

# STUDY OF PERI-RESUSCITATION TROPONIN AND OUTCOMES (SANTO) PROOF-OF-CONCEPT STUDY

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## RATIONALE

Common causes of out-of-hospital cardiac arrest include a) arrhythmia, b) chronically weakened myocardium, and c) acute occlusion of coronary arteries

Potential strategies to improve perfusion include mechanical circulatory support or extracorporeal membrane oxygenation (ECMO) until percutaneous coronary intervention (PCI) can be performed to correct acute coronary occlusion (ACO)

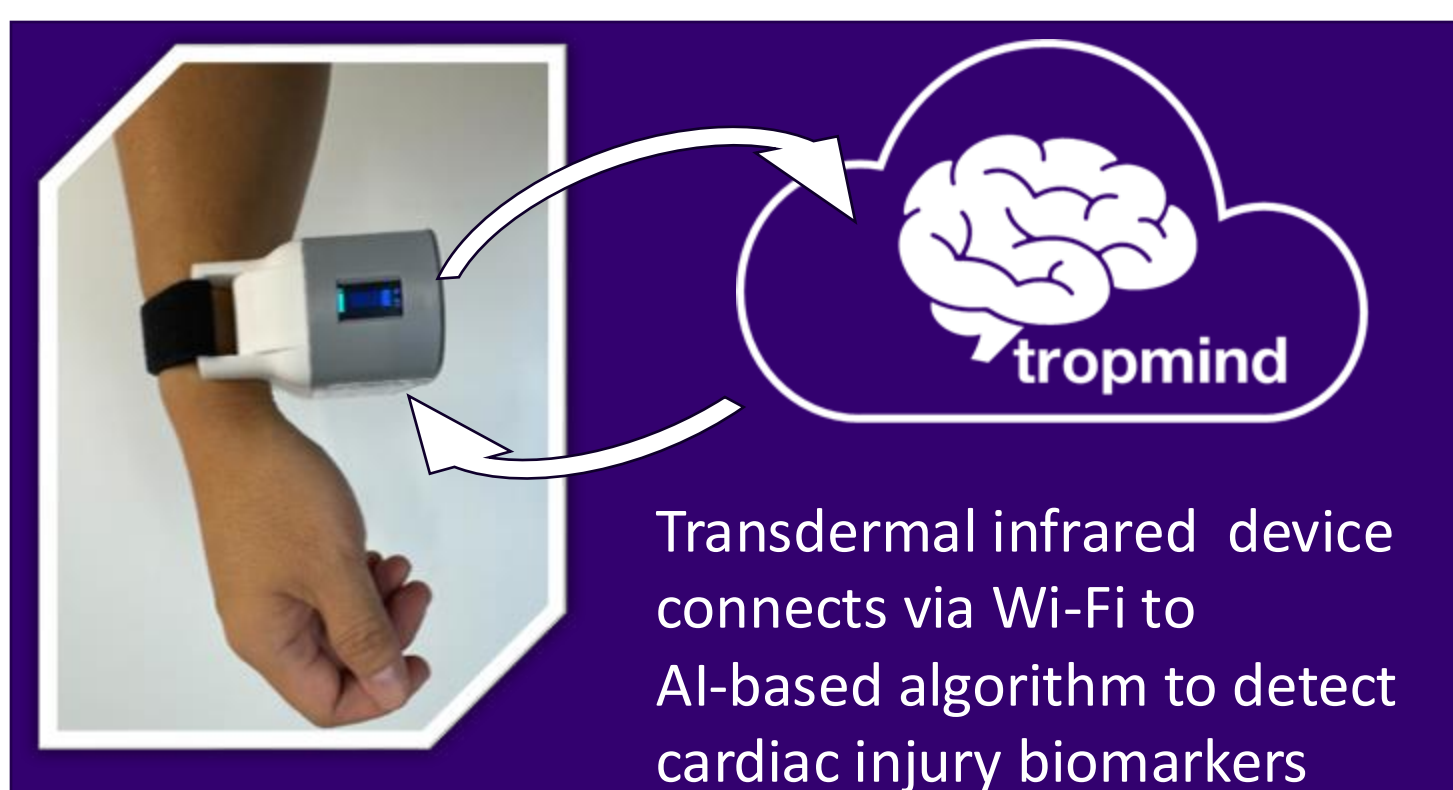
In patients without circulation, ECMO requires specialized personnel, is resource intensive, and does not benefit all patients

In patients with circulation restored, early PCI may improve outcomes

Simple method identifying likely ACO needed

RCE Technologies Inc. (Carlsbad, CA) developing Tropsensor for bloodless transdermal measurement of troponin I

## NOVEL DIAGNOSTIC DEVICE



## DESIGN

Ongoing prospective cohort study

Included patients resuscitated from OHCA of presumed cardiac etiology, with spontaneous circulation at emergency department (ED) arrival

## INTERVENTION

Device applied as soon as feasible after patient arrival in ED

Blood draw for troponin obtained X 2

Tropsensor values obtained as close as feasible to blood draws

IRB approved study under waiver of documented written consent

## OUTCOMES, ANALYSIS

Primary outcome: Feasibility

Prop. patients with device applied, troponin value recorded

Secondary outcome: Bloodless troponin values from Tropsensor correlated with standard blood-based measures

