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ORIGINAL RESEARCH

Prospective, multicentre observational study of point-of-care ultrasound practice in emergency departments across Australia and New Zealand: The POCUS-ED Registry

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Abstract

Objectives: The present study aimed to describe the characteristics, performance, accuracy and significance of point-of-care ultrasound (POCUS) use in the ED, by utilising an expanded version of the ACEM-mandated special skills placement (SSP) logbook, to develop a novel clinical quality registry.
Methods: A prospective, observational study was performed across EDs in Australia and New Zealand over a 12-month period. Trainees undertaking ACEM-approved ultrasound (US) SSPs recorded all US scan interpretations and follow-up imaging reports in an online database.
Results: In total, 2647 USs were recorded by 26 special skills trainees across 10 EDs in Australia or New Zealand; of these 2356 scans (89%) were clinically indicated. Overall, 2493 scans (94%) were used for diagnostic assessment, of which 1147 (43%) had abnormal findings. Basic echocardiography, extended Focused Assessment with Sonography in Trauma and right upper quadrant scans were the most commonly used modalities. There were 134 US-guided procedures logged in the registry. Approximately 36% of scans were reported to alter the original provisional diagnosis, whereas in another 37% of cases, POCUS was thought to confirm the original clinical suspicion. The majority of scans (76.5%) entered into the registry were physically reviewed by the SSP supervisor.
Conclusions: This multicentred registry provides a detailed description

Key findings

- Basic echocardiography, eFAST and right upper quadrant scans are the most commonly used ultrasound modalities.
- POCUS is frequently utilised as a combination of modalities to answer specific clinical questions.
- POCUS alters provisional diagnoses in over one-third of clinical cases.

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of the current utilisation of POCUS within special skills US placements across EDs in Australia and New Zealand. This data should inform clinical leaders in emergency US to improve both POCUS education and governance around this important tool.

Key words: *emergency ultrasound, governance, point-of-care ultrasound, quality assurance, registry.*

Introduction

Point-of-care ultrasound (POCUS) has been adopted at an increasing rate in EDs across Australia and New Zealand and is now considered to be a core competency of emergency physicians.[1,2] There is a wide array of clinician experience, training and expertise in the realm of POCUS, which is limited by the absence of a universal accreditation or governance scheme.[3–5] Currently, there is no standardised system for recording or storing these scans, nor is there a regulated method for reporting them in patients' clinical records, which has implications for the overall governance of this ubiquitous investigation.[6]

The literature surrounding the implementation and performance of POCUS in Australasian EDs is scarce with very limited information available regarding frequency of use, indications for scanning, modalities undertaken and the subsequent accuracy of scan interpretation.[7] Data regarding the potential economic and logistical benefits of POCUS, including clinical impact of POCUS timing, impact on time to definitive diagnosis, alteration in working diagnosis or changes to management plans, remains poorly investigated and remains a large void in the current published literature.[8–11]

The ACEM allows emergency medicine trainees to undertake focussed non-ED training in particular disciplines (including ultrasound [US]) through their special skills placement (SSP) programme.[12] An US SSP trainee undertakes 3–6 months of dedicated time where their primary role is to perform and interpret US in a supernumerary capacity. These scans (often proctored by a clinician qualified in POCUS or else reviewed by them at a later date) may be clinically indicated based on the needs of patients and the ED environment, or completely for training purposes. These trainees are mandated to keep a logbook of each scan and the confirmed diagnosis. At present, the only other emergency medicine clinicians in Australasia mandated to keep a logbook of their POCUS use are those holding, or training towards qualifications from other institutions including some universities.[13,14]

The present study aimed to acquire standardised POCUS data by utilising ACEM SSP trainees and their mandated logbook to develop a novel clinical quality registry[15–17] allowing for prospective, observational analysis of the characteristics, performance, accuracy and clinical significance of POCUS use in the EDs of Australia and New Zealand.

Methods

Study design and setting

This prospective, observational study was carried out across 10 EDs in Australia ($n = 9$) and New Zealand ($n = 1$) between February 2019 and 2020.

