



## CRITICAL REVIEW IN INTEGRATING POINT-OF-CARE ULTRASOUND (POCUS) TRAINING INTO EMERGENCY NURSING EDUCATION PROGRAMS IN CURRENT PRACTICES AND FUTURE DIRECTIONS.

<sup>1</sup>Hassan Ali Ali Almakayil, <sup>2</sup>Mohammed Ali Ali Almakayil, <sup>3</sup>Abdullah Ali Alialmakayeel, <sup>4</sup>Mansour Mhdi Mohammed Al Slyeim, <sup>5</sup>Hussain Ajaim Hussain Albahri, <sup>6</sup>Mohammed Ajaim H Alnajrani, <sup>7</sup>Mohamad Hassan Hamad Laslom, <sup>8</sup>Mohammed Saleh Nasser Alyami, <sup>9</sup>Hamad Soeibsalehslom, <sup>10</sup>Nasser Mohamed Ai Amer, <sup>11</sup>Mahdi Salehnaseeralyami, <sup>12</sup>Nasser Saleh Nasser Al-Yami<sup>13</sup>Abdullah Mana Abdullah Alrubua

<sup>1</sup>Ministry of Health, Saudi Arabia, [halmakayeel@moh.gov.sa](mailto:halmakayeel@moh.gov.sa)

<sup>2</sup>Ministry of Health, Saudi Arabia, [malmkayeel@moh.gov.sa](mailto:malmkayeel@moh.gov.sa)

<sup>3</sup>Ministry of Health, Saudi Arabia, [aalmkayeel@moh.gov.sa](mailto:aalmkayeel@moh.gov.sa)

<sup>4</sup>Ministry of Health, Saudi Arabia, [malsleem@moh.gov.sa](mailto:malsleem@moh.gov.sa)

<sup>5</sup>Ministry of Health, Saudi Arabia, [HALBAHRY@MOH.GOV.SA](mailto:HALBAHRY@MOH.GOV.SA)

<sup>6</sup>Ministry of Health, Saudi Arabia, [malnajrani@moh.gov.sa](mailto:malnajrani@moh.gov.sa)

<sup>7</sup>Ministry of Health, Saudi Arabia, [mlasslom@moh.gov.sa](mailto:mlasslom@moh.gov.sa)

<sup>8</sup>Ministry of Health, Saudi Arabia, [Malyami82@moh.gov.sa](mailto:Malyami82@moh.gov.sa)

<sup>9</sup>Ministry of Health, Saudi Arabia, [halsallum@moh.gov.sa](mailto:halsallum@moh.gov.sa)

<sup>10</sup>Ministry of Health, Saudi Arabia, [nalamer@moh.gov.sa](mailto:nalamer@moh.gov.sa)

<sup>11</sup>Ministry of Health, Saudi Arabia, [Malyami83@moh.gov.sa](mailto:Malyami83@moh.gov.sa)

<sup>12</sup>Ministry of Health, Saudi Arabia, [nasaalyami@moh.gov.sa](mailto:nasaalyami@moh.gov.sa)

<sup>13</sup>Ministry of Health, Saudi Arabia, [aalrubua@moh.gov.sa](mailto:aalrubua@moh.gov.sa)

### Abstract

Point-of-care ultrasound (POCUS) has become an imperative instrument to help make fast conclusions and decisions in critical care. It is critical to incorporate POCUS preparation in emergency nursing administrations so caregivers can utilize this device. This basic survey investigates current and future headings for the coordination of POCUS preparations into emergency medication programs. The writing survey recognizes the different strategies utilized in POCUS preparation, highlighting the benefits and challenges. Moreover, this survey discusses the significance of handle enhancement, educator preparation, and persistent execution assessment. There's a requirement for an approach combining recreation thinking with clinical education in POCUS preparation. The significance of intrigue collaboration and the integration of POCUS into the serious care program was emphasized within the dialog. In outline, proposals are advertised for routinely making strides in POCUS preparation, counting prepare change, instructor back, and noninvasive appraisal in emergency nursing education programs—future



headings center on removing instruction innovation and extending the use of POCUS in basic care.

