

Going Above & Beyond ACLS: Goal-Directed CPR



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**MICHIGAN SOCIETY FOR RESPIRATORY
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EMERGENCY MEDICINE
UNIVERSITY OF MICHIGAN HEALTH SYSTEM

Thank You!



**Michigan Society
For Respiratory Care**

Conflict of Interest/Financial Disclosures



I wish...

The Plan for Today...



- ACLS ain't so "A"
- Push Like Your Life Depends On It
- Blind Men & Elephants, No Longer!
- When Air Becomes Breath
- When the End is Just the Beginning

Why I Care



Why You Should Care



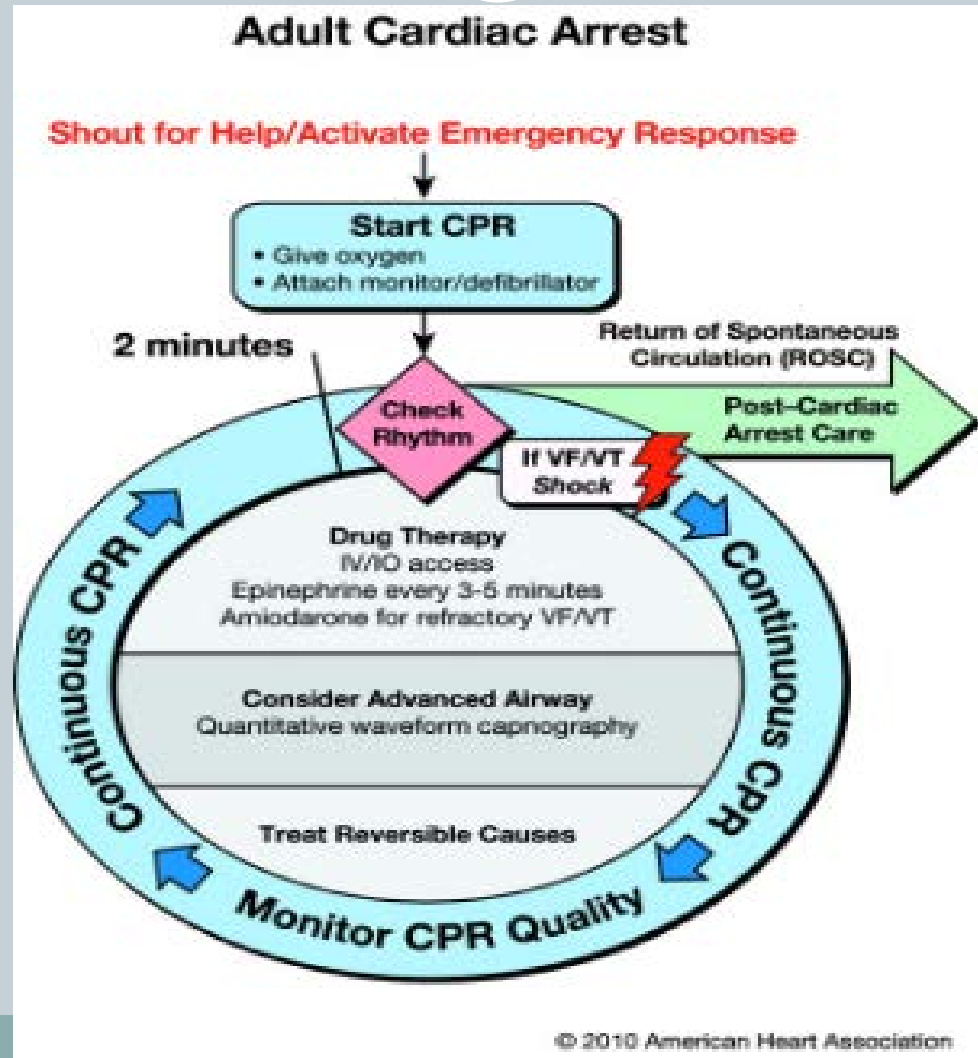
- 300,000 Out-of-hospital cardiac arrests/year
- >90% mortality rate
- RT can make all the difference!

ACLS Ain't So "A"



“What’s so exciting? You press hard, you press fast...sometimes it works, most times it doesn’t.”

