Time matters - Realism in resuscitation training

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BACKGROUND

The advanced life support guidelines recommend two minutes of cardiopulmonary resuscitation (CPR) and minimal hands-off time to ensure sufficient cardiac and cerebral perfusion. We have observed doctors who shorten the CPR intervals during resuscitation attempts. During simulation-based resuscitation training, the recommended two-minute intervals of CPR are often deliberately decreased in order to increase the number of scenarios. However, we do not know if the shortening of the CPR intervals during resuscitation training is due to a skewed perception of time due to the simulation scenario. The aim of this study was to test if keeping two-minute intervals of CPR during resuscitation training ensures better adherence to time during resuscitation in a simulated setting.

METHODS

This study was designed as a randomised control trial. Fifty-four 4th-year medical students with no prior advanced resuscitation training participated in an extra-curricular one-day advanced life support course. Participants were either randomised to simulation-based training using real-time or shortened intervals in the scenarios. Adherence to time was measured using the European Resuscitation Council's Cardiac Arrest Simulation Test (CASTest) in retention tests conducted one and 12 weeks after the course.

Figure text:
Figure shows the deviation from 120 seconds in the one week and 12 weeks (left: fake-time CPR interval group (control); right: real-time CPR interval group (intervention)).

CONCLUSION

This study indicates that time is an important part of fidelity. Variables critical for performance, like adherence to time in resuscitation, should therefore be kept realistic during training to optimize outcome.

RESULTS

The real-time group adhered significantly better to the recommended two-minute intervals (time-120) (mean 13; standard derivation (SD) 8) than the shortened interval group (mean 44; SD 18) when tested ($p < 0.001$, Monte Carlo permutation test ($n=10,000$)). The hands-off time for the fake-time group was increased by 30% compared to the real-time group.

DISCUSSION

During simulation scenarios, ALS instructors in general tend to shorten the CPR intervals as they devote their focus to the assessment of heart rhythm and decision-making in the short pause in-between the CPR intervals. This focus is warranted by the importance of pattern recognition and the specific knowledge required to ensure swift decision-making, which has meant that CPR intervals are shortened (faked) to maximise the number of repetitions. However, the importance of using real-time in ALS simulation scenarios is apparent and time fidelity ought to be incorporated when designing simulation scenarios.