

Pitfalls Working with Clinical Studies Including Acute Patients. How to work with Studies with no Obvious Benefit

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NEURESCUE device journey (2017-2024)



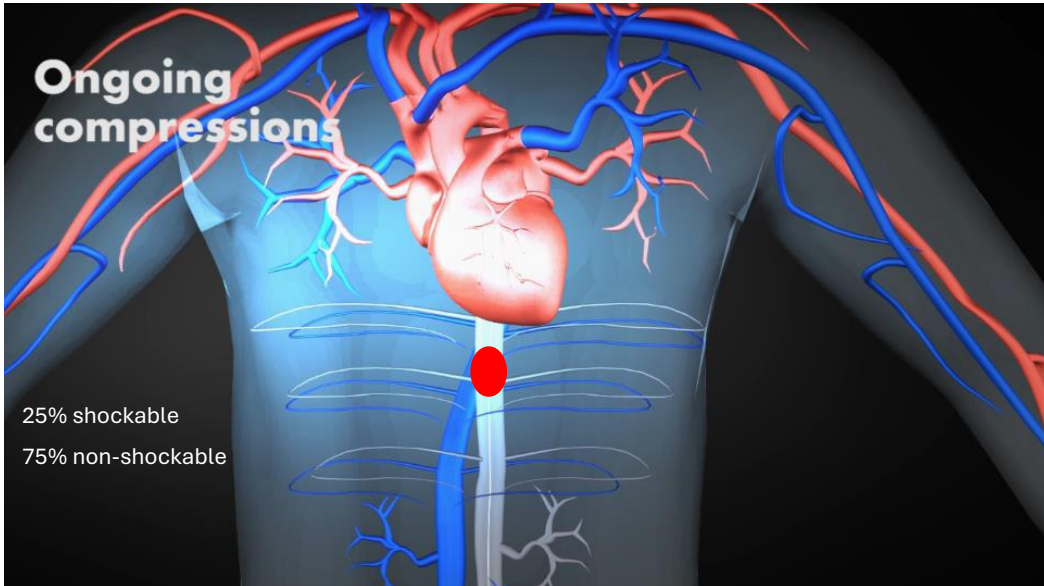
- 2 CT scan studies
- 1 pilot animal study
- 1 RCT blinded animal study
- 1 GLP compliant animal study
- 510(k) approval
- IDE approval
- Community consultation study
- 3 initiated clinical feasibility studies
- 2 finalized feasibility studies
- 3 publications and 2 on its way
- Initial process of a RCT

Agenda

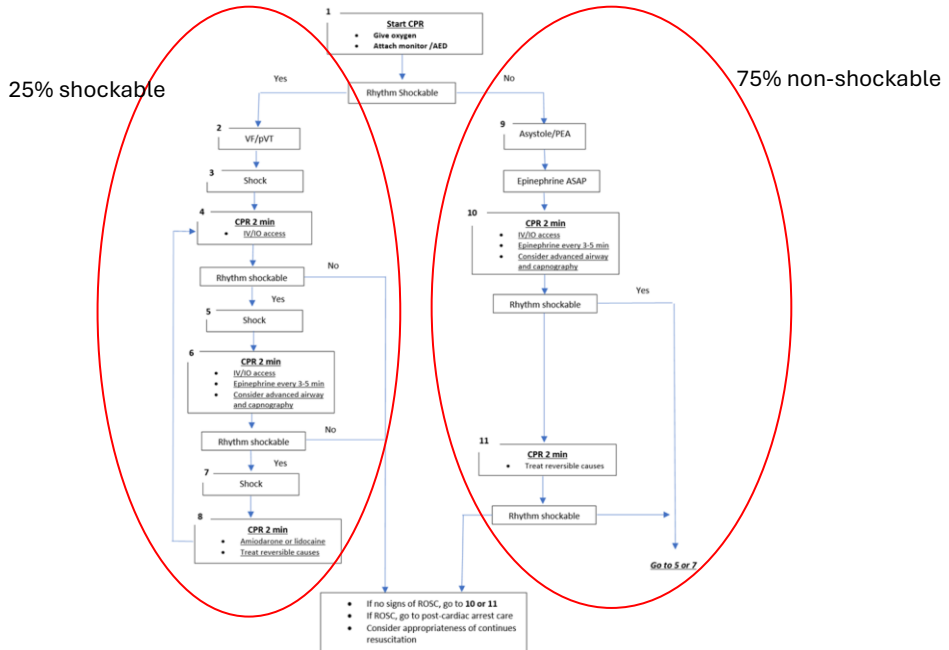


7-9 mio. deaths annually

40% between 25-74 years



Adult Cardiac Arrest Algorithm American Heart Association 2020[®]



