Application for an Area of Focused Practice

Overview

The ABMS Focused Practice designation recognizes areas of practice that either evolve as specialists progress through their professional careers or emerge as medicine changes due to advances in medical practice. Focused Practice is not intended to be a form of certification, since it recognizes areas of focus within recognized specialties or subspecialties and is based upon clinical experience. Use of the designation will recognize an evolution of practice relevant to continuing certification.

Requests from a Member Board to designate an area of focused practice within a specialty or subspecialty will go through an approval process that is similar to the process outlined in Article VII, Section 7.2 of the Amended and Restated Corporate Bylaws of the American Board of Medical Specialties.

Focused Practice Criteria

1. The area of focused practice must have a sponsoring ABMS Member Board who will define the eligibility criteria and submit the application to COCERT.
2. Eligible diplomates must be certified by the sponsoring Member Board and have an active primary or relevant subspecialty certificate with good standing in the community.
3. The sponsoring Member Board will develop the clinical practice experience (both in terms of time and volume) beyond initial training required for eligibility. Formal fellowship training may count toward the practice requirement.
4. The sponsoring Member Board will be required to develop requirements, including a Board-based assessment for eligible diplomates, prior to awarding a focused practice designation.
5. The area of focused practice must have an MOC requirement that is determined and described by the Member Board. The MOC requirement may be fully tailored toward the area of focused practice.

Application for an Area of Focused Practice

Upon completion, please forward this application for a new area of focused practice to Richard E. Hawkins, MD, ABMS President and Chief Executive Officer, in care of David B. Swanson, PhD, at dswanson@abms.org with a copy to Paul Lawlor at plawlor@abms.org. If you need any assistance with the completion of this application, please contact Paul Lawlor.

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Name of Sponsoring Board(s): American Board of Emergency Medicine

1. **Provide the name of the proposed area of focused practice:** Clinical Ultrasonography (CU)

2. **If multiple Boards are interested in this Focused Practice Designation and wish to collaboratively submit an application, please view the addendum found at the end this application. Each Board should complete an addendum to describe specialty-specific modifications.**

   None.

3. **State the purpose of the proposed area of focused practice and include the rationale for how this area of focused practice is different from a subspecialty, in two paragraphs or less:**

   The purpose of the proposed designation of Focused Practice in Clinical Ultrasonography (CU) is to recognize expertise held by emergency physicians with sophisticated, comprehensive knowledge of CU. Residency-trained emergency physicians have acquired basic expertise applying point-of-care ultrasound in the emergency department, whereas those physicians who specialize in CU have acquired a greater breadth and depth of knowledge that is distinct from the emergency physician.

   ABEM will require ABEM-approved CU fellowship training that provides practitioners with a depth of knowledge and specialized expertise in education and research that exceeds that of other practitioners with general emergency ultrasound competency. Appropriately trained emergency physicians, who have not completed fellowship programs in CU, would not be precluded from using ultrasound technology in the routine care of patients. CU practiced by emergency physicians expedites patient care as it is provided at the bedside and does not require the patient to be transported outside of the emergency department. CU is available 24 hours a day and the data acquired are contemporaneously integrated into the clinical care of the emergency department patient. Requiring expertise that has a significant technologic and/or procedural component is not unique. From interventional cardiology to electrophysiology to hyperbaric medicine, technical advances in medicine have created the need for focused expertise.

4. **Focused practice typically falls under one of these areas. Please describe which of the following this application addresses:**

4.a Evolving area of practice

Ultrasonography is an evolving area of practice in Emergency Medicine. The contemporaneous use of CU in the provision of care has grown rapidly as high-quality ultrasound devices become more compact, portable, affordable, and easier to use at the point of care. The field is not solely procedural, but rather uses expertise in acquiring ultrasound images to augment real-time clinical decision-making at the bedside. All areas within Emergency Medicine benefit from advances in CU: use in resuscitation of the acutely decompensated, undifferentiated patient; diagnosis of emergency conditions; evaluation of symptom or sign-related complaints such as dyspnea, hypotension, chest pain, abdominal pain, etc.; assistance with completion of emergency procedures (e.g., intravenous access, regional anesthesia, fracture reduction, joint aspiration, etc.) that enhance patient comfort and safety while maximizing the efficiency of the physician; monitoring patient conditions sonographically, and, avoiding unnecessary ionizing radiation in the diagnosis of abdominal pain, soft tissue injuries or infections (e.g., abscesses), or chest pain.

Those emergency physicians who have chosen to focus their practice in CU are the thought leaders responsible for advancing the use of ultrasonography throughout Emergency Medicine including the areas of prehospital, battlefield, austere environment, and disaster medicine. All ABEM diplomates are expected to have acquired a basic set of knowledge and skills in the application of CU. Beyond the basic skills learned in residency, emergency physicians with the designation of Focused Practice in CU will develop the additional teaching materials, research skills, web-based resources, assessment tools, and standards needed to more broadly integrate CU in emergency departments nationwide. While each emergency department may not have its own expert in CU, this designation of Focused Practice will expand the ease and accessibility to CU experts, both locally and regionally, who can provide continuing education in advances within CU.

A designation of Focused Practice in Clinical Ultrasonography would result in the acceleration of education and research to further advance the life-saving skills needed to care for critically ill and injured patients; assess and manage patients who need non-elective hospital admissions; and, perform complex evaluations of high-risk patients.

4.b Area of practice limited in scope or size N/A

4.c Specialized procedure N/A

5. **Please outline the eligibility criteria required of candidates in the proposed area of focused practice, as they pertain to the following:**

5.a What specialty and/or subspecialty certificate(s) will a diplomate be required to hold in order to be eligible for this area of focused practice?

All diplomates seeking a designation of Focused Practice in CU must hold current primary board certification issued by ABEM or the American Osteopathic Board of Emergency Medicine (AOBEM).

5.b Clinical practice experience (both in terms of time and patient volume) in the area of focused practice, beyond initial training:

5.b.i Training Pathway

The diplomate must have successfully completed a minimum of one year of ABEM-approved fellowship training in CU as of the graduation date, that is based on "The Core Content of Clinical Ultrasonography Fellowship Training"[1] (Attachment 1). The core content details the breadth of knowledge, skills, and abilities (KSAs) required in CU training. In addition to Image Acquisition and Interpretation Skills, the core content also includes the following: 1) Education Skills, 2) Research Skills, and 3) Administration Skills.

5.b.ii Training-Plus-Practice Pathway

The Training-Plus-Practice Pathway will be available to diplomates for five years from the date the first CU fellowship is approved. To apply for a designation of Focused Practice through the Training-Plus-Practice Pathway a diplomate must meet all of the following criteria:

- The diplomate must successfully complete an acceptable, unaccredited fellowship of at least one year in CU.
- Demonstrate that within the five years (60 months) immediately preceding the date on which they submit their CU application, they have practiced CU at least 24 months. The 24 months do not need to be contiguous.
- During the 24 months of CU practice, diplomates must have performed or overseen/supervised an average of 300 CU studies per year.
- During the 24 months of CU practice, diplomates must have reviewed, for quality purposes, an average of 500 studies per year that have been performed by other physicians.

5.b.iii Practice-only Pathway

The Practice-only Pathway will be available for diplomates for five years from the date the first CU fellowship is approved. To apply for certification through the Practice-only Pathway a diplomate must meet all of the following criteria:

- They must demonstrate that within the five years (60 months) immediately preceding the date on which they submit their CU application, they have practiced CU at least 36 months. The 36 months do not need to be contiguous.
- During the 36 months of CU practice, diplomates must have performed or overseen/supervised on average of 300 CU studies per year.
- During the 36 months of CU practice, diplomates must have reviewed, for quality purposes, an average of 500 CU studies per year that have been performed by other physicians.
- Eligible physicians will have extensive experiential knowledge that will be demonstrated by expertise in:
    - Imaging informatics specific to workflow management, review, and archiving CU images
    - Picture Archival and Communication Systems (PACS) and other image and interpretation management solutions
    - Digital Communications in Medicine (DICOM) standards
    - CU practices to implement appropriate quality assurance and quality improvement programs.