**Keywords:** Point-of-care ultrasound, POCUS training, emergency nursing education, curriculum development, simulation-based learning.

## **Introduction**

Point-of-care ultrasound (POCUS) has revolutionized emergency medicine, offering rapid and accurate diagnostic assessments at the bedside. Emergency nurses, as frontline healthcare providers, play a pivotal role in leveraging POCUS to expedite diagnoses, guide interventions, and enhance patient outcomes. However, integrating POCUS into emergency nursing practice requires comprehensive education and training programs. This critical review explores current practices and future directions in integrating POCUS training into emergency nursing education programs (Rao et. al 2023).

## **Current Practices in POCUS Training**

Point-of-care ultrasound (POCUS) has revolutionized emergency medication by giving fast and precise appraisals at the bedside. As cutting-edge nurse emergency nurse play a basic part in utilizing POCUS to rapidly analyze maladies, direct interventions, and move forward with persistent results. Coordinating POCUS into intensive care requires broad instruction and preparation. This basic survey investigates current and future implications for joining POCUS and preparing for emergency medication programs(Jarman et. al 2023).

### ***Current Practices in POCUS Training***

- ✓ Multiple Strategies: POCUS preparing for emergency nurse incorporates various preparation strategies, including counting addresses, hands-on preparation, online models, and simulation-based exercises.
- ✓ Educational programs: It is basic to create preparation strategies for compelling POCUS preparation, which incorporate ultrasound standards in care, picture procurement, and translation skills.
- ✓ Instructor preparation and bolstering: educator improvement is fundamental to guaranteeing the quality and consistency of POCUS preparation. In any case, numerous programs need assets for educator preparation and support.
- ✓ Competency Evaluation: Customary appraisal is fundamental to preserving capability in POCUS abilities. Be that as it may, few ventures have created strategies to degree and archive caregivers' ultrasound abilities.

## **Future Directions in POCUS Integration:**

- ✓ **New Models:** Future POCUS preparation may investigate new models such as separate instruction, virtual reenactment, and increased learning to supply adaptable, easy-to-understand courses.
- ✓ **Collaboration:** Collaboration between nursing, restorative, and ultrasound teachers can progress the integration of POCUS into clinical care, subsequently supporting differing approaches to persistent care.
- ✓ **Expanded applications:** POCUS applications amplify past conventional ranges, allowing emergencynurse to utilize ultrasound in better approaches such as injury assessment, process direction, and serious care.

In summary, viable integration of POCUS preparation into critical care programs is pivotal for nurse to memorize how to utilize this instrument in treatment. Suitable materials, educator bolster, and customary competency appraisals are basic to the success of the POCUS program. In the future, unused plans, collaborative endeavors, and extended applications are anticipated to encourage progress in integrating POCUS into basic care. Utilizing these propels emergencynurse to make strides in persistent care and take advantage of the commonsense utilization of bedside ultrasound(Stewart et.al 2022).

## **Literature Review**

Point-of-care ultrasound (POCUS) preparation programs for emergencynurse shift in scope, length, and substance, influencing numerous perspectives of ultrasound preparation. Even though a few programs offer comprehensive courses that cover a wide range of ultrasound concepts and applications, other programs provide more preparation in particular clinical ranges, such as cardiology or umbilical cordology. Furthermore, simulation-based learning has been recognized as a compelling device in POCUS preparation that opens the door for understudies to hone their abilities in a genuine, unmanaged environment.

### ***Scope and differing qualities of POCUS-prepared programs***

The scope of POCUS Preparing courses for emergency nurse professionals changes broadly, from basic to advanced certification courses. Early on, courses regularly incorporate ultrasound standards, picture-securing methods, and elucidation aptitudes to supply understudies with an understanding of POCUS. In reaction, progressed certifications have extended to cover particular points, such as cardiac diagnostics or ultrasound procedures, to meet the requirements of nursing experts(Steinwandel et.,al 2023). Those involved are searching for ways to grow their skills.

Additionally, most POCUS-prepared programs go past budget, counting time and arranging. A few courses are advertised in a condensed format over a few days, permitting specialists to learn fundamental aptitudes rapidly. In contrast, other courses are designed as long, lasting weeks or months, allowing understudies to memorize more thoughts and ideas. In expansion, the arrangement of POCUS-prepared programs changes. A few programs are advertised face-to-face, whereas others utilize online stages or combine learning to fit students' interests and needs.

