

# Developing a sustainable neonatal resuscitation program at Shirati KMT Hospital in Tanzania

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**TAP TO GO BACK TO  
KIOSK MENU**

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## INTRODUCTION

The neonatal mortality rate in Tanzania is approximately five times higher than in the United States, according to the World Health Organization. Helping Babies Breathe (HBB), an evidence-based neonatal resuscitation program, is part of the Helping Babies Survive (HBS) curriculum developed by the American Academy of Pediatrics (AAP). HBB teaches birth attendants how to respond to post-delivery respiratory distress and has been shown by Msemo *et al.* to reduce neonatal mortality by up to 47%.

The purpose of this project was to continue previous work in teaching the HBB curriculum in Shirati, Tanzania while also identifying and training interested participants to become instructors, with the ultimate goal of creating a self-sustaining HBB program.

## HYPOTHESIS

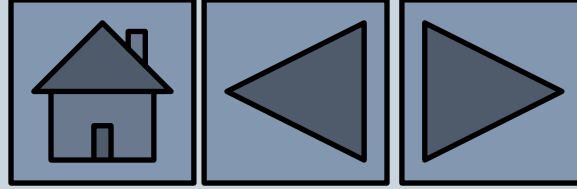
Participants will become more proficient and confident in their neonatal resuscitation skills after being trained in HBB. Students who have previously taken the course will have higher performance on the pre-class survey compared to new students.



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## MATERIALS & METHODS

### HBB Course Instruction

One two-hour HBB class was held for 25 nursing students. The course consisted of a lecture, practical skills training, and a Q&A session. The current study taught students with a higher instructor to student ratio compared to the 2018 study (1:5 vs. 1:8).

A second two-hour HBB class was held for three participants interested in becoming HBB instructors. These students were taught with a 1:1 ratio.

### Participants/Subjects

**Study site:** Shirati KMT Hospital, Shirati, Tanzania

**Study population:** Shirati School of Nursing students (n=25)

**Study dates:** 18 and 20 June 2019

### Interventions/Observations

**Independent variable:** HBB course instruction

**Dependent variable:** survey score, confidence, class usefulness

### Data Collection

Knowledge and confidence were assessed with a survey before and after class. The following data points were acquired and quantified:

- class performance (survey knowledge score)
- class usefulness
- number of students who plan to use knowledge gained
- confidence in using a bag-valve mask

17 students had previously attended a Helping Babies Breathe course. 8 students were new to the program. Pre-class surveys were compared between new and previously trained students to assess knowledge retained.

**Before Class:**

1. Which of the following best describes you?  
Midwife  
Nurse  
Medical Officer  
Doctor  
Nursing student  
Health extension worker  
Other: \_\_\_\_\_
2. Have you ever been trained in or attended a "Helping Babies Breathe" class?  
Yes  
No
3. Did you use the skills learned in HBB (Helping Babies Breathe) after taking the class?
4. Within the first minute of life, what is the most important factor that will lead you to intervene and help a baby breathe?  
Heart rate less than 150 beats per minute  
Baby is not crying or breathing well  
Baby is born blue  
Always intervene and provide breathing assistance
5. When should you start using the bag-valve mask?  
Only when a doctor is present  
When the baby is born blue  
If you have cleared the airway, stimulated, and the baby is still not breathing  
When the baby has not been breathing for over 2 minutes
6. How long do you have to dry the baby, assess breathing, and provide respiratory intervention if the baby needs it?  
1 minute  
3 minutes  
5 minutes  
10 minutes
7. Do you feel comfortable using the bag-valve mask?  
Yes  
No
8. How many breaths per minute should you give to a newborn baby with a bag-valve mask who is not breathing?  
You should never provide breathing intervention  
12 - 20 breaths per minute  
30 breaths per minute  
40 breaths per minute