- They must meet the criteria in two of the three areas listed below:

  1. Leadership-Administration

     Hold or held one of the following positions for a minimum of one year: CU fellowship director or assistant/associate director, and whose CU or Emergency Ultrasonography (EUS) program has graduated at least three classes of fellows during her or his leadership tenure; or,

     Hold or held a leadership position for a minimum of one year, such as an ultrasonography division or section chief, responsible for quality assurance, credentialing, or structured education of attending physicians, fellows, residents, medical students, mid-level providers, or nurses in the field of clinical ultrasonography.

  2. Scholarly Publications and Products

     Served as a first, second, or senior author on five or more peer-reviewed ultrasonography articles or ultrasonography book chapters (or a combination of five articles and book chapters) in a core ultrasound or core Emergency Medicine text book. Published abstracts do not count. For peer-reviewed articles, a PMID must be supplied for credit. Electronic or web-based publications are limited to *MedEd Portal* and the *Sonoguide*™; other web-based publications and webpages do not count. The inclusion of other electronic publications might be considered as peer review standards evolve.

  3. Teaching

     Presented at least five ultrasonography lectures at a minimum of three different regionally-, nationally-, or internationally-based conferences. Or, presented at least five ultrasonography lectures, outside of her or his own department or institution, for which participants can receive CME credit. External proof (e.g., program schedules or brochures) is required to meet this criterion.

     For physicians who practice in non-academic settings, teaching a minimum of 10 hours (as verified by the department chair or similar person) of structured professional development lectures or workshops for medical colleagues will be considered. Time spent instructing during a clinical shift cannot be included in this definition.

5.c Additional qualifications (if any):

Diplomates must fulfill the ABEM Policy on Medical Licensure.

Physicians must demonstrate the fine motor skills and hand-eye coordination needed to master the technological components needed to recognize Focused Practice in CU. Applicants will be asked to provide information about an appropriate verifier who can confirm that the physician has demonstrated these skills.

6. With regard to Board-based assessment for candidates prior to awarding this area of focused practice, which assessment methods will be required? (Check all that apply)

☑ Examination

☑ Written. A half-day secure Designation of Focused Practice examination consisting of approximately 50-75 single-best answer, multiple-choice questions. The content and scope of the examination will be determined by an examination writing panel, which will establish the blueprint for the examination, write and select questions, establish a criterion-referenced passing standard, and serve as consultants on issues of eligibility and other policies.

- ☐ Oral/practical
- ☐ Other (Please specify)

☐ Participation in a registry

☑ Submission and review of case lists. ABEM reserves the right to request and review case logs, either as part of a random audit, or as needed.

☐ Review of patient charts

☐ Other (please specify)

6.a Please describe the rationale behind the method(s) required in the assessment process:

The stringent eligibility criteria allow only those diplomates who have demonstrated expertise in CU to take the examination that could lead to the designation of Focused Practice in CU. Without already having obtained this broad-based, multi-faceted knowledge in CU, it is unlikely that the physician would be able to successfully complete a validated, secure examination.

The multiple-choice format of the examination places greater emphasis on accurately interpreting an image and using it to arrive at an appropriate diagnosis or determine treatment.

7. Please outline the Maintenance of Certification (MOC) program planned for this area of focused practice:

Diplomates with a designation of Focused Practice in CU will participate in the ABEM MOC Program, with an emphasis in CU where possible. To renew the designation of Focused Practice beyond its expiration date, they must participate in each component of the program.

- Part 1 - Professional Standing and Professionalism: Diplomates must continuously maintain medical licensure in compliance with the American Board of Emergency Medicine's (ABEM) medical licensure policy.
- Part 2 - Lifelong Learning and Self-Assessment (LLS): Diplomates must complete LLSA tests based on designated readings. Diplomates, including those with a CU Designation of Focused Practice, will be able to select from LLSAs with a CU emphasis as well as standard Emergency Medicine and ABEM subspecialty tests.
- Part 3 - Assessment of Knowledge, Judgment, and Skill (KJS): Diplomates must take and pass the CU cognitive expertise examination.
- Part 4 - Improvement in Medical Practice (IMP): Clinically active diplomates must attest to participation in an acceptable national, regional, or local practice improvement program that meets the ABEM requirements.

8. Document the professional and scientific status of this area of focused practice by addressing (a) through (d) below.

8.a Please describe how the existence of a body of scientific medical knowledge underlying the proposed area of focused practice is, in large part, distinct from, or more detailed than that of other areas in which certification or focused practice are offered:

Clinical Ultrasonography focuses on enhancing knowledge and familiarity of general Emergency Medicine practitioners in the following aspects:

- Image acquisition and interpretation performed by the treating emergency physician.
- Occurs contemporaneously at the point-of-care and during acute or critical evaluations

that can be repeated serially as a patient's condition changes.

- A focused examination that answers a specific clinical question or set of questions.
- Often combines focused views of multiple organ systems in an integrated diagnostic approach to a presenting sign or symptom (e.g., e-FAST exam).
- Used to more safely perform invasive procedures (e.g., central line placement).

Focused practice in CU also relies on more detailed knowledge that is broader in scope than that used by general emergency physicians, including the following characteristics:

- Knowledge of the literature base in CU, and understanding of methodology and practice of research in CU.
- Administration of CU programs, including image acquisition and interpretation management systems as well as quality assurance principles and practice.
- Leadership development to better integrate this approach into the delivery of safer, more efficient, and more cost-effective care in the emergency department.

The Core Content of Clinical Ultrasonography Fellowship Training outlines the KSAs a trained physician Clinical Ultrasonographer should master.[1] This curriculum is more advanced than the requirements for emergency ultrasonography taught in residency programs. Additionally, its focus on the image acquisition and interpretation to assist with real-time treatment decisions in the emergency department helps to distinguish CU from other specialties that may use ultrasonography, but as a consultant, rather than as the primary treating physician.

8.a.i Body of Literature

The breadth of the application of CU is demonstrated by the growing body of literature. There are more than 20 textbooks dedicated to emergency ultrasonography, critical care ultrasonography, and point-of-care ultrasonography with other application-specific ultrasound textbooks. For example, a textbook on Ultrasound program management was published in early 2018.[2] All major Emergency Medicine reference textbooks have sections on ultrasonography.

There are over 30,000 peer-reviewed, medical ultrasonography articles archived in PubMed dedicated to clinical, point-of-care, emergency, focused, or CU-specific topics (accessed May 1, 2018). There are multiple websites dedicated to emergency and point-of-care ultrasonography. There is one journal dedicated to CU named *Critical Ultrasound Journal*, with nine additional journals solely dedicated to ultrasound research, the majority of which are clinically oriented (Attachment 2).

8.b Explain how this proposed area of focused practice addresses a distinct and well-defined patient population and care need:

8.b.i Patient Population

Many patients who present for emergency care will benefit from Clinical Ultrasonography expertise when using more nuanced and advanced ultrasonography in austere environments (e.g., war zones, mass casualty situations, at high altitude, Antarctica and for aerospace medicine).[3,4,5] Physicians with a designation of Focused Practice in CU will assist in ensuring that patients who would benefit from emergency ultrasonography have access to it.

More commonly, those patients who are critically ill from any cause will benefit the most from CU expertise due to its ability to help narrow a differential diagnosis and expedite time-dependent treatment decisions. Appropriate use of CU requires a sophisticated understanding of technical aspects of image acquisition, data interpretation, and its immediate integration into patient care.

8.b.ii Patient Care Need

- Facilitates Diagnosis and Treatment

  Clinical ultrasonography includes a wide variety of ultrasonographic applications, but typically assists the emergency physician in answering a diagnostic, binary question (e.g., is the patient hypovolemic?) that more immediately determines the initial treatment in the emergency department setting.

