# The Basics, a LUCAS and an SGA

An explanatory trial to determine what's first.

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Disclosure: I have no affiliations or sponsorships to disclose

# Denis Daly

- Paramedic-AP
- Education and Competency Assurance Officer in the NASC Ireland (14- )
- MSc in Healthcare Simulation and Patient Safety, EMS-Immediate Care and studying for MSc in Clinical Education.
- Undergrad / Post-Grad Dip. in EMS (AP) and Dip. in Training and Ed.
- Infantry (1981-2014)

"If you always put the patient first when making a decision, you will never make the wrong decision". Dr Geoff King

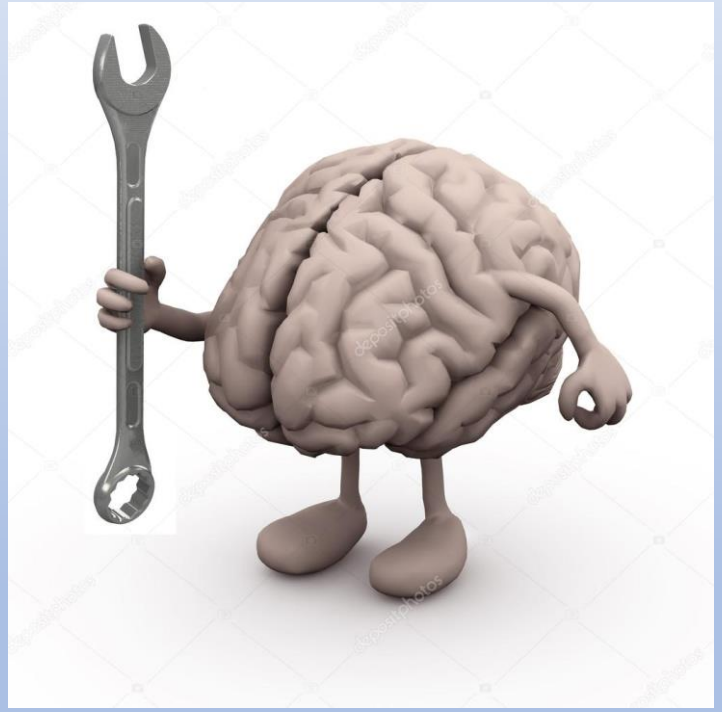
# Background to Research


- The NAS has been using the LUCAS since 2014, and currently every emergency ambulance in Ireland is equipped with one.
- Human factors were the prime movers for the adoption of the LUCAS.
- A recent 2017 study showed overall survival benefits with mechanical CPR as compared to manual only, when the device was applied early during an OHCA (MAP).

V, Ng BL, Ang SH, Lee CY, Leong SH, Ong ME, et al. Prompt use of mechanical cardiopulmonary resuscitation in out-of-hospital cardiac arrest: the MECCA study report.. Singapore Medical Journal. 2017;: p. 424-431.

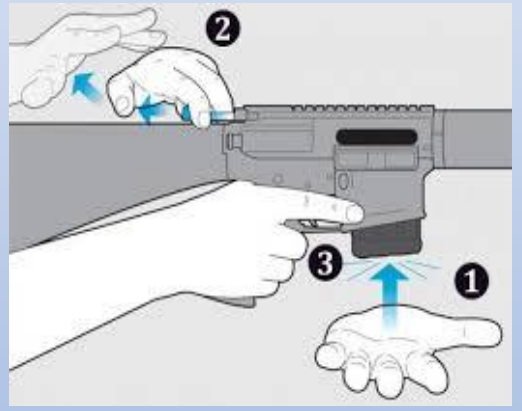
# Develop an Alternative System of Work

- Guideline driven (Compressions)
- Simple and pragmatic (Cognitive-Load)
- Minimum movement (Work-load)
- Drills are measurable (Data + Research)



