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DALL'EVIDENZA AI TRATTAMENTI FUTURI

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PORTO ANTICO GENOVA

Chi è il bystander “laico”? Come modificare l’algoritmo BLS in base al soccorritore

Federico Semeraro
Ospedale Maggiore, Bologna

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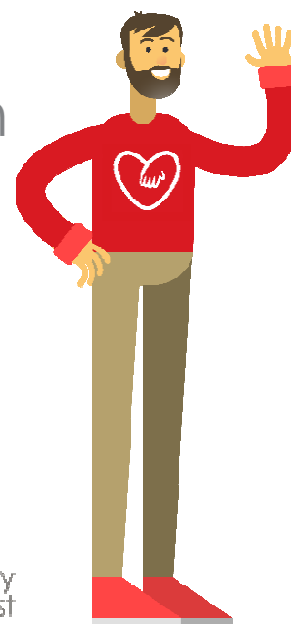
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President Italian Resuscitation Council
Educational Committee (SEC) BLS co-chair ERC
FERC European Resuscitation Council
EuReCa One & Two National Coordinator
A breathtaking picnic and Relive Project Coordinator
Star Wars & Star Trek addicted

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Bystander is the key of success



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ORIGINAL ARTICLE

Bystander Efforts and 1-Year Outcomes in Out-of-Hospital Cardiac Arrest

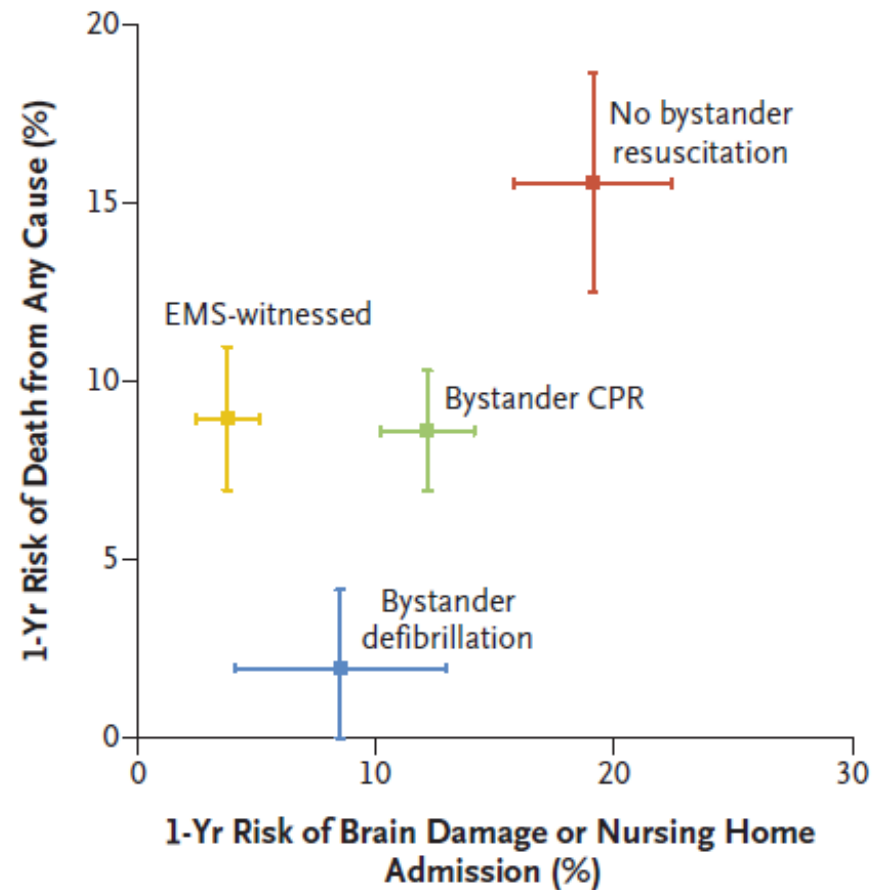
Kristian Kragholm, M.D., Ph.D., Mads Wissenberg, M.D., Ph.D., Rikke N. Mortensen, M.Sc., Steen M. Hansen, M.D., Carolina Malta Hansen, M.D., Ph.D., Kristinn Thorsteinsson, M.D., Ph.D., Shahzleen Rajan, M.D., Freddy Lippert, M.D., Fredrik Folke, M.D., Ph.D., Gunnar Gislason, M.D., Ph.D., Lars Køber, M.D., D.Sc., Kirsten Fonager, M.D., Ph.D., Svend E. Jensen, M.D., Ph.D., Thomas A. Gerds, Ph.D., Christian Torp-Pedersen, M.D., D.Sc., and Bodil S. Rasmussen, M.D., Ph.D.

