

Use of active Intrathoracic Pressure Regulation during resuscitation

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FINANCIAL DISCLOSURE

**I have the following financial interests or relationships to
disclose:**

none

Manipulating Intrathoracic Pressures

- IPR has been used initially for cardiac arrest, then in spontaneously breathing patients. It can now be used on mechanically ventilated patients.

Manipulating Intrathoracic Pressures

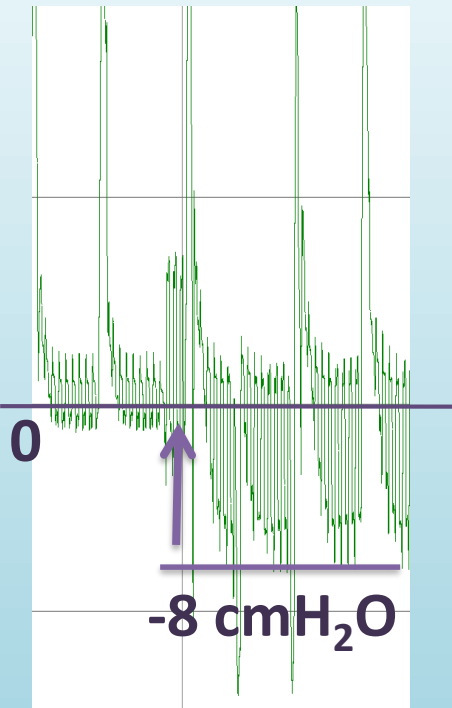
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- a-IPR therapy is delivered with a device that is inserted into a standard respiratory circuit between the patient and a means to provide positive pressure ventilation (bag valve balloon or mechanical ventilator).
- a-IPR lowers intrathoracic pressures to subatmospheric levels during the expiratory phase of positive pressure ventilation.

