



Ο ΡΟΛΟΣ ΤΩΝ ΑΥΤΟΜΑΤΩΝ ΕΞΩΤΕΡΙΚΩΝ ΑΠΙΝΙΔΩΤΩΝ – Η ΕΛΛΗΝΙΚΗ ΕΜΠΕΙΡΙΑ



Άγγελος Παπανικολάου MD
Καρδιολόγος

Α' Καρδιολογική Κλινική Πανεπιστημίου Αθηνών
Ιπποκράτειο ΓΝΑ

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70 ΧΡΟΝΙΑ ΚΑΡΔΙΟΛΟΓΙΑΣ (ΕΚΕ)
70 YEARS OF CARDIOLOGY (HSC)

ΠΑΝΕΛΛΗΝΙΟ ΚΑΡΔΙΟΛΟΓΙΚΟ ΣΥΝΕΔΡΙΟ
PANHELLENIC CONGRESS OF CARDIOLOGY





- I do not have any potential conflict of interest

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Επιδημιολογία Καρδιακής Ανακοπής

INCIDENCE OF EMS-TREATED CARDIAC ARREST IN EUROPE

C Atwood, M Eisenberg, J Herlitz, T Rea. Resuscitation 2005;67:75-80

	incidence	survival
All rhythm	0.4/1000/y	10.7%
VF	0.2/1000/y	21.2%
Extrapolation: Europe (729 million)		
All rhythm	275.000/y	
VF	123.000/y	

INCIDENCE OF EMS-TREATED CARDIAC ARREST IN USA.

T Rea, M Eisenberg, G Sinibaldi, R White. Resuscitation 2004;63:17-24

	incidence	survival
All rhythm	0.5/1000/y	8.4%
VF	0.2/1000/y	17.7%
Extrapolation: USA (290 million)		
All rhythm	155.000/y	
VF	60.000/y	

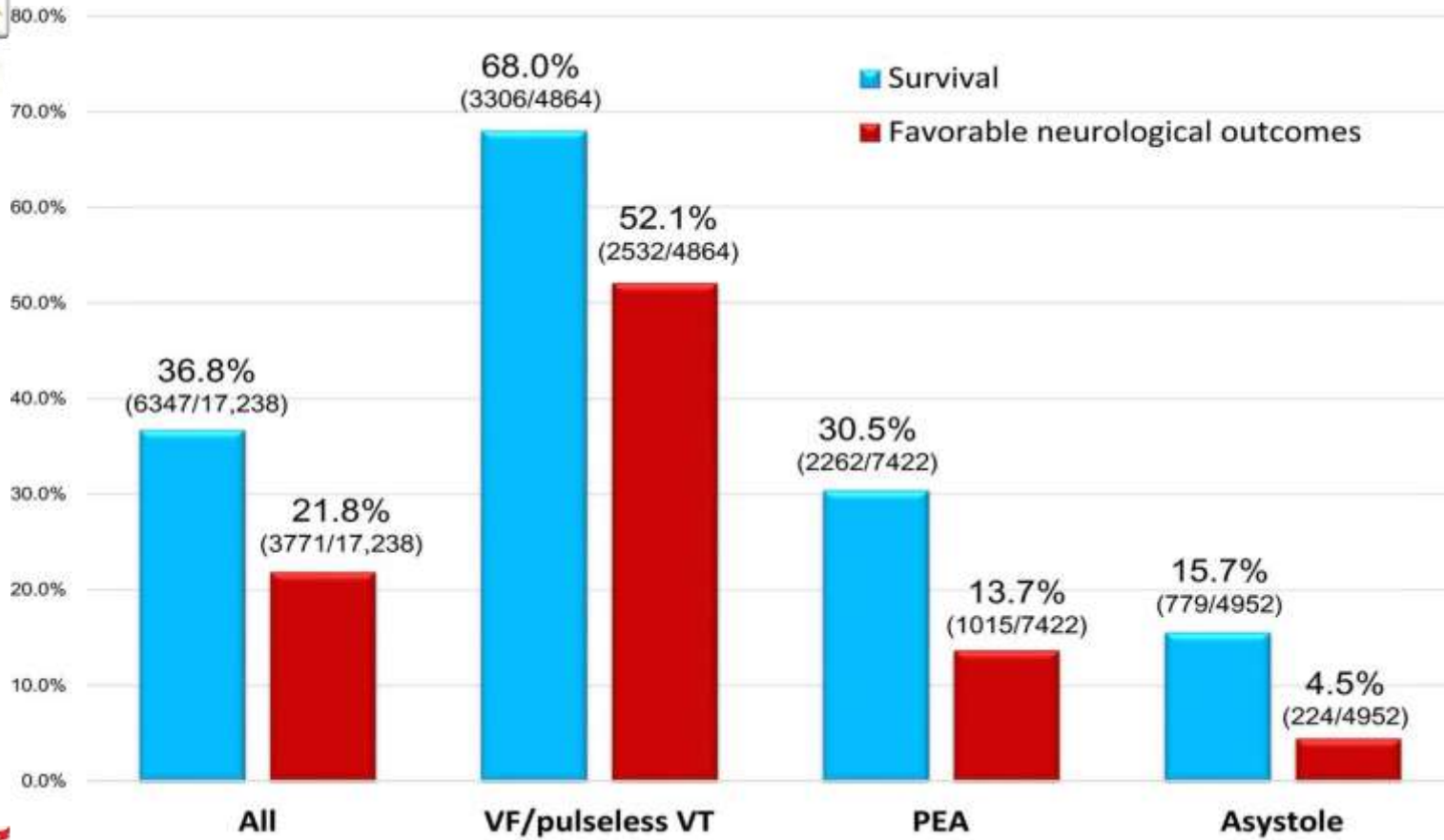


Percentage of Presenting Arrhythmias and Survival to Discharge for IHCA and OHCA

Presenting Arrhythmia	IHCA		OHCA	
	Percent of Total Cardiac Arrests	Percent Survive to Discharge	Percent of Total Cardiac Arrests	Percent Survive to Discharge
VF/VT (shockable)	17.4	32.6	20.5	30
Asystole (unshockable)	28	2.3	49.4	2.3
PEA (unshockable)	54.3	44.3	24.1	10.7
Other	Not reported	Not reported	4.5	46.4



One-month outcomes after out-of-hospital cardiac arrest by the initial rhythm.