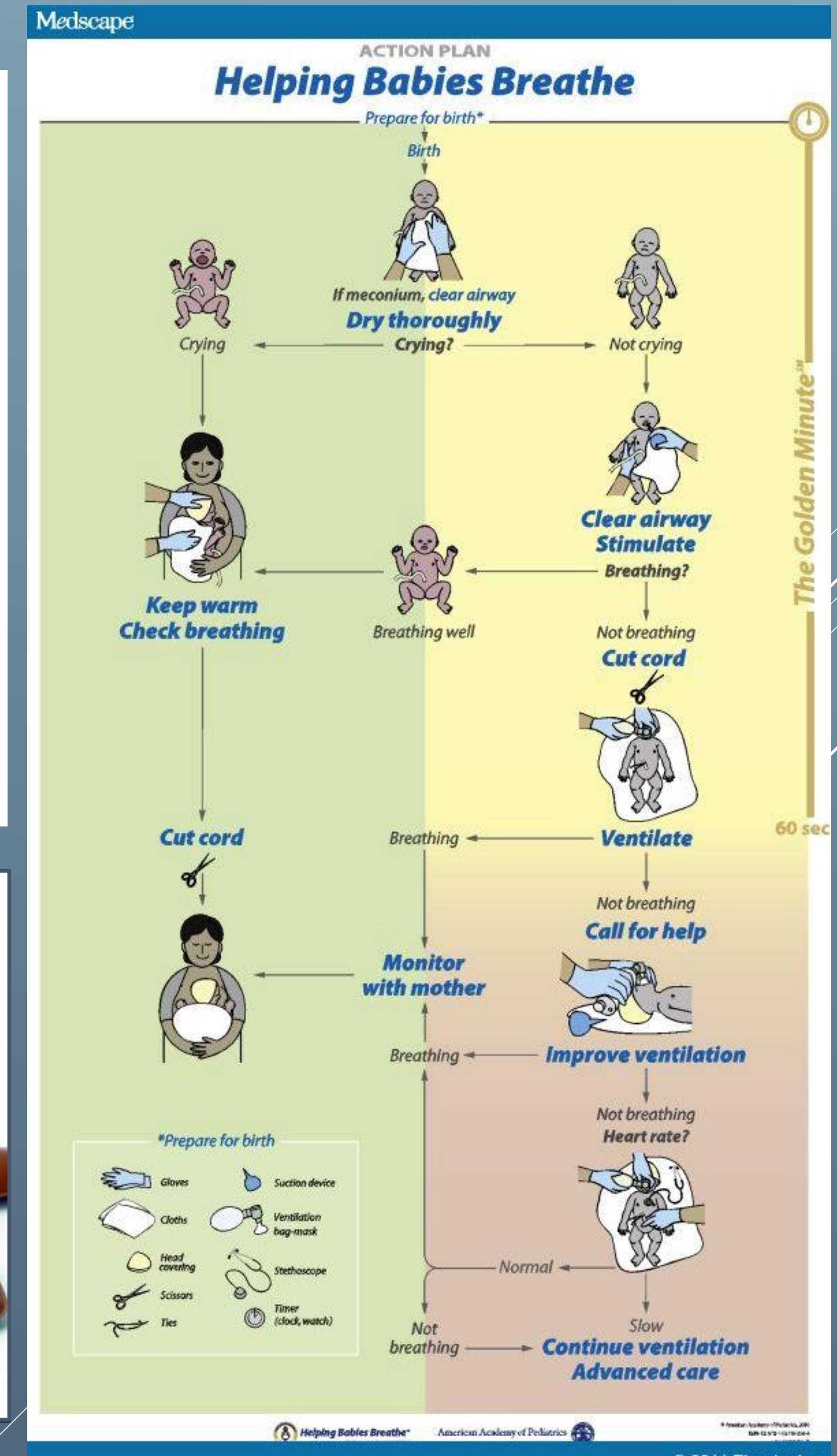
**After Class:**

1. Within the first minute of life, what is the most important factor that will lead you to intervene and help a baby breathe?  
Heart rate less than 150 beats per minute  
Baby is not crying or breathing well  
Baby is born blue  
Always intervene and provide breathing assistance
2. When should you start using the bag-valve mask?  
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1 minute  
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5 minutes  
10 minutes
4. Do you feel comfortable using the bag-valve mask?  
Yes  
No
5. How many breaths per minute should you give to a newborn baby with a bag-valve mask who is not breathing?  
You should never provide breathing intervention  
12 - 20 breaths per minute  
30 breaths per minute  
40 breaths per minute
6. Did you find this class useful?  
Yes  
No
7. What about the class did you find most helpful?
8. What about the class did you find least helpful?
9. How could we improve this class?
10. Do you plan to do anything differently when delivering babies as a result of this class?  
Yes  
No
11. If YES, which parts of the class will you incorporate into your practices when delivering babies?
12. Are there any subjects of skills you would like us to teach in the future?
13. Any other suggestions or comments



