Untrained Volunteers Are Marginally Effective in Delivering Public Access Defibrillation

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Study objectives: This study analyzed the behavior of untrained volunteers when presented with a simulated cardiac arrest and an automated external defibrillator (AED). The primary hypothesis of this study was that volunteers could, with no advance training, operate an AED to deliver a defibrillation to a mannequin in 3 minutes or less at least 75% of the time. The secondary hypothesis was that this population would perform all of the tasks considered essential in AED use (establish unresponsiveness, check for breathing, give 2 rescue breaths, check for pulse, apply electrodes correctly, clear patient, activate emergency medical services (EMS) response, and start chest compressions) less than 25% of the time.

Methods: This was a prospective, observational study set in a terminal at one of the largest airports in the United States. The subjects were passers-by who volunteered to stop and participate. We excluded any subject who had completed an advanced cardiac life support class. After obtaining informed consent, the investigator told the subjects that the AED was a lifesaving device that could restart someone’s heart after it stopped. The study area had an AED, a telephone, and a resuscitation mannequin. The AEDs were the most recent models available in the year 2000. They gave a combination of visual and audible instructions. When the AED advised to shock, the subject needed to push a button to deliver the shock. The investigators did not give the subjects any instructions except, “The device will tell you all you need to know.” We examined results using a test of binomial proportions.

Results: One hundred twenty-three subjects participated in the study; 70 (57%) were male. The median age was 42 years (interquartile range 32 to 50 years). Ninety-one (78%) participants were white, 10 (9%) were black, and 13 (11%) were Hispanic. Sixty-two (56%) of 111 subjects who said they would help were able to deliver a defibrillation in 3 minutes or less (95% confidence interval 46% to 65%). Four (4%) of 110 subjects who said they would help were able to perform all of the essential steps of AED use (95% confidence interval 1% to 9%).

Conclusion: This study suggests that slightly more than half of untrained volunteers, using only the visual and auditory instructions from an AED, are able to deliver a shock within 3 minutes or less. When they do deliver a shock, they rarely complete all of the essential steps of AED use.