All 20 EDs with ACEM-approved, US SSPs were invited to participate in the Australian and New Zealand Emergency Medicine Point-of-Care Ultrasound Registry (POCUS-ED Registry), of which 10 were able to take part, comprising a mix of public and private, tertiary and urban district hospitals (Fig. 1). The US SSP registrar(s) from each participating hospital received a short induction at the commencement of their SSP about the study and the unique standardised data collection form. Following this, they were required to log all US scans from their SSP in the POCUS-ED database.

Data collection

The POCUS-ED database was created by utilising the mandated ACEM SSP logbook as a backbone, ensuring all modalities and crucial sonographic findings required by higher qualifications were also included, providing a suitable, all-inclusive database serving the needs of multiple paths of accreditation. Additional metrics were added to this database including various timestamps and the diagnostic or therapeutic influence of the US (Appendix S1).

Data from each POCUS scan performed by the US SSP trainee (including those used for procedural guidance) were self-reported and their findings were recorded in Research Electronic Data Capture (REDCap®) (Nashville, TN, USA), supported by the Agency for Clinical Innovation (ACI) consortium partner. Data were stored on the NSW Health (eHealth) server, hosted with a 'nswhealth.gov.au' domain and adhered to the strict privacy and confidentiality policies of NSW Health. Additional in-patient data, including formal radiology reports, timing of this imaging and final diagnoses, were later entered by the same clinician.

Objectives

The primary objective of the present study was to use a novel registry to describe the current use of POCUS by emergency medicine trainees undertaking ACEM SSPs, with particular emphasis on indications of use, modalities utilised and the accuracy of scan interpretation against a 'gold-standard'. Secondary objectives included investigation into how frequently POCUS influenced the final diagnosis or whether it altered clinical management or disposition of patients.

Ethics

Permission for the study was granted by the South Western Sydney Local Health District Human Research Ethics Committee (HREC/18/LPOOL/274).

Data analysis

Data analysis was performed using the statistical software R (version 4.0; R Core Team, Vienna, Austria). Parametric or non-parametric summary statistics were produced where

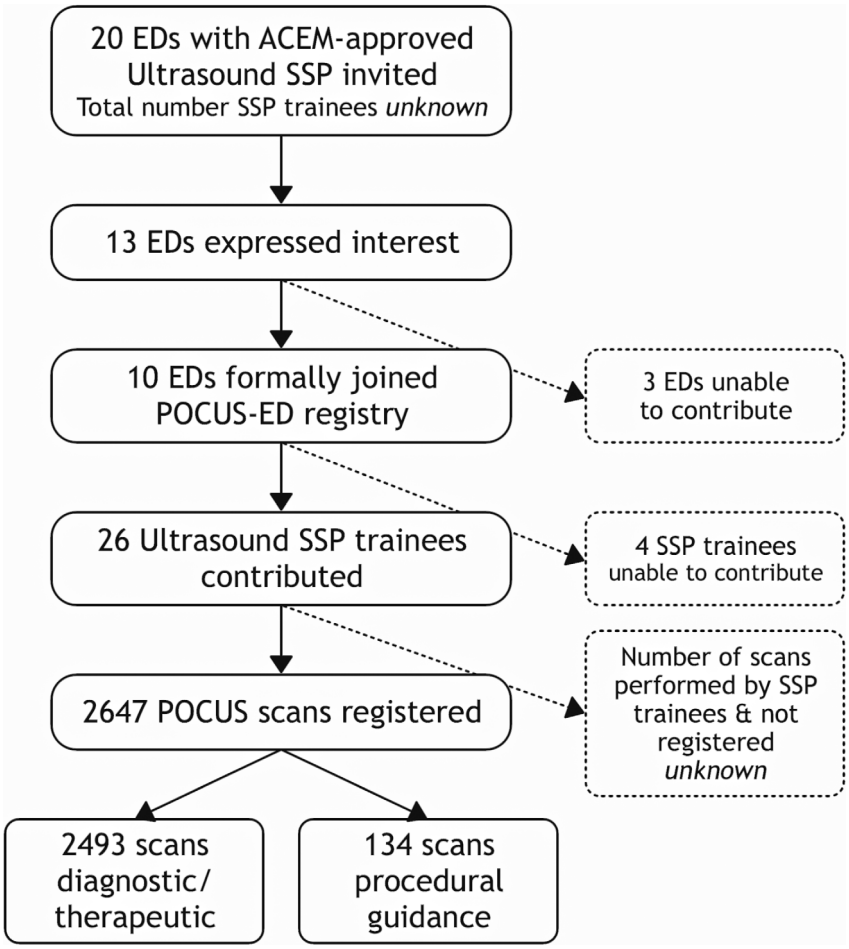

Figure 1. *Participant (ED and SSP trainee) selection.*

appropriate, and a 95% confidence interval [CI] was presented for point estimates.

