464903 - TEACHING LIFE SAVING PROCEDURES: THE IMPACT OF MODEL FIDELITY ON ACQUISITION AND TRANSFER OF CRICOTHYROTOMY SKILLS TO CADAVERS

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Introduction: Cricothyrotomy is the final option in all cannot-ventilate non-intubate airway-management algorithms. A decline in the need for cricothyrotomies has resulted in decreased exposure of physicians to this life saving technique. Although 80% of American anesthesiology residency programs teach cricothyrotomy, 60% consist of lectures only. Consequently, residents, often the first physicians on scene during resuscitations, have very little experience or confidence to perform this emergent intervention. This study compared cricothyrotomy skills acquired on a simple inexpensive model vs. a high fidelity simulator using valid evaluation instruments. We tested the transfer of these skills to human cadavers using global assessment scales (GRS), task specific checklists (CL), and procedure time.

Methods: After REB approval, 22 first and second year anesthesiology residents were recruited. All subjects performed a pre-test cricothyrotomy on embalmed adult human cadavers. Cadaver exclusion criteria consisted of previous neck surgery/disease and a BMI>35. The pretest sessions were videotaped in a manner masking the residents' identity and level of training. Correct placement of the tube was confirmed by dissection. Subjects then watched an instructional video followed by didactic instruction and were randomized into 2 groups: High Fidelity (HF, n=11) training on a full- scale Laerdal SimMan® simulator possessing an anatomically accurate larynx and Low Fidelity (LF, n=11) training on a model constructed from corrugated tubing. All subjects performed 2 supervised cricothyrotomies on their designated model. Within 2 weeks of the training session all subjects performed a videotaped cricothyrotomy post-test on a cadaver. Two blinded examiners timed and graded the performances using a 3-point CL and GRS.

Results: There was no significant difference in cricothyrotomy performance between the LF and HF model groups as evaluated by CL, GRS, and time (all:p=NS). Training on a model significantly improved cricothyrotomy performance irrespective of fidelity when evaluated by CL, GRS, and time (all: p<0.001). Inter-rater reliability was strong (checklist: r=0.90; GRS: r=0.89).

Discussion: Our study shows that a simple model, easily constructed for less than \$10 CAD, is as effective as a more expensive simulator in acquiring the skills to perform a cricothyrotomy. The skills acquired on both models transferred effectively to cadavers. Training for this life saving skill does not need to be limited by simulator accessibility or cost.

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Change in Cricothyrotomy Performance Grades between Pre and Post Test