Manipulating Intrathoracic Pressures

CPR

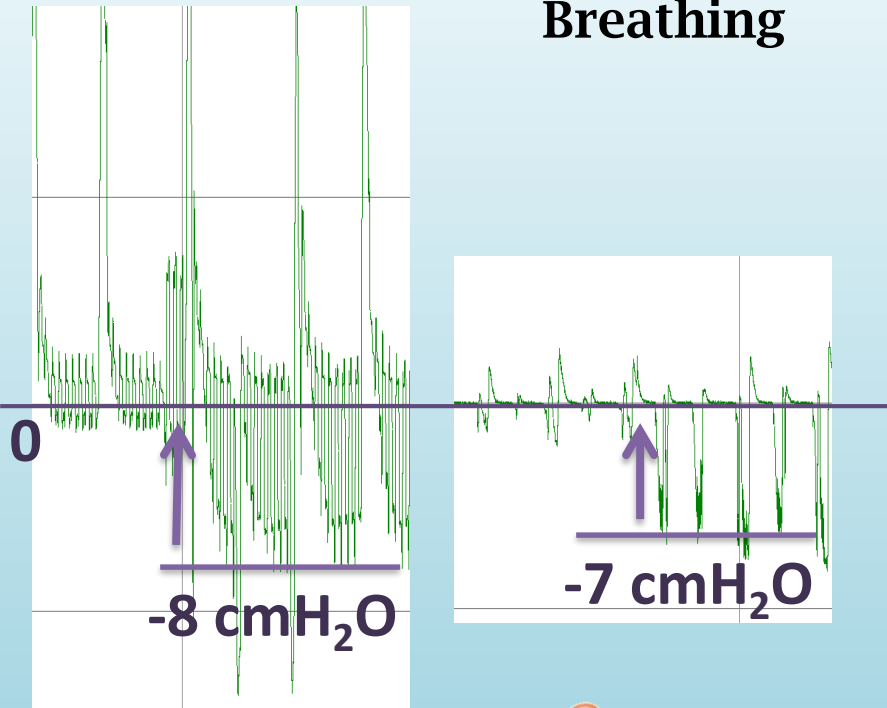


ResQPOD

Manipulating Intrathoracic Pressures

CPR

Spontaneously
Breathing



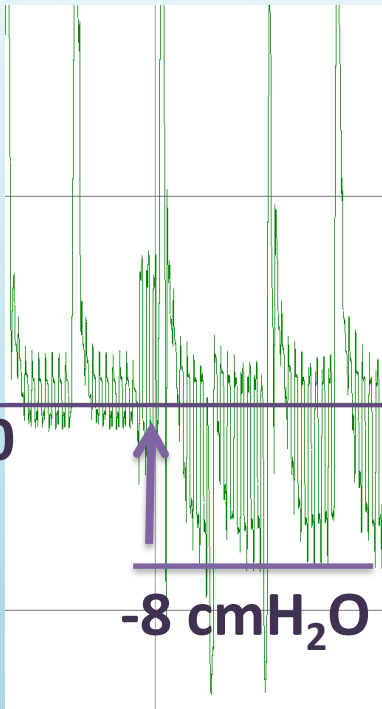
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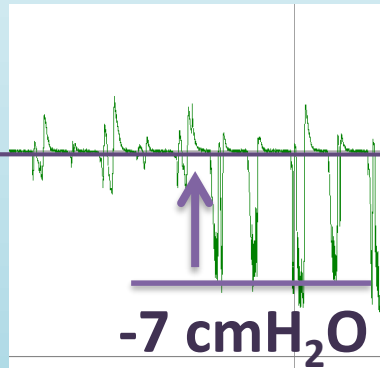
ResQGARD

Manipulating Intrathoracic Pressures

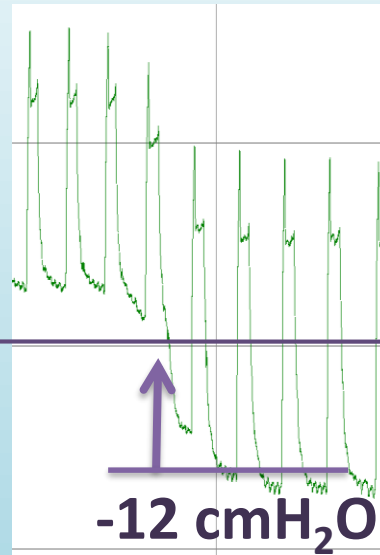
CPR



Spontaneously Breathing



Mechanically Ventilated



ResQPOD



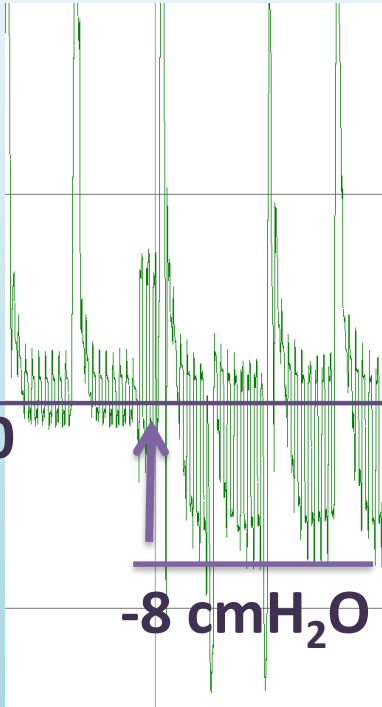
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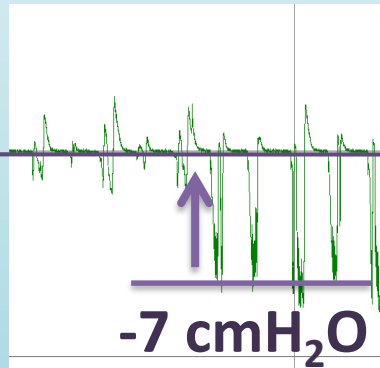
CirQLator