NeoNatalie Training Model

laerdalglobalhealth.com



HBB Action Plan

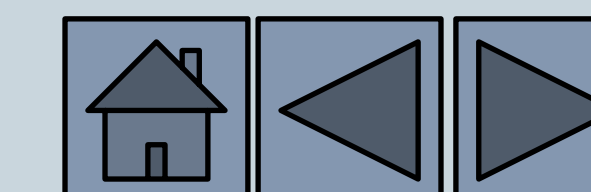
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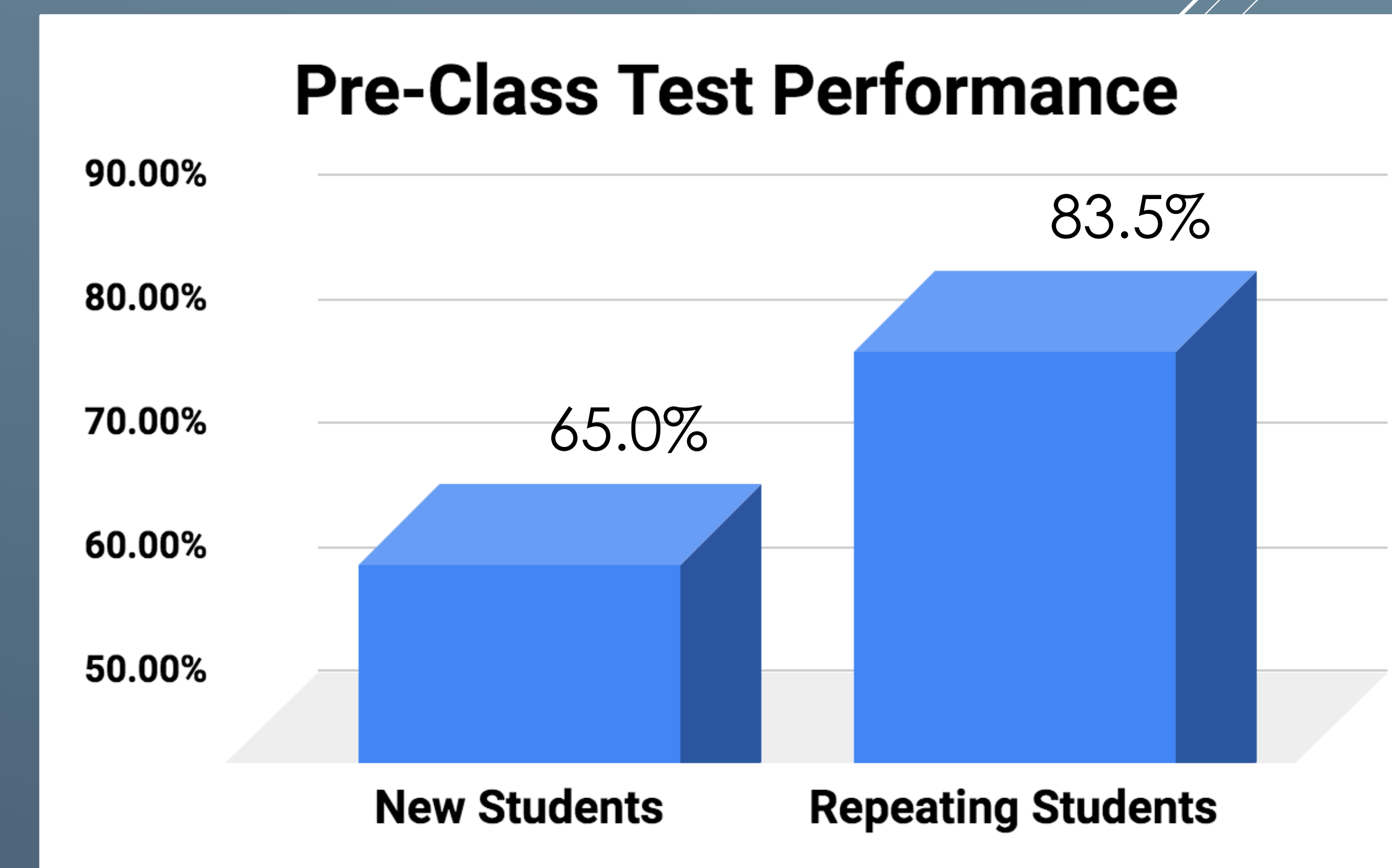
