

“...and the dead shall rise again.”

Head Up CPR

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Disclosures

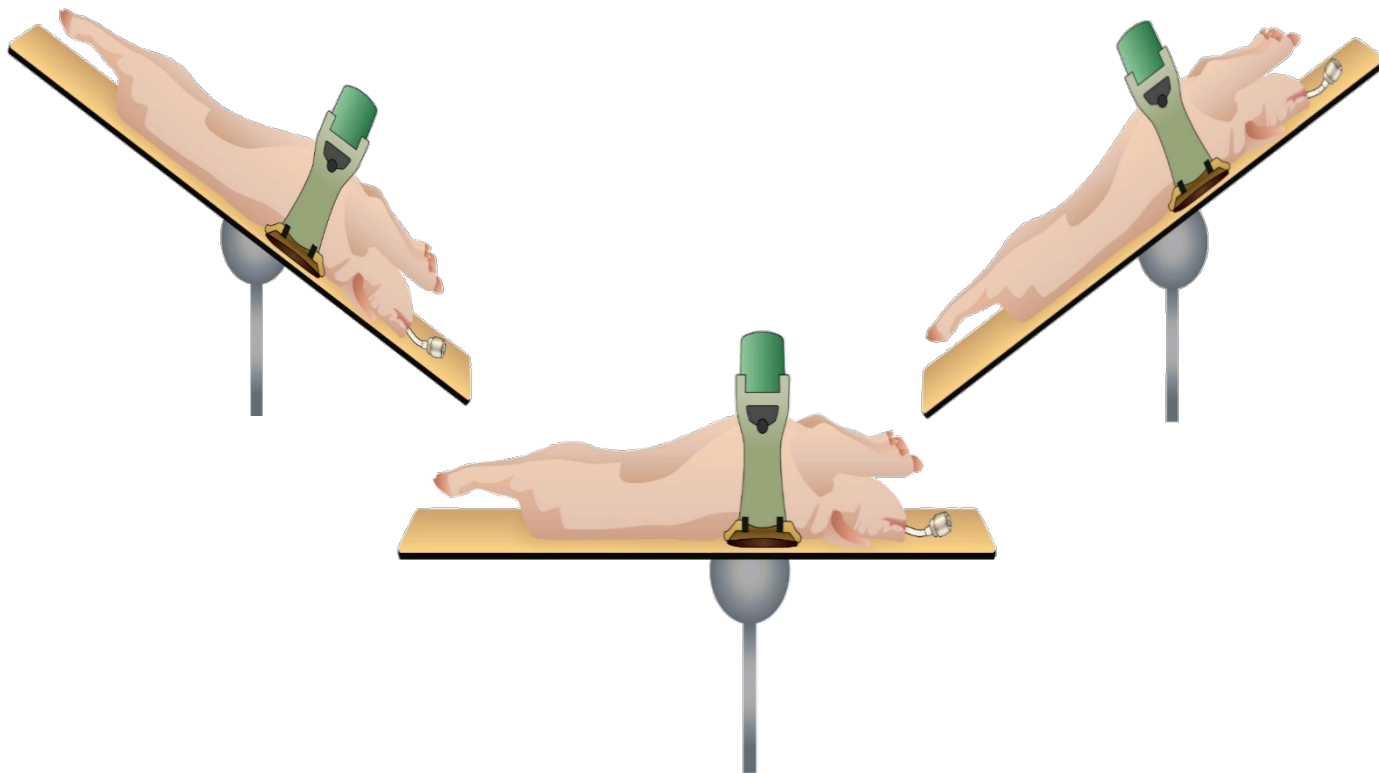
- I am on the SAB of Advanced Circulatory Solutions the makers of EleGARD.



