CPR from 2002 to 2018

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20 Sept 2018

IRC Italian Resuscitation Council

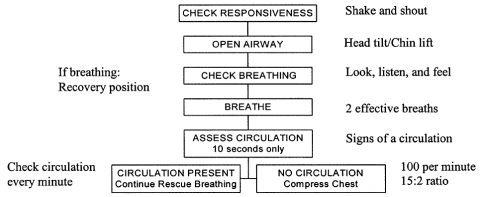
Conflicts of interest

- Editor-in-Chief Resuscitation
- Chairman, European Resuscitation Council
- Member of ILCOR CEE Working Group
- Author ERC Guidelines
- Co-investigator for:
  - AIRWAYS-2 trial
  - PARAMEDIC-2 trial

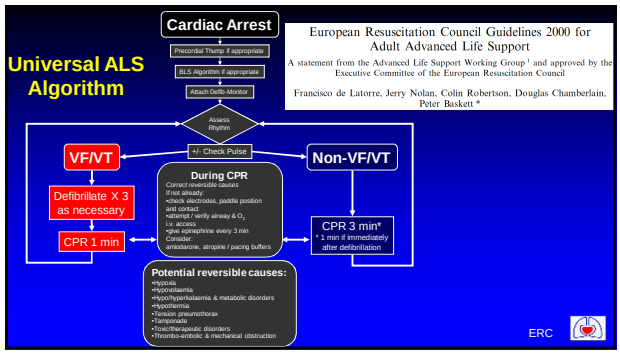
European Resuscitation Council Guidelines 2000 for Adult Basic Life Support

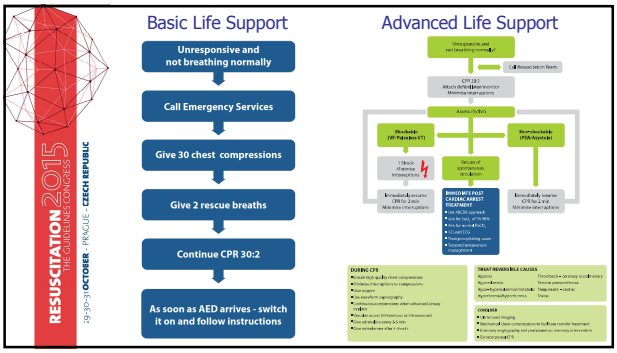
A statement from the Basic Life Support and Automated External Defibrillation Working Group[1] and approved by the Executive Committee of the European Resuscitation Council

Anthony J. Handley *, Koenraad G. Monsieurs, Leo L. Bossaert



Resuscitation 2001;48:199–205





Basic Life Support

1997	• Airway, Breathing, Circulation • 15:2, 4-5 cm, rate 100 min
2000	• No pulse check for lay persons • Compression only CPR if unable or unwilling
2005	• Change ratio to 30:2
2010	• High quality CPR • Start with chest compressions (at least 5 cm, rate at least 100 min)
2015	• Dispatcher assisted CPR • Chest compressions 5-6 cm, rate 100-120 min

Advanced Life Support

1997	• Universal ALS Algorithm described
2000	• Initial 3-stacked shocks • Subsequently, 1 minute between shocks
2005	• Single shocks, 2 minutes between shocks • Targeted Temperature Management
2010	• High quality CPR • Capnography
2015	• Uncertainty about role of drugs • E-CPR, Echo, Mechanical CPR, TTM, Prognostication

American Heart Association | American Stroke Association
life is why

EUROPEAN RESUSCITATION COUNCIL

ANZCOR
Australian and New Zealand Committee on Resuscitation

InterAmerican Heart Foundation

International Liaison Committee on Resuscitation
ILCOR

Heart&Stroke Foundation of Canada

International Consensus Conference on ECC and CPR Science with Treatment Recommendations

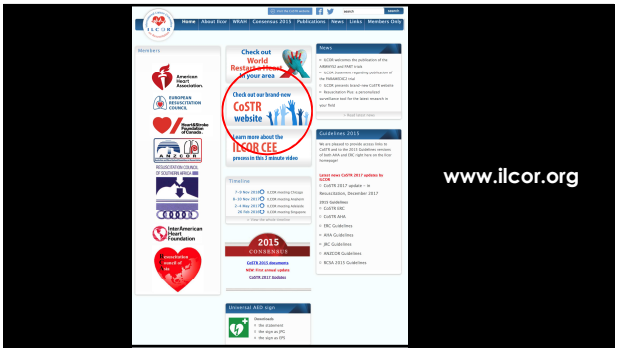
2000 2005 2010 2015

Set the questions
↓
Evaluate the evidence
↓
Consensus on Science
↓
Treatment Recommendations
↓
Guidelines
↓
Implementation

