CARDIO RUN 2024

16ème CONGRÈS DE PATHOLOGIE CARDIO-VASCULAIRE

Hôtel Saint Alexis
ILE DE LA RÉUNION
France

18-19-20 SEPTEMBRE 2024

COMITÉ SCIENTIFIQUE

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Ashok TIROUVANZIAM (Nantes)

CARDIORUN.ORG

ORGANISATION GÉNÉRALE

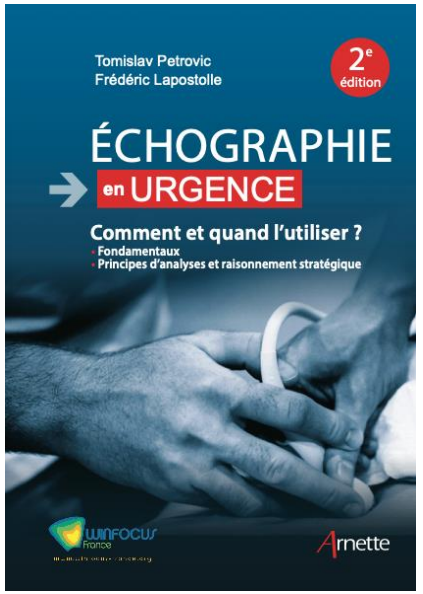
MCO CONGRÈS - **Contacts :** julie.faber@mcocongres.com - aurore.davy@mcocongres.com - www.mcocongres.com

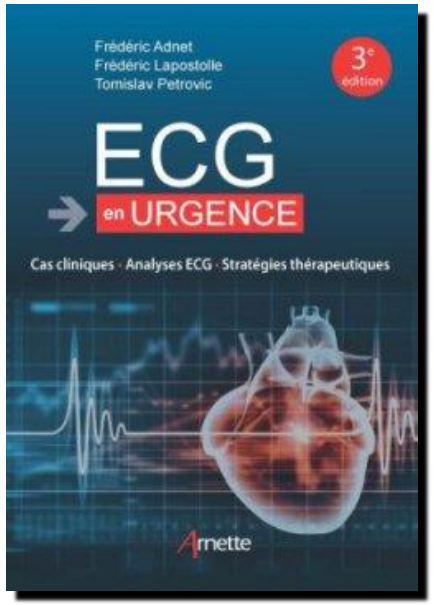
Disclosures

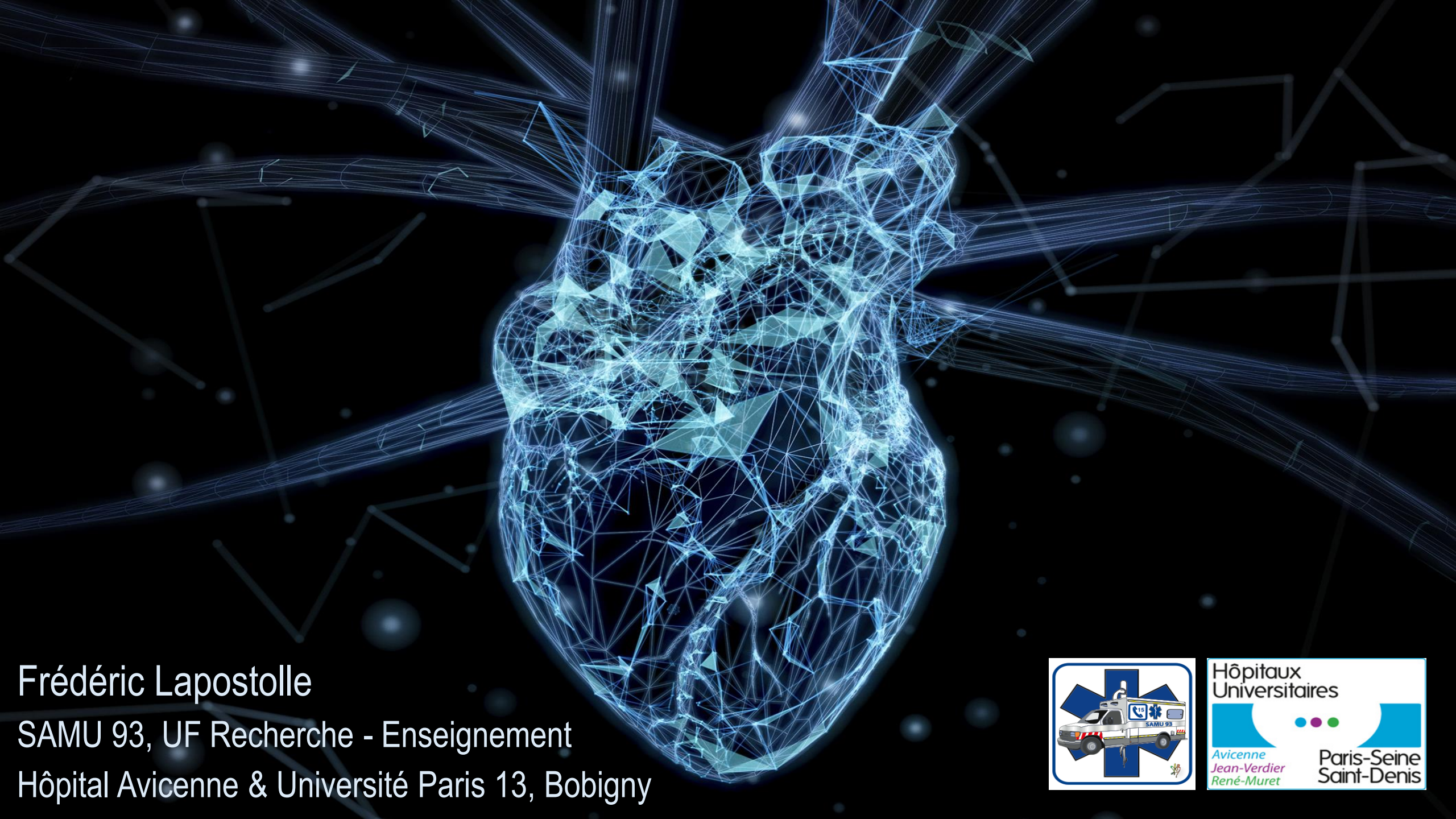
Conferences : Boehringer-Ingelheim, Mundipharma, Nova-Biomedical, Serb, Teleflex

Investigator – Researsh : Mundipharma, Serb, Teleflex

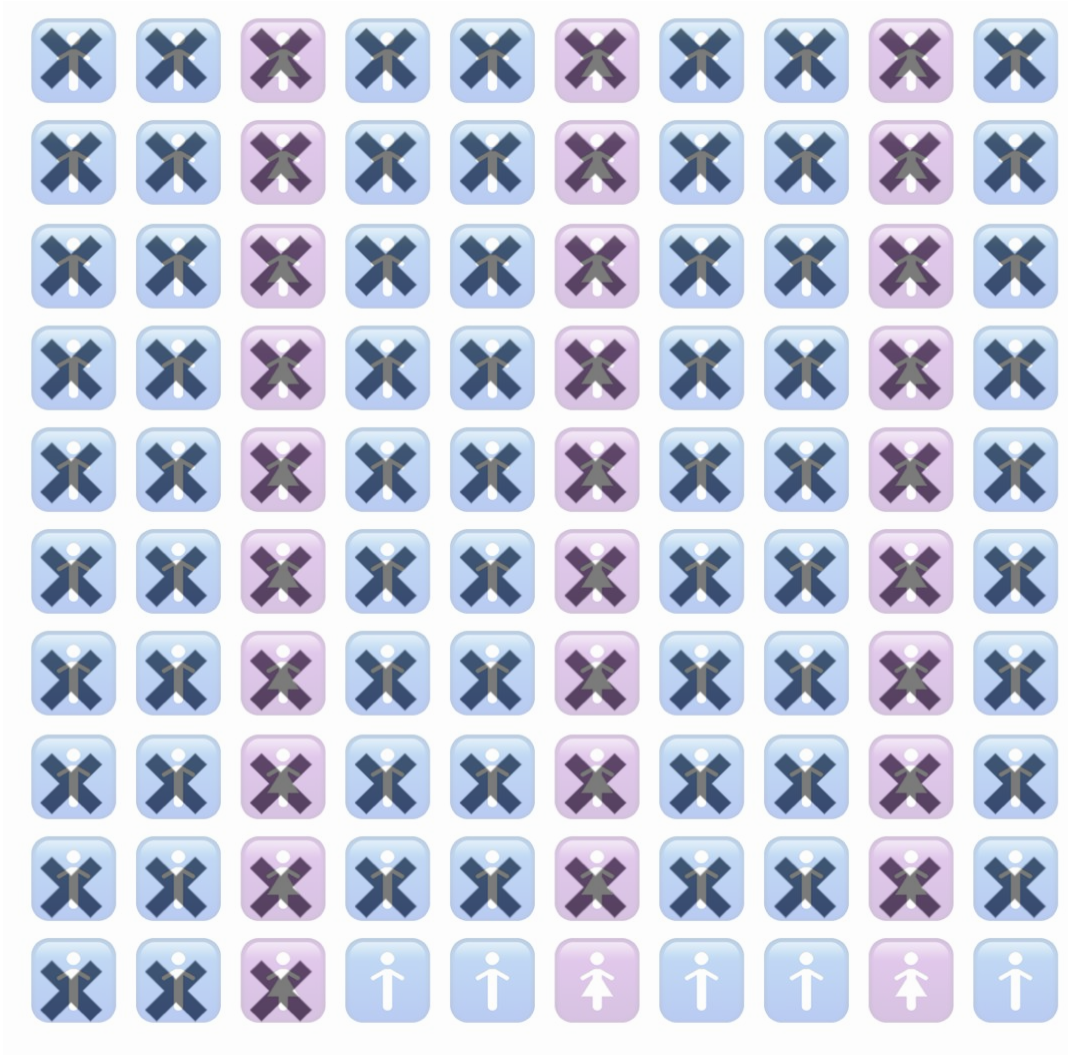
FORMATION SANTÉ EDUPRAT



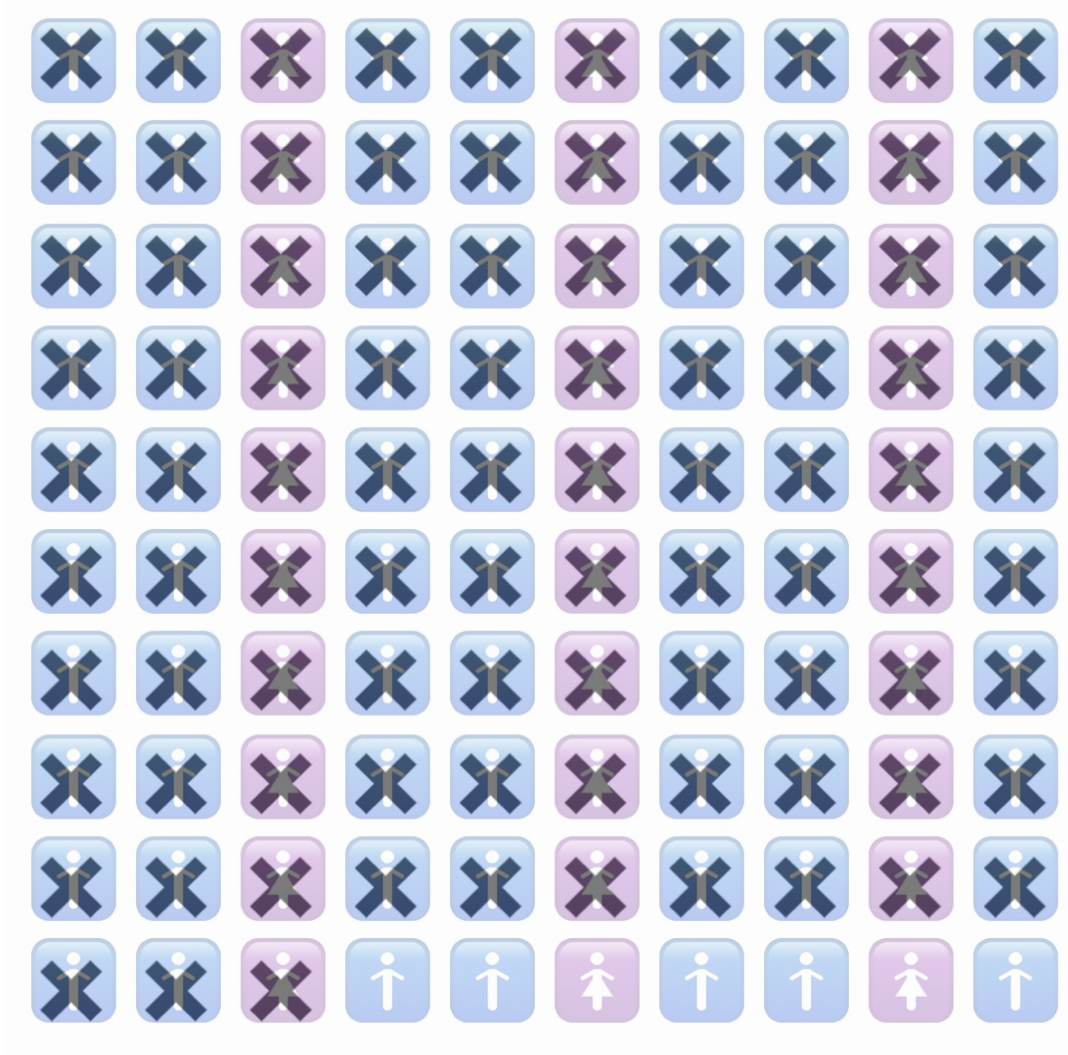


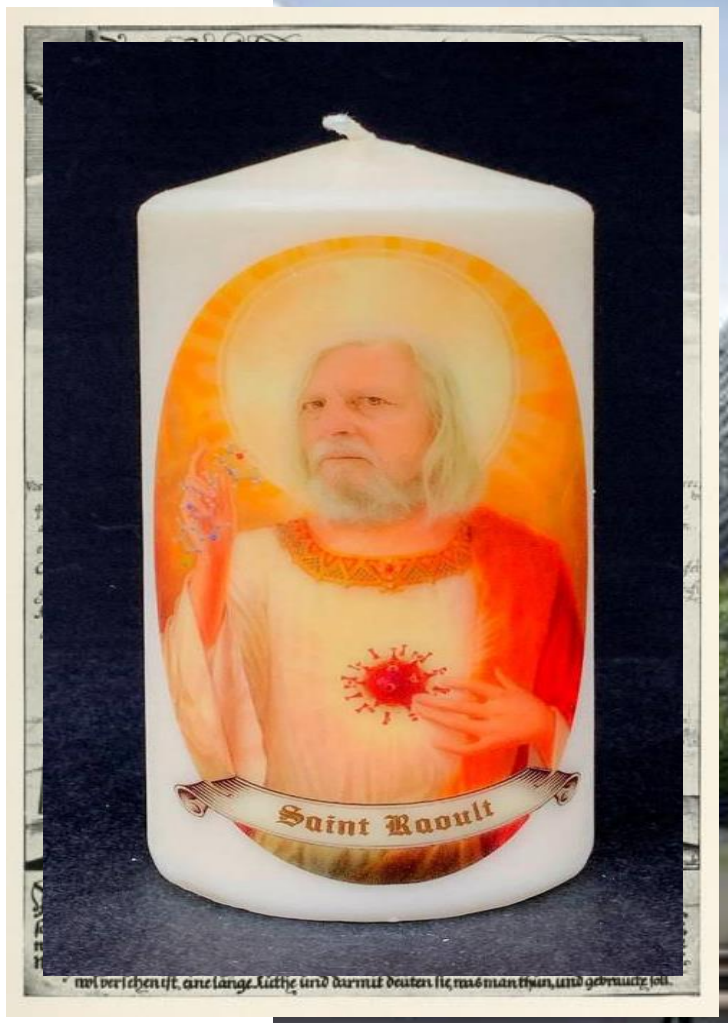


Frédéric Lapostolle
SAMU 93, UF Recherche - Enseignement
Hôpital Avicenne & Université Paris 13, Bobigny