Yoshikazu Goto et al. J Am Heart Assoc 2016;5:e002819

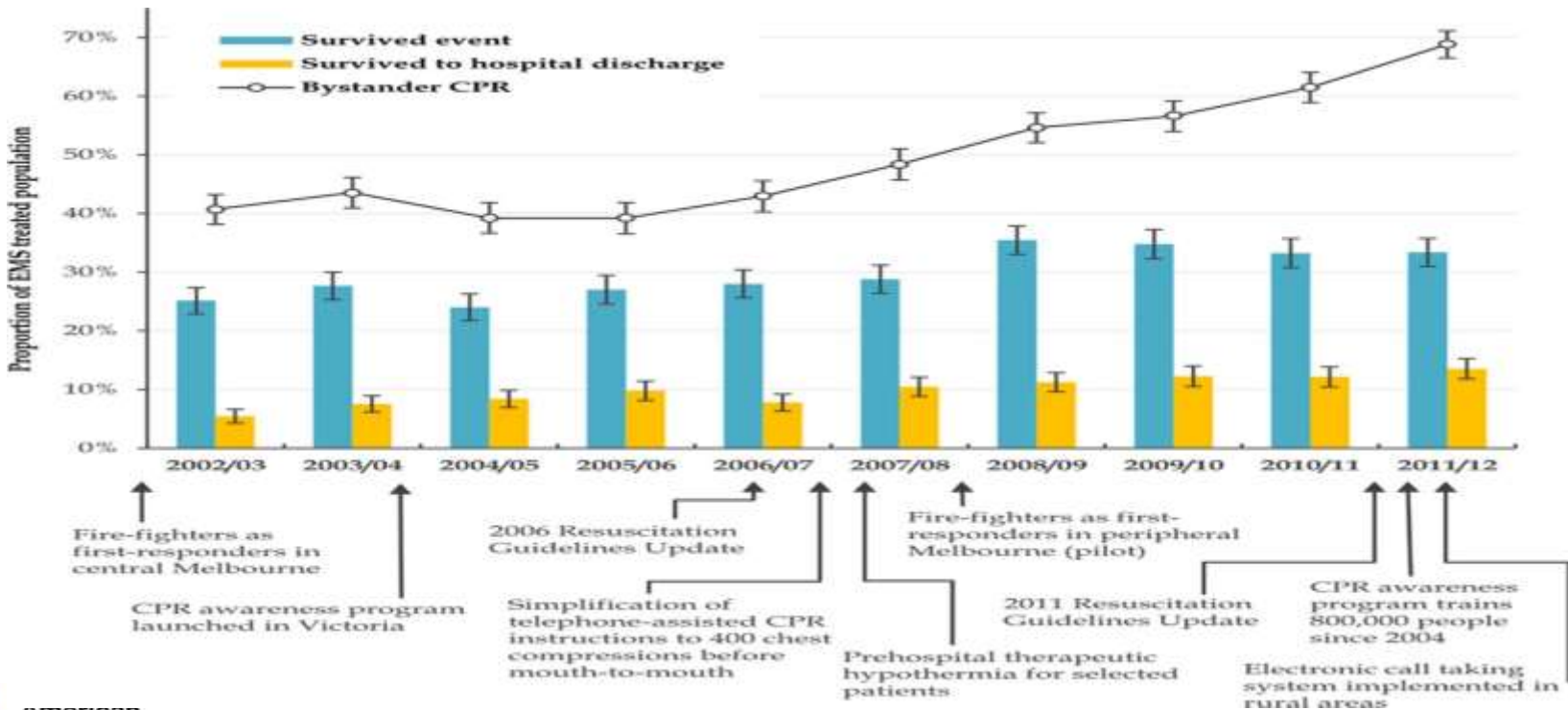


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Ten-year unadjusted trends in bystander cardiopulmonary resuscitation (CPR) and survival in the emergency medical service (EMS)-treated adult presumed cardiac out-of-hospital cardiac arrest population in Victoria, Australia, 2002 to 2012 (P trend <0.001 for all).



Ziad Nehme et al. Circ Cardiovasc Qual Outcomes. 2015;8:56-66



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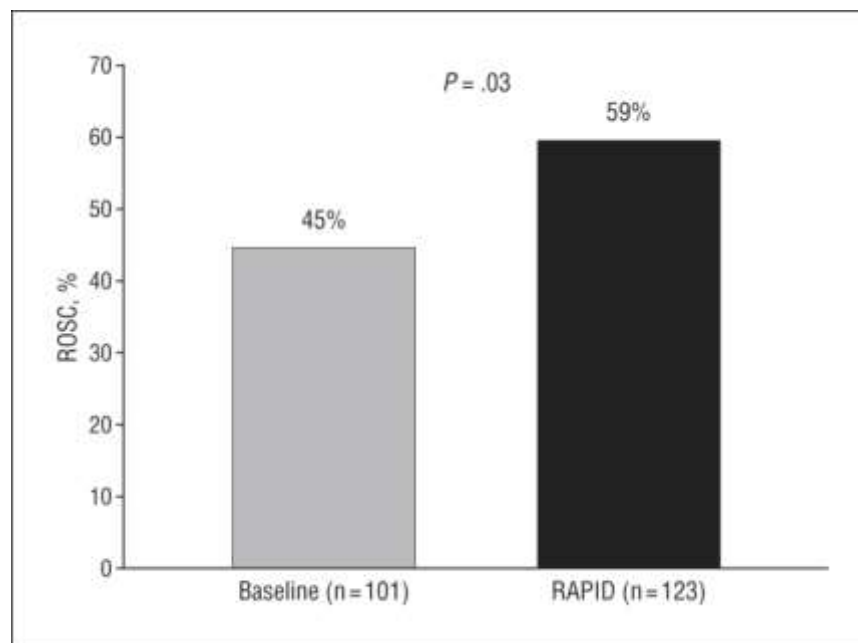
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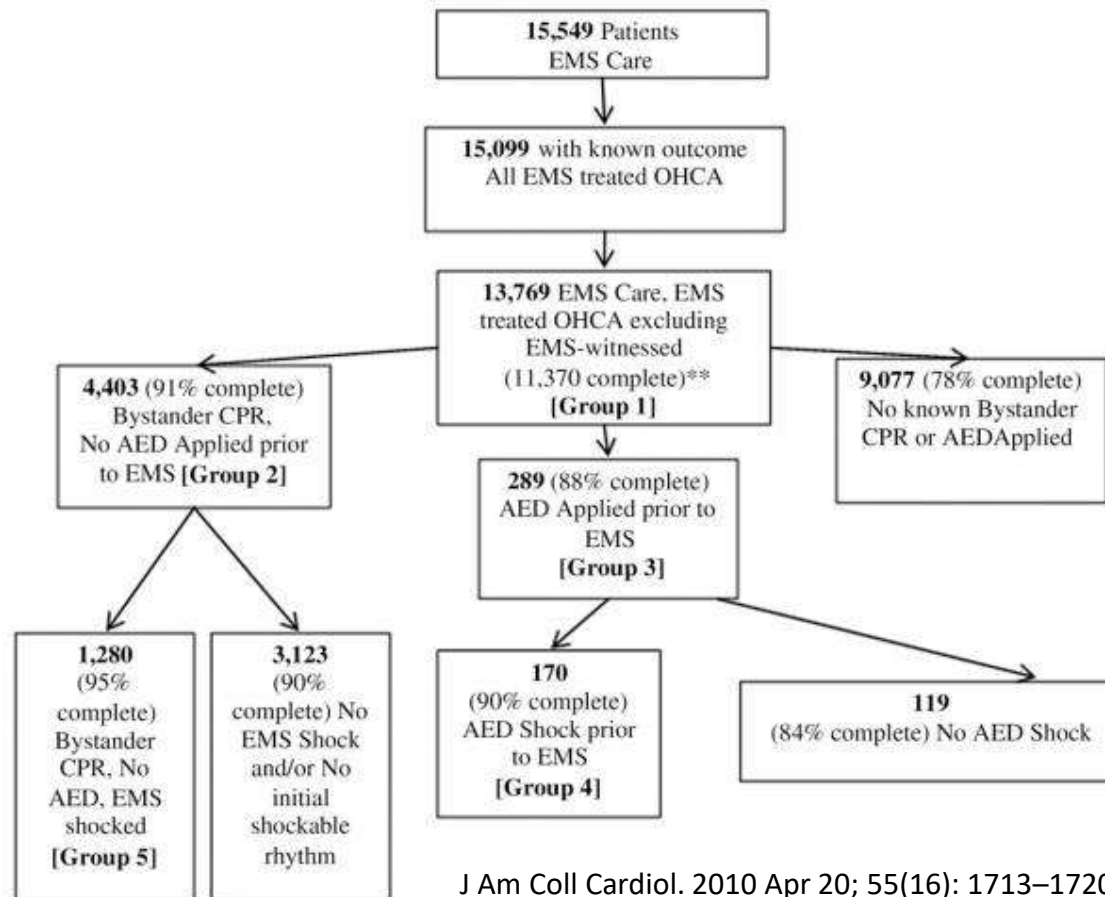
From: Improving In-Hospital Cardiac Arrest Process and Outcomes With Performance Debriefing

