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Point-of-Care Ultrasound Cardiac Activity Definition

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Methods: This is a retrospective observational review of FOCUS examinations obtained over one year at a large, tertiary care, pediatric emergency department. Images were obtained and immediately interpreted by PEM physicians and learners, then retrospectively reviewed for quality assurance (QA) by EM physicians fellowship-trained in ultrasonography. Acquired images were assessed by three pediatric cardiologists for image quality and interpretation. The electronic medical record was reviewed to determine patient presentations and outcomes.

Results: We reviewed 558 patient charts evaluated by an EM QA sonographer. Our cardiologists reviewed 384 sets of FOCUS images that met inclusion criteria; the majority of exclusions were due to incomplete documentation. The average patient age was 9.57 ± 4.92 years, and 195 (50.8%) patients were male. Many patients (42.2%) had no significant medical history, and the most common chief complaint was chest pain or discomfort (24.7%). The average assessment of image quality via Likert scale rating by the cardiologist was 2.96 ± 0.71 while the EM QA assessment was significantly higher at 3.39 ± 0.59 ($p < 0.0001$). The inter-class correlation coefficient (ICC) among the cardiology reviewers was 0.75. The cardiologists found abnormalities in 7.8% of studies, and the PEM physicians in 8.7%. Of these studies, the most common pathology was pericardial effusion. Comprehensive echocardiograms were obtained in 31 (8.1%) patients, while cardiologists recommended additional imaging in 35 (9.1%).

Conclusion: Although there was no comparative, significant difference between FOCUS interpretation and clinical outcome, image quality was the prevailing barrier to overall assessment. These findings help to understand mitigating factors for FOCUS acceptance by other subspecialties.

752 | Point-of-care ultrasound cardiac activity definition

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Background and Objectives: Point-of-care ultrasound (POCUS) is frequently used in cardiac arrest to determine cardiac activity, guide resuscitation, and make medical decisions. Currently there is no agreed upon sonographic definition of cardiac activity, potentially leading to inconsistent interpretation of images in clinical practice. The primary objective of our study was to determine emergency physicians use of a definition of cardiac activity, and if a standardized definition would be desired. We also analyzed how providers use POCUS, apply their findings, and their level of confidence in utilizing ultrasound in this patient population.

Methods: A review of the POCUS literature identified varying definitions of cardiac activity and used to create a cross-sectional convenience survey. All (73) emergency medicine attendings, fellows, and residents from the Medical College of Wisconsin Affiliated Hospitals Emergency Medicine program were invited to complete an online survey about definitions of cardiac activity, POCUS use, scanning techniques, and confidence when evaluating a patient in cardiac arrest. Descriptive statistics and Spearman correlations of survey data generated with IBM® SPSS® 24.0.

Results: A total of 45 of 73 participants (62%) participated. Forty-three (96%) used POCUS to assess patients during cardiac arrest. Most POCUS use occurred during pulse checks (84%) to assess for the presence or absence of cardiac activity, however, there was no consensus definition of cardiac activity among participants. There was a weak correlation (rs = 0.248, $p = 0.108$) between provider confidence (median (interquartile range) = 7.0 (2.0), max = 10) and determining cardiac activity. Eighty-nine percent believe a standard definition would be helpful.

Conclusion: Most providers use POCUS during cardiac arrest and to assess for cardiac activity, yet there is no agreed upon definition. A standard definition of cardiac activity would improve clinical decision-making and provider confidence with POCUS in cardiac arrest.

753 | Point-of-care echo prior to chest pain observation unit admission

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Background and Objectives: Chest pain is one of the most common reasons for emergency department (ED) visits. In response to guidelines from the American Heart Association/American College of Cardiology, chest pain observation units (CPUs) offer relatively low-risk patients with chest pain prompt, comprehensive investigation with provocative testing and/or imaging. Scarce data exists on the role of point-of-care ultrasound echo (POCUS) on the selection, evaluation and management of CPU patients. Numerous case reports suggest alternative diagnoses and complications found during POCUS for patients presenting with chest pain. We planned to examine differences in outcomes for patients receiving POCUS prior to CPC admission.

Methods: Electronic health record data was collected from a cohort of patients with an index visit between 01/2013 and 05/2018 to a CPU within an ED in a large academic, tertiary care hospital in the Northeast. All adults >18 years old with angina equivalent symptoms admitted to an ED CPU with height and weight data were included ($n = 7,092$). Patients receiving POCUS during their ED evaluation were identified. Linear and logistic regression was used to examine the association between completion of POCUS and patient outcomes, such as length of stay, admission rate, abnormal stress, composite major adverse cardiovascular event (MACE) and mortality.

Results: A total of 7093 patients were evaluated in the CPU, with 748 (10%) receiving POCUS. There was no difference between the two