

Time Required to Perform Point-of-Care Ultrasound in an Academic Nephrology Hospital Service



To the Editor: Point-of-care ultrasound (POCUS) is a real-time exam performed and interpreted by a treating physician at the time of a clinical encounter to answer a focused clinical question. In nephrology, POCUS is most used to identify kidney pathology and assess volume status.^{1,2} A recent survey by the nephrology fellowship training program directors and nephrology fellows revealed that only 38% of fellows received POCUS education during fellowship.³ POCUS has failed to gain traction in nephrology education and practice due to a lack of available educators, the expense of equipment, and a perceived lack of time. This study aims to quantify the time spent performing POCUS and assess diagnostic accuracy in the hands of a trained nephrologist in the inpatient setting ([Supplementary Methods](#)).

RESULTS

During the 2-week period of the study, 24 POCUS studies were performed. Eight kidney, 20 lung, and 14 cardiac studies were performed as indicated. The average duration of the studies was 4.7 minutes (± 2.3). Of the cases, 28% (7/24) had a formal study pending at

the time of the POCUS examination. Of these cases, 100% (7/7) of the POCUS exams correlated with the subsequent formal report ([Table 1](#)). Out of all 24 studies, POCUS results helped to guide management in 33% (8/24) of cases. The adjustments included diuretics (5/8), fluids (2/8), and midodrine/albumin (1/8).

DISCUSSION

We have demonstrated that POCUS can answer basic clinical questions without significant additional time required during rounds. For assessing binary questions such as volume status or hydronephrosis, we found that POCUS examinations could broadly correlate with official radiographic studies in 7/7 (100%) of cases. A prospective observational study done in the emergency department revealed a sensitivity and specificity of approximately 70% for identifying hydronephrosis in patients presenting with renal colic.⁴ Similarly, in the evaluation of acute dyspnea in the emergency department, POCUS showed a concordance of greater than 70% with radiographic studies.⁵ Our reported time per study (4.6 minutes) was comparable to the length achieved by nephrologists (5 minutes).⁶ Although the implementation of POCUS into nephrology training is feasible based on this study, further efforts must be made to eliminate barriers to training.

DISCLOSURE

All the authors declared no competing interests.

SUPPLEMENTARY MATERIAL

[Supplementary File \(PDF\)](#)
[Supplementary Methods](#).

Table 1. Nephrologist performed POCUS examinations compared to formal radiology study

Age	Patient sex	Reason for consult	Time POCUS done	Time and type of formal Study	POCUS result	Formal study result	Agree with POCUS
59	M	AKI	9:07	Kidney US at 9:33	No hydronephrosis	No hydronephrosis; small volume ascites	Yes
52	F	AKI on CKD	7:25	Kidney US at 9:22	Right kidney transplant; No hydronephrosis	No hydronephrosis	Yes
39	M	AKI	14:23	CT Chest at 16:04	clear on right but large effusion of left	Large loculated left pleural effusion	Yes
61	F	AKI	12:29	CT Chest at 11:01 (the following day)	B-Line pattern	Bilateral upper lung predominant peripheral reticular opacities; Small pleural effusion.	Yes
97	F	AKI on CKD	8:53	CT Chest at 16:31	Bilateral B-line pattern	Small bilateral pleural effusions	Yes
79	F	AKI on CKD	8:46	CXR at 13:51	Scattered B lines with irregular pleura	Interstitial pulmonary edema; Persistent small bilateral pleural effusions	Yes
44	M	AKI on CKD	6:57	Renal US at 14:00	No hydronephrosis	Increased renal echogenicity, suggesting medical renal disease. No hydronephrosis	Yes

AKI, acute kidney injury; CKD, chronic kidney disease; CT, computed tomography; CXR, chest x-ray; F, Female; M, Male; POCUS, point-of-care ultrasound; US, ultrasound.

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