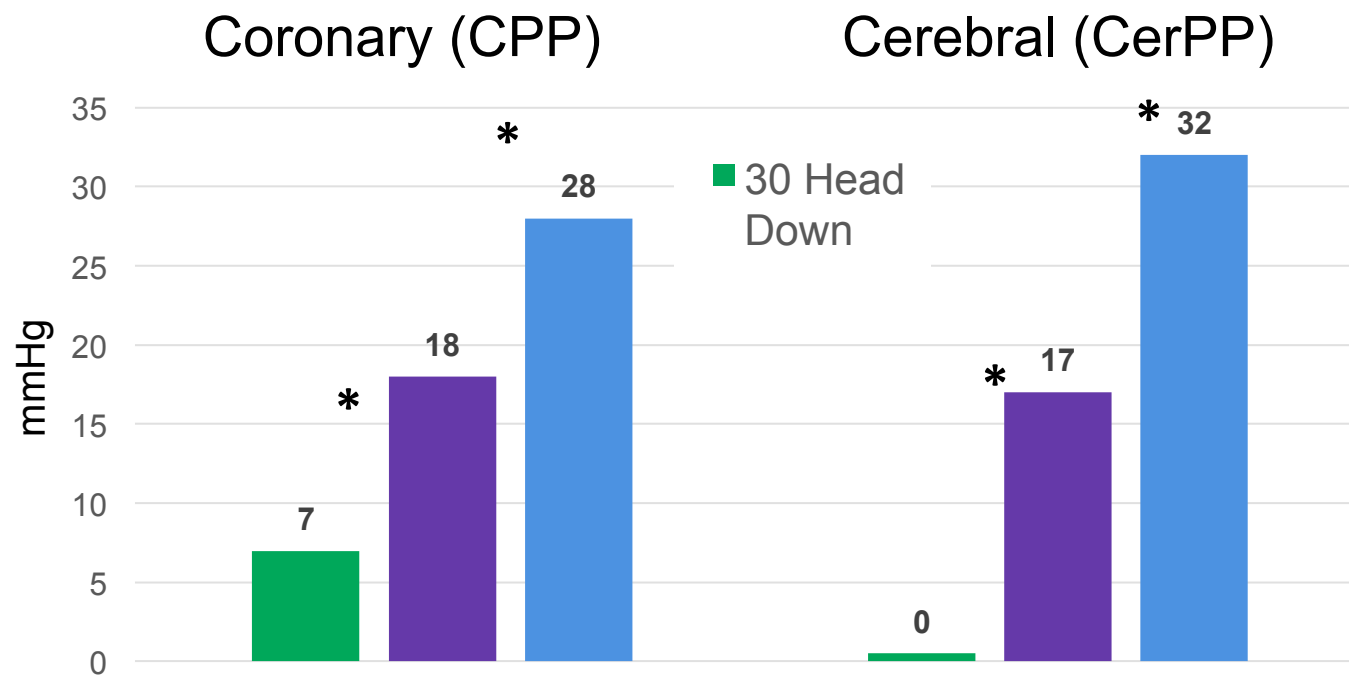
Seoul, South Korea





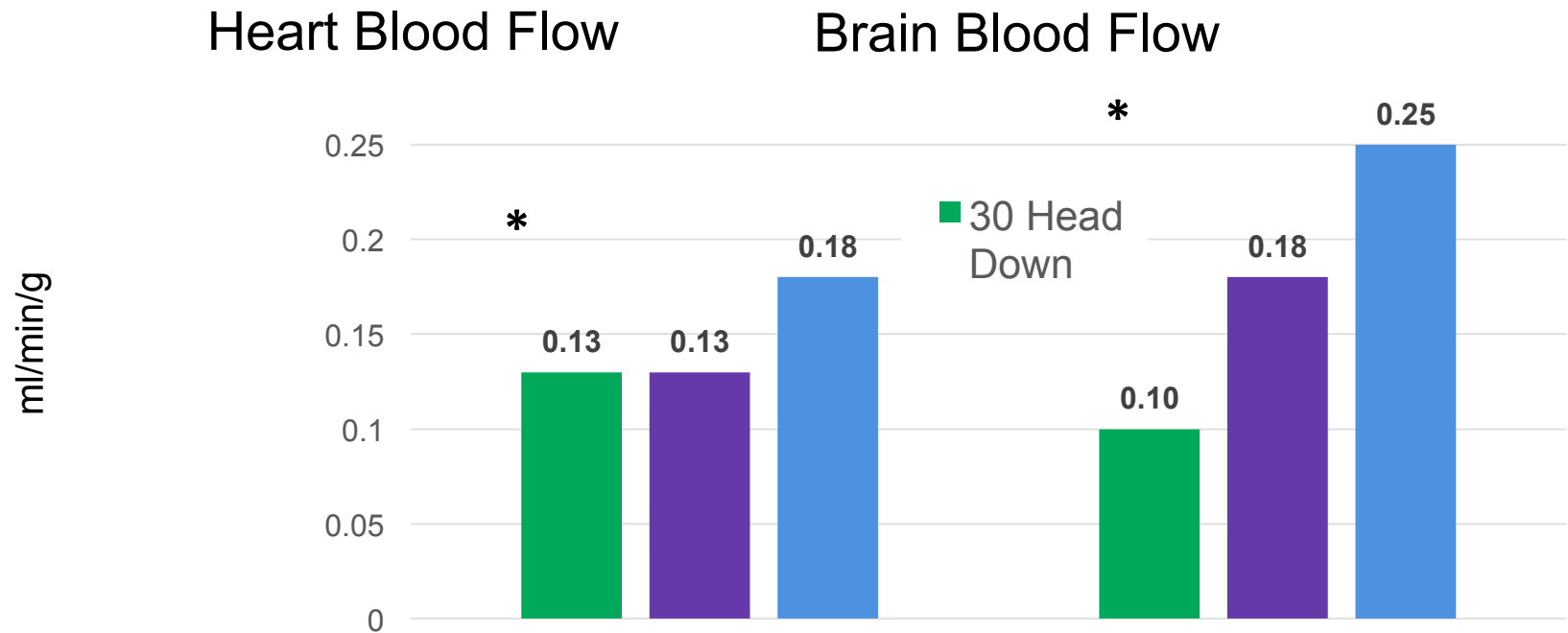


Study Results: Perfusion Pressures