N Engl J Med 2017; 376:1737-1747 | May 4, 2017 | DOI: 10.1056/NEJMoa1601891

Absolute Risk of Anoxic Brain Damage or Nursing Home Admission and Death from Any Cause at 1 Year of Follow-up According to EMS-Witnessed and Bystander-Intervention Status.

Shown are the 1-year absolute risk of anoxic brain damage or nursing home admission and the 1-year absolute risk of death from any cause in relation to EMS-witnessed and bystander-intervention status.

Data for 2527 of 2855 patients are included; those with missing status for bystander CPR or bystander defibrillation (328 patients) are not included in the analyses. Squares indicate point estimates (absolute risks), and I bars 95% confidence intervals.



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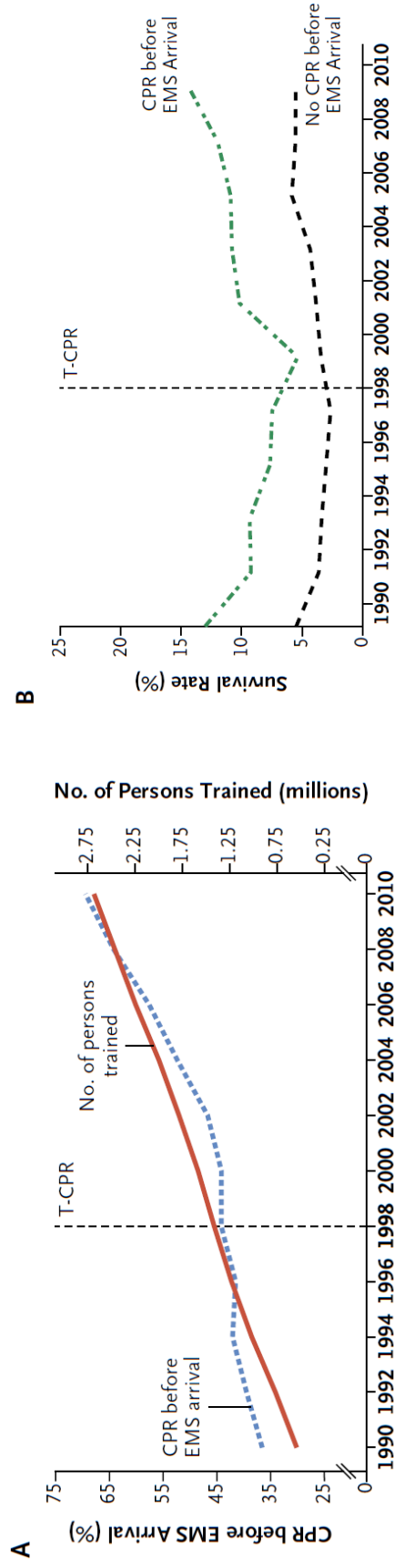


The NEW ENGLAND JOURNAL of MEDICINE

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.
N Engl J Med 2015; 372:2307-2315 | June 11, 2015 | DOI: 10.1056/NEJMoa1405796