Manipulating Intrathoracic Pressures

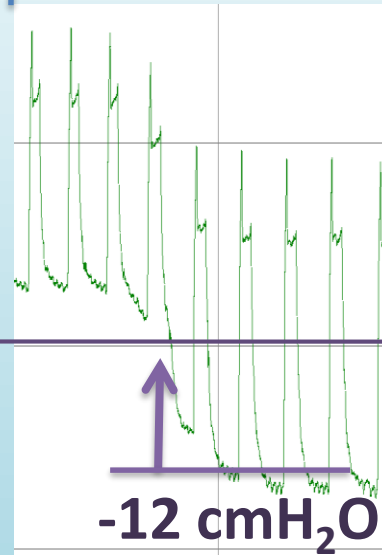
CPR



Spontaneously Breathing



Mechanically Ventilated



ResQPOD



ResQGARD

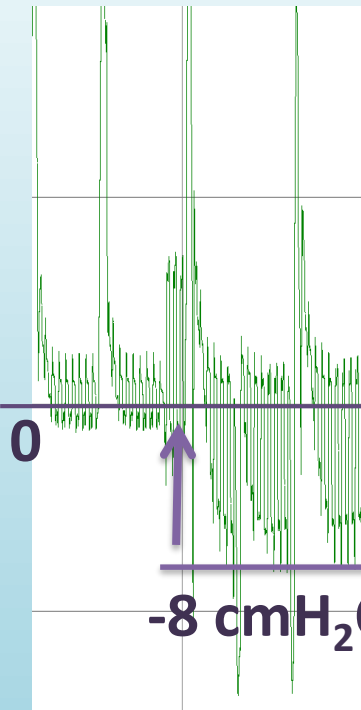


CirQLator

CirQPOD