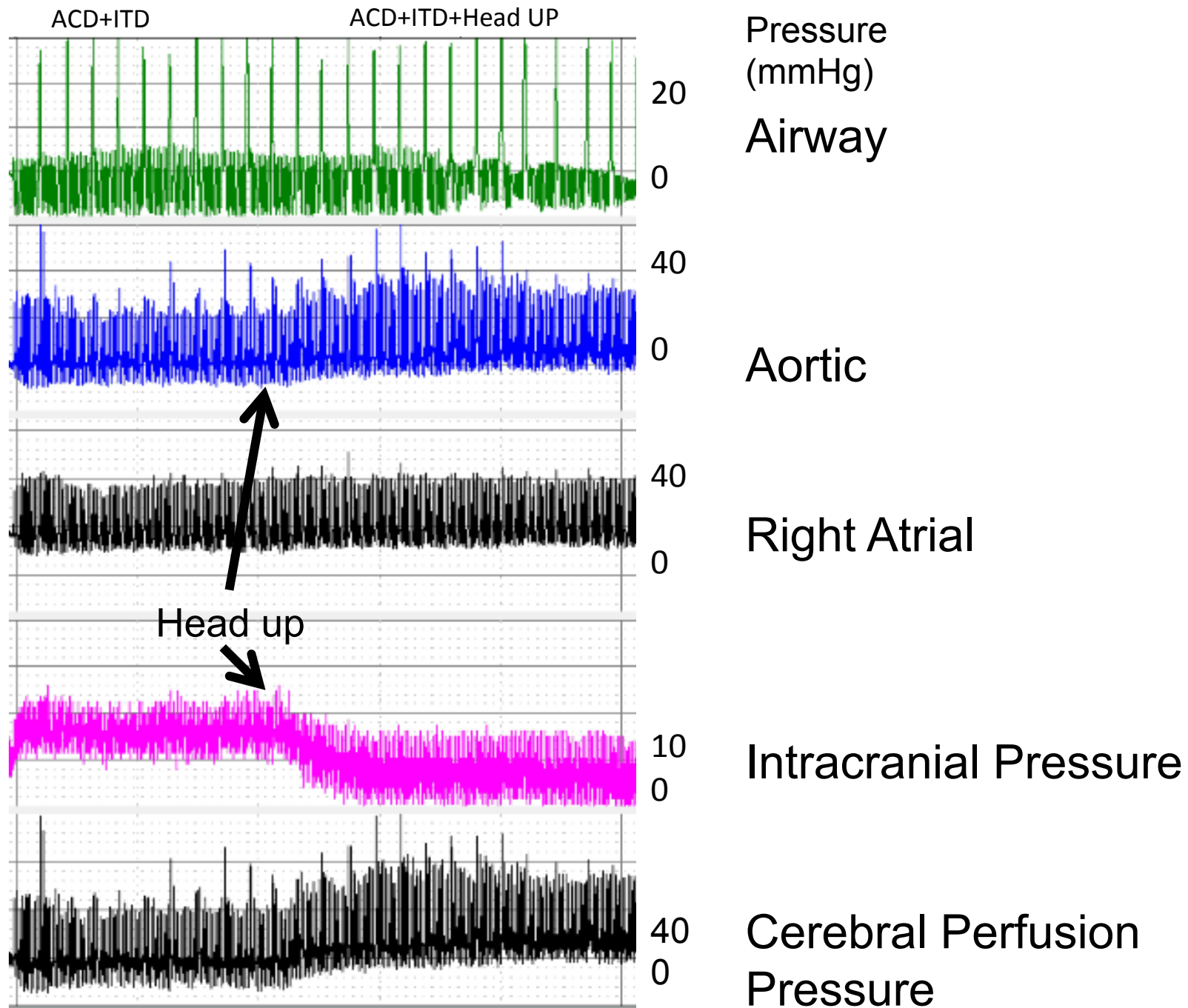
*p<0.001

Study Results: Vital Organ Blood Flow

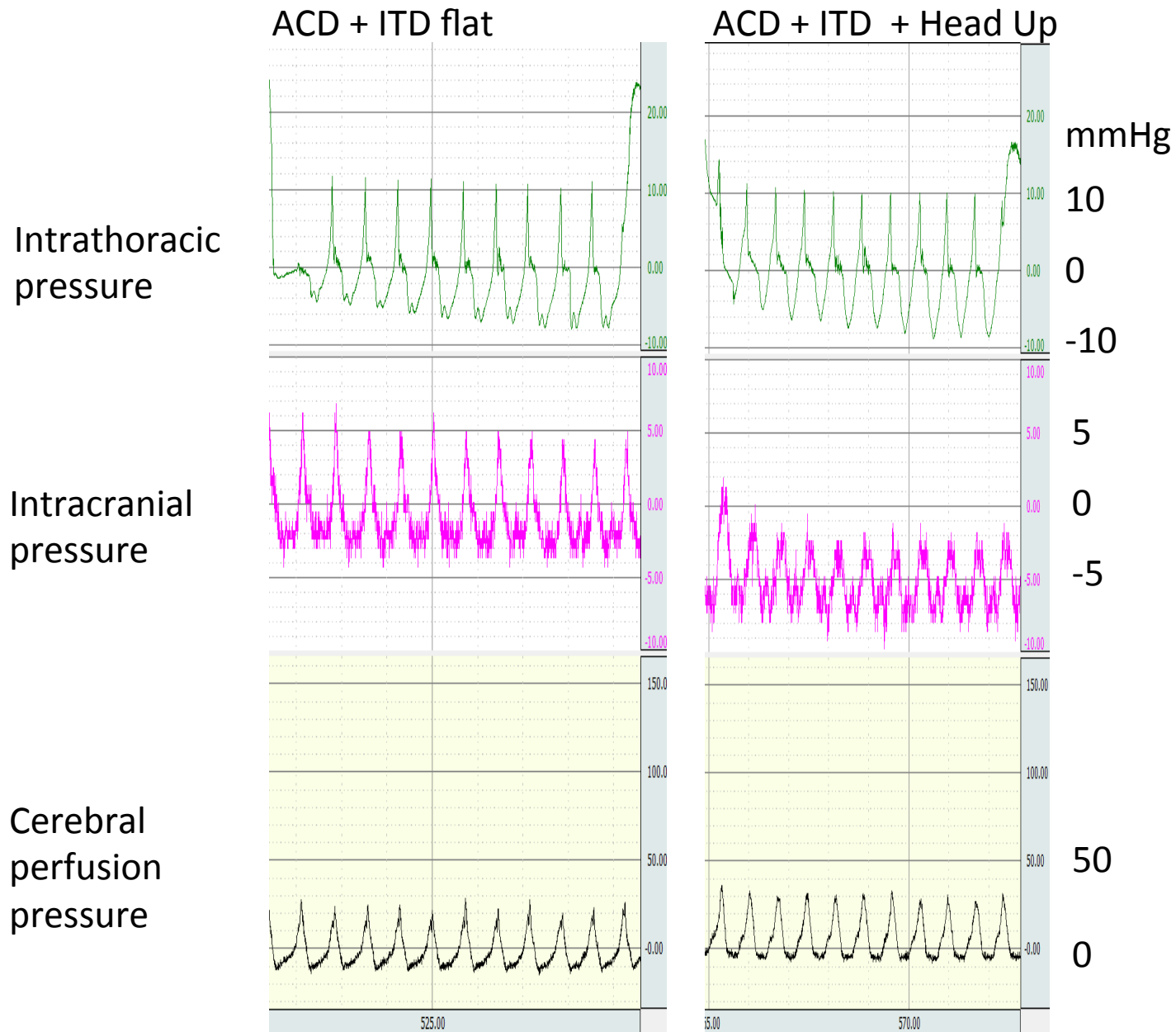


* $p < 0.05$

Human Cadaver 1 Pressure Tracings



Representative Pressure Tracings: Details from Cadaver 2



What is the mechanism?

- Drains venous blood from the brain
- Lowers ICP
- Enhances R to L heart circulation (like sitting up with CHF)
- Reduces a concussion with every compression

