Can Nurses Perform the Skills of Resuscitative Endovascular Balloon Occlusion of the Aorta? A Pilot Study
Carmen N. Spalding, PhD1, CDR Carl Goforth, PhD2,3, CDR Matthew Bradley, MD2,3, LCDR Felipe Grimaldo, MD1, LCDR Victor Jourdain, MD1, David Coenen1, Susan Driscoll-Bannister1, Alisha Hawrylack, RT(R)(VI)4, James Stone, MD/PhD4, 1Naval Medical Center San Diego, San Diego, CA; 2Naval Medical Research Center, Silver Spring, MD; 3Department of Surgery, Uniformed Services University of the Health Sciences 4University of Virginia, Charlottesville, VA; 1Naval Medical Center San Diego, San Diego, CA; 2Naval Medical Research Center, Silver Spring, MD; 3Department of Surgery, Uniformed Services University of the Health Sciences 4University of Virginia, Charlottesville, VA;

Background
- Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA)
  - May reduce most common survivable cause of battlefield death
  - Austere surgical teams
    - Have limited number of physicians
    - May be overwhelmed with multiple casualties.
  - Nurses act as physician extenders in these teams
  - REBOA
    - Promising alternative to achieve temporary hemostasis
    - Less invasive than open thoracotomy with aortic cross-clamping
    - Insert catheter into aorta from femoral access sheath
    - Inflate balloon to occlude aorta
  - Research Question: Can nurses be trained to perform REBOA?

Methods
- Pilot study design: non-randomized, within-subjects
- Setting: Naval Medical Center San Diego Bioskills Simulation Training Center
- Participants (N = 15):
  - Materials: Prytime Medical™ STAAR REBOA, FemoralLine Man™ trainers, Blue Phantom™ biopsy and 2-vessel blocks
  - Procedures: Training
    - Phase I
      - Introductory session to ultrasound guided access (GE V-Scan™)
      - Weekly time trials (over 4-6 weeks)
    - Phase II
      - Training sessions (3.5 days total)
        - Lectures
        - Simulation
        - Case Studies
        - Task Trainer
        - Perfused Cadavers
  - Assessment Measures
    - Written exam (pre/post, 31 items, multiple choice, true/false)
    - Task trainers (femoral arterial line placement, REBOA deployment)
    - Perfused cadaver (femoral line placement, REBOA deployment combined)
  - MegaBOA*: Case Studies with REBOA skills performance (n=4 each)
- Data Analysis: t-tests, multiple regression with post-hoc analyses, pairwise correlations; (a priori p < .05)

Results
- Written Exam: Pre: M = 71%, Post: 90%, Improvement: 19% (p < .001)
- MegaBOA Results (N=60):
  - 98% correctly identified need for REBOA
  - 98% identified / applied in appropriate zone
  - 1% did not deploy when REBOA indicated
  - Application success when applied: 100%

Limitations
- Modest sample size, classroom setting
- Mannequins and cadavers, not actual trauma patients

Areas for Future Research
- Replication with larger, more diverse samples and settings
- En route application

Conclusions
- This novel training pilot study demonstrated that nurses quickly learn and effectively perform REBOA

Objectives
- To determine whether a novel simulation-enhanced training program can assist nurses to demonstrate
  1. Proficient cognitive ability
  - REBOA indications-for and risk/benefits
  2. Proficient psychomotor ability
  - Femoral arterial line placement and REBOA catheter insertion

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References

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