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“Using Focused Bedside Echocardiology to Evaluate for PE in the Unstable Patient”

Pulmonary embolism (PE) is a potentially life-threatening disorder that can be challenging to diagnose and treat. A focused cardiac ultrasound (FOCUS) of the right heart can be used at the bedside to assist in the diagnosis and prognosis of PE; particularly in critically ill patients¹. FOCUS evaluation may include evaluating right heart enlargement, hypokinesis (including septal flattening and McConnell’s sign), and tricuspid regurgitation. More recently, analysis of the longitudinal motion of the tricuspid valve, a technique known as tricuspid annular plane systolic excursion (TAPSE) has been studied. TAPSE has been used to accurately measure right heart function in many disease state and has most recently been used to evaluate patients with known PE in the emergency department (ED). TAPSE has been shown to be a more reliable and reproducible measure than some other FOCUS parameters.

We hypothesize that critically ill patients with PE will have evidence of right heart dysfunction on FOCUS. Definitive diagnostic imaging can be cumbersome in the emergent setting, and removing an ill patient from the ED for an unnecessary CTA may be harmful. The presence of acute renal failure, contrast allergy, or a resource limited setting may impede the use of CTA. The ability to significantly reduce the index of suspicion for PE rapidly at the bedside may help the clinician focus on other critical diagnoses.