Results

During the 12 months of the 2019–2020 clinical year, 26 special-skills trainees from 10 EDs participated in the present study, recording a total of 2647 POCUS scans, of which 2356 (89.0%) were clinically indicated. The median (interquartile range [IQR]) number of scans recorded by each hospital was 223.5 (195.0–267.5), whereas the median (IQR) number of scans recorded by each trainee was 78.5 (29.8–129.0). Of the patients included in the registry, the mean age was 51.1 (±22.7) years and 50.1% were female.

Table 1 provides a summary of diagnostic US utilisation including the modalities used, indications for scans, frequency of abnormal findings and their clinical impact. A total of 2493 scans (94.2%) were either diagnostic, or used to guide bedside therapy, of which 1197 (45.2%) were reported as normal, 1147 (43.3%) had abnormal findings and 128 (4.8%) were reported as indeterminate. The three most commonly used modalities were basic echocardiography (28.0%), extended Focused Assessment with Sonography in Trauma (eFAST) (20.4%) and right upper quadrant (RUQ) scans (15.3%). Of interest, the most common indication for utilising bedside echocardiography was for normotensive patients with chest pain. Only 51% of the patients undergoing RUQ scans were adequately fasted.

US-guided procedures, which are summarised in Table 2, were only logged on 134 (5.1%) occasions. Of these, the three most common were peripheral vascular access, nerve block (or regional anaesthesia) and paracentesis. The majority of these procedures were successfully completed, typically on their first attempt.

A summary of the abnormalities identified for each clinically indicated, diagnostic US modality is provided in Appendix S1. Where possible, the location of these abnormalities is reported (e.g. RUQ intraperitoneal free fluid). The magnitude of these abnormalities is also reported. The registry requested numerical measurements only if a scan was reported as 'abnormal' which is why anatomical structures largely fell in the pathological range (e.g. abdominal aortic calibre, common bile duct diameter or gallbladder wall thickness). Within the echocardiography findings, up to 8% of the cases reported abnormalities such as regional wall motion defects and valvular lesions, which fall outside the accepted syllabus for an 'echo in life-support' scanning modality. Large pericardial effusions appeared rare (seven cases) and only four cases reported tamponade physiology. Cholelithiasis was identified in over 28% of all RUQ scans.

Table 3 lists the different 'gold standard' tests utilised in confirming the final diagnoses following each diagnostic US. These scans were reported to agree with a confirmatory test in only 56.6% of the cases; however, 37.5% of the cases failed to report this outcome. The three most common confirmatory tests used were a credentialed POCUS supervisor (27.9%), CT (19.6%) and diagnostic US (15.0%). From a governance perspective, 1908 diagnostic scans (76.5%) were physically reviewed by the SSP supervisor.

The recorded influences of each US are reported in Table 4. POCUS scans altered the original provisional diagnosis in 36% of the cases. In addition to confirming clinical suspicion (36.6% of the cases), the next most common influences on patient care were; guiding communication with patients or other clinicians (25.0%), identifying the need for further imaging (20.4%) or changing clinical management (19.6%). In approximately 7% of the cases, POCUS helped avoid additional imaging.

