

Long-Term Retention of Advanced Cardiovascular Life Support (ACLS) Knowledge after American Heart Association ACLS Certification



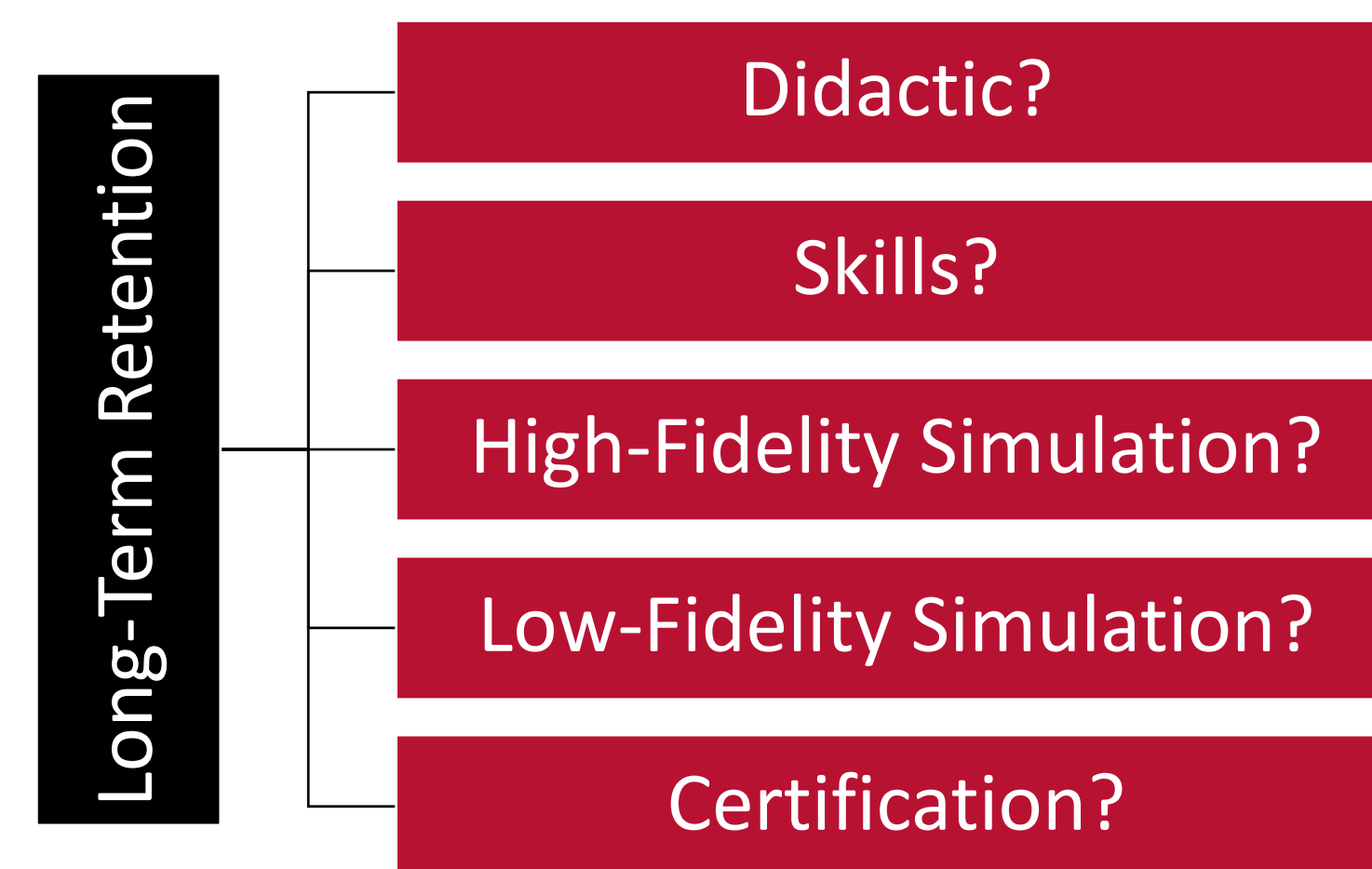
Susan E. Smith, PharmD, BCPS, BCCCP¹; Kelly C. Rogers, PharmD, BCCP, FCCP, FACC²; Andrea Sikora Newsome, PharmD, MSCR, BCPS, BCCCP, FCCM¹; Michael Fulford, PhD³

¹Department of Clinical and Administrative Pharmacy, University of Georgia College of Pharmacy; ²Department of Clinical Pharmacy and Translational Science, University of Tennessee Health Science Center College of Pharmacy; ³Dean's Office, University of Georgia College of Pharmacy



BACKGROUND

- Advanced cardiovascular life support (ACLS) skills degrade rapidly, with only 30% and 14% of nurses passing ACLS assessments 3 and 12-months after completing ACLS training, respectively.



