

Training First-responders to Administer Anaphylaxis Publically Available Epinephrine: A Randomized Study

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Introduction

Improving public access and training for epinephrine auto-injectors (EAIs) can reduce time to initial treatment in anaphylaxis. Effective use of EAIs by the public requires bystanders to respond in a timely and proficient manner. We wished to examine optimal methods for effective training and skill retention for public use of EAIs.

Methods

In this prospective, stratified randomized study, 154 participants at 15 sites receiving installation of public EAIs were randomized to one of three experimental education interventions: A) didactic poster (POS) teaching; B) poster with video teaching (VID), and C) Poster, video, and simulation training (SIM). Participants were tested by participation in a standardized simulated anaphylaxis scenario at 0-months, immediately following training, and again at follow-up at 3 months. Participants' responses were videoed and assessed by blinded raters. Patient recorded experience measures (PREMs) assessed participant-patient interaction for every scenario. Data that was non-normally distributed was analyzed using non-parametric testing (Kruskall-Wallis-Rank Sum-Test).

Results

Initial analysis showed differences between group baseline characteristics for age and first aid training; with a multivariable analysis providing the effect size of these differences. PREM data and video assessment data were not normally distributed. Analysis of PREM data revealed significantly higher scores in the SIM group at 0-months (median=6.5, IQR=5; p=0.05) and 3-months (median=5, IQR=3; p<0.01), compared to those groups that did not receive SIM. Video assessment performance scores show trends in higher skills and knowledge retention for SIM participants at 3-months; full data analysis will be performed at a later date. Final video assessment analysis will involve a weighted scoring system, using a consensus process, and an inter-rater agreement analysis.

Conclusion

Simulation training improves interaction, essential skills, and retention of knowledge in simulated anaphylaxis response with public EAIs compared to non-simulation-based training.