Evaluating the Ergonomics of Cardiac Arrest Care

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Introduction

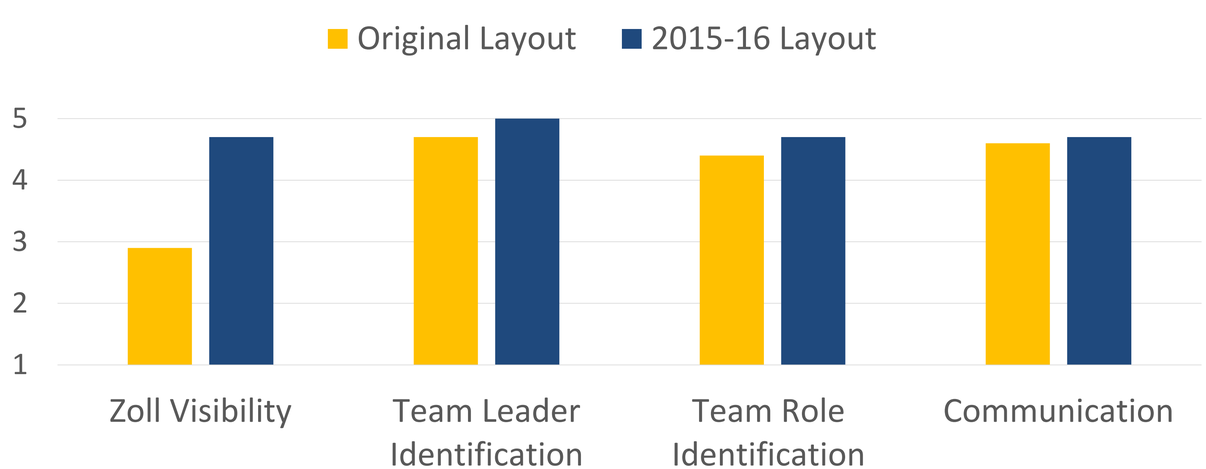
American Heart Association's (AHA) Get With the Guidelines (GTWG) provides the best current literature synthesis on cardiac arrest care [1]. Key among these are to improve the delivery of CPR; however, built environments can be configured to limit high quality resuscitation care. The aim of our project was to optimize the built environment by evaluating ergonomics to improve and support high quality resuscitation care.

Materials and Methods

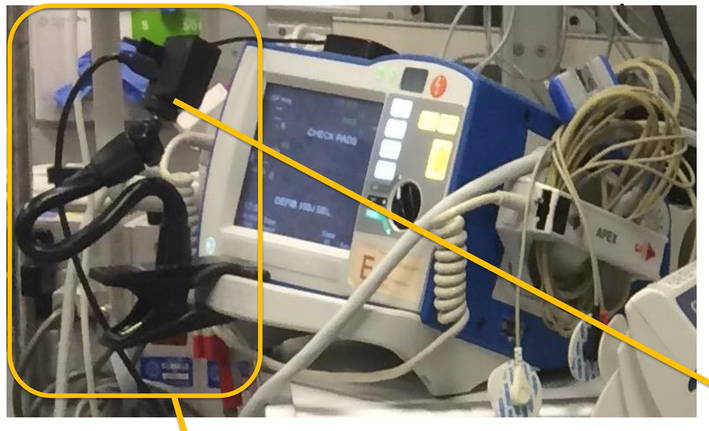
Using a medium-fidelity mannequin and with participants in their usual roles, post simulation surveys were collected and analyzed using a Likert Scale (1-worst & 5-best) to provide qualitative feedback to the group. During the 2014-15 academic year, three proposed layouts and the original ED resuscitation bay layout were simulated.

Results

After 2014-15 results did not suggest an improvement over the original design, the multidisciplinary team used an iterative approach to improve the 2015-16 academic year design using the feedback collected from the 2014-15 layout, staff suggested making 3 changes to improve our design. The 2015-16 layout was assessed using similar methodology.



Changes to Original Design

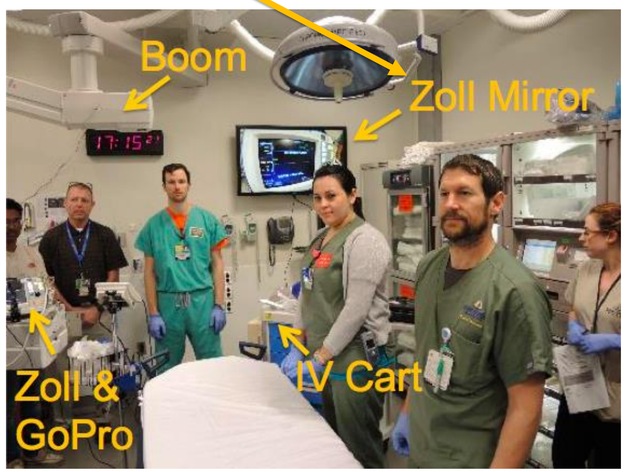


Monitor CPR Quality:

- Defibrillator in-front of compressor
- Video relay on defibrillator monitor for entire team to view quality
- Team Leader Stool

Reduce Time to Shock:

- Defib on right side for defibrillator delivery



Conclusion

We quantified the impact of these layout changes using team surveys. The next steps are to measure how performance standards, as defined by the American Heart Association, are affected by the change in CPR ergonomics.

[1] Abella BS, Edelson DP, Kim S, Retzer E, Myklebust H, Barry AM, et al. CPR quality improvement during in-hospital cardiac arrest using a real-time audiovisual feedback system. Resuscitation. 2007;73:54–61. doi: 10.1016/j.resuscitation.2006.10.027.