



A conference that is for us and by us

Emergency Medicine Pharmacotherapy with Resuscitation (EMPowerRx) Conference





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Keep the standard: 1 mg Epinephrine

Drew Posen, PharmD

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SDE=Standard Dose Epinephrine (1 mg)

HDE=High-Dose Epinephrine (>1 mg)

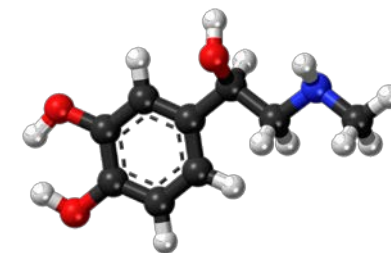
ROSC=Return of Spontaneous Circulation

RR=Risk Ratio

Epinephrine increases survival

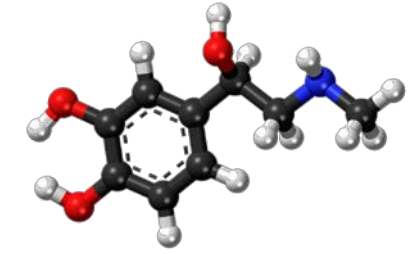
Cochrane Review (N=21,704)¹; relative to placebo

- Increased ROSC with SDE (RR=2.86)
- Increased survival to admission (RR=2.51)
- Increased survival to discharge (RR=1.44)
- No difference in neurological outcomes



Cochrane Database Syst Rev. 2019;1(1):CD003179.

Importance of survival



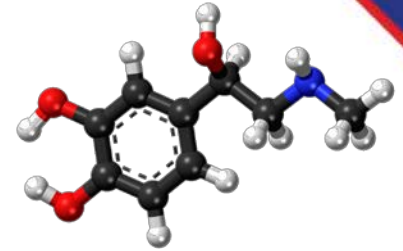
PARAMEDIC2²

- No difference in survival to discharge with favorable neurologic outcome with SDE (87 vs 74; RR=1.18; 95% CI: 0.86-1.61)
- Among the additional survivors, unfavorable neurologic outcomes:
 - SDE: 39
 - Placebo: 16

➤ +23 prospective donations after circulatory death (DCD) for organ transplant
- Expands donor pool to meet demand-supply mismatch³
 - Graft survival with DCD is non-inferior to donation after brain death (DBD)⁴

NEJM. 2018;379:711-721. Curr Opin Organ Transplant. 2018;23(1):136-141. Transplant Rev. 2020;34(4):100563

More epi does not increase survival

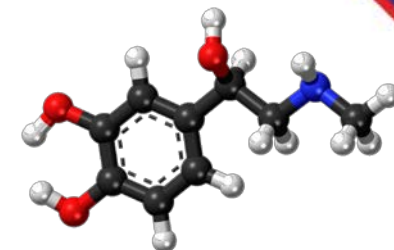


Cochrane Review (N=21,704)¹; HDE relative to SDE

- Greater ROSC with HDE (RR=1.15)
- No difference in survival to discharge
- No difference in neurological outcomes

Cochrane Database Syst Rev. 2019;1(1):CD003179.

More epi worsens cerebral blood flow



Epinephrine improves cerebral and coronary blood flow⁵

- Confirmed by microsphere, PET, and MRI imaging
- Associated with neurological outcomes and ROSC, respectively^{6,7}

High-dose epinephrine reduces cerebral blood flow and oxygenation⁸

- Authors propose dose-dependent impairment in autoregulation

CCM. 2009;37(4):1518-1520. Resusc Plus. 2020;4:100051. JAMA. 1990;263(8):1106-1113. CCM. 2000;28(5):1423-1430

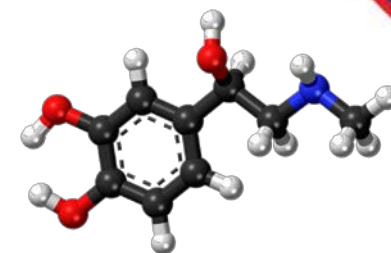
Pediatrics do worse with HDE

Perondi et al (2004)

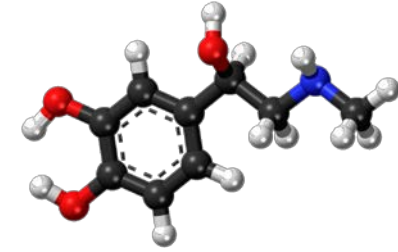
- Prospective, double-blind, randomized controlled trial
- Enrolled children in cardiac arrest after 1 dose of SDE
- Compared SDE (0.01 mg/kg) and HDE (0.1 mg/kg)

Results (N=64)

- Average age 6 years, with asystolic (70%) arrest in the ICU (65%)
- Survival at 24 hours was higher with SDE (7 vs 1, $p=0.05$)



NEJM. 2004;350(17):1722-1730.



Keep the standard

Standard dose epinephrine (1 mg)

- Increases cerebral and coronary blood flow
- Increases survival in cardiac arrest
- Expands the transplantation donor pool

High-dose epinephrine

- Offers no improvement in outcomes
- May be detrimental for cerebral perfusion
- Pediatrics have lower 24-hour survival



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