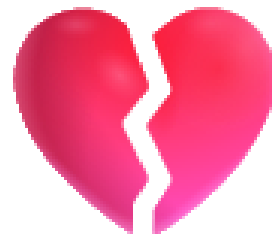
Intended clinical performance data in a cardiac arrest study

- Survival
- Survival with good neurological outcome
- Length of stay
- Cost of treatment

Or

- Feasibility of the device
- Change in pressures
- Sign of life
- Return of Spontaneous circulation
- Change in cardiac rhythm
- Bridge to treatment

How to
investigate
safety data in
a cardiac
arrest study?

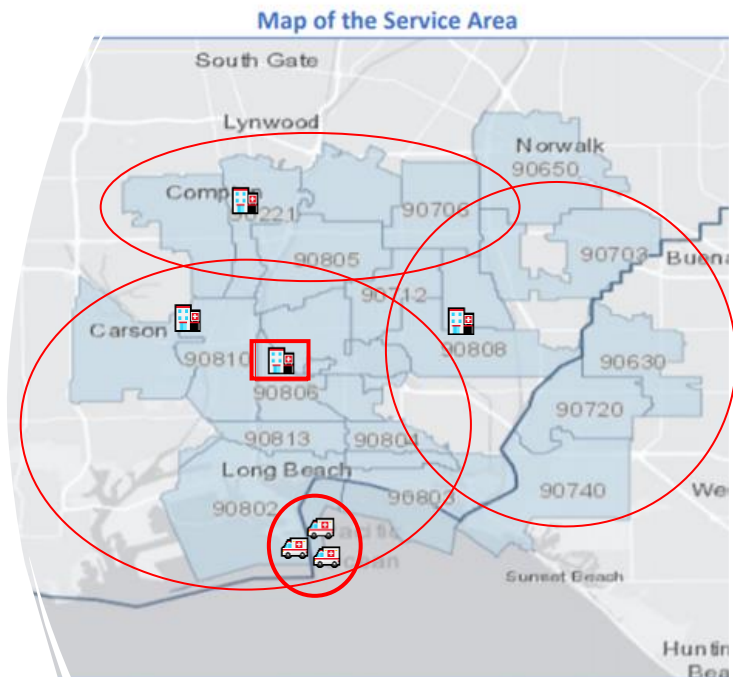


Endpoints

- **Primary endpoint:** Successful occlusion within 10 minutes from 1st vessel puncture during ACLS
- **Primary Safety endpoints:** pseudo aneurism, blood vessel damage due to the device being investigated, thrombosis, lower extremity amputation, renal failure, paralysis
- **Secondary endpoints:**
 - Blood pressure 2 min post occlusion
 - Signe of life
 - ROSC
 - Rhythm changes

Subject identification

- In-hospital cardiac arrest
- Out-of-hospital cardiac arrest
- Shockable rhythm (25%)
- Non-shockable rhythm (75%)