Manip

CPR



ResQPOD



ResQGARD

CirQLator

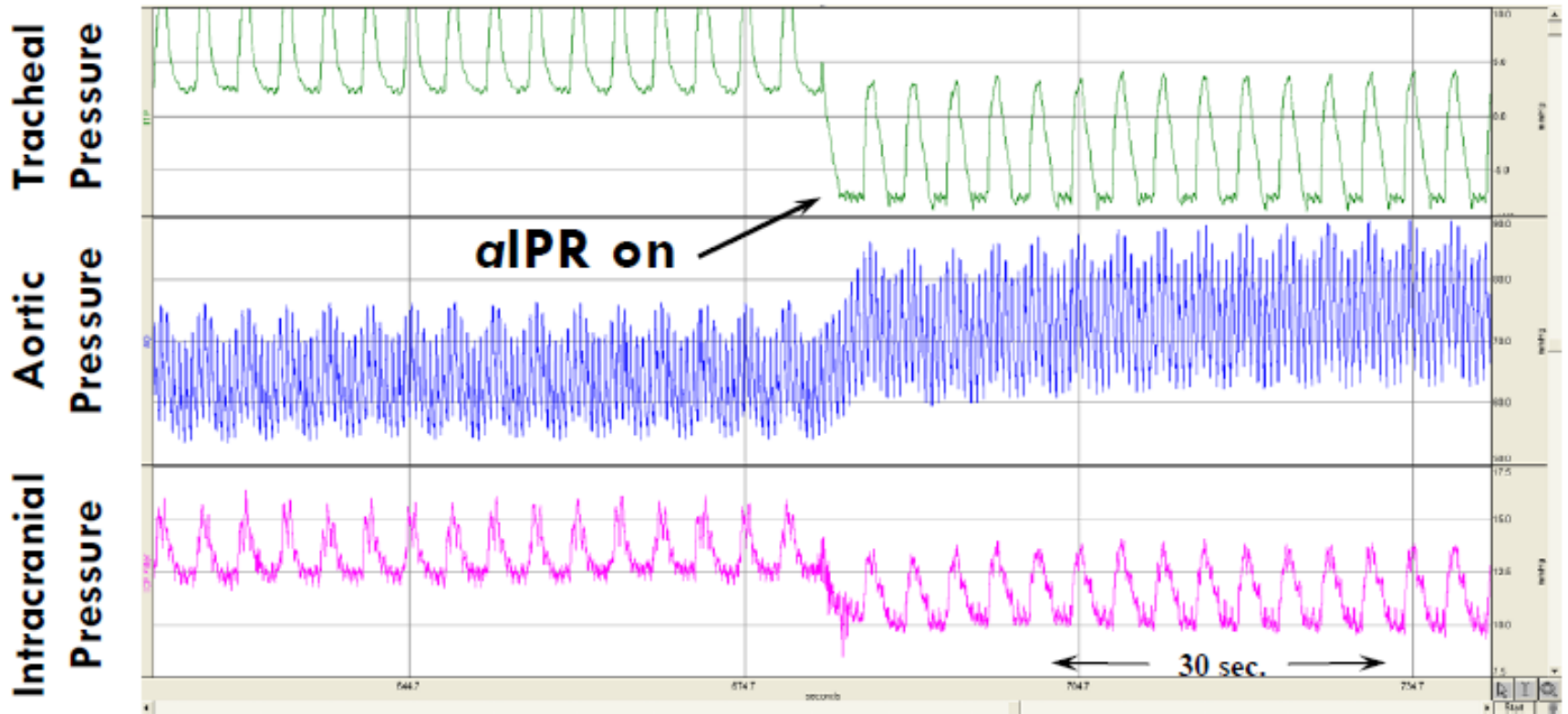
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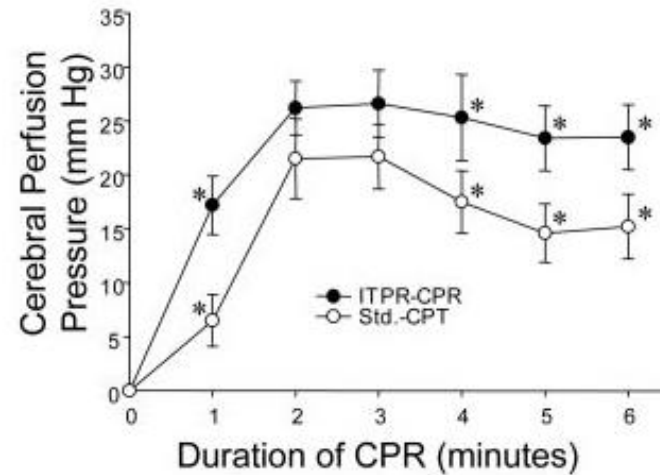
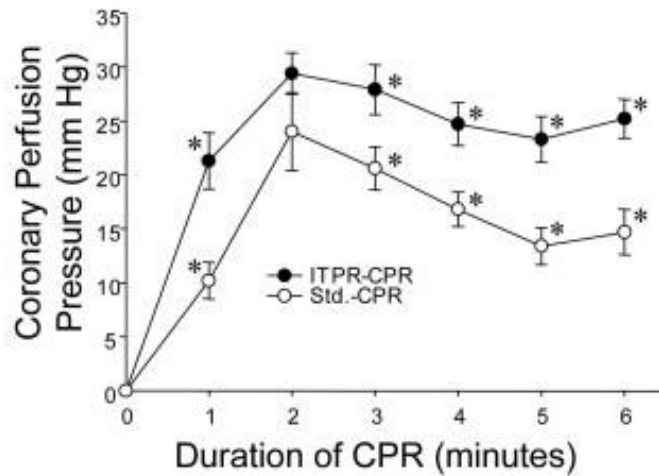


