

## Defining How Faculty are Qualified to Teach Point of Care Ultrasound



James P. Rathmell, M.D.  
Chair, Department of Anesthesiology,  
Perioperative and Pain Medicine  
Brigham and Women's Health Care  
Leroy A. Vandam Professor of Anaesthesia  
Harvard Medical School  
Boston, Massachusetts USA



## Conflict of Interest

Director, American Board of Anesthesiology

The ABA oversees preparation and administration of Primary and subspecialty physician board certification examinations in Anesthesiology

Association of Anesthesiology Subspecialty Program Directors - Chicago, IL - November 4, 2017

## Objectives

- Discuss the advantages, disadvantages, and difficulties in establishing rigid assessment criteria for defining competence in point of care ultrasound
- Describe approaches for defining qualification for those instructing in point of care ultrasound

Association of Anesthesiology Subspecialty Program Directors - Chicago, IL - November 4, 2017

POINT-OF-CARE ULTRASOUND

## NEW KNOWLEDGE & SKILLS

Learning and Teaching

## New Knowledge and Skills: Learning and Learning to Teach

SPECIAL ARTICLE

American Society of Regional Anesthesia  
and Pain Medicine 2011 John J. Bonica Award Lecture  
*The Evolution of the Field of Pain Medicine*

James P. Rathmell, MD

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THE JOURNAL OF THE AMERICAN SOCIETY OF REGIONAL ANESTHESIOLOGISTS

## New Knowledge and Skills: Learning and Learning to Teach

▽ Editorial *Regional Anesthesia and Pain Medicine*, Vol 29, No 4 (July-August), 2004; pp 305-306

### The Injectionists


**W**hat is pain medicine? Is it a subspecialty or a primary medical discipline? For the anesthesiologist, is it a full-time endeavor or a field that is easily practiced as an aside within the daily routine of the operating room? If you open the telephone book in an unfamiliar city and find a physician listed as a pain medicine specialist, are you confident that you can predict the treatment modalities that he or she will offer?

In a Letter to the Editor in this issue of *Regional Anesthesia and Pain Medicine*, Dr. Hackbarth describes a bothersome symptom of a much greater problem that faces the fledgling field of pain medicine.<sup>1</sup> A plethora of technique workshops, both independent and affiliated with our most prestigious academic societies, offer brief training in the technical aspects of interventional pain. Dr. Hackbarth contends that by offering these training sessions, we are promoting the haphazard and indiscriminate use of injection techniques in clinical practice, rather than promoting a balanced and multidisciplinary approach to caring for our patients suffering with chronic pain.

# POINT-OF-CARE ULTRASOUND INTEGRATING TRAINING

Knowledge and skills for all anesthesiologists

# Point-of-care Ultrasound: Training for Anesthesiologists



ACGME Program Requirements for  
Graduate Medical Education  
in Anesthesiology

# Point-of-care Ultrasound: Training for Anesthesiologists

*Journal of Cardiothoracic and Vascular Anesthesia*, Vol 29, No 4 (August), 2015; pp 462-468

**ORIGINAL ARTICLES**

**Focused Cardiovascular Ultrasound Performed by Anesthesiologists in the Perioperative Period: Feasible and Alters Patient Management**

Brian Cowie, MBBS, FANCA

**Objectives:** The aim of this study was to assess the feasibility and effects on perioperative management of a focused transthoracic echocardiogram performed by anesthesiologists.

**Design:** A retrospective observational study of all patients having a focused cardiovascular ultrasound (FoCUS).

**Setting:** A single tertiary referral university teaching hospital.

**Participants:** Fifty consecutive perioperative patients who had a clinical indication for a FoCUS.

**Intervention:** After performing a FoCUS, relevant clinical information was communicated to the anesthesiologist in charge of the case, who then decided on the appropriate management of the patient including the choice of anesthesia, invasive monitoring, fluids, vasoactive drugs, and perioperative care. If indicated, patients were referred for a formal echocardiography-based transthoracic echocardiogram.

**Measurements and Main Results:** Anesthesiologists were able to obtain diagnostic-quality images during a FoCUS in 98% of patients. The most common indication for a FoCUS was an undifferentiated apical systolic murmur in 60% of cases, with 30% of all patients having acute aortic dissection. In 84% of patients, some change in their perioperative care occurred as a result of the FoCUS study. Major findings correlated with a formal echocardiography-based transthoracic echocardiogram in 87% of cases.

**Conclusion:** Anesthesiologists with a cardiac and echocardiography background can successfully perform a FoCUS in almost all patients when indicated, which provides valuable new diagnostic information guiding changes in perioperative management in the majority of patients.