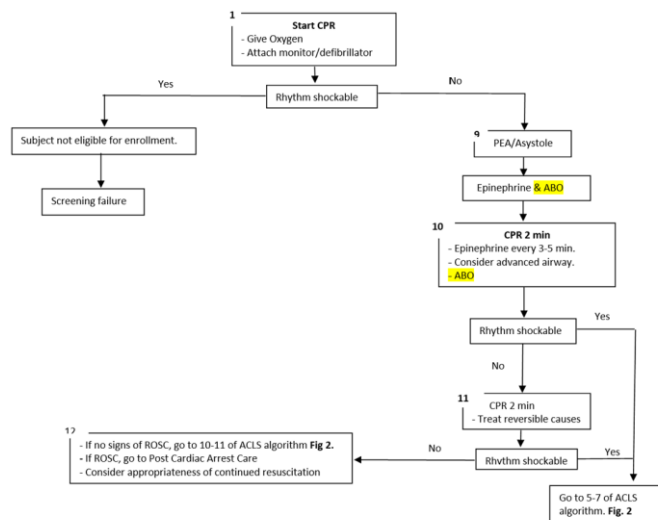


Survival rate

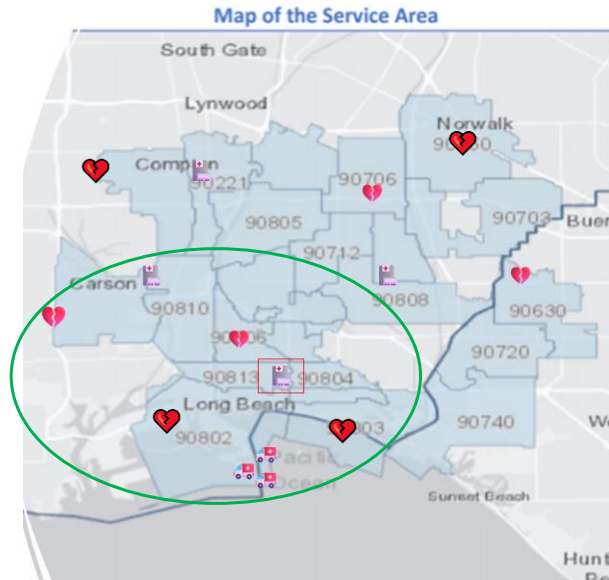
- Non-shockable rhythm 6.9% ROSC or rhythm change
- Non-shockable rhythm Survival to discharge 3.3%
- Shockable rhythm survival to discharge >30%



Study procedure Arm 2 ACLS + ABO treatment



Patient recruitment plan



Cardiac arrest sites

- Feasibility of site(s)