# Performance under pressure

*AVIATE…..NAVIGATE…….COMMUNICATE*




*TAP…..RACK……BANG*

*ACCESS….ASSESS…..COMPRESS*

***BSD***

# Literature

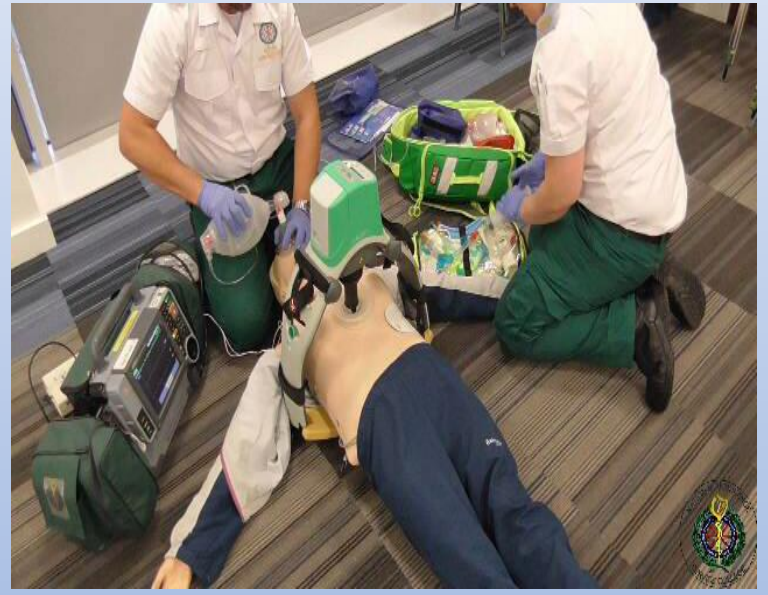
- A lack of consensus on MCCDs in OHCA as many jurisdictions interpret guidelines and develop their own protocols.
- No comparable zero point, multiple protocols, and use of 30 day patient survival rates to various hospitals as a measure of success.
- Multiple studies have found that these devices are often applied without due regard to on-going CPR and can result in significant interruptions in chest compressions.

Brouwer TF, Walker RG, Chapman FW, Koster RW. Duration of longest chest compression interruption predicts poor cardiac arrest survival independent of chest compression fraction. Circulation. 2018;: p. 126-87.

Abella BS, Alvarado JP, Mykelbust H, Edelson DP, Barry A, O'Hearn N, et al. Quality of cardiopulmonary resuscitation during in-hospital cardiac arrest. JAMA. 2005;: p. 305-10.

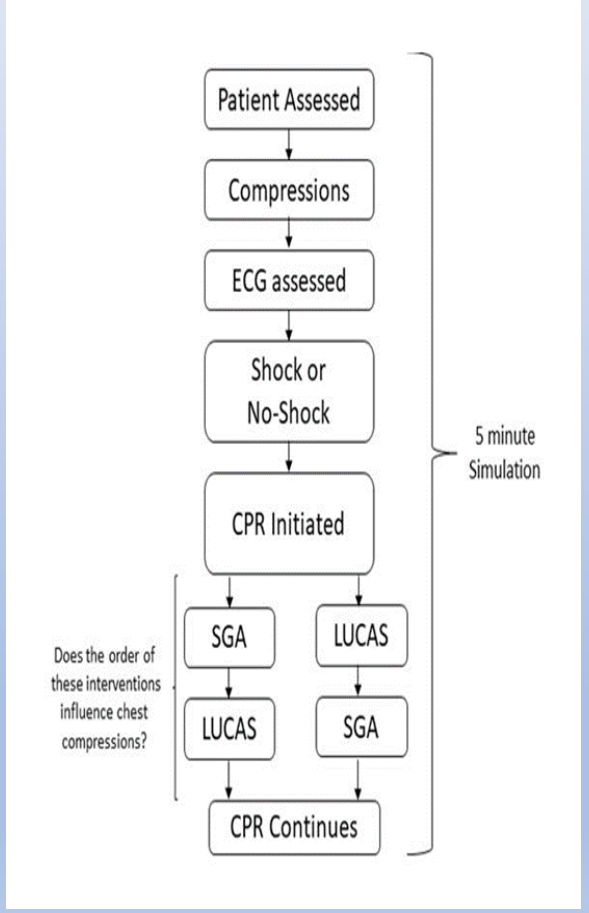
# Overview

- Data from simulated (OHCA) assessments.
- Compared gaps in CC when LUCAS was deployed before a KLT and vice versa.
- To provide our EMS practitioners with evidence based guidance on how to better employ the LUCAS