  An example of the integrated use of CU is in the evaluation of non-traumatic hypotension as ultrasound improves accuracy and speed of determining its etiology.[6] Probably the best-known emergency ultrasonography application is the "Rapid Ultrasound in SHock" (RUSH protocol) incorporates focused cardiac, aortic, and abdominal ultrasound exams into an integrated protocol that evaluates potential causes of hypotension.[7]

  Focused cardiac ultrasound has been shown to be accurate for the assessment of pericardial effusion, evaluation of global cardiac systolic function, presence of marked right or left ventricular enlargement, and intravascular volume assessment.[8] A recent consensus statement involving 33 experts from 16 countries discussed the scope and level of evidence for different aspects of focused echocardiography as part of CU.[9] A recent review of circulatory shock recommended that "whenever possible, focused echocardiography should be performed as soon as possible in any patient presenting with shock."[10] More than fifteen protocols use ultrasound for the assessment of medical shock.[11] This is not a protocol that is readily implemented through the conventional use of diagnostic ultrasonographic imaging in a radiology department.

  Shortness of breath is a common chief complaint in the emergency department, with a wide variety of etiologies that can be ascertained using CU. The use of ultrasound for diagnosis of undifferentiated dyspnea has been called the Bedside Lung Ultrasound in Emergency (BLUE protocol).[12] Other integrated protocols have combined immediate, bedside ultrasound of the pleural spaces with focused echocardiography to aid in evaluation.[13,14,15]

  It has been suggested that ultrasound may soon replace the chest radiograph as the initial diagnostic imaging choice in the acute setting for patients who are having difficulty breathing.[16] Ultrasound has been shown to be superior to supine chest radiographs typically obtained in trauma patients.[17] For medical patients with dyspnea, ultrasound of the pleural interface may show comet-tail artifacts known as B-lines that are indicative of alveolar interstitial fluid.[18,19] Pleural ultrasound demonstrating the presence of B-lines has been shown to improve the accuracy of diagnosis of pulmonary edema.[20,21]

  There are many other diagnoses that can be made emergently with the use of ultrasonography, including the identification of ocular, solid organ, or

musculoskeletal injuries; ruptured ectopic pregnancy; and soft tissue infections to name only a few. Once clinical suspicion is confirmed with ultrasonography, directed diagnostic studies can be obtained in a more timely fashion.

- Procedural Guidance

  The evolving area of practice using CU to enhance procedural safety continues to expand. The use of ultrasound guidance for placement of central venous catheters has been endorsed by the Agency for Healthcare Research and Quality (AHRQ) as one of the eleven most important opportunities to improve patient safety.[22] The National Institute for Clinical Excellence (NICE) in the United Kingdom has concluded that, "Two-dimensional (2-D) imaging ultrasound guidance is recommended as the preferred method for insertion of central venous catheters into the internal jugular vein in adults and children in elective situations."[23] Use of ultrasound guidance for central venous access is an emerging standard of care and has been endorsed by more than fifteen professional societies in multiple countries.[24,25,26]

  In addition to ultrasound guidance for central vascular access, the application of CU includes procedural guidance for pericardiocentesis, thoracentesis, paracentesis, arthrocentesis, abscess drainage, foreign body removal, transvenous pacer placement, and nerve blocks.[27] Used for both static and dynamic (real-time) guidance to detect the best approach and location for a procedure, CU can reduce time-to-completion, reduce complications, avoid important anatomic structures, and ease patient discomfort. Expertise in the performance and teaching of ultrasound-guided vascular access, particularly using simulation, has the potential to improve patient-centered outcomes.[28,29]

- Reduction of Ionizing Radiation

  Incorporating ultrasonography into practice reduces ionizing radiation, which benefits all patients, but perhaps the pediatric patient population the most, particularly with regard to the diagnosis of undifferentiated abdominal pain. Similar reductions in radiation can be found in the non-emergent, adult patient with nephrolithiasis or cholethiasis, who frequently receive numerous CT scans. They can benefit from emergency care using CU.

8.c Please provide information about the group of diplomates concentrating their practice in the area of focused practice, if known:

8.c.i The projected number of such diplomates in total and annually (along with the source(s) of the data):

The Society of Clinical Ultrasound Fellowships reports that over the past four years, approximately 70-100 physicians have graduated from CU fellowship training each year.

A recent study[30] indicated that 63 percent of the CU fellowship graduates who responded to a survey began working full-time in an academic setting after graduation:

- 33 percent as ultrasound division directors
- 4 percent as fellowship directors
- 3 percent as ultrasound medical student directors.

Currently, at least 1,200 emergency physicians are members of one or more CU societies (Attachment 3 lists counts reported by each society). It is anticipated that a majority of these physicians will seek the designation of Focused Practice.

8.c.ii The annual rate of change of such diplomates in the recent past and projected annual rate of change for the near future (along with the source(s) of the data):

There has been no significant change in the number of CU fellowship graduates each year over the last four years as reported by the Society of Clinical Ultrasound Fellowships. The rate of change anticipated for diplomates who seek a designation of Focused Practice in CU can be expected to remain fairly steady. Over the past 15 years, the number of ABEM-certified physicians has increased by approximately four percent per year, and the number of diplomates with CU expertise could increase at about the same rate. The attrition rate from CU practice is not tracked.

8.c.iii The current geographic distribution of this group of diplomates, its projected spread in the next five (5) years, and an explanation of how you arrived at this projection: The current geographic distribution of members of the three primary CU societies is shown in Attachment 3. Currently, the distribution closely follows the distribution of Emergency Medicine residency programs, as would be expected given that most CU fellowship programs are associated with Emergency Medicine residency programs. Therefore, it seems likely that growth in the near term will follow the same pattern.

8.d Please identify the existing national societies that have a significant interest in the area of focused practice:

8.d.i Indicate the existing national societies' size and scope, along with the source(s) of the data:

The American Institute of Ultrasound in Medicine (AIUM) is a multi-specialty organization with more than 10,000 members with representation from more than 20 medical specialties (www.aium.org). The AIUM Section of Emergency and Critical Care Ultrasonography has 1,535 members, which is about 15% of the total membership of the AIUM.

The American College of Emergency Physicians (ACEP) Emergency Ultrasound Section, founded in 1996, reports that it has 1,263 members. The ACEP Emergency Ultrasound Section has over 10 subcommittees and has published multiple foundational articles and guidelines.

The Academy of Emergency Ultrasound within the Society for Academic Emergency Medicine reports that it has 158 members.

The Society of Clinical Ultrasound Fellowships reports that it represents and supports activities of 104 fellowship programs, 135 CU Directors or Administrators from these fellowships, and 235 registered current or former fellows.

The Pediatric Emergency Medicine Point of Care Clinical Ultrasonography Network (P2Network) reports that it has approximately 140 members in the United States and Canada, many of whom likely hold subspecialty certification in Pediatric Emergency Medicine.

In addition, there are several supporting specialty organizations including the American Academy of Emergency Medicine, a specialty organization with over 8,800 members.

8.d.ii Indicate the distribution of academic degrees held by their members, along with the source(s) of the data:

1. Doctor of Medicine
2. Doctor of Osteopathy
3. Registered Diagnostic Medical Sonographer
4. Doctor of Philosophy

8.d.iii Indicate the relationship of the national societies' membership with the proposed focused practice designation:

ABEM has a collaborative relationship with the leadership of the national Emergency Medicine Clinical Ultrasonography societies. ABEM routinely holds discussions with the societies' leadership and will draw from nationally recognized physician leaders in CU to develop an examination panel as well as a non-ACGME accrediting (approval) body for the purpose of determining Board Eligibility for this designation of Focused Practice.

9. Please describe how the cognitive knowledge, clinical and interpersonal skills, professional attitudes, and practical experience of diplomates in this area of focused practice will be distinct from diplomates in other specialties, subspecialties, and areas of focused practice.