- Purpose:** Evaluate the impact of American Heart Association (AHA) certification in ACLS on long-term retention of ACLS confidence and knowledge in PharmD students.

OUTCOMES

Primary Outcome

- Knowledge assessment score of $\geq 80\%$, assessed by 10 randomly selected multiple choice questions

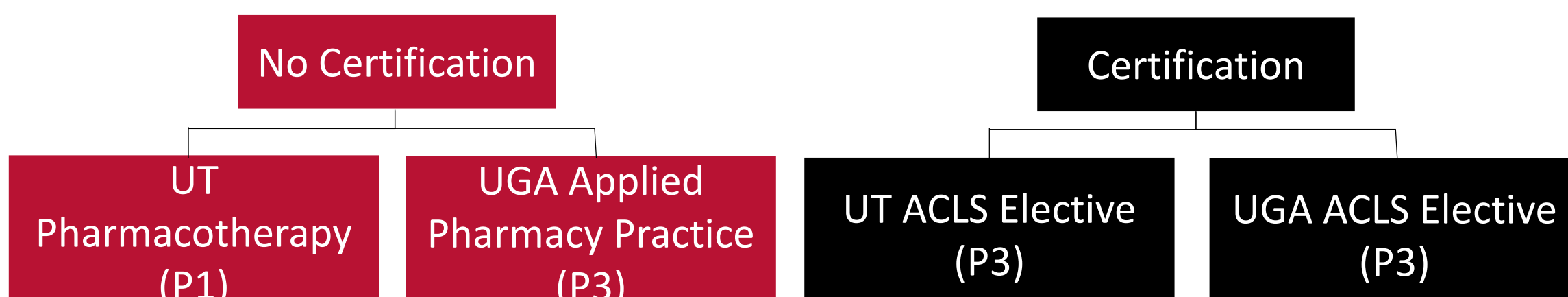
Secondary Outcomes

- Confidence in ACLS, assessed by Dreyfus model

STUDY DESIGN

- Design:** cross-sectional electronic survey of PharmD students at least one year after ACLS education

Study Groups:



- Survey:** 37 questions assessing knowledge (10), perceptions (15), demographics (6), and experiences with cardiac arrest (6)
- Compensation:** \$10 electronic gift card offered
- Analysis:**
 - Chi-squared and Mann-Whitney U tests to compare categorical and continuous variables
 - Binary logistic regression applied to primary outcome to account for confounding variables

RESULTS

Table 1. Characteristics of Study Participants

Variable	No Certification (n=135)	Certification (n=39)	Variable	No Certification (n=135)	Certification (n=39)
ACLS Course(s) Taken*			Male Gender	36 (26.7)	16 (41)
UT Pharmacotherapy	106 (78.5)	14 (35.9)	Degree(s) Held		
UT ACLS Elective	0 (0)	14 (35.9)	Bachelor's	105 (77.8)	20 (51.3)
UGA APP II	32 (23.7)	21 (53.8)	Master's	4 (3)	2 (5.1)
UGA Critical Care Elective	6 (4.4)	9 (23.1)	Doctor of Pharmacy	34 (25.3)	34 (87.2)
UGA ACLS Elective	0 (0)	25 (64.1)	Other Professional Degree	1 (0.7)	1 (2.6)
Age			None	12 (8.9)	1 (2.6)
<20 years	4 (3)	0 (0)	Post-Graduate Plans		
20 – 24 years	71 (52.6)	3 (7.7)	Job in Community Pharmacy	27 (20)	14 (35.9)
25 – 29 years	54 (40)	31 (79.5)	Job in Hospital Pharmacy	21 (15.6)	8 (20.5)
30 – 34 years	5 (3.7)	5 (12.8)	Other Pharmacy Job	9 (6.7)	2 (5.1)
35 – 39 years	1 (0.7)	0 (0)	Residency Training	69 (51.1)	12 (33.3)
Class Rank in PharmD Program at time of survey completion			Fellowship Training	6 (4.4)	1 (2.6)
P2 (class of 2023)	56 (41.5)	0 (0)	PhD or Other Degree	3 (2.2)	1 (2.6)
P3 (class of 2022)	44 (32.6)	5 (12.8)			
P4 (class of 2021)	0 (0)	1 (2.6)			
Graduate (class of 2020)	35 (25.9)	33 (84.6)			