TABLE 1. *Utilisation of point-of-care ultrasound by diagnostic modality*

Diagnostic modality ($n = 2493$)	Clinical indication, n (%)†		Findings, n (%)‡				Clinical impact, n (%)‡	
			Abnormal	Normal	Indeterminant	Confirmed	Diagnosis changed	Management changed
Cardiac ($n = 741$)	Chest pain (normotensive)	310 (41.8%)	101 (33%)	190 (61%)	17 (5.5%)	150 (48%)	102 (33%)	63 (20%)
	Dyspnoea	195 (26.3%)	125 (64%)	59 (30%)	9 (4.6%)	115 (59%)	73 (37%)	43 (22%)
	Shock	92 (12.4%)	57 (62%)	28 (30%)	5 (5.4%)	48 (52%)	49 (53%)	36 (39%)
	Cardiac arrest	29 (3.9%)	23 (79%)	3 (10%)	2 (6.9%)	8 (28%)	14 (48%)	7 (24%)
	Other	111 (15.0%)	40 (36%)	68 (61%)	2 (1.8%)	50 (45%)	30 (27%)	17 (15%)
	Not recorded	4 (0.5%)	1 (25%)	3 (75%)	–	1 (25%)	2 (50%)	–
eFAST ($n = 540$)	Trauma	286 (53.0%)	47 (16%)	230 (80%)	7 (2.4%)	184 (64%)	111 (39%)	44 (15%)
	Shock (non-traumatic)	49 (9.1%)	28 (57%)	19 (39%)	2 (4.1%)	30 (61%)	31 (63%)	17 (35%)
	Other	191 (35.4%)	99 (52%)	86 (45%)	4 (2.1%)	115 (60%)	56 (29%)	32 (17%)
	Not recorded	14 (2.6%)	3 (21%)	8 (57%)	–	4 (29%)	3 (21%)	1 (7.1%)
RUQ (biliary) ($n = 404$)	RUQ/epigastric pain	349 (86.4%)	181 (52%)	135 (39%)	27 (7.7%)	213 (61%)	145 (42%)	74 (21%)
	Abnormal liver function tests	22 (5.5%)	13 (59%)	7 (32%)	2 (9.1%)	15 (68%)	8 (36%)	6 (27%)
	Other	32 (7.9%)	11 (34%)	19 (59%)	–	15 (47%)	9 (28%)	2 (6.2%)
	Not recorded	1 (0.2%)	–	1 (100%)	–	–	–	–
Renal ($n = 328$)	Flank pain	250 (76.2%)	118 (47%)	111 (44%)	18 (7.2%)	144 (58%)	68 (27%)	36 (14%)
	Abnormal renal function? obstruction	16 (4.9%)	8 (50%)	8 (50%)	–	11 (69%)	7 (44%)	2 (12%)
	Other	57 (17.4%)	23 (40%)	32 (56%)	1 (1.8%)	31 (54%)	15 (26%)	8 (14%)
	Not recorded	5 (1.5%)	2 (40%)	3 (60%)	–	2 (40%)	2 (40%)	1 (20%)
AAA ($n = 313$)	Flank pain	119 (38.0%)	34 (29%)	75 (63%)	10 (8.4%)	61 (51%)	51 (43%)	28 (24%)
	Clinical suspicion for AAA	84 (26.8%)	39 (46%)	44 (52%)	1 (1.2%)	54 (64%)	43 (51%)	25 (30%)
	Undifferentiated shock/hypotension	36 (11.5%)	22 (61%)	14 (39%)	–	17 (47%)	25 (69%)	14 (39%)
	Other	62 (19.8%)	19 (31%)	41 (66%)	1 (1.6%)	29 (47%)	14 (23%)	8 (13%)
	Not recorded	12 (3.8%)	3 (25%)	7 (58%)	2 (17%)	3 (25%)	–	–
Lung ($n = 286$)	Shortness of breath/hypoxia	223 (78.0%)	160 (72%)	51 (23%)	9 (4%)	150 (67%)	101 (45%)	60 (27%)
	Hypotension/shock	18 (6.3%)	14 (78%)	4 (22%)	–	7 (39%)	13 (72%)	9 (50%)
	Other	35 (12.2%)	21 (60%)	14 (40%)	–	21 (60%)	15 (43%)	12 (34%)
	Not recorded	10 (3.5%)	7 (70%)	3 (30%)	–	6 (60%)	5 (50%)	2 (20%)