International Liaison Committee on Resuscitation
ILCOR

EUROPEAN RESUSCITATION COUNCIL

Resuscitation Council (UK)



www.ilcor.org

Advanced Cardiac Life Support in Out-of-Hospital Cardiac Arrest

Ontario Prehospital Advanced Life Support Study Group

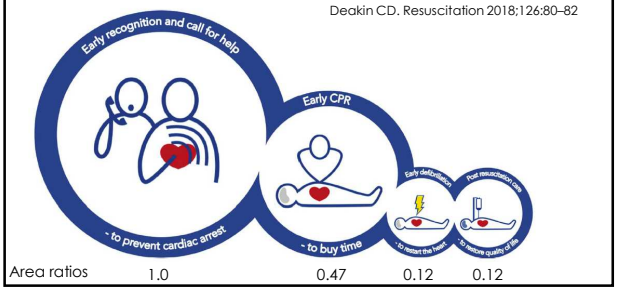
Stiell IG. NEJM 2004;351:647–56

Variable	Adjusted Odds Ratio (95% CI)
Age <75 yr	1.6 (1.2–2.3)
First link: early access by bystander	4.4 (3.1–6.4)
Second link: early CPR by bystander	3.7 (2.5–5.4)
Third link: defibrillation in ≤8 min	3.4 (1.4–8.4)
Fourth link: advanced life support	1.1 (0.8–1.5)

0.1 1.0 10.0

The chain of survival: Not all links are equal

Deakin CD. Resuscitation 2018;126:80–82

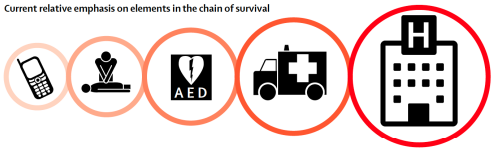


Area ratios 1.0 0.47 0.12 0.12

Out-of-hospital cardiac arrest: prehospital management

Marcus Eng Hock Ong, Gavin D Perkins, Alain Cariou — *Lancet* 2018; 391: 980–88

Current relative emphasis on elements in the chain of survival



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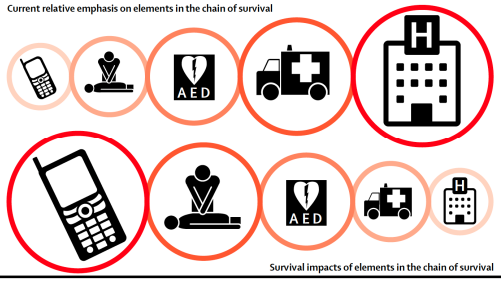
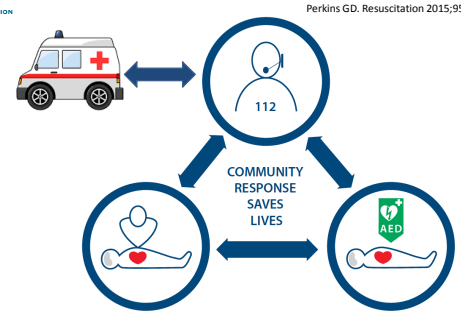
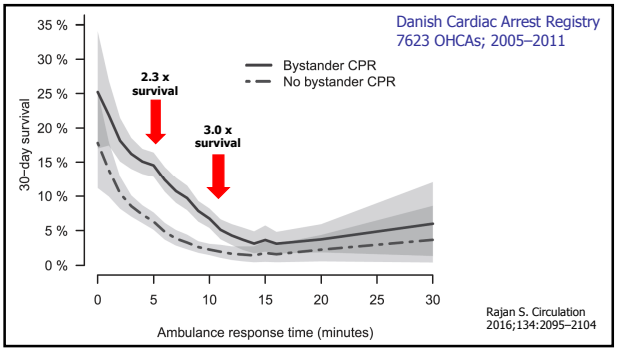


Survival impacts of elements in the chain of survival

Perkins GD. Resuscitation 2015;95:81-99

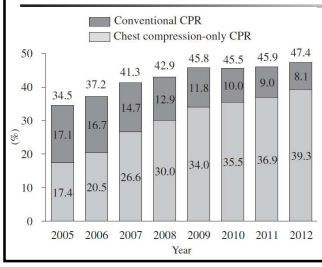




Rajan S. Circulation 2016;134:2095–2104

Dissemination of Chest Compression–Only Cardiopulmonary Resuscitation and Survival After Out-of-Hospital Cardiac Arrest

Iwami T. Circulation 2015;132:415-22

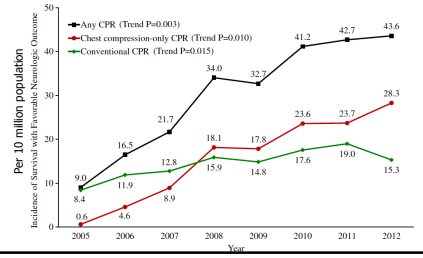


816,835 OHCAs (with resuscitation attempt)

