

ACLS TRAINING IN THE PHARMD CURRICULUM

Background

- Foundational knowledge and skills with advanced cardiovascular life support (ACLS) principles will support the development of “practice-ready” pharmacy graduates
- The University of Georgia College of Pharmacy offers a 4-year Doctor of Pharmacy (PharmD) program

Objective

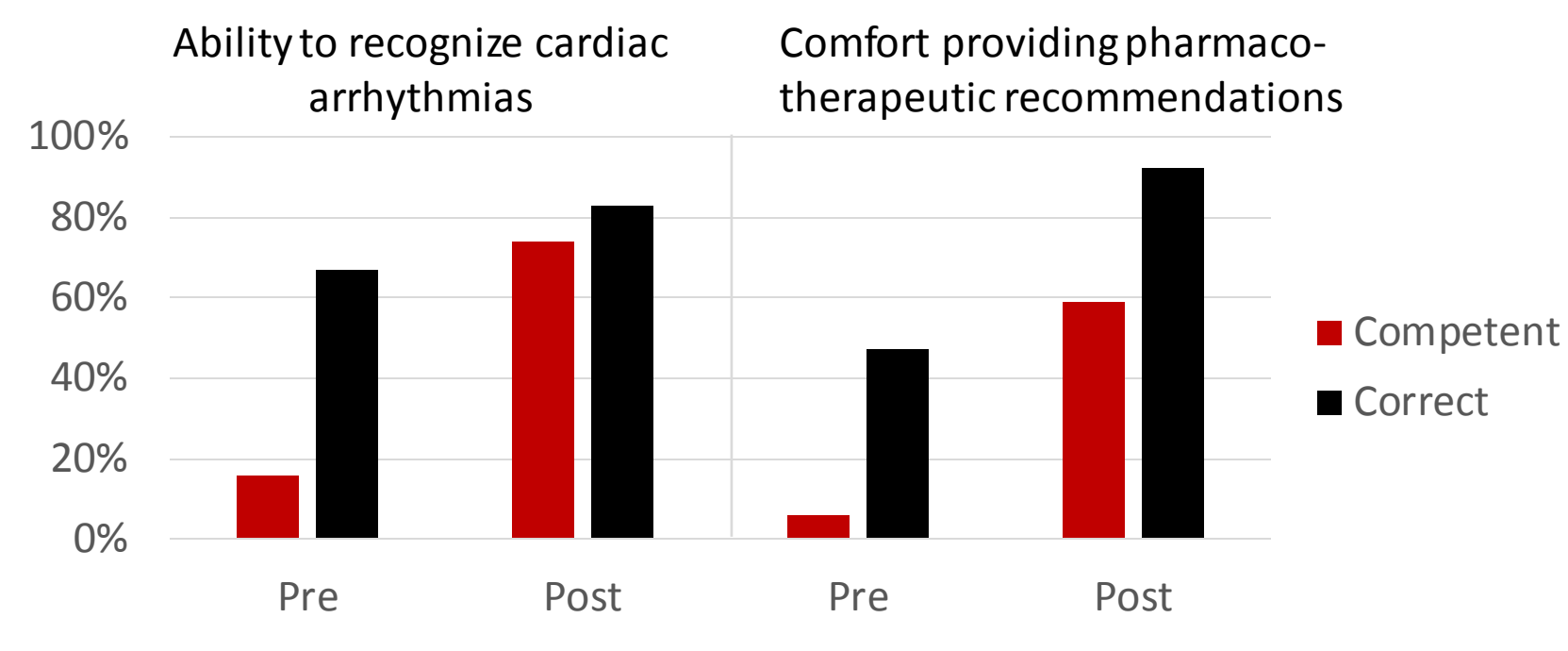
- To investigate an association between students’ confidence and actual performance after completing ACLS training in the PharmD curriculum