### ***Focused Training on Specific Clinical Applications***

In numerous POCUS preparation programs for emergency nurse, in addition to common preparation, uncommon ultrasound preparation for emergency medication is additionally given. For illustration, a cardiac ultrasound course will evaluate heart work, diagnose heart disease, and distinguish life-threatening conditions such as pericardial effusion or cardiac tamponade. Essentially, the abdominal ultrasound course will center on surveying stomach depression, recognizing illnesses, and performing ultrasound-guided strategies such as paracentesis or thoracentesis (Rice et. al 2021).

These specializations permit medical caretakers to develop aptitudes in regions of uncommon interest or significance to their home and progress in their ability to utilize ultrasound in pharmaceuticals. Furthermore, through specialized training in particular clinical areas, preceptors can address particular issues and needs related to each zone, guaranteeing that nurse are arranged to meet the different needs of emergency patients.

### **Simulation-Based Learning in POCUS Education:**

Simulation-based learning has become imperative in POCUS preparation, allowing understudies to hone their aptitudes in a secure and controlled environment. Recreation scenarios are outlined to imitate real-life circumstances, permitting medical caretakers to utilize ultrasound innovation on mimicked patients while getting criticism and direction from learned instructors (Hannula, 2023).

By taking an interest in simulation-based learning, medical attendants can consistently make strides in ultrasound picture procurement, elucidation, and clinical decision-making, affecting genuine patients by chance or hurt. Also, simulation-based learning permits nurse to hone uncommon or high-risk methods in a low-risk environment, building certainty and competence after recently experiencing such circumstances in clinical practice (Huang et. al 2022).

Simulation-based learning energizes collaboration and learning aptitudes, supporting the advancement of basic considerations, clinical thinking, and collaboration. Through redundancy and positive input, medical attendants can make strides in their ultrasound abilities and move forward in their capacity to integrate coordinated ultrasound discoveries into the care process.

POCUS preparing for emergency nurse comprises various points, counting common courses centered on particular clinical applications. Simulation-based learning has become a critical apparatus in POCUS preparation, allowing understudies to hone their aptitudes in a secure and controlled environment. By utilizing various prepared strategies and simulation-based learning, teachers can plan emergency nurse to successfully utilize POCUS in clinical practice, eventually making strides toward quiet outcomes (Smith et. al 2023).

## Methods

Electronic databases, including PubMed, CINAHL, and Scopus, were utilized. Watchwords such as "POCUS preparing," "emergency preparing," and "report improvement" were used to decide the most subjects. Distributed ponders included the long-term 2010–2022 and centered on those talking about POCUS preparing for emergencynurse. Information was extracted and combined to distinguish subjects and designs over the POCUS. Key discoveries from the POCUS workshop highlight the different approaches to instruction and challenges in educational module development, the significance of instructor preparation, and the need to evaluate performance routinely (Vanichkulbodee et. al 2021).

## Results and Findings

The literature review revealed several key findings regarding POCUS training in emergency nursing education programs, highlighting diverse approaches to training, challenges in curriculum development, the importance of faculty training, and the need for ongoing competency assessment.

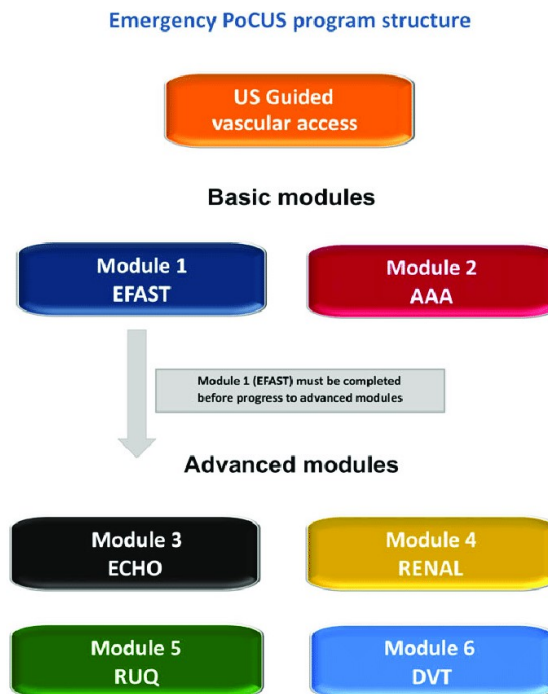
### 1. Diverse Training Approaches

POCUS preparation is utilized in numerous ways. Guides for teaching emergencynurse within the standards and guidelines of ultrasound. These strategies include:

