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### **“Accuracy of Emergency Medicine Resident Performed Point-of-Care Ultrasound”**

**OBJECTIVES:** The objective of this study is to uncover the accuracy and proficiency of Emergency Medicine (EM) residents at Point-of-Care Ultrasound (POCUS) at a high-volume, urban, academic emergency department.

**BACKGROUND:** POCUS, a non-invasive diagnostic tool used by EM physicians, has been shown to reduce lengths of hospital visits, decrease time to care, and increase cost-effectiveness. The utility of POCUS is so pronounced that EM physicians must show competency to complete their residency. Recent literature has shown POCUS teaching varies widely, competency prediction methods are inadequate, and EM residents use POCUS less often than attending EM physicians. These findings raise questions as to how residents develop proficiency in this field.

**METHODS:** A retrospective chart review was conducted on patients over 18 years of age presenting to the emergency department at University Medical Center in New Orleans, LA who had a POCUS interpreted by a resident from 12/1/2020 to 6/1/2021. Three POCUS modalities were examined including Focused Assessment with Sonography for Trauma (FAST), Cardiac, and Aorta. Patients who did not receive a gold standard confirmatory study were excluded. For each modality, the resident's interpretation of the POCUS was compared to the results from the confirmatory study, and sensitivity and specificity were computed using SAS 9.4. Also, the abdominal component of the FAST exam was stratified by the Post Graduate Year (PGY) of the interpreting resident.

**RESULTS:** The sample sizes for each modality are 405 for peritoneal fluid during FAST, 404 for pericardial fluid during FAST, 91 for pleural fluid during FAST, 99 for left ventricle systolic function, 86 for pericardial effusion, and 36 for abdominal aortic aneurysm. Respectively, the sensitivities and specificities for each modality is 70% and 95%; 0% and 99%; 33% and 99%; 91% and 63; 100% and 90%; and 83% and 100%. The sample sizes for the stratified abdominal FAST are 57 for PGY4, 59 for PGY3, 92 for PGY2, and 197 for PGY1. Respectively, the sensitivities and specificities for each academic year are 78% and 100%; 83% and 98%; 70% and 89%; and 61% and 96%.

**CONCLUSIONS:** In this study, residents performed POCUS with a sensitivity and specificity comparable to attending physicians for most of the modalities. Furthermore, residents obtained this competency early in their training. Discrepancies in detecting pericardial effusion on FAST exams and during cardiac exams can be attributed to a lack of patients presenting with such pathology, highlighting the importance of adequate training opportunities for residents. Resident directors should supplement the current minimum scan requirement with simulations where residents can practice interpreting images with these pathologies.