

Time to application of a mechanical CPR device in a simulated cardiac arrest: A prospective observational pilot study

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This pilot study found that novice rescuers can quickly and accurately apply a mCPR device after a formal training session. A break in exposure followed by repeated skill performance led to further improvements.

Introduction

- Out-of-hospital cardiac arrest (OHCA) poses unique environmental and resourcing challenges.
- Mechanical CPR (mCPR) device use could alleviate some of these challenges.
- Any interruption to compressions is associated with negative patient outcomes, and mCPR device application necessitates a period of hands-off chest time.
- Novice rescuers ability to apply mCPR devices has not been studied.

Methods

- Fourteen undergraduate paramedicine students with no previous exposure to mCPR were trained by a manufacturer representative.
- Participants then worked in teams of two to complete five short manikin-based cardiac arrest scenarios, applying mCPR during the resuscitation.
- Participants returned at two and four weeks post training to repeat the assessment protocol.

Results

- 103 instances of mCPR application were observed.
- Mean hands-off chest time decreased significantly at each time point (Session 1: 8.8 seconds vs Session 2: 7.0 seconds vs Session 3: 5.8 seconds).
- There was no significant difference between each crew's mean hands-off chest time.
- Causes of delayed/unsuccessful applications are identified in Table 1.

Discussion

- Novice rescuers can apply the mCPR device quickly and accurately after exposure to a formal training session.
- Repeat skill performance led to further improvements, suggesting a role for frequent exposure and repeat competency assessments.
- This study is the first to quantify mCPR device application times in novice rescuers.
- These findings should prompt consideration of mCPR device deployment.
- Future research should explore these results in larger samples over longer timeframes.

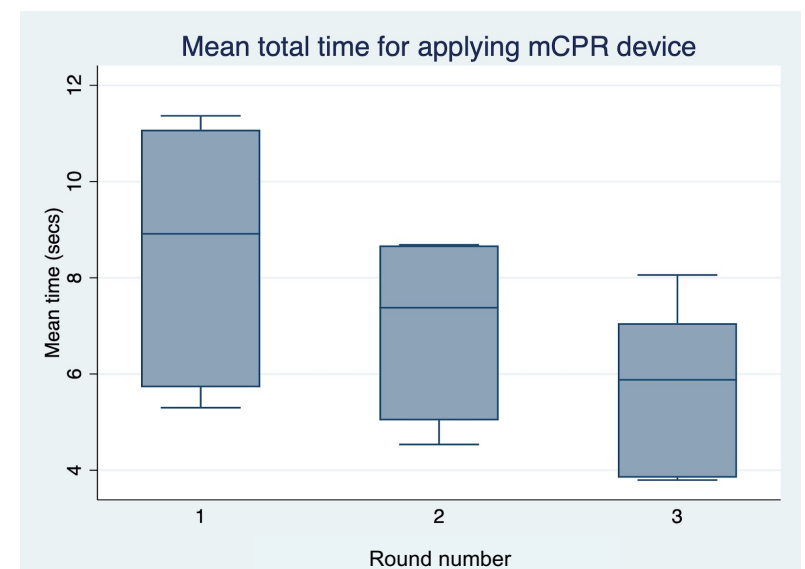


Figure 1: Difference in combined crew mean time taken to apply mCPR device across the three sessions.

Issue resulting in slow/unsuccessful application	Times observed
Stamp placement - height	4
Stamp placement - lateral	2
Device not powered on	3
Backboard placement	1

Table 1: Causes of delayed and unsuccessful applications.

References

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