Physicians with the designation of Focused Practice in CU will have a unique skillset: 1) Knowledge and ability to independently practice Emergency Medicine as demonstrated by ABEM certification; and, 2) Added expertise in CU that can serve as an additional opportunity for education and quality improvement within the practice of Emergency Medicine.

Specific areas of distinction include the following:

9.a Clinical competence:

Emergency physicians with a focused practice in CU will have expertise applying point-of-care ultrasound in the emergency department beyond that level expected of residency trained emergency physicians. Additionally, these physicians will have a more extensive ultrasonography knowledge base, technical skills, administrative and educational expertise in the use of CU in emergency care.

9.b Scope of practice:

The scope of practice for an emergency physician with a Focused Practice in Clinical Ultrasonography would be limited to his or her typical practice. CU allows a physician with focused practice the ability to integrate ultrasound images into diagnostic reasoning to determine treatment modalities at the point-of-care only. As a result, CU would primarily be limited to the care of patients in the emergency department. Those with the designation might also oversee the practice of ultrasonography by other emergency physicians who have not focused their practice.

The ability to integrate CU immediately at the bedside without the patient leaving the emergency department, distinguishes this Focused Practice from ultrasonography that is performed only by a technician who lack experience in diagnostic reasoning. Additionally, a

Focused Practice designation in CU differs from ultrasonography performed by other specialists due to the vast number of disease processes encountered, not isolated to a particular area of medicine, as well as the fact that the image acquisition is done at the bedside concurrently with the ongoing clinical management of the patient. Ultrasound images are incorporated with the context of the patient's presentation rather than being interpreted in isolation at some point in time after treatment decisions were made.

ABEM-certified physicians who are already subspecialty certified, may choose to augment their clinical practice. One could envision this Focused Practice escalating the pace at which pre-hospital providers (i.e., Emergency Medical Services) use CU in the treatment of mass casualty scenarios. Much of the existing body of work in pre-hospital ultrasonography exists for emergency physicians who are deployed into an area of war.

9.c Body of knowledge and skills:

ABEM will require ABEM-approved fellowship training for physicians seeking this designation of Focused Practice. Skills obtained upon successful completion of the fellowship will include those described in The Core Content of Clinical Ultrasonography Fellowship Training.[1]

10. For (a) through (e) below, please project the need for and the effect of the proposed new focused practice on the existing patterns of certification or other areas of focused practice. Please indicate how you arrived at your response.

10.a Please indicate whether there is any overlap between this area of focused practice and existing subspecialty certifications or other areas of focused practice.

There is no overlap between Focused Practice in CU and any other subspecialty. The ultrasound knowledge acquired during a Radiology residency reflects only part of the knowledge and skills required for this Focused Practice, since the ability to integrate the images into determining emergent bedside treatment of emergency department patients is the basis for this designation. Moreover, radiologists do not perform or interpret many of the imaging studies used in point-of-care applications in the acute care setting.

10.b Please outline plans for evaluation of the impact of the proposed area of focused practice on your own programs of specialty and subspecialty certification and any other areas of focused practice:

ABEM will track the growth of diplomates seeking this designation on an annual basis, as it does for its primary and subspecialty certificates.

10.c Please outline plans for evaluation of the impact of the proposed area of focused practice on other Member Boards' programs of specialty and subspecialty certification and any other areas of focused practice:

An ABEM designation of Focused Practice in CU is expected to have little or no impact on other Member Boards' programs of specialty and subspecialty certification. The American Board of Pediatrics (ABP) supports this application and may consider similar recognition within the field of Pediatric Emergency Medicine at some time in the future.

This Focused Practice designation will not negatively affect other specialists who perform ultrasonography. To be clear, the types of studies performed in the emergency department, under the purview of CU, are often not performed by radiologists (e.g., checking for sliding lung sign when a pneumothorax is suspected; checking for cardiac activity or pericardial tamponade in a pulseless patient during a resuscitation; checking for right ventricular distention in the hemodynamically unstable patient). Moreover, the studies are often

performed under extreme time-sensitivity and in unstable patients who cannot safety leave the emergency department. It is unusual for any emergency ultrasonography study to supplant a diagnostic ultrasound that would be routinely performed in the radiology department or ultrasound suite. CU will expedite treatment by assisting with diagnostic reasoning and the safer performance of invasive procedures (e.g., US-guided paracentesis or central line placement) at the bedside. Emergency physicians will still request formal diagnostic ultrasonographic studies performed out of the emergency department to confirm complex clinical diagnoses.

10.d The impact of the proposed area of focused practice on practice, both existing and long-term, specifically:

10.d.i Access to care (please include your rationale):

Many patients who present to an emergency department for care can benefit from treatment that incorporates CU, particularly critically ill or injured patients. It is portable, available at all times of the day or night, and does not require transporting the patient.

It has been argued that ultrasound is among the most important and feasible diagnostic imaging modalities in the developing world.[31] Clinicians with comprehensive and advanced training in ultrasound are well-positioned to provide training and oversight of the use of CU to enhance emergency care on a global scale.

Point-of-care ultrasononography reduces the length of stay for a subset of patients in the emergency department, which increases access to emergency department resources for other patients.

10.d.ii Quality and coordination of care (please include your rationale):

CU enhances the quality of care and improves patient safety. Many invasive procedures performed in the ED are safer when sonographic imaging is applied, such as central intravenous catheter placement, paracentesis, thoracentesis, pericardiocentesis, abscess drainage, and peripheral intravenous access. The use of emergency ultrasound to guide procedures, such as central venous access has been shown to reduce the time required, reduce the failure rate, and reduce complications.[7]

CU assists the emergency physician in coordinating care more efficiently by allowing treatment decisions to be made without transporting the patient from the emergency department. This added efficiency allows consultants and ancillary staff to more easily provide care in parallel rather in a linear, more time-consuming manner. A quicker and more accurate diagnosis that is provided by CU results in a timelier disposition for the patient, improving ED throughput.

Rapid, accurate triage is one of the hallmarks of an effective response to mass casualties or disasters. Essentially all current plans for disaster preparedness recommend the expeditious and broad use of emergency ultrasound to aid in the triage of mass casualty victims.[13]

10.d.iii Benefits to the public (please include your rationale):

Focused, limited examinations that are rapidly performed at the bedside are often the optimal study to guide care during acute illness and critical conditions. These studies are performed immediately, limiting the need to transport the patient out of the emergency department and direct monitoring by the emergency physician. Once the

image is acquired, then the physician must wait for the image to be interpreted, thus delaying treatment decisions.

In the emergency department, consultative ultrasound may not be immediately available or may be limited in availability for 24-hour/day coverage. Having physicians well-trained in clinical ultrasonography ensures that patients will receive appropriate, high-quality care regardless of the time of day or day of the week.

CU does not eliminate the need for formal, consultative, diagnostic ultrasonographic, or other imaging studies. There are times in caring for the critically ill or injured patient when CU can lead more quickly to focused CT imaging and definitive intervention. This is seen in cases of multisystem trauma, venous thromboembolism, and active aortic aneurysmal disease.

CU may more rapidly rule out pathology and decrease patient length of stay, improving overall emergency department efficiency. Emergency physicians using bedside ultrasonography to identify intrauterine pregnancy were able to significantly reduce the length of stay compared with formal radiology ultrasound, for example.[4,8,9] Similarly, emergency physician–performed ultrasound of the gallbladder reduced the length of stay by 32 minutes when compared with formal radiology ultrasound.[10] Perhaps because of improved time to diagnosis and decreased length of stay, the use of emergency ultrasound is associated with improved patient satisfaction.[11,12] Studies have shown that patients' perceptions of the competence of physicians improved as well as their confidence in physician's diagnoses.[12]

By reducing time to diagnosis in critically ill patients and reducing length of stay in discharged patients, emergency physician–performed ultrasound will significantly improve emergency department efficiency.

