roche, Air Liquide, Vygon, General Electric, Mindray


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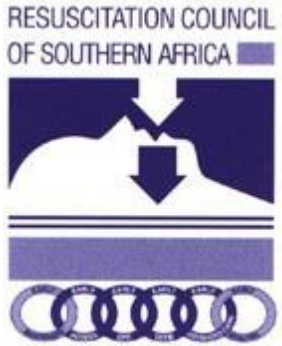
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International Liaison Committee
ILCOR
on Resuscitation


EUROPEAN
RESUSCITATION
COUNCIL


NEW ZEALAND
Resuscitation Council
WHAKAHAUORA AOTEAROA


American
Heart
Association
Learn and Live


Australian
Resuscitation Council

Comment répondre à la question ?

Est- ce que l'adrénaline fonctionne ?

Ne faut-il pas raccourcir les délais d'administration ?

Est ce que la dose de 1 mg est la bonne dose ?

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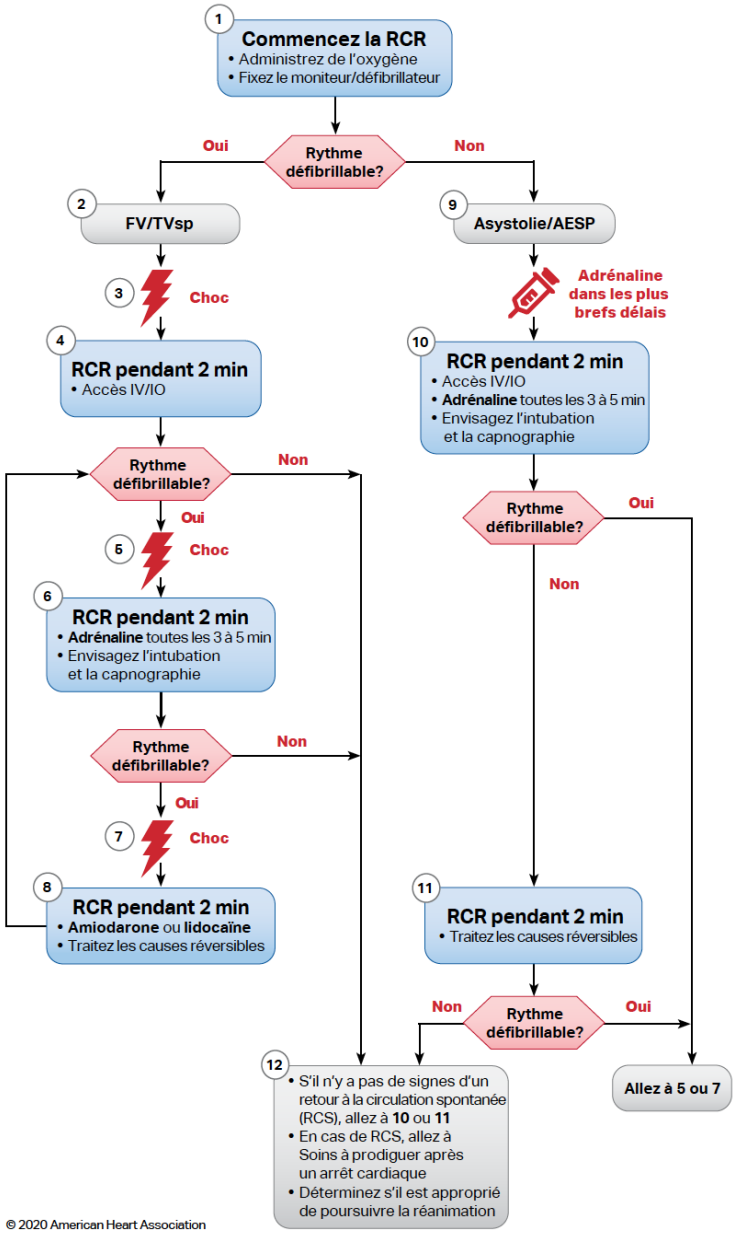
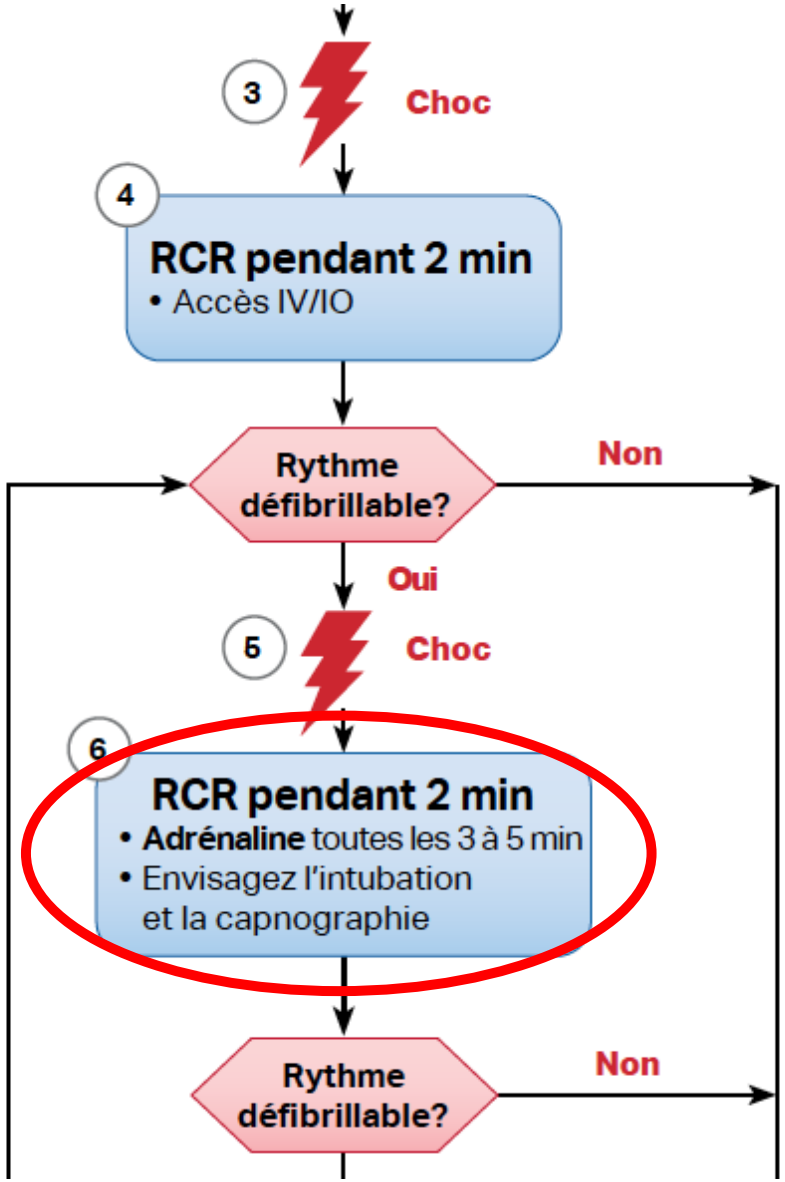
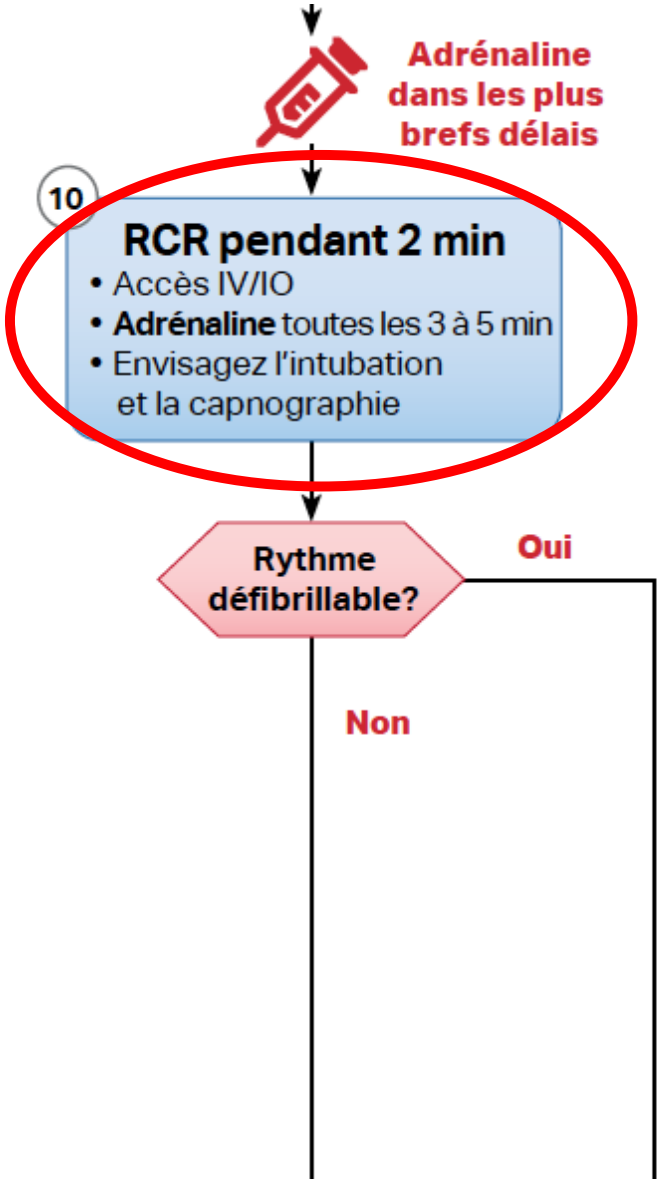
Figure 4. Algorithme de l'arrêt cardiaque chez l'adulte.