TABLE 1. *Continued*

Diagnostic modality ($n = 2493$)	Clinical indication, n (%)†		Findings, n (%)‡				Clinical impact, n (%)‡	
			Abnormal	Normal	Indeterminant	Confirmed	Diagnosis changed	Management changed
Early pregnancy ($n = 216$)	Early pregnancy bleeding	107 (49.5%)	63 (59%)	36 (34%)	7 (6.5%)	69 (64%)	51 (48%)	20 (19%)
	Possible ectopic pregnancy	63 (29.2%)	44 (70%)	12 (19%)	7 (11%)	40 (63%)	23 (37%)	13 (21%)
	Other	42 (19.4%)	21 (50%)	19 (45%)	2 (4.8%)	17 (40%)	9 (21%)	5 (12%)
	Not recorded	4 (1.9%)	–	3 (75%)	1 (25%)	2 (50%)	2 (50%)	1 (25%)
DVT ($n = 117$)	Leg swelling	68 (58.1%)	26 (38%)	41 (60%)	1 (1.5%)	46 (68%)	30 (44%)	16 (24%)
	PE evaluation	20 (17.1%)	7 (35%)	12 (60%)	1 (5%)	16 (80%)	10 (50%)	5 (25%)
	Other	27 (23.1%)	5 (19%)	21 (78%)	1 (3.7%)	13 (48%)	9 (33%)	4 (15%)
	Not recorded	2 (1.7%)	–	2 (100%)	–	1 (50%)	1 (50%)	–
Gynae/pelvic ($n = 63$)	Lower abdominal pain	51 (81.0%)	29 (57%)	14 (27%)	8 (16%)	28 (55%)	26 (51%)	17 (33%)
	Vaginal bleeding	8 (12.7%)	5 (62%)	3 (38%)	–	6 (75%)	6 (75%)	4 (50%)
	Other	4 (6.4%)	2 (50%)	2 (50%)	–	3 (75%)	2 (50%)	1 (25%)
Soft tissue ($n = 52$)	?Abscess	18 (34.6%)	13 (72%)	5 (28%)	–	6 (33%)	14 (78%)	9 (50%)
	Painful limb/joint	15 (28.9%)	9 (60%)	4 (27%)	2 (13%)	5 (33%)	9 (60%)	5 (33%)
	Swollen or inflamed limb/joint	10 (19.2%)	7 (70%)	3 (30%)	–	2 (20%)	5 (50%)	2 (20%)
	?Foreign body	3 (5.8%)	3 (100%)	–	–	2 (67%)	1 (33%)	1 (33%)
	Other	6 (11.5%)	4 (67%)	2 (33%)	–	3 (50%)	5 (83%)	4 (67%)
Ocular ($n = 18$)	Reduced visual acuity	8 (47.1%)	2 (25%)	6 (75%)	–	1 (12%)	5 (62%)	2 (25%)
	Eye pain	4 (23.5%)	–	4 (100%)	–	3 (75%)	2 (50%)	–
	Reduced consciousness	1 (5.9%)	1 (100%)	–	–	1 (100%)	1 (100%)	1 (100%)
	Other	4 (23.5%)	2 (50%)	2 (50%)	–	–	2 (50%)	2 (50%)
	Not recorded	1 (5.6%)	1 (100%)	–	–	1 (100%)	–	–
Scrotal ($n = 12$)	Testicular pain	9 (75.0%)	6 (67%)	2 (22%)	1 (11%)	5 (56%)	5 (56%)	2 (22%)
	Scrotal swelling	2 (16.7%)	–	2 (100%)	–	2 (100%)	2 (100%)	1 (50%)
	Not recorded	1 (8.3%)	1 (100%)	–	–	–	–	–
Other ($n = 89$)	–	–	49 (55%)	34 (38%)	6 (6.7%)	58 (65%)	44 (49%)	27 (30%)

†% as a proportion of each modality. ‡% as a proportion of each indication listed. All values as n (%). AAA; abdominal aortic aneurysm; DVT; deep vein thrombosis; eFAST, extended Focused Assessment with Sonography in Trauma; PE; pulmonary embolism; RUQ; right upper quadrant.