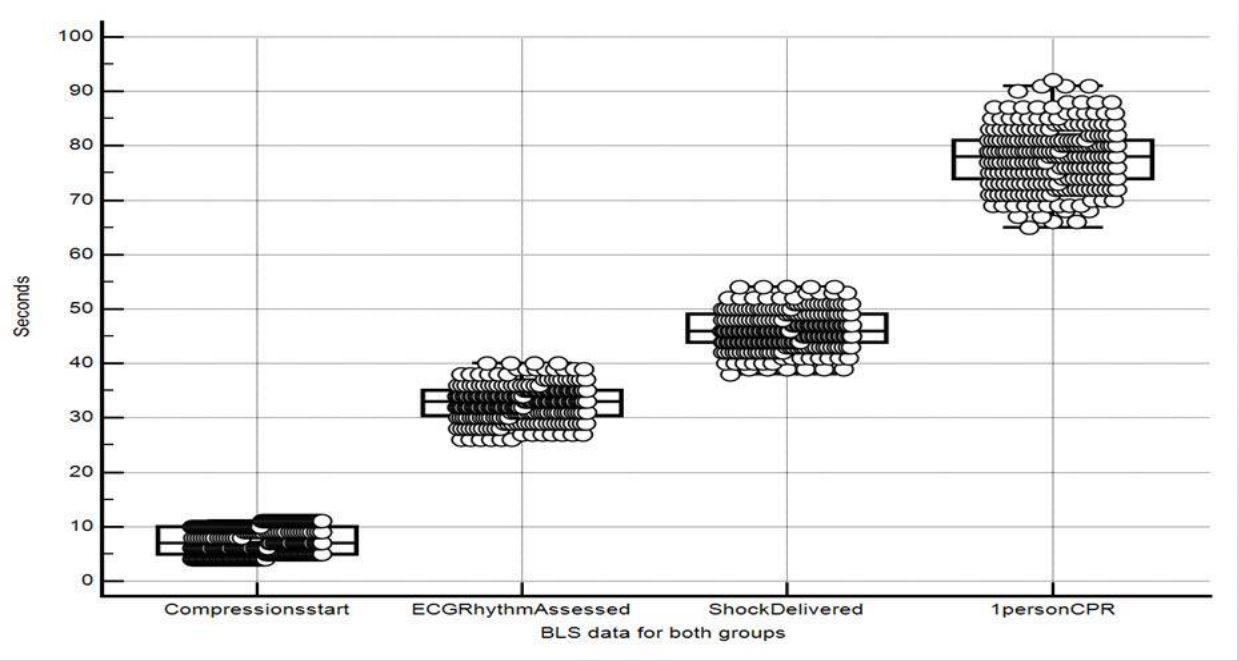
# Methodology

- Student paramedic 2-person crews were assigned a simulated call for a “58 y/o patient, not conscious, not-breathing” (Supine adult manikin).
- Time zero is once assessment of the patient begins.
- The crew managed the initial stages of a simulated adult OHCA VF simulation using a simple, well-practiced BLS drill, a LUCAS, and a KLT while minimising interruptions to chest compressions.
- Simulation continued for 5 minutes (300sec).
- Data collected manually from Laerdal Simpad® reports.