DAMC	Education	Hypothermie	Angioplastie	ECMO	bation
					
					




Saint Raoult

Plaquenil® 200 mg
filmomhulde tabletten
hydroxychloroquinesulfaat
Voor oraal gebruik
30 filmomhulde tabletten

Réanimation
DOI 10.1007/s13546-016-1210-7

MISE AU POINT / *UPDATE*

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

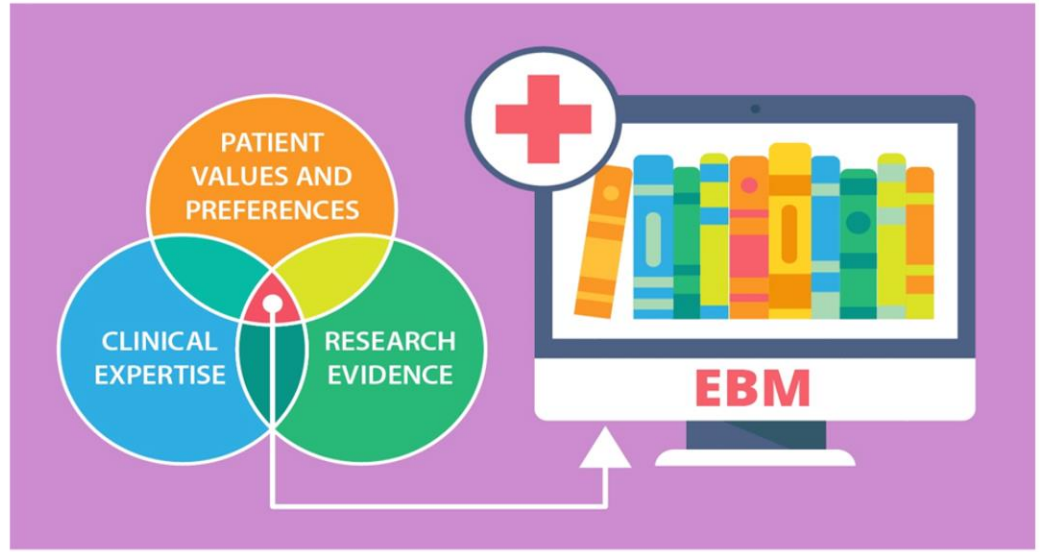


Fig. 1 LUCAS® (Lund University Cardiac Arrest System) de la société Medtronic™. Crédit photo : JMA–Samu 93

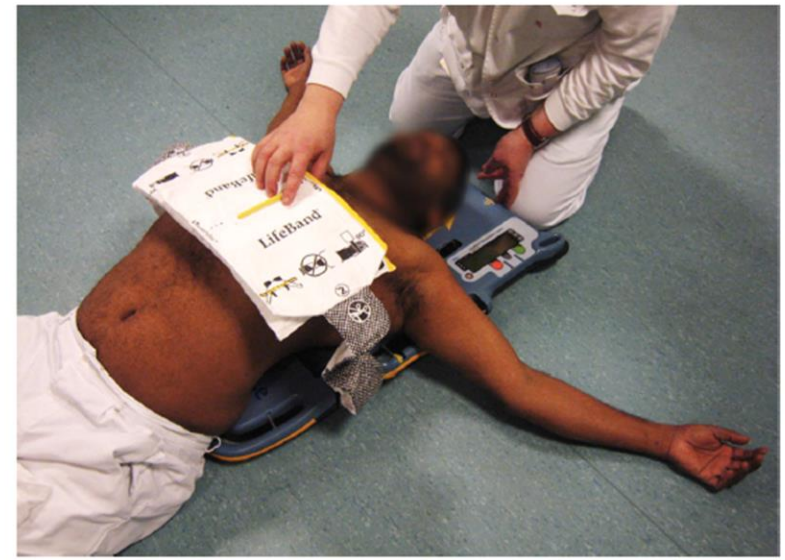


Fig. 2 Autopulse® fabriqué par Zoll™. Crédit photo : JMA–Samu 93

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 hospital

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-

JAMA®
The Journal of the American Medical Association

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

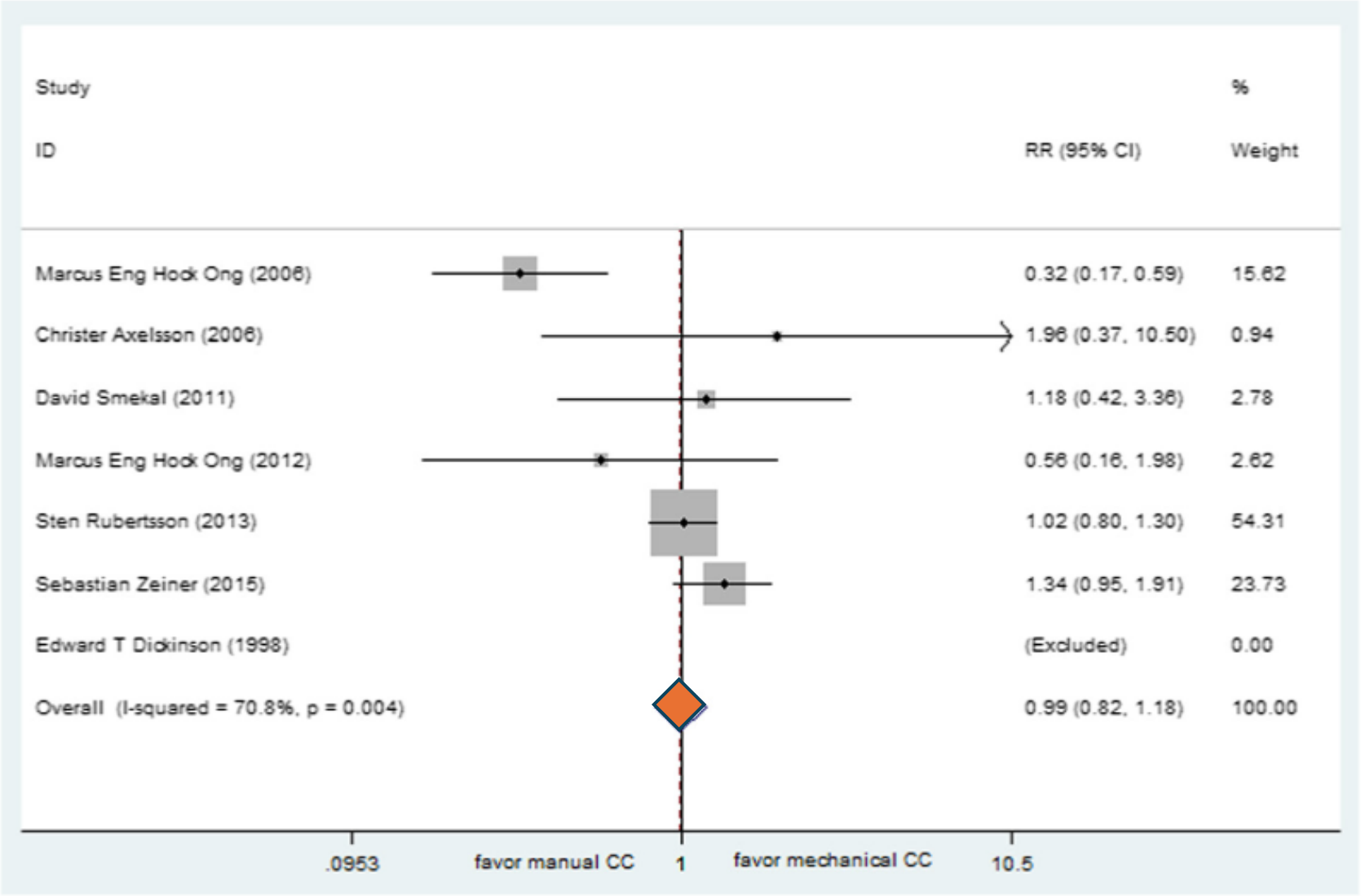


Fig. 5 Effect of manual chest compression and mechanical chest compression on survival to hospital discharge for OHCA patients

Li, *Scand J Emerg Med*, 2016


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.

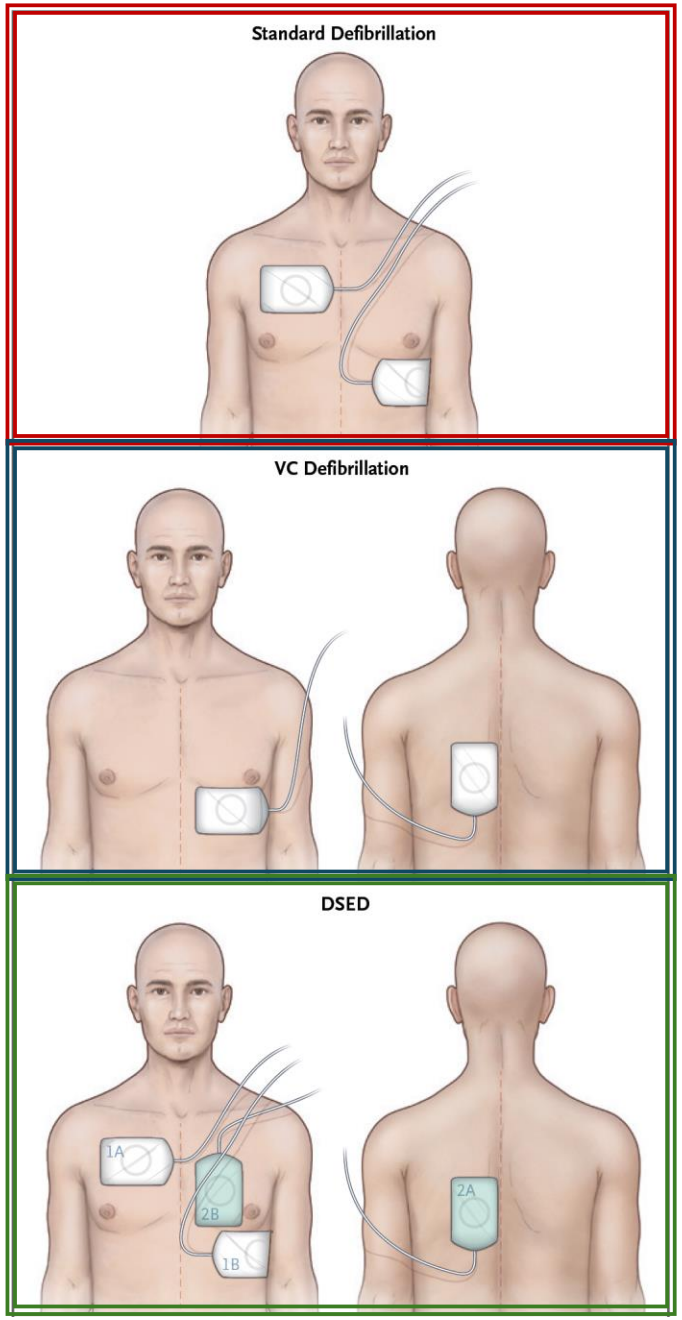
†Intervals from collapse to intervention could not be calculated for unwitnessed arrests.

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.



after which defibrillation was provided. For all patients, the first three defibrillation attempts occurred with defibrillation pads placed in the anterior–lateral position (standard defibrillation).

450 Patients were assessed for eligibility

45 Were excluded
19 Did not have VF as presenting rhythm
14 Had VF terminated before third shock
3 Had DNR order in place
9 Were not treated by participating paramedic service

405 Underwent randomization

136 (33.6%) Were assigned to standard defibrillation
135 Received standard defibrillation
1 Received DSED

144 (35.6%) Were assigned to VC defibrillation
113 Received VC defibrillation
31 Received standard defibrillation

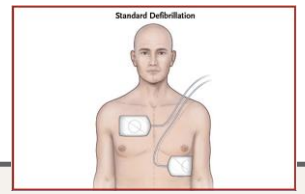
125 (30.9%) Were assigned to DSED
107 Received DSED
16 Received standard defibrillation
2 Received VC defibrillation

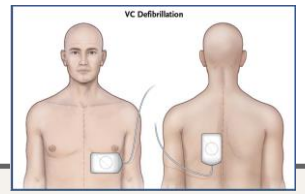
92 (67.6%) Had VF termination
36 (26.5%) Had ROSC at any time
15 (11.2%) Had modified Rankin scale score ≤2
18 (13.3%) Survived to hospital discharge

115 (79.9%) Had VF termination
51 (35.4%) Had ROSC at any time
23 (16.2%) Had modified Rankin scale score ≤2
31 (21.7%) Survived to hospital discharge

105 (84.0%) Had VF termination
58 (46.4%) Had ROSC at any time
34 (27.4%) Had modified Rankin scale score ≤2
38 (30.4%) Survived to hospital discharge

