

The Jewish Hospital Using a Mechanical Compression Device to Advance Nursing Practice

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LITERATURE REVIEW

Effective compressions are essential to patient survival of a cardiac arrest.
Effective compressions are both physically and mentally exhausting.
MCD (Mechanical Compression Devices) are used by EMS (Emergency Medical Services) to reduce variability in compression quality, fatigue and reallocate resources.

PURPOSE

Evaluate the quality of mechanical chest compressions provided by an MCD compared with manual chest compressions performed by ED personnel during an adult cardiac arrest simulation.



RESEARCH QUESTION

Is there a difference in hands off time and chest compression quality using an MCD compared to manual compressions during a cardiac arrest simulation?

METHODS

Design: IRB Approved Study

2 group cross over design

Teams of 3-5 participated two simulations:

- A 10-minute cardiac arrest with the MCD.
- A 10-minute cardiac arrest with manual compressions.

Setting: 208 bed Academic Medical Center- 33 Bed Emergency Department.

Sample: 60 BLS trained ED personnel (RNs, Paramedics, Respiratory Therapists, ED Technicians)

Data Collection:

- Objective data was obtained from a high-fidelity simulation manikin. (see graph below)
- Subjective Data was gathered from participants regarding teamwork and communication.

RESULTS

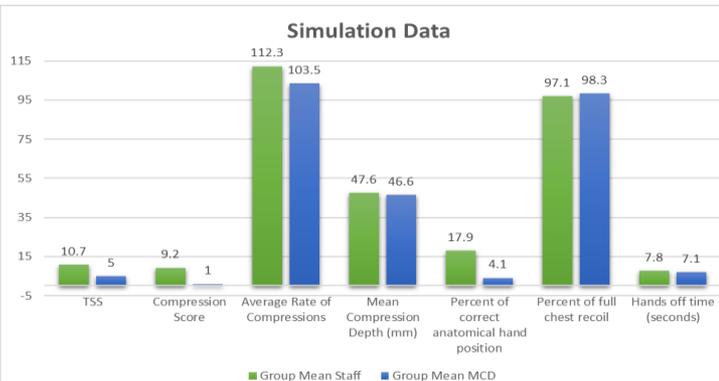
No statistical differences found between groups' Total Simulation Score (TSS), compression score, mean compression depth, percentage of full chest recoil or hands-off time ($P > 0.05$).

Manual Compressions simulation was found to have a higher average rate of compressions than MCD simulation (112.3, 103.5, $P=0.002$).

Manual Compressions simulation had a higher percentage of correct anatomical hand positioning than MCD (17.9, 4.1, $P=0.026$).

Participants reported that simulations using the MCD were more organized, used fewer human resources, and increased the ability to have closed-loop communication.

DATA ANALYSIS



IMPLICATIONS FOR EMERGENCY NURSING PRACTICE



MCDs could provide consistent compressions during adult cardiac arrest.

MCD could be beneficial during cardiac resuscitation by allowing nurses to be reallocated to more appropriate tasks using their unique skill set.

MCD could improve team dynamics during cardiac resuscitation by reducing chaos and improving ability for closed-loop communication.

The results of this study supported funding for MCD purchase for 9 EDs in our market.