ACLS Ain't So "A"



Push Like Your Life Depends On It



Clinical paper

The impact of increased chest compression fraction on the probability of return of spontaneous circulation for out-of-hospital cardiac arrest with ventricular fibrillation☆

Christian Vaillancourt^{a,*},
Judy Powell^b, Graham Nichol^c,
Ian G. Stiell^a, the Resuscitation

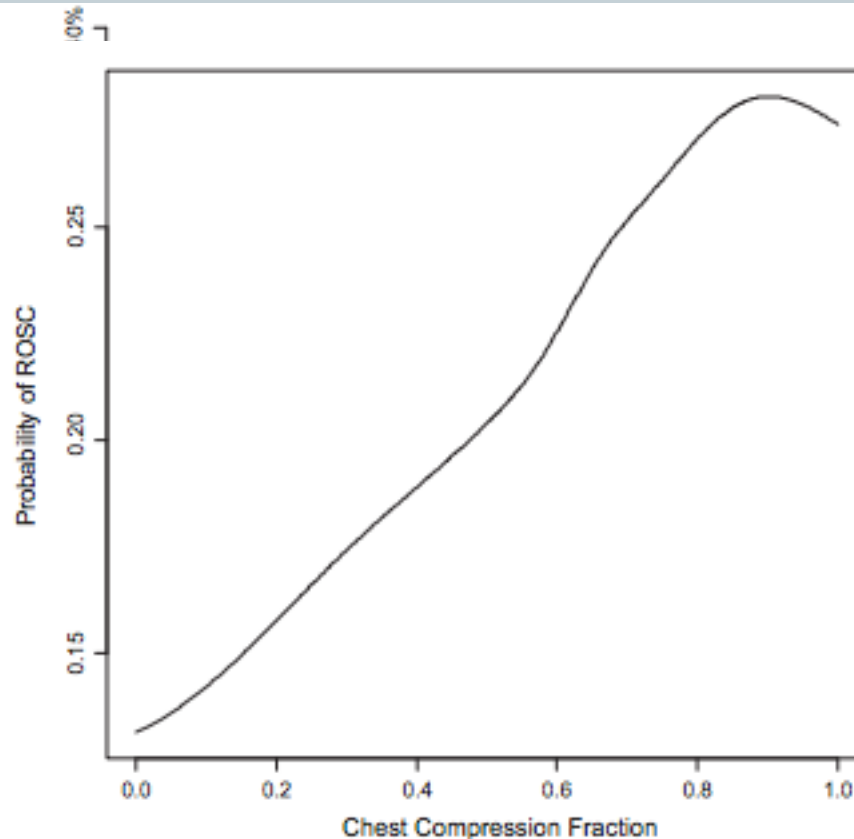


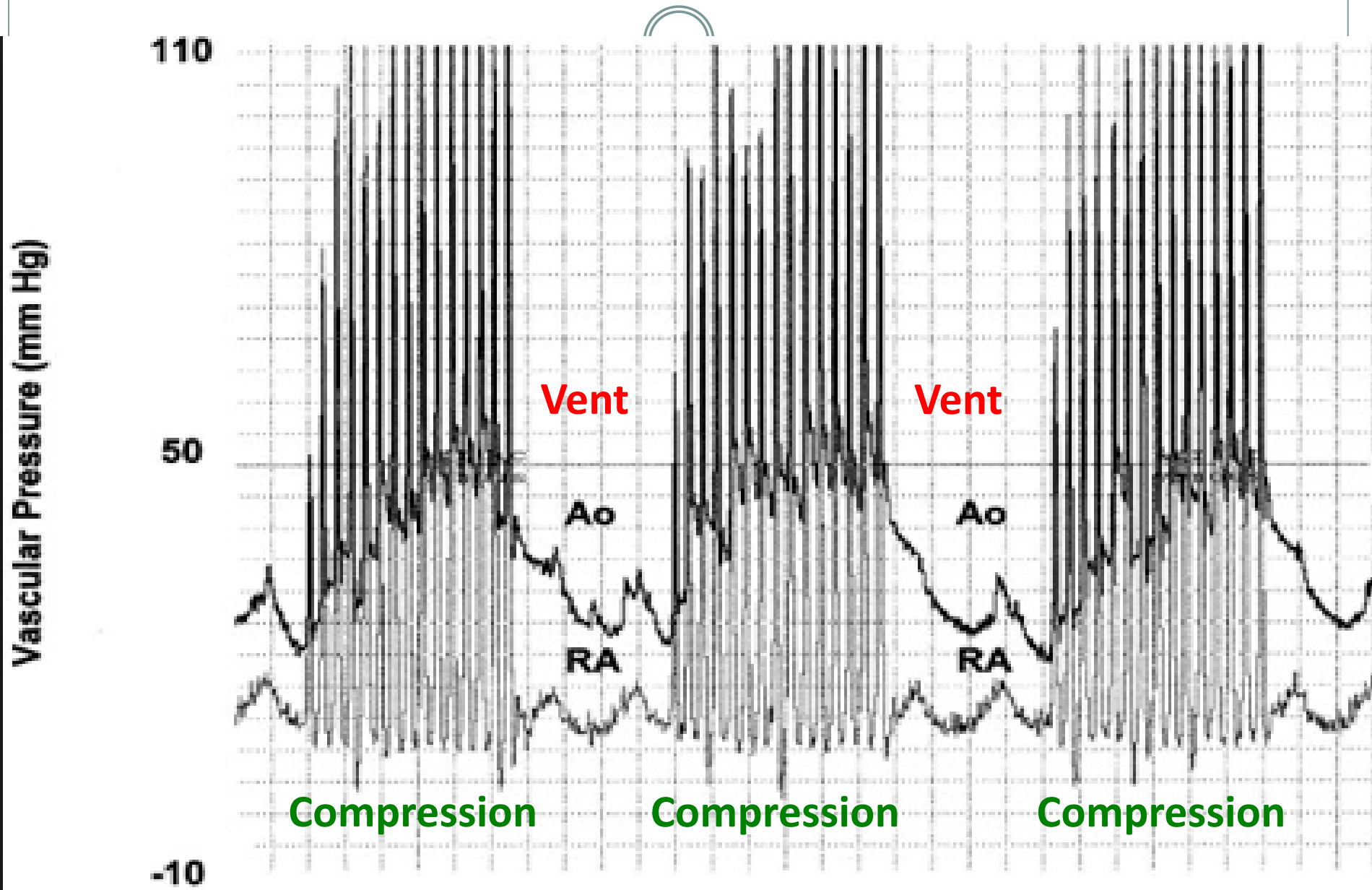
Fig. 2. Smoothing spline representing the unadjusted incremental probability of return of spontaneous circulation corresponding to a linear increase in chest compression fraction.



of spontaneous
ventricular

Andrusiek^c,
Berg^f,

Push Like Your Life Depends On It



Push Like Your Life Depends On It



THE BOTTOM LINE

- Minimize Hands-Off Time!
 - Metronomes, Apps, and “Smart” Defibs
 - Fingers ON the Pulse
 - Pre-Charge Defib
 - Compress through Shock...BEWARE!

Blind Men & Elephants, No Longer!



Blind Men & Elephants, No Longer!



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Resuscitation 106 (2016) 76–82



Contents lists available at [ScienceDirect](http://www.sciencedirect.com)



Table 3

Comparison of resuscitation outcomes among index events with ETCO₂ monitoring (n = 803 index events).

Outcome	ETCO ₂ >10 mmHg n (%)	ETCO ₂ ≤10 mmHg n (%)	OR (CI95) ^a	p-Value
Survival to hospital discharge	125/520 (24)	31/283 (11)	2.41 (1.35, 4.30)	0.003
Survival with favorable neurological outcome	94/520 (18)	23/283 (8)	2.31 (1.31, 4.09)	0.004

OR, odds ratio; CI, confidence interval.

Robert M. Sutton^{a,*}, Benjamin French^b, Peter A. Meaney^a, Alexis A. Topjian^a, Christopher S. Parshuram^c, Dana P. Edelson^d, Stephen Schexnayder^e, Benjamin S. Abella^f, Raina M. Merchant^f, Melania Bembea^g, Robert. A. Berg^a, Vinay M. Nadkarni^a, for the American Heart Association's Get With The Guidelines–Resuscitation Investigators



Fig. 2. Regression analysis illustrating end-tidal CO₂ (ETCO₂) in relation to chest compression (CC) depth measured at 5 fixed rates.

Blind Men & Elephants, No Longer!



