

The Use of End-Tidal Carbon Dioxide to Evaluate CPR Depth Requirement in a Porcine Model of Paediatric Sudden Cardiac Arrest: Are Current Depth Guidelines Excessive?

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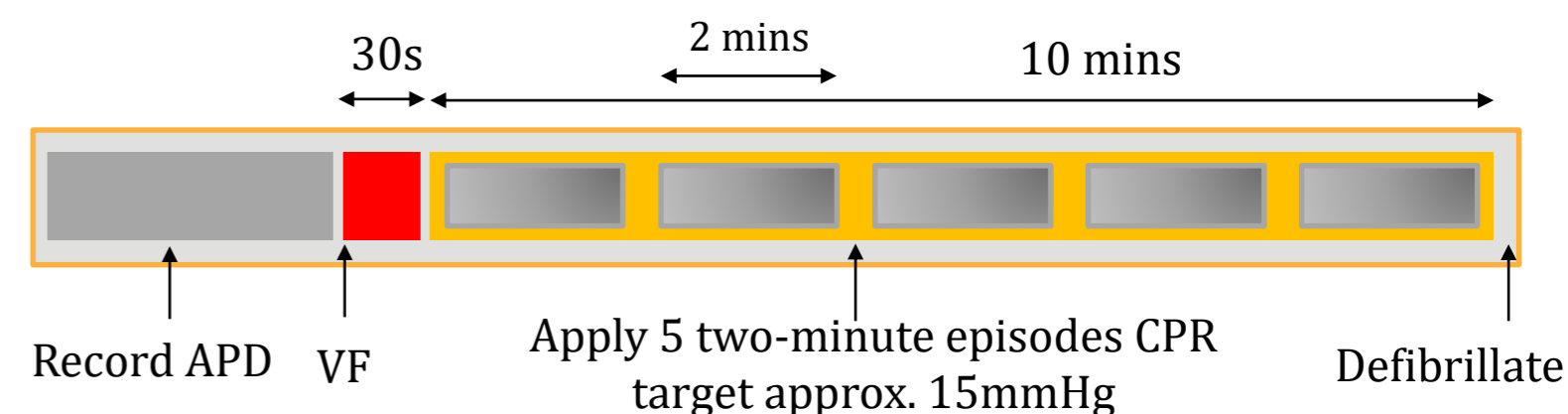
Background and Objective

- Current guidelines 50mm or $\geq 1/3$ of anterior-posterior diameter (APD) = limited evidence
- Previous research: 50mm excessive in a paediatric porcine model, causing traumatic injury.
- **ILCOR knowledge gap:** No physiological recommendations for paediatric CPR depth
- AHA adult guidelines recommend increasing CPR quality if EtCO₂ is less than 10mmHg