TABLE 2. *Ultrasound-guided procedures summary*

Procedure ($n = 134$)	Total number performed (%)†	Success n (%)‡	≥2 attempts required (%)‡
Peripheral vascular access	59 (44%)	58 (98.3%)	9 (16%)
Nerve block/regional anaesthesia	51 (38%)	51 (100%)	2 (3.9%)
Arterial line placement	6 (4.5%)	6 (100%)	0
Paracentesis	5 (3.7%)	5 (100%)	1 (20%)
Central venous access	3 (2.2%)	3 (100%)	0
Lumbar puncture	1 (0.7%)	1 (100%)	0
Foreign body removal	1 (0.7%)	1 (100%)	0
Pleural drainage	1 (0.7%)	1 (100%)	0
Other	7 (5.2%)	5 (71.4%)	1 (14.3%)

†% as a proportion of all procedures. ‡% as a proportion of each procedure listed. All values as n (%).

TABLE 3. *Accuracy of diagnostic POCUS studies including confirmatory test details and frequency of supervisor review*

Did POCUS agree with confirmatory test? ($n = 2493$)	
Yes	1410 (56.6%)
No	149 (6.0%)
Not recorded	934 (37.5%)
Confirmatory test	
Credentialed POCUS supervisor	695 (27.9%)
CT scan	488 (19.6%)
Diagnostic US	375 (15.0%)
Clinical course or follow up	195 (7.8%)
X-ray	135 (5.4%)
Echocardiography	81 (3.3%)
Operative findings	22 (0.9%)
Vascular lab	19 (0.8%)
Nuclear medicine (incl. VQ scan)	11 (0.4%)
Magnetic resonance imaging	3 (0.1%)
Further test not available	271 (10.9%)
Not recorded	198 (7.9%)
Supervisor case review	
Yes	1908 (76.5%)
No	237 (9.5%)
Not recorded	348 (14.0%)

All values as n (%). POCUS, point-of-care ultrasound.

Discussion

The present study presents the data from a novel POCUS registry and represents a convenience sample of patients receiving ED-based POCUS across Australia and New Zealand. It also signifies the first POCUS registry to provide detailed, local information to both ACEM and the clinical leads in US working in the EDs of Australia and New Zealand to not only focus education on the most commonly utilised modalities but also to enhance governance systems around the most frequently performed procedures and scanning modalities.

There were several observations which were unexpected and are worthy of further exploration. Interestingly, the majority of echocardiography was performed on normotensive patients with chest pain. Historically, a Basic Echocardiography in Life Support (BELS) examination was taught to assess for a variety of causes of shock (impaired left ventricular function, pericardial effusion with tamponade or right-heart strain from large pulmonary emboli). This finding may support the fact that emergency medicine trainees are electing to perform training echocardiography scans on stable patients in preparation for later use in the critically ill. Alternatively, it may be a signal that the current generation of emergency medicine clinicians is exploring wider applications for this US modality.[18] Examples of such applications include the exclusion of a gross cardiomyopathy in dyspnoeic patients or a concomitant pericardial effusion with pericarditis whereby the patient obtains rapid reassurance and the clinician reaches an accelerated disposition and discharge plan.

TABLE 4. *Clinical influence of POCUS study*

Did POCUS alter the provisional diagnosis? ($n = 2647$)	
Yes	952 (36.0%)
No	1184 (44.7%)
Uncertain	229 (8.7%)
Not recorded	282 (10.7%)
How POCUS scan altered clinical care†	
Confirm clinical suspicion	970 (36.6%)
Communication with patient/clinicians	661 (25.0%)
Request further imaging	541 (20.4%)
Change of clinical management/treatment	520 (19.6%)
Therapeutic decision	306 (11.6%)
Avoid additional imaging	208 (7.9%)
Triage	205 (7.7%)
Procedural guidance	153 (5.8%)
Other	115 (4.3%)

†Clinicians could nominate more than one influence for each scan, hence total exceeds 100%. All values as *n* (%). POCUS, point-of-care ultrasound.