Methods

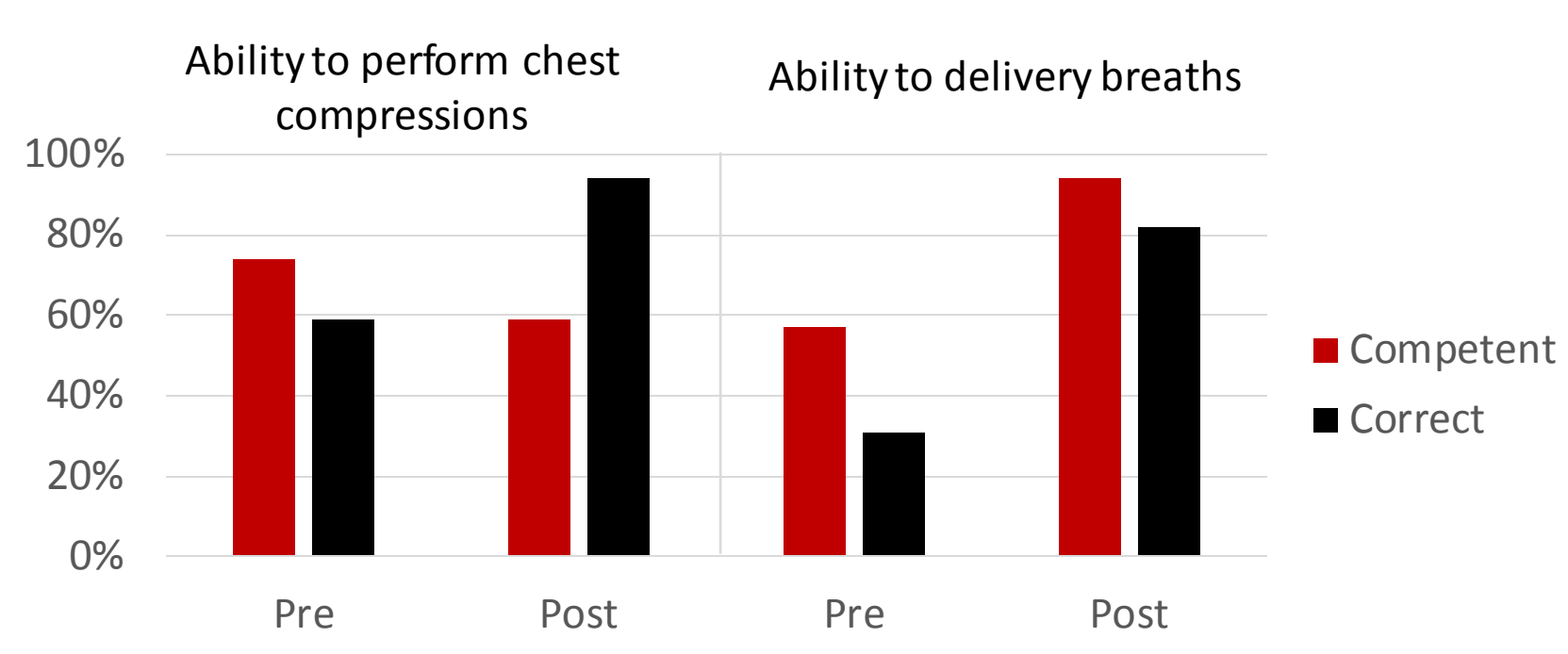
- 2-hour didactic lecture + 2-hour simulation-based experience in 3rd year of PharmD program
- Pre- and post-instruction assessment:
 - 18 questions evaluating perceptions of confidence
 - 10 questions evaluating knowledge
- Knowledge questions mapped to confidence questions to identify any associations

Results

- All students (n=133) participated
- Knowledge demonstrated on the pre-instruction assessment often exceeded confidence:



- Student confidence exceeded knowledge in two areas:



Implications

- Student knowledge and confidence improved significantly after receiving in-class instruction
- Confidence was elevated in the pre-instruction assessment on skills that are taught in Basic Life Support (BLS) and expanded upon in ACLS
- Lower than expected performance in these areas potentially highlights that skills-related competencies require repetition and reinforcement

INVESTIGATOR TEAM

- Susan E. Smith, PharmD, BCPS, BCCCP
- Andrea Sikora Newsome, PharmD, BCPS, BCCCP
- W. Anthony Hawkins, PharmD, BCCCP
- Michael J. Fulford, PhD
- Beth B. Phillips, PharmD, FASHP, FCCP, BCPS

An evaluation of ACLS training in the PharmD curriculum found that confidence in basic life support exceeds knowledge, highlighting the need for repetition of skill-based competencies



Critical Care Collaborative
College of Pharmacy
UNIVERSITY OF GEORGIA

TABLES AND FIGURES

Table 1. Knowledge & Confidence Pre- and Post-Instruction

Confidence	Pre	Post	p-value
Novice	53% (26 – 68%)	0% (0 – 0%)	<0.001
Advanced Beginner	26% (16 – 37%)	5% (0 – 32%)	<0.001
Competent	11% (5 – 21%)	37% (16 – 53%)	<0.001
Proficient	0% (0 – 11%)	26% (11 – 53%)	<0.001
Expert	0% (0 – 0%)	5% (0 – 16%)	<0.001
Knowledge			
Overall Score	48.6% ± 21.2%	83.6% ± 13.5%	<0.001

