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Implementation and outcomes of a multi-specialty point-of-care ultrasound (POCUS)-focused anatomy and pathology integration lab for OHSU School of Medicine (SOM) students

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Keywords

Ultrasonography; Curriculum; Education, Medical, Undergraduate;ultrasound curriculum; basic science integration; pre-clinical phase curriculum

Abstract

Innovation/Goal: To enhance SOM students' ability to integrate anatomy and pathology during the pre-clinical phase Developing Human block (DEVH), we implemented the SOM's first combined lab incorporating point-of-care ultrasound (POCUS) and pathology in an active simulation center environment.

Background: Hands-on ultrasound training enhances medical students' anatomy understanding and radiology skills.1,2 In surveys and course evaluations, SOM students identified a curricular gap in integrating some foundational sciences with clinical content, including areas of anatomy and pathology. The SOM's pre-clinical curriculum has not previously had required POCUS learning sessions; this created an opportunity for use of POCUS to help solidify anatomy. DEVH, centered on reproductive anatomy, physiology, and pathology, lacked active learning labs to integrate basic science content. To bridge this gap and enhance student understanding of reproductive anatomy, pathology, and POCUS, we developed an integrated active-learning session for second-year SOM students during the 2024 DEVH block. The session aimed to provide hands-on experience while reinforcing interdisciplinary connections and concepts.

Methods: We identified DEVH areas where reproductive imaging could highlight key anatomical concepts taught in lab and lectures, as well as having high-yield pathological correlates. Eight focus areas were identified: prostate disease, inguinal hernias, pre- and post-menopausal bleeding, ovarian tumors, molar pregnancies, breast masses, and testicular masses. Eight stations were created: four included hands-on POCUS scanning and pathology images, while four used tablet-based radiology and pathology imaging. Faculty members from POCUS, radiology, and pathology facilitated the 8 stations, with standardized patients assisting at scanning stations. Two 2-hour required sessions were held in the Multnomah Pavillion simulation center, with students rotating through 13-minute stations. Students completed an end-of-lab activity evaluation that included

seven 5-point Likert-scale questions about the lab's utility and usefulness to learning and two open-ended questions on lab highlights and areas for improvement. We reviewed feedback for descriptive statistics and qualitative themes.

Findings/Results: Of 147 attendees, 117 (79.6%) completed evaluations. Of the 117 responses, 105 (90%) were positive. Most students agreed or strongly agreed the lab: 1) improved integration of DEVH content (96%); 2) was a productive use of block time (93%); and 3) provided valuable POCUS skills (94%). Students expressed a desire for more integration labs (95%). Feedback highlighted issues with organization, feeling rushed, and insufficient station space. Students valued hands-on learning, ultrasound exposure, reviewing/ correlating pathology content, and faculty-led instruction.

Impact/Applications: Our integrated pre-clinical phase lab, incorporating anatomy, POCUS, and pathology, provided SOM students with an opportunity to consolidate block material and learn new practical radiology skills. Despite logistical challenges, such as timing, space, and staffing, it provided high-yield foundational basic science learning, and increased student confidence for clinical rotations. Plans for next year include streamlining the schedule and including fewer stations, with more time at each. We also plan to adjust the location and set up of the lab so that students have a better learning environment. Staffing challenges will be improved by early recruitment and expanding the facilitator pool. This lab's format is translatable and replicable for other SOM pre-clinical phase blocks that incorporate anatomy and pathology content.

Learning Outcomes

1. Identify opportunities to utilize POCUS training in undergraduate medical education
2. Describe the benefit of integrating multiple threads of a pre-clinical phase curriculum in an active learning environment
3. Identify challenges that arise from creating a multi-specialty simulation-center based learning activity and suggest solutions

References

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