

## Clinical Summary

---

### Comparison of Survival to Hospital Discharge between Integrated AutoPulse-CPR and Manual-CPR during out-of-hospital cardiac arrest of presumed cardiac origin: The Circulation Improving Resuscitation Care (CIRC) Trial

Wik L, Olsen J-A, Persse D, et al. Comparison of survival to hospital discharge between integrated autopulse CPR and manual CPR during out-of-hospital cardiac arrest: the circulation improving resuscitation care (CIRC) trial. Abstract 1. *Prehosp Emerg Care*. 2012; 16(1):152.

#### Purpose

- To compare integrated AutoPulse CPR (iA-CPR) with high-quality manual CPR (M-CPR) to determine equivalence or superiority of either treatment

#### Primary Outcome

- Survival to hospital discharge

#### Secondary Outcome

- Return of spontaneous circulation (ROSC), 24-hour survival, and modified Rankin Score (mRS) at discharge

#### Methods

- Randomized controlled trial of EMS treated adult out-of-hospital cardiac arrests of presumed cardiac origin
- Conducted at 3 US and 2 European sites
- Data collection took place between March 2009 and January 2011
- Systematic study-wide training and monitoring of CPR quality was implemented
- When CPR was indicated, EMS responders initiated manual compressions and then patients were randomized to receive immediate iA-CPR or continued M-CPR.

#### Results

- 2,099 subjects received iA-CPR (49.6%) and 2,132 M-CPR (50.4%)
- After adjustment for enrollment site, age, witnessed arrest, and initial cardiac rhythm, survival was statistically equivalent for iA-CPR compared to M-CPR (adjusted OR 1.061, 95% CI 0.829 - 1.365). The 95% CI for the log OR (-0.188 to 0.311) was fully within the equivalence boundaries.
- No significant difference in discharge mRS =3 (adjusted OR 0.843, 95% CI 0.618 - 1.149)
- Unadjusted values for iA- and M-CPR were respectively:
  - survival to hospital discharge 9.4% vs. 11.0%
  - ROSC 28.6% vs. 32.3%
  - 24-hour survival 21.8% vs. 25.1%
  - median mRS: 2 vs. 2
  - hands-off fraction: 19.6% vs. 20.2%

#### Conclusion

- “Compared to high-quality M-CPR, iA-CPR resulted in statistically equivalent survival to hospital discharge and no difference in neurologic status at discharge in adults with out-of-hospital cardiac arrest of presumed cardiac etiology.”



**Discussion Points:**

- The results of over 4,000 patients show statistically equivalent survival to hospital discharge between the two methods. Numerically, the results for this endpoint were 9.4% vs. 11%; respectively, and statistical testing on this outcome found no difference between the two treatment arms.
- Both survival percentages were high and likely reflect the effect of good CPR and low hands off time
- Extensive training, retraining, and continued monitoring of staff was performed to assure the best results. A “pit crew” approach to code management was also used – a method not used by all EMS agencies. Training to this level is time-consuming and expensive.
- LUCAS and AutoPulse® are two different devices with different principles of compression and application as well as driving source concept and reliability. It is not prudent to extrapolate results of this study and apply them to another type of device.
- A randomized control trial currently underway specifically using the LUCAS® Chest Compression System (the LINC Trial). Data is expected to be available sometime in 2013. The trial’s data safety and monitoring board performed an interim review of the data and has allowed the study to continue, an indication there are no safety concerns.
- Another study using LUCAS 2, the Prehospital Randomised Assessment of Mechanical compression Device In Cardiac arrest (PaRAMeDIC) study is underway in the United Kingdom
- This is an abstract and not all the study data is included. A fully published manuscript will reveal more details. Until then, don’t try to make assumptions regarding the results, or base any decisions, pro or con, regarding AutoPulse specifically and mechanical chest compression devices in general.

**For further information, please contact Physio-Control at 800.442.1142 or visit our website at [www.physio-control.com](http://www.physio-control.com)**