Table 2. Student Confidence in ACLS Abilities

	Pre	Post
Q1 I am able to identify hemodynamic stability	2 (2 – 3)	3 (3 – 4)
Q2 I am able to identify a patient in cardiac arrest	2 (2 – 3)	4 (3 – 4)
Q3 I am able to recognize different cardiac arrhythmias	2 (1 – 2)	3 (2 – 4)
Q4 I am able to differentiate stable and unstable arrhythmias	1 (1 – 2)	3 (2 – 4)
Q5 I am able to perform cardiopulmonary resuscitation	3 (2 – 3)	4 (3 – 4)
Q6 I know the ratio of compressions to breaths for CPR in patients with or without an advanced airway	3 (2 – 4)	4 (4 – 5)
Q7 I am able to perform adequate chest compressions	3 (2 – 4)	4 (3 – 5)
Q8 I know when to choose synchronized cardioversion or defibrillation	3 (2 – 4)	4 (3 – 5)
Q9 I know which medications to use for different cardiac arrhythmias	2 (1 – 3)	4 (3 – 4)
Q10 I know the doses of medications to use for different cardiac arrhythmias	1 (1 – 2)	3 (3 – 4)
Q11 I am able to suggest reversible causes of cardiac arrest	2 (1 – 2)	3 (3 – 4)
Q12 I am able to manage the code cart	1 (1 – 2)	3 (2 – 4)
Q13 I am able to prepare medications during a medical emergency	1 (1 – 2)	3 (2 – 4)
Q14 I know which medications are supplied in prefilled Abboject syringes	1 (1 – 2)	3 (2 – 4)
Q15 I am able to assemble an Abboject syringe	1 (1 – 1)	3 (3 – 4)
Q16 I feel comfortable providing pharmacotherapeutic recommendations in a code setting	1 (1 – 1)	3 (2 – 4)
Q17 I know my role as a pharmacist in a cardiovascular emergency	1 (1 – 2)	3 (3 – 4)
Q18 Overall, I am confident in my ability to participate in a cardiovascular emergency	1 (1 – 2)	3 (2 – 4)
Q19 I understand the role of the team leader in a cardiovascular emergency	2 (1 – 3)	4 (3 – 4)

1 = novice, 2 = advanced beginner, 3 = competent, 4 = proficient, 5 = expert
p<0.001 for all comparisons

Table 3. Performance on Knowledge Questions Mapped to Confidence

Knowledge Question	Correct Response			Confidence Question(s)	Competent or Higher		
	Pre	Post	p-value		Pre	Post	p-value
Q20	67%	83%	0.004	Q3	16%	74%	<0.001
Q21	67%	86%	<0.001	Q1	38%	84%	<0.001
				Q4	16%	73%	<0.001
				Q9	14%	82%	<0.001
				Q10	10%	78%	<0.001
Q22	69%	86%	0.001	Q3	16%	74%	<0.001
Q23	23%	63%	<0.001	Q2	36%	93%	<0.001
				Q5	58%	90%	<0.001
Q24	59%	94%	<0.001	Q7	74%	92%	<0.001
Q25	59%	86%	<0.001	Q16	6%	59%	<0.001
Q26	31%	82%	<0.001	Q6	57%	94%	<0.001
Q27	30%	78%	<0.001	Q2	36%	93%	<0.001
				Q3	16%	74%	<0.001
Q28	37%	86%	<0.001	Q11	16%	77%	<0.001
Q29	47%	92%	<0.001	Q16	6%	59%	<0.001

Table 4. Mapping of Knowledge Questions to Confidence Questions

Knowledge-Based Question	Confidence Question
Q20 What is the cardiac rhythm?	Q3 I am able to recognize different cardiac arrhythmias
Q21 What intervention should be taken first?	Q1 I am able to identify hemodynamic instability Q4 I am able to differentiate stable and unstable arrhythmias Q9 I know which medications to use for different cardiac arrhythmias Q10 I know the doses of medications to use for different cardiac arrhythmias
Q22 You perform the intervention and the following is seen on the cardiac monitor. The patient does not have a pulse. What rhythm is she in?	Q3 I am able to recognize different cardiac arrhythmias
Q23 What intervention should be taken first?	Q2 I am able to identify a patient in cardiac arrest Q5 I am able to perform cardiopulmonary resuscitation
Q24 Which of the following represents appropriate chest compressions?	Q7 I am able to perform adequate chest compressions
Q25 Which of the following interventions is most likely to improve outcomes?	Q16 I feel comfortable providing pharmacotherapeutic recommendations in a code setting
Q26 The anesthesia team arrives and performs endotracheal intubation. How should breaths be delivered?	Q6 I know the ratio of compressions to breaths for CPR in patients with or without an advanced airway delivered?
Q27 Two cycles of CPR have passed, the patient has been defibrillated twice and has received one dose of epinephrine. At the next rhythm check, the following is seen. What should be done next?	Q2 I am able to identify a patient in cardiac arrest Q3 I am able to recognize different cardiac arrhythmias
Q28 As CPR continues, the team leader prompts the team to consider reversible causes. Which of the following is NOT a reversible cause of cardiac arrest?	Q11 I am able to suggest reversible causes of cardiac arrest
Q29 The patient achieves return of spontaneous circulation (ROSC) and is transferred to the medical intensive care unit. Blood pressure is 90/40, HR 110, SpO2 100% (mechanically ventilated with 100% FiO2). She is not responding to commands. The team would like to initiate targeted temperature management. Which of the following is correct?	Q16 I feel comfortable providing pharmacotherapeutic recommendations in a code setting