Lung US utilisation was responsible for only 10% of the scans in this registry which appears to be lower than that expected by the authors who teach at these participating centres. Although this may signify that lung US is deferred for acquisition after completing the traditional POCUS modalities of eFAST, abdominal aortic aneurysm (AAA) scans and BELS, it may also be explained by reporting bias towards only registering positive findings. It is also possible that lung US was performed and recorded as a component of indicated BELS scans. The use of this particular modality is well-supported by literature demonstrating the ease of skill acquisition[19] and a growing evidence base to support its accurate findings, especially in patients with undifferentiated dyspnoea,[11,20] heart failure[10] or pneumonia.[21] This finding opens an opportunity for POCUS educators to emphasise the ease with which lung US can be both learnt and applied to a wide variety of clinical circumstances in the ED.

One encouraging trend identified in our data is the frequent use of POCUS as a combination of modalities clearly utilised to answer specific clinical questions. Dyspnoea was the second most common indication (26%) for using cardiac assessment, combining it with parenchymal lung US for examination of impaired ventricular function and the presence or absence of B-lines to suggest interstitial pulmonary oedema.[22] Flank pain (investigating for renal colic), was the most common indication for AAA scans. Atraumatic shock remained a common cause for combining eFAST, echocardiography and AAA scans in a similar sequence to that described in the 'RUSH' protocol (Rapid Ultrasound in SHock examination).[23] This reinforces the recognition of the strength of POCUS in the hands of a treating bedside clinician in answering a series of dichotomous clinical questions based on history and physical examination findings, instead of merely embarking on an untargeted search for a possible pathology.

Trainees reported that approximately 56% of cases agreed with the follow-up confirmatory test, whereas only 6% did not. It has to be acknowledged that over 37% of the entries left this particular data field blank. Such a degree of missing data in this datafield significantly restricts the registry from making a true estimate of POCUS accuracy which could be as high as 94%. No doubt, the complexity of this registry and ongoing time constraints led to reduced compliance with clinical follow ups. It must also be considered that within this missing data set is a group of scans which were undertaken with the real-time supervision of a qualified sonographer or a US-credentialled clinician. In such instances, if the POCUS study was normal then getting a confirmatory test would be considered a waste of time and resources. Regardless of why, this finding does still have implications for clinical governance. This registry did not collect patient-level data to explore US accuracy in more detail but it raises an important issue that requires further exploration in future works.

Finally, any future attempts at a similar registry must focus on optimising the logbook and its data-entry mechanism. It should collect the simplest yet meaningful minimum data set which still allows for ongoing insightful analysis to occur, whereas being as user-friendly as possible for the sonologist to enter data quickly and easily at the bedside. This registry should be created by the end-users (trainees and clinicians undergoing further qualification) and clinical leads in emergency US, in collaboration with ACEM, and ideally with organisations who offer these higher-level US qualifications. Alternatively, a registry could be performed by only utilising credentialed practitioners who are 'allowed' to interpret and integrate their images into clinical decision making without factoring in learning curves or trainee requirements. Importantly, data security and patient confidentiality are of equal utmost importance.

Limitations

As a prospective registry relying on clinicians to self-report their own scan interpretations as well as definitive outcomes, the results are subject to both reporting and confirmation bias and are likely influenced by the clinical significance of the scan performed. This is evidenced by the

high proportion of scans (e.g. 38% of AAA and over 70% of lungs) reported as abnormal, which exceeds the frequency of abnormal findings expected in routine ED practice. It strongly suggests that there was a bias towards preferentially recording the interesting or pathological USs. This finding restricts the ability of this registry to accurately describe how frequently POCUS impacts clinical management.

This registry was designed in a way that all scans performed by each trainee would be logged; however, there was a gradual yet visible decay in the participation of trainees observed over the study period, in particular the second 6 months. This is likely a consequence of the fatigue effect resulting from the need to keep multiple log books and do more extensive follow up than a standard log book would mandate. Ideally, this registry would have access to the total number of scans performed by each trainee (relative to the numbers actually logged); however, this was not possible to collect. This is an important limitation influencing the generalisability of our work.

Conclusions

This multicentred, clinical quality registry provides a detailed description of the current utilisation of POCUS within special skills US placements across the EDs of Australia and New Zealand. This data should inform ACEM and the clinical leaders in emergency US to consider expanding the core modules required for clinicians whereas fine-tuning education and exploring local methods of tightening the clinical governance around this important tool.

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Competing interests

None declared.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Supporting information

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Appendix S1. Supporting Information