THE BOTTOM LINE

- Use EtCO₂ Early & Often
 - Change something if EtCO₂ drops
 - Consider pulse checks for acute increases
 - EtCO₂ <10 after 20 mins pretty poor prognosis

When Air Becomes Breath



Resuscitation 93 (2015) 20–26

Resuscitation 105 (2016) 59–65



Contents lists available at [ScienceDirect](#)

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation



Clinical paper

The association between timing of tracheal intubation and outcomes of adult in-hospital cardiac arrest: A retrospective cohort study[☆]



Chih-Hung Wang^{a,b}, Wen-Jone Chen^{a,c}, Wei-Tien Chang^a, Min-Shan Tsai^a,
Ping-Hsun Yu^d, Yen-Wen Wu^{e,f,g,**,1}, Chien-Hua Huang^{a,*,1}

Odds Ratio (95% CI)

8.8 Mins

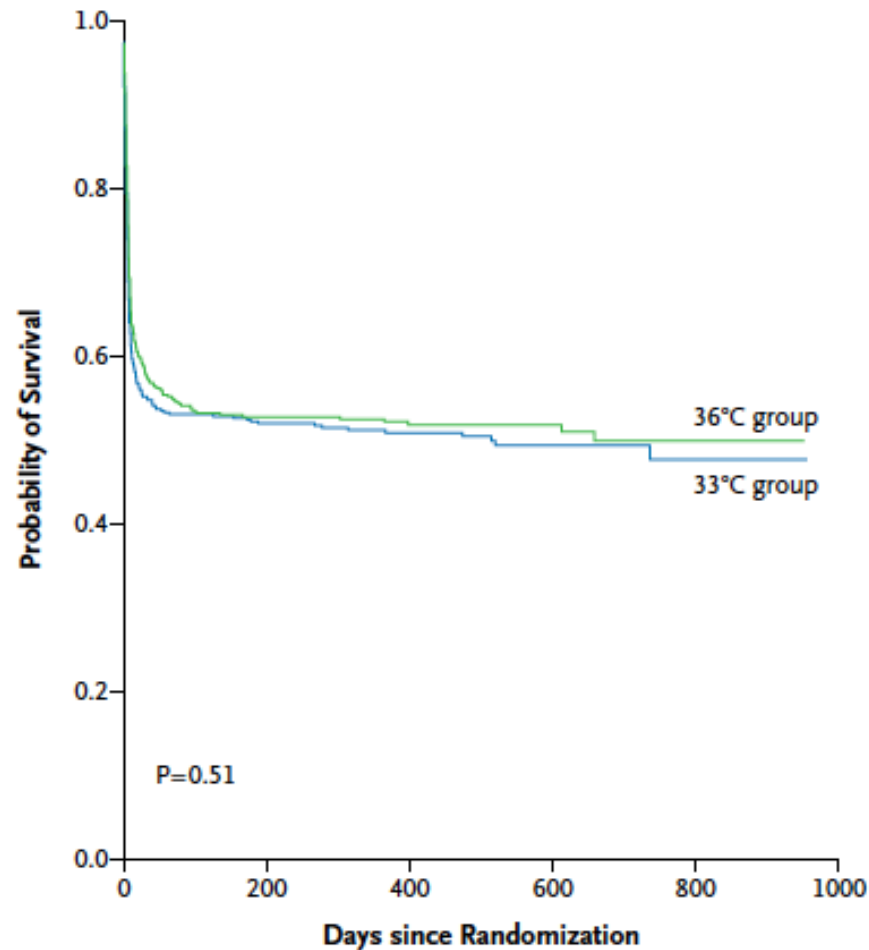
When Air Becomes Breath



THE BOTTOM LINE

- Jury is Out
 - Don't let it interrupt compressions
 - You've got time (~8 minutes)

When the End is Just the Beginning



No. at Risk

33°C group	473	230	151	64	15
36°C group	466	235	144	68	12

Figure 2. Probability of Survival through the End of the Trial.

When the End is Just the Beginning



THE BOTTOM LINE

- Keep 'em Cool
 - Prevent Fever!
 - If 33°C is too hard, aim for 36°C fx 72 hours

What We Learned Today



- When the End is Just the Beginning
 - Keep 'em Cool
- When Air Becomes Breath
 - Jury is Out
- Blind Men & Elephants, No Longer!
 - Use EtCO₂ Early & Often
- Push Like Your Life Depends On It
 - Minimize Hands Off Time
- ACLS Ain't So "A"
 - You Can Change the Outcome

Questions?