10.e Please explain the effects, if known, of the proposed area of focused practice on:

10.e.i Immediate costs and their relationship to the probable benefits (please indicate your methodology):

The cost of the required training is and would likely continue to be similar to the cost of a one-year subspecialty fellowship. It is not anticipated that the CU fellowship costs would be greater than any other procedure-based subspecialty or focused practice training program.

10.e.ii Long-term costs and their relationship to the probable benefits (please indicate your methodology):

CU as distinct from emergency ultrasonography may further reduce costs by expanding and further standardizing the practice of point-of-care ultrasonography

Performing focused, condition-specific ultrasound studies at the point of care leads to streamlined care. CU reduced time to necessary operative care for trauma patients by 64% with lower CT use, 27% fewer days in the hospital, and a 35% decrease in hospital charges.[32] Moreover, complications and morbidity resulting from invasive procedures will be decreased, further lowering healthcare costs.[33,34,35] This approach also decreases the amount of ionizing radiation received by the patient.[36,37] The ability to rapidly make a diagnosis or exclude possible conditions in a differential diagnosis is substantial. CU results in overall shorter intervals of care, which further lowers cost of

care and aggregate resource use.[38,39] Appropriate use of CU can reduce total episode-of-care costs by using fewer consultative diagnostic studies, promoting greater efficiency of care (e.g., lower resource consumption), and leading to fewer patient complications.[40,41,42,43,44, 45,46,47,48,49,50]

10.f Please explain the effects if this area of focused practice is not approved:

Should this designation not be approved, the potential exists that future, unknown benefits to patient care would not be realized. CU thought leaders would not have the deserved recognition for helping to advance the practice of ultrasonography in Emergency Medicine. In turn, this may limit younger physicians from seeking this expertise and halt further ground-breaking research into the direct benefits to patient care gained from CU.

11. Please indicate how the proposed area of focused practice will be evaluated periodically (e.g., every five years) to ensure that the area of focused practice remains viable:

ABEM monitors its certification statistics closely on an annual basis. ABEM would include a designation of Focused Practice in CU in this data analysis to ensure that a need for such recognition continues to exist and to track further dissemination of CU expertise into EM.

12. Please list key stakeholder groups from which ABMS may wish to solicit commentary on the proposed area of focused practice:

- American Board of Anesthesiology
- American Board of Family Medicine
- American Board of Internal Medicine
- American Board of Obstetrics and Gynecology
- American Board of Pediatrics
- American Board of Radiology
- American Board of Surgery

To be completed for areas of focused practice for which formalized training is currently available to meet <u>some</u> of the requirements for clinical experience and patient volume

13. Please provide the following information for those training programs that have a primary educational effort devoted to the proposed area of focused practice, along with their geographic locations and the source(s) of the data:

a. **Please list the names of training programs in the proposed area of focused practice:** Please see Attachment 4, provided by the Society of Clinical Ultrasound Fellowships. The first non-ACGME-accredited emergency ultrasound fellowships were started in the mid- to late 1990s.

b. **Indicate the total number of trainee positions available currently (along with the source(s) of the data):** The Society of Clinical Ultrasound Fellowships reports that there are 239 fellowship positions available.

c. **Provide the number of trainees completing the training annually (along with the source(s) of the data):** Approximately 70, as reported by the Society of Clinical Ultrasound Fellowships

d. **Organization(s) providing accreditation or oversight for training programs (Please submit evidence that they have the willingness, capability, and resources to conduct the review of these programs):** ABEM is currently working with thought leaders and experts in CU to establish a process for accrediting CU fellowships (referred to as "ABEM-approved" throughout this document).

e. **(Please submit evidence that they have the willingness, capability, and resources to conduct the review of these programs):** Members of the Society of Clinical Ultrasound Fellowships are program directors and faculty members of EM CU training programs. They have demonstrated their willingness by active participation on a CU Taskforce sponsored by ABEM; annual national membership meetings to engage the community, in which ABEM is a participant, and completion of necessary work to move forward the process for recognizing CU expertise.

   In a 2017 survey of CU society members conducted by ABEM, the majority (approximately 65 percent) felt that a designation of Focused Practice in CU would be appropriate. Approximately 86 percent felt that they would be likely to seek the designation themselves. Of the 228 survey respondents, 147 (approximately 64 percent) were CU fellowship program directors or faculty. Over 75 percent felt that their fellowship graduates would apply for the designation. Although this does not constitute direct evidence of willingness and capability to review CU fellowship programs, it does indicate substantial commitment to CU fellowship training.

14. How much additional clinical experience is required beyond training?

Required clinical experience is similar to that for some ABEM subspecialties and is noted in question five of this application. In summary, the candidate must have practiced CU for 24-36 months within the preceding five years and must be able to demonstrate sufficient expertise in image acquisition, by performing or supervising an average of 300 CU studies per year. This experience is in addition to the requirement that the candidate must have reviewed, for quality purposes, an average of 500 studies that have been performed by other physicians for each of the preceding two to three years.

***NOTE: When submitting this application, please attach the following items*:**

- *Copy of proposed application form for the candidates for this area of focused practice (Attachment 5)*
- *A written statement indicating concurrence or specific grounds for objection from each Primary and Conjoint Board having expressed related interests in the same field (Not applicable)*
- *Written comments on the proposed area of focused practice from at least one (1) public stakeholder groups (Attachment 6)*
- *An example of how diplomates will be recognized for this area of focused practice (Attachment 7)*

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EDUCATIONAL ADVANCE

The Core Content of Clinical Ultrasonography Fellowship Training

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Abstract

The purpose of developing a core content for subspecialty training in clinical ultrasonography (US) is to standardize the education and qualifications required to provide oversight of US training, clinical use, and administration to improve patient care. This core content would be mastered by a fellow as a separate and unique postgraduate training, beyond that obtained during an emergency medicine (EM) residency or during medical school. The core content defines the training parameters, resources, and knowledge of clinical US necessary to direct clinical US divisions within medical specialties. Additionally, it is intended to inform fellowship directors and candidates for certification of the full range of content that might appear in future examinations. This article describes the development of the core content and presents the core content in its entirety.

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In 1999, the American Medical Association passed Resolution 802 and Policy H-230.960 stating that ultrasound (US) is "within the scope of practice of appropriately trained physicians" and that this scope of practice should be developed "in accordance with recommended training and education standards developed by each physician's respective specialty."[1] Clinical US, performed at the bedside by the treating clinician, is

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now employed to some degree by most medical specialties.[2] For more than two decades, the specialty of emergency medicine (EM) has incorporated clinical US as a key modality for care of the patient in the acute setting, and it is now considered a core competency for residency training.[3–6]

Fellowships in EM clinical US have been formed to provide physicians with the skills to oversee the education, use, and administration of clinical US and to provide training for research in the field. The first recognized emergency US fellowship was offered in 1993, and there are currently emergency US fellowships listed at 90 institutions, many of which accept multiple fellows (James Mateer, MD, personal communication, August 23, 2012; http://eusfellowships.com). While guidelines for emergency US fellowships have been developed and approved by the American College of Emergency Physicians (ACEP),[7] emergency US fellowships are not currently accredited by the Accreditation Council of Graduate Medical Education (ACGME).

In 2007, a subcommittee for subspecialty development under the Ultrasound Section of ACEP was formed to explore a certification or board examination process for fellowship training in clinical US. In October 2011, members of the ACEP Ultrasound Section and the Academy of Emergency Ultrasound (AEUS) of the Society for Academic Emergency Medicine (SAEM) voted in favor of pursing an application for ACGME accreditation of clinical US fellowships. As a step toward this goal, the subcommittee formed the writing group that generated this document. The document was created in close communication with ACEP, SAEM, and the American Board of Emergency Medicine (ABEM).