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JAMA, March 21, 2012—Vol 307, No. 11

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

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

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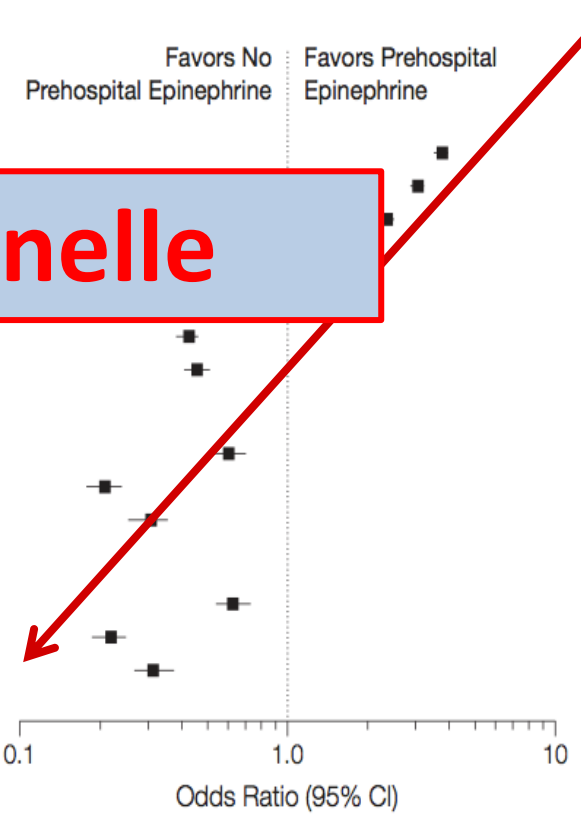
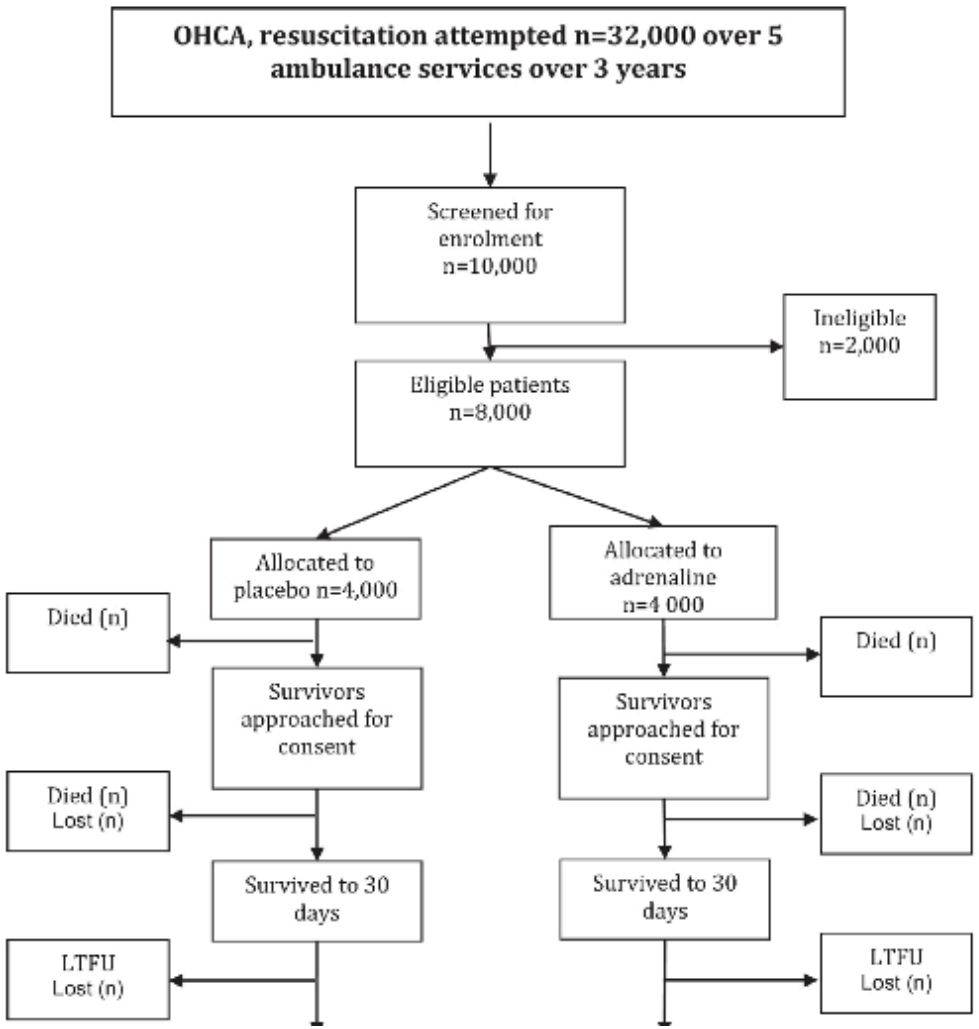
Unconditional Logistic Regression Analyses

Model	Total No. of Cases	No. (%) With Outcome: Epinephrine	No. (%) With Outcome: No Epinephrine	Odds Ratio (95% CI)
ROSC				
Unadjusted	417 155	2786 (18.5)	23 042 (5.7)	3.75 (3.59-3.91)
Adjusted for sele				
Adjusted for all c				
1-Month survival				
Unadjusted				
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)



Etude observationnelle



PARAMEDIC2

The Adrenaline Trial

A Randomized Trial of Epinephrine in Out-of-Hospital Cardiac Arrest

G.D. Perkins, C. Ji, C.D. Deakin, T. Quinn, J.P. Nolan, C. Scomparin, S. Regan, J. Long, A. Slowther, H. Pocock, J.J.M. Black, F. Moore, R.T. Fothergill, N. Rees, L. O'Shea, M. Docherty, I. Gunson, K. Han, K. Charlton, J. Finn, S. Petrou, N. Stallard, S. Gates, and R. Lall, for the PARAMEDIC2 Collaborators*

