Lecture summaries

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Basic POCUS in Emergency and Critical Care

Point-of-care ultrasound (POCUS) is an essential tool in emergency and critical care medicine, enabling rapid and standardized assessment of unstable patients. Abdominal and thoracic POCUS allow early detection of free fluid, pleural and pericardial effusions, pneumothorax, and pulmonary pathology. These non-invasive, repeatable examinations support triage, monitoring, and clinical decision-making in both traumatic and non-traumatic conditions. POCUS provides clinically meaningful information, improves patient management, and can be reliably performed by non-imaging clinicians in emergency and intensive care settings.

Learning goals

1. Understand the principles and indications of POCUS in emergency and critical care.
2. Perform a structured abdominal and thoracic POCUS examination.
3. Recognize normal and abnormal POCUS findings.
4. Interpret POCUS results within the clinical context.
5. Use POCUS for triage, monitoring, and follow-up.

AI Assisted Imaging: Is There a Place in POCUS Yet?

Artificial intelligence (AI) is increasingly integrated into point-of-care ultrasound (POCUS), mainly through probe guidance, image quality feedback, automated measurements, and focused detection tasks such as cardiac function assessment and B-line quantification. Current evidence shows that AI-assisted POCUS can improve accessibility, consistency, and efficiency, particularly in acute care and cardiopulmonary applications. However, performance remains highly dependent on image quality, model generalizability, and clinical validation. Available data, including veterinary emergency and critical care studies, support AI as a complementary decision-support tool rather than a replacement for clinician expertise.

Learning goals

1. Describe current AI applications in POCUS, including guidance, automation, and interpretation support.
2. Understand the potential benefits of AI-assisted POCUS in emergency and critical care.
3. Identify the main limitations and risks associated with AI use in POCUS.
4. Summarize available clinical and veterinary evidence supporting AI-assisted POCUS.
5. Define the appropriate role of AI as an adjunct to clinician-performed POCUS.