Time-adjusted difference between two-blood draws  
Spearman's correlation

## RESULTS

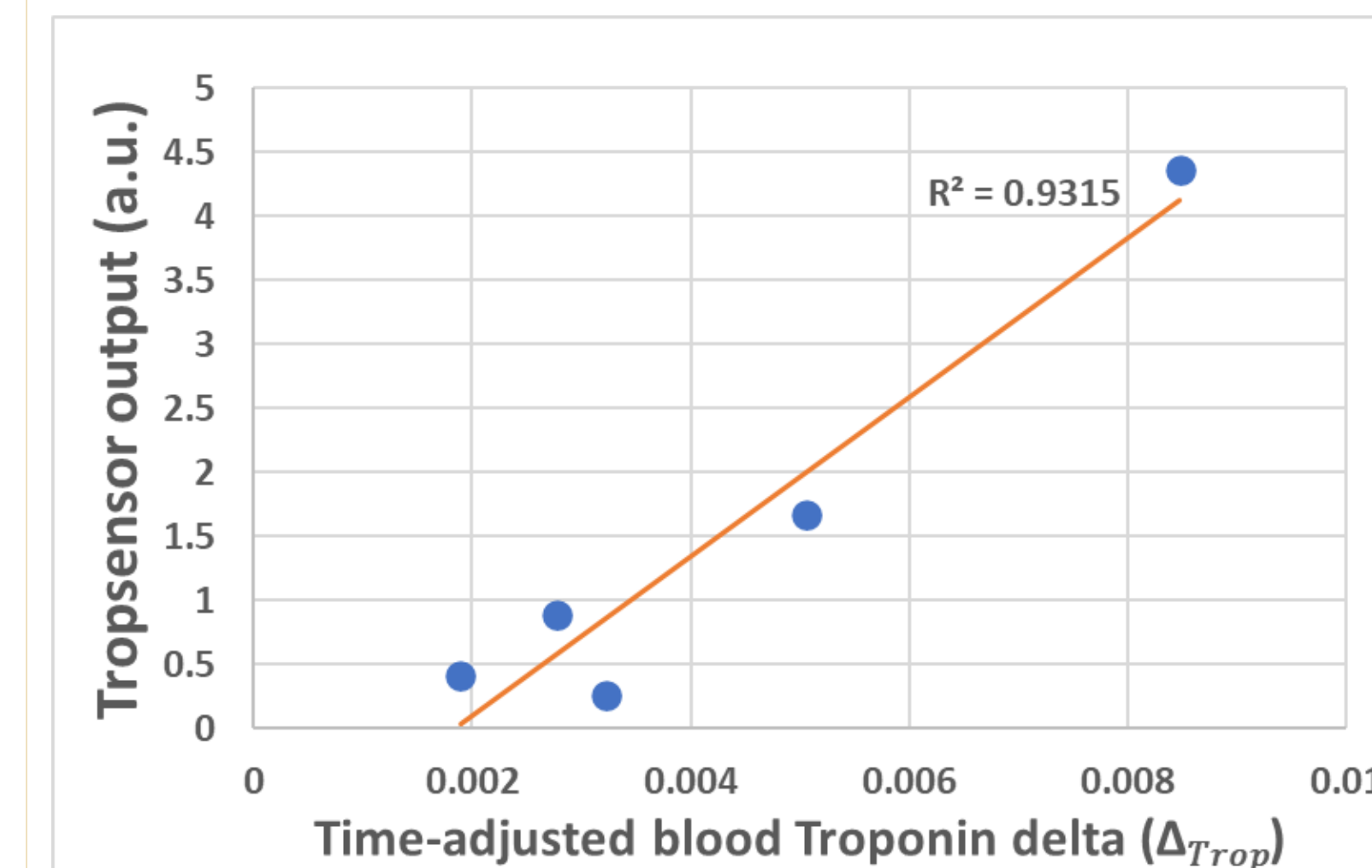
### PATIENT FLOW

12 participants enrolled as of October 15, 2023

17% female;  
50% had witnessed arrest;  
42% had bystander cardiopulmonary resuscitation;  
33% had shockable first rhythm

Tropsensor values available on 7 (58%) participants;  
5 had 2 serum troponin values, included in analysis

### BLOODLESS TROPONIN VS. CHANGE IN BLOOD TROPONIN



Time-adjusted blood troponin delta

$$\Delta_{Trop} = \frac{t_2 - t_1}{\Delta_{min}}$$

Where

$t_1$  and  $t_2$  are blood troponin values collected in chronological order after ED admission

$\Delta_{min}$  is time difference in minutes between two Tropsensor measurements taken after ED admission

QUESTIONS ABOUT STUDY? NICHOL@UW.EDU

ABOUT DEVICE? ATANDRA@RCE.AI

## DISCUSSION

Tropsensor is a transdermal infrared spectrophotometric sensor designed to correlate cardiac troponin I

Large potential public health impact in EMS and outpatient settings, where wearable may be applied on patients earlier in disease progression

Strengths: Device is simple, easy to apply, providers measure in 3 mins.

Limitations: small sample size; vintage ED

Wi-Fi transmission can be difficult in vintage ED



Device modified so no longer requires Wi-Fi connection

## CONCLUSION

Collection of bloodless troponin values feasible after OHCA

Bloodless troponin values highly correlated with serum troponin values

Additional research required to determine if Tropsensor in ED or field improves patient outcome

## ACKNOWLEDGEMENTS

We thank contributing patients, ED nurses, physicians