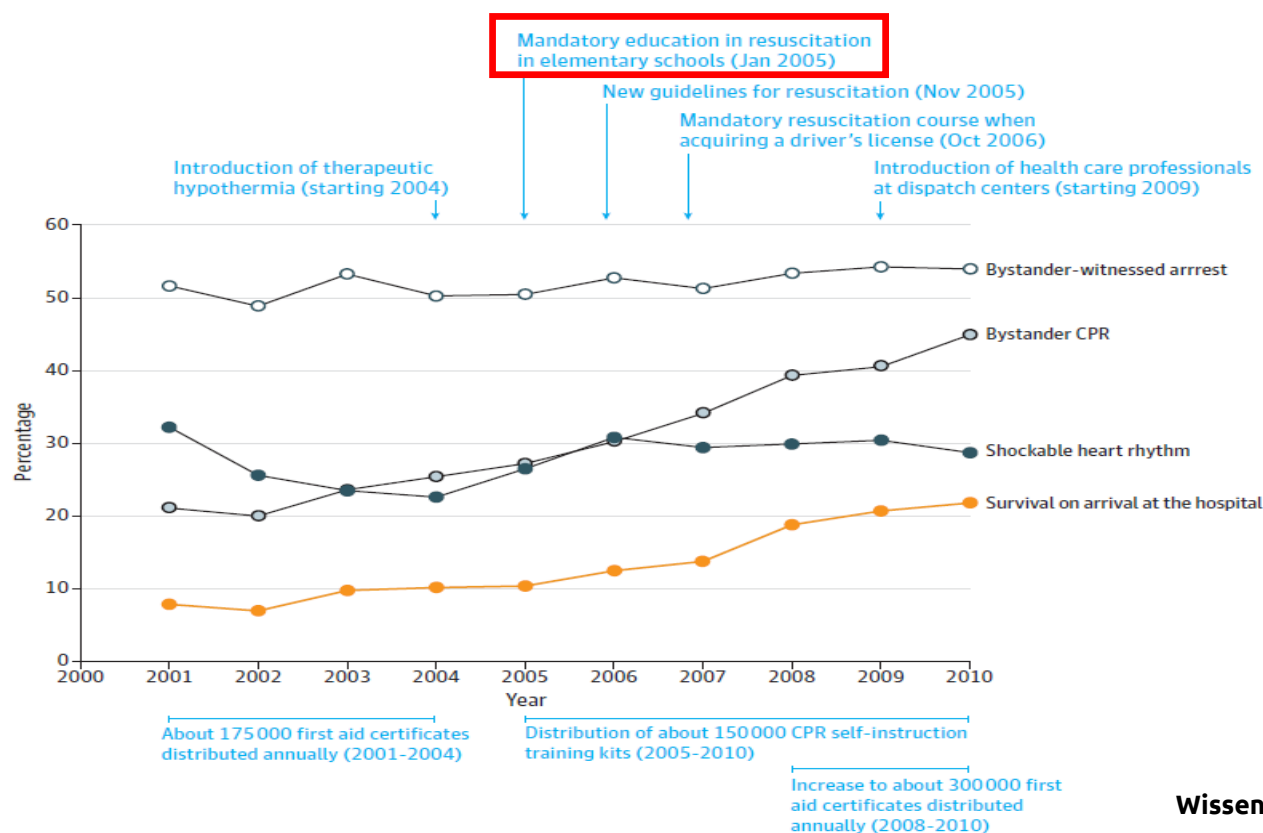
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Original Investigation

Association of National Initiatives to Improve Cardiac Arrest Management With Rates of Bystander Intervention and Patient Survival After Out-of-Hospital Cardiac Arrest



Wissenberg M et al. JAMA 2013

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Kids Save Lives – ERC position statement on school children education in CPR



The 10 ERC principles – increasing survival with “Kids Save Lives”:

1. Everyone can save a life – even children can save a life.⁹⁻¹⁶
2. Up to two hours of CPR training a year for school children is enough.^{9-11,15,16}
3. Training must involve hands-on practice which may be augmented with theoretical – including virtual – learning.⁹ Such training has also been performed without sophisticated equipment or specific resuscitation manikins.
4. Annual training of school children should start by the age of 12 years or earlier.^{9-11,15}
5. Trained children should be encouraged to train other people. The homework for all children after such training should be: please train 10 other people within the next two weeks and report.
6. A wide range of people, including anaesthesiologists, cardiologists, emergency physicians, nurses, paramedics, medical and other healthcare students, trained teachers and many other volunteers can successfully teach school children in CPR – in schools, in hospitals and elsewhere.^{6,9,15,16}
7. The responsible people in the Ministries of Education and/or Ministries of Schools and other leading politicians of each country should implement a nationwide programme for teaching CPR to school children.¹²
8. Every National Resuscitation Council (NRC) or similar organisation should support the implementation of a national initiative and “Kids Save Lives” campaign in its country.
9. With “Kids Save Lives”, children will also learn relevant social responsibility and social skills.⁹⁻¹¹
10. National programmes that train school children in CPR can save more lives, improve productivity of society, and reduce healthcare costs.^{12,17}



[Kids Save Lives – ERC position statement on school children education in CPR. August 2016 Volume 105, Pages A1–A3](#)

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EUReCA
TWO European Registry
of Cardiac arrest

1 Ottobre - 31 Dicembre 2017

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■ Aims

- Expand the ***EuReCa network***
- Find the incidence and outcome for ***out-of-hospital cardiac arrest*** (OHCA) in Europe
- **Improve the understanding of the role, age, and gender profile of bystanders in OHCA in Europe**
- Generate estimates of European ***OHCA incidence and outcome*** for patient subgroups that make up a small proportion of overall cases at national level e.g. traumatic aetiology, patients transferred to hospital with ongoing CPR.

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■ Objectives:

- Encourage participating countries to aim for ***national data collection*** and ***encourage additional countries*** to participate
- In order to provide ***more robust estimates of incidence, management and outcome***, the period of data collection is three months (1st October to 31st December 2017)
- **Identify consistency and variation in the use of the term ‘bystander CPR’**
- **Describe the incidence of ‘bystander CPR’ and its influence on OHCA outcome**

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Bystander survey and the impact it will have on EuReCa TWO

- EuReCa ONE study showed a lack of a uniform interpretation of the “bystander CPR” definition congruent with the Utstein definition.
- Therefore an online questionnaire on bystanders had been sent to all participants including 62 questions.

