

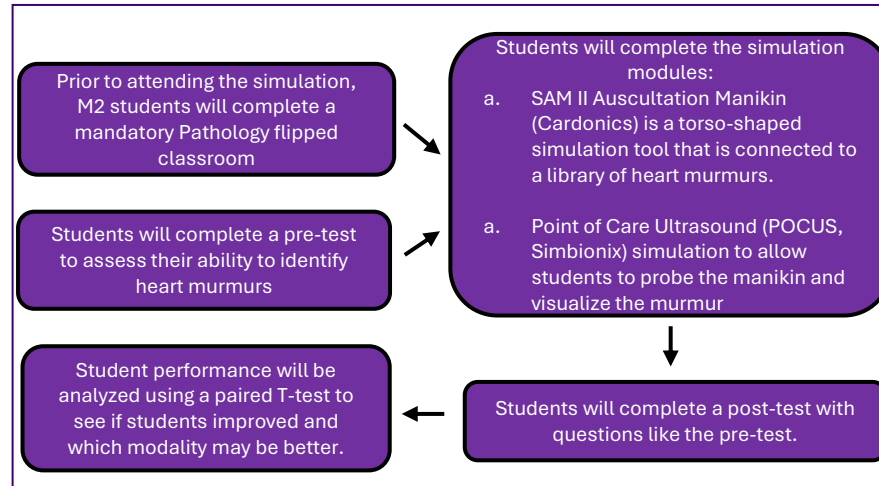
### Background

- The reported prevalence of cardiac murmurs in neonates is approximately 19.26 per every one-thousand live births.<sup>1</sup>
- Auscultation and ultrasound are some of the most important tools in the initial procedure for identifying a heart murmur.<sup>1</sup>
- Since the transition to pass/fail STEP 1 grading, medical schools have seen a decrease in student performance on STEP 1 and in rotations in the M3 and M4 years.<sup>2,3</sup>
  - Historically, the cardiology section has underperformed other sections, not only at Brody but also nationally.<sup>2,3</sup>
  - This trend is seen not only on Brody made assessments but also on STEP 1.
- Students can expect to have questions related to heart murmurs and their clinical presentation on Brody assessments and USLME STEP 1.
  - These types of questions will require students to listen to or visualize a heart murmur and relate it to a clinical scenario stem.
- Clinical simulation has been shown to improve basic science curriculum and is effective at long term retention. Self-directed simulation may also help supplement student learning and help alleviate faculty burden.

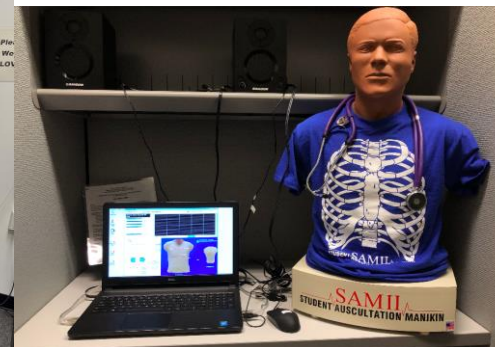
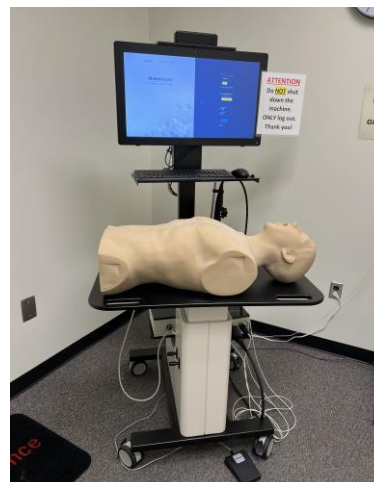
### Purpose Statement

- The purpose of this project is to explore the need for supplemental resources in the cardiology unit at the Brody School of Medicine and to specifically assess if an auscultation and ultrasound simulation may be useful in helping students apply their understanding of heart murmurs to clinical scenarios.
- This study will also explore if auscultation or ultrasound simulations are better for student material mastery.
  - Recent studies have shown that ultrasound may be more useful for long term retention.
  - It's utility in the identification of the pathology underlying heart murmurs for M2 students prior to STEP 1 has yet to be explored.

### Methods



### Symbionix Ultrasound Simulator and Cardonics SAM II Simulation Tool



### Possible Pre and Post-test Questions

1. An 82-year-old man is brought to the emergency department by ambulance after fainting at home. His vital signs are:

Temperature: 99 °F  
Pulse: 115  
Blood pressure rate: 25

His wife reports that he was hospitalized for a heart attack last week. On physical examination, he appears weak, pale, short of breath. Auscultation reveals bilateral rales, and a new holosystolic murmur at the apex of the heart radiating to the axilla. What is the most likely cause of this murmur.

2. A newborn infant is being examined. He is acyanotic. He cries when he is not being swaddled during the examination. Cardiac auscultation reveals a murmur (there will be an added audio clip). The physician prescribes indomethacin and on follow-up examination the murmur has disappeared. What is the most likely embryological origin of the vessel that is targeted by this therapy.

### Conclusions and Next Steps

- The module will be implemented in early September.
  - The goal will be for the module to run in the weeks after the pathology thread congenital heart disease flipped classroom.
  - Content will complement and illustrate concepts covered during the flipped classroom.
  - The module will be entirely self-directed.
  - A follow-up survey on module utility will be implemented after completion of Step 1.
- The greatest concern will be student participation since it is a voluntary session.

### References and Acknowledgments



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