CCCPR	30.6%
Conventional CPR	12.3%
No CPR	57.1%

Telephone-assisted CPR changed from conventional to compression-only in 2006

Dissemination of Chest Compression–Only Cardiopulmonary Resuscitation and Survival After Out-of-Hospital Cardiac Arrest



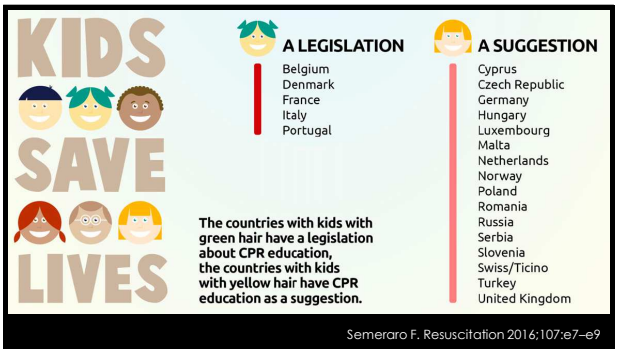
Iwami T. Circulation 2015;132:415-422

Chest compression-only versus conventional cardiopulmonary resuscitation for bystander-witnessed out-of-hospital cardiac arrest of medical origin: A propensity score-matched cohort from 143,500 patients*

	Unadjusted data		P	Propensity-matched data		P
	CCCPR (n=102,487)	Conventional CPR (n=41,013)		CCCPR (n=40,096)	Conventional CPR (n=40,096)	
1-month survival	9.7%	10.9%	0.021	11.3%	10.9%	0.011
CPC 1–2	5.6%	6.5%	0.028	7.2%	6.5%	<0.001

Adjusted OR for CPC 1–2 compression-only versus conventional CPR = **1.14 (1.08–1.22)**

Kitamura T. Resuscitation 2018;126:29–35



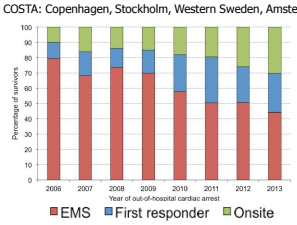
Semeraro F. Resuscitation 2016;107:e7–e9

Smith CM, Wilson MH et al. Resuscitation 2017;121:123–6

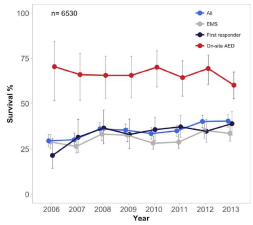
Different defibrillation strategies in survivors after out-of-hospital cardiac arrest

Zijlstra JA. Heart 2018 online

COSTA: Copenhagen, Stockholm, Western Sweden, Amsterdam



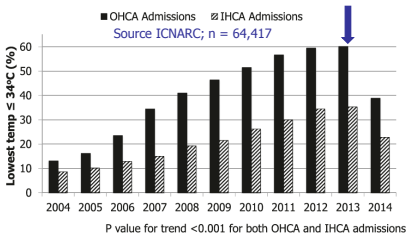
Proportion of survivors with shockable initial rhythm shocked by each group



Survival rates with shockable rhythm (36% in 2008 and 40% in 2013; P=0.004)

Impact of TTM Study in the UK

Nolan J. Critical Care 2016;20:219



P value for trend <0.001 for both OHCA and IHCA admissions

Data from Intensive Care National Audit & Research Centre (ICNARC)

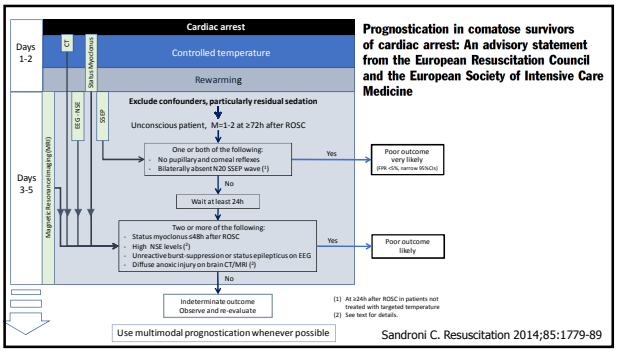
ttm2trial.org

ttm2

Hypothermia or Early Treatment of Fever

- TTM 33 versus fever control at ≥ 37.8ºC
- All-rhythm OHCA
- TTM 33 – cooling devices; closed loop control
- Standard care – target ≤ 37.5ºC (using cooling devices if temp ≥ 37.8ºC)
- 1º end point: mortality at 180 days; estimated 1200 pts
- Prognostication ≥ 96 hours post arrest

NCT02908308



Prognostication in comatose survivors of cardiac arrest: An advisory statement from the European Resuscitation Council and the European Society of Intensive Care Medicine

Sandroni C. Resuscitation 2014;85:1779-89