Use of a simple checklist during observation of simulated cardiac arrest does not improve time to defibrillation over observation alone

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Objective

To determine whether the use of a simple checklist during observation of a simulated cardiac arrest results in better performance, specifically time to defibrillation, than observation alone.

Methods

Medical students participating in simulated cardiac arrest scenarios were randomised to passive (P) or active (A) sessions. In each session, students were further randomised to simulation “1” or “2”. All students had participated in a two hour BLS/ALS refresher in the weeks prior to the simulations and all students participated in a one hour discussion on chest pain, shortness of breath and cardiac arrest management immediately prior to the simulations. P1 and A1 students performed their scenario, involving a simulated cardiac arrest, immediately following the discussion. No check lists were used by these groups. P2 students watched P1 teams live. A2 students watched A1 teams live while also completing a checklist based on the ARC algorithm for cardiac arrest management. All students then participated in a 30-45 minute debrief of the first scenario. P2 and A2 students then participated in a second simulated cardiac arrest scenario followed by another debrief session. Scenarios were recorded to DVD and were used to determine time to initiation of CPR, time to first defibrillation, interruptions to chest compressions and time between defibrillations. Times were compared between P2 and their control (P1), A2 and their control (A1) and between A2 (checklist) and P2 (no checklist) groups.
Results

Eighty-two medical students in 28 teams participated in 14 passive and 14 active sessions. There was no significant difference between the groups in terms of demographics, group size or previous exposure to simulation, defibrillation or training for cardiac arrest. The mean time to defibrillation for P1 and P2 was 130 seconds (95% CI 90-171) and 74 seconds (95% CI 64-85) respectively with a mean difference of 56 seconds (95% CI 26-86) (P = 0.001). The mean time to defibrillation for A1 and A2 was 121 seconds (95% CI 96-146) and 84 seconds (95% CI 71-98) respectively with a mean difference of 36 seconds (95% CI 6-67) (P = 0.02). The mean difference between P2 and A2 was minus 10 seconds (95% CI -40-20)(P = 0.501). For each of the groups, there was no significant difference between time to initiation of CPR, time between first and second defibrillations or time where no chest compressions were performed. Chest compressions were not performed for approximately 30% of the arrest time for all groups. Time between defibrillations tended to be shorter in the second scenarios (P2, A2), though this did not reach statistical significance.

Conclusions

Time to defibrillation is improved for medical students performing simulated cardiac arrest management after they have witnessed one such simulation and participated in a subsequent debrief. In the setting of a comprehensive teaching package with two hours of instruction prior to participation in a simulation, the use of this simple checklist does not seem to add to this improvement. Delay in initiation of and interruptions to CPR have been identified as needing further attention in future education sessions.