CirQPOD

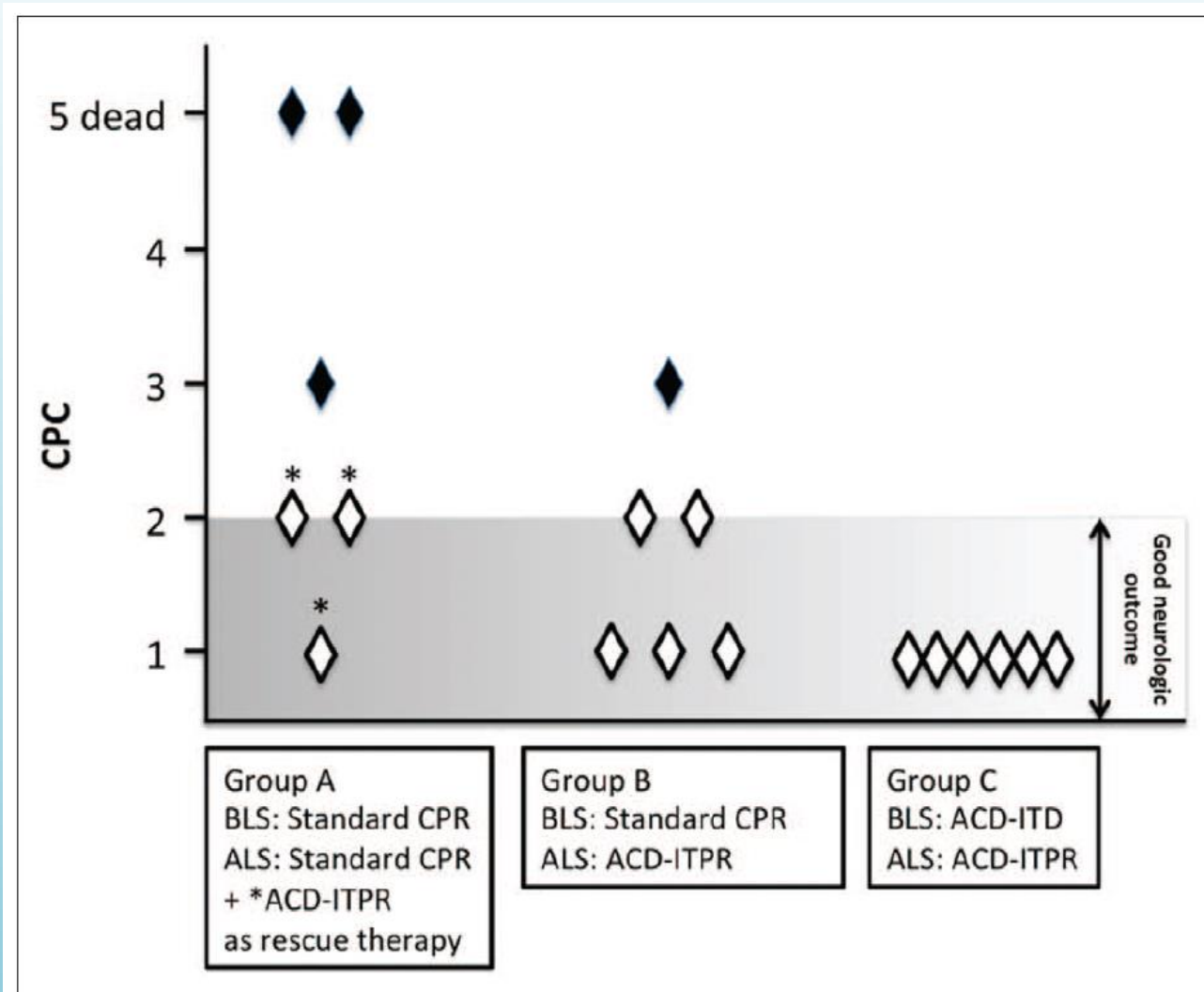
Effect of aIPR on Tracheal, Aortic, Intracranial Pressures during CPR