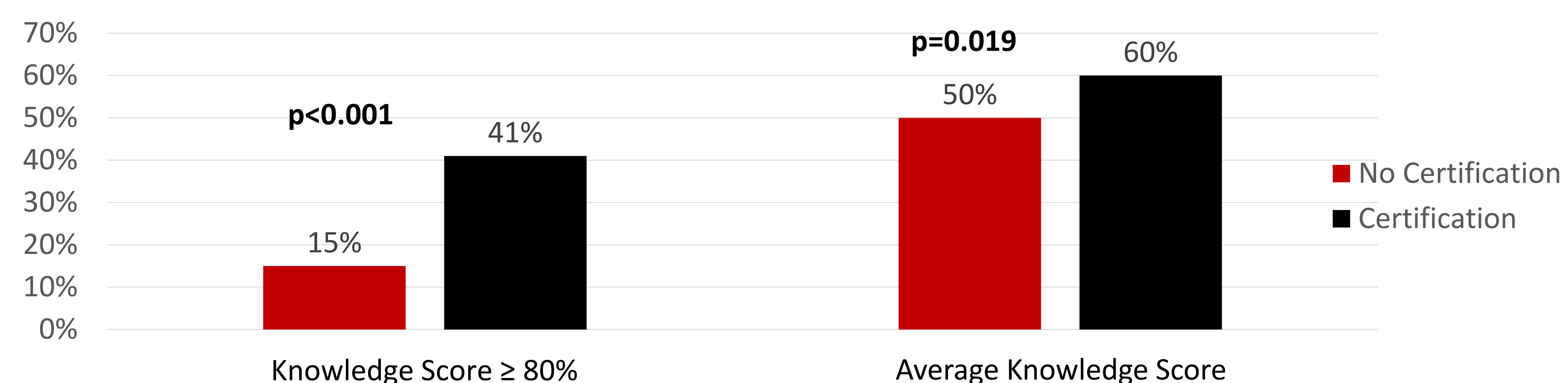
All values presented as Number (Percentage); *students may have enrolled in more than one course

Table 2. Experiences with Cardiac Arrest

Variable	No Certification (n=135)	Certification (n=39)	p-value
Witnessed cardiac arrest event	35 (25.9)	29 (74.4)	<0.001
Number of cardiac arrests witnessed	3 (1 – 4)	4 (2 – 8)	0.192
≥ 5 cardiac arrests witnessed	8 (22.9)	14 (48.3)	0.033
Location(s) of witnessed cardiac arrest			
In-hospital setting	34 (97.1)	29 (100)	0.359
Out-of-hospital setting	2 (5.7)	1 (3.4)	0.669
Role(s) in cardiac arrest event			
Observer	32 (91.4)	28 (96.6)	0.399
Prepared medications	16 (45.7)	18 (62.1)	0.192
Administered medications	4 (11.4)	3 (10.3)	0.890
Performed chest compressions	7 (20)	8 (27.6)	0.476
I felt comfortable during the cardiac arrest event(s)*	14 (40)	19 (65.5)	0.075
I understood what was going on during the cardiac arrest event(s)*	25 (71.4)	24 (82.7)	0.512
I felt like a valued team member during the cardiac arrest event(s)*	9 (25.7)	17 (58.6)	0.051

All values presented as Number (Percentage) or Median (Interquartile Range); *indicates response of Agree or Strongly Agree

