



# **Mechanical Behaviors: The LINC Trial vs the Memphis Experience**

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# *LINC Trial*

*JAMA. 2014;311(1):53-61*

✱ 2589 patients from six European sites





# LINC Results

Outcome	Mechanical compressions (%)	Manual compressions (%)
4-h survival (primary end point)	23.6	23.7
ICU discharge	7.5	6.4
Hospital discharge	8.3	7.8
Good neurological outcome (CPC 1-2) at 1 mo	8.1	7.3
Good neurological outcome (CPC 1-2) at 6 mo	8.5	7.6

**LINC Results**

**CPC=clinical performance category**



# And so...

- ✱ Confirmed Mechanical is as good as high quality CPR
- ✱ No difference in outcomes





# But...

- ❖ EMS retrained on CPR every 6 months
- ❖ Didn't evaluate for specific areas of benefit



# Memphis Fire Department

- ✱ **Approximately 1,900 personnel**
  - ✱ **350+ Medics**
  - ✱ **1500+ EMTs**
- ✱ **59 Stations**
- ✱ **60 Engines**
- ✱ **27 Truck Companies**
- ✱ **36 ALS Ambulances**
- ✱ **3 Heavy Squads**
- ✱ **Sponsoring Agency for USAR Tennessee Task Force 1**





# Demographics

- ✱ **Annual Call Volume 123,000 runs**
- ✱ **Cardiac Arrests 1100-1200/year**



# Lucas Deployment

✱ **Began field trials in 2011 as a pilot project**





**2011**

✱ **Cardiac Arrest Calls: 1,132**

✱ **WITH LUCAS DEVICE**

✱ **ROSC: 1**

✱ **No ROSC: 4**

**25%**

✱ **WITHOUT LUCAS DEVICE**

✱ **ROSC: 174**

✱ **No ROSC: 754**

**23%**

✱ **\*\*192 Responses for ROSC were noted as "Not Available"**



# 2012

- ❖ **Lucas device deployed on 18/36 ambulances**
- ❖ **No other changes in training, tools, meds, number units, or response times**
- ❖ **Units selected were randomly chosen**
- ❖ **Frequent changes in assigned medics**





# 2012 results

✱ **Cardiac Arrest Calls: 1,204**

✱ **WITH LUCAS DEVICE**

✱ **ROSC: 37**

**48%**

✱ **No ROSC: 77**

✱ **WITHOUT LUCAS DEVICE:**

✱ **ROSC: 213**

**26%**

✱ **No ROSC: 825**



**2013**

**✱ Full deployment on all units thanks to charitable grant**





# **2103 results**

✱ **Cardiac Arrest Calls: 1,134**

✱ **WITH LUCAS DEVICE**

✱ **ROSC: 128**

**49.6%**

✱ **No ROSC: 258**

✱ **WITHOUT LUCAS DEVICE:**

✱ **ROSC: 220**

**28.3%**

✱ **No ROSC: 775**

✱ **\*\*194 Responses "Not Available"**



## 2014 to date...

✱ **Cardiac Arrest Calls: 172**

✱ **WITH LUCAS DEVICE**

✱ **ROSC: 13**

**26%**

✱ **No ROSC: 50**

✱ **WITHOUT LUCAS DEVICE:**

✱ **ROSC: 23**

✱ **No ROSC: 127**

**18%**





# **Why the differences? (IMHO)**

- ✱ **We transport a significant number of cardiac arrests**

- ✱ **Fewer Pauses?**

- ✱ **More consistency?**

- ✱ **Lots of time moving patients in situations where CPR quality is poor**



❖ **Data is VERY rough**

❖ **Will be pursuing details and patient followup**





# Questions?

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Thanks to Institute for HealthCare  
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[www.code3visualdesigns.com](http://www.code3visualdesigns.com)