Arch Intern Med. 2008;168(10):1063-1069. doi:10.1001/archinte.168.10.1063



Return of spontaneous circulation (ROSC) by cohort. RAPID indicates resuscitation with actual performance integrated debriefing.

Survival After Application of Automatic External Defibrillators Before Arrival of the Emergency Medical System



J Am Coll Cardiol. 2010 Apr 20; 55(16): 1713–1720.

Table 1

Characterization of All EMS-Treated Victims and Various Subgroups of Interest

	Group 1: EMS-Treated OHCA, Excluding EMS Witnessed	Group 2: Bystander CPR, No AED Applied Before EMS	Group 3: AED Applied Before EMS	Group 4: AED Shock Before EMS	Group 5: Bystander CPR, No AED, EMS Shocked	Group 6: Public Location Only	Group 7: Bystander Witnessed Only
n	13,769	4,403	289	170	1,280	2,193	5,630
Median age, yrs	67 (26)	65 (27)	62 (24)	60 (20)	63 (22)	60 (21)	68 (24)
Gender							
Male	8,826 (64%)	2,838 (64%)	212 (73%)	141 (83%)	987 (77%)	1,814 (83%)	3,783 (67%)
Unknown	27 (0%)	10 (0%)	0 (0%)	0 (0%)	2 (0%)	6 (0%)	10 (0%)
Median EMS response time, min	5.3 (2.9); 9	5.4 (2.8); 9.3	5.6 (3.4); 11	5.3 (3.2); 9.6	5.3 (2.7); 8.9	5 (3); 9	5.4 (3); 9.1
Public location	2,193 (16%)	888 (20%)	171 (59%)	130 (76%)	468 (37%)	2,193 (100%)	1,285 (23%)
Witnessed bystander	5,630 (41%)	2,278 (52%)	180 (62%)	130 (76%)	980 (77%)	1,285 (59%)	5,630 (100%)
Unknown first rhythm	1,273 (9%)	278 (6%)	25 (9%)	13 (8%)	42 (3%)	156 (7%)	—
Shockable	3,278 (24%)	1,341 (30%)	170 (59%)	170 (100%)	1,280 (100%)	1,054 (48%)	2,122 (38%)
Unknown	808 (6%)	175 (4%)	5 (2%)	0 (0%)	0 (0%)	118 (5%)	229 (4%)
Transported to hospital	8,106 (59%)	2,553 (58%)	224 (78%)	146 (86%)	999 (78%)	1,746 (80%)	3,861 (69%)
Survival to hospital discharge	907 (7%)	382 (9%)	69 (24%)	64 (38%)	286 (22%)	368 (17%)	641 (11%)

Values are n, n (interquartile range), n (%), and n (interquartile range); 90%. Group 1 = all patients receiving EMS care for presumed cardiac arrest, excluding EMS-witnessed arrests. Group 2 = all non-EMS-witnessed arrests in which a bystander performed CPR. No AED applied before EMS. Group 3 = all non-EMS-witnessed arrests in which an AED was applied before EMS arrival. This was the primary multivariate analysis group. Group 4 = all non-EMS-witnessed arrests in which an AED applied before EMS arrival provided a shock. Group 5 = all non-EMS-witnessed arrest in which a bystander performed CPR, but the first shock was provided by EMS. Group 6 = all non-EMS-witnessed cardiac arrests treated by EMS in a public location. Group 7 = all bystander-witnessed cardiac arrests (must be non-EMS-witnessed).

AED = automatic external defibrillator; CPR = cardiopulmonary resuscitation; EMS = emergency medical services; IQR = interquartile range; OHCA = out-of-hospital cardiac arrest.

Table 3

Survival to Hospital Discharge by Type of Location

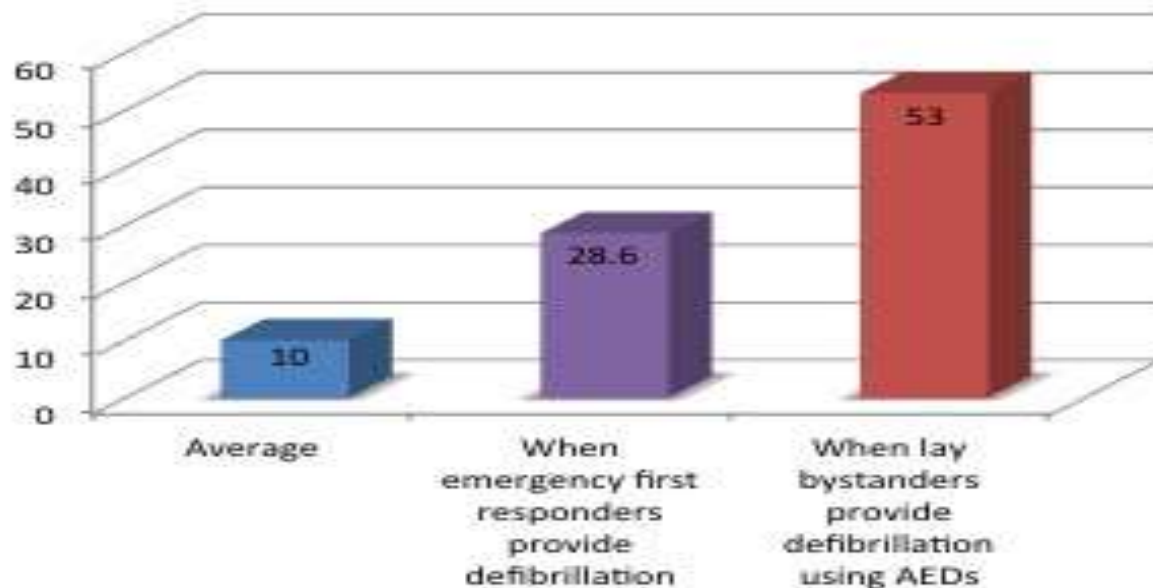
	AED Applied Before EMS	Survival (%)	Bystander CPR, No AED Applied Before EMS	Survival (%)	Adjusted OR [*] (95% CI) [†]
Public	171	35	888	20	1.86 (1.26–2.75)
Street/highway	14	36	210	13	
Public building	48	38	169	21	
Place of recreation	41	49	135	24	
Industrial place	18	22	54	15	
Other public place	50	24	320	23	
Private	117	9	3,510	6	1.39 (0.62–3.09)
Home residence	71	11	2,805	7	
Farm/ranch	1	0	7	0	
Residential institution	41	5	668	2	
Other private place	4	0	30	10	