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Bystander CPR (EuReCa TWO definition)

Una persona è un bystander, indipendentemente dalle qualifiche mediche o professionali e la rianimazione sarà definita bystander CPR se:

viene eseguita una qualsiasi rianimazione che comprenda almeno massaggio o defibrillazione. La persona che effettua la rianimazione è presente sulla scena ma non è stata allertata o inviata sulla scena dal 118.

Il fatto che il soccorritore ha collegato un DAE ma non ha erogato la scarica e le compressioni con o senza ventilazioni, non lo qualifica come bystander.

Nel caso invece in cui abbia erogato la scarica è considerato bystander CPR. Qualsiasi tentativo di RCP da parte di un bystander, a prescindere dalla qualità o dalla durata, sarà considerato bystander CPR.

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BYSTANDER SURVEY - OPINION FINDING

		EuReCa TWO
1.02	A layperson at scene by chance, without specific training	Yes
1.02	A layperson at scene by chance, trained in BLS	Yes
1.03	A layperson at scene by chance, trained in BLS, with an AED	Yes
1.12	A physician at scene by chance, not on duty	Yes
1.13	A physician at scene by chance, not on duty, with an AED	Yes
1.22	Ambulance personnel at scene by chance, not on duty	Yes
1.23	Ambulance personnel at scene by chance, not on duty, with an AED	Yes
1.32	Other healthcare-personnel at scene by chance, not on duty	Yes
1.33	Other healthcare-personnel at scene by chance, not on duty, with an AED	Yes
1.62	A policewoman / policeman at scene by chance, not on duty	Yes
1.63	A policewoman / policeman at scene by chance, not on duty, with an AED	Yes
1.72	An employed professional firefighter at scene by chance, not on duty	Yes
1.73	An employed professional firefighter at scene by chance, not on duty, with an AED	Yes

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► Condizioni iniziali

Trattamento eseguito prima arrivo ambulanza	
RCP al telefono	<input type="text" value="Si"/>
RCP	<input type="text" value="Si-RCP con sole compressioni"/>
Applicato DAE	<input type="text" value="Si"/>
Defibrillazione	<input type="text" value="Si"/>
Ritmo iniziale riscontrato	<input type="text" value="FV/TV/Shock DAE"/>
Chi ha iniziato RCP	<input type="text" value="Astante presente per caso/vero astante"/>
Sesso astante	<input type="text" value="F"/>
Età	<input type="text" value="12"/>

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ERC Guidelines 2015

have arrived!

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Rapporto compressioni-ventilazioni

I dati degli studi su animali supportano un incremento del rapporto compressioni-ventilazioni superiore a 15:2.¹⁵⁶⁻¹⁵⁸ Un modello matematico suggerisce che il rapporto 30:2 rappresenti il migliore compromesso tra flusso sanguigno e distribuzione di ossigeno.^{159,160} Un rapporto di 30 compressioni e 2 ventilazioni era raccomandato nelle Linee Guida del 2005 e 2010 per il soccorritore singolo che esegue la rianimazione di un adulto. Questo riduceva il numero di interruzioni nelle compressioni e la frazione di tempo senza flusso ematico,^{161,162} e riduceva il rischio di iperventilazione.^{149,163} Diversi studi osservazionali hanno riportato esiti lievemente migliori a seguito dell'applicazione delle modifiche delle linee guida, che comprendevano il passaggio da un rapporto compressioni-ventilazioni di 15:2 a un rapporto raccomandato di 30:2.^{161,162,164,165} ERC pertanto continua a raccomandare un rapporto compressioni-ventilazioni di 30:2.

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RCP con sole compressioni

Studi su animali hanno documentato che la RCP con sole compressioni toraciche può essere efficace come la RCP con compressioni associate a ventilazioni, nei primi minuti dopo un arresto cardiaco non legato ad asfissia.^{140,166} Studi su animali e modelli matematici sulla RCP con sole compressioni toraciche hanno mostrato che le riserve arteriose di ossigeno si esauriscono in 2-4 minuti.^{158,167} Se le vie aeree sono pervie, la presenza di gasping occasionali e il rilasciamento passivo del torace possono fornire un minimo scambio d'aria.^{48,141,168-170}

Diversi studi osservazionali, classificati per lo più come studi con evidenza di qualità molto bassa, hanno suggerito l'equivalenza della RCP con sole compressioni toraciche rispetto a quella effettuata con compressioni e ventilazioni, negli adulti in arresto cardiaco di sospetta causa cardiaca.^{26,171-182}