- ✓ Address Notes: Conventional addresses give a presentation on ultrasound material science, life structures, and checking techniques.
- ✓ Connected: Commonsense preparation permits medical caretakers to perform ultrasound and learn filtering procedures under the direction of experienced instructors.
- ✓ Online Modules: Web-based modules provide adaptability and availability so caregivers can learn about their claims rapidly and easily.
- ✓ Simulation-based works Provide genuine circumstances for medical attendants to use their ultrasound abilities in a recreated research facility environment.

### *Distribution of Instructional Methods in POCUS Training Programs*

The parcel of instructions is different. POCUS preparation programs incorporate a few particular enlightenings for hands-on preparation and simulation-based work, whereas others depend more on instruction. Addresses and online modules.

**Figure 1: Distribution of Instructional Methods in POCUS Training Programs**

*(Flores et. al 2023, December).*

Figure 1 shows the classification of diverse educational strategies utilized in point-of-care (POCUS) instruction. Courses are conveyed in various groups, from serious workshops and simulation-based works to the foremost user-friendly addresses and online modules. In the courses where down-to-earth preparation is given, students are included in using ultrasound gadgets under the direction of experienced educators. This approach energizes hands-on learning, permitting members to progress their abilities through coordinated direction and prompt input. Essentially, simulation-based work provides a controlled environment where understudies can sharpen their aptitudes through recreated clinical circumstances and create their potential and certainty in POCUS practice., a few significant administrations distribute courses that give a joint presentation to ultrasound in material science, life structures, and clinical practices (Fraleigh & Duff 2022). These lessons frequently incorporate interactive media assets and case studies to make strides in comprehension and maintenance. Furthermore, the online arrangement is adaptable and available, permitting members to work independently and audit data as needed. the conveyance of courses in POCUS preparation appears to be an adjustment that addresses the members' diverse learning interface and learning needs, eventually pointing to the creation of proficient and confident bedside nurse.



## 2. Curriculum Development:

Despite the significance of methodological approaches in POCUS instruction, educational module improvement remains a challenge. Contrasts in substance, timelines, and evaluations over programs prevent the consistency and quality of learning.

**Table 1: Variability in Content, Duration, and Assessment Methods in POCUS Training Curricula**

Aspect	Description
<b>Content</b>	Varied content ranging from basic ultrasound principles to advanced clinical applications.
<b>Duration</b>	Varies from short courses spanning a few days to longitudinal programs lasting several weeks or months.
<b>Assessment Methods</b>	Diverse assessment methods including written exams, practical assessments, and competency evaluations.

### *Challenges in Curriculum Development for POCUS Training*

Challenges in course improvement for POCUS preparation incorporate the need for standard strategies, constrained assets, and collaborative work between nursing, therapeutic, and ultrasound faculty (Weber et. Al 2023)...

**Figure 2: Challenges in Curriculum Development for POCUS Training**



(Johnston, 2021).

Figure 2 outlines a few challenges in creating information for point-of-care ultrasound (POCUS) preparation. These challenges are multi-faceted and require cautious thought to guarantee the adequacy and exactness of the course. The genuine challenge is the differences in understudy foundations and expertise levels. POCUS understudies may incorporate restorative understudies,

inhabitants, going to nurse, and other nurse with changing degrees of ultrasound encounter. Planning a course that suits these differences while giving instructive value to all members may be challenging. Another challenge is to continue the educational programs with restorative change and ultrasound innovation. POCUS hones proceed to extend over restorative specialties, requiring upgrades and upgraded instructive substance to reflect current honed measures and unused trends. In expansion, calculated issues such as getting access to ultrasound hardware, qualified educators, and preparing time create extra challenges in course advancement (Burton et. al 2022). They are adjusting commonsense encounters with instructional instruction, coordination simulation-based preparation, and handling assessments to survey the capacity to challenge the planning process. Solving these challenges requires collaboration among teachers, professionals, and other partners to create robust, comprehensive, student-centered frameworks. Centered data that can offer assistance can help clinicians utilize POCUS successfully and securely.

