

## Ultrasound Guided Vascular Access Course

2024

8 AMA PRA Category 1



## Ultrasound Guided Vascular Access

Faculty: Shawn Shanmuganathan BS, RDMS, RVT

### Welcome to Advanced Health Education Center

As the Senior Vice President, I would like to thank you for choosing Advanced Health Education Center's (AHEC) for your Ultrasound training course. The faculty, staff, and fellow students join me in welcoming you. We will make reasonable efforts to ensure that your time with us is enjoyable as well as educational. These courses are designed to help you develop the skills and acquire the information necessary to perform at a high level of competency in sonography. There are various areas in which you will be evaluated during the course to ensure your learning and success.

AHEC has been a leading provider of continuing education for healthcare professionals in imaging sciences since 1988. Our mission is to provide you with evidence-based education and training that will increase your knowledge, enhance your competency, and improve patient care. Since receiving ACCME Accreditation in 1998, we have assisted in the development of ultrasound skills for physicians, sonographers, nurses, midwives and other healthcare professionals.

The registration packet is designed to provide students with general information regarding AHEC, course information, CME credit, and disclosure of relevant financial interest. We wish you well in your professional advancements and are here to assist you in pursuing your educational goals. Please contact us if we can be of further assistance to you at 1-800-239-1361.

Congratulations and good luck pursuing your professional goals!

Best,



*KReddix*

Kelli Reddix, MBA, BAAS, LVN

Senior Vice President

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## Course Overview

**Event Location:** Advanced Health Education Center  
8502 Tybor Drive  
Houston, Texas, 77074

**Credit:** 8 AMA PRA Category 1™

**Time:** 8:00 am – 5:00 pm

**Instructor:** Shawn Shanmuganathan BS, RDMS, RVT

## Course Description:

Central venous catheterization and PICC line insertions can be difficult and can cause serious complications. Central venous cannulation (CVC) is an important procedure in the practice of emergency and critical care medicine. A PICC line is, by definition and per its acronym, a peripherally inserted central catheter, and ultrasound is rapidly becoming a tool of choice for identifying the venous anatomy needed for success. With the increasing ability of bedside ultrasound, the technology has proven to reduce error and improve patient care. The Agency for Healthcare Research & Quality, the Institute of Medicine and the National Institute for Health & Clinical Excellence have all endorsed ultrasound-guided central venous cannulation (UGCVC) as a recommended practice. Given the importance of CVC it is paramount that physicians become proficient with UGCVC.

Ultrasound guided vascular access is rapidly becoming the standard of care in many medical institutions. Basic ultrasound expertise is invaluable, but there is a whole array of ultrasound procedures that can be performed that will increase your effectiveness and diagnostic accuracy. Go beyond the basics and get the skills you need to expand your effective use of ultrasound in your clinical environment!

Participants in this course will benefit from demonstration, hands-on scanning with phantoms where the ultrasound faculty will teach you the essential skills and techniques to perform exams that make a difference in patient outcomes by demonstrating cardiac problems, deep vein thrombosis, or need for an intervention that can be done under ultrasound guidance.

**Faculty:** Shawn Shanmuganathan - No relevant financial relationships to disclose.



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## Course Objectives:

At the completion of this course, the learner will be able to:

Orientation to Ultrasound Equipment and Function

- Recognize ultrasound equipment and describe its function.
- Discuss functions of the ultrasound machine such as: transducers, output, depth, focusing, real time imaging, Doppler imaging

Venous Anatomy and the Ultrasound Appearance of DVT

- Differentiate normal from abnormal venous anatomy
- Explain how to perform a basic venous ultrasound evaluation for DVT
- Be familiar with anatomical areas of the lower extremity and differentiate between veins
- Explain the basic techniques for limited ultrasound examination of deep veins

Ultrasound Guided Procedures

- Recognize and discuss ultrasound guided procedures
- Explain line placement in the jugular vein
- Explain line placement in the subclavian vein
- Explain the procedure for identifying and accessing the vein or structure using ultrasound guidance

## Course Topics:

- Venous orientation and pathology to demonstrate DVT
- Upper and lower extremities, to include the jugular, subclavian, femoral, saphenous, basilic and superficial veins of the upper extremity
- Proper way to compress veins
- Use color Doppler to evaluate areas of suspected DVT prior to inserting a line
- Central and peripheral line placement
- PICC lines will be introduced as important and time saving ways of managing critically ill patients
- Hands-on practice will be offered for all topics using phantoms