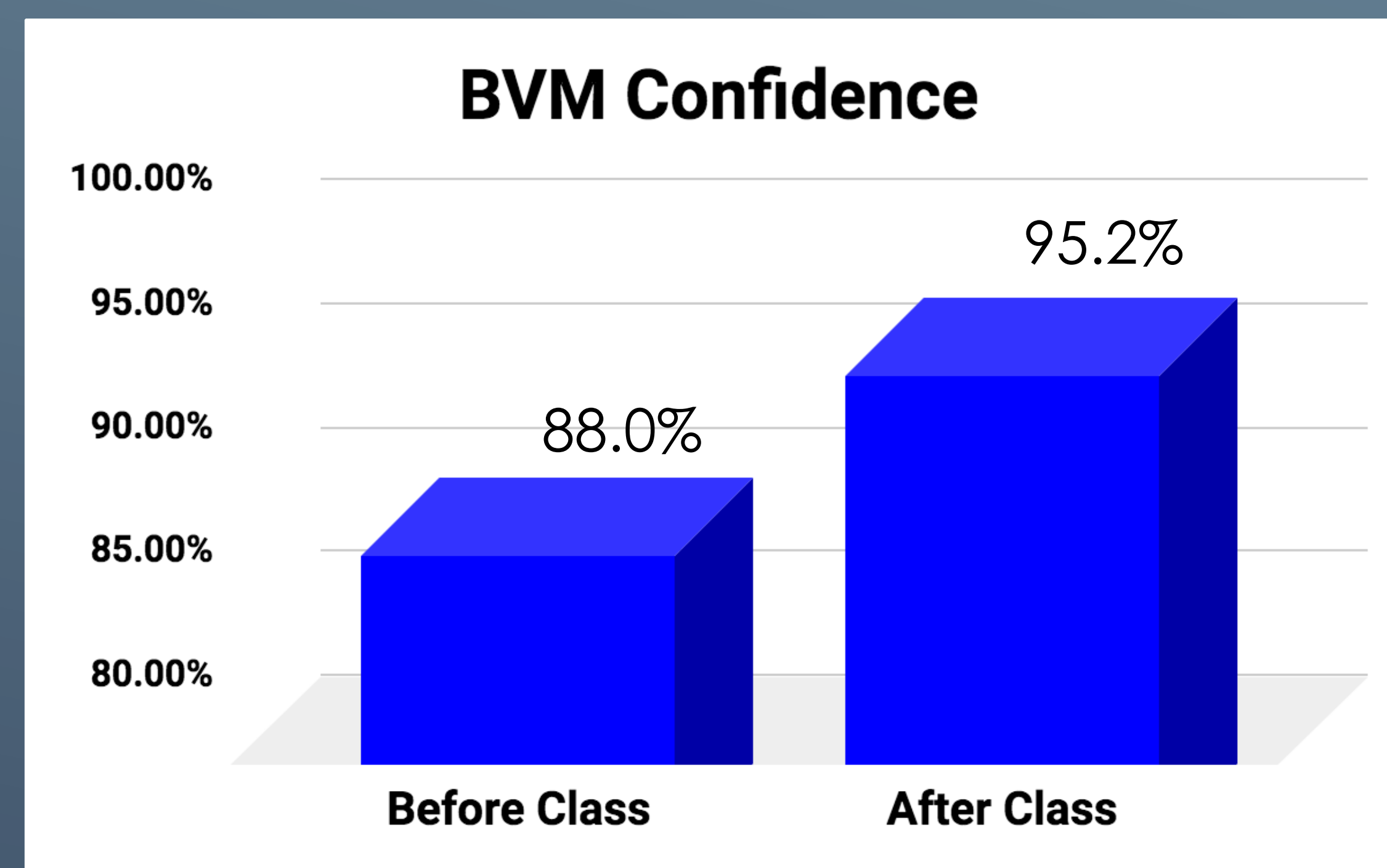
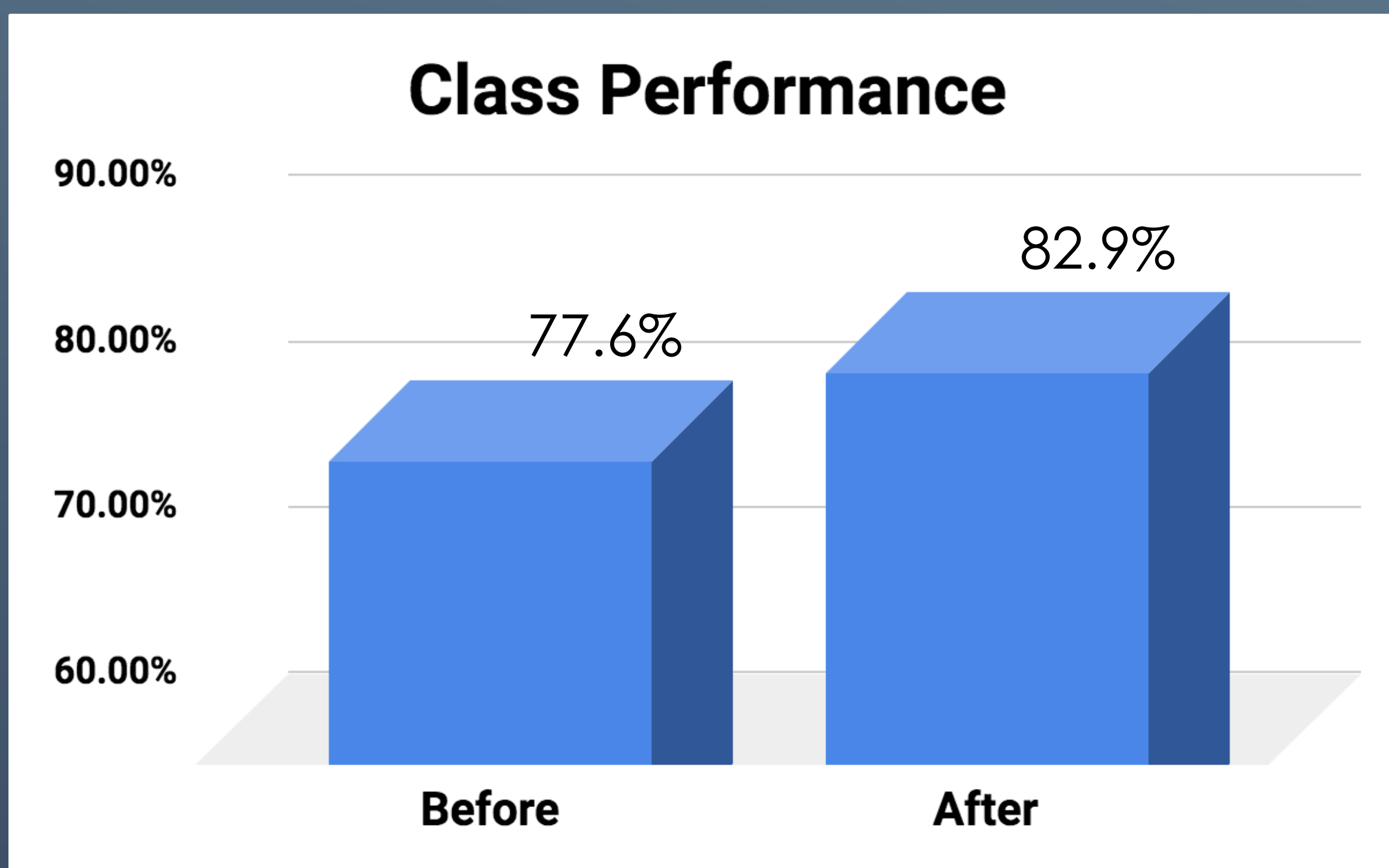
## RESULTS