Cheskes, NEJM, 2022





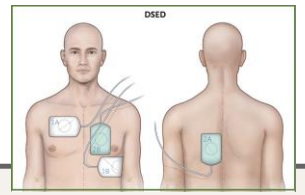
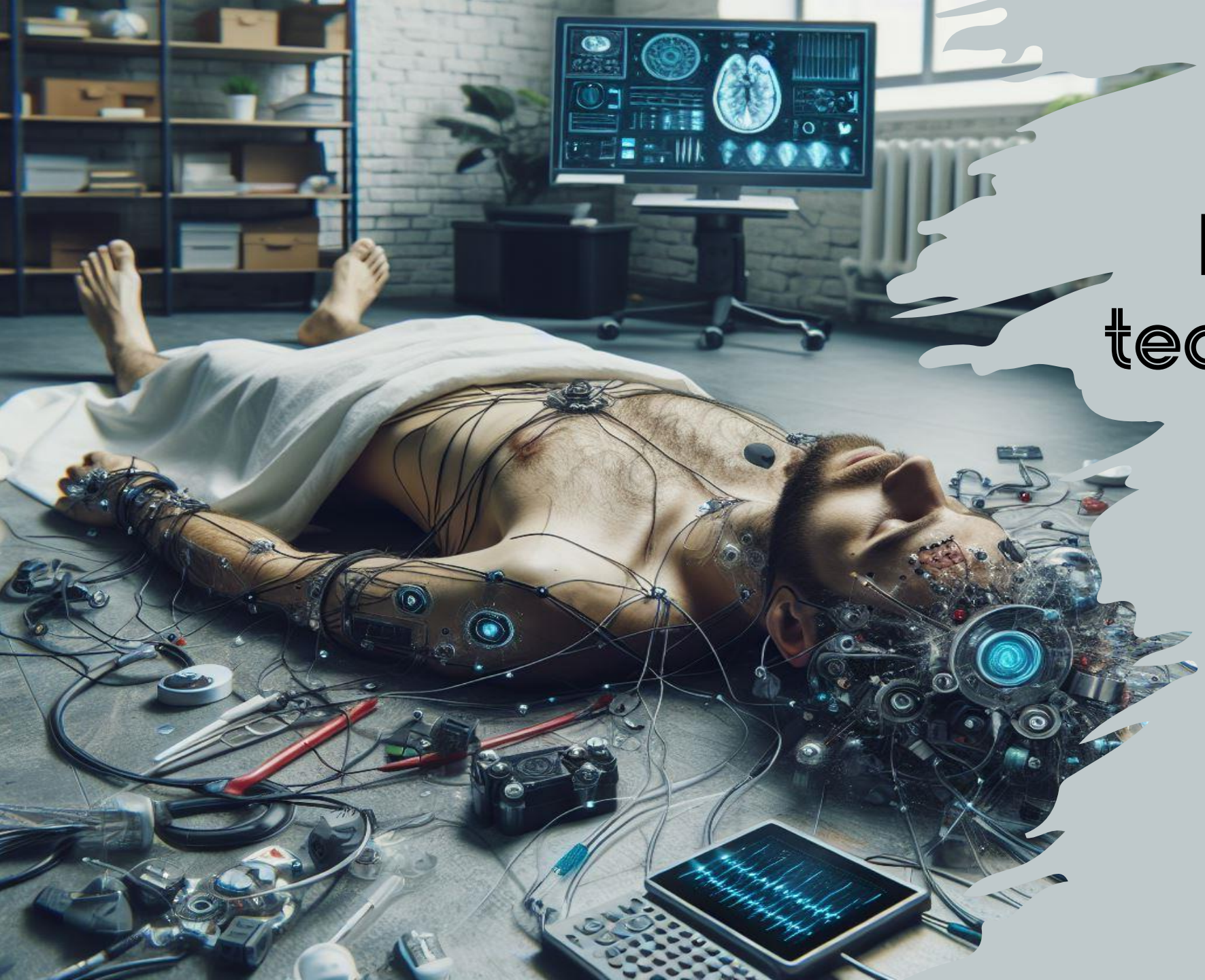


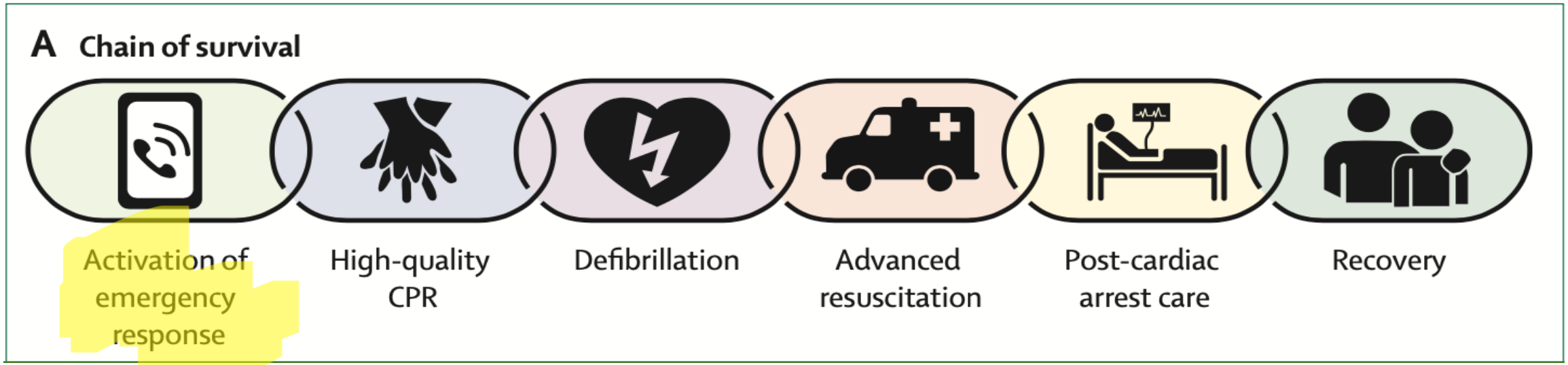
Table 3. Primary and Secondary Outcomes.

Outcome	Standard Defibrillation (N = 136)	VC Defibrillation (N = 144)	DSED (N = 125)	Adjusted Relative Risk (95% CI)*	
				DSED vs. Standard	VC vs. Standard
	number of patients/total number (percent)				
Survival to hospital discharge†	18/135 (13.3)	31/143 (21.7)	38/125 (30.4)	2.21 (1.33–3.67)	1.71 (1.01–2.88)
Termination of ventricular fibrillation	92/136 (67.6)	115/144 (79.9)	105/125 (84.0)	1.25 (1.09–1.44)	1.18 (1.03–1.36)
ROSC	36/136 (26.5)	51/144 (35.4)	58/125 (46.4)	1.72 (1.22–2.42)	1.39 (0.97–1.99)
Modified Rankin scale score ≤2†‡	15/134 (11.2)	23/142 (16.2)	34/124 (27.4)	2.21 (1.26–3.88)	1.48 (0.81–2.71)

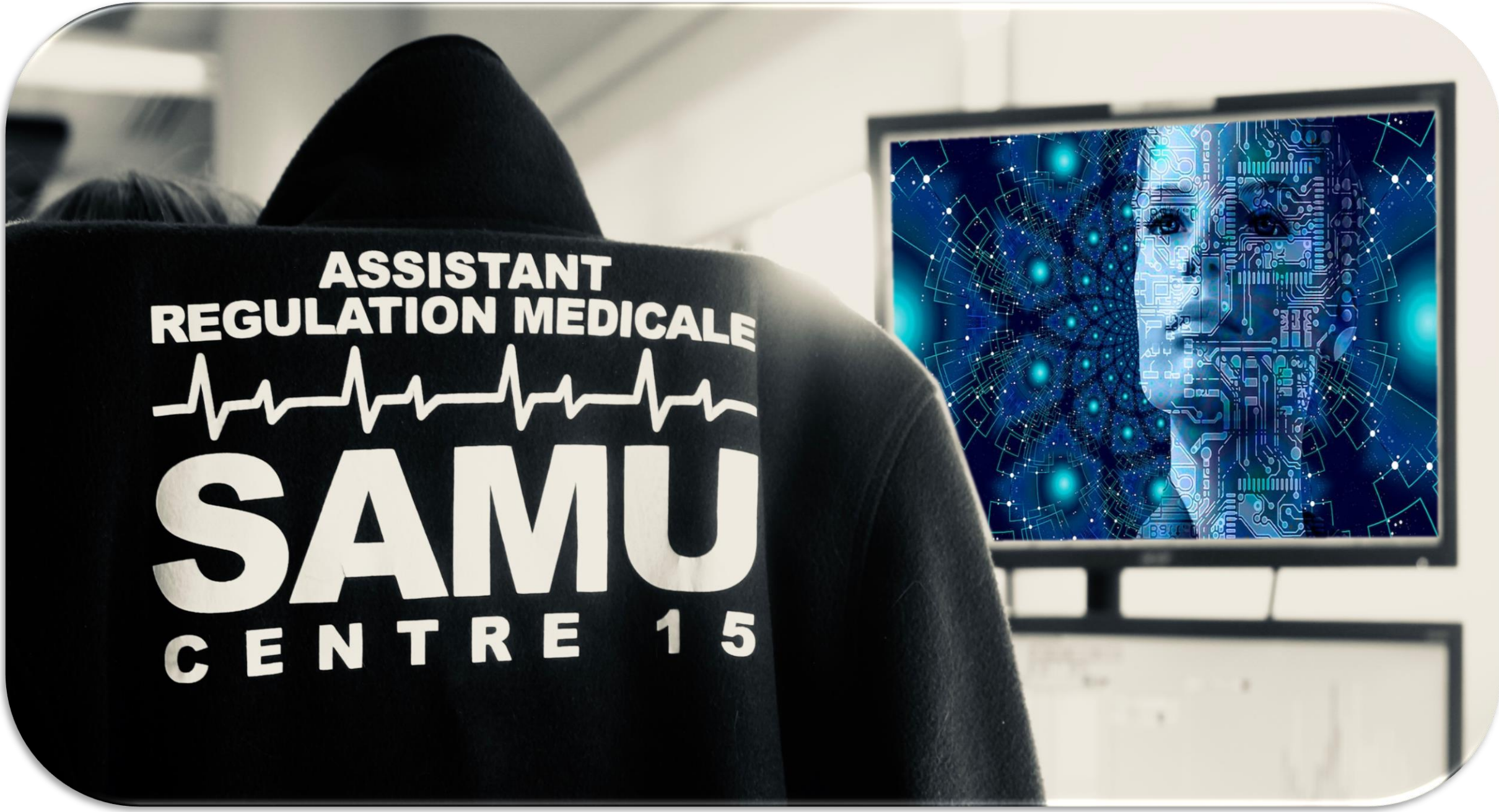
Cheskes, NEJM, 2022



L'espoir est technologique ?



Marijon, Lancet, 2023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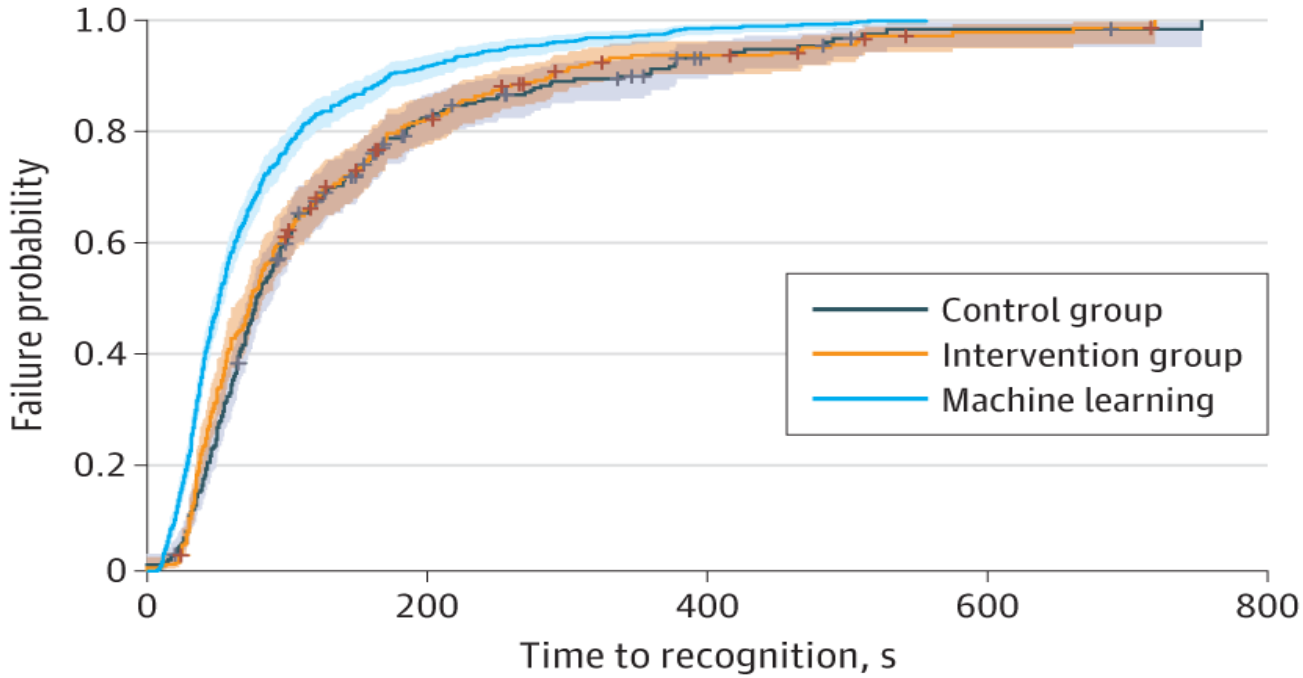
JAMA Network | Open

RCT: Effect of Machine Learning (ML) Alert on Dispatcher Recognition of Out-of-Hospital Cardiac Arrest During Calls to Emergency Medical Services (EMS)



No. at risk					
Control group	335	48	12	2	0
Intervention group	316	52	15	3	0
Machine learning	654	55	10	0	

Blomberg SN, Christensen HC, Lippert F, et al. Effect of machine learning on dispatcher recognition of out-of-hospital cardiac arrest during calls to emergency medical services: a randomized clinical trial. *JAMA Netw Open*. 2021;4(1):e2032320. doi:10.1001/jamanetworkopen.2020.32320

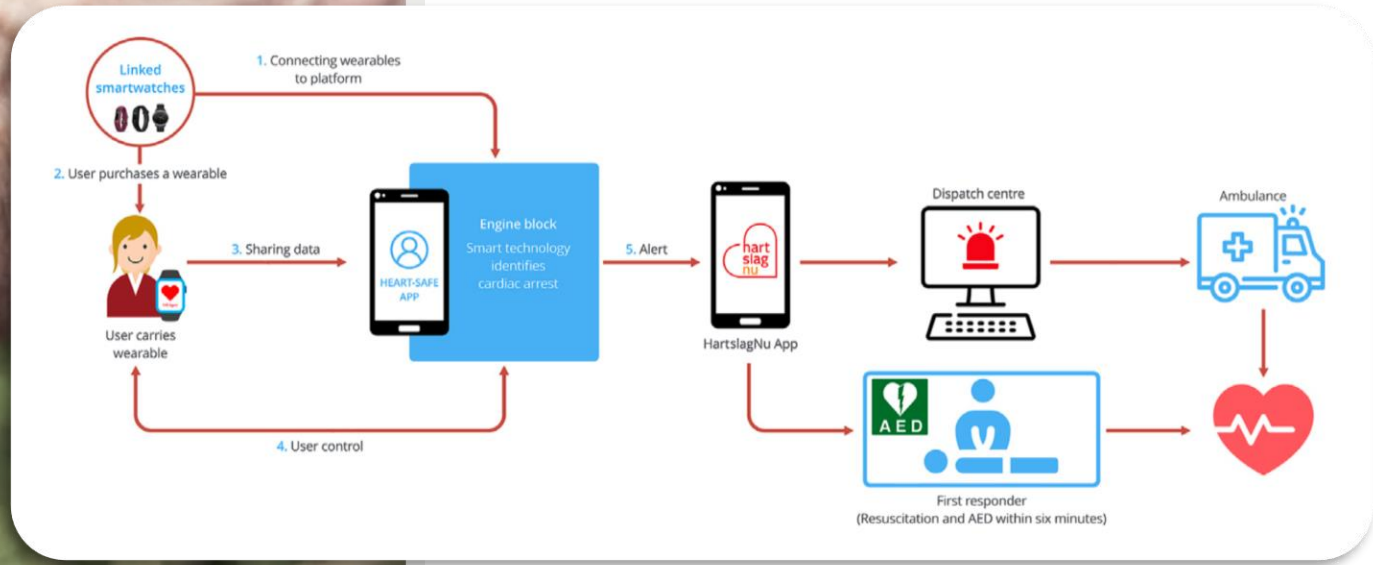
NEWS | BIOMEDICAL

This Smart Watch Detects Cardiac Arrest, and Summons Help

The new iBeat Heart Watch raises the alert if your heart rate falters

BY ELIZA STRICKLAND | 17 JUL 2018 | 4 MIN READ |

PHOTO: IBEAT



Schober, HEART-SAFE, Resuscitation Plus, 2022

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.