Cerebral Perfusion Pressure

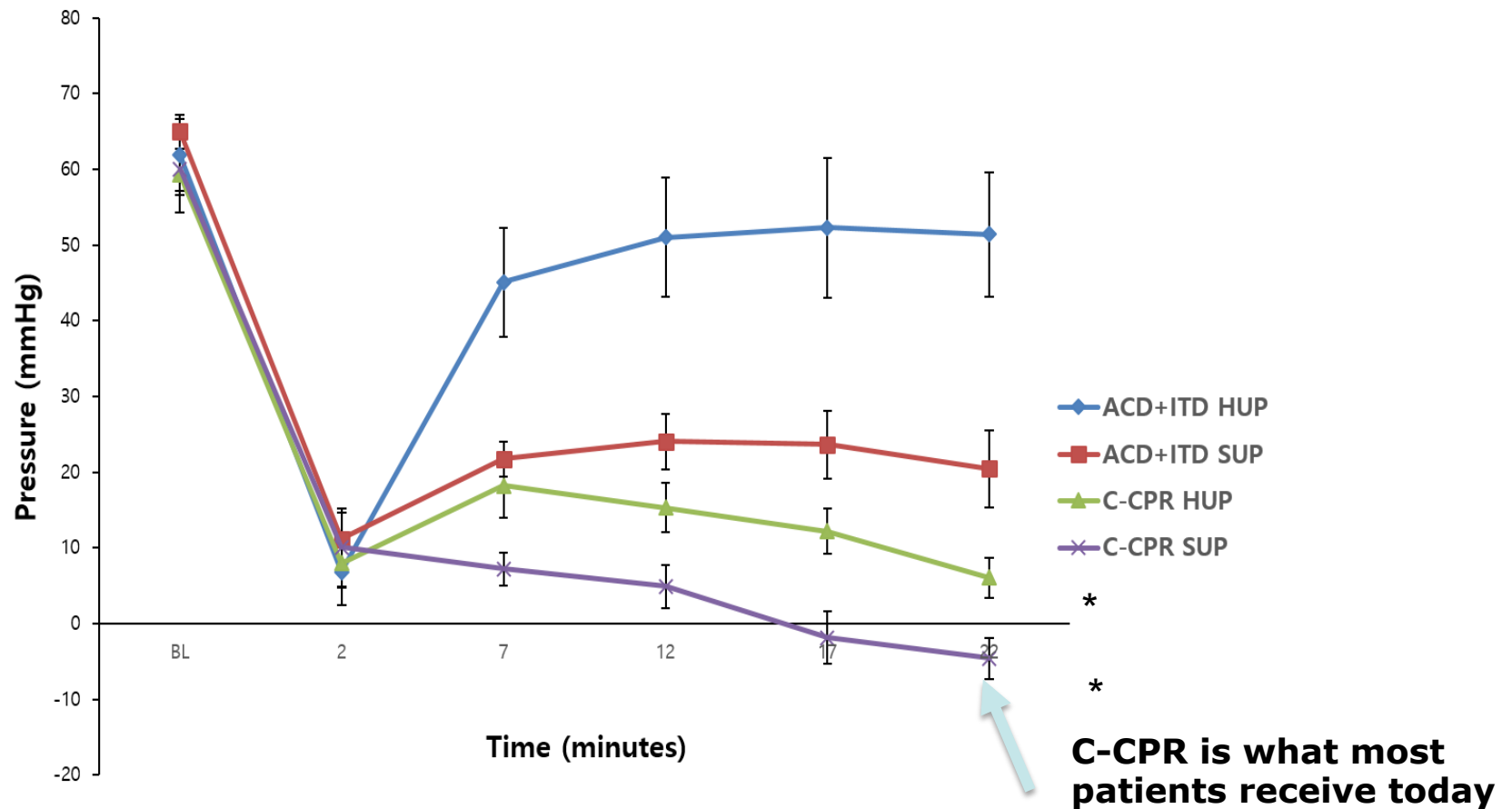


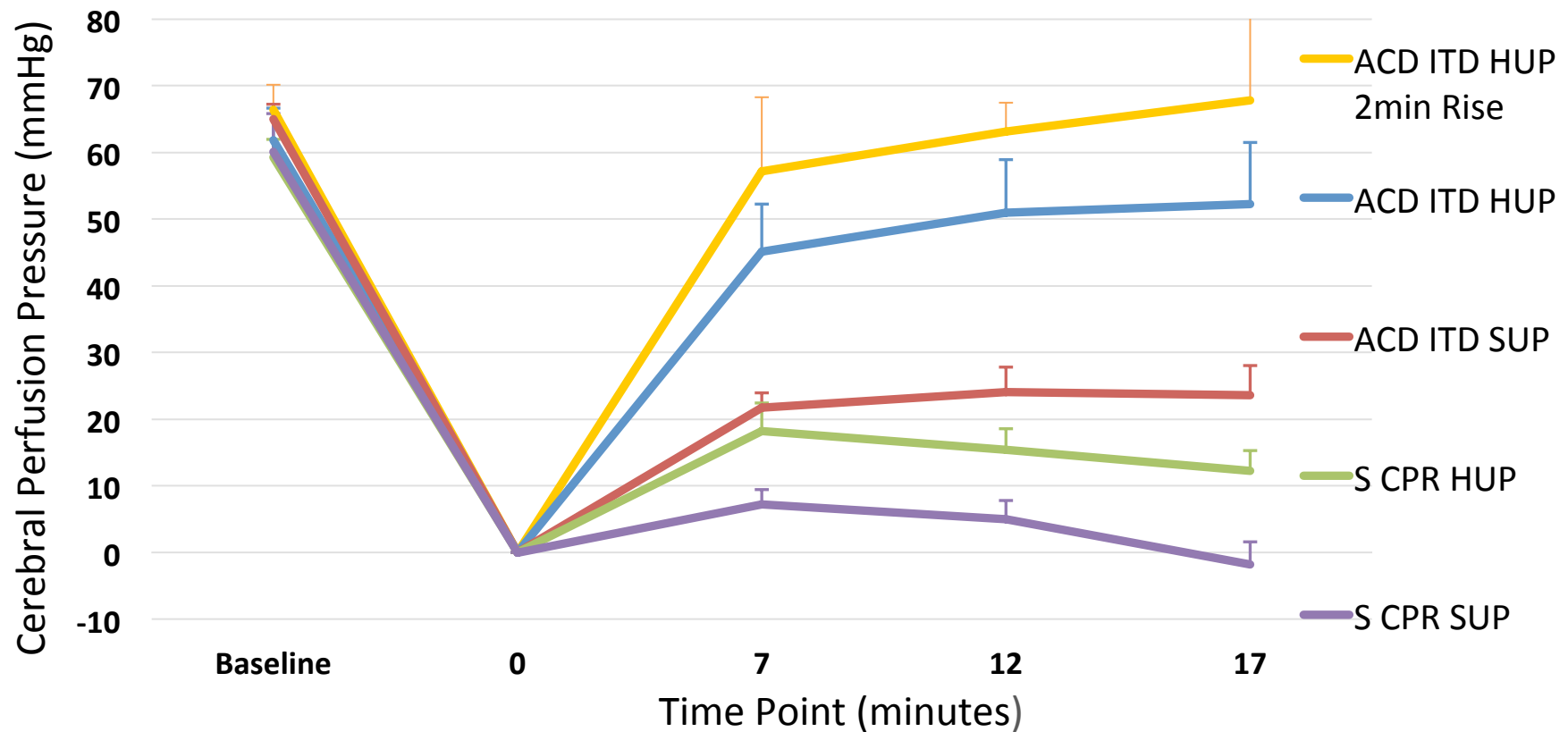
Figure 3. Cerebral Perfusion Pressure from baseline to 22 minutes in the CAD+ITD HUP, ACD+ITD SUP, C-CPR HUP, and C-CPR

*No pigs resuscitated with C-CPR

Recent Discoveries

Over the last year we have discovered the importance of taking time to prime the heart and being careful not to lose that prime with a rapid raising of the patient's head.