TERMINOLOGY

The term "clinical ultrasonography" is used throughout this document to maintain clarity. Clinical US refers to the use of US as a focused diagnostic test, with image archiving and reporting in the medical record, by clinicians who are directly involved with the care of the patient. Associated terms such as "point-of-care ultrasound," "bedside ultrasound," "focused ultrasound," "emergency ultrasound," "limited ultrasound," or others are not used here, although they may describe aspects of clinical US. While this document focuses on applications of clinical US in the acute setting, clinical US may apply to a broad range of specialties.

GOALS AND CURRICULUM OVERVIEW

This document proposes core content for clinical US fellowship training (see Data Supplement S1). The outline is consistent with previously published national US and fellowship development guidelines and should be considered a template for clinical US fellowship training, especially in EM.[7,8] A detailed document that describes a scanning protocol, a normal anatomy and pathology review, and an integration strategy for clinical care of the patient is available as an online resource through the ACEP US section Web site. The technical report is divided into four broad categories: 1) image acquisition and interpretive skills, 2) education skills, 3) research skills, and 4) administrative skills. Basic resident-level skills are included as they serve as a foundation for advanced skills. While the core content described here reflects the field of emergency clinical US, many medical specialties incorporate clinical US, and they may share significant components of the clinical US subspecialty curriculum.

RECOGNITION OF THIS CURRICULUM

ACEP supports this document. The AEUS of SAEM and SAEM board of directors endorse this document. The board of directors of the American Society of Clinical Ultrasound Fellowships (formerly known as Eusfellowships.com) endorses this document.

FUTURE DEVELOPMENT OF THE CORE CONTENT

An organized structure for fellowship training in clinical US applications, clinical education, research, and administration skills is provided in this document. This document will serve to instruct and guide fellowship directors and candidates on the clinical US fellowship core content and will serve as the basis for future examination questions and certification development. This article provides the basis for a potential multispecialty ABMS clinical US subspecialty. The core content is intended to be a living document in keeping with the ever-evolving practice of clinical US.

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CURRICULUM

1. Image Acquisition and Interpretation Skills
1.1 Clinical Ultrasonography Fellow Applications Content
1.1.1 Physics
1.1.1.1 Basic
1.1.1.1.1 Artifacts
1.1.1.1.2 Knobs
1.1.1.1.3 Planes
1.1.1.1.4 Properties of sound waves
1.1.1.1.1 Background physics
1.1.1.1.2 Display and monitors
1.1.1.1.3 Image resolution
1.1.1.1.4 Transducers
1.1.1.1.5 Ultrasound beam
1.1.1.2 Advanced
1.1.1.2.1 Aliasing
1.1.1.2.2 Doppler techniques
1.1.1.2.2.1 Color
1.1.1.2.2.2 Spectral
1.1.1.3 Biological effects and safety
1.1.1.4 Performance testing
1.1.2 Cardiac
1.1.2.1 Basic
1.1.2.1.1 Asystole
1.1.2.1.2 Global left ventricular function
1.1.2.1.3 Global right ventricular size
1.1.2.1.4 Pericardial fluid
1.1.2.1.5 Tamponade physiology
1.1.2.2 Advanced
1.1.2.2.1 Advanced views
1.1.2.2.2 Aortic root assessment
1.1.2.2.3 Cardiac output assessment
1.1.2.2.4 Chamber size, pressure, and comparison
1.1.2.2.5 Regional wall motion
1.1.2.2.6 Valvular assessment
1.1.3 Chest and lung
1.1.3.1 Basic
1.1.3.1.1 Pleural fluid
1.1.3.1.2 Pneumothorax
1.1.3.2 Advanced
1.1.3.2.1 Consolidation
1.1.3.2.2 Alveolar interstitial syndrome
1.1.3.2.3 Pleural disease
1.1.3.2.4 Rib and sternal fracture
1.1.4 Aorta
1.1.4.1 Basic
1.1.4.1.1 Abdominal aortic aneurysm
1.1.4.2 Advanced
1.1.4.2.1 Aortic arch assessment
1.1.4.2.2 Aortic dissection
1.1.4.2.3 Aortic root assessment
1.1.4.2.4 Descending aorta assessment
1.1.4.2.5 Thoracic aneurysm
1.1.5 Renal
1.1.5.1 Basic
1.1.5.1.1 Hydronephrosis
1.1.5.1.2 Qualitative bladder volume
1.1.5.2 Advanced
1.1.5.2.1 Artifacts
1.1.5.2.1.1 Twinkling
1.1.5.2.2 Cysts
1.1.5.2.2.1 Simple
1.1.5.2.2.2 Complex
1.1.5.2.3 Congenital renal abnormalities
1.1.5.2.4 Masses
1.1.5.2.5 Quantitative bladder volume
1.1.5.2.6 Renal Doppler
1.1.5.2.7 Renal parenchymal assessment
1.1.5.2.8 Renal transplant
1.1.5.2.9 Stone assessment
1.1.5.2.10 Ureteral jets
1.1.6 Male genito-urinary
1.1.6.1 Basic
1.1.6.2 Advanced
1.1.6.2.1 Scrotum and scrotal contents
1.1.6.2.1 Abscess and cellulitis
1.1.6.2.2 Hydrocele
1.1.6.2.3 Varicocele
1.1.6.2 Testicle
1.1.6.2.1 Cysts
1.1.6.2.2 Epididymo-orchitis
1.1.6.2.3 Masses
1.1.6.2.4 Parenchymal assessment
1.1.6.2.5 Torsion
1.1.7 Hepatobiliary
1.1.7.1 Basic
1.1.7.1.1 Cholelithiasis
1.1.7.2 Advanced
1.1.7.2.1 Gallbladder and biliary tree
1.1.7.2.1 Ductal assessment
1.1.7.2.2 Masses
1.1.7.2.3 Polyps
1.1.7.2.4 Sludge
1.1.7.2.5 Wall assessment
1.1.7.2.5.1 Adenomyomatosis
1.1.7.2.5.2 Emphysematous cholecystitis
1.1.7.2.5.3 Global and focal wall thickening
1.1.7.2.5.4 Pericholecystic fluid
1.1.7.2.5.5 Porcelain gallbladder
1.1.7.2.2 Liver
1.1.7.2.2.1 Cysts
1.1.7.2.2.2 Disruption of internal architecture
1.1.7.2.2.3 Masses
1.1.7.2.2.4 Parenchymal assessment
1.1.7.2.3 Portal vein Doppler
1.1.7.2.4 Portal venous thrombosis
1.1.8 Other abdomen
1.1.8.1 Trauma
1.1.8.1.1 Basic (see integrated examinations section)
1.1.8.1.2 Advanced (see integrated examinations section)

1.1.8.2 Non-trauma
1.1.8.2.1 Basic
1.1.8.2.1.1 Peritoneal fluid assessment
1.1.8.2.2 Advanced
1.1.8.2.1 Appendix
1.1.8.2.2 Bowel
1.1.8.2.2.1 Ileus
1.1.8.2.2.2 Intussusception
1.1.8.2.2.3 Obstruction
1.1.8.2.2.4 Pyloric stenosis
1.1.8.2.3 Hernias
1.1.8.2.4 Pancreas
1.1.8.2.4.1 Masses
1.1.8.2.4.2 Pseudocysts
1.1.8.2.5 Pneumoperitoneum
1.1.8.2.6 Spleen
1.1.8.2.5.1 Cysts
1.1.8.2.5.2 Disruption of internal architecture
1.1.8.2.5.3 Masses
1.1.8.2.5.4 Parenchymal assessment

1.1.9 Ocular
1.1.9.1 Basic
1.1.9.1.1 Undifferentiated vitreous chamber pathology
1.1.9.2 Advanced
1.1.9.2.1 Extra-ocular muscle assessment
1.1.9.2.2 Foreign body
1.1.9.2.3 Lens dislocation
1.1.9.2.4 Optic nerve sheath diameter
1.1.9.2.5 Peri-orbital emphysema
1.1.9.2.6 Pupillary assessment
1.1.9.2.7 Retinal detachment
1.1.9.2.8 Retro-bulbar hematoma
1.1.9.2.9 Vitreous detachment and hemorrhage