Gender	Code Blue Date	Code Blue Time	Location	Compressions with a device (Y/N)	Defibrillation for initial pVT/VF (Y/N)	Confirmation of intubation with video (Y/N)	Quantitative EtCO2 trend (Y/N)	Epinephrine within 5 minutes (Y/N)	Initial amiodarone (Y/N)	Survival of code (Y/N)	Survived to ICU (Y/N)	Code Status changed for code during or CPC Score within 24 hours (Y/N)	CPC Score prior to Code (Y/N)	CPC Score at Discharge (Y/N)	Compliance with ACLS (Y/N)	Admission History / Notes	TLR
88 F	01/09/2022	14:18 Critical Care	7th Floor - 1418 Critical Care	Y	NA	PEA	NA	Y	Y	N	Y	Expired	Y	NA	NA	NA	Adm with COVID-19 (PNA, 45 day LOS in the ICU) (scheduled for a week in ICU but reinitiated, Vax R, 2 jca booster)
85 F	01/09/2022	21:43 Critical Care	7th Floor - 2143 Critical Care	Y	NA	Asystole	NA	Y	Y	N	Y	Expired	Y	NA	NA	NA	Adm with COVID-19 PNA, 38 day LOS, need alignment on daily prophylaxis 5 mg and Ethicon, VTE: not obese, Vax R2 & Booster
63 M	07/09/2022	18:31 Critical Care	7th Floor - 1831 Critical Care	N	NA	PEA	NA	Y	Y	N	Y	Expired	Y	NA	NA	NA	Adm with COVID-19 PNA, hx of DM II, CAD and lung cancer on immunotherapy - NO VAX
74 M	09/03/2022	11:45 5th Floor	3rd Floor - 1145 5th Floor	Y	NA	Asystole	Y	N	Y	Y	Y	Expired	Y	NA	NA	NA	Admitted altered & found homeless. Ptg placed 6 days prior to this code - 70 hrs earlier high medical of 600mg and tube clamped. Residual kidneys. Runy/G checked pt am @ 30am before code.
63 M	14/09/2022	16:00 Critical Care	7th Floor - 1600 Critical Care	Y	NA	PEA	Y	Y	Y	Y	Y	Expired	Y	NA	NA	NA	Adm with Encephalopathy of 8R and Generalized weakness
79 M	18/09/2022	07:30 8th Floor	7th Floor - 0730 8th Floor	N	NA	PEA	Y	Y	Y	Y	Y	Expired	N	NA	NA	NA	Adm with Peritoneal carcinomatosis, Compressions documented by 2 minutes. Looks like possible separation
70 M	22/09/2022	17:28 8th Floor	7th Floor - 1728 8th Floor	N	NA	PEA	Y	Y	Y	N	N	Expired	N	NA	NA	NA	Adm with Pancreatitis. Coded 2 more times in ICU, all on the same day but > 20 minutes apart - 3 previous
76 M	23/09/2022	21:25 8th Floor	7th Floor - 2125 8th Floor	Y	NA	PEA	Y	Y	Y	N	Y	Expired	N	NA	NA	NA	Adm with COVID-19 from DM
63 F	24/09/2022	12:30 4th Floor	7th Floor - 1230 4th Floor	Y	NA	PEA	Y	N	Y	N	N	Expired	N	NA	NA	NA	Adm with GI Bleed/Not Gastric ulcer: 1x lap and path R. Catheter. In ICU up to 80000
81 F	24/09/2022	20:00 Critical Care	7th Floor - 2000 Critical Care	Y	NA	PEA	NA	Y	Y	N	N	Expired	N	NA	NA	NA	Adm as full arrest from Dialysis Center and again in ambulance. HXIC in ICU had intubated in ED
77 F	24/09/2022	01:35 Critical Care	7th Floor - 0135 Critical Care	N	NA	PEA	NA	Y	Y	N	Y	Expired	Y	NA	NA	NA	Adm renal failure/pneumonia Shock Code in ED on admission - 3/20/22. This code occurred in ICU 2 days later R&P - yep
60 F	26/09/2022	03:43 Critical Care	3rd Floor - 0343 Critical Care	Y	NA	Vtach	NA	Y	Y	N	N	Expired	N	NA	NA	NA	Adm with CAD and had an aborted CABG the evening before for severe PTEB and total aortic stenosis. Day 1 CPO Severe CP at 03:19 / P tach and defibrillated in 3 minutes
64 F	28/09/2022	17:37 Critical Care	3rd Floor - 1737 Critical Care	Y	NA	PEA	Y	N	Y	N	Y	Expired	N	NA	NA	NA	Adm for elective redo valve surgery on 12/1/22. MVA/neck) Aortic tears, T89 (fractured). Downloaded aPTT, then intub. thorax and back to OR.
59 F	29/09/2022	21:35 4th Floor	7th Floor - 2135 4th Floor	N	NA	PEA	Y	Y	Y	Y	Y	Expired	N	NA	NA	NA	Adm from Outpat Oncology office with new CVA. After paramedics in ED got on the bed - also later had decrease in mental status, drop in BP, HR up to 130 and increased work of breathing, intubated level 2 PNA. In ICU - always when quickly cooled again and pt expired after ~30 minute arrest in ICU
44 F	30/09/2022	01:00 Critical Care	3rd Floor - 0100 Critical Care	Y	NA	PEA	NA	Y	Y	N	N	Expired	N	NA	NA	NA	Adm through ED with Cardiac Arrest. HXIC in ICU. R&P with Cardiac/Doc. PT is a DM, Dialysis in ICU (AKA HX. Dialysis 3 hrs prior to this arrest - 1:00PM due to low bp.

Exception from informed consent

Community consultation

Remember to use all your data to the marked approval submission



EFIC plan

Race/Ethnicity distribution.

Population	Black or African American	American Indian/ Alaska Native	Asian	Native Hawaiian/ Pacific Islander	Other Race	Two+ races	White Non-Hispanic	Hispanic or Latino
LBMC Service area	12%	0.8%	15,7%	0,8%	17,1%	4,7%	21,8%	47,4%
Long Beach	13%	1,2%	13%	0,9%	13,2%	5,5%	27,7%	42,4%
LA County	8,3%	0,6%	14,2%	0,3%	20,2%	3,9%	26,7%	48,3%
California	5,9%	0,7%	13,9%	0,4%	13,3%	4,6%	38,4%	38,6%

Data Sources: MemorialCare Long Beach Medical Center: Community Health Needs Assessment 2019.