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## Course Schedule

Lecture 8am-11am | Scan Lab 11am-12pm | Lunch 12pm-1pm | Scan Lab 1pm-5pm

### Lecture

8am – 9:30am

Orientation to Ultrasound Equipment and Function

- Transducers, output, depth, focusing, real time imaging, Doppler imaging

9:30am – 11am

Venous Anatomy and the Ultrasound Appearance of DVT

- Basic sonographic techniques to evaluate for DVT
- Common femoral vein
- Greater saphenous vein
- Popliteal vein
- Normal morphology and Doppler appearance
- Veins with abnormal morphology
- Veins with Sonographic signs of DVT
- Compressible and non-compressible veins
- Normal and abnormal Doppler flow patterns

### Scan Lab

11am-12pm and 1pm-5pm

Ultrasound Guided Procedures

- Central line placement (Jugular and Subclavian veins)

Sonographic probe position to identify the thoracic cavity, jugular vein, and subclavian vein

- Successful cannulation of a practice phantom using ultrasound guidance and needle
- Obtain images of the chest cavity and abdominal cavity
  - Lower quadrant windows
  - Hepatic and supra-splenic windows
  - Sub-costal window
  - Image the lower thoracic cavity



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## Skills Checklist

The participant will demonstrate an understanding of the following controls to optimize the image:

- Physics and Instrumentation
- On/Off
- Output/Power
- Depth
- Master Gain
- TGC/DGC
- Focal Zones
- Dynamic Range
- Presets
- Calipers
- Freeze/Cine
- Color/Power Doppler
- Zoom

The participant will identify and be able to image the following anatomy with measurements where applicable:

- Views of Subclavian Vein
- Views of Jugular Vein
- Views of CFV
- Identify Basilic and Brachial Veins
- Correlate the sound beam to the aspiration needle with a phantom
- Soft Tissue Applications



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### **CME Credit:**

- “The Advanced Health Education Center is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.”
- “The Advanced Health Education Center designates this educational activity for a maximum of 8 hours AMA PRA Category I™. Physician should claim credit commensurate with the extent of their participation in the activity.”

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AHEC defines a skills course as a limited enrollment course where a received registration with payment reserves your place in a course (i.e. all Ultrasound courses, Mammography Initial Training and other theory courses). For cancellations received at least two weeks prior to the course date, a refund less a 30% processing fee will be given. Within two weeks of the course, no refund is given, but a tuition credit – less a 30% processing fee – may be applied to a future course. No refunds or tuition credit is given for non-attendance. Facilities may substitute employees by notification to AHEC at least one week in advance.

### **Disclosure of Relevant Financial Interest for Individuals in Control of Content:**

As a provider accredited by the ACCME, Advanced Health Education Center, Ltd ensures balance, independence, objectivity, and scientific rigor in all of its sponsored educational activities.

In addition to the identified CME faculty member for an educational activity, all non-faculty, including committee members and administrative personnel involved in the planning, development or production of the sponsored activity and/or authorship or review of enduring materials do not have any relevant financial interest to disclose. Financial interest includes but is not limited to relationships with commercial companies, manufacturers, or corporations, whose products or services are related to the subject matter of the presentation within the prior 12 months.

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  - AHEC: President
  - No relevant financial interest to disclose
- Jence Cantu, MHA RT(R) - Committee Member
  - AHEC: Chief Executive Officer (CEO)
  - No relevant financial interest to disclose



## **Ultrasound Guided Vascular Access**

Faculty: Shawn Shanmuganathan BS, RDMS, RVT

- Peggy Hoosier, M.Ed RT(R)(M) - Program Director
  - AHEC: Chief Operating Officer (COO)
  - No relevant financial interest to disclose
- Kelli Reddix, MBA, BAAS, LVN - Planning Committee
  - AHEC: Senior Vice President
  - No relevant financial interest to disclose
- Nanette Joiner
  - AHEC: Administrative Support
  - No relevant financial interest to disclose
- Debbie Robertson, BS, RDMS
  - Ultrasound Faculty
  - No relevant financial interest to disclose
- Virlene Guzman, RT(R), RDMS, RVT
  - Ultrasound Faculty
  - No relevant financial interest to disclose
- Shawn Shanmuganathan, BS, RDMS, RVT
  - Ultrasound Faculty
  - No relevant financial interest to disclose

### **Content Validation:**

All presentations designated for AMA PRA Category 1™ are reviewed and approved by members of the curriculum committee for content validity, and to ensure that no conflicts of interest exist prior to the advertisement and delivery of the educational activity.

**The faculty and staff at AHEC welcome you!**