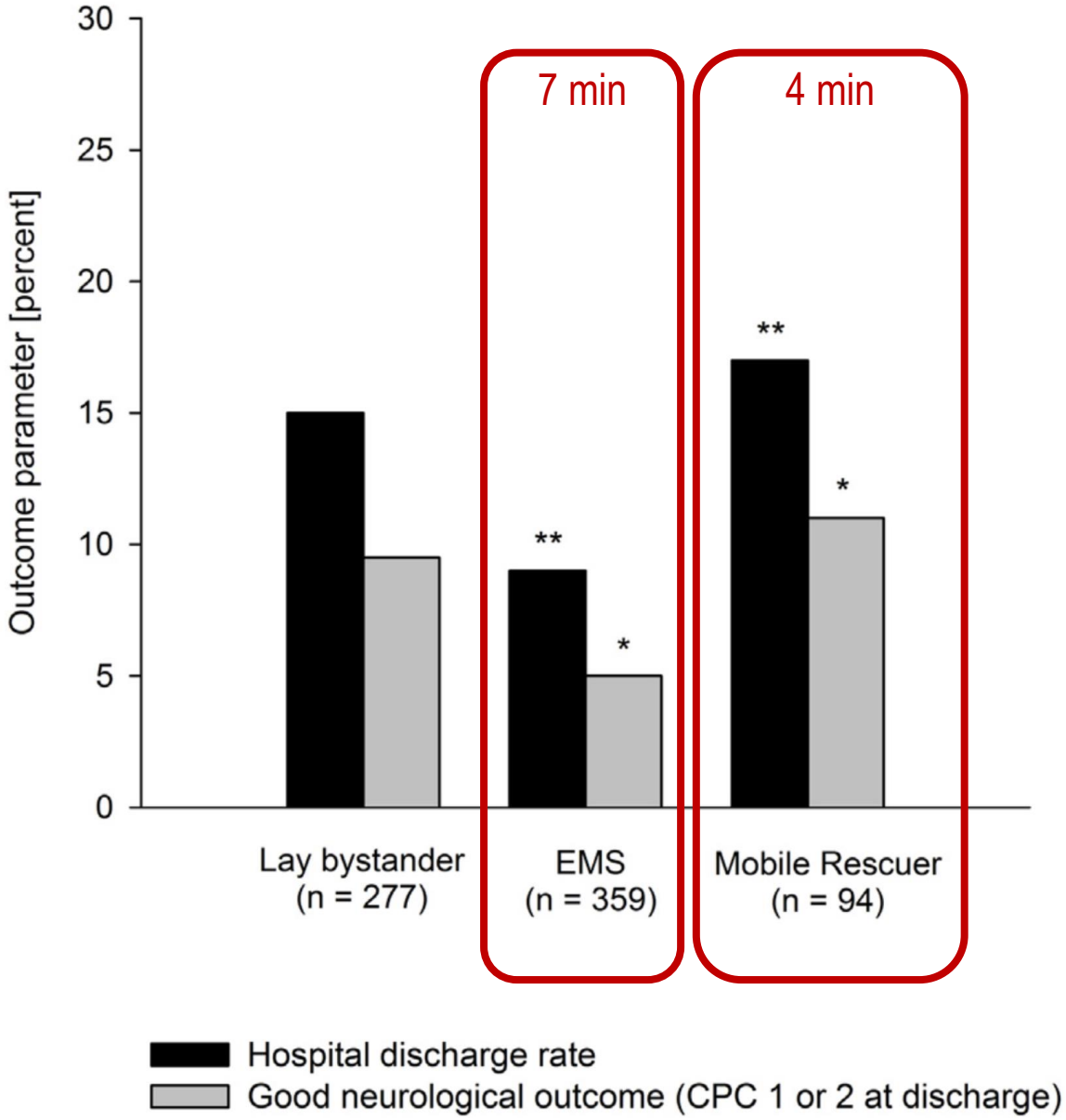
Sauv Life géolocalise la victime, alerte et guide les volontaires vers un défibrilateur et la victime

3.

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

2021 : NOS BELLES HISTOIRES. Son cœur est reparti grâce aux citoyens de Sauv life

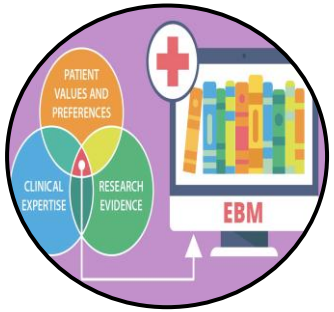
Thierry, de Bouguenais, a pu être sauvé grâce à l'intervention de sa femme, des citoyens et des secours. Il a témoigné en mai 2021 dans Presse Océan. Les chances de survie sont très minces en cas d'arrêt cardiaque. | PHOTO ARCHIVES PRESSE OCÉAN-CT



Letter to the Editor

Reply to: How (Not) to prove that a mobile phone-based alerting system has a positive effect on outcome after out-of-hospital cardiac arrest?

Calle, Resuscitation 2020



Stroop, Resuscitation 2020


LINFO.RE
Arrêt cardiaque
LINFO.RE
LA REUNION
OCEAN INDIEN
FRANCE
MONDE
Sauv Life : une application pour sauver des vies
LINFO.RE – créé le 12.10.2019 à 19h15 – mis à jour le 12.10.2019 à 19h15 - La rédaction

UNIVERSITÉ DE LA RÉUNION

Unité de Formation et de Recherche Santé

Evaluation de l'utilisation systématique de l'application SAUV-Life à La Réunion

Clémence Beauchamp - 11 Mars 2022

Résumé :

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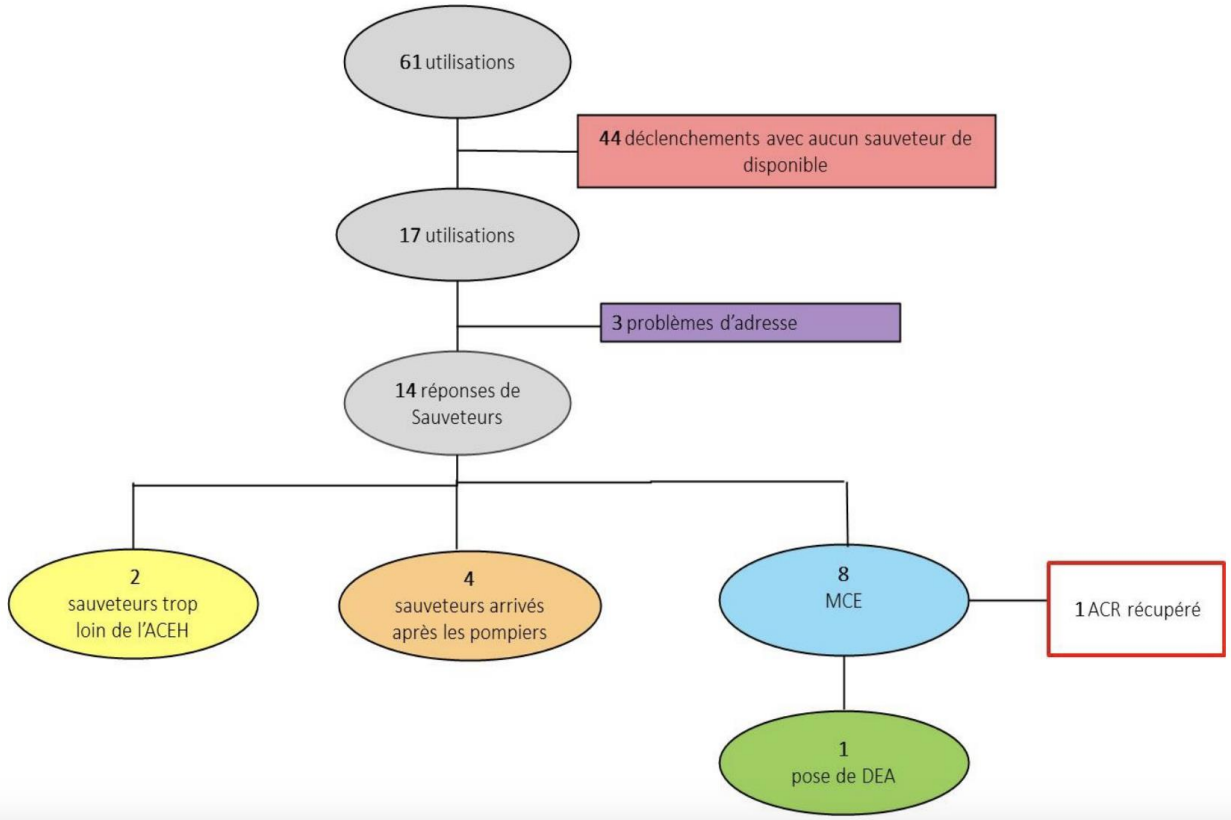
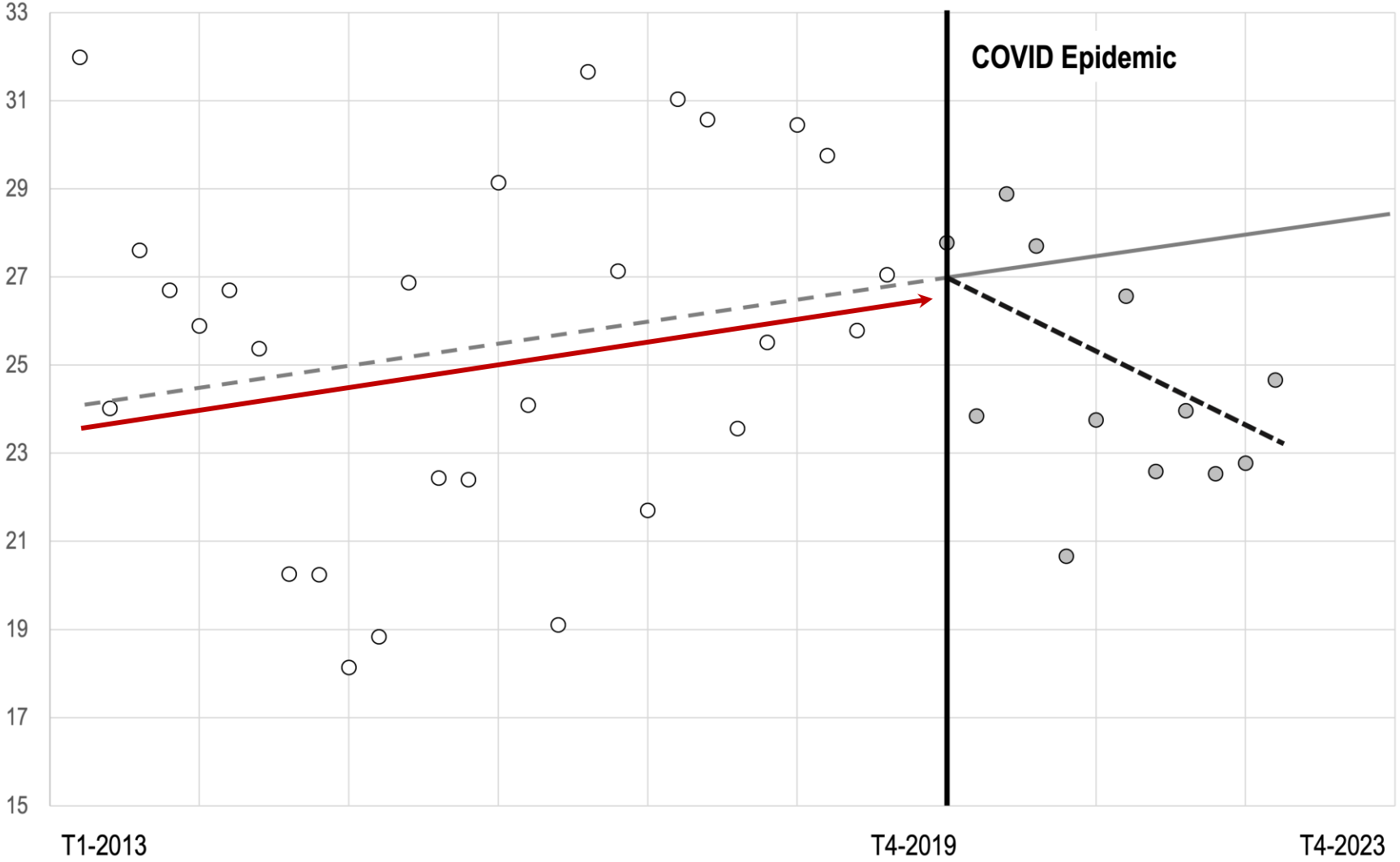
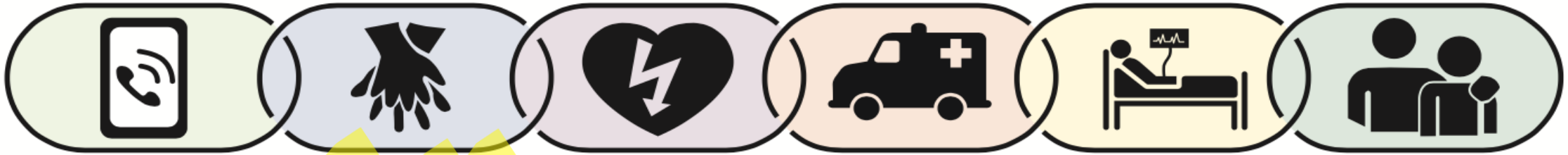