* Versus no AED applied.

† $p = 0.75$ for interaction between AED applied and type of location. Subgroup data are unadjusted and provided for descriptive purposes. Conclusions are based on the multivariate analysis on the far right.

Abbreviations as in Tables 1 and 2.

Out-of-Hospital Cardiac Arrest Survival



 **Sudden Cardiac Arrest Foundation**
TAKING AWARENESS, SAVING LIVES

Baekgaard J, et al, Circulation, July 7, 2017

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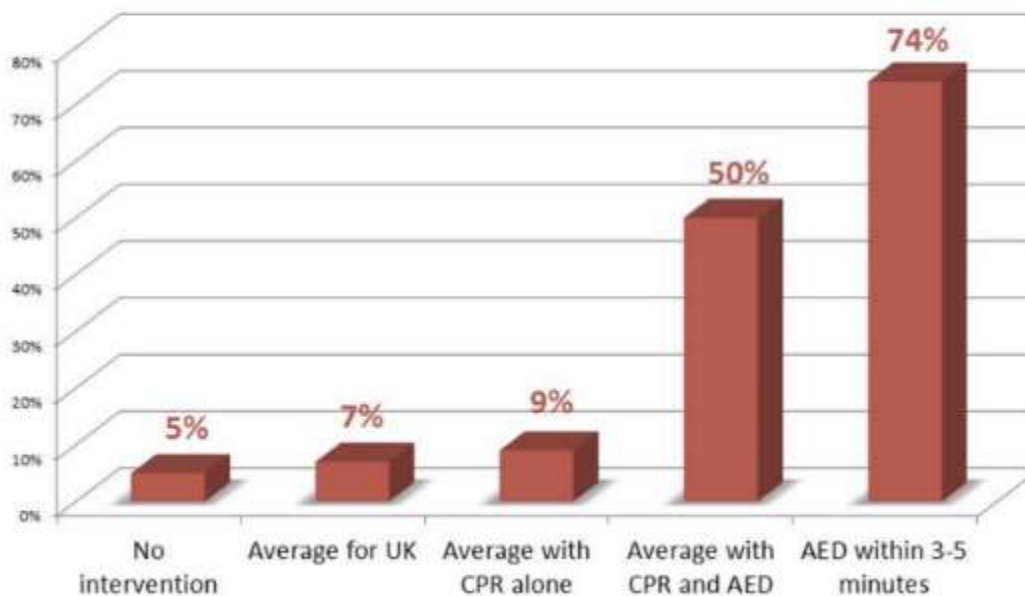
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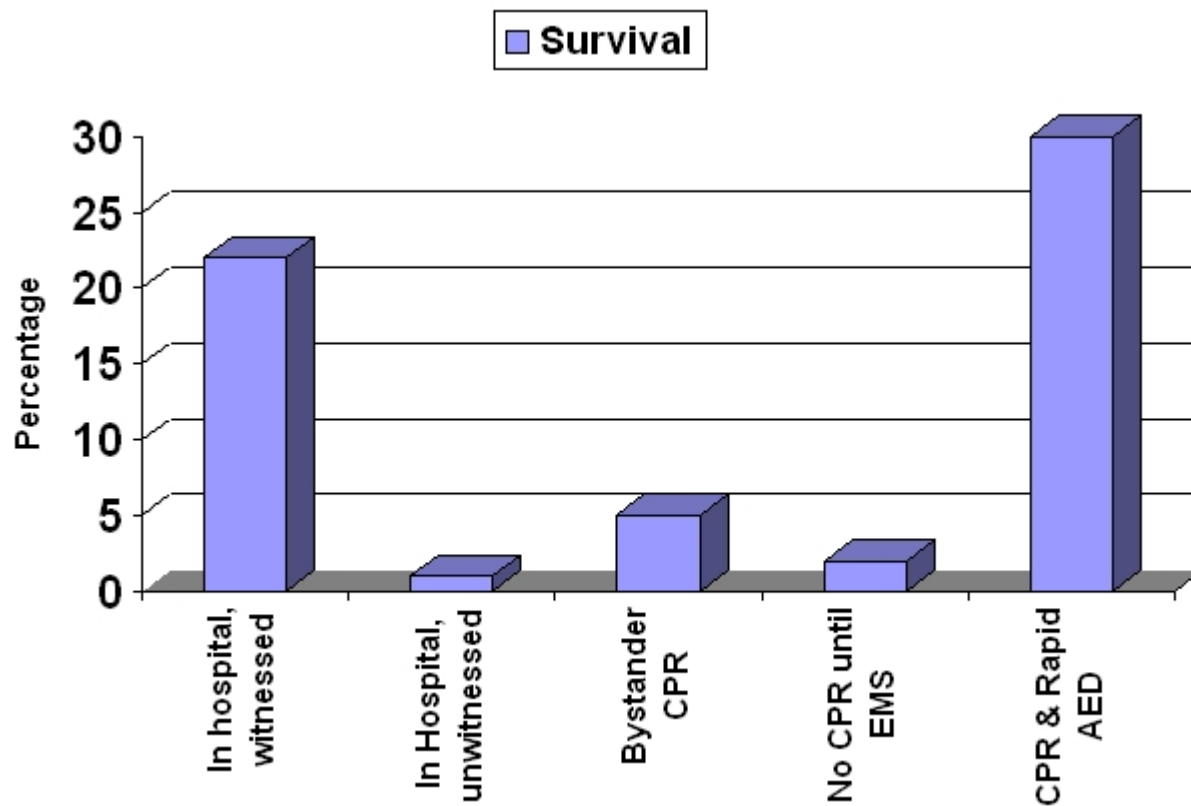
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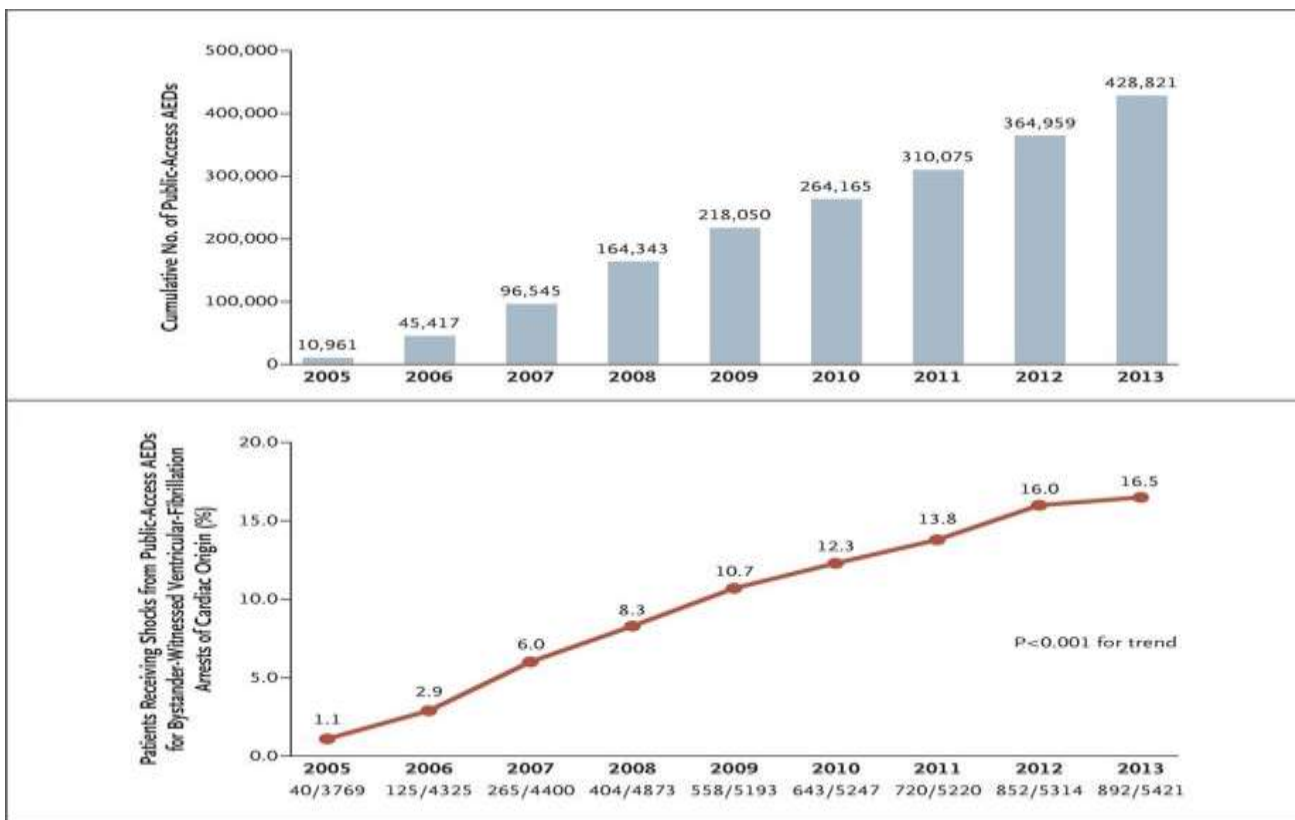
The impact of public-access defibrillators on survival

