

# Introducing Point-Of-Care Ultrasound for Volume Assessment to the Noon Conference Series



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## Introduction

- Point-of-care ultrasound is becoming cheaper, more accessible, and easier to use
- Interest in point-of-care ultrasound for internal medicine residents has been known since 2010<sup>1</sup>
- Multiple studies that have investigated the volume exam often included small sample sizes, limited generalizability, and often showed sensitivities of less than 50%<sup>2</sup>
- Only 35% of surveyed internal medicine program directors reported that their programs provided formal ultrasound training to all their residents and 28% provided formal ultrasound training to some but not all their residents<sup>3</sup>
- There is a growing point-of-care ultrasound curriculum being developed for the Internal Medicine residency for which lectures and other educational tools need to be developed

## Methods

- A workshop was conducted for the noon conference series as part of the point-of-care ultrasound curriculum
- The topics of this workshop included the biostatistical qualities of the volume exam (JVD, lower extremity edema, crackles, etc.), an introduction to the volume focused ultrasound assessment (JVD ultrasound, IVC ultrasound, pulmonary A and B lines, and VEXUS (Volume Excess Ultrasound) scan) and cases to reinforce the topics
- A pre and post workshop survey were completed by participants
- Survey questions included year of training (medical student, PGY1, PGY2, etc.), knowledge-based questions about ultrasound, and a 5-point Likert scale to assess participants confidence with volume assessment and ultrasound assessment
- Likert questions were evaluated with a two-sample equal variance T-test

## Results

- 16 pre-workshop and 19 post-workshop surveys were completed
- 50% of participants reported having an ultrasound curriculum at their medical school

	Percent
3 <sup>rd</sup> Year Medical Student	12.5
4 <sup>th</sup> Year Medical Student	6.25
PGY-1	37.5
PGY-2	6.25
PGY-3/4	31.25
Did not answer	6.25

Figure 1: Level of training of participants

	Pre-workshop survey	Post-workshop survey	p value
Confidence with Volume Assessment	2.75 ± 0.68	2.95 ± 0.71	0.41
Confidence with IVC Ultrasound	2.19 ± 1.05	2.68 ± 0.95	0.15
Confidence with Differentiating A Lines and B Lines on Lung Ultrasound	2 ± 1.21	3.47 ± 1.12	0.0007

Figure 2: Mean confidence with standard deviation for volume assessment, IVC ultrasound, and lung A and B lines measured on a 5-point Likert scale

	Pre-workshop survey	Post-workshop survey
Biostatistics for volume assessment	18.75	42.1
Ultrasound finding for JVD	25	97.4
The components of VEXUS	81.25	94.7

Figure 3: Percent correct for knowledge-based questions on pre-workshop and post-workshop surveys

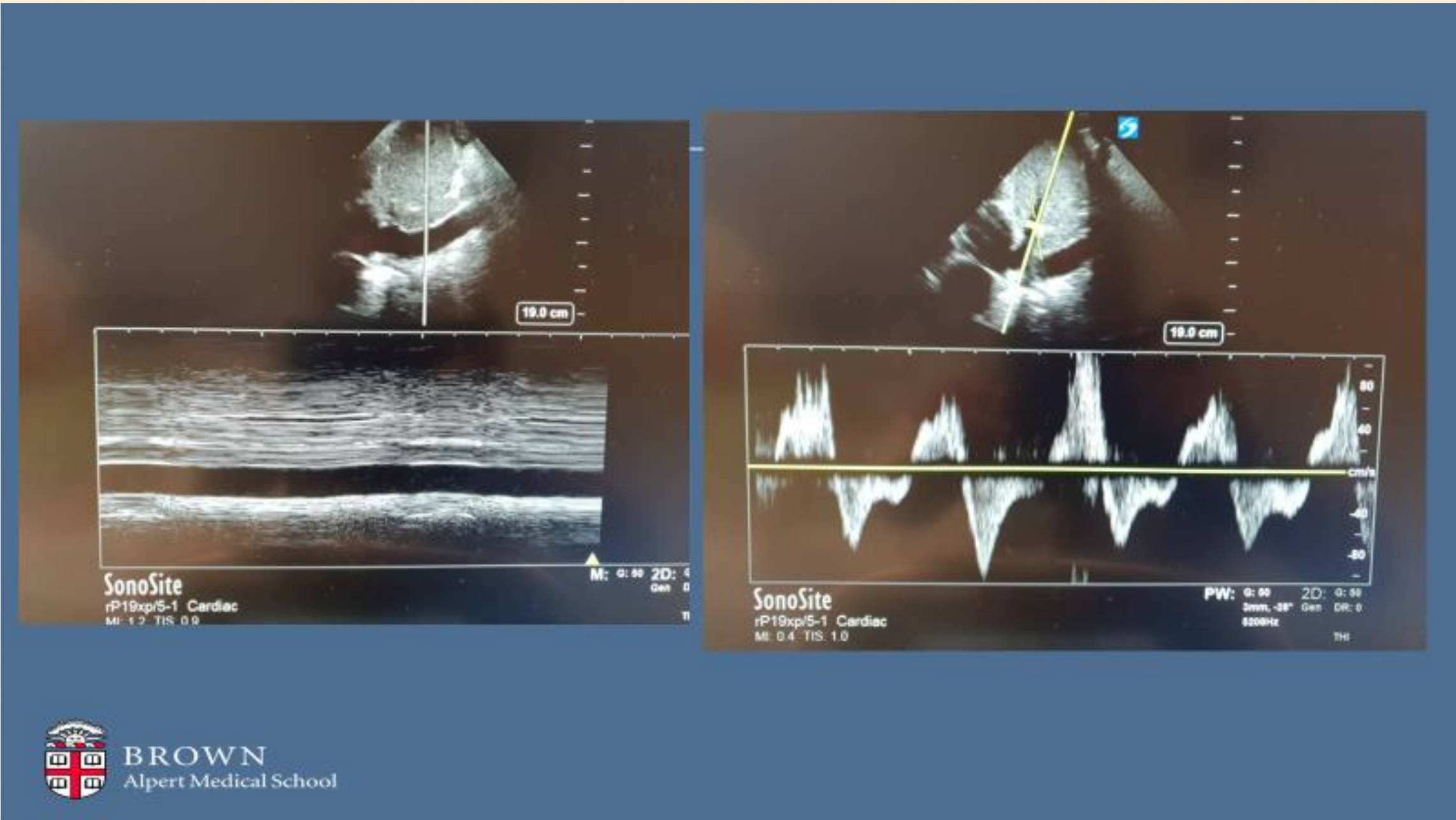


Figure 4: Slide demonstrating IVC ultrasound and hepatic vein doppler

## Discussion

- Participants ranged from interns, junior and senior residents, to medical students
- On average, participants reported increased confidence with the volume and point-of-care ultrasound exams
- There was a statistically significant increase in confidence for differentiating A and B lines on lung ultrasound
- Participants had a higher chance of selecting the correct answer on knowledge-based questions following the workshop
- Limitations include unequal amount of pre and post workshop surveys, number of participants, lack of practical time with the ultrasound

## Conclusion

- There is a growing need for learning materials for the Ultrasound Curriculum
- Further work should include didactic but also practical teaching along with identifying knowledge gaps for further lectures

## Selected References

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