

All Together Now! A Mixed-methods Evaluation of Interprofessional Point-of-Care Ultrasound Training

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Background

- Point-of-care ultrasound (POCUS) refers to the use of portable ultrasound technology by clinicians to make real-time management decisions.
- POCUS education is rapidly expanding in medical schools (1) and internal medicine (IM) residency programs (2), but lack of trained faculty is a major barrier to broader adaptation (1-2).
- Interprofessional education (IPE) (3) and peer-led teaching (4-5) have potential advantages to standard, faculty-led teaching, including curricular sustainability when teaching resources are limited.

Intervention

- Participants: First-year internal medicine (IM) residents (n=24)
- Coaches: Diagnostic Medical Sonography (DMS) students (n=6)
- Train-the-trainer Session for DMS coaches:
 - POCUS background
 - Principles of adult learning
 - Coaching & feedback strategies
 - Coaching simulation cases
- IPE POCUS Workshops
 - Flipped classroom with pre-course instructional videos
 - Description of DMS training program
 - Hands-on scanning of live model with DMS coach
 - Room, machine, and patient set-up
 - Right and left kidney for evaluation of hydronephrosis
 - Bladder volume estimation
 - Gallbladder for evaluation of cholecystitis

Assessment & Analysis

- Objective structured clinical exam of image acquisition skills (107 point scale):
 - Technique
 - Image quality
 - Anatomical identification
- Pre- and post-survey of attitudes towards IPE (6-7) and stereotypes towards other professional groups (8) taken from previously published questionnaires and analyzed via Wilcoxon signed-rank test.
- Post-intervention focus group interviews of residents and DMS coaches with qualitative analysis using grounded theory methodology.



Perceptions of Residents Towards Interprofessional Education (n=24)

	Before	SD	After	SD	p-value
Learning with other health professionals will help me become a more effective member of a health care team	4.54	0.51	4.71	0.46	0.10
Patients would ultimately benefit if health professionals worked together to solve patient problems	4.79	0.42	4.88	0.34	0.16
Shared learning with other health professionals will increase my ability to understand clinical problems	4.38	0.82	4.50	0.59	0.45
Shared learning will help me to think positively about other professionals	4.21	0.88	4.75	0.53	<0.01
Team-working skills are essential for all health professionals to learn	4.63	0.58	4.71	0.55	0.41
Shared learning will help me to understand my own limitations	4.42	0.58	4.67	0.64	0.08
Learning with other health professionals is a worthwhile use of my time	4.21	0.83	4.58	0.65	0.01
It is beneficial to learn clinical problem-solving skills from health professionals outside my own college or department	4.33	0.64	4.58	0.50	0.03
I would welcome the opportunity to work on more small-group projects with other health professionals	3.96	0.96	4.54	0.66	<0.01
Interprofessional learning better utilizes resources	4.00	0.98	4.71	0.46	<0.01
It is important for my training program to provide interprofessional learning opportunities.	3.96	0.81	4.54	0.59	<0.01
Interprofessional learning should be a goal of my training program	4.00	0.78	4.38	0.92	0.09
I like courses taught by faculty from other colleges or departments	3.71	1.08	4.38	0.71	<0.01
I like courses that include students from other colleges or departments	3.92	0.83	4.42	0.65	0.01

Discussion

- Near-peer, interprofessional education is an effective pedagogy for teaching resident physicians abdominal POCUS skills.
- This approach can improve participants' perceptions towards interprofessional collaboration, dispel stereotypes amongst health professionals, and provide leadership development opportunities for DMS students.
- IPE is a feasible strategy to integrate POCUS education when faculty expertise is limited.

Results

Abdominal POCUS Objective Structured Clinical Exam Scores

Exam Section (Available Points)	Mean	SD
Image Quiz (13)	12.3	0.9
Exam Prep (18)	16.8	1.4
R Kidney (18)	17	1.1
L Kidney (18)	16.4	1.8
Bladder (16)	14.9	1.0
Gallbladder (24)	20.4	3.4
Total Score (107)	97.7	5.2

Perceptions of Residents Towards Sonographers (n=24)

	Before	SD	After	SD	P-value
Academic ability	3.71	0.86	4.33	0.57	0.00
Professional competence	4.21	0.72	4.54	0.51	0.02
Interpersonal skills	4.00	0.93	4.54	0.59	0.00
Leadership abilities	3.33	0.82	4.04	0.81	0.00
The ability to work independently	4.08	0.65	4.54	0.59	0.01
The ability to be a team player	3.96	0.75	4.50	0.66	0.00
The ability to make decisions	3.29	0.96	4.17	0.76	0.00
Practical skills	4.29	0.86	4.79	0.42	0.01
Confidence	4.17	0.64	4.46	0.59	0.07
Teaching skills	3.63	0.74	4.29	0.77	0.00

Exam Preparation



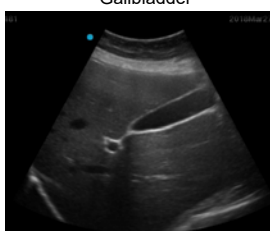
Kidneys



Bladder



Gallbladder



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