Variable	Epinephrine (N=4015)	Placebo (N=3999)
Interval between emergency call and ambulance arrival at scene		
No. of patients in analysis	4015	3999
Median (IQR) — min†	6.7 (4.3–9.7)	6.6 (4.2–9.6)
Return of spontaneous circulation — no. (%)		
Yes	1457 (36.3)	468 (11.7)
No	2518 (62.7)	3492 (87.3)
Missing data	40 (1.0)	39 (1.0)
Transportation of patient to hospital — no. (%)		
Yes	2041 (50.8)	1227 (30.7)
No	1974 (49.2)	2772 (69.3)

A Randomized Trial of Epinephrine in Out-of-Hospital Cardiac Arrest

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)
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)

A Randomized Trial of Epinephrine in Out-of-Hospital Cardiac Arrest

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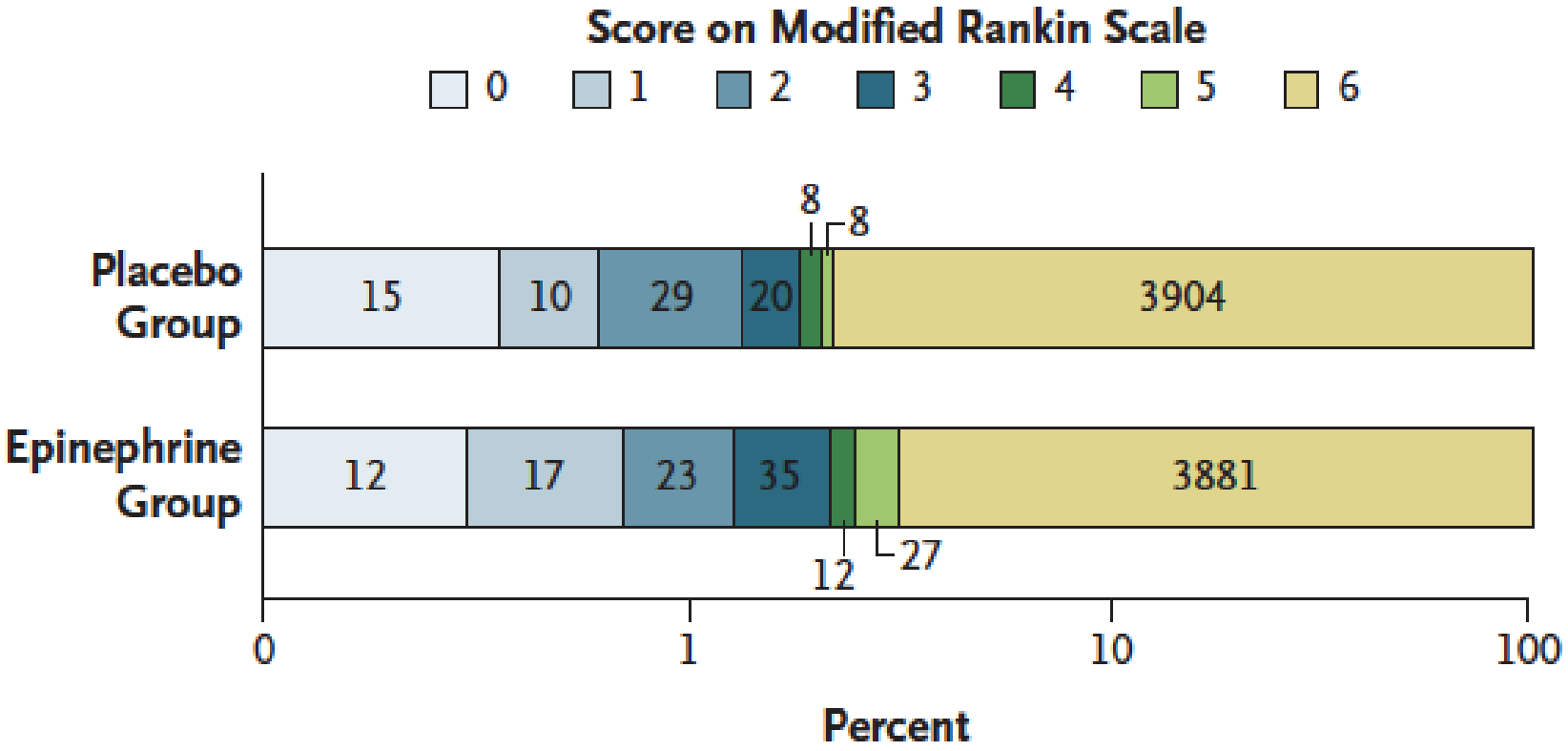

Au total ….

