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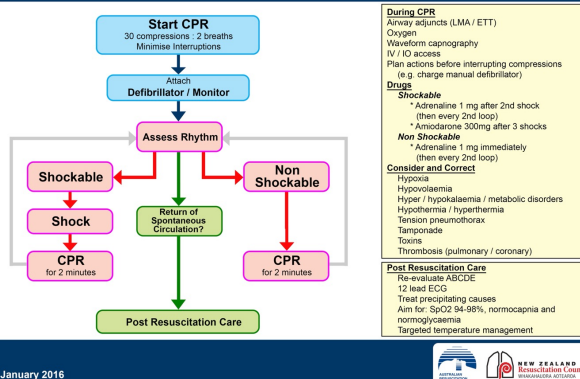
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Safar et al 1959



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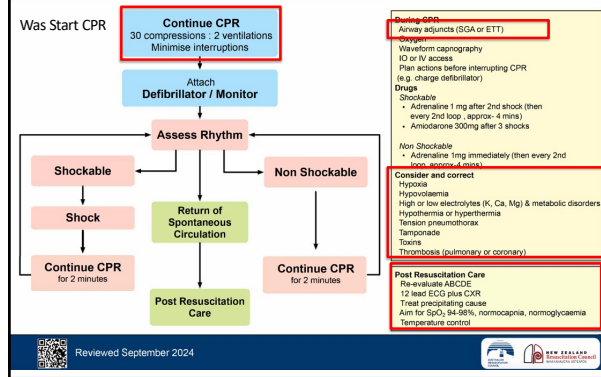
Advanced Life Support for Adults



January 2016

8

Adult Advanced Life Support



Reviewed September 2024

9

Compression Rate 100-120bpm



10



weak recommendation,
very-low-quality evidence

Fomica & Paolini 2013



11

Should we do CPR?

Yan et al. Critical Care (2020) 24:61
https://doi.org/10.1186/s13054-020-2773-2

Critical Care

RESEARCH

Open Access



The global survival rate among adult out-of-hospital cardiac arrest patients who received cardiopulmonary resuscitation: a systematic review and meta-analysis

Shijiao Yan^{1,2†}, Yong Gan^{3†}, Nan Jiang³, Rixing Wang⁴, Yunqiang Chen^{5,2}, Zhiqian Luo^{5,2}, Qiao Zong⁶, Song Chen⁷ and Chuanzhu Lv^{4,5,2*}

Overall 7.7% 1 year survival (Pooled Results)



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CARDIAC ARREST SURVIVAL IS RARE WITHOUT PREHOSPITAL RETURN OF SPONTANEOUS CIRCULATION

David A. Wampler, PhD, LP, Lindsey Collett, EMT-P, Craig A. Manifold, DO, Christopher Velasquez, EMT-P, Jason T. McMullan, MD
PREHOSPITAL EMERGENCY CARE OCTOBER/DECEMBER 2012 VOLUME 16 / NUMBER 4

- 2,483 cardiac arrest from US data registry
- 6.6% survival rate
- 36% achieved field ROSC (n=894)
- 17.2% with field ROSC survived (n=154 of 894)
- 0.69% with non field ROSC survived (n=11 of 1589)



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The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

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. Scamperin, 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*

- Published on July 18, 2018, at NEJM.org.



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What did they do?

- Double blind randomised controlled trial
- 8014 patients that had Out of Hospital Cardiac Arrest (OHCA)
- 4015 got adrenaline, 3999 patients got saline
- Primary outcome rate of survival at 30 days
- Secondary outcome – rate of survival to hospital discharge with favourable neurological outcome (Score 3 or less)



16

Score Definition

Score	Definition
0	No symptoms
1	No significant disability. Able to carry out all usual activities, despite some symptoms
2	Slight disability. Able to look after own affairs without assistance, but unable to carry out all previous activities
3	Moderate disability. Requires some help, but able to walk unassisted
4	Moderately severe disability. Unable to attend to own bodily needs without assistance, and unable to walk unassisted
5	Severe disability. Requires constant nursing care and attention, bedridden, incontinent
6	Dead



