Presentation Abstract

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Title: How Does Performing Bedside Ultrasound Impact Utilization Of Ct Scans In Critically Ill Patients With Undifferentiated Hypotension?

Authors: Hamid Shokoohi, Keith Boniface, Ali Pourmand, Yiju Teresa Liu, Melissa McCarthy, Kabir Yadav, Rasha Buhumaid, Mohammad Salimian. George Washington University, Washington, DC

Abstract: **Background:** CT imaging is a commonly used diagnostic test for critically ill patients, but exposes patients to ionizing radiation, requires transport out of the ED, and can be time-consuming. Utilization of bedside ultrasound (US) in the evaluation of critically-ill patients with undifferentiated hypotension can expedite assessment and has the potential to improve EM physicians' diagnostic certainty.
Objectives: To measure the impact of using bedside US on EM physicians' plan to utilize CT imaging for hypotensive patients. We hypothesized that CT utilization would increase after results of US protocol.
Methods: This is a sub-analysis of a prospective cohort study quantifying the impact of an US hypotension protocol (aorta, FAST, caval, cardiac, pneumothorax) on ED attending physicians' diagnostic uncertainty and resource utilization. That study enrolled a convenience sample of patients presenting with non-traumatic hypotension at an urban academic ED. Data collection included a probability-weighted differential diagnosis, critical therapies, and planned diagnostic testing including CT imaging. Physicians were surveyed immediately after initial evaluation, and surveyed again after the hypotension protocol was performed by an expert ED sonographer. Data included any change in plan to order CT scans after seeing the US results. Patients' inpatient course was also recorded, including inpatient performance of CT imaging and ultimate diagnosis.
Results: Of the 118 patients enrolled, ED physicians intended to perform CT in 47 (39.8%), and 18 (39.1%) yielded significant pathology. There was no significant change in the total number of planned CT scans before and after performing the US

protocol, however a change in the type of CT scans was observed in 26 of cases (22%), both from abdominal to chest, and vice versa. In 13 cases, an initially planned CT scan was cancelled as a result of the US; subsequent inpatient chart review showed that the cancelled scan did not lead to missed findings or an adverse event. In 13 cases (11%), a newly planned CT scan identified significant pathology. **Conclusion:** A bedside US protocol for patients with undifferentiated hypotension is not associated with an increase in CT utilization. The protocol is associated with a shift toward ordering CTs that is more likely to reveal pathology.

Society For Academic Emergency Medicine
2340 S. River Road, Suite 208
Des Plaines, IL 60018
Phone: 1-847-813-9823
Fax: 1-847-813-5450
Email: **General Inquiries**
OASIS Helpdesk