Translation of documents

People who have limited English-speaking ability.

Zip Code	Limited English-speaking ability
LBMC Service area	21.6%
Long Beach	18,3%
LA County	24,9%
California	18,6%

Data source: MemorialCare Long Beach Medical Center: Community Health Needs Assessment 2019.

Leading causes of death by race at Long Beach

Leading causes of death by race at Long Beach.

Ranking	Hispanic/Latino	White non-Hispanic	Black/African American	Asian
1	Heart diseases 57 per 100.000	Heart diseases 366 per 100.000	Heart diseases 232 per 100.000	Heart diseases 147 per 100.000
2	Cancer 55 per 100.000	Cancer 271 per 100.000	Cancer 169 per 100.000	Cancer 134 per 100.000
3	Cerebrovascular diseases 16 per 100.000	Chronic respiratory disease 94 per 100.000	Diabetes 42 per 100.000	Cerebrovascular diseases 46 per 100.000

Data source: MemorialCare Long Beach Medical Center: Community Health Needs Assessment 2019

Required documents for the community outreach

Document type
Focus Group Guide
Individual Survey/Questionnaire
ARISE study LBMC Press Release
PowerPoint ARISE study survey slides
Public disclosure Flyer
Letter to Community Leaders
ARISE Study Public Disclosure Newspaper Ad
ARISE Study Internet marketing Ads
Community Consultation and Survey Phone Scripts
Public disclosure poster
ARISE LBpost.com ad
ARISE study Press telegram

Public disclosure

- Public Disclosure requirement of the Exception from Informed Consent (EFIC) regulations (21 CFR 50.24) for emergency research, states:
- 21 CFR 50.24
 - *(a)(7) Additional protections of the rights and welfare of subjects will be provided, including at least:*
 - *(ii) Public disclosure to the communities in which the clinical investigation will be conducted and from which the subjects will be drawn, prior to initiation of the clinical investigation, of plans for the investigation and its risks and expected benefits;*
 - *(iii) Public disclosure of sufficient information following completion of the clinical investigation to apprise the community and researchers of the study, including the demographic characteristics of the research population, and its results;*

Public disclosure Flyer



Upcoming Clinical Study at MemorialCare Long Beach Medical Center

New treatment may help more patients survive cardiac arrest.

The ARISE study will investigate a new experimental treatment for in-hospital cardiac arrest that may help more patients survive.

Cardiac arrest is a major health problem accounting for an estimated 15-20% of all deaths. Cardiac arrest is the sudden loss of heart function. The current standard treatment of cardiac arrest is chest compressions (also known as CPR), defibrillation and medicine. Even with these standard treatments, around 75% of patients do not survive due to their cardiac arrest inside the hospital.

If a cardiac arrest patient does not respond to standard treatment, the device used in this study, the Neurescue device, is placed. This device may help restart a patient's heart and protect their brain during a cardiac arrest. The device is used while the patient will continue to receive standard treatment for the cardiac arrest and only once all other options have been attempted without success.

Most patients with cardiac arrest are not able to give consent, therefore this study has been FDA approved and approved by the Institutional Review Board (IRB) to enroll patients without their consent.

Ten (10) patients will be enrolled from April 2022 to September 2023. Significant risks to the study include kidney complications, paralysis, a blood clot or blockage in blood vessels, death, and neurological impairment.



Your opinion about this study is very important to us and therefore we kindly ask you to complete our survey at aristudy.com. Your responses will remain anonymous. For more information about the ARISE study please email contact@aristudy.com

Focus groups and surveys

- 5 focus groups
- 100 survey answers

Race distribution from community outreach

Racial/Ethnicity distribution from the community consultation

Black or African American	American Indian/Alaska Native	Asian	Native Hawaiian/Pacific Islander	White Non-Hispanic	Hispanic or Latino	Prefer not to say
6(6.6)	3(3.4)	14(15.7)	3(3.4)	58(65.2)	19(20.4)	6(6.6)

