Pre-hospital Trial with Real CPR Help® Finds Survival 2.7 Times More Likely

ZOLL®

The Influence of Scenario-Based Training and Real-Time Audiovisual Feedback on Out-of-Hospital Cardiopulmonary Resuscitation Quality and Survival From Out-of-Hospital Cardiac Arrest

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Purpose

Assess the impact of real-time audiovisual feedback on CPR quality and survival from out-of-hospital cardiac arrest (OHCA) when deployed in the context of scenario-based training.

Outcome Measures

Survival to hospital discharge (all rhythms) with good neurological status. Survival to hospital discharge (witnessed, shockable rhythms); CPR quality.

Methods

- Prospective two-phase study of consecutive adult OHCA patients who had CPR initiated in the field.
- Conducted at fire-based EMS agency with 19 stations staffed by 373 EMT-Ps and EMT-Bs.
- A monitor/defibrillator equipped with Real CPR Help® was used to provide real-time audiovisual feedback and to record chest compression quality.
- Phase 1: 18 months of CPR quality and outcome data were collected with the audiovisual CPR prompting disabled.
- Phase 2: Audiovisual CPR prompting turned on in conjunction with scenario-based training.

Results

- 484 consecutive patients enrolled (232 Phase 1; 253 Phase 2).
- All-rhythm survival increased from 8.7% in Phase 1 to 13.9% in Phase 2 (relative improvement 59.7%), with an OR of 2.72 [95% CI 0.93 to 3.21]. Favorable functional outcomes increased from 6.5% in Phase 1 to 10.8% in Phase 2, with an OR of 2.69 [95% CI 1.04 to 6.94] (Table 1).
- For witnessed arrests with a shockable rhythm, survival improved from Phase 1 to Phase 2 from 26.3% to 55.6%, respectively (relative improvement 113.8%) with an adjusted OR of 3.81 [95% CI 1.23 to 11.80]. Favorable functional outcomes increased from 19.6% in Phase 1 to 45.7% in Phase 2, with an adjusted OR of 3.83 [95% CI 1.11 to 13.13] (Table 1).
- All CPR metrics showed statistically significant improvements from Phase I to Phase 2 (Figures 1-4).

Table 1 - Survival to Hospital Discharge and Survival with Good Neurological Outcome

Patient Set	Phase 1 to Phase 2 Relative Improvement	Adjusted Odds Ratio	
		Survival to Discharge	Good Neurological Outcomes
All Rhythms	59.7%	2.72	2.69
Witnessed Shockable Rhythm	113.8%	3.81	3.83

Conclusions

Real-time audiovisual feedback is independently associated with an increased likelihood of both survival to hospital discharge and favorable functional neurological outcome, along with achievement of the AHA Guidelines-recommended metrics for CPR quality, when deployed in conjunction with scenario-based training.

CPR Quality Metric
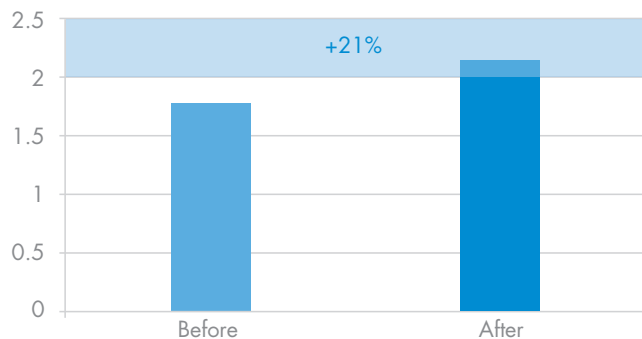
Figure 1 - Mean Compression Depth (inches)

+21%

Before After

Figure 3 - Mean Chest Compression Fraction (%)
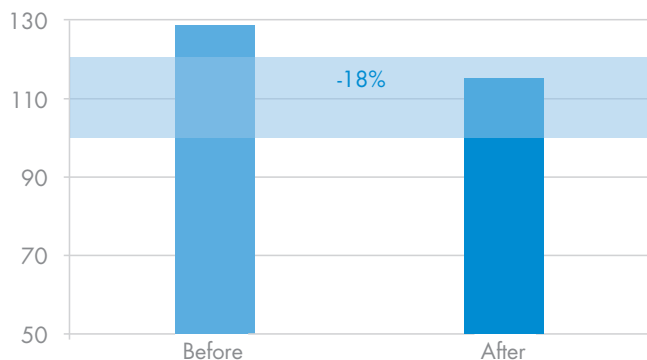
+27%

Before After
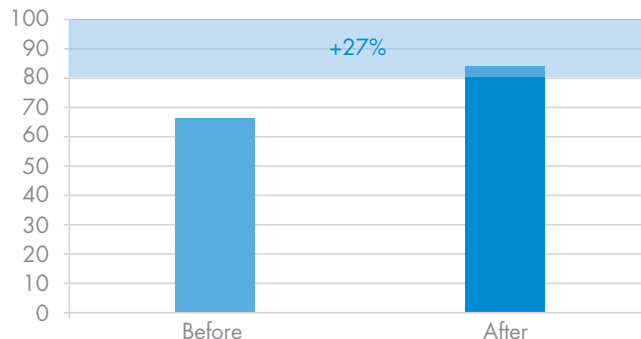
Figure 2 - Mean Compression Rate (CPM)

-18%

Before After

Figure 4 - Mean Pre-Shock Pause (seconds)

-42%

Before After