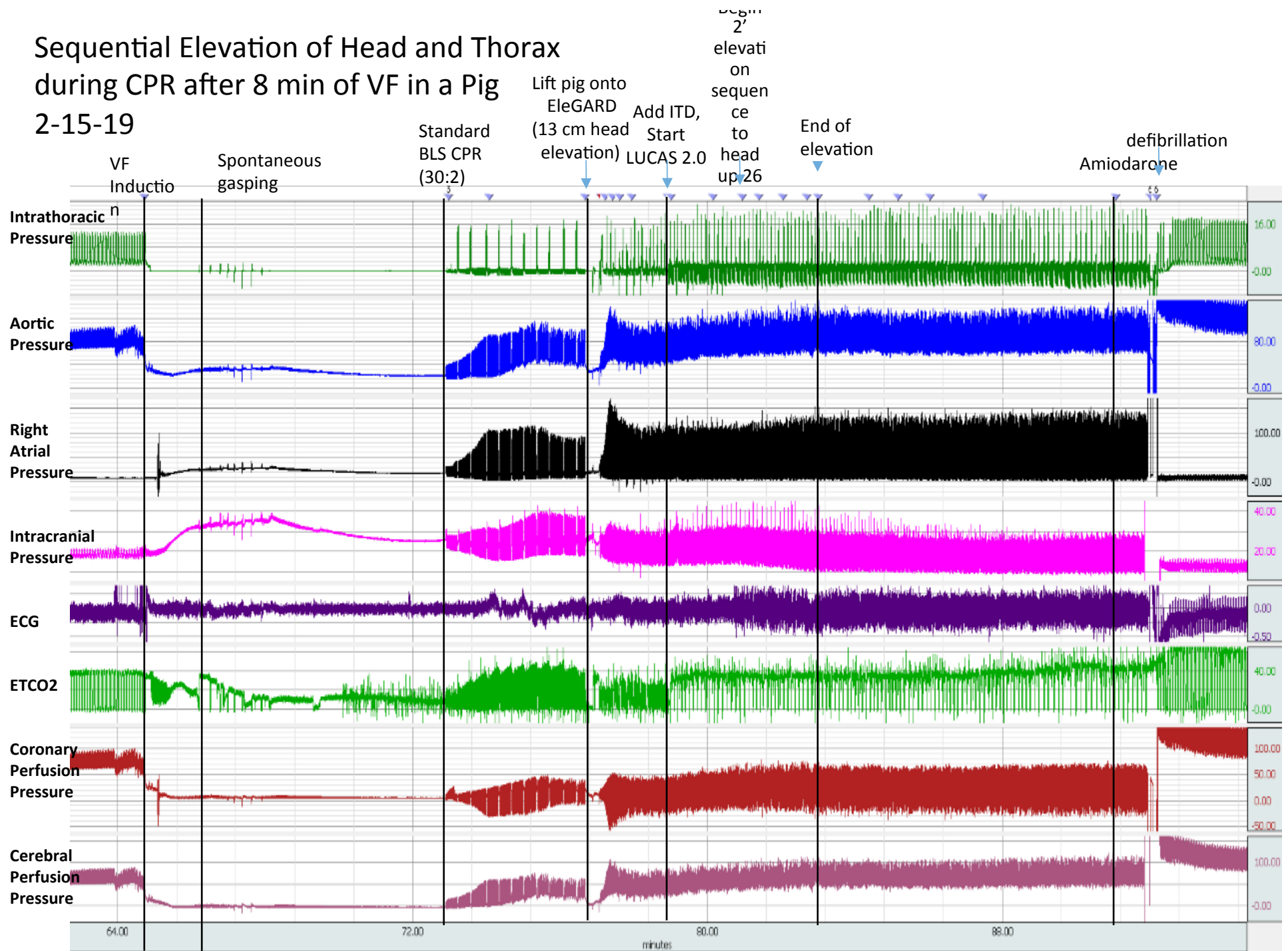
Cerebral Perfusion Pressures with Elevated CPR



- ACD - Active Compression Decompression Cardiopulmonary Resuscitation
- ITD - Impedance Threshold Device
- HUP - Head Up Intervention
- S CPR - Standard Cardiopulmonary Resuscitation
- SUP - Supine Intervention
- 2min Rise - Elevation of the head and upper thorax 6 cm/min over 2 minutes

Sequential Elevation of Head and Thorax during CPR after 8 min of VF in a Pig

2-15-19



Additional Experience with Elevation of the Head and Thorax During CPR

1. Don't elevate the head too quickly.
2. Need to 'prime the system' before elevating head and heart. Two minutes of priming with the ITD in place
3. There is an optimal elevation sequence and height: after 2' of priming then elevate head and thorax over 2'

One of our first success stories



From Pigs to People

Now, we're going to do a bunch more.

Field Trial Sites

- **California**
 - Alameda County
- **Florida**
 - Palm Beach County
- **Minnesota**
 - Anoka County
 - Ramsey County
- **Ohio**
 - Lucas County
- **Tennessee**
 - Memphis
- **Washington**
 - Whatcom County

Thank You.

Any Questions?

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