Reuter, Eur J Emerg Med, 2023



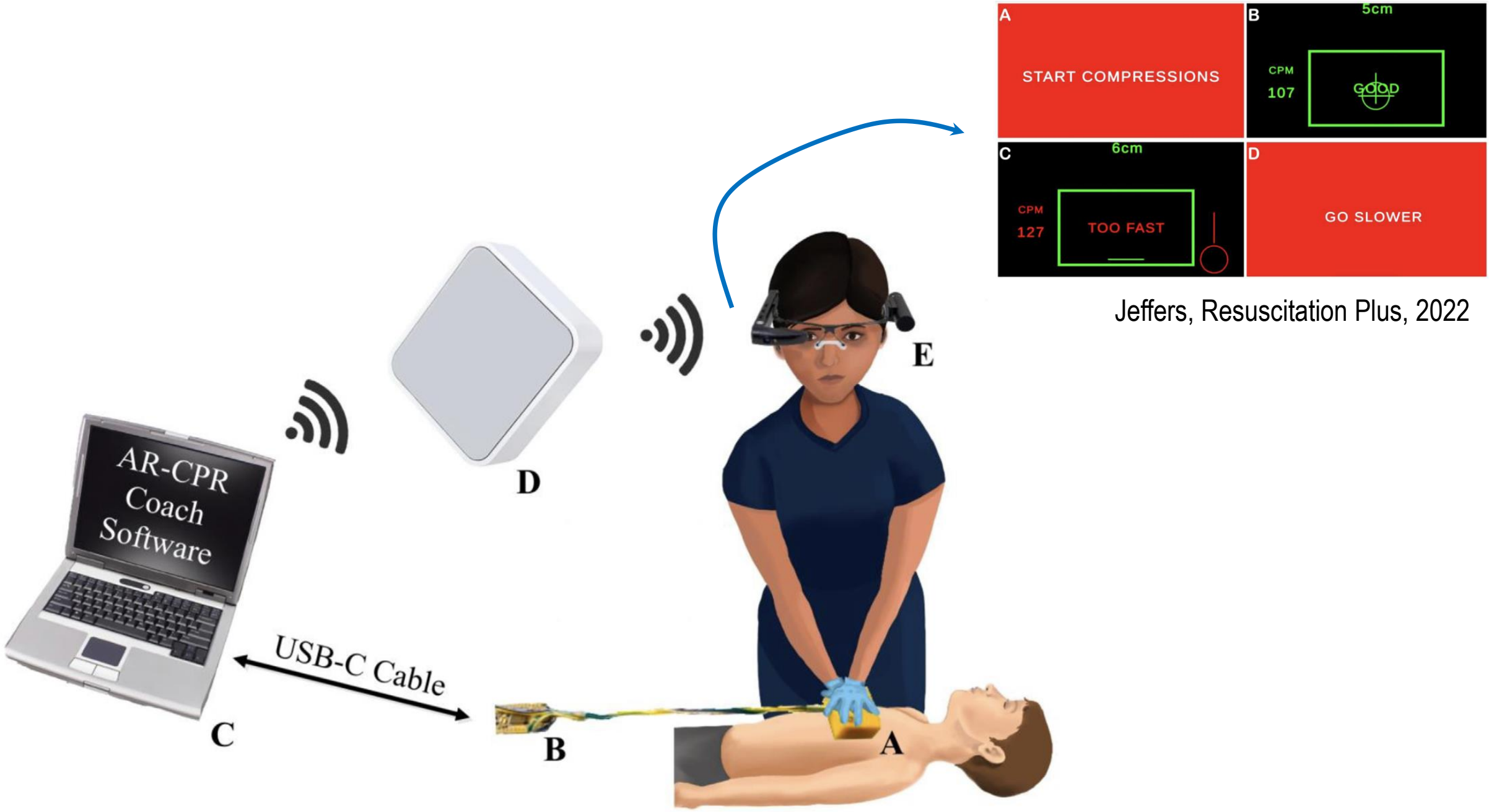
SAUV life

A **Chain of survival**

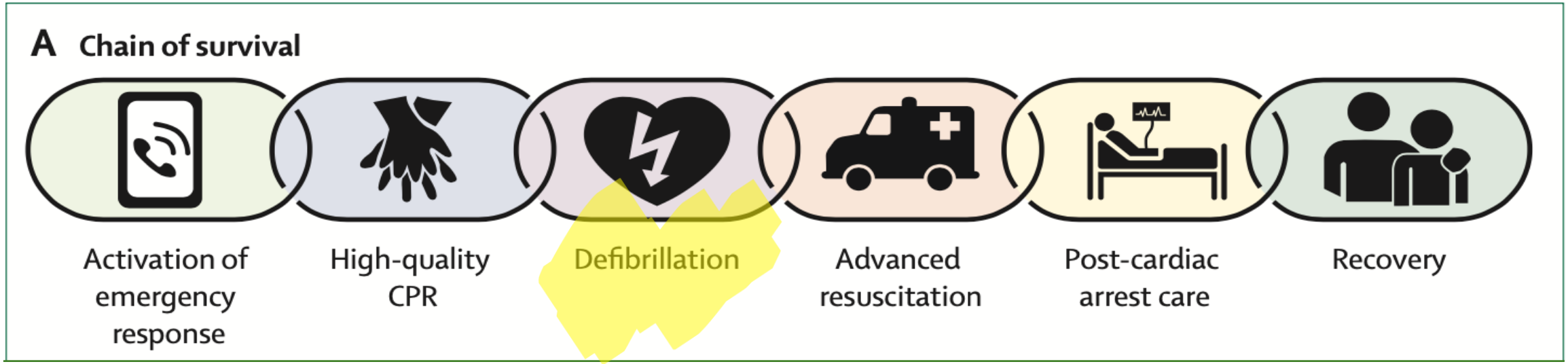


Activation of emergency response | High-quality CPR | Defibrillation | Advanced resuscitation | Post-cardiac arrest care | Recovery

Marijon, Lancet, 2023



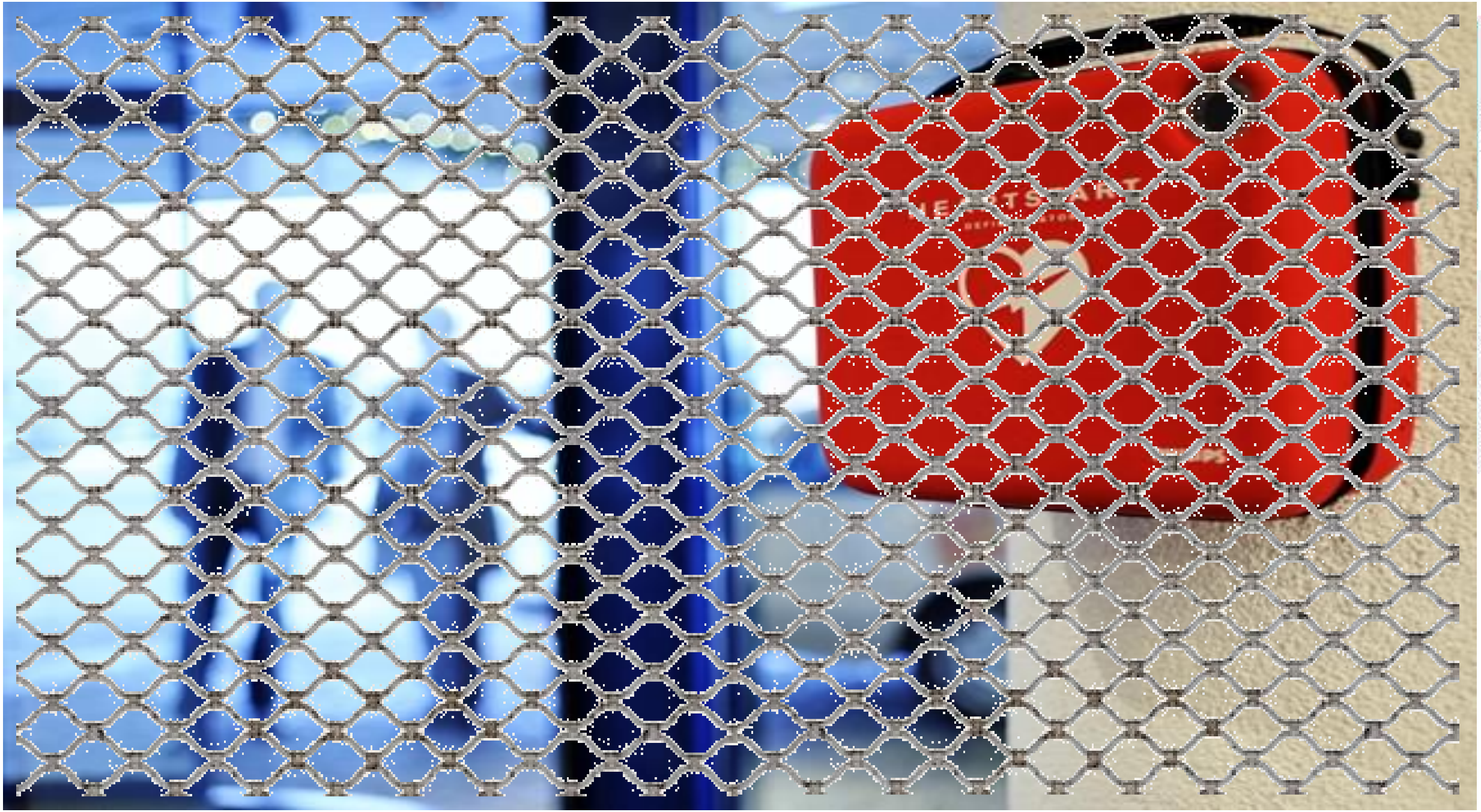
Jeffers, Resuscitation Plus, 2022



Marijon, Lancet, 2023

Géo'DAE – Base nationale des défibrillateurs

Géo'DAE
BASE NATIONALE DES DÉFIBRILLATEURS



6,021 défibrillateurs

60%

Thomas-Lamotte, Resuscitation, 2024

NON CONFORME


00:09.877


TU Delft - Ambulance Drone
00:09.776
À regarder plus tard
Partager
0:14 / 3:22
YouTube


01:57.784

La Californie interdit la livraison de marijuana par drones

INSPIRATION PAR LA RÉDACTION 13 SEPTEMBRE 2017

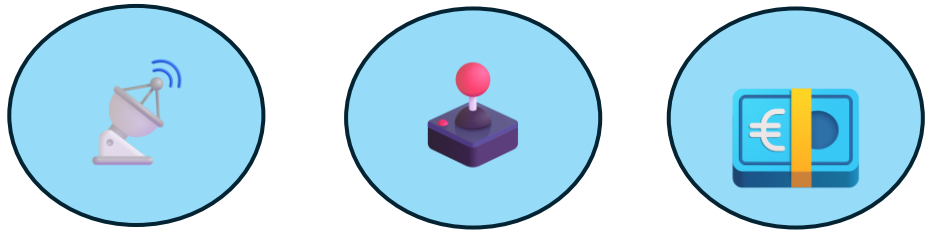
Barbereau, France Bleu Nord, 2023

FAITS DIVERS - JUSTICE

Un réseau de livraison de drogue par drone en prison démantelé à Lille

3 hommes ont été interpellés le 6 juin 2023, soupçonnés de participer à un réseau de livraison de cannabis pour des détenus en prison grâce des drones. Le matériel volant était vendu sur toute la France. C'est l'aboutissement d'un an d'enquête de la Police Judiciaire de Lille.

Un drone destiné à livrer de la drogue en prison - Police Nationale

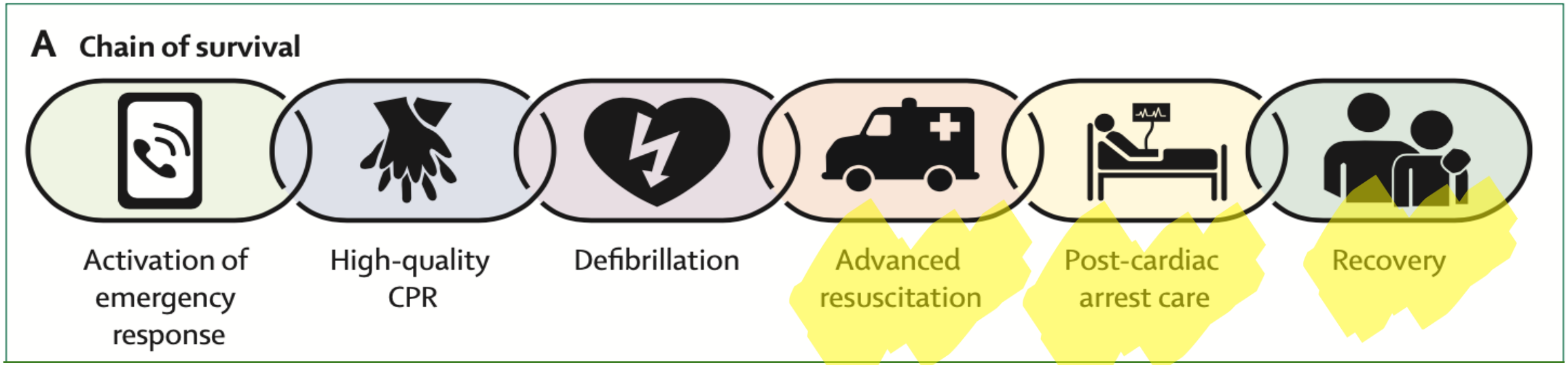


Review

Challenges & barriers for real-time integration of drones in emergency cardiac care: Lessons from the United States, Sweden, & Canada

« *there is significant potential* »

Carrillo-Larco, *Glob Health Epidemiol Genom*, 2018 ; Claesson, *JAMA*, 2017 ; Lim, *J Clin Med*, 2023 ; Zegre-Hemsey, Resuscitation Plus, 2024



Marijon, Lancet, 2023

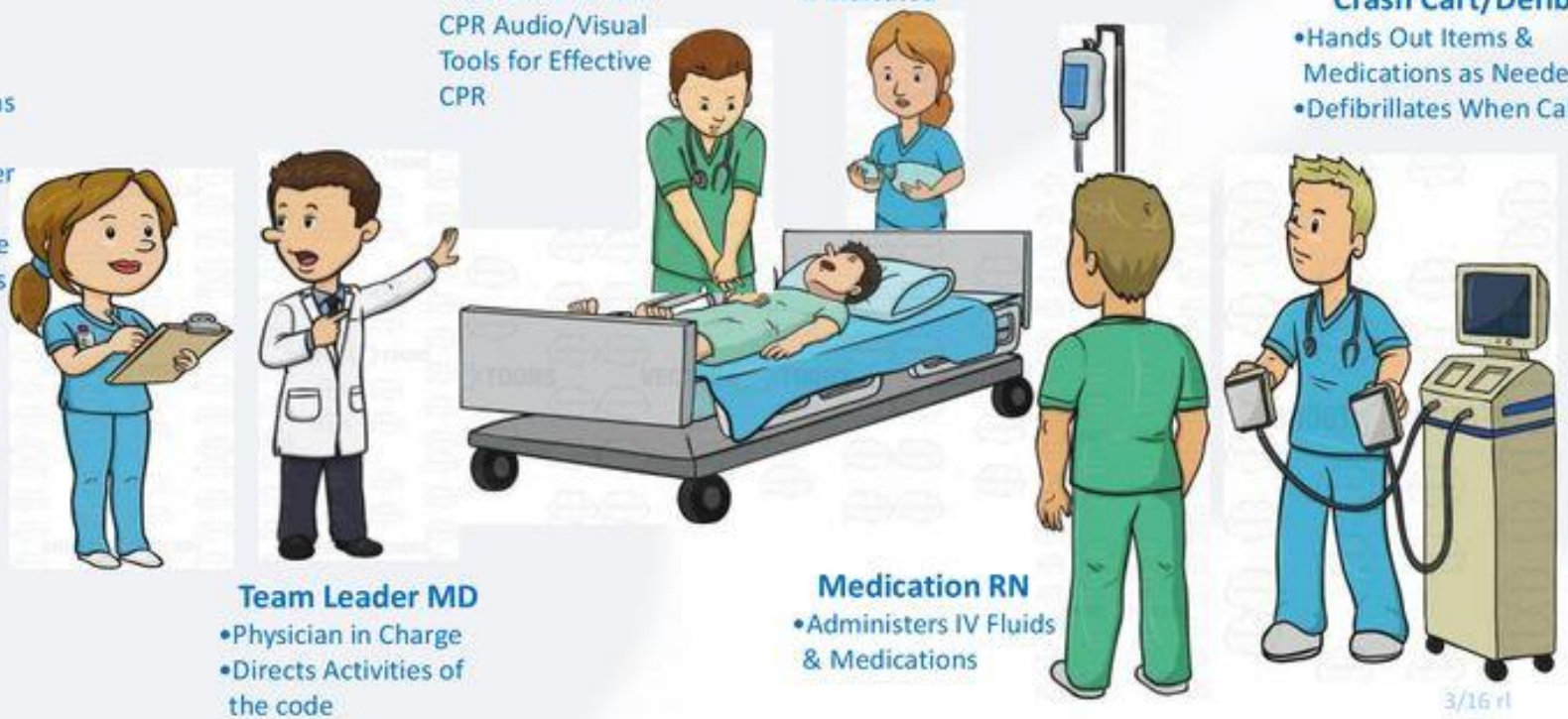
Code Blue Team
What's Your Position?

