

Tele-Support for Emergency Medical Technicians dealing with Pediatric Cardiac Arrest

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Goal of the Study

This study aimed to analyze the impact of tele-support on participants' guideline adherence in a simulated pediatric out-of-hospital cardiac arrest (POHCA) scenario. We hypothesized that tele-support improves guideline adherence.



Reenacted scenario, team leader communicates with tele-emergency physician via smartphone in chest harness



Tele-emergency physicians observing the defibrillator monitor via real-time transmission and engaging in communication with the EMTs in the scenario via video call



Expert supervising simulation in the control room



EMTs wearing eye-tracking glasses during patient care in the scenario

Left: Table illustrating time to critical events

* 2 teams did not administer 2nd dose of adrenaline
**1 team did not treat hypoglycemia at all, 4 teams did not treat hypoglycemia according to guidelines
*** 7 teams did not reach ROSC
+ 1 team did not reach ROSC

Time to events in seconds (median)		
	Teams without tele-support (n=21)	Teams with tele-support (n=21)
Start of CPR	36	34
1 st administration of adrenaline	314	277
2 nd administration of adrenaline	618 *	492
Treatment of reversible cause	564 **	422
ROSC	720 ***	600 +

Methods

In a simulation setting, 42 teams completed a POHCA scenario, either with or without tele-support in a randomized manner. Each team consisted of two emergency medical technicians (EMTs), and one confederate of the study team. Both EMTs were equipped with eye-tracking glasses. Tele-support was provided by an experienced emergency physician who received real-time data transmission from the defibrillator (via Zoll RescueNet Live) and communicated via video call.

Results

In this study, tele-support led to a significant difference in guideline adherence, resulting in a higher score (15/15 points vs. 13/15 points, median). Without tele-support, 7 teams were unable to reach return of spontaneous circulation (ROSC) within the specified timeframe, whereas only one team in the tele-support group did not reach ROSC. No significant differences in cognitive load were observed. Regarding gaze behavior, the data indicates that fixation duration on equipment and the manikin is longer in the tele-support group, while fixation duration on the monitor is shorter.

Conclusion

Tele-support led to a higher score in guideline adherence in simulated POHCA. The results of the present study are consistent with those of previous research, indicating the potential of telemedicine for EMTs (3).

Acknowledgement

This study received funding by the ÖGARI, as well as a grant by ZOLL for using a demo-version of RescueNet Live. Furthermore, this abstract was already presented at the AIC 2024 and awarded the 2nd poster prize.

References

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