ADVANCED HEALTH EDUCATION CENTER®

EDUCATION ▲ STAFFING ▲ CONSULTING

Ultrasound Guided Vascular Access Course

6 AMA PRA Category 1

Faculty: Shawn Shanmuganathan BS, RDMS, RVT

Target Audience: This activity is designed for physicians, sonographers, nurses, and other healthcare professionals interested in learning ultrasound guided procedures.

Disclosure Summary: All relevant financial relationships of faculty and planners have been disclosed and mitigated. Full disclosure information is provided within this syllabus.

Advanced Health Education Center (AHEC) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

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Welcome to Advanced Health Education Center

On behalf of the faculty, staff, and your fellow students, I want to personally welcome you to your Ultrasound training course at AHEC. We're thrilled you've chosen us to advance your education, and we are committed to making your experience both enjoyable and rewarding.
Our courses are designed to help you build practical skills, deepen your knowledge, and perform at a high level of competency in sonography. Throughout your training, you will be evaluated in several areas to ensure your growth and success.

Since 1988, AHEC has been a trusted provider of continuing education for healthcare professionals in the imaging sciences. Our mission is to provide evidence-based education that enhances your competency and improves patient care. We have proudly supported the development of ultrasound skills for physicians, sonographers, nurses, midwives, and other healthcare professionals.

This registration packet includes essential information about AHEC, your course, CME credit, and disclosure of any relevant financial interests. We are here to support you in achieving your educational goals—please don't hesitate to reach out to us at 1-800-239-1361 if you need assistance.

Congratulations on taking this step in your professional journey. We look forward to seeing your skills and confidence grow!

Warm Regards,



Kelli Reddix, MBA, BAAS, LVN
Senior Vice President
Phone 1-800-239-1361 • 8502 Tybor, Houston, Tx, 77074

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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 – 3:00 pm
Instructor: Shawn Shanmuganathan BS, RDMS, RVT

Course Description:

Ultrasound-Guided Vascular Access: Central Venous and PICC Line Techniques
Central venous catheterization (CVC) and PICC line insertions are critical procedures in emergency and critical care, but they carry the risk of serious complications if not performed accurately. Ultrasound guidance has become the standard of care for identifying venous anatomy, improving procedural success, and reducing patient risk. Organizations such as the Agency for Healthcare Research & Quality, the Institute of Medicine, and the National Institute for Health & Clinical Excellence endorse ultrasound-guided central venous cannulation (UGCVC) as a recommended practice.

This course equips physicians and healthcare professionals with the skills needed to perform safe, effective, ultrasound-guided vascular access. Participants will benefit from expert demonstration, hands-on practice with phantoms, and guidance on performing procedures that directly impact patient outcomes—ranging from central line placement to identification of deep vein thrombosis. Basic ultrasound knowledge is helpful, but this course goes beyond fundamentals to enhance your diagnostic accuracy and procedural proficiency in clinical practice.

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

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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-3pm

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-3pm

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 6 hours AMA PRA Category I™. Physician should claim credit commensurate with the extent of their participation in the activity."

AHEC Cancellation and Refund Policy for Skills Courses:

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 an ACCME-accredited provider, Advanced Health Education Center (AHEC) is committed to ensuring balance, independence, objectivity, and scientific rigor in all of its educational activities.

In accordance with ACCME Standard 3, AHEC requires that all individuals in control of content—including planners, faculty, committee members, and administrative personnel involved in the planning, development, or production of educational activities—disclose all financial relationships with ineligible companies within the past 24 months. A financial relationship is considered relevant if it exists between the individual and an ineligible company whose products or services are related to the content of the educational activity.

AHEC has implemented mechanisms to identify, mitigate, and disclose relevant financial relationships to prevent commercial bias in its educational activities. All disclosed relevant financial relationships have been mitigated prior to the commencement of the educational activity.

The individuals listed below are acknowledged by AHEC as having control of the content, planning, development, or administrative support of all educational activities.

- Marilyn Sackett, M. Ed, RT (R), Committee Member
  - AHEC: President
  - No relevant financial interest to disclose
- Jence Garza, MHA RT(R) - Committee Member
  - AHEC: Chief Executive Officer (CEO)

    - No relevant financial interest to disclose
- Peggy Hoosier, M.Ed RT(R)(M) - Committee Member
    - AHEC: Consultant
    - No relevant financial interest to disclose
- Kelli Reddix, MBA, BAAS, LVN - Program Director
    - AHEC: Senior Vice President
    - No relevant financial interest to disclose
- Nanette Joiner
    - AHEC: Administrative Support
    - No relevant financial interest to disclose
- Chevaun Fletcher, BS, RDMS
    - Ultrasound Faculty
    - No relevant financial interest to disclose
- Jessica Smith, BS, MHA, 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™ credit undergo a rigorous review process to ensure content validity. This process includes:

- Curriculum Committee Review: All content is reviewed and approved by members of the curriculum committee for scientific accuracy, balance, and alignment with current evidence-based practices.
- Peer Review: Where applicable, content is subjected to peer review by individuals with appropriate clinical expertise and no relevant financial relationships with ineligible companies.
- Conflict of Interest Assessment: Prior to the advertisement and delivery of the educational activity, all individuals involved in the planning, development, or production of the activity disclose any relevant financial relationships. Any identified conflicts are resolved in accordance with ACCME Standard 3.5.
- Identification of Emerging Topics: New and evolving topics are clearly identified as such within the program to distinguish them from established, evidence-based practices.

This comprehensive approach ensures that all educational content is fair, balanced, and based on the best available evidence, thereby supporting safe and effective patient care.