Survival rates from sudden cardiac arrest

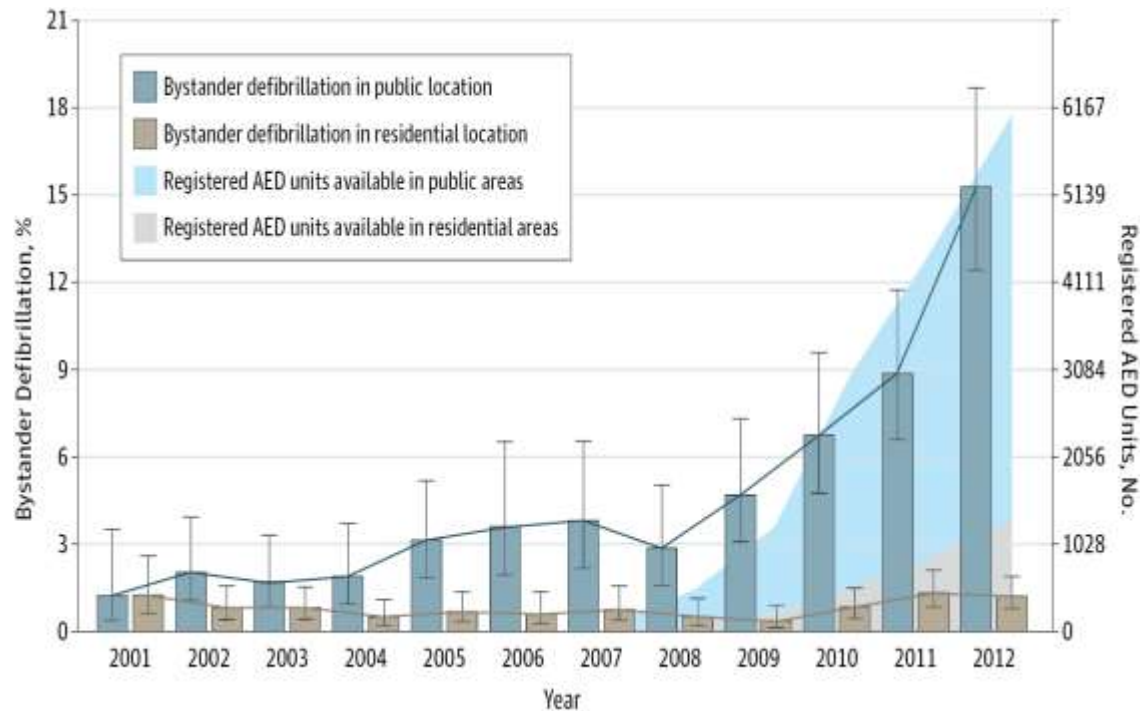




Public-Access Defibrillation and Out-of-Hospital Cardiac Arrest in Japan



Bystander Defibrillation for Out-of-Hospital Cardiac Arrest in Public vs Residential Locations



JAMACardiol.2017;2(5):507-514

Table. Baseline Characteristics and Survival Among Patients With OHCA in Denmark According to Location and Whether Bystander Defibrillation Was Performed^a