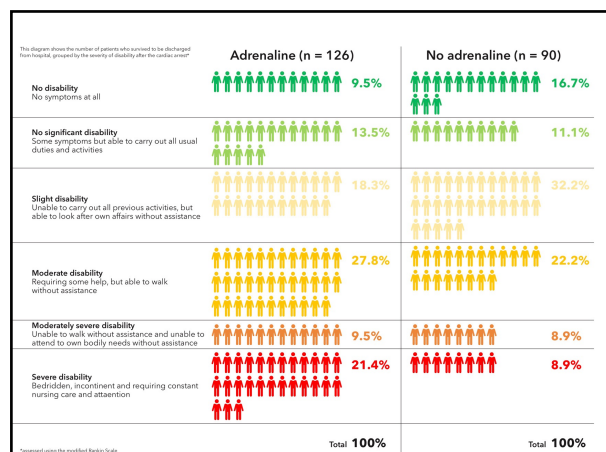
17

The results

- Alive at 30 days
 - 130 from 4012 pts (3.2%)
 - 94 from 3999 pts (2.4%) (p=0.02)
- No difference at discharge with favourable neurological outcome
 - Severe neurological outcome worse in survivors with adrenaline
 - 31% adrenaline vs 17.8% with Placebo



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21

THE NEW ENGLAND JOURNAL OF MEDICINE

ORIGINAL ARTICLE

Defibrillation Strategies for Refractory Ventricular Fibrillation

Sheldon Cheskes, M.D., P. Richard Verbeek, M.D., Ian R. Drennan, A.C.P., Ph.D., Shelley L. McLeod, Ph.D., Linda Turner, Ph.D., Rosandra Pinto, Ph.D., Michael Feldman, M.D., Ph.D., Matthew Davis, M.D., Christian Vaillancourt, M.D., Laurie J. Morrison, M.D., Paul Dorian, M.D., and Damon C. Scales, M.D., Ph.D.

2022 paper

- Compared standard AL with Vector Change (AP) and DSED for VF
- Cluster randomised Canadian Prehospital n=406 (ceased by covid)
- Survival to Discharge
 - DSED vs Standard 30.4% vs 13.3, AP 21% vs Standard 13.3%
- Good Neurological Outcome (mRS 0-2)
 - DSED 27.4%, VC 16.2%, Standard 11.2%
- REBELEM – results ‘cautiously interpreted’

22

Circulation

ANA Journals | Journal Information | All Issues | Subjects | Features | Resources & Ed

Home > Circulation > Vol. 148, No. 24 > 2023 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations: Summary From the Basic Life Support; Advanced Life Support; Pediatric Life Support; Neonatal Life Support; Education, Implementation, and Teams; and First Aid Task Forces

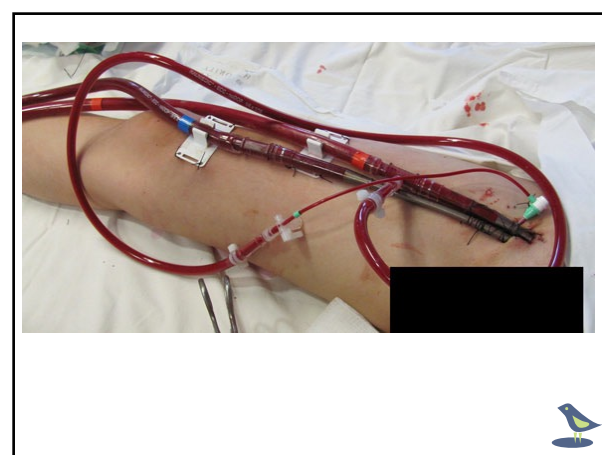
OPEN ACCESS
REVIEW ARTICLE
PDF EPUB

Tools | Share

2023 Treatment Recommendations

- We suggest that a DSED strategy (weak recommendation, low-certainty evidence) or a VC defibrillation strategy (weak recommendation, very low-certainty evidence) may be considered for adults with cardiac arrest who remain in VF or pulseless ventricular tachycardia after ≥ 3 consecutive shocks.
- This is not a current ARC recommendation