Recorder
Timekeeper
- Documents Actions of Code
- Official Timekeeper
- Ensures Code Record is Complete
- Obtains Signatures
- Completes Notification Form

CPR
- Positioned Across from Defib to See CPR Audio/Visual Tools for Effective CPR

Airway Management
- Provides Airway Management and Respiratory Assistance as Needed
- Person Qualified to Intubate if Indicated

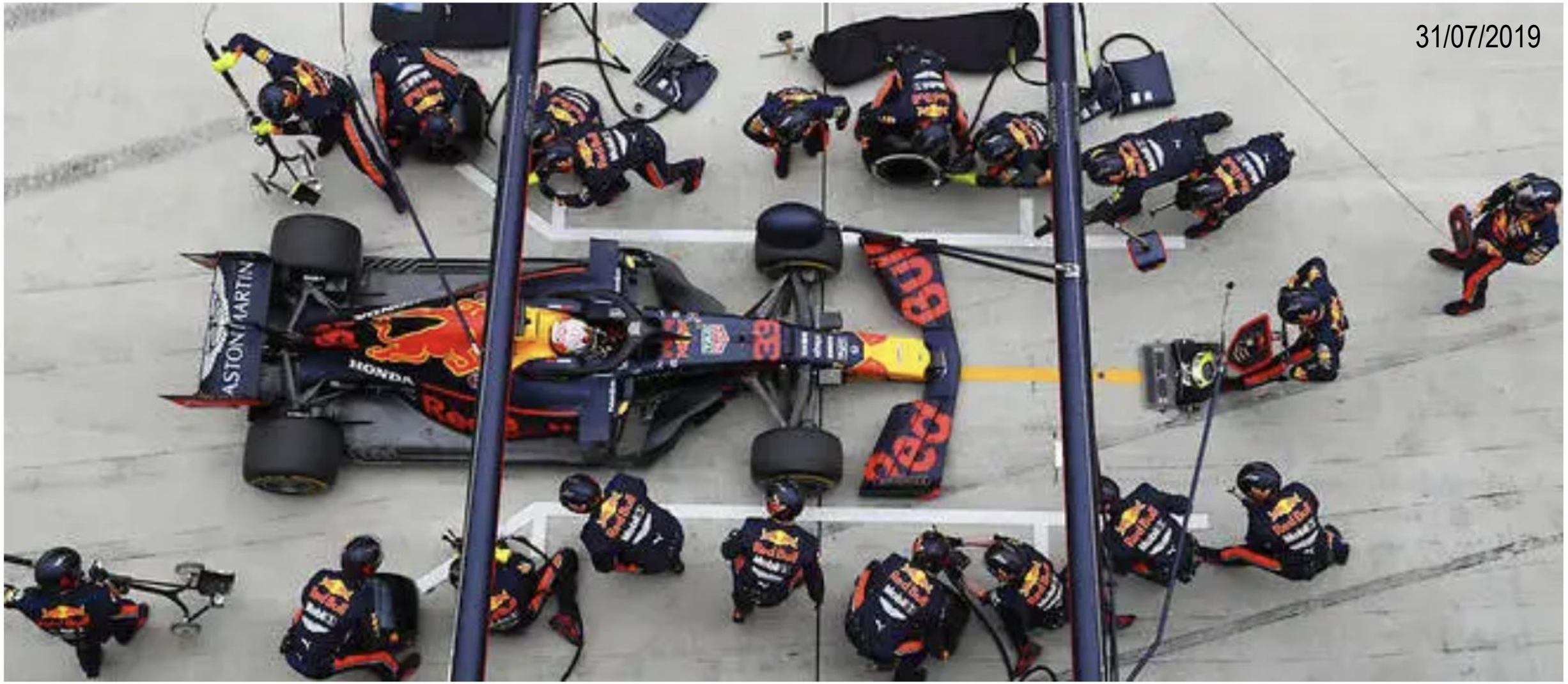
Crash Cart/Defib RN
- Hands Out Items & Medications as Needed
- Defibrillates When Called for



Team Leader MD
- Physician in Charge
- Directs Activities of the code

Medication RN
- Administers IV Fluids & Medications

3/16 rl



Formule 1 : 1 sec et 88/100 pour changer quatre roues

Red Bull, spécialiste du ravitaillement express, a encore amélioré son record de vitesse pour un arrêt aux stands, de précieux dixièmes gagnés pour le pilote.

North Shore University Hospital
Northwell Health

Defib Nurse
1. Places the Patient on Defibrillator
2. Set to 200J Analyze and Defib at 1st pulse check if VF/VT
3. Places IV Access Once on LUCAS and Defibrillator

Defibrillator

Monitor

Airway Physician/PA
1. Completes airway, breathing assessment
2. Ensures ETCO2 placement
3. Airway Management until RT arrives

LUCAS Tech
1. Takes over chest compressions from EMS
2. Places LUCAS Backboard
3. LUCAS Device Placement
4. Manages LUCAS Device During Arrest

CPR Tech
1. Initiates CPR once on ED stretcher
2. Assists with LUCAS Device Placement
3. Places patient on bedside monitor

Procedure Physician/PA
1. Ensures patient has access (IO, CVC)
2. Cardiac ultrasound during pulse checks

Medication Nurse
1. Confirms IV Access Functioning
2. Obtains/Administers Medications
3. Confirms Medications Given

Physician Leader
1. Coordinates all aspects of cardiac arrest management
2. Confirms medications with Nurse Leader
3. ECMO Referral/Calls End of Arrest

Nurse Leader
1. ACLS Protocol - Timing for rhythm checks, ACLS meds for Attending Confirmation
2. Documentation of Arrest
3. Primary Nurse after Arrest

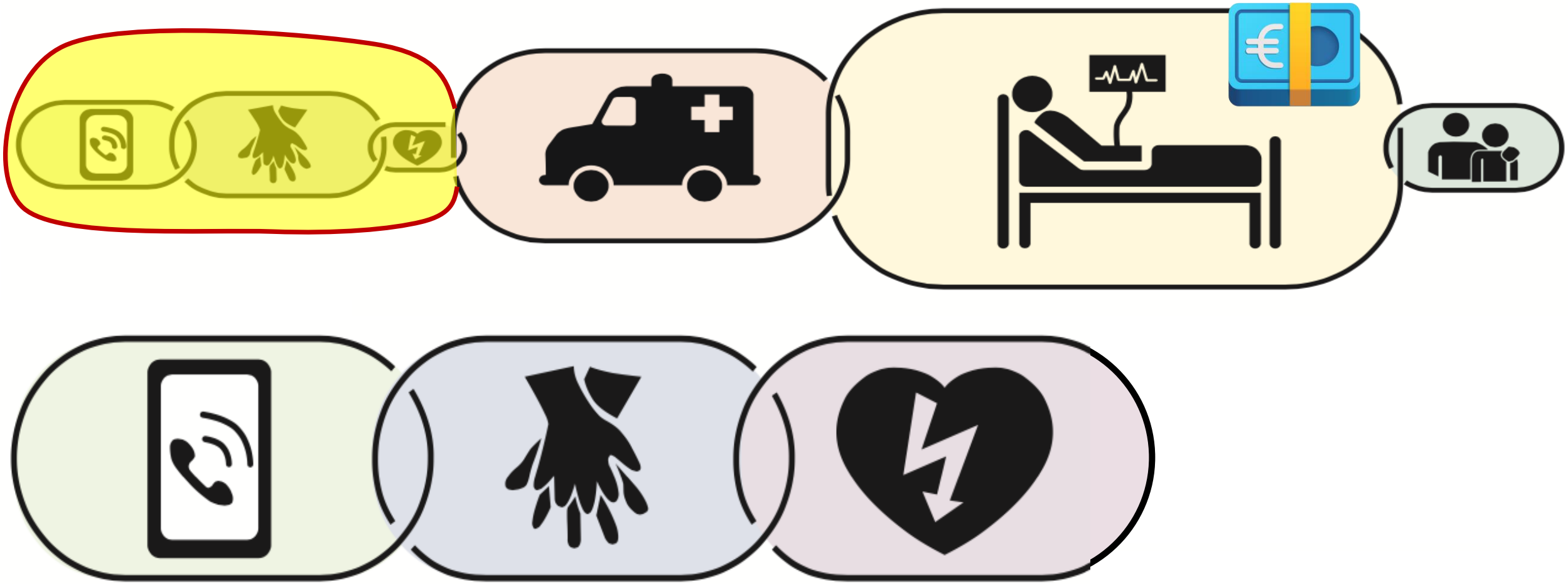
Rolston, JAHA, 2010

Le drone ambulance pourrait sauver des vies

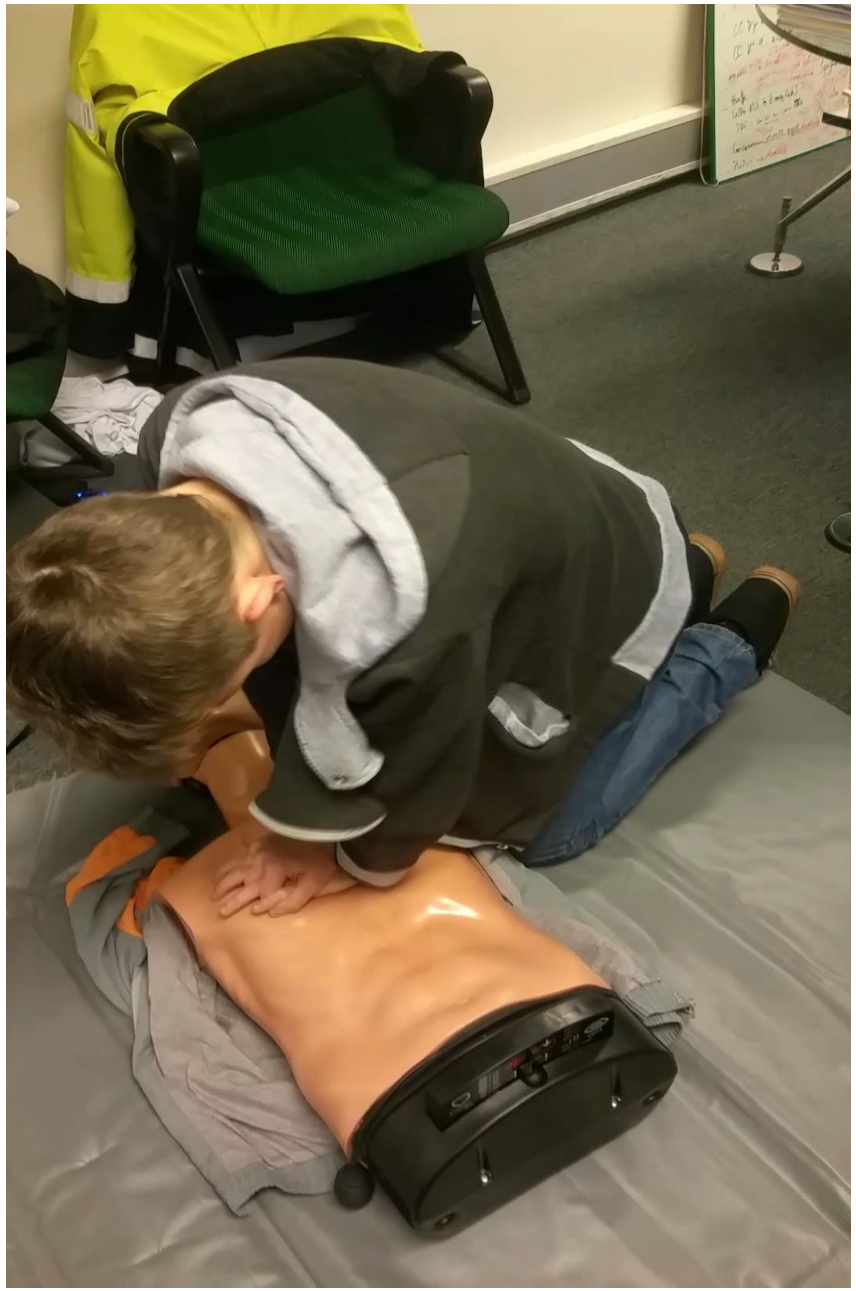
Par Jeanne Hutin


SAMU
AMBULANCE
AMBULANCE
AMBULANCE
SAMU

C Investment from National Institutes of Health



Marijon, Lancet, 2023



MINISTÈRE DE L'ÉDUCATION NATIONALE

education.gouv.fr POUR L'ÉCOLE DE LA CONFIANCE

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sur education.gouv.fr sur tous les sites de l'éducation nationale

Accueil > Le Bulletin officiel > 2016 > n°30 du 25 août 2016 > Enseignements primaire et secondaire

Enseignements primaire et secondaire

BO LE BULLETIN OFFICIEL DE L'ÉDUCATION NATIONALE

Le Bulletin officiel de l'éducation nationale publie des actes administratifs : décrets, arrêtés, notes de service, etc. La mise en place de mesures ministérielles et les opérations annuelles de gestion font l'objet de textes réglementaires publiés dans des B.O. spéciaux.

Is the Basic Life Support (BLS) course mandatory to obtain a category B* driving licence?