Variable	Location of OHCA				All (n = 18 688)	Missing Data
	Residential		Public			
	Bystander Defibrillation (n = 117)	No Bystander Defibrillation (n = 13 788)	Bystander Defibrillation (n = 243)	No Bystander Defibrillation (n = 4540)		
Age, median (IQR), y	68 (58-77)	73 (63-81)	64 (53-73)	68 (58-78)	72 (62-80)	0
Males	84 (71.8)	8913 (64.6)	220 (90.5)	3459 (76.2)	12 676 (67.8)	0
OHCA characteristics						
Bystander CPR	99 (84.6)	4377 (31.8)	229 (94.2)	2428 (53.6)	7133 (38.2)	47
Bystander-witnessed arrest	82 (70.1)	6475 (47.2)	203 (83.5)	2999 (66.5)	9759 (52.2)	103
Shockable heart rhythm	117 (100)	2859 (21.6)	243 (100)	1976 (45.0)	5195 (27.8)	722
Time interval, median (IQR), min ^b	15.0 (10.0-21.0)	12.0 (7.0-20.0)	13.0 (8.0-17.0)	10.0 (6.0-15.0)	11.0 (7.0-19.0)	1771
Comorbidity						
Ischemic heart disease (MI not included)	36 (30.8)	3597 (26.1)	59 (24.3)	1111 (24.5)	4803 (25.7)	0
Previous MI	16 (13.7)	1747 (12.7)	36 (14.8)	531 (11.7)	2330 (12.5)	0
Heart failure	29 (24.8)	2987 (21.7)	42 (17.3)	823 (18.1)	3881 (20.8)	0
COPD	14 (12.0)	2239 (16.2)	6 (2.5)	422 (9.3)	2681 (14.3)	0
Malignant disease	13 (11.1)	1698 (12.3)	15 (6.2)	406 (8.9)	2132 (11.4)	0
Renal disease	2 (1.7)	715 (5.2)	6 (2.5)	153 (3.4)	876 (4.7)	0
Survival						
ROSC at hospital arrival	42 (37.2)	1702 (12.6)	133 (56.4)	1121 (25.1)	2998 (16.0)	347
30-d Survival	23 (19.7)	660 (4.8)	114 (46.9)	676 (14.9)	1473 (7.9)	0

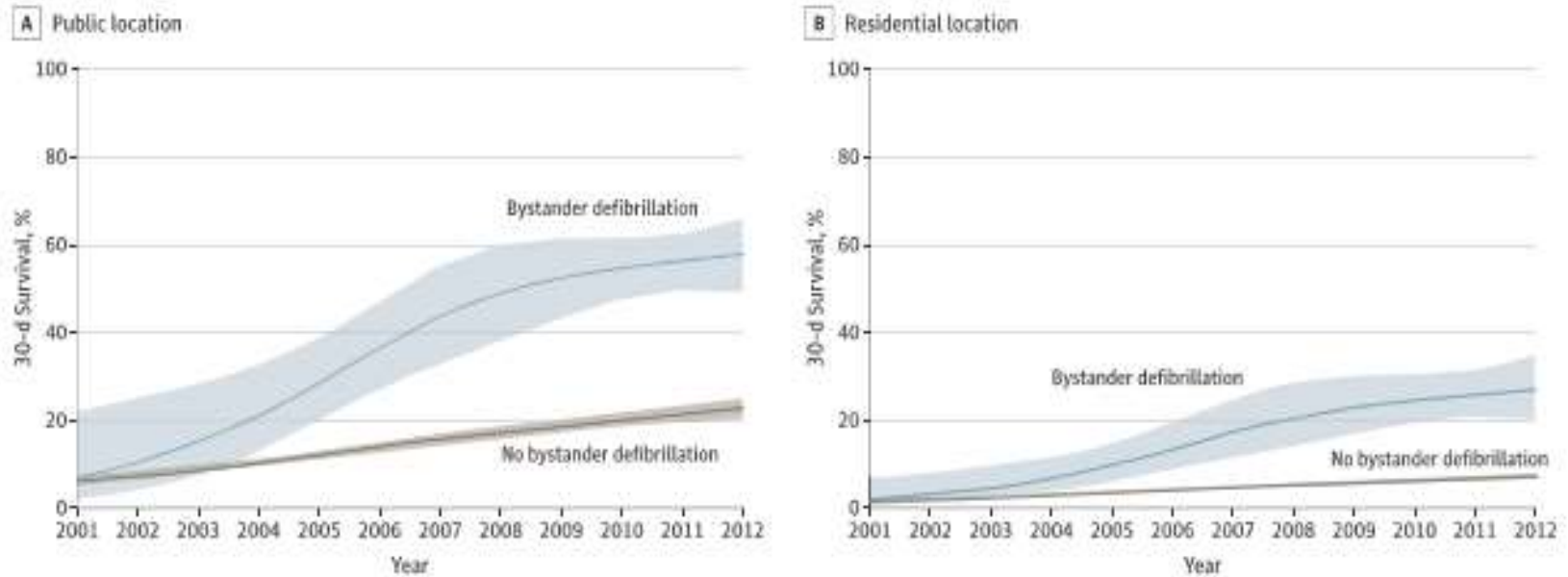
Abbreviations: COPD, chronic obstructive pulmonary disease; CPR, cardiopulmonary resuscitation; IQR, interquartile range; MI, myocardial infarction; OHCA, out-of-hospital cardiac arrest; ROSC, return of spontaneous circulation.

^a Data are presented as number (percentage) of patients unless otherwise

indicated. Data were collected from June 1, 2001, to December 31, 2012.

^b Indicates estimated time from recognition of the arrest to the first rhythm analysis by the emergency medical services personnel.

Figure 4. 30-Day Survival According to the Location of the Out-of-Hospital Cardiac Arrest (OHCA) and Performance of Bystander Defibrillation



The 30-day survival among patients with OHCA in public vs residential locations according to whether the patients underwent defibrillation by bystanders. The results from logistic regression were not adjusted for patient

characteristics, and restricted cubic splines were used to model changes in calendar time. Shaded areas indicate 95% CIs.

EuReka ONE REGISTRY

Table 1
Summary data for all participating countries.