Figure 1. Knowledge Score ≥ 1 Year After ACLS Training

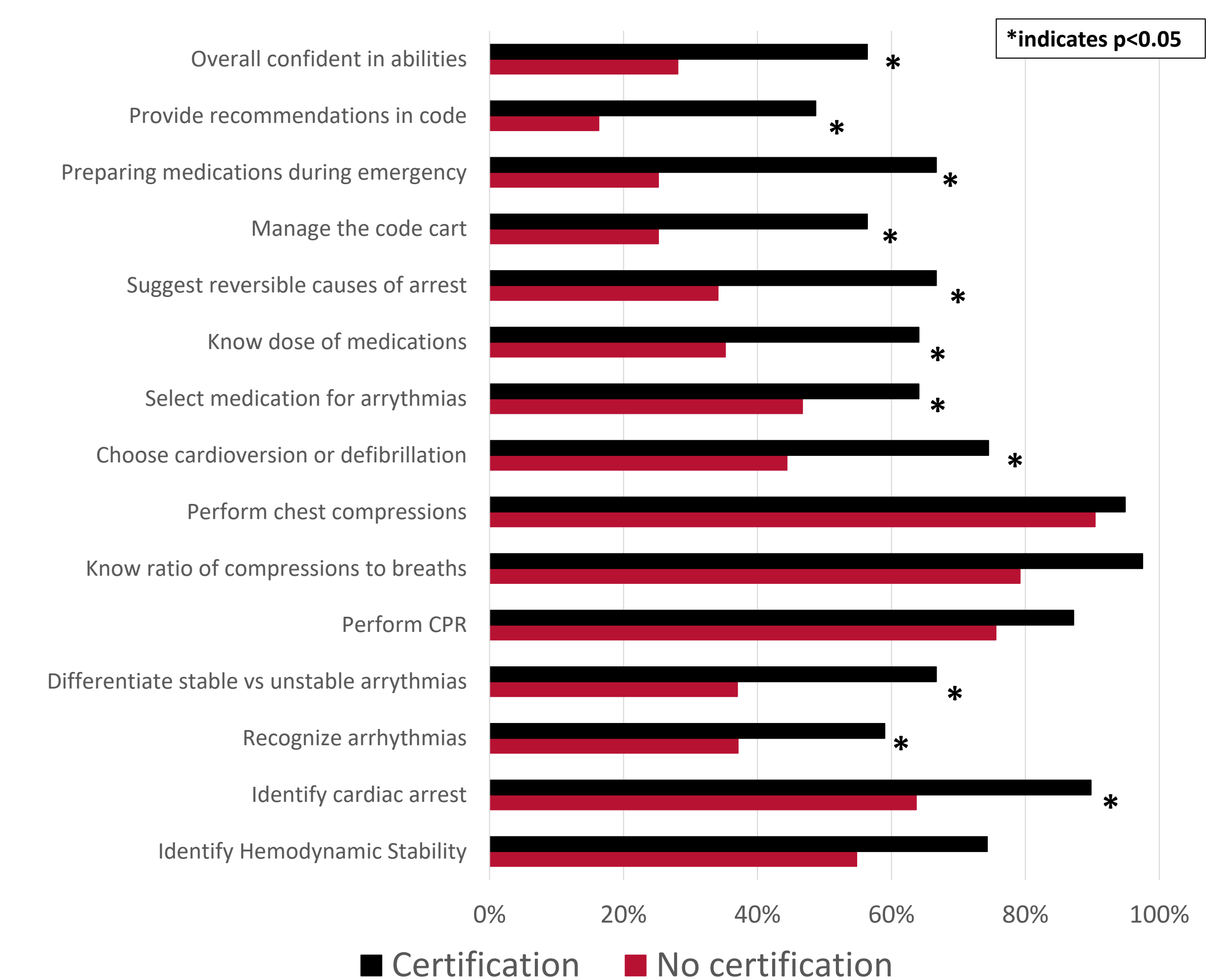


RESULTS CONTINUED

Table 3. Factors Associated with Knowledge Score $\geq 80\%$

Variable	OR (95% CI)	p-value
AHA ACLS Certification	3.566 (1.467 – 8.667)	0.005
Additional ACLS Training	3.470 (0.978 – 12.304)	0.054
Plans for Post-Graduate Training	2.271 (0.967 – 5.333)	0.060
Bachelor's Degree	0.640 (0.271 – 1.511)	0.308
Female Gender	0.976 (0.412 – 2.311)	0.956

Figure 2. Competent or Higher Confidence in ACLS Abilities



CONCLUSIONS

- Compared to didactic teaching alone, ACLS certification resulted in increased long-term retention of ACLS knowledge and confidence
- The relationship between AHA certification and long-term knowledge retention remained after adjusting for potentially confounding variables
- For students without certification, confidence remained high for skills taught in basic life support, but was lower for ACLS-specific skills
- Consideration should be given to expansion of AHA certification in the PharmD curriculum

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Research was supported by a 2019 AACP New Investigator Award