1.1.10 Female pelvis
Transabdominal and/or transvaginal approaches
1.1.10.1 Basic obstetrics
1.1.10.1.1 First trimester assessment
1.1.10.1.1.1 Intra-uterine pregnancy
1.1.10.1.1.1 Gestational sac
1.1.10.1.1.2 Yolk sac
1.1.10.1.1.3 Fetal assessment
1.1.10.1.1.2 Free fluid
1.1.10.2 Basic gynecology
1.1.10.3 Advanced obstetrics
1.1.10.3.1 First trimester assessment
1.1.10.3.1.1 Blighted ovum
1.1.10.3.1.2 Fetal dating
1.1.10.3.1.3 Subchorionic hemorrhage
1.1.10.3.2 Second trimester assessment
1.1.10.3.2.1 Fetal dating
1.1.10.3.3 Third trimester assessment
1.1.10.3.3.1 Adnexa (see below)
1.1.10.3.3.2 Amniotic fluid assessment
1.1.10.3.3.3 Fetal dating
1.1.10.3.3.4 Fetal station
1.1.10.3.3.5 Placental location
1.1.10.4 Advanced gynecology
1.1.10.4.1 Adnexa
1.1.10.4.1.1 Abscess
1.1.10.4.1.2 Cysts
1.1.10.4.1.3 Ectopic pregnancy
1.1.10.4.1.4 Masses
1.1.10.4.1.5 Torsion
1.1.10.4.2 Uterus
1.1.10.4.2.1 Cysts
1.1.10.4.2.2 Endometritis
1.1.10.4.2.3 Masses
1.1.10.4.2.4 Retained products of conception

1.1.11 Procedures
1.1.11.1 Basic
1.1.11.1.1 Abscess drainage
1.1.11.1.2 Foreign body removal
1.1.11.1.4 Paracentesis
1.1.11.1.5 Pericardiocentesis
1.1.11.1.6 Thoracentesis
1.1.11.1.7 Vascular access
1.1.11.2 Advanced
1.1.11.2.1 Arthrocentesis
1.1.11.2.2 Cardiac pacer wire placement
1.1.11.2.3 Endotracheal tube evaluation
1.1.11.2.4 Guiding and verifying tube and catheter placement
1.1.11.2.4.1 Foley
1.1.11.2.4.2 Gastrostomy
1.1.11.2.4.3 PICC catheter
1.1.11.2.5 Lumbar puncture
1.1.11.2.6 Regional anesthesia

1.1.12 Venous/Arterial assessment
1.1.12.1 Basic
1.1.12.1.1 Deep venous thrombosis lower extremity
1.1.12.1.2 Inferior vena cava
1.1.12.2 Advanced
1.1.12.2.1 Deep venous thrombosis neck
1.1.12.2.2 Deep venous thrombosis upper extremity
1.1.12.2.3 Doppler evaluation
1.1.12.2.3.1 Arterial flow
1.1.12.2.3.2 Pseudoaneurysm

1.1.13 Soft tissue
1.1.13.1 Basic
1.1.13.1.1 Abscess
1.1.13.1.2 Cellulitis
1.1.13.1.3 Foreign body detection
1.1.13.2 Advanced
1.1.13.2.1 Fasciitis
1.1.13.2.2 Lymph node assessment
1.1.13.2.3 Myositis
1.1.13.2.4 Peritonsillar abscess
1.1.13.2.5 Soft tissue masses

1.1.14 Musculoskeletal
1.1.14.1 Basic
1.1.14.2 Advanced
1.1.14.2.1 Bones
1.1.14.2.2 Joints
1.1.14.2.3 Ligaments
1.1.14.2.4 Muscles
1.1.14.2.5 Tendons

1.1.15 Pediatrics
Assessment would include the relevant applications contained within the curriculum; however specific focus on the following:

1.1.15.1 Basic
1.1.15.2 Advanced
1.1.15.2.1 Appendix
1.1.15.2.2 Hip assessment
1.1.15.2.3 Intussusception
1.1.15.2.4 Lumbar puncture
1.1.15.2.5 Pyloric stenosis

1.1.16 Head and neck
1.1.16.1 Basic
1.1.16.2 Advanced
1.1.16.2.1 Neck masses
1.1.16.2.2 Salivary glands
1.1.16.2.3 Thyroid cysts
1.1.16.2.4 Vocal cords

1.1.17 Integrated examinations and syndromes
1.1.17.1 Basic
Trauma primary survey
1.1.17.1 Pericardial fluid
1.1.17.2 Peritoneal fluid
1.1.17.3 Pleural fluid
1.1.17.4 Pneumothorax
1.1.17.2 Advanced
Trauma secondary survey
1.1.17.2.1 Limited solid organ injury
1.1.17.2.2 Musculoskeletal
1.1.17.2.3 Optic nerve sheath diameter
1.1.17.2.4 Soft tissue
1.1.17.3 Undifferentiated abdominal pain
1.1.17.4 Undifferentiated chest pain and/or dyspnea
1.1.17.5 Undifferentiated hypotension

1.2 Clinical Ultrasonography Training with Non-Emergency Medicine Specialties

Specialties with potential collaborative training opportunities for clinical ultrasonography fellows include and are not limited anesthesiology, cardiology, critical care medicine, general surgery, obstetrics gynecology, radiology, and vascular surgery. The specialty-specific guidelines vary in terms of time devoted to ultrasound training, requisite number of scans, didactic instruction, and demonstration of competency.

2. Education Skills

2.1 Development of educational content
2.1.1 Assessment of content and curricular development
2.1.2 Didactic lecture preparation
2.1.3 Utilization of social media and mixed media

2.2 Presentation of educational content
2.2.1 Assessment of presentation content and organization
2.2.2 Oral presentation and speaking skills
2.2.3 Visual presentation skills

2.3 Bedside hands-on instruction
2.3.1 Assessment of hands-on education methods

2.4 Competency assessment of hands-on and theoretical skills
2.4.1 Evaluation of competency pathway comprehension
2.4.1.1 Accreditation
2.4.1.2 Certification
2.4.1.3 Credentialing
2.4.2 Evaluation of functional knowledge and cognitive abilities
2.4.2.1 Chart review
2.4.2.2 Image review
2.4.2.3 Lectures
2.4.2.4 Written or online examinations
2.4.3 Evaluation of psychomotor skills
2.4.3.1 Ethics
2.4.3.2 Observed structured clinical examinations
2.4.3.3 Procedural competence
2.4.3.4 Scanning sessions
2.4.3.5 Simulator sessions
2.4.4 Evaluation of teaching skills
2.4.4.1 Direct observation
2.4.4.2 Lectures
2.4.4.3 Written evaluations

3. Research Skills

3.1 Research didactic and coursework
3.1.1 Critical analysis of medical literature
3.1.2 Fundamental knowledge of epidemiology and biostatistics
3.1.3. Informed consent, legal, and ethics regulations
3.1.4 Research acquisition, analysis, and interpretation skills

3.2 Research project development
3.2.1 Question and hypothesis development
3.2.2 Literature search and review
3.2.3 Methodology, data collection, management, and analysis
3.2.4 Institutional review board submission

3.3 Research project abstract and manuscript preparation

3.4 Research education and administration

3.5 Fellowship research evaluation and assessment

4. Administration Skills

4.1 Quality improvement principles and program
4.1.1 Assessment and feedback strategy
4.1.2 Critical findings
4.1.3 Peer review
4.1.4 Sampling
4.1.5 Risk management

4.2 Leadership
4.2.1 Administrative oversight
4.2.2 Communication
4.2.3 Education oversight
4.2.3.1 Non-physicians
4.2.3.2 Physicians
4.2.4 Equipment oversight
4.2.5 Research oversight
4.2.6 Risk Management oversight
4.2.7 Workflow solution oversight