ERC ha valutato attentamente il bilancio tra il potenziale beneficio o danno derivante dalla RCP con sole compressioni rispetto alla RCP standard che comprende anche le ventilazioni. La nostra fiducia sull'equivalenza tra la RCP con sole compressioni e la RCP standard non è sufficiente a modificare la prassi attuale. Pertanto, ERC supporta le raccomandazioni ILCOR: secondo cui tutti i soccorritori dovrebbero effettuare le compressioni toraciche a tutti i pazienti in arresto cardiaco. I soccorritori addestrati e in grado di eseguire le ventilazioni dovrebbero effettuare le compressioni toraciche e le ventilazioni in quanto questo approccio può garantire effetti benefici aggiuntivi ai bambini e alle vittime di arresto cardiaco causato da asfissia,^{175,183,184} o nei casi in cui il tempo di risposta del servizio di emergenza sia prolungato.¹⁷⁹

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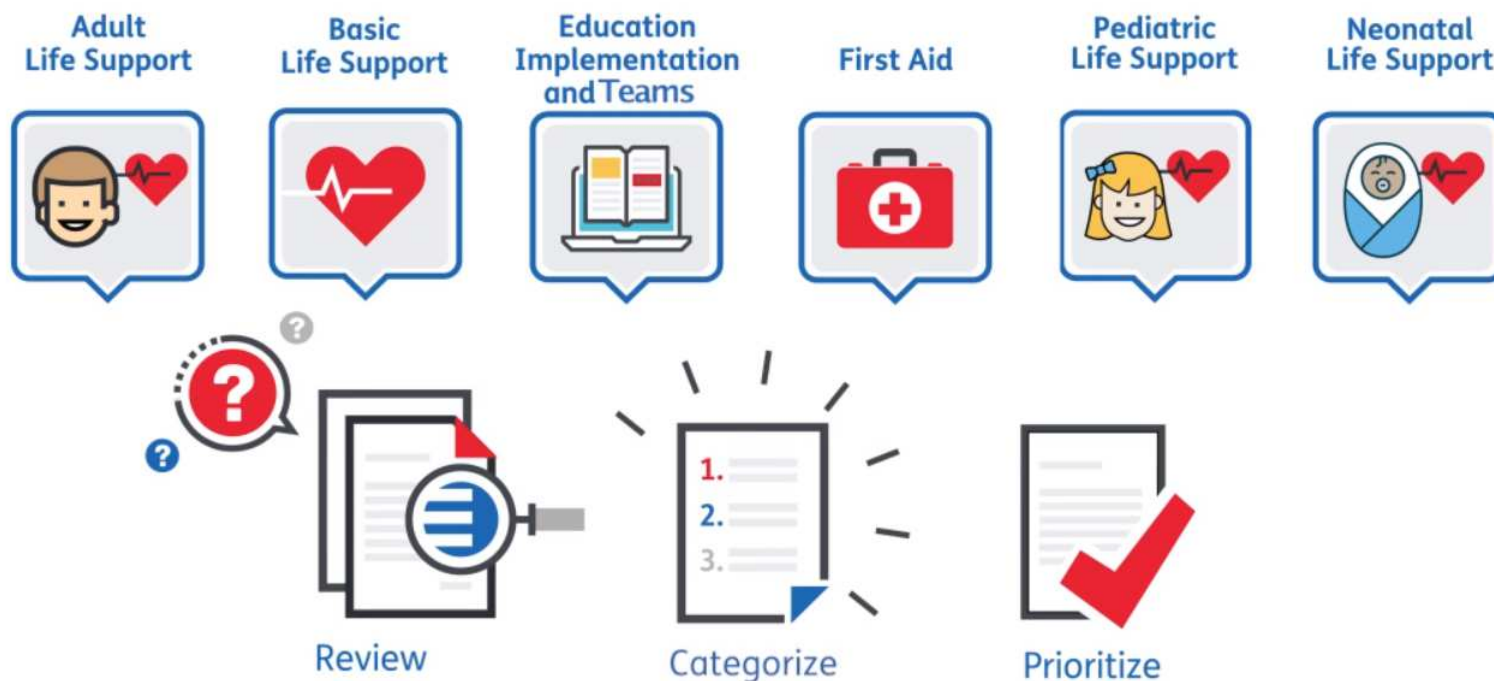
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Continuous Evidence Evaluation Process