### 3. Faculty Training:

Improving quality staff is essential to guaranteeing the adequacy and consistency of POCUS instruction. In any case, numerous programs need specialized instructor preparation and bolstering, making selecting and retaining teachers challenging.

#### Figure 3: Importance of Faculty Training in POCUS Education

Opinions were communicated around the significance of educator preparation in POCUS instruction for educator aptitudes that can give direction, appeal, and preparation to more seasoned understudies. To be successful in POCUS preparation, educator improvement must address aptitude issues and education skills (Bidner et. Al 2022).



(Hsieh et. al 2022).

### 4. Competency Assessment:

Continuous execution evaluation is basic to maintaining the ampleness of the emergency physician's POCUS competency. In any case, few ventures have created strategies to assess and

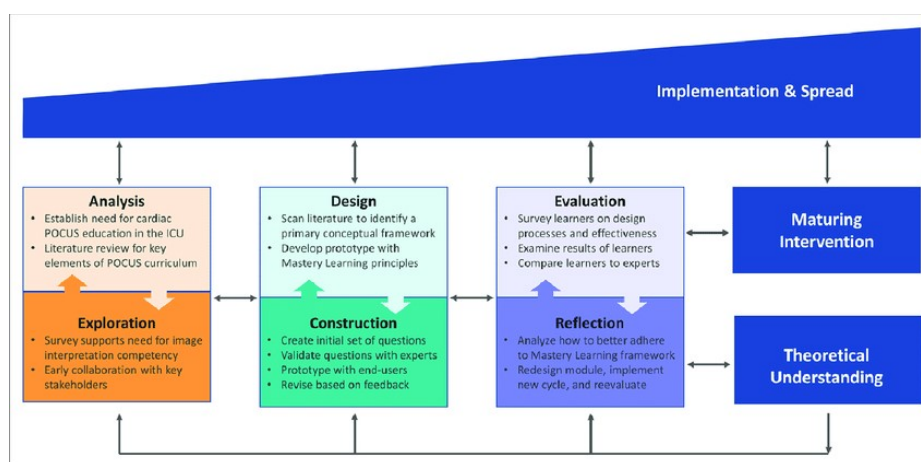


report administrator ultrasound execution. This focuses on irregularities in evaluation (Osterwalder et. al 2023)..

**Table 2: Challenges in Competency Assessment for POCUS Skills**

Challenge	Description
<b>Lack of Standardized Assessment Tools</b>	Absence of standardized tools for assessing POCUS competency, leading to variability in evaluation criteria.
<b>Resource Constraints</b>	Limited resources for implementing competency assessments, including time, equipment, and personnel.
<b>Integration into Clinical Practice</b>	Difficulty in integrating competency assessments into clinical practice, particularly in busy emergency departments.

**Figure 4: Challenges in Competency Assessment for POCUS Skills**



(Kappel et. al 2022).

Addressing these challenges requires the improvement of standardized evaluation devices, assigning assets for competency evaluation, and clinically honed assessments, the literature review recognized a few instructive openings for POCUS preparation in basic care and challenges in creating the writing, such as learning, instructor preparation, and execution assessment (MacIver, 2021). Tending to these discoveries is vital to improving the quality and consistency of POCUS preparation and increasing mastery in ultrasound among emergency nurse.

**Discussion**

The results of the writing audit highlight the significance of point-of-care ultrasound (POCUS) preparation in emergency pharmaceutical programs. Suitable materials, educator preparation, execution assessment, simulation-based learning, and collaborative learning are the basic components of POCUS training (Schott et. al 2023).