Return of Spontaneous Circulation (ROSC)

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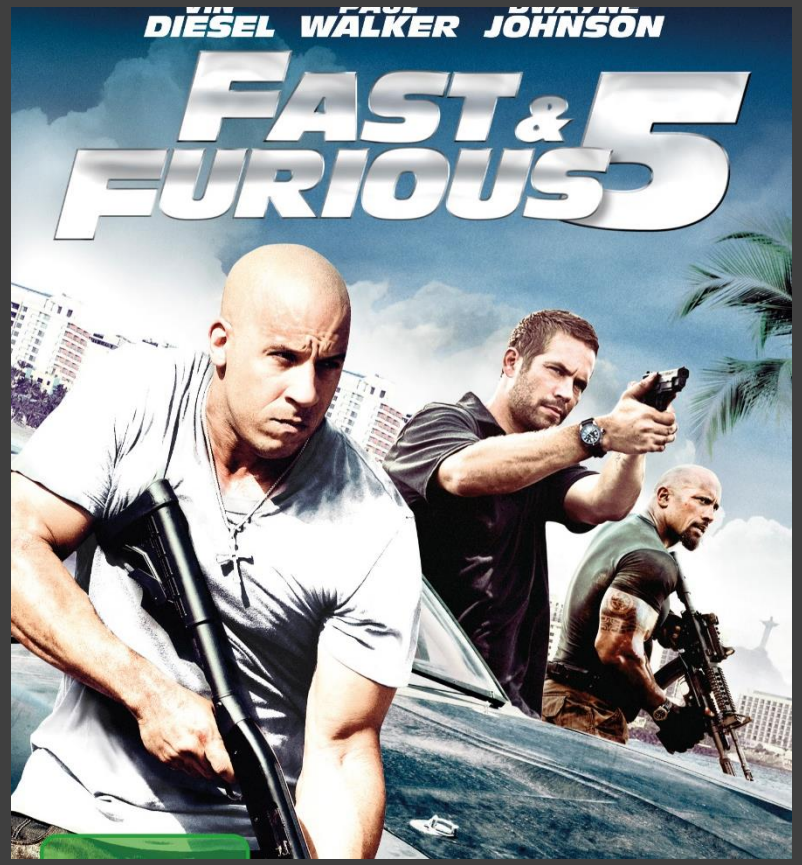

Shock, Publish Ahead of Print

DOI: 10.1097/SHK.0000000000001731

Timing of intravenous epinephrine administration during out-of-hospital cardiac arrest

Tatsuma Fukuda[1*], Naoko Ohashi-Fukuda[2], Ryota Inokuchi[3], Yutaka Kondo[4,5], Takayuki Taira[1,6], Ichiro Kukita[1]

Adrénaline .. Plus précoce ….

Timing of intravenous epinephrine administration during out-of-hospital cardiac arrest

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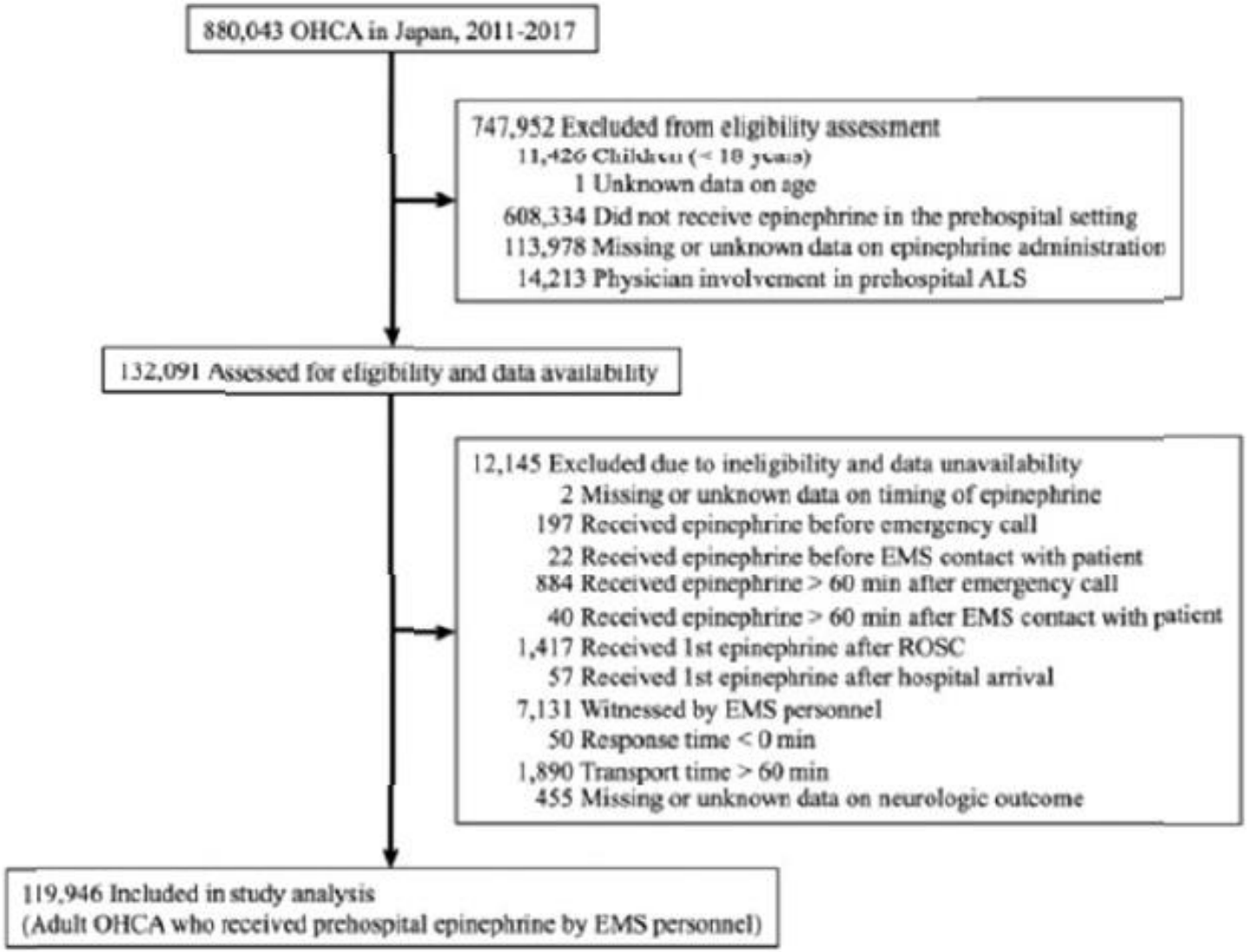

