

## ACS 2026 Surgeons and Engineers: A Dialogue on Surgical Simulation

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### Research Abstracts

#### Evaluating CPR Breast Attachment Impact on EMT Training: A Randomized Controlled Trial

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**Introduction:** Simulation training has been instrumental in preparing providers for high-stakes medical procedures. However, under representation breasted of bodies in simulation may contribute to poorer outcomes among female patients. In resuscitation, males have higher odds of receiving bystander CPR (B-CPR) and surviving out-of-hospital cardiac arrest (OHCA) compared to females. Studies suggest that concerns about breast exposure, causing injury, or being accused of sexual harassment may contribute to gender disparities in B-CPR. This study examines whether using the ReviveHer breast attachment during CPR training impacts Emergency Medical Technician (EMT) students' willingness, comfort, confidence, and concerns when performing CPR on breasted and non-breasted individuals.

**Methods:** EMT students at North Seattle College participated in a two-day CPR training and completed pre- and post-training surveys assessing participants' willingness, confidence, and concerns specific to providing CPR to breasted and non-breasted individuals. Participants were randomized into control or experimental groups. The control group used standard flat-chested manikins, while the experimental group trained with the ReviveHer breast attachment. Pre- and post-intervention surveys were contrasted using Independent Samples Mann-Whitney U Test.

**Results:** The experimental group showed significantly increased willingness to initiate CPR across all body types and settings: breasted-public ( $p=0.011$ ), breasted-private ( $p=0.015$ ), non-breasted-public ( $p=0.009$ ), and non-breasted-private ( $p=0.024$ ). They also reported greater comfort in unclothing a breasted body in a private setting to perform CPR ( $p=0.017$ ), increased confidence in providing compressions to an unclothed breasted body ( $p=0.043$ ), and decreased fear of sexual harassment accusations ( $p=0.044$ ).

**Conclusions:** Incorporating the ReviveHer breast attachment into CPR training enhances EMT students' preparedness to administer CPR to both breasted and non-breasted individuals. Beyond CPR, engineering breast representation in simulation can improve surgical training by furthering operative and crisis management skills. Future applications of the ReviveHer could include chest wall incisions (sternotomy, clamshell), point-of-care cardiac ultrasounds, and intraoperative and perioperative resuscitation training.

