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Education

PATIENT PERCEPTIONS OF ULTRASOUND EDUCATIONAL SCANS IN THE EMERGENCY DEPARTMENT

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☐ **Abstract—Background: Emergency medicine residents may perform bedside ultrasound (BUS) scans that are carried out solely for educational purposes. This may lead to confusion on the part of patients, as the implications in the context of their medical care may be unclear. Study Objectives: We hypothesized that a scripted introduction would improve understanding of the objectives and limitations of educational BUS. Methods: A perceptual survey was completed by a prospectively enrolled convenience sample of patients in two emergency departments. In phase 1, fifty patients completed the survey after their educational BUS. During phase 2, sonographers were provided with a one-paragraph scripted introduction to use and 50 additional patients were recruited. Group data were analyzed using chi-squared tests, Kruskal-Wallis, and *t*-test. Results: There were no statistical differences in demographics between the two groups. The scripted introduction changed several survey responses by a statistically significant amount for questions including whether their clinician ordered the study, whether it was part of their medical care, and whether it would be part of their medical record ($p < 0.01$). The responses as to whether they would tell their doctor that they had an ultrasound done were not significantly changed by the script ($p = 0.86$). Conclusion: This study demonstrates that the use of a scripted introduction regarding the purpose of educational BUS improved patient understanding of the objectives and limitations of such scans. There were still areas where the scripted introduction did not change patient's perception of the educational BUS scan.** © **2014 Elsevier Inc.**

☐ **Keywords—ultrasound; education; emergency medicine; patient perceptions; bedside ultrasound**

INTRODUCTION

Bedside teaching has been an integral part of medical education since the origin of the profession. Bedside ultrasound (BUS) teaching as part of emergency medicine residency training is unique in that it may include imaging studies performed on patients solely for the purpose of educating residents in the various applications of emergency ultrasound ("educational scans"). Whereas most other learning in the emergency department (ED), for example, history-taking and procedures performed by residents or medical students, occurs in the context of direct medical care of the patient, ultrasound scans performed for teaching purposes may have no direct relevance to the patient's presenting complaint or medical evaluation.

Patient perceptions and understanding of these educational encounters likely vary, as these scans often are not clearly differentiated by the health care provider from scans that are performed for diagnostic or clinically indicated purposes. Although patients feel it is important for

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them to know their physician's level of training, a minority of them actually understand the hierarchy of the medical training system, particularly those patients with less than a high school level of education (1,2). Bedside teaching overall has enjoyed widespread acceptance by patients and is a critical component of medical education. The ED setting provides learners with excellent educational opportunities given the high volume and acuity (3). Emphasis has been placed on making patients comfortable during such teaching encounters, by ensuring that they understand the process and are not left with unanswered questions (4). It has been suggested that effective patient–doctor communication may play a role in improving patient health outcomes (5). Furthermore, a legal precedent has been set that liability can exist for the emotional distress caused by incorrect reassurance from a diagnostic imaging study despite a lack of physical negligence (6).

During a typical educational encounter at our institution, the resident approaches the patient, explains that they are learning to integrate ultrasound into patient care, and requests verbal consent to perform an educational BUS. The resident then performs the BUS on various parts of the patient's anatomy that may or may not be related to the chief complaint. During this process the resident is learning to identify certain structures and sonographic findings. If an abnormality is found, this information is shared with the treating emergency physician, who then makes a decision regarding management of the finding. When no gross abnormalities are found, such educational scans do not become part of the patient's medical record and no actions are taken based on the images obtained. Furthermore, ultrasound taught in the emergency setting may give only a limited evaluation of the patient's anatomy and, as such, should in no way be used to exclude various disease processes that may be further elucidated on a complete sonographic evaluation performed in the radiology department.

Importance

Frequently, the limitations of BUS are either not clearly explained to patients prior to performing the educational scan or patients may misunderstand their purpose. A concern therefore exists that patients may be discharged with a false sense of reassurance of a "clean bill of health."

Goals of This Investigation

Although studies have been published on patient perceptions of bedside teaching and on patients' perceptions of radiologic studies, to our knowledge there are no studies on patient understanding of the limitations of emergency BUS, especially in the setting of a purely educational scan that is not clinically indicated (7,8). Our primary objective in this study was to evaluate patient understanding of educational BUS examinations with the primary outcome of a statistically significant change in survey answers prior to and after utilizing a standardized scripted introduction.

MATERIALS AND METHODS

Study Design and Setting

We conducted a prospective convenience study at two large urban teaching hospitals with both an emergency medicine residency as well as an emergency ultrasound fellowship. Resident physicians perform educational BUS examinations during their required ultrasound rotation. The Institutional Review Board approved this study.

Selection of Participants

Patients are usually selected for educational scans based on their estimated time in the department, minimal interference with medical care, level of distress (i.e., patients able to tolerate the scan without increasing discomfort), and willingness to participate. All patients who gave consent to participate were included in the data analysis. Patients younger than 18 years, prisoners, patients in acute distress, and those not literate in English were excluded.

Interventions

The study took place in two phases. During phase 1, residents were not prompted how to approach the patient or what to say prior to performing the BUS examination. During this phase, 50 patients were enrolled and completed the survey after their bedside evaluation. During phase 2 of the study, residents performing the BUS were given a scripted introduction to use when explaining the purpose of the educational BUS scan:

> "I am part of the ultrasound team here in the emergency department. I am learning how to ultrasound different parts of the human body. This is not part of your medical care, but for my learning. The doctor taking care of you today did not order this scan and it will not be part of your medical record. If I do find something abnormal I will let you and your doctor know, however, ultrasound can only look at the big picture and can not always tell if there is something wrong with the body part that we are scanning."

Methods and Measurements

Resident sonographers were asked to let one of the study coordinators know after they had performed an educational BUS. The resident sonographers were not made