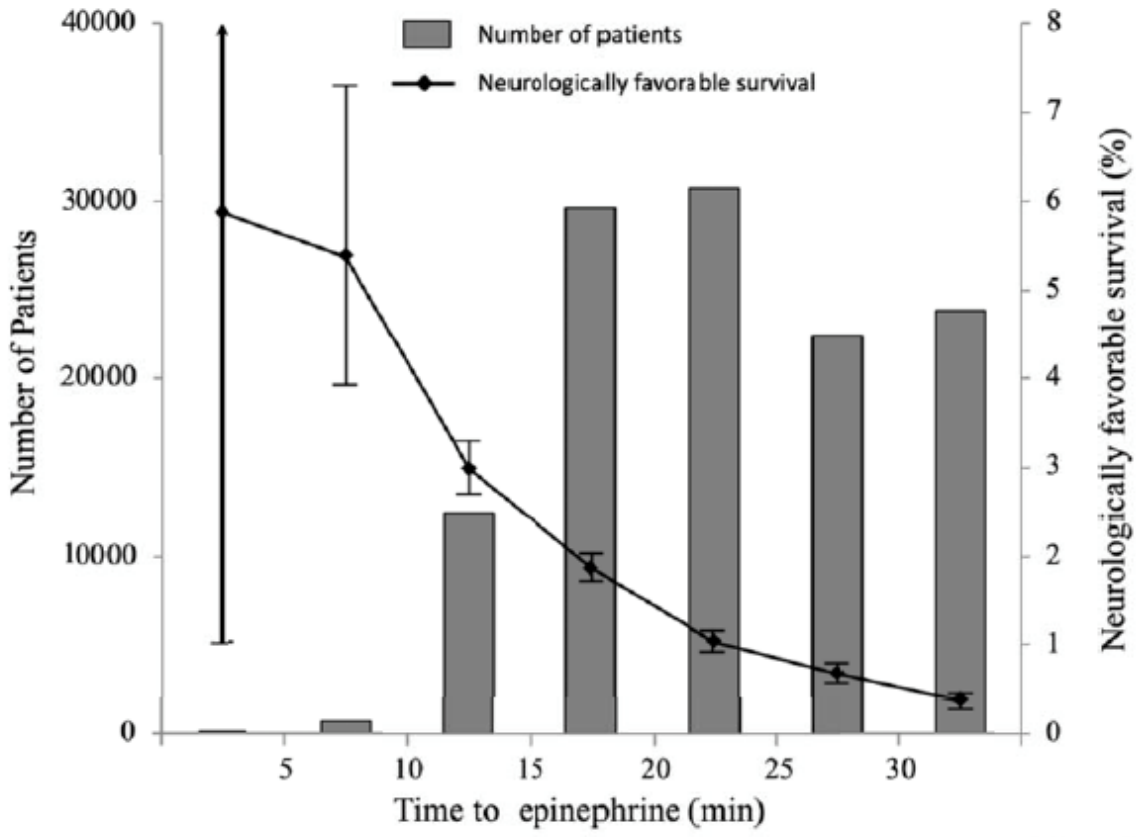

								P for trend
ROSC - No.	4	212	3140	6749	5635	3357	2926	< 0.0001
Survivors - No.	3	85	1036	1801	1384	672	392	< 0.0001
CPC 1 or 2 - No.	1	38	371	549	315	149	85	< 0.0001

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Tatsuma Fukuda[1*], Naoko Ohashi-Fukuda[2], Ryota Inokuchi[3], Yutaka Kondo[4,5], Takayuki Taira[1,6], Ichiro Kukita[1]

Figure 2. Number of patients and unadjusted favorable outcomes according to 5-minute intervals of time to epinephrine administration

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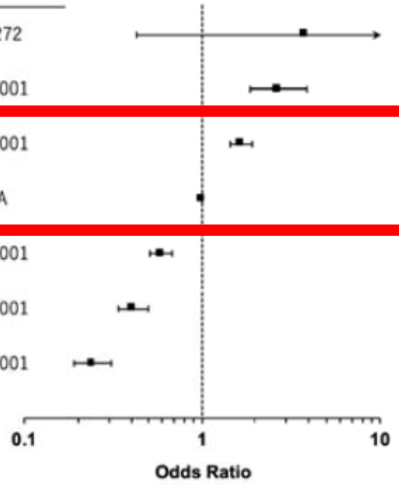
Figure 3. Adjusted neurologically favorable survival according to 5-minute intervals of time to epinephrine administration

Graded inverse associations were observed between time to epinephrine administration and one-month neurologically favorable survival.

