

# Integration of Formative Pathophysiology Assessment into the Phase 1, Year 1 Cardiovascular Medicine Course at Dartmouth's Geisel School of Medicine



PRESENTER:  
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## BACKGROUND

- The cardiovascular medicine course was redesigned in 2019, concurrent with the larger curricular restructuring project at Geisel. Physiology and pathophysiology were integrated for the first time.
- Course evaluations from the first class of students to experience this integrated design reflected a strong desire for more formative assessments, particularly in pathophysiology.
- Educational research supports regular formative assessment; active recall tasks improve retention.

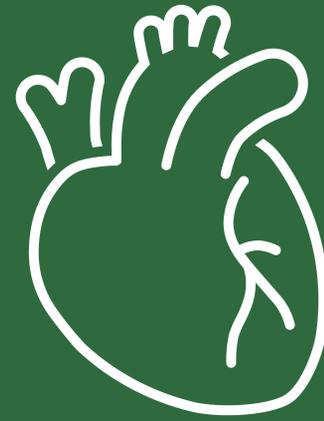
## METHODS

- Reviewed student course evaluations
- Reviewed course objectives and the required text to identify key competencies
- Compared objectives with board prep materials to identify common themes
- Drafted quiz questions and explanations
- Met with course directors to review drafts

## RESULTS

Our team produced 6 Canvas-based formative assessments covering cardiovascular disease. Each thematically-driven quiz assesses student understanding of one pathophysiology topic, including:

- Arrhythmias
- Congenital heart disease
- Heart Failure and cardiomyopathy
- Hypertension
- Ischemic heart disease
- Valvular disease



A patient presents following **one week** of worsening fatigue and dyspnea on exertion. Her history is notably for **prior breast cancer treatment**. Bilateral rales are heard on pulmonary exam. Cardiac auscultation reveals leftward **displacement of the PMI and an S3 gallop**. CXR shows an enlarged heart. What would be the **most appropriate imaging study** to do next and what would it be expected to show?

Example – Heart Failure & Cardiomyopathy

## DISCUSSION

This project was intended to develop a new tool that supports student learning, gauges content mastery before summative assessments, and provides feedback to faculty/course directors.

The assessments are meant to grow with the course and adapt to student and faculty need over time. Now that we have a basic instrument for assessing mastery of essential pathophysiology, future iterations may focus more on integration between topics and longitudinal review. Examples include:

- Questions from longitudinal curricula (e.g., Race & Health Equity, Imaging) to better assess performance across domains.
- Integration of cross-curricular spiraled review into quiz questions (e.g., infectious disease, hematology, and biochemistry).
- Questions that highlight physical exam maneuvers and patient interview techniques specific to assessing cardiovascular health.

## REFERENCES

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