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JAMA | Original Investigation | CARING FOR THE CRITICALLY ILL PATIENT

Effect of Intra-arrest Transport, Extracorporeal Cardiopulmonary Resuscitation, and Immediate Invasive Assessment and Treatment on Functional Neurologic Outcome in Refractory Out-of-Hospital Cardiac Arrest: A Randomized Clinical Trial

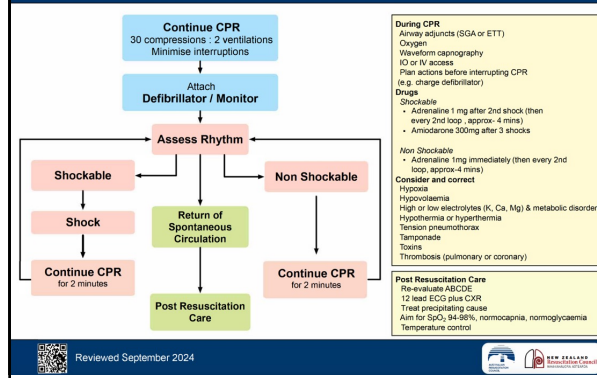
Jan Belohlavek, MD, PhD; Jana Smalцова, MD; Daniel Rob, MD; Ondrej Farnak, MD; Ondrej Smid, MD; Milana Pokorna, MD, PhD; Jan Horák, MD; Vratislav Mrázek, MD; Tomas Kovarik, MD, PhD; David Zemanek, MD, PhD; Ales Kral, MD, PhD; Stepan Havranek, MD, PhD; Petra Kavalkova, PhD; Lucie Kompletova, MD; Helena Tomkova, MD; Alan Mejstrik, MSc; Jaroslav Valasek, MD; David Peran, MSc; Jaroslav Pekara, MSc; Jan Rulisek, MD, PhD; Martin Balík, MD, PhD; Michal Hupytch, PhD; Jiri Jankovsky, PhD; Jan Malik, MD, PhD; Anna Valerianova, MD, PhD; Frantisek Mlejnsky, MSc, PhD; Petr Kolouch, MD; Petra Havranekova, MD, PhD; Dan Romportl, MD; Arnost Komarek, PhD; Ales Linhart, MD, PhD; for the Prague OHCA Study Group

- I love ECMO but where is the evidence???
- Dignity, expense, time and effort, false hope
- Study halted n=264 (3987 excluded)
- Need to be 10% improvement (was 9.5%)
- Underpowered (result by chance)
- Consider patient selection



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Adult Advanced Life Support



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Myth of CPR- Hillman 2010

- Collective belief that resuscitation was possible, and the suddenly dead could be revived
- Poor outcomes of resuscitation
- Little 'real life' science behind algorithm
- Costs hospitals \$450 000 per survivor
- Community training expense
- Early warning systems have developed



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ASSUMPTION

- Early recognition of clinical deterioration
- Followed by prompt and effective action
- Minimise adverse events
- Lower level of intervention required to stabilise
- Where is the evidence?



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At Risk Patients

- Predict Risk
 - Age, sex, Dx on admission, emergency admission, aged care resident, inter hospital transfer
- Prevent deterioration
 - Medical co-management of some surgical patients
 - Most post surgical issues medical
 - 'No bones in the heart'
- Advanced care planning
 - Suboptimal end of life decision making



29

Box 1: The Ottawa Chest Pain Cardiac Monitoring Rule¹³

A patient with chest pain can be removed from cardiac monitoring on initial physician assessment if:

- the patient is currently chest pain free
- and the patient's electrocardiogram is normal or has nonspecific changes (no signs of acute ischemia; infarction; bundle branch block; prolonged QRS, QT or PR interval; left ventricular hypertrophy with strain; arrhythmia; or paced rhythm).

Syed 2017, Gattien 2007



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In Conclusion

- Outcomes of CPR unchanged in 50 years
- Paradigm shift to pre deterioration model
- Observations are important
- But so in the clinician's knowledge of the patient
- Failure will continue if not focus on the human errors component of programs