Abbreviations: CI, Confidence interval; OR, Odds ratio

Neurologically favorable survival

Time to epinephrine	Adjusted OR (95% CI)	P value
0 - 5 minutes	3.81 (0.43-33.35)	0.2272
6 - 10 minutes	2.70 (1.86-3.90)	<0.0001
11 - 15 minutes	1.66 (1.44-1.91)	<0.0001
16 - 20 minutes	Ref	NA
21 - 25 minutes	0.59 (0.51-0.68)	<0.0001
26 - 30 minutes	0.41 (0.34-0.50)	<0.0001
> 30 minutes	0.24 (0.19-0.31)	<0.0001



Au total ….

Comment répondre à la question ?

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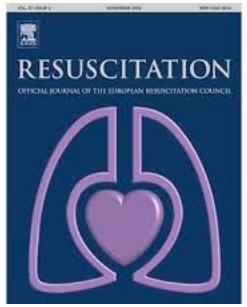
Lower-dose epinephrine administration and out-of-hospital cardiac arrest outcomes☆

Cameron A. Fisk[a], Michele Olsufka[b], Lihua Yin[c], Andrew M. McCoy[c], Andrew J. Latimer[c], Charles Maynard[d], Graham Nichol[e], Jonathan Larsen[f], Leonard A. Cobb[b], Michael R. Sayre[c,f,*]



October 1, 2012,
0.5 mg at 4 and 8 min followed by additional doses of 0.5 mg every 8 min for shockable rhythms
0.5 mg every 2 min for non-shockable rhythms (lower dose).

Adjusted analysis

	Shockable			Non-Shockable		
	aOR	95% CI	P-value	aOR	95% CI	P-value
Sustained ROSC	0.85	0.60–1.21	0.364	1.07	0.87–1.31	0.527
Survival to discharge	0.91	0.62–1.32	0.606	1.26	0.79–2.01	0.33
Favorable neurological outcome	0.84	0.57–1.24	0.377	1.17	0.68–2.02	0.577

Values are n (%).
Adjusted odds ratios (aOR) reported as transitioning from higher dose to lower dose.
ROSC = return of spontaneous circulation

Resuscitation 2018

Lower-dose epinephrine administration and out-of-hospital cardiac arrest outcomes☆

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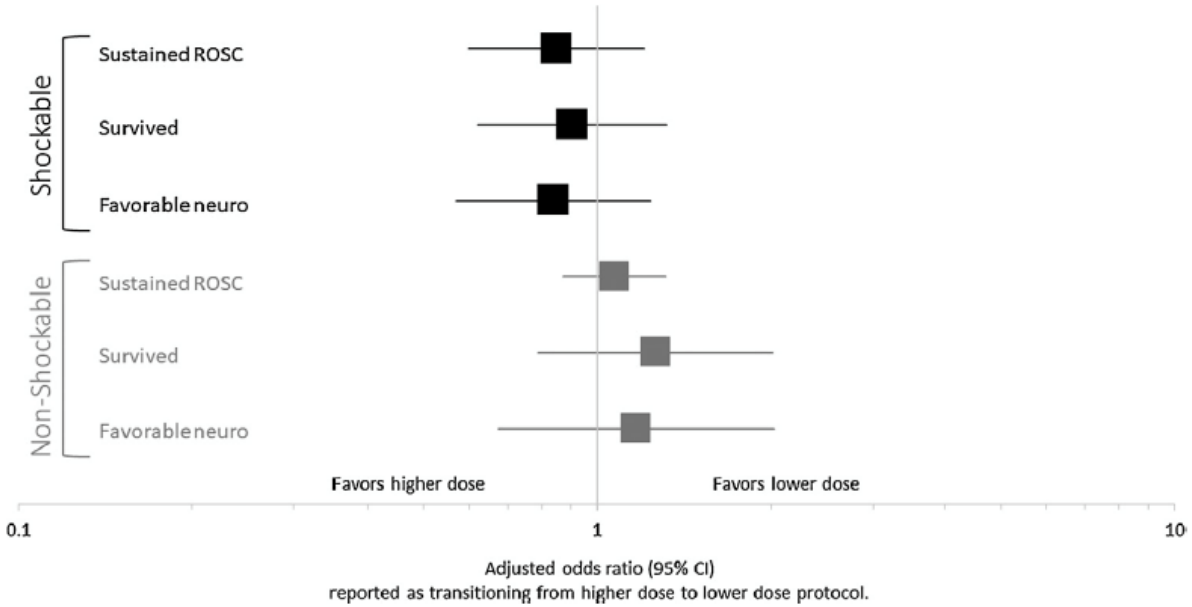
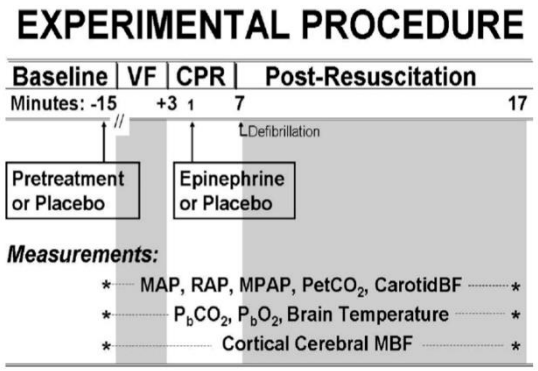