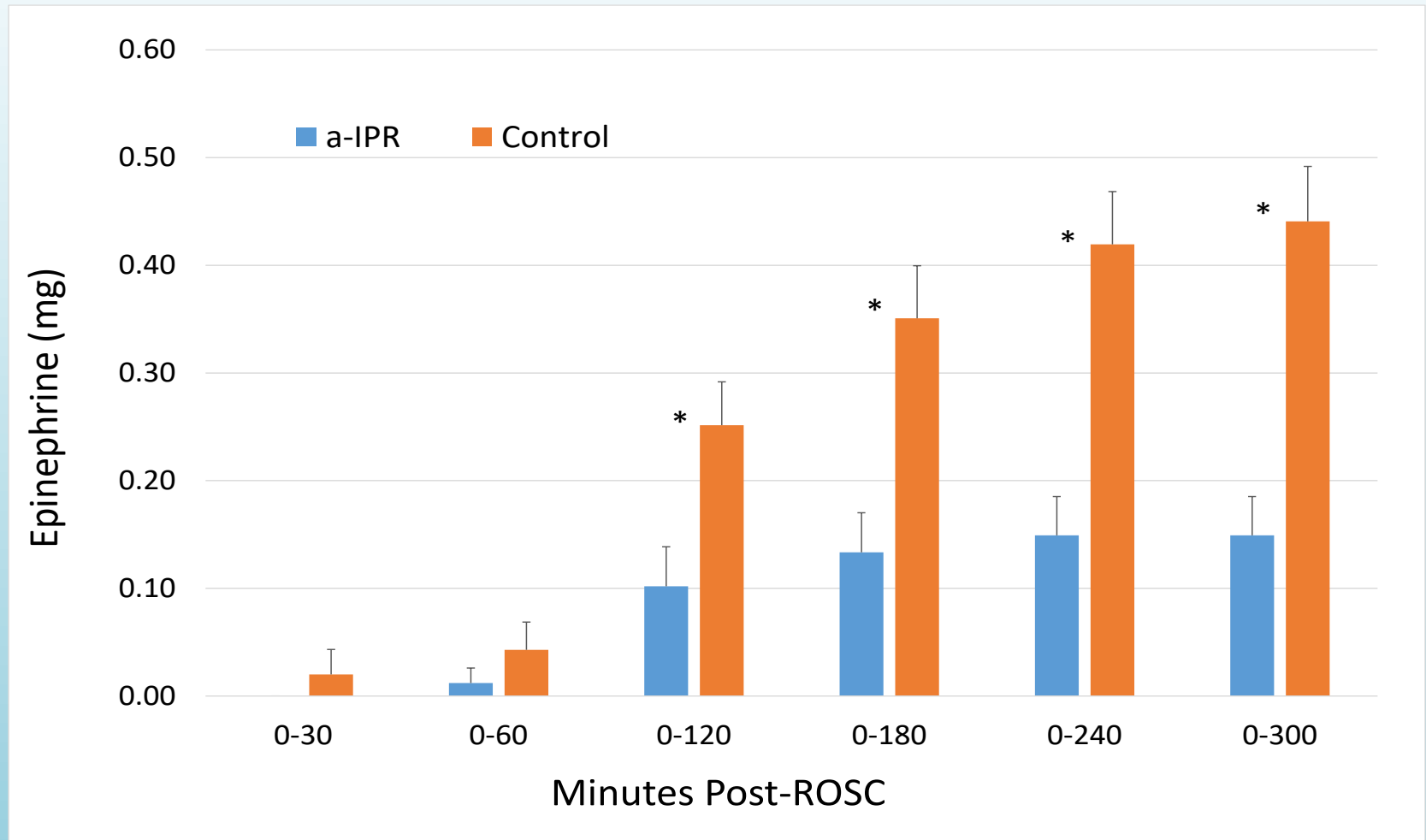
aIPR improved vital organ perfusion compared to S-CPR.