EUROPEAN RESUSCITATION COUNCIL

EFA

YES

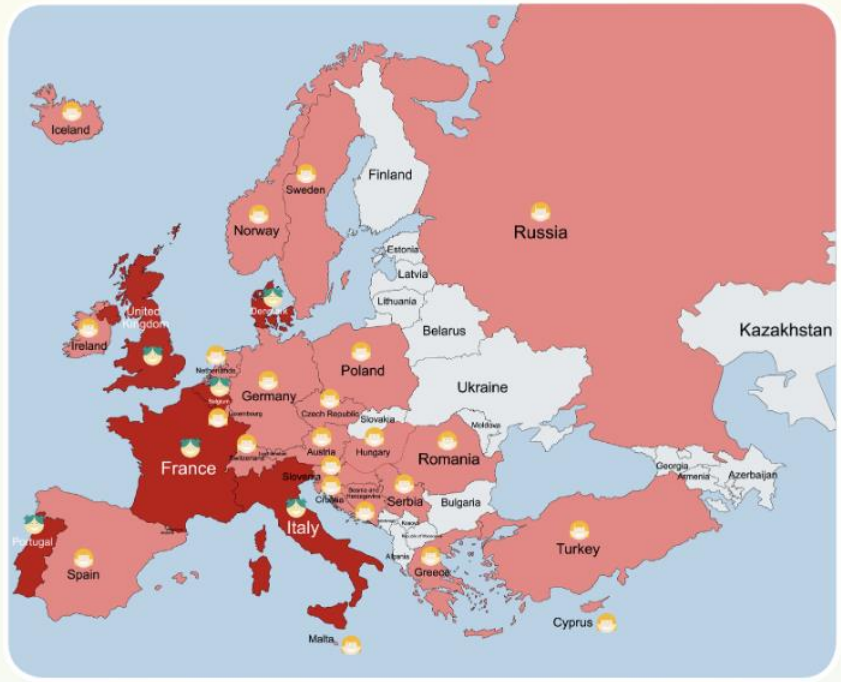
Austria
Bulgaria
Croatia
Czech Republic
Denmark
Estonia
Germany
Hungary
Lithuania
Moldavia
Norway
Poland
Slovakia
Slovenia
Switzerland

NO

Albania
Belgium*
Bosnia
Cyprus
France
Finland
Greece
Iceland
Ireland
Italy
Luxembourg
Malta
Netherlands
Portugal
Romania
Spain
Sweden
United Kingdom
Ukraine

*Category B driving license allows an individual to drive a motor vehicle with a maximum authorised mass not exceeding 3500 kg and designed and constructed for the carriage of no more than eight passengers in addition to the driver.
*Except in Brussels Region where it is mandatory since 2018.

European Map of CPR Education 2020



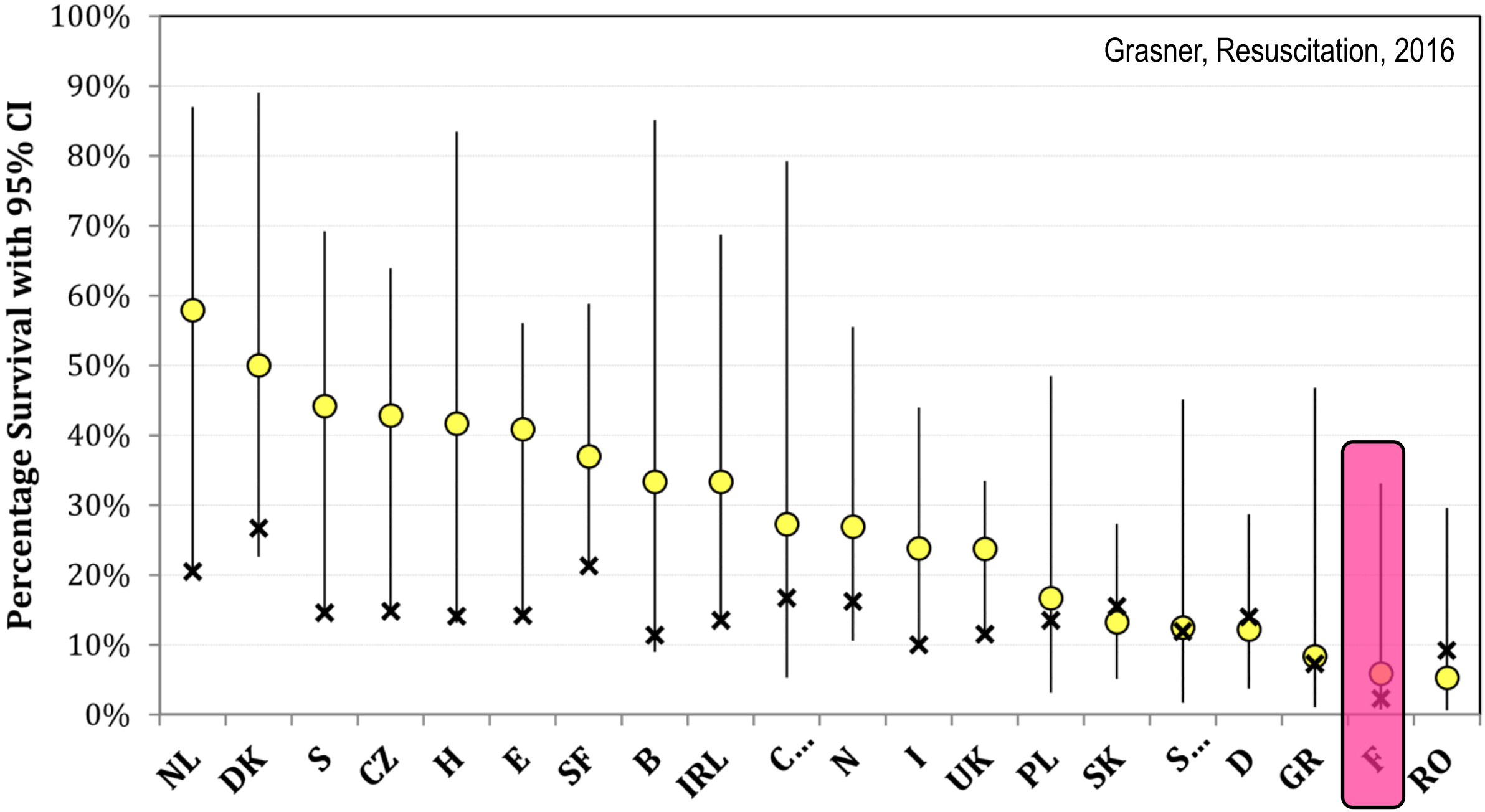
A LEGISLATION

Belgium
Denmark
France
Italy
Portugal
United Kingdom

A SUGGESTION

Austria
Bosnia and Herzegovina
Croatia
Cyprus
Czech Republic
Germany
Greece
Hungary
Iceland
Ireland
Luxembourg
Malta
Netherlands
Norway
Poland
Romania
Russia
Serbia
Slovenia
Spain
Sweden
Switzerland
Turkey

The countries with kids with green hair have a legislation about CPR education, the countries with kids with yellow hair have CPR education as a suggestion.


Grasner, Resuscitation, 2016
Percentage Survival with 95% CI
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
NL
DK
S
CZ
H
E
SF
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IRL
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N
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GR
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RO

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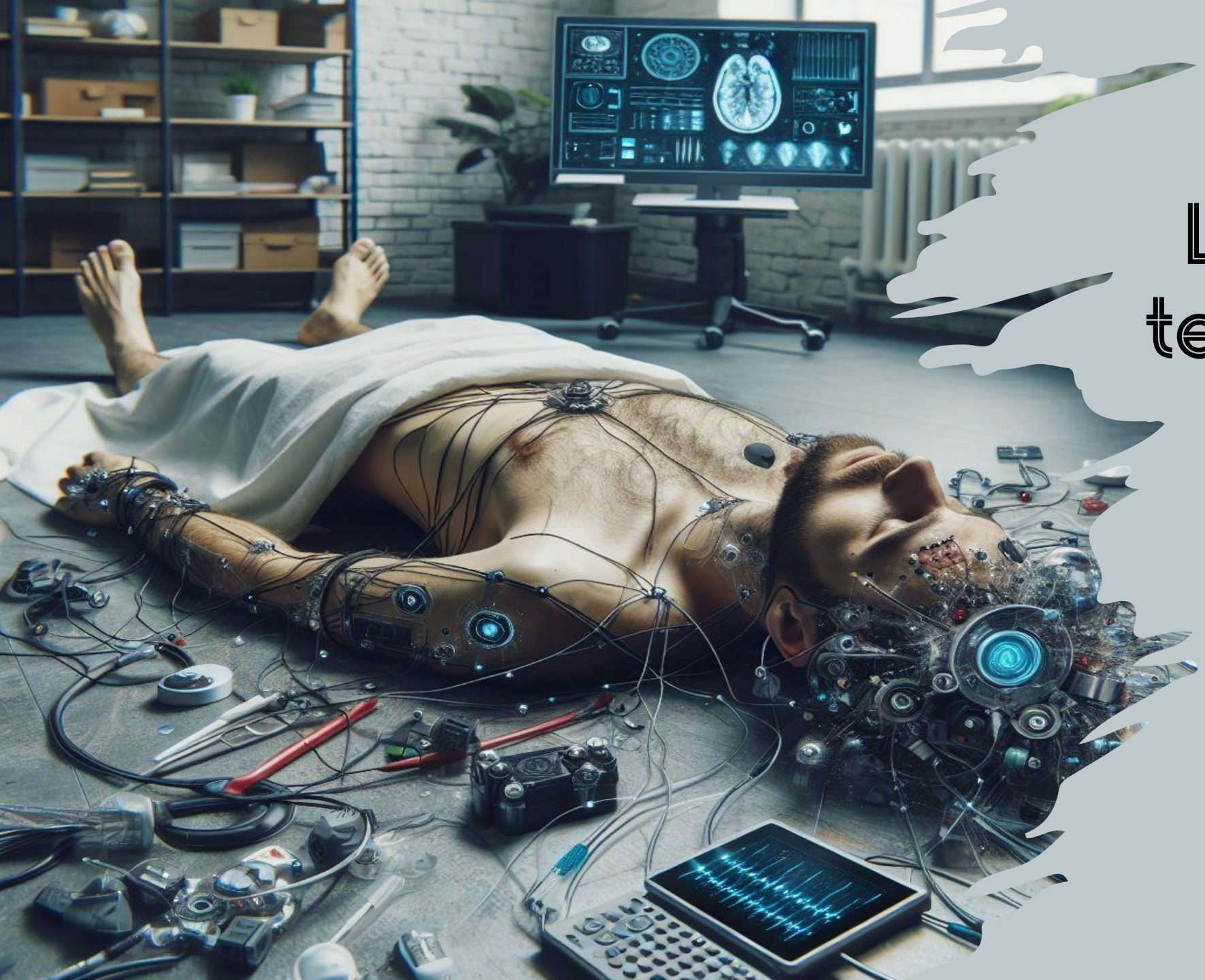
Nouvelles technologies pour la formation



Le fol espoir technologique

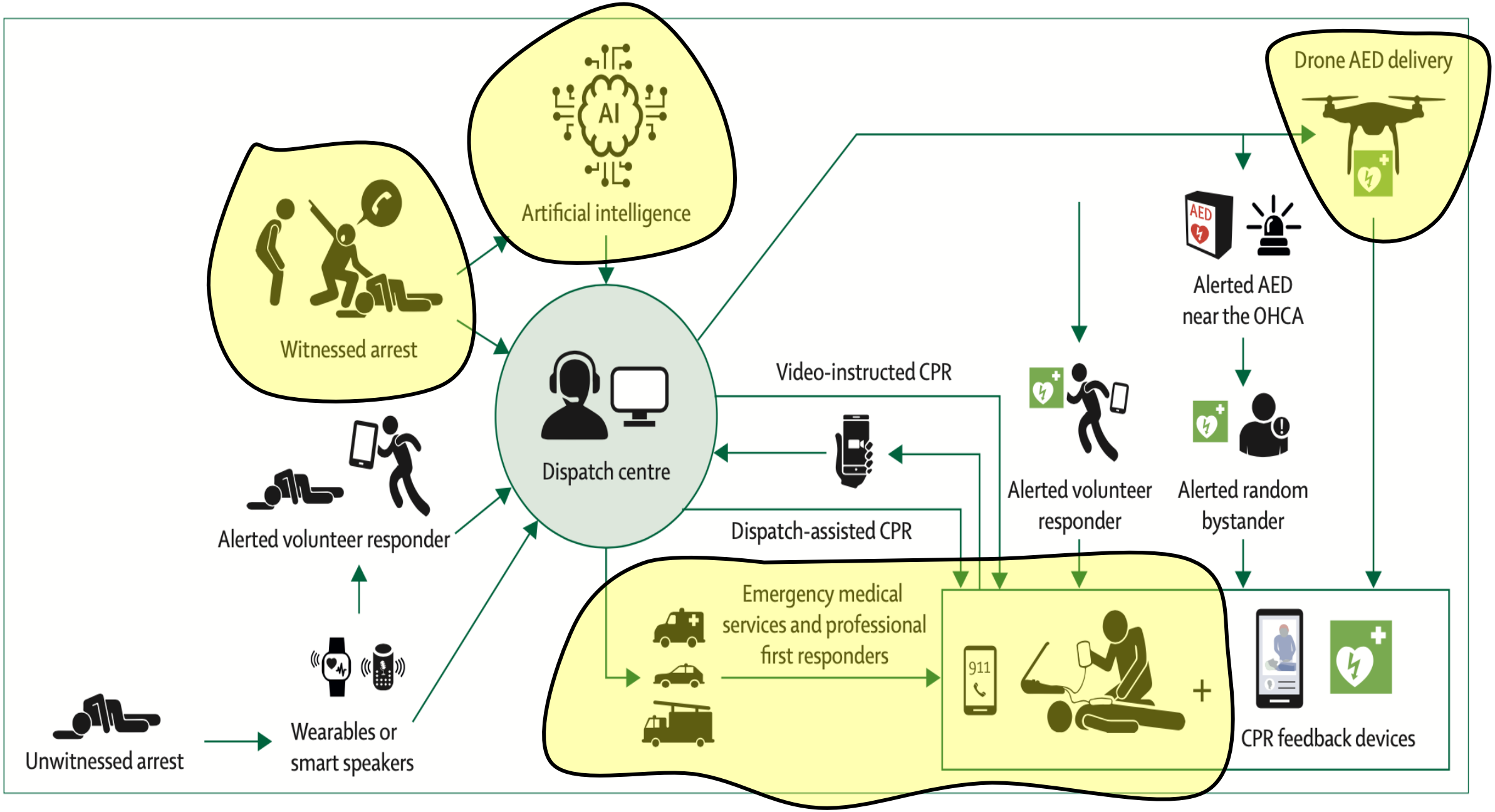
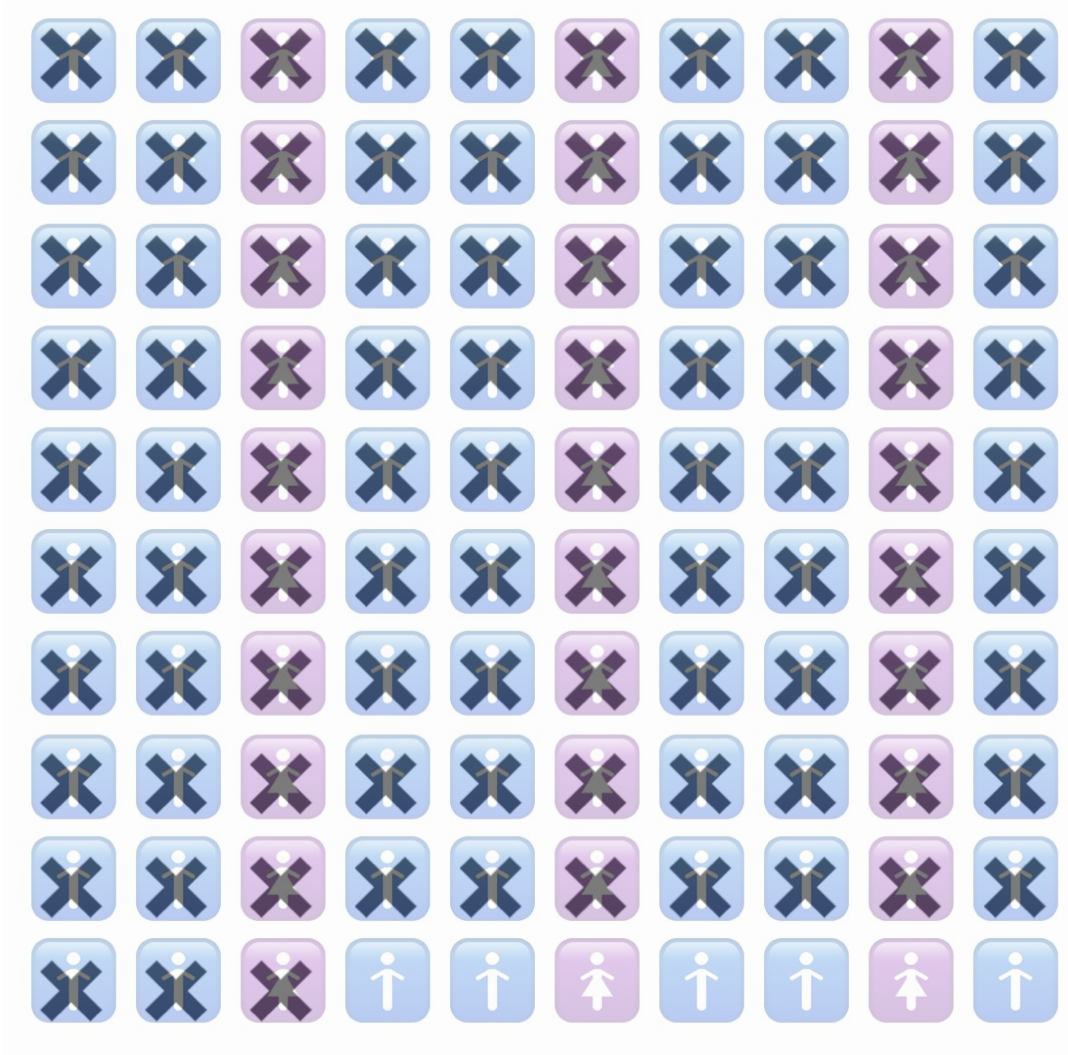