GRADE
Methodology

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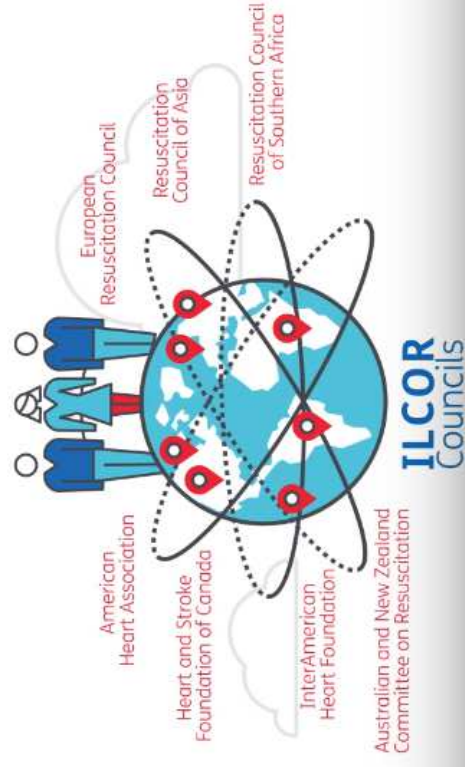
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Release of six up-to-date Consensus on Science and Treatment Recommendations

ILCOR is pleased to announce its initial effort in its new continuous evidence evaluation (CEE) process with the release of six up to date Consensus on Science and Treatment Recommendations (CoSTR). You can download these six CoSTR documents by clicking on the links in the list below.

ILCOR's CEE process will result in web publications of (CoSTR) at this site. Each CoSTR will include the original question that was searched and a value and preference statement as well as a list of knowledge gaps. Each CoSTR includes an independent citation such that it can be cited consistently. The CoSTRs are labeled "draft" in order for a CoSTR summary article to be published later in 2017. If you have any questions, concerns or comments regarding any of these CoSTRs, please contact us by email at: ilcor@heart.org

August 9, 2017 CoSTR Posting:

- [CPR: Chest Compression to Ventilation Ratio -Dispatch Assisted - Adult](#)
- [CPR: Chest Compression to Ventilation Ratio - Bystander - Adult](#)
- [CPR: Chest Compression to Ventilation Ratio -Bystander - Pediatric](#)
- [CPR: Chest Compression to Ventilation Ratio - Adult](#)
- [CPR: Chest Compression to Ventilation Ratio – EMS Delivered - Adult](#)
- [CPR: Chest Compression to Ventilation Ratio - In-hospital-Adult](#)

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CPR: Compression to Ventilation Ratio – Dispatch assisted - Adult

Treatment recommendations

We recommend that dispatchers provide instructions to perform continuous chest compressions (i.e. compression-only CPR) to callers for adults with suspected out of hospital cardiac arrest (strong recommendation, low-quality evidence).

CPR: Compression to Ventilation Ratio-Bystander – Adult

Treatment recommendations

We continue to recommend that chest compressions be performed for all patients in cardiac arrest (good practice statement).

In the 2015 CoSTR, this was cited as a strong recommendation but based on very-low-quality evidence. (Perkins 2015 e43, Travers 2015 s51).

We suggest that those who are trained, able and willing to give rescue breaths as well as chest compressions do so for all adult patients in cardiac arrest (weak recommendation, very-low-quality evidence).

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CPR : Chest Compression to Ventilation Ratio-Adult

Treatment recommendations

We suggest a compression–ventilation ratio of 30:2 compared with any other compression–ventilation ratio in patients with cardiac arrest (weak recommendation, very low-quality evidence).

CPR: Chest compression to ventilation ratio- EMS delivered

Treatment recommendations

We recommend EMS providers perform CPR with 30 compressions to 2 ventilations or continuous chest compressions with positive-pressure ventilations delivered without pausing chest compressions until a tracheal tube or supraglottic device has been placed (strong recommendation, high quality evidence). We suggest that where EMS systems have adopted bundles of care involving the initial provision of minimally interrupted cardiac resuscitation, the bundle of care is a reasonable alternative to conventional CPR for witnessed shockable out of hospital cardiac arrest (weak recommendation, very-low-quality evidence).

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CPR: Chest Compression to Ventilation Ratio In-Hospital- Adult

Treatment recommendations

Whenever tracheal intubation or a supraglottic device is achieved during in-hospital CPR, we suggest providers perform continuous compressions with positive pressure ventilations delivered without pausing chest compressions (weak recommendation, very low quality evidence).

CPR: Chest Compression to Ventilation Ratio--Bystander - Pediatric

Treatment recommendations

We suggest that bystanders provide CPR with ventilation for infants and children younger than 18 years with OHCA (weak recommendation, very low quality evidence). We continue to recommend that if bystanders can't provide rescue breaths as part of CPR for infants and children younger than 18 years with OHCA (Good Practice statement), they should at least provide chest compressions.