aIPR improved 24-hour survival with favorable neurologic function



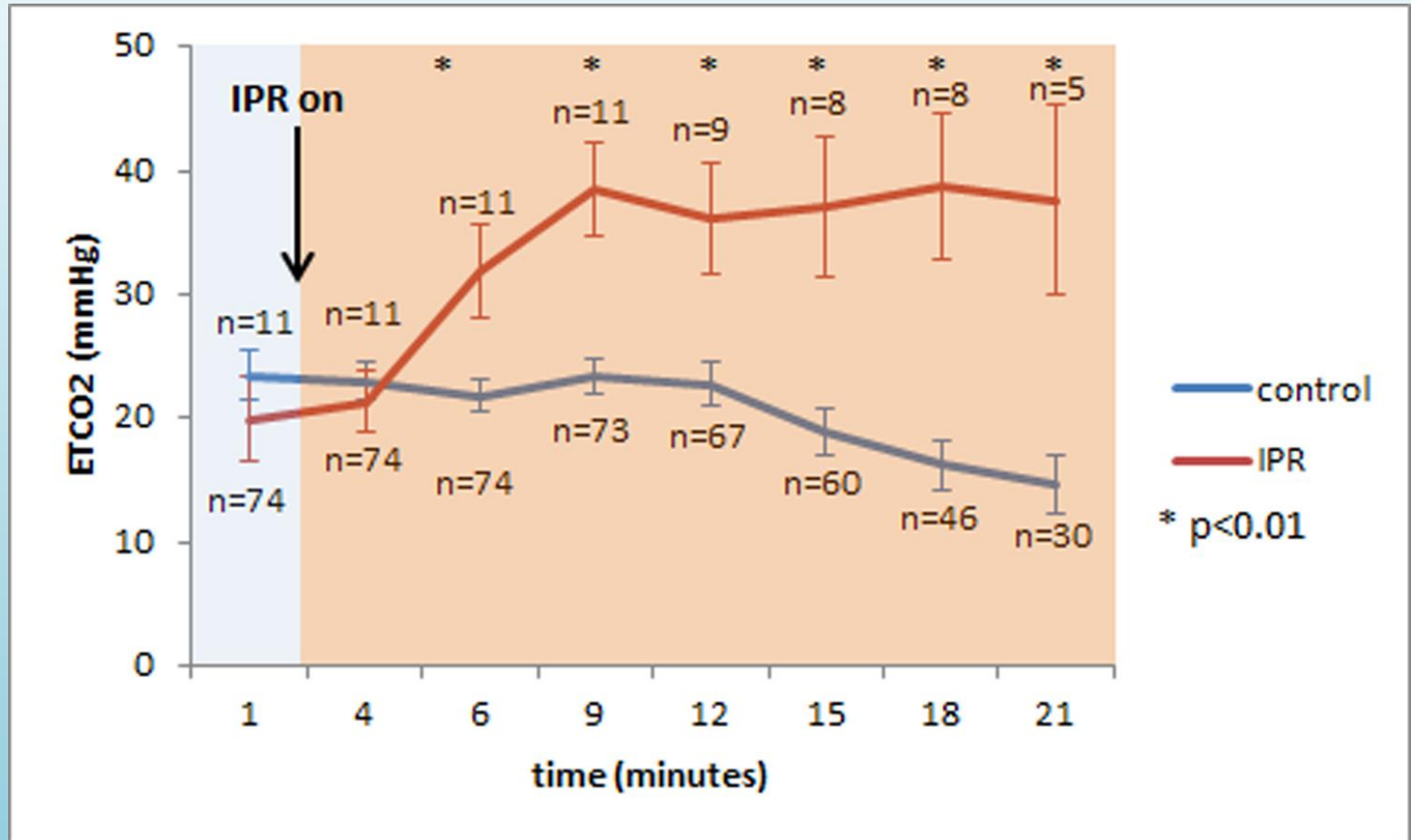
Post ROSC : Cumulative Epinephrine (mg) Administration



Total epinephrine during the post-ROSC period was significantly reduced with a-IPR (0.08 ± 0.09 vs 0.29 ± 0.12 mg, $p < 0.01$).

Metzger et al., NAEMSP 2017

ETCO2 levels and ROSC rates were significantly higher in the 11 IPR patient compared to the 74 control patient



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- Combined, these effects result in an increase in mean systemic arterial pressure, cardiac output, and coronary and cerebral perfusion.
- a-IPR improves venous drainage from the brain, lowers ICP, and reduces the resistance to forward blood flow to the brain.

Other uses

- aIPR can also be use on:
 - brain injury,
 - septic shock,
 - hemorrhagic shock,
 - intraoperative hypotension.

Conclusion

- Even if a-IPR was recently approved by the FDA, several questions remain unanswered, in particular, the exact indication and duration of use.
- Further human clinical evaluation of the therapy will be necessary before a broad use is possible.

Thank you !

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