Figure 11: **Technological solutions for improved resuscitation**

Marijon, Lancet, 2023



DÉBATS • CHALEUR HUMAINE

« La technologie a trop d'impact sur la planète pour être la solution à la crise du climat »

Par Nabil Wakim

Le Monde, 27/12/2022

ENTRETIEN | **« Chaleur humaine ». L'idée que l'innovation nous sauvera de l'épuisement des ressources et des changements climatiques est une illusion dangereuse, prévient l'ingénieur Philippe Bihouix, qui appelle à multiplier les démarches « low-tech » et à privilégier la sobriété.**

QUENTIN FAUCOMPRÉ

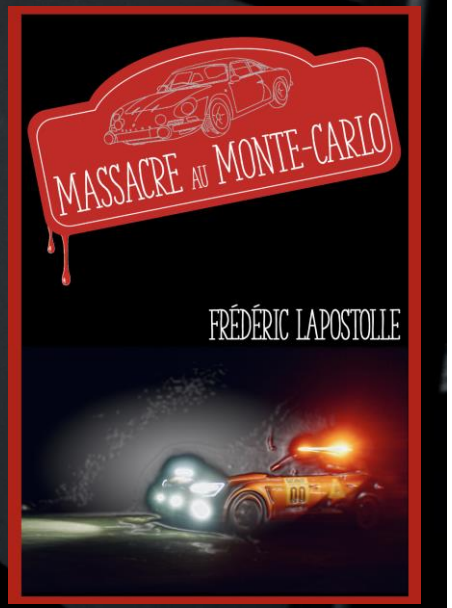
Georges Charpack et Henri Broch

In : Devenez sorciers, devenez savants

"La charge de la preuve revient toujours à celui qui affirme quelque chose de nouveau et plus la chose affirmée sort du cadre des lois établies... plus les preuves apportées pour étayer cette proposition doivent être robustes."

Foto FLapo SAMU 93

Amazon-publishing®



@fredlapo93
frederic.lapostolle@aphp.fr

Arrêt Cardiaque

Pourquoi rien ne marche ?

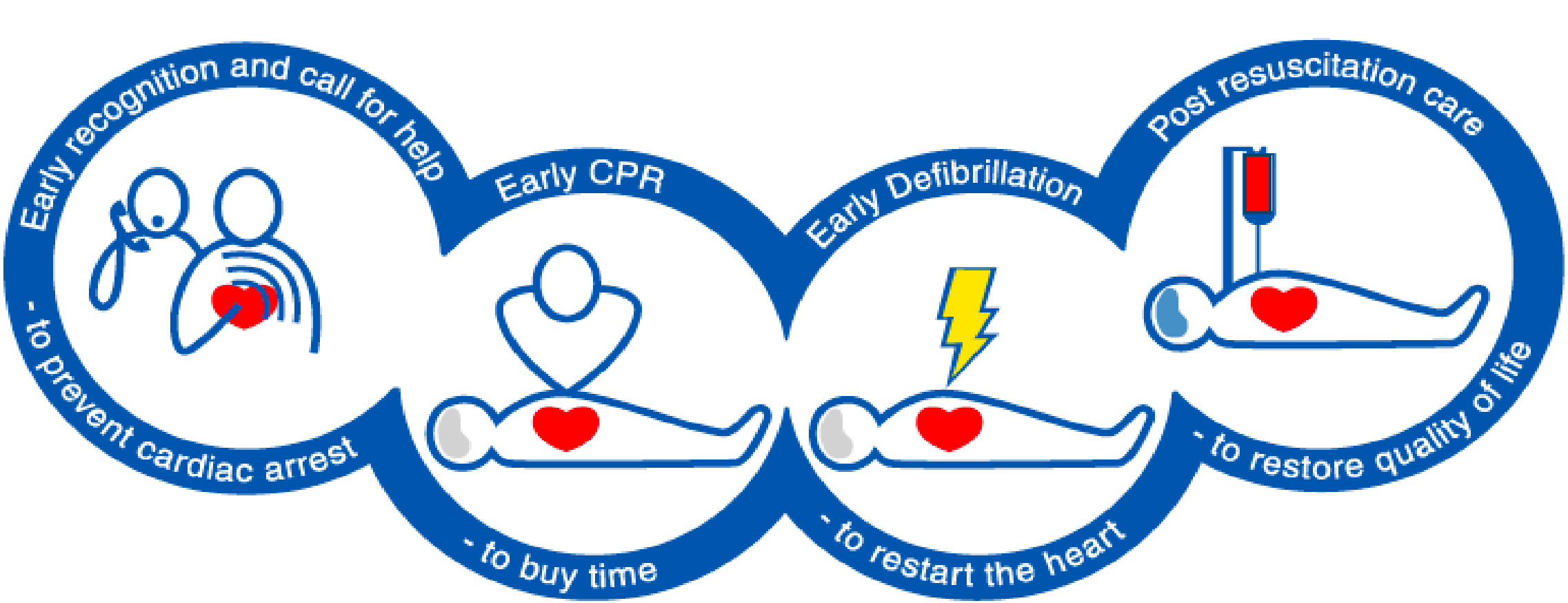


Fig. 2.2. The chain of survival.

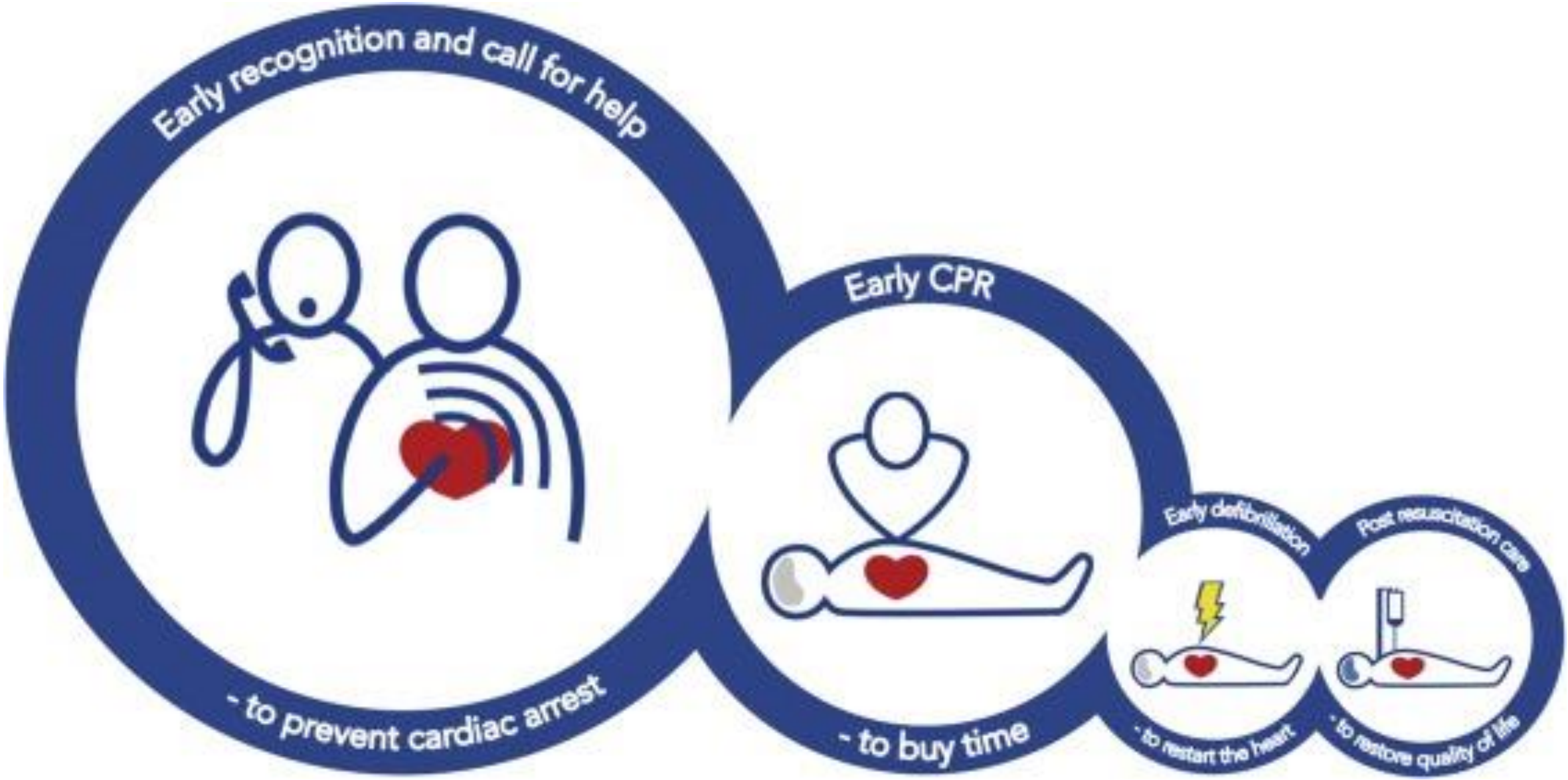
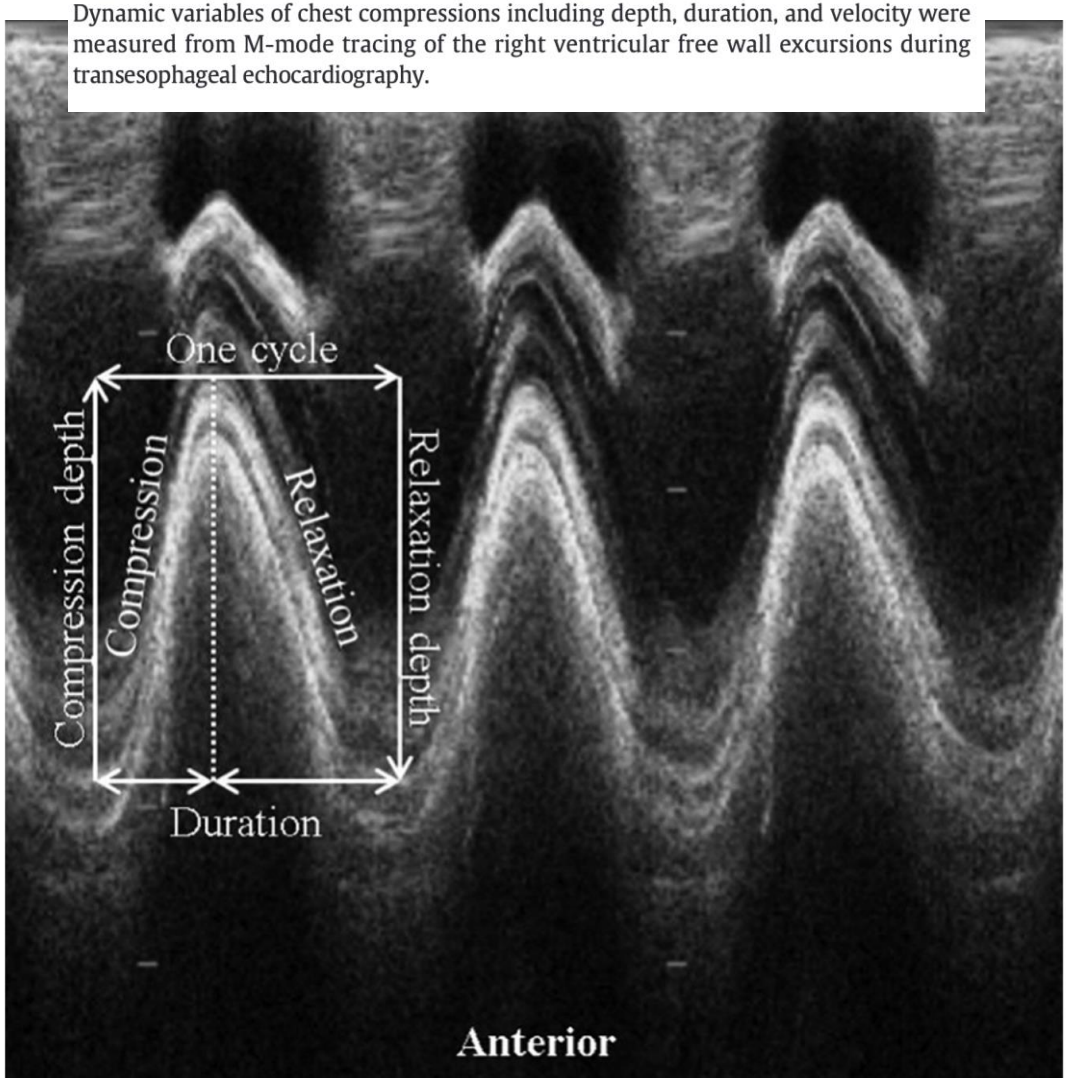

Early recognition and call for help
- to prevent cardiac arrest
Early CPR
- to buy time
Early defibrillation
- to restart the heart
Post resuscitation care
- to restore quality of life

Fig. 1. Measurement of metrics from the right ventricular free wall excursion. Dynamic variables of chest compressions including depth, duration, and velocity were measured from M-mode tracing of the right ventricular free wall excursions during transesophageal echocardiography.



Kim, J Crit Care, 2019