In 2015, this was cited as a strong recommendation based on very low quality evidence (Maconochie, 2015, e147, de Caen, 2015, S177).

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Contents lists available at ScienceDirect

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation



Review

Effectiveness of different compression-to-ventilation methods for cardiopulmonary resuscitation: A systematic review



Huda M. Ashoor^a, Erin Lillie^a, Wasifa Zarin^a, Ba' Pham^{a,b}, Paul A. Khan^a, Vera Nincic^a, Fatemeh Yazdi^a, Marco Ghassemi^a, John Ivory^a, Roberta Cardoso^a, Gavin D. Perkins^c, Allan R. de Caen^d, Andrea C. Tricco^{a,e,*}, ILCOR Basic Life Support Task Force¹

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^c University of Warwick, Warwick Medical School and Heart of England NHS Foundation Trust, Coventry, CV4 7AL, United Kingdom

^d Stollery Children's Hospital, University of Alberta, 8440 112 Street Northwest, Edmonton, Alberta, T6G 2B7, Canada

^e Epidemiology Division, Dalla Lana School of Public Health, University of Toronto, Health Sciences Building, 155 College Street, 6th floor, Toronto, Ontario, M5T 3M7, Canada

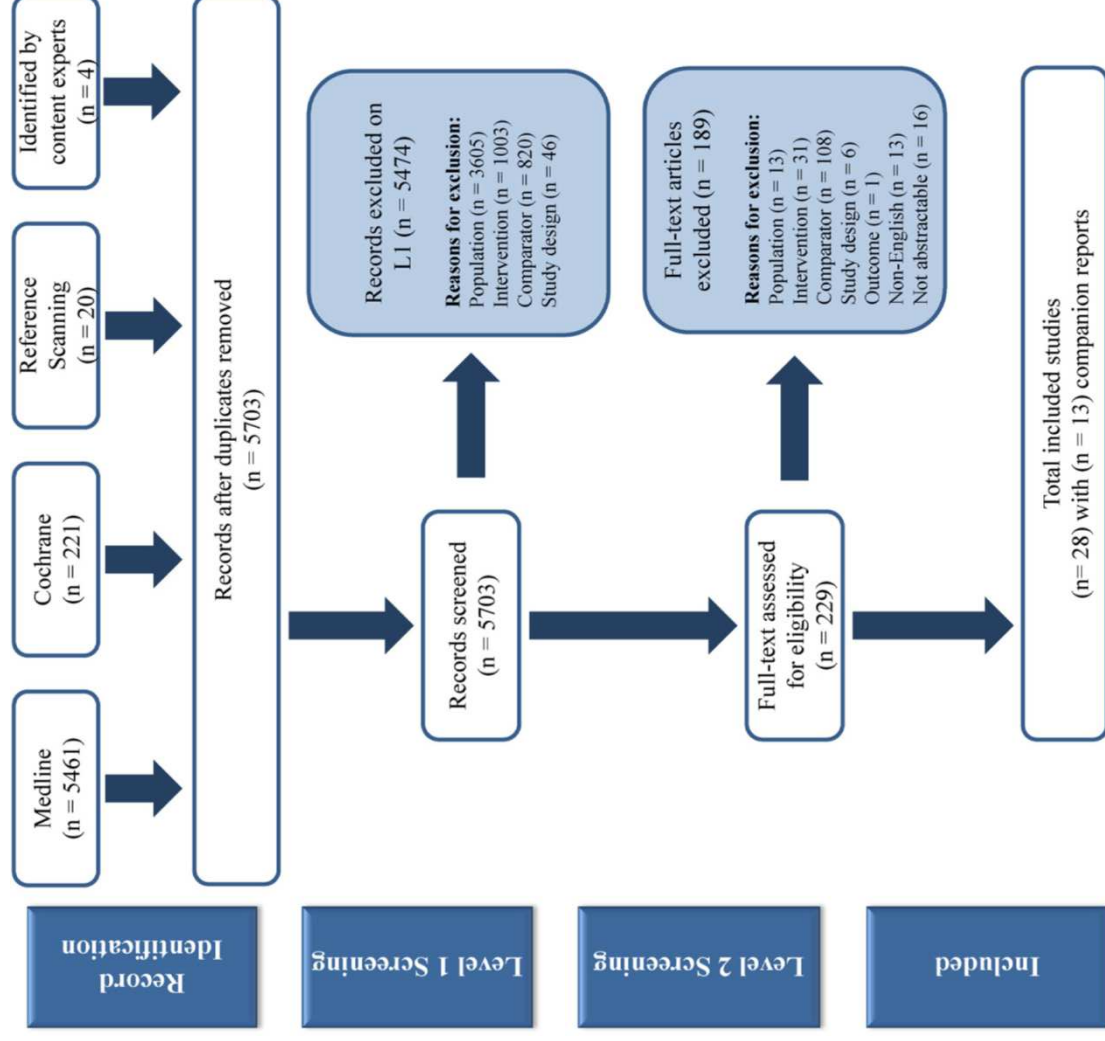
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Conclusions

For adults, our results demonstrated that CPR 30:2 is associated with better survival and favourable neurological outcomes when compared to CPR 15:2.