Social education Long beach

Social education level in the MemorialCare Long Beach Medical Center

Area	High School Degree or Higher	Bachelor's Degree or Higher
LBMC service area	78.2%	26.0%
Long Beach	79.5%	29.5%

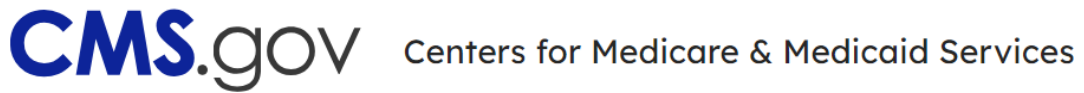
Social education level distribution from the community consultation

	Not attended school	Grade 1-8	Grade 9-11	High School Degree or Higher (n)%	College 1-3 years or technical school	College ≥4 years
Community Consultation	1(1.1)	0(0)	3(3.2)	5(5.3)	36(37.2)	50(53.2)

Exception from informed consent

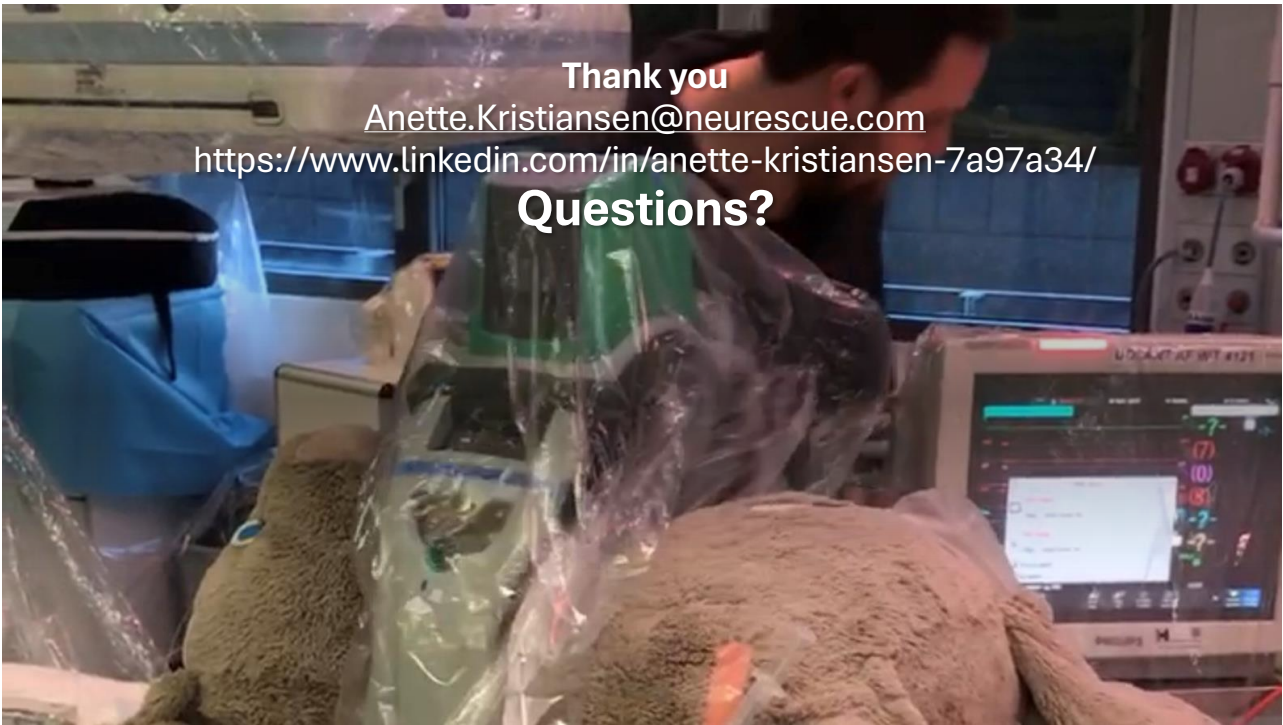
- *Prospective informed consent*
- Notification Letter
- Informed consent for continued participation





Medicare Coverage Related to Investigational Device Exemption (IDE) Studies

Instructions: Medicare Coverage Related to Investigational Device Exemption (IDE) Studies



Thank you
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Questions?