

Impact of Human Simulation Training on ACLS Performance

Leonid Bunegin, BS

University of Texas Health Science Center at San Antonio

Paul Cash

Problem: Many Advanced Cardiac Life Support (ACLS) providers face patients experiencing life threatening cardiac events with significant knowledge but little or no experience. Outcomes are heavily dependent on the experience level of the providers performing the resuscitation. Current training methods fail to teach the basic skills needed for resuscitation, and the critical thinking necessary to develop functional team dynamics.

Strategy: The purpose of this study was to compare experientially based ACLS training utilizing high-fidelity human simulation and traditionally based training.

Practice Change: Four teams of health care professionals were recruited for ACLS training. Two groups were trained using the traditional ACLS curriculum and two groups were trained using the ACLS high-fidelity simulator training. Following a 1 week hiatus, the 4 teams were evaluated on skills and team performance during 8 simulated cardiac arrest scenarios on a high fidelity human simulator. Leadership and individual responsibilities within the team were assigned on a rotating basis so that each member of the team performed each task. Resuscitation scenarios were video taped and simulator event logs were recorded for each scenario. Resuscitation task, completion time, individual and team performances were evaluated by 3 certified ACLS instructors blinded to the training methods.

Results: Traditionally trained individuals failed to follow AHA recommended task performance guidelines. They failed to turn on oxygen, establish IV access/administer fluids, and administer epinephrine and anti-arrhythmics until late in the scenario. Defibrillation also exceeded the AHA recommended time interval. Simulation trained individuals performed specific resuscitation tasks more quickly and complied more consistently with the AHA guidelines. $86.3 \pm 6.9\%$ of the resuscitation tasks were performed satisfactorily by simulation trained individuals as opposed to $38.4 \pm 10.2\%$ for traditionally trained individuals. Simulation training improved team interactions 25%.

Recommendations: The use of high fidelity human simulation training may have a significant impact on survival in cardiac arrest patients.