Review of: "Development of a Curriculum for Emergency Physicians to Teach Transesophageal Echocardiography for Cardiac Arrests: A Kern Six-Step Model"

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Potential competing interests: No potential competing interests to declare.

The paper under review presents a curriculum designed to train emergency physicians (EPs) in the use of focused transesophageal echocardiography (TEE) for managing out-of-hospital cardiac arrests (OHCAs). This curriculum is based on the Kern model, a structured approach for curriculum development in medical education. The paper is thorough in its approach, detailing each step of the Kern model and its application to this educational need. However, while the paper demonstrates significant strengths, there are areas that could benefit from further improvement.

Strengths

Comprehensive Framework: The use of the Kern model provides a robust and systematic approach to curriculum development. Each of the six steps is well-defined and logically sequenced, ensuring that the curriculum addresses both general and specific needs effectively.

Evidence-Based Content: The curriculum is grounded in the American College of Emergency Physicians' (ACEP) guidelines, ensuring that the educational content is relevant and up-to-date. The emphasis on three specific TEE views aligns with ACEP's standards, providing a clear focus for the training program.

Combination of Learning Modalities: The integration of asynchronous pre-didactic learning, didactic sessions, and simulation-based education is commendable. This multimodal approach caters to different learning styles and reinforces both theoretical knowledge and practical skills.

Focus on Practical Application: The curriculum's emphasis on practical, hands-on training through high-fidelity simulations is a significant strength. This approach is likely to enhance the psychomotor skills required for effective TEE use in emergency settings.

Evaluation Strategies: The paper outlines both formative and summative evaluation methods, which are crucial for assessing the effectiveness of the training program and the competency of the trainees.

Areas for Improvement

Detailed Needs Assessment: While the general and targeted needs assessments are described, the paper could benefit from a more detailed analysis of the existing knowledge and skills of the target audience. Understanding the baseline proficiency of EPs in transthoracic echocardiography (TTE) and their familiarity with ultrasound principles would help tailor

the curriculum more precisely.

Incorporation of Image Interpretation Training: The ACEP's assumption that EPs proficient in TTE do not require extensive training in TEE image interpretation might not hold true universally. The curriculum should include more comprehensive training in image interpretation to address potential gaps in knowledge, as supported by the literature indicating discrepancies between image acquisition and interpretation skills.

Pilot Testing and Feedback Integration: The paper suggests piloting the curriculum but does not provide details on how feedback from these pilots will be systematically collected and integrated into the curriculum. A structured feedback mechanism would ensure continuous improvement and refinement of the program.

Resource Allocation and Feasibility: While the paper mentions the need for resources such as high-fidelity simulators, it lacks a detailed plan for resource allocation and funding. A more explicit discussion of the feasibility, cost considerations, and potential funding sources would strengthen the implementation plan.

Long-Term Skill Retention and Impact: The paper could elaborate more on strategies for ensuring long-term retention of TEE skills and the overall impact of the curriculum on patient outcomes. Follow-up assessments and continuous education modules could be proposed to address skill decay over time.

Train-the-Trainer Model: The conclusion emphasizes the train-the-trainer approach, but the paper does not provide specific strategies for training and certifying trainers. A detailed plan for the selection, training, and evaluation of trainers would enhance the scalability and sustainability of the program.

The development of a curriculum based on the Kern model to teach EPs the use of focused TEE for managing OHCAs is a well-conceived and necessary educational initiative. The strengths of this paper lie in its structured approach, evidence-based content, and practical focus. However, areas such as detailed needs assessment, comprehensive image interpretation training, structured feedback mechanisms, resource allocation, long-term skill retention strategies, and the train-the-trainer model need further elaboration and improvement. Addressing these areas will enhance the curriculum's effectiveness, feasibility, and impact on emergency medical practice.