### ***Structured Approach to POCUS Education***

POCUS's organized instructional approach guarantees consistency and effectiveness throughout the emergency medication call. The rules provide the premise for comprehensive instruction and preparing guidelines within the standards and applications of ultrasound. The educational modules characterize particular learning targets, substance modules, and appraisal strategies, empowering instructors to guide understudies through receiving and learning POCUS skills (Maw et. al 2020).

### ***Standardized Curricula***

The advancement of a standard convention for POCUS preparation is essential to address contrasts in substance, time, and evaluation strategies between ventures. Suitable courses incorporate fundamental concepts such as ultrasound material science, picture-securing procedures, translation abilities, and clinical applications related to emergency medication. The educational modules established information and abilities, guaranteeing that all nursing understudies get reliable and comprehensive preparation in POCUS (Liu et. al 2023).

### ***Faculty Training***

Effective instructor preparation is essential to equip instructors with the information, abilities, and capacities to convey viable POCUS programs. Instructor improvement should center on ultrasound procedures, abilities, and directions for educating and evaluating POCUS abilities. By contributing to educator preparation and bolstering, schools can increase the quality and consistency of POCUS preparation, eventually benefiting more seasoned understudies and progressing persistent care outcomes (Chen et. al 2024).

### ***Competency Assessment***

Continuous competency evaluation is essential to maintaining the competency of the POCUS emergency doctor. Testing gear and methods should be utilized to measure the ultrasound capabilities of faculty precisely. Competencies ought to incorporate capability in picture securing and elucidation abilities and the capacity to coordinate ultrasound discoveries into treatment decision-making forms. Through standard competency evaluations, professionals can distinguish zones for enhancement and give counsel and support to senior students.

### ***Simulation-Based Learning***

Simulation-based learning gives clinicians a secure, positive environment to create and make strides in their ultrasound abilities. Recreation scenarios can be altered to recreate various clinical circumstances experienced in intense care, permitting understudies to hone ultrasound strategies in a practical but controlled environment. Simulation-based learning increases students' certainty and capacity to utilize POCUS in clinical practice by providing openings for hands-on practice, input, and reflection (Maxson et. al 2023).

### ***Interdisciplinary Collaboration***

Interdisciplinary collaboration between the nursing, therapeutic, and ultrasound workforces is basic for successfully integrating POCUS into the generally intense system. Collaboration encourages sharing abilities, assets, and best practices, permitting nursing understudies to take advantage of numerous viewpoints on instruction. By working together in a POCUS, staff and students can create modern teaching techniques, make intuitive learning opportunities, and cultivate a culture of collaboration and teamwork (Leidi et. al 2020).

An approach to POCUS preparation in emergency nursing administrations is vital to getting medical caretakers ready to utilize this apparatus in treatment. The basic components of POCUS preparation are instructional strategies, instructor preparation, competency evaluation, reenacted learning, and collaborative learning. By tending to these issues, schools can guarantee that understudies get a comprehensive POCUS and eventually make strides in improving the quality of care for emergency patients.

### **Conclusion**

In summary integrated POCUS and preparing for emergency nursing education program actors with the essential abilities to utilize this apparatus in treatment. Orderly forms backed by instructor preparation and normal execution assessment are imperative in guaranteeing the adequacy and consistency of POCUS preparation (Cormack et. al 2023). These measures are basic to protecting capacity and progressing in understanding care results. Future bearings for POCUS instruction incorporate innovation in separate instruction models to extend availability and ease of instruction. Additionally, there's a need to extend the use of POCUS in serious care, investigate modern zones, and move existing administrations forward to progress persistent care. With these plans in place, emergency -preparation programs can be created and adjusted to meet the challenges of today's healthcare environment.

### **Recommendations**

- Create a precise approach that incorporates the essentials of ultrasound, picture procurement, and elucidation skills(Lai, 2022)..
- Give educators preparation and support to guarantee the quality and consistency of POCUS training.
- Conduct progressing execution assessments to screen clinical hone in ultrasound.
- Utilize simulation-based learning to convey execution in a secure and controlled environment.Foster interdisciplinary collaboration between nursing, medical, and ultrasound faculty to enhance the integration of POCUS into emergency care frameworks.

By implementing these recommendations, emergency nursing education programs can better prepare nurses to utilize POCUS effectively in clinical practice, ultimately improving patient outcomes.

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