For children, more patients receiving CPR with either 15:2 or 30:2 compression to ventilation ratio experienced favourable neurological function, survival, and ROSC when compared to CO-CPR for children of all ages, but for children <1 years of age, no statistically significant differences were observed.

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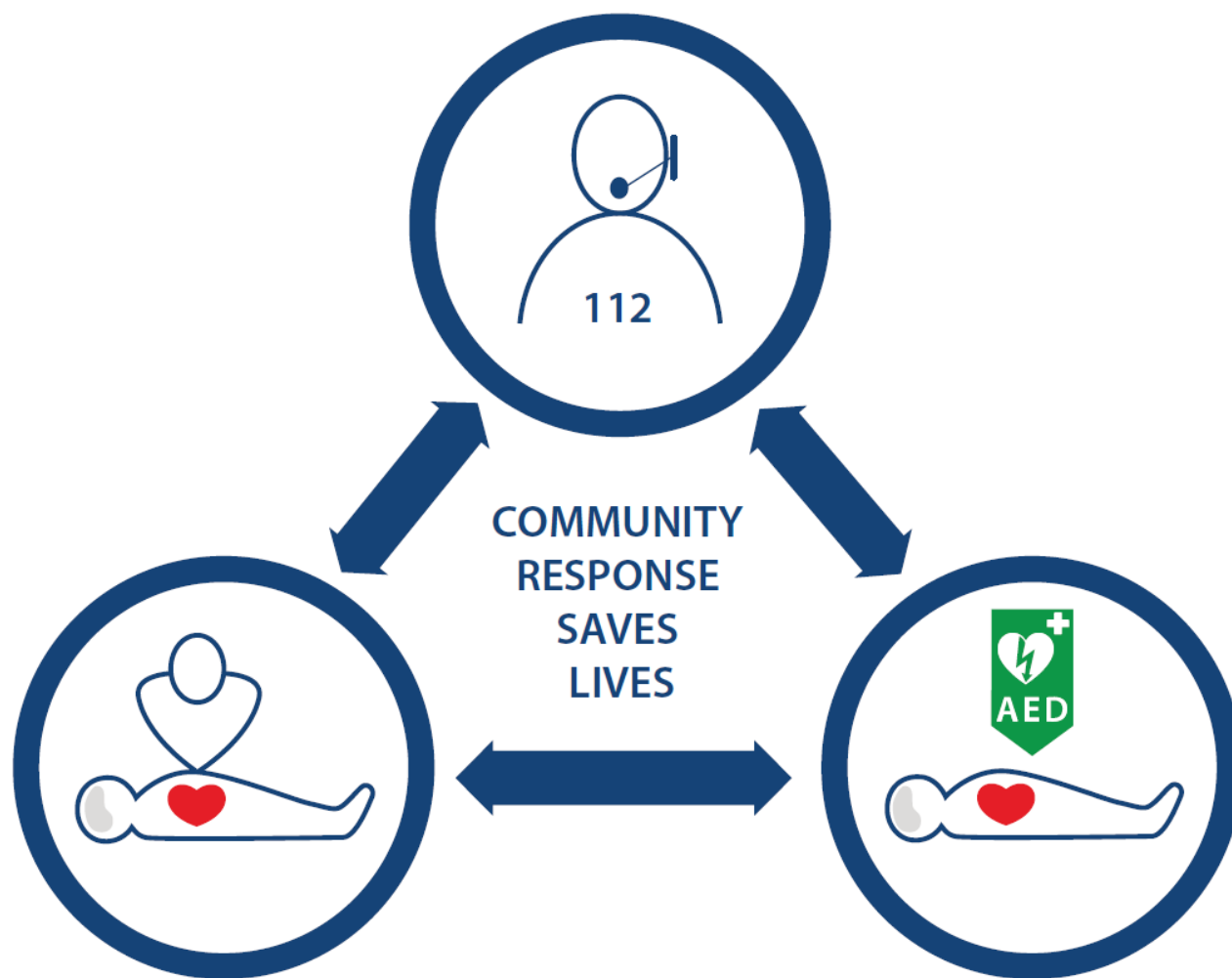
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