

Introduction

In-Hospital Cardiac Arrest (IHCA) is a *low-frequency, high-stakes* event. Although Internal Medicine (IM) trainees are often responsible for leading resuscitation teams in teaching hospitals, there is wide variability in exposure, skill, and confidence in responding to IHCA.

Objective

The goal of this study was to assess IM housestaff-reported comfort and experience with resuscitation skills before versus after participating in an interprofessional, simulation-enhanced “code blue” curriculum.

Methods

A “code blue” curriculum was implemented at the University of Louisville from January 2015 to December 2015. Participants included IM housestaff, nurses, respiratory therapists, and pharmacy residents. Prior to the start of each month-long ICU rotation, groups participated in a 90-minute cardiac arrest simulation of stable ventricular tachycardia (VT) which deteriorates into pulseless VT. Housestaff completed cross-sectional surveys regarding IHCA experience, skill, and comfort just prior to participating in the curriculum (pre), and in December 2015, 12 months after initiation of curriculum (post). IM residents (2nd year n=6, 3rd year n= 13) and categorical/preliminary interns (n=39) responded to a pre-curricular survey, and residents (2nd year n=9, 3rd year n=9) and interns (n=11) responded to a cross-sectional post-curricular survey (at varying lengths of time since participation). We compared survey responses pre- vs. post-curriculum. This study was approved by the University of Louisville IRB #14.1211 and supported by a grant from the Alliance for Academic Internal Medicine.

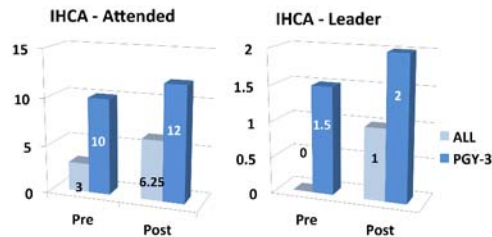


Figure 1. Median number of IHCA attended and led, pre- vs. post-curriculum. Responses for 3rd year residents (PGY-3) reported separately.

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Comfort with Resuscitation Skills

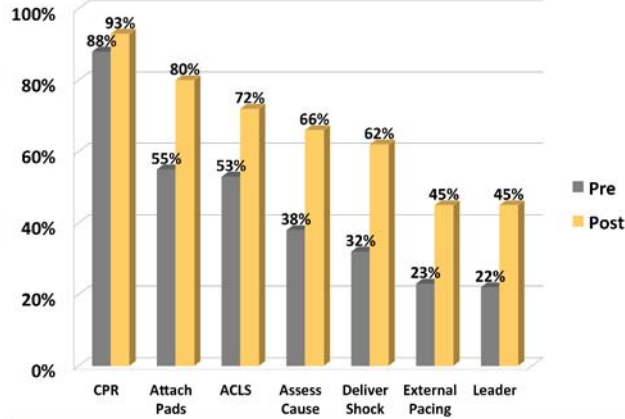


Figure 2. Percentage of housestaff reporting comfort with various resuscitation skills, pre- vs. post-curriculum.

Results

Self-reported experience in attending IHCA varied widely, and increased from pre- to post-curriculum (Figure 1). Pre-curriculum, the median number of IHCA attended was 3 (IQR 3, 10); the median number of IHCA attended post- increased to 6.25 (IQR 3.75, 15). The median number of IHCA for which housestaff reported serving as the leader pre- vs. post- increased minimally for all housestaff [0 (IQR 0, 0) to 1 (IQR 0,0)] and for 3rd year residents [1.5 (IQR 0.5, 4.25) to 2 (IQR 1, 5)]. Baseline survey results indicated wide variability in reported comfort with performing resuscitation skills, ranging from 88% reporting comfort performing high-quality CPR to 22% reporting comfort serving as code team leader. This variability persisted at 12 months, but an increased percentage of housestaff reported comfort with all skills: performing high-quality CPR (93% post v. 88% pre); attaching defibrillator pads (80% post v. 55% pre); following ACLS algorithms (72% post v. 53% pre); assessing for underlying cause of arrest (66% post v. 38% pre); delivering shocks (62% post v. 32% pre); external pacing (45% post v. 23% pre); and serving as code team leader (45% post v. 22% pre) (Figure 2). Self-reported preparedness to serve as team member increased from 69% pre- to 88% post-curriculum; preparedness to serve as team leader increase from 24% pre- to 50% post-curriculum. Additionally, those who reported feeling overwhelmed during IHCA decreased from 31% pre- to 18% post-curriculum (Figure 3). Housestaff identified 1) simulation curriculum, and 2) observing senior physicians respond to real-world IHCA as the most effective methods to improve resuscitation skills.

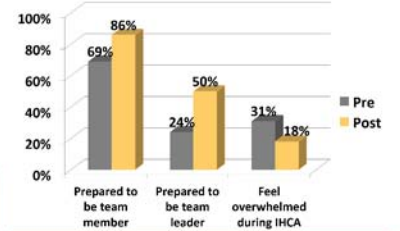


Figure 3. Percentage of housestaff reporting preparedness for IHCA roles, pre- vs. post-curriculum.

Conclusion

Despite the lack of substantially increased IHCA leadership experience over the course of one year, housestaff report improved comfort and preparedness to respond to IHCA; they attribute this improvement, in part, to participation in this interprofessional, simulation-enhanced curriculum. Housestaff uniformly rated this curriculum as helpful, praising the inter-professional, team-based design. Comments described the curriculum as a “low stress way to practice high stress situations”... “where code skills can be honed without the ensuing mayhem [surrounding] a real code.” Given the wide variability in housestaff exposure, skill, and confidence in responding to IHCA, this inter-professional approach is an effective way to train housestaff for this low-frequency, high-stakes event.