

Background

- Pediatric cardiopulmonary arrest (CPA) is rare, occurring in only 6,000 hospitalizations per year, but is associated with a mortality rate of 40-50%
- CPR skill retention is poor and declines with time
- Simulation-based mock code exercises are used to improve CPR quality, but there is a lack of evidence that CPR performed in these mock codes meets the quality benchmarks set by the AHA

Objectives/Aims

- Determine if the CPR performed during mock codes meets the AHA standards for high-quality CPR
- Assess the relationship between perceived performance and actual quality of CPR delivered during mock codes

Methods

- Prospective observational study in an academic quaternary care center
- Biweekly mock codes held throughout various units in the hospital on a rotating schedule
- Accelerometer-based measurements from a CPR monitor/defibrillator
- High fidelity mannequin
- Self-evaluation forms to determine provider perception

Results

Baseline Characteristics	
Participants	240
Credentials	
RN	122
MD	61
Medical Student	2
NP	1
Pharm D	20
RT	10
No Response	24
Role	
Facilitator	34
Lead	17
Airway	23
Compressions	28
Lines/Meds	50
Monitor	21
Recorder	14
Other	74
Cases	
Total	27
Shock	12
No shock	15
Locations	
Acute Care	17
ICU	7
Procedural Area (Imaging, Post-op, Dialysis)	3

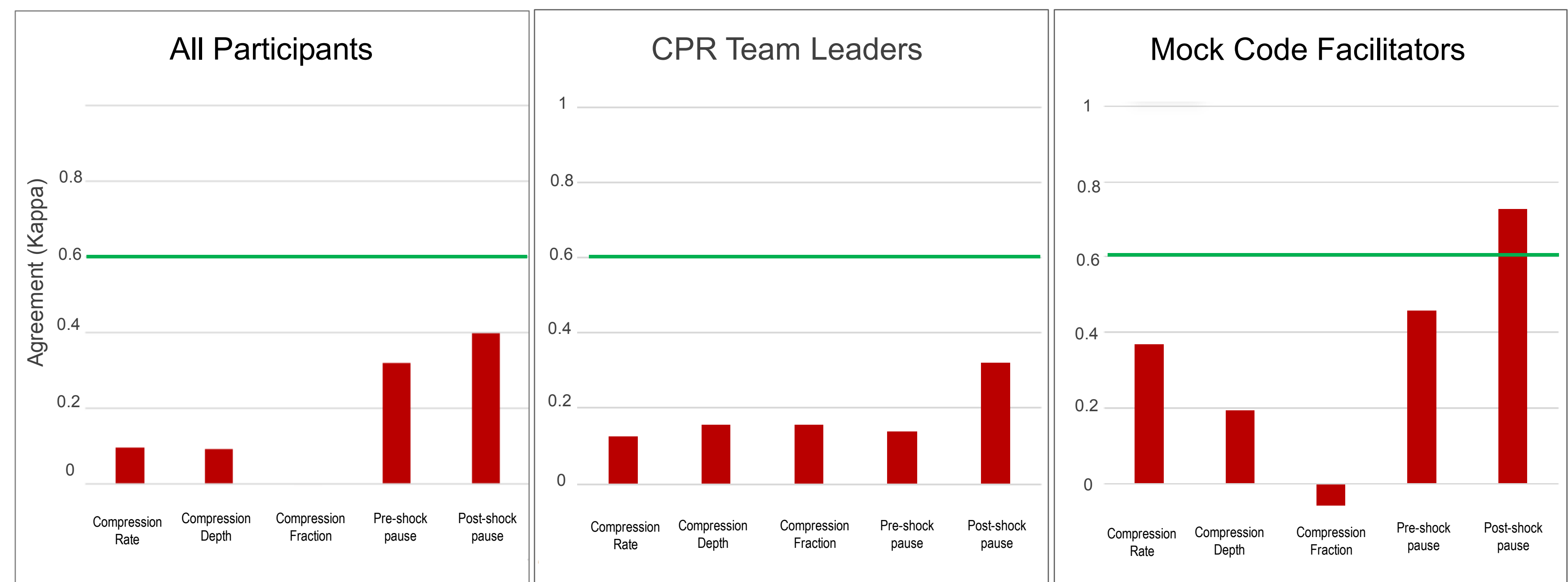
CPR Performed did not meet AHA recommendations.		
	AHA Recommendation	N (%)
Compression Rate	110-120	14 /27 (51.9%)
Compression Depth	Infant 1.1-5 in	11/27 (40.7%)
	Child 2.2-4 in	
Compression Fraction*	80 %	6/27 (22.2%)
Compressions in Target^	100 %	0/27
Pre-shock Pause	≤ 10 sec	10 (66.7%)
Post-shock Pause	≤ 10 sec	13 (86.7%)

*Compression Fraction: during CPR, the proportion of time in which chest compressions are delivered
^Compressions in Target: the proportion of chest compressions delivered at both the correct depth and rate

Conclusions

- CPR performed during mock codes never met all AHA benchmarks for high quality CPR
 - For the individual parameters of chest compression depth and rate, the goal was met approximately 50% of the time. However, the goal for Compressions in Target was never met.
- Despite the use of real-time audiovisual CPR feedback devices, healthcare providers have poor insight into the quality of CPR being delivered during mock codes
 - Mock code facilitators who are responsible for providing immediate feedback after a mock code have minimal to moderate insight into the quality of CPR delivered during mock codes
 - CPR Team Leaders have none to minimal insight into the quality of CPR delivered during mock codes

Providers are not accurately able to determine if CPR performed met AHA standards.



Agreement analysis was performed using the kappa statistic for inter-test reliability to compare provider perception of CPR quality against actual objective quality of CPR delivered. Kappa ranges from -1.0 to +1.0. A kappa of > 0.6 (moderate agreement) was used to establish agreement

Future Directions

- Assess provider perceptions of CPR quality as a function of time since CPR training
- Develop and test new educational models for teaching CPR and improving skillset retention
- Does increase role-specific training, including a CPR Coach, improve CPR quality
- Data-driven debriefings for actual CPR events to improve provider perceptions