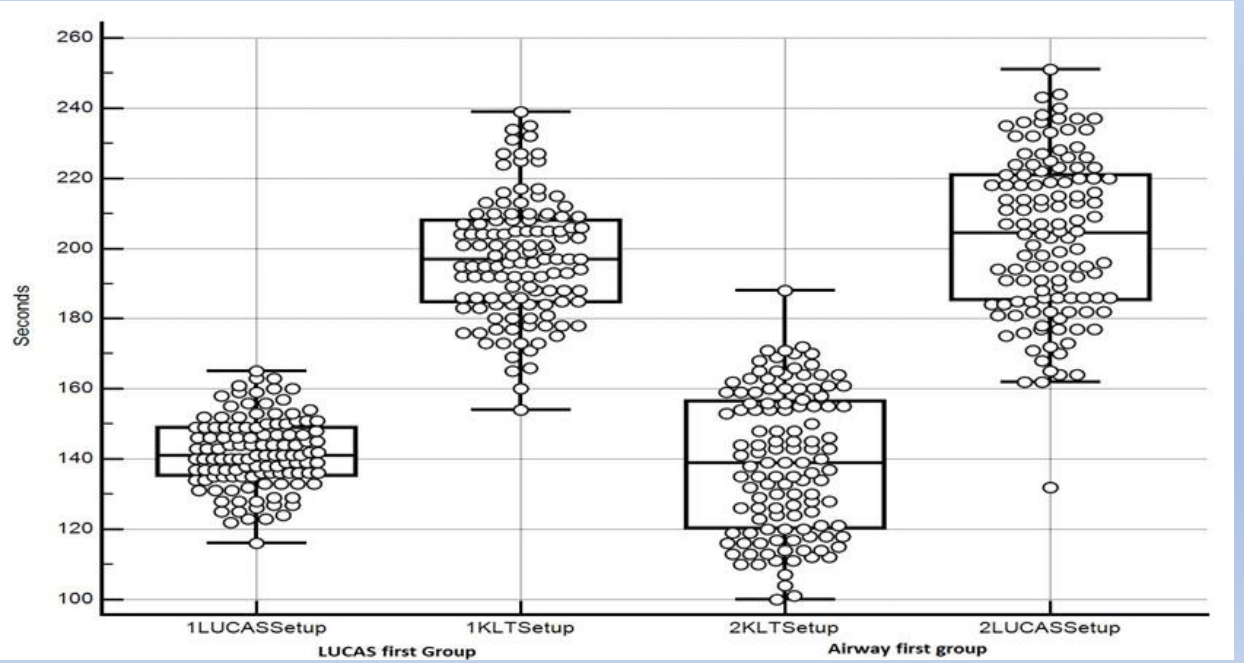


# Results

BLS Interventions

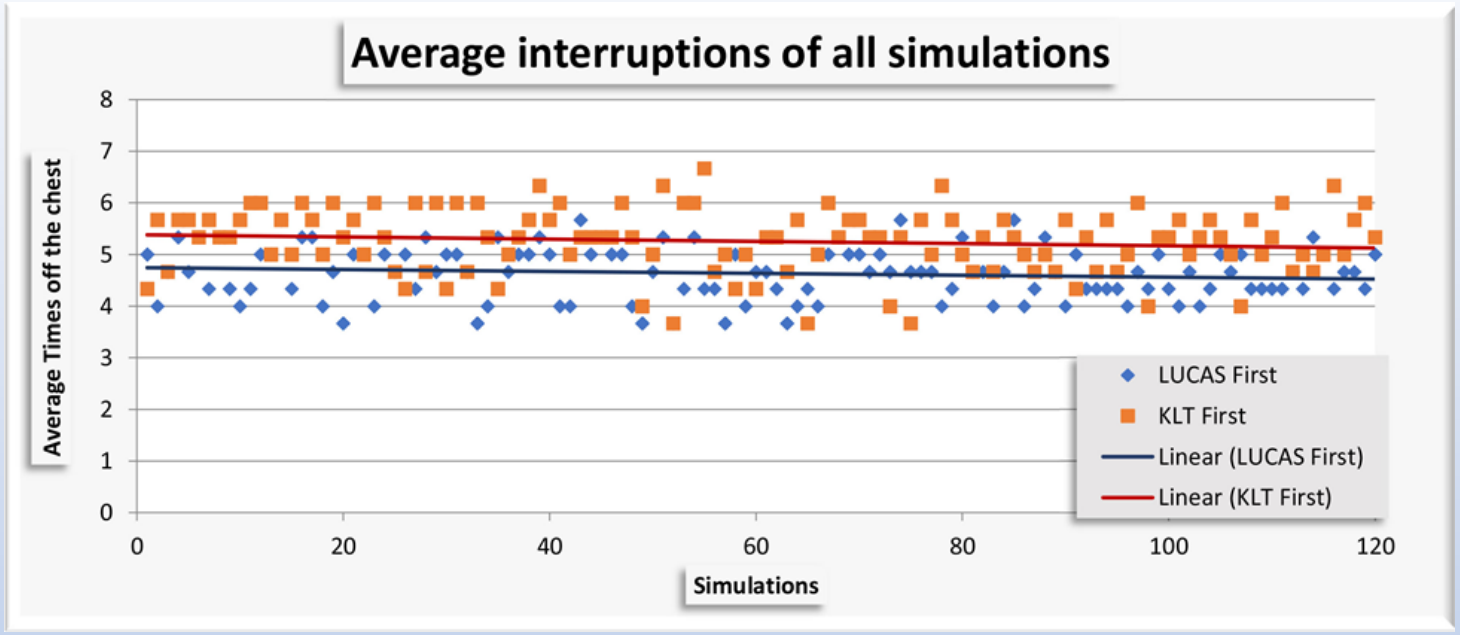


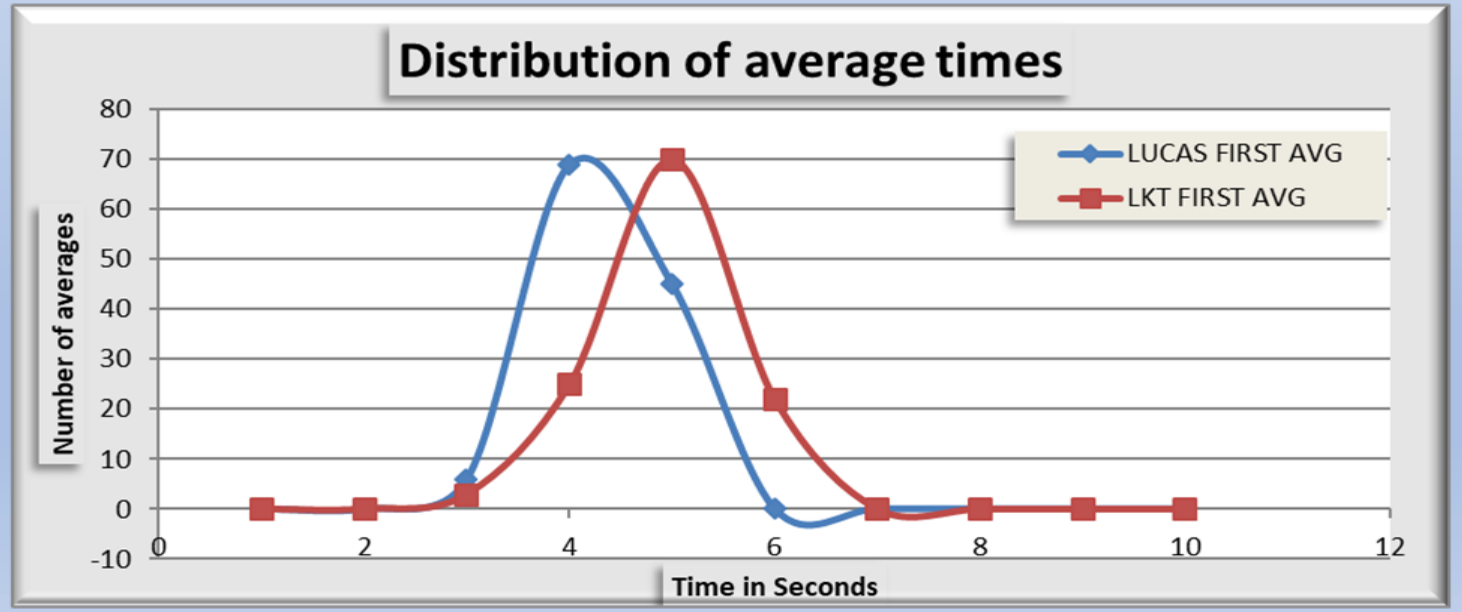

LUCAS and Airway Interventions



# Results

| | LUCAS 1st | King LT 1st |
|---|---|---|
| Mean (Secs) | 4.63 | 5.25 |
| Known Variance | 0.25 | 0.38 |
| Observations | 120 | 120 |
| Hypothesized Mean Difference | 0.00 | |
| z | -8.51 | |
| P(Z ≤ z) one-tail | 0.00 | |
| z Critical one-tail | 1.64 | |
| P(Z ≤ z) two-tail | 0.00 | |
| z Critical two-tail | 1.96 | |



# Key points

- The statistical significance of the research in favour of the “LUCAS first” model was favourable, but its clinical significance was less obvious.
- Both drills complied with guidelines, with CC interruptions < 10 seconds.
- Interruptions were shorter when deploying the LUCAS before KLT.
- An Utstein style guideline specific to OHCA / MCCD deployment may provide a common platform for future research.
- LUCAS deployment timing and technique are key .

# Conclusions

- Employing the LUCAS before taking care of an advanced airway facilitates quality chest compressions early.
- It minimizes the time off the chest, frees up a responder, removes cognitive load and introduces structure to the resuscitation effort (30-2).
- A carefully designed simple drill, with repetition-based training may improve patient outcome when using an MCCD.
- In simulation, a **2-person** team can effectively manage the early stages of an OHCA event, while keeping compression intervals **well** within accepted parameters.

# STUDENT PARAMEDIC ASSESSMENT

**WOTD**

- Pragmaticfull
- Scientificness
- Unacademical
- Soup-coolers