**KEY WORDS:** focused transthoracic echocardiography, anesthesiologist, perioperative

# Point-of-care Ultrasound: Training for Anesthesiologists

*Journal of Cardiothoracic and Vascular Anesthesia*, Vol 29, No 1 (February), 2015; pp 82-88

**A Review of 364 Perioperative Rescue Echocardiograms: Findings of an Anesthesiologist-Staffed Perioperative Echocardiography Service**

Nicholas W. Markin, MD, Benjamin S. Gralich, MD, Matthew J. Griffes, MD, Timothy J. Hoimberg, MD, David E. Morgan, MD, and Joshua M. Zimmerman, MD, FASE

**Objective:** Review the findings and use of rescue echocardiography performed by the Division of Perioperative Echocardiography and its impact on patient management.

**Design:** Retrospective observational study.

**Setting:** Single institution, tertiary care hospital.

**Participants:** Three hundred sixty-four consecutive rescue echocardiograms in the perioperative setting.

**Interventions:** Rescue transthoracic or rescue transesophageal echocardiography.

**Measurements and Main Results:** Of a total of 1,675 perioperative echocardiograms performed in a 28-month period, 364 (21.8%) were rescue studies. Of these, 95.9% were transthoracic and 4.1% were transesophageal. Location at time of rescue echocardiography was intraoperative (55.5%), postoperative (44.2%), and preoperative (0.3%). No single diagnosis predominated the intraoperative or postoperative environment, and the frequency of common etiologies did not allow for assumption. There was a change in management for 214 patients (59%) as the result of findings. The methods used in performing rescue echocardiography at the authors' institution are reported.

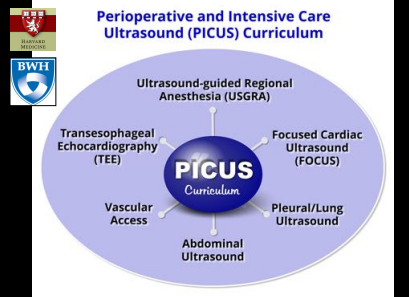
**Conclusion:** The heterogeneity of diagnoses and the frequency with which rescue echocardiography changed management further supports the growing body of evidence that the hemodynamically unstable perioperative patient benefits from its use.

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**KEY WORDS:** rescue echocardiography, hemodynamic instability, transesophageal echocardiography, transthoracic echocardiography, intraoperative hypotension

# Point-of-care Ultrasound: Training for Anesthesiologists

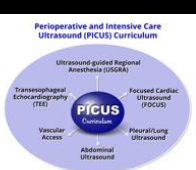
**Perioperative and Intensive Care Ultrasound (PICUS) Curriculum**



The diagram illustrates the PICUS Curriculum as a central hub with six surrounding branches: Transesophageal Echocardiography (TEE), Vascular Access, Abdominal Ultrasound, Pleural/Lung Ultrasound, Focused Cardiac Ultrasound (FOCUS), and Ultrasound-guided Regional Anesthesia (USGRA). Logos for the University of Wisconsin-Madison and Boston Children's Hospital are also present.

# Point-of-care Ultrasound: Training for Anesthesiologists

**PICUS Curriculum in the PACU**



The diagram shows the PICUS Curriculum in the PACU with five components: Transesophageal Echocardiography (TEE), Vascular Access, Abdominal Ultrasound, Pleural/Lung Ultrasound, and Focused Cardiac Ultrasound (FOCUS). Logos for the University of Wisconsin-Madison and Boston Children's Hospital are also present.

**Week 1**

**Monday**

- 8-8:30am
  - Complete questionnaire
  - Complete pretest exam
- 8:30-9:00am
  - Meet Lindsey at STRATUS to complete simulator exam

**Tuesday**

- 8-9am
  - Watch online lectures on "Parasternal Long Axis", "Parasternal Short Axis", "Apical 4-chamber", "Subcostal 4 chamber and IVC".
  - Watch "Introduction to QPath"

## Point-of-care Ultrasound: Training for Anesthesiologists



## Point-of-care Ultrasound: Training for Anesthesiologists



## Point-of-care Ultrasound: Training for Anesthesiologists



## Point-of-care Ultrasound: Training for Anesthesiologists

- Teachers in our program are all motivated and interested in point of care ultrasound
- They have acquired skills/knowledge via fellowship training and/or went to outside perioperative ultrasound conferences with hands on training

## Point-of-care Ultrasound: Training for Anesthesiologists

- When getting a “critical mass” of teachers it depends on what area of point of care (perioperative) ultrasound you aim to teach: regional, TEE, FoCUS (Focused cardiac ultrasound)/TTE, lung, abdominal, vascular
- Regional and TEE are areas with knowledge and existing educational infrastructure

## Point-of-care Ultrasound: Training for Anesthesiologists

- Assure that the three essential components of an US training program are in place:
  - Didactics
  - Hands-on sessions
  - QA

# Point-of-care Ultrasound: Training for Anesthesiologists

AMERICAN SOCIETY OF ECHOCARDIOGRAPHY CONSENSUS STATEMENT

## Focused Cardiac Ultrasound in the Emergent Setting: A Consensus Statement of the American Society of Echocardiography and American College of Emergency Physicians