Code	Country	Total population (in thousands)	Population covered (in thousands)	Percentage covered	Regions	Cases with CA	CA per 100,000 per year	CPR attempted	CPR per 100,000 per year
A	Austria	8474	1538	18%	7	71	55	54	42
B	Belgium	11,200	1530	14%	6	105	*	105	82
CRO	Croatia	4285	1893	44%	6	98	62	66	42
CYP	Cyprus	0.800	0.200	25%	1	6	36	4	24
CZ	Czech Rep.	10,520	4359	41%	7	886	244	379	104
DK	Denmark	5614	1726	31%	1	116	81	101	70
SF	Finland	5439	4445	82%	20	467	126	216	58
F	France	66,318	17,166	26%	44	855	60	743	52
D	Germany	80,620	13,416	17%	51	1369	122	738	66
GR	Greece	11,030	6144	56%	7	253	49	165	32
H	Hungary	9909	1288	13%	3	127	118	85	79
ICE	Iceland	0.328	0.328	100%	6	13	58	10	44
IRL	Ireland	4588	4588	100%	1	209	76	155	41
I	Italy	59,830	8015	13%	4	773	116	428	64
LUX	Luxemburg	0.549	0.549	100%	3	46	102	28	62
NL	Netherlands	16,800	4870	29%	3	250	62	190	47
N	Norway	5048	3931	78%	11	188	57	167	51
PL	Poland	38,530	2265	6%	1	275	146	133	70
P	Portugal	10,460	0.262	3%	1	35	160	16	73
RO	Romania	19,960	5344	27%	3	378	85	229	51
SRB	Serbia	7164	3200	45%	7	488	183	159	60
SK	Slovakia	5421	5421	100%	1	670	148	343	76
SLO	Slovenia	2050	0.660	32%	4	38	69	25	45
E	Spain	47,270	47,270	100%	17	1107	28	756	19
S	Sweden	9593	7482	78%	20	301	*	301	48
CH	Switzerland	8081	0.346	4%	1	22	76	14	48
UK	United Kingdom	64,597	26,346	41%	12	1536	*	1536	70
	Total	514,478	174,582	34%	248	10,682	-	7146	-

* B, S, UK: only cases with cardiopulmonary resuscitation (CPR) attempted.

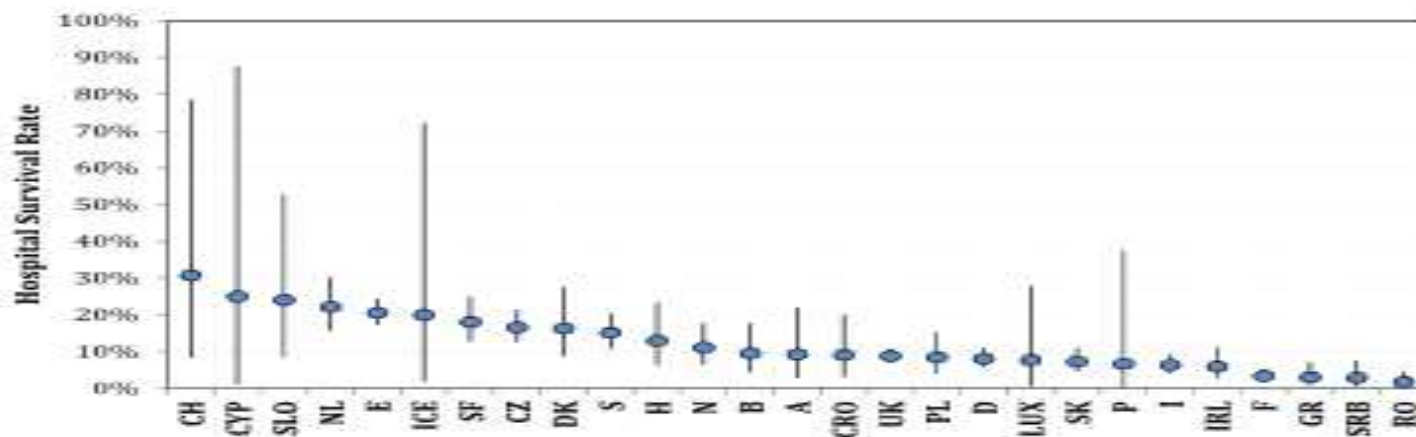
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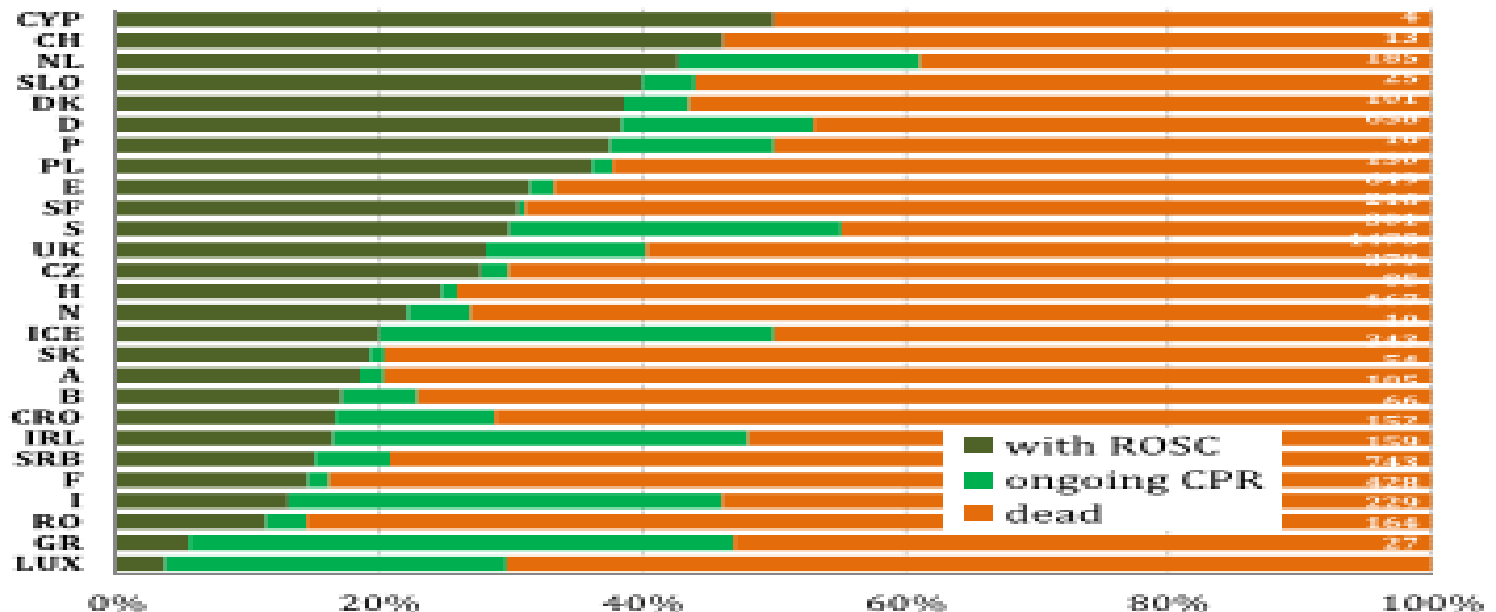


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Abbreviations for countries names are explained in Table 1.

Fig. 4. Percentage survival in cases with CPR attempted (discharged from hospital alive or alive at least 30 days after event). The vertical lines represent the 95% confidence intervals. The graph includes 6414 patients from 27 countries (range 4 – 1218). The overall rate is 10.3%. Abbreviations for countries names are explained in Table 1.



Abbreviations: ROSC= Return of spontaneous circulation, CPR= cardiopulmonary resuscitation, Abbreviations for Countries names are explained in Table 1.