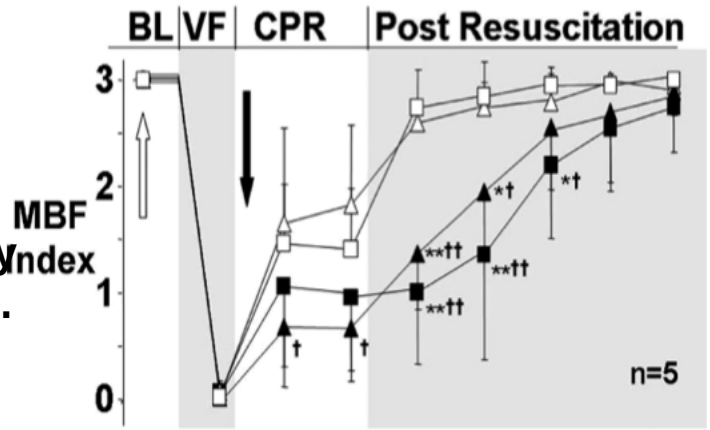
Fig. 3. Logistic regression adjusted odds ratios for select outcomes.

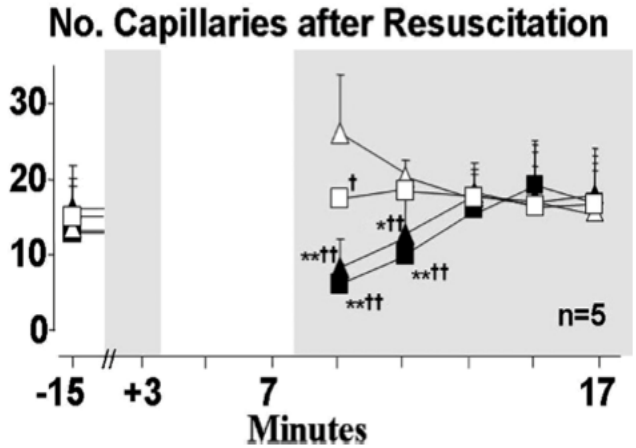
Epinephrine reduces cerebral perfusion during cardiopulmonary resuscitation

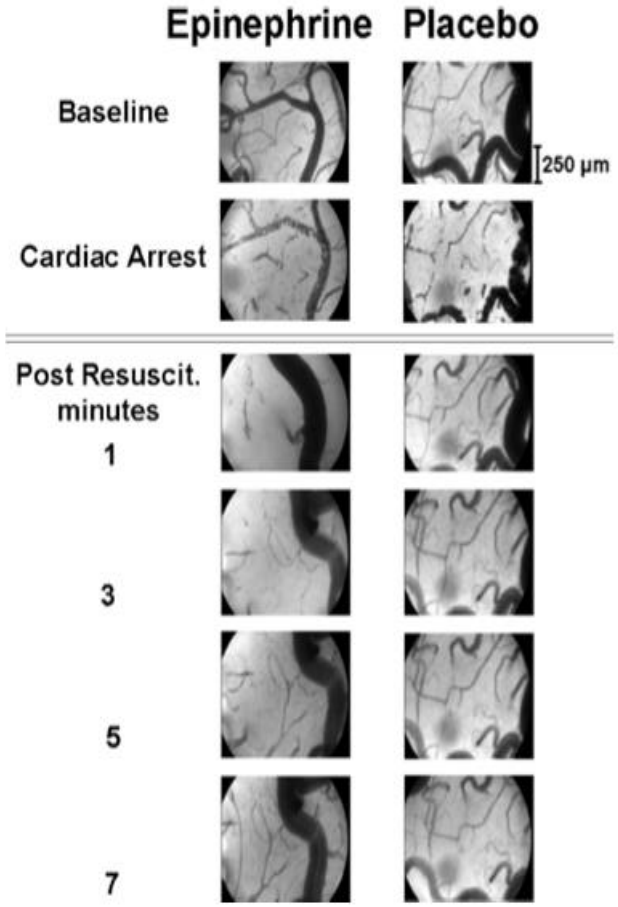
Ristagno G, et al. Crit Care Med. 2009;37:1408-15

Hypothezis: **epinephrine selectively decreases microvascular flow**
Design: **Randomized prospective animal study**
Subjects: **Domestic pigs.**









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OUI…..

Ne faut-il pas raccourcir les délais d'administration ?

Sûrement…

Est-ce que la dose de 1 mg est la bonne dose ?

Des Etudes vont débuter …