Arthur J. Labovitz, MD, FASE, Chair; Vikki E. Noble, MD, FACEP; Michelle Bierig, MPH, RDCS, FASE; Steven A. Goldstein, MD, Robert Jones, DO, FACEP; Anandhar Suresh, MD, FASE; Thomas R. Pomeroy, MD, FASE; Kirk T. Spencer, MD, FASE; Virek S. Tatal, MD, FACEP; and Erica Wee, MD; St. Louis, Missouri; Boston, Massachusetts; Washington, District of Columbia; Cleveland, Ohio; Stoney Brook, New York; Omaha, Nebraska; Chicago, Illinois; Charleston, North Carolina; Portland, Oregon

The use of ultrasound has developed over the last 50 years into an indispensable first-line test for the cardiac evaluation of symptomatic patients. The technologic miniaturization and improvement in transducer technology, as well as the implementation of educational curricula and changes in residency training programs and specialty practice, have facilitated the integration of focused cardiac ultrasound into practice by specialties such as emergency medicine. In the emergency department, focused cardiac ultrasound has become a fundamental tool to expedite the diagnostic evaluation of the patient at the bedside and to initiate emergent treatment and triage decisions by the emergency physician. (J Am Soc Echocardiogr 2010;23:1225-30)

**Keywords:** Echocardiography, Emergency department, Focused cardiac ultrasound, Resuscitation

# Point-of-care Ultrasound: Training for Anesthesiologists



IV.A.5.a).(2).(c).(viii)

emergency department bedside ultrasound;  
(Outcome)

IV.A.5.a).(2).(c).(viii).(a)

Residents must use ultrasound for the bedside diagnostic evaluation of emergency medical conditions and diagnoses, resuscitation of the acutely ill or injured patient, and procedural guidance. (Outcome)

POINT-OF-CARE ULTRASOUND

## ASSESSING COMPETENCY

Core competencies for all anesthesiologists

## Assessing Competency

Journal of  
**HOSPITAL MEDICINE**

PERSPECTIVES IN HOSPITAL MEDICINE

### Hospital Medicine Point of Care Ultrasound Credentialing: An Example Protocol

J. Hosp. Med. 2017 September;12(9):767-772

By: Benji K. Mathews, MD, Michael Zwank, MD, RDMS

 The American Board of  
Anesthesiology

## ABA Technical Skill OSCE: Application of Ultrasonography

## Application of Ultrasonography

For this OSCE station candidates will be assessed on their ability to use a common ultrasound machine to identify the normal anatomy relevant to placing a nerve block or an intravascular catheter

During the exam candidates will be required to:

- interact with an examiner and a standardized patient
- position the patient appropriately for the procedure
- instruct the examiner on how to adjust the depth and gain in order to obtain the best image
- demonstrate simulated needle placement technique

## Application of Ultrasonography

The images to be obtained will be chosen from among the following procedures:

### Vascular cannulation

- Internal jugular vein
- Cubital fossa vessels
- Radial artery
- Femoral vessels

### Nerve blocks

- Interscalene
- Supraclavicular
- Transversus abdominis plane (TAP)
- Femoral
- Adductor canal (saphenous)
- Popliteal

## Resources

Exemplar scenarios and a video preview of the **Application of Ultrasonography** station can be found on the ABA's website

OSCE CONTENT OUTLINE: B.3  
APPLICATION OF ULTRASONOGRAPHY

In this station, you will be asked to complete 3 separate tasks related to the use of ultrasound to assess or nerve blocks.

For each task, you will be required to produce an image using an ultrasound probe that you will. The examiner will operate the ultrasound machine, and you may request that the examiner adjust gain.

You can instruct the standardized patient to position himself or herself as appropriate. The patient remains awake for all vascular access tasks.


For each task, you will generate an image that would support the conduct of a specified vascular access or nerve block procedure. You may be asked to generate an in-plane or out-of-plane view. Check or with the image, you will ask the examiner to freeze the image. You will then be asked to identify the image, as directed by the examiner.

You may be asked to identify the optimal needle positioning for vascular access or nerve block, optimal needle tip location to deposit local anesthetic.

You have no more than 2 minutes and 30 seconds to complete each task.

Your 3 tasks are to produce images to facilitate the following procedures, including identification of the appropriate structure. **NOTE:** For the actual examination, the specific procedures and structures will be listed, so that you will know which procedures will be examined before entering the examination room. The specific procedures that could be examined are included in the content outline.

OSCE Overview Video



Go To:

[www.theaba.org/PDFs/APPLIED-Exam/OSCE-Exemplar-Scenarios](http://www.theaba.org/PDFs/APPLIED-Exam/OSCE-Exemplar-Scenarios)

## Summary

- The best way to assure competence in this technical skill is to make training in ultrasonography a part of the core training for all anesthesiologists
- Individual programs will have to assess their own resources and build upon their existing strengths with guidance from those who have assembled successful programs

## Summary

- Those who have already developed interest and expertise should assemble and disseminate guidelines that suggest how faculty can best assure that faculty are highly qualified to teach point-of-care ultrasound



Boston Public Library

Boston, Massachusetts, 2012