Objective: Assess depth & APD proportion required to achieve EtCO₂ of 15mmHg

Materials and Methods

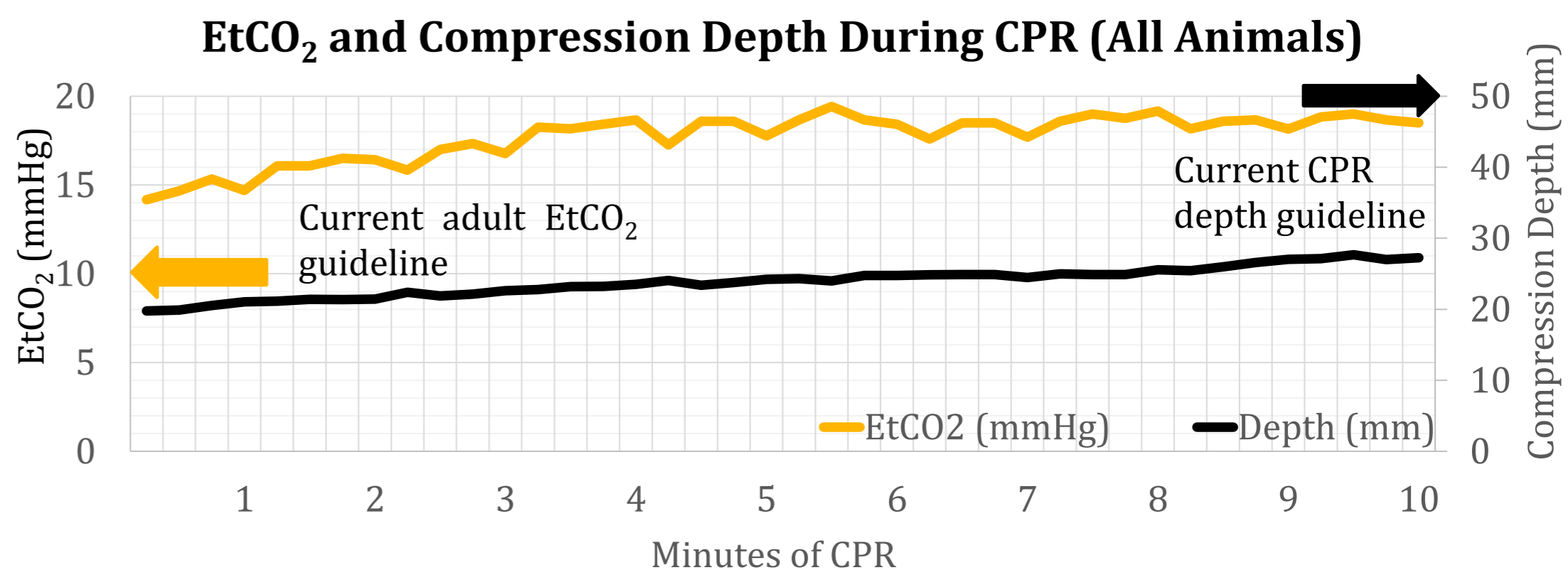
Twelve piglets (11.5–25.0kg Average: 20.5kg)



Findings

Parameter (All Observations during CPR)	Median Value	IQR
EtCO ₂ (mmHg)	17	15, 19
BP (mmHg)	55	47, 69
CPR Depth (mm)	24.1	20.6, 26.2
Proportion of APD (%)	15.0	13.6, 16.4

- Average EtCO₂ did not increase with depths > approx. 25mm
- CPR administered at ~ 50% guidelines yielded EtCO₂ $\geq 50\%$ greater than the adult guideline indicator to improve CPR quality.



Conclusion

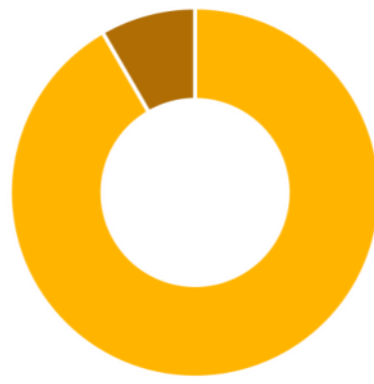
- Lower than guideline CPR depth and APD proportion may be sufficient for paediatric patients.
- As 75% of animals suffered rib fractures at ≤ 27.7 mm, increasing CPR depth to 50mm **may cause additional damage**, with little potential benefit.

Shock Success



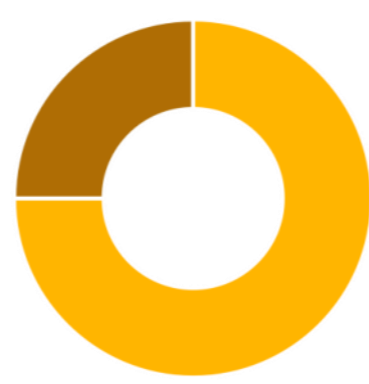
■ Yes ■ No

ROSC



■ Yes ■ No

Rib Fractures



■ Yes ■ No