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Summary

- Randomised, unblinded, multi-centre controlled trial
- 4753 OHCA patients enrolled, age and gender profile similar in both groups
  - 2394 received high-quality manual CPR
    - 32.3% had ROSC on arrival at ED
    - 24-hour survival rate was 25%
    - Survival to hospital discharge rate was 11%
  - 2359 received mechanical CPR using Autopulse (load-distributing band device)
    - 28.6% had ROSC on arrival at ED
    - 24-hour survival rate was 21.8%
    - Survival to hospital discharge rate was 9.4%
- Bystander CPR rates were similar for both groups (47-49%), as were witnessed vs. unwitnessed arrests
- Mechanical CPR group had higher incidence of rib fractures and subcutaneous emphysema
- Manual CPR group had higher incidence of pulmonary oedema and sternal fractures
- CPR fraction at 5 and 10 minutes was higher in the manual CPR group
- Manual CPR group received a higher average rate of compressions/minute in the first 10 minutes than the mechanical group
- Neurological outcome did not differ between groups
- Compared to high-quality manual CPR, the use of the Autopulse resulted in statistically equivalent survival to hospital discharge (adjusted odds ratio of survival to hospital discharge for mechanical CPR compared to manual CPR, was 1.06 (95% CI 0.83–1.37), meeting the criteria for equivalence)

Limitations

- Blinding was not possible due to intervention type
- Hospital based post resuscitation care varied from site to site
- Post-enrollment exclusions were done for various reasons
- No longer-term outcomes measured except for survival to hospital discharge
- Compression depth as an indicator of compression quality was not monitored
- The trial was funded by ZOLL Medical (the manufacturer of the study device)
- All authors’ institutions received funding from ZOLL for their participation in the trial.
ZOLL developed the CIRC trial protocol


To compare integrated automated load distributing band CPR (iA-CPR) with high-quality manual CPR (M-CPR) to determine equivalence, superiority, or inferiority in survival to hospital discharge. [...]