*Patients included in the 'Dead' category either died at scene or were pronounced dead on arrival at hospital. Numbers to the right of each bar represent the total number of cases per country.

Fig. 3. Status on hospital admission (n=6884)*. Abbreviations: ROSC= Return of spontaneous circulation; CPR= cardiopulmonary resuscitation; Abbreviations for countries names are explained in Table 1. *Patients included in the 'Dead' category either died at scene or were pronounced dead on arrival at hospital. Numbers to the right of each bar represent the total number of cases per country.

ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ

Αθήνα, 22.8.2007

ΥΠΟΥΡΓΕΙΟ ΥΓΕΙΑΣ & ΚΟΙΝΩΝΙΚΗΣ ΑΛΛΗΛΕΓΓΥΗΣ ΑΡ.ΠΡΩΤ: Υ4α\οικ

ΓΕΝΙΚΗ Δ/ΝΣΗ ΥΓΕΙΑΣ

Δ/ΝΣΗ ΑΝΑΠΤΥΞΗΣ ΜΟΝ. ΥΓΕΙΑΣ

ΤΜΗΜΑ Α'

Πληροφορίες: Κ. ΑΠΟΣΤΟΛΙΔΟΥ
ΤΗΛ 210 5231107

ΠΡΟΣ

ΠΙΝΑΚΑ ΔΙΑΝΟΜΗΣ
(ΓΙΑ ΕΝΕΡΓΕΙΑ)

Ε Γ Κ Υ Κ Λ Ι Ο Σ

ΘΕΜΑ: « Κανόνες Χρήσης Αυτόματου **Εξωτερικού Απινιδιστή** ή **Απινιδιστή** σε Δημόσιους Χώρους. »

ΣΧΕΤ: **1.** Η αριθμ. 1409/6.6.2007 Απόφαση της Εκτελεστικής Επιτροπής του Κεντρικού Συμβουλίου Υγείας.

2. Η πρόταση της Εθνικής Επιτροπής Καρδιοαναπνευστικής Αναζωογόνησης (ΕΕΚΑΑΝ) του ΚΕΣΥ.

V. Δημόσιοι χώροι εγκατάστασης ΑΕΑ

Κάθε Δημόσια Υπηρεσία, Ιδιωτική επιχείρηση, Οργανισμός, όπου συχνάζει μεγάλος αριθμός προσώπων, όπως :

- Αεροδρόμια, Λιμάνια
- Υπουργεία, Δικαστήρια, Σωφρονιστικά Καταστήματα, Κοινοβούλιο και λοιπές Δημόσιες Υπηρεσίες
- Αεροπλάνα, Πλοία
- Αθλητικά κέντρα
- Ξενοδοχεία, Σχολεία
- Εμπορικά κέντρα, Σταθμοί λεωφορείων
- Σιδηροδρομικοί σταθμοί και οποιοσδήποτε άλλος χώρος, όπου η άμεση πρόσβαση ιατρικής βοήθειας και απαραίτητου συνοδού εξοπλισμού είναι δυσχερής ή αδύνατη.

VI. Εγκατάσταση και θέση ΑΕΑ

Έχοντας υπ' όψη τα ανωτέρω και ειδικότερα τα αναφερόμενα στις ενότητες IV και V, η εγκατάσταση ΑΕΑ καθορίζεται με βάση συγκεκριμένα κριτήρια χωροταξίας και πιθανότητας εμφάνισης επεισοδίου καρδιακής ανακοπής. Συγκεκριμένα:

- Εκτιμώνται χώροι με τη μεγαλύτερη συχνότητα ανακοπή (2 ανακοπές/έτος). Π.χ. Σε γήπεδα 1 ΑΕΑ/15.000 θεατές
φυλακή 1 ΑΕΑ/όροφο
εμπορικό κέντρο 1 ΑΕΑ/ όροφο
ξενοδοχείο 1 ΑΕΑ
αεροπλάνο 1 ΑΕΑ

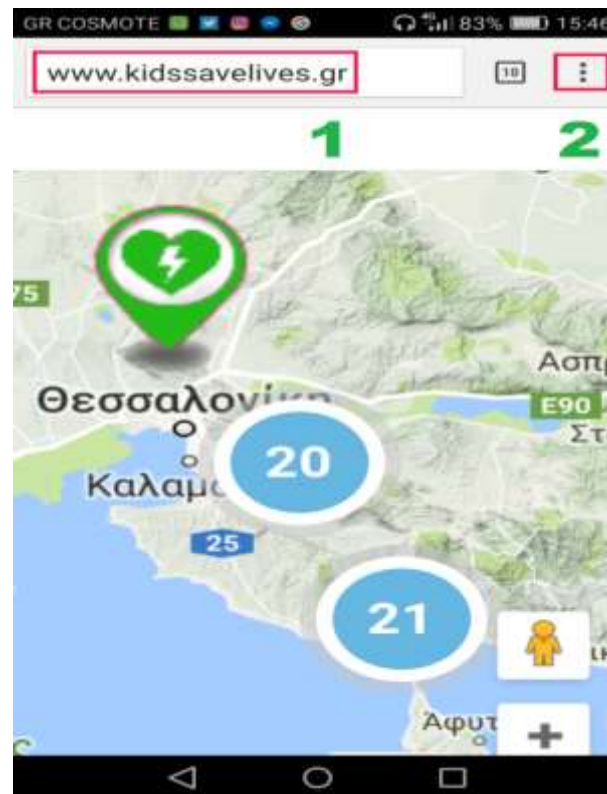
- Επιλέγονται χώροι όπου κυκλοφορούν περισσότερα από 250 άτομα, ηλικίας μεγαλύτερης των 60 ετών , επί περίπου 16 ώρες ημερησίως.

-Επίσης, χώροι όπου συνέβησαν περισσότερα του ενός επεισόδια ανακοπής κατά τα τελευταία 2 χρόνια

Η θέση εγκατάστασης του ΑΕΑ πρέπει να είναι προσβάσιμη (περπατώντας 1-1,5μια λεπτό) και ορατή εμφανώς σε όλους.

Η θέση του ΕΑΕ πρέπει να είναι δίπλα σε τηλέφωνο για την άμεση ενεργοποίηση του ΕΚΑΒ.

KIDS SAVES LIVES



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ΚΑΤΑΣΤΑΣΗ

Όλες

Ελεγμένος

Μη Ελεγμένος

ΛΕΞΗ ΚΛΕΙΔΙ

Η ΤΟΠΟΘΕΣΙΑ ΜΟΥ

Η Τοποθεσία μου
250 km

Αναζήτηση



ΕΣΣΔΑ
Μη Ελεγμένος / Αθήνα





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ΠΑΝΕΛΛΗΝΙΟ ΚΑΡΔΙΟΛΟΓΙΚΟ ΣΥΝΕΔΡΙΟ
PANHELLENIC CONGRESS OF CARDIOLOGY