	Score Before Class	Score After Class
Average	3.88 (77.6%)	4.14 (82.9%)
Standard Deviation	0.881 (17.6%)	0.829 (16.6%)
N	25	21*

	Confident Before Class	Confident After Class
Average	88.0%	95.2%
N	25	21*

\*4 students left the class prior to filling out a post-class survey

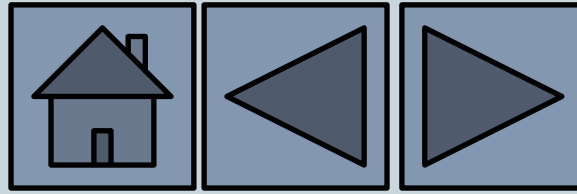
	New Students Pretest Score	Returning Students
Average	3.25 (65.0%)	4.17 (83.5%)
Standard Deviation	0.707 (14.0%)	0.809 (16.2%)
N	8	17



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## ONGOING DATA

	2017	2018	2019
Increase in class performance	+18.5% (70.1% → 88.6%)	+18.1% (72.5% → 90.6%)	+5.3%* (77.6% → 82.9%)
Confidence gained	24% (71.7% → 95.7%)	5.8% (89.6% → 94.5%)	7.2% (88.0% → 95.2%)
Class usefulness	100%	97.9%	95.2%
N	46	96	25

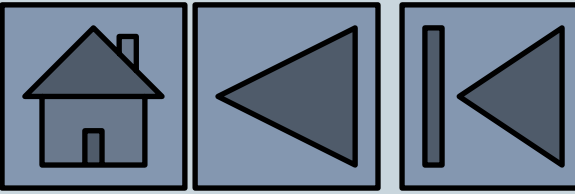
\*Net increase in class performance was lower in 2019, likely due to the fact that 68% of the 2019 students had previously taken HBB courses. This difference can be seen in the trend of higher pre-class performance scores each year. Future classes will likely follow this trend as HBB continues to improve local neonatal resuscitation skills.



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## CONCLUSION

This study suggests that HBB courses increase proficiency and confidence in performing neonatal resuscitation. The goal of previous research teams was to eventually train all nursing students, maternity ward nurses, and midwives at the Shirati KMT Hospital. This year the goal was to advance that process by establishing a self-sustaining HBB program in Shirati, Tanzania.

Local practitioners were identified and provided with 1:1 training to become instructors, enabling the HBB program in Shirati to be self-sustaining. Ongoing work will focus on increasing the number of attendees and continuing to train local staff to independently and consistently teach HBB courses.

The introduction of additional programs from the AAP's HBS curriculum, such as Essential Care for Small Babies (ECSB), could further improve infant survival and provides a future direction for more advanced education in neonatal care.