4.3 Program systems
4.3.1 Disinfection principles
4.3.2 Equipment and hardware
4.3.2.1 Purchase
4.3.2.2 Maintenance and cleaning
4.3.3 Safety principles
4.3.4 Workflow design, software and solutions
4.3.4.1 Electronic and digital interfaces

4.3.4.2 Image archiving
4.3.4.3 Policies and procedures
4.4 Relationships and networks
4.4.1 Biomedical engineering
4.4.2 Coders and billers
4.4.3 Departmental physicians and non-physicians
4.4.4 Hospital credentialing and privileging committees
4.4.5 Hospital purchasing
4.4.6 Industry
4.4.7 Infection control
4.4.8 Information technologists
4.4.9 Institutional review board
4.4.10 International organizations
4.4.11 Legal and risk management
4.4.12 Local organizations
4.4.13 Materials management
4.4.14 Medical staff services
4.4.15 Other departments
4.4.15 National organizations
4.4.15.1 Non-governmental
4.4.15.1.1 Multi-specialty
4.4.15.1.2 Specialty-specific
4.4.15.2 Governmental
4.4.15.2.1 Government agencies
4.4.15.2.2 Public health agencies
4.4.16 Quality Improvement committee
4.5 Coding and billing
4.5.1 Coding
4.5.2 Documentation
4.5.3 Payer structure
4.5.4 Policy
4.5.4.1 State
4.5.4.2 National
4.5.5 Terminology
4.6 Economics
4.6.1 Microeconomics
4.6.1.1 Allocation of resources
4.6.1.2 Basic accounting
4.6.1.3 Principles of department and division budgeting
4.6.2 Macroeconomics
4.6.2.1 Allocation of resources
4.6.2.2 Billing
4.6.2.3 Departmental revenue
4.6.2.4 Hospital revenue

Attachment 2

Ultrasound-Specific Journals

1. Critical Ultrasound Journal
2. Journal of Ultrasound in Medicine
3. Journal of Clinical Ultrasound
4. Ultrasound in Medicine and Biology
5. Ultrasonics
6. Journal of Medical Ultrasound
7. Ultrasound
8. Ultrasound Quarterly
9. Echocardiography
10. Journal of the American Society of Echocardiography

Clinical Ultrasonography Society Membership by State/Province*

State/Province				Total**
Alabama	12	2	1	15
Alaska	7	0	0	7
Arizona	18	3	2	23
Arkansas	7	1	0	8
California	137	11	14	162
Canada, not specified	0	0	11	11
Colorado	26	1	6	33
Connecticut	24	12	3	39
Delaware	8	1	0	9
District of Columbia	8	0	5	13
Florida	69	7	2	78
Georgia	22	2	1	25
Hawaii	1	0	0	1
Idaho	4	0	0	4
Illinois	43	5	1	49
Indiana	14	1	0	15
Iowa	4	0	0	4
Kansas	8	0	0	8
Kentucky	10	1	6	17
Louisiana	9	1	0	10
Manitoba, Canada	0	1	0	1
Maine	6	1	0	7
Maryland	31	7	2	39
Massachusetts	40	11	3	54
Michigan	58	21	2	81
Minnesota	28	3	2	33
Mississippi	3	0	0	3
Missouri	25	3	1	29
Montana	3	0	0	3
Nebraska	6	1	0	7
Nevada	3	0	0	3
New Hampshire	5	1	0	6
New Jersey	25	3	3	31
New Mexico	8	1	0	9
New York	144	10	28	172
North Carolina	29	3	1	33
North Dakota	0	0	0	0
Nova Scotia, Canada	0	1	1	2
Ohio	58	8	4	70
Oklahoma	7	0	0	7

State/Province				Total**
Ontario, Canada	0	2	12	14
Oregon	20	1	0	21
Pennsylvania	83	13	11	107
Quebec	0	0	4	4
Rhode Island	9	4	2	15
South Carolina	19	0	1	20
South Dakota	0	0	0	0
Tennessee	19	2	0	21
Texas	85	2	8	95
Utah	9	2	0	11
Vermont	4	0	0	4
Virginia	45	4	0	49
Washington	23	0	1	24
West Virginia	14	1	0	15
Wisconsin	21	3	3	27
Wyoming	2	0	0	2
	1,263	157	141	1,550

* U.S. and Canadian membership only
** An unknown number of physicians belong to more than one society.

Clinical Ultrasonography Fellowship Programs

Clinical Ultrasonography Fellowship Program	Location
Advocate Christ Medical Center	Oak Lawn, IL
Alameda County Medical Center - Highland Hospital	Oakland, CA
Albany Medical Center	Albany, NY
Allegheny General Hospital	Pittsburgh, PA
Banner University Medical Center-Phoenix (Envision/EPS)	Phoenix, AZ
Baylor College of Medicine	Houston, TX
Baylor College of Medicine / Texas Children's Hospital (Pediatric US)	Houston, TX
Baystate Medical Center	Springfield, MA
Beaumont Hospital	Royal Oak, MI
Bellevue Hospital/NYU Medical Center	New York, NY
Berbee Walsh Department of Emergency Medicine - University of Wisconsin	Madison, WI
Beth Isreal Deaconess Medical Center Boston	Boston, MA
Boston Medical Center/Boston University	Boston, MA
Brigham and Women's Hospital	Boston, MA
Brown University	Providence, RI
Carilion Clinic	Roanoke, VA
Carolinas Medical Center	Charlotte, NC
Children's Hospital of Philadelphia	Philadelphia, PA
Children's National Medical Center	Washington, DC
Children's Hospital Los Angeles	Los Angeles, CA
Christiana Care Health System	Newark, DE
Cleveland Medical Center - University Hospitals	Cleveland, OH
Cohen Childrens Medical Center	New Hyde Park, NY
Cook County Rush Emergency US Fellowship	Chicago, IL
Dartmouth Hitchcock Medical Center	Lebanon, NH

Clinical Ultrasonography Fellowship Program	Location
Denver Health Medical Center	Denver, CO
Denver Health Pediatric US Fellowship	Denver, CO
Duke University Medical Center	Durham, NC
Eastern Virginia Medical School	Norfolk, VA
Emory University	Atlanta, GA
Envision/Banner University Medical Center - Phoenix	Phoenix, AZ
FEP of TEAMHealth Ultrasound Fellowship	Orlando, FL
Geisinger Health System	Danville, PA
George Washington University School of Medicine and Health Sciences	Washington, DC
Georgetown University and Washington Hospital Center	Washington, DC
Good Samaritan Hospital Medical Center	West Islip, NY
Harbor - UCLA Medical Center	Torrance, CA
Hennepin County Medical Center	Minneapolis, MN
Henry Ford Health System	Detroit, MI
Icahn School of Medicine at Mount Sinai	New York, NY
Icahn School of Medicine at Mount Sinai - Peds	New York, NY
Indiana University	Indianapolis, IN
John Peter Smith Hospital	Fort Worth, TX
Kaiser Permanente - San Diego Medical Center	San Diego, CA
Loma Linda University Medical Center	Loma Linda, CA
Maimonides Medical Center	Brooklyn, NY
Maine Medical Center	Portland, ME
Massachusetts General Hospital	Boston, MA
Medical College of Georgia	Augusta, GA
Medical University of South Carolina	Charleston, SC
MetroHealth Medical Center	Cleveland, OH
Morristown Memorial Hospital/Atlantic Health System	Morristown, NJ

Clinical Ultrasonography Fellowship Program	Location
Mount Sinai St. Lukes Mount Sinai Roosevelt Hospital Center	New York, NY
New York Presbyterian - Morgan Stanley Children's Hospital, Columbia University	New York, NY
New York Presbyterian Brooklyn Methodist Hospital	Brooklyn, NY
New York Presbyterian Queens	Flushing, NY
North Shore-LIJ University Hospital- Northwell Health	Manhasset, NY
Northwell Health - Staten Island University Hospital	Staten Island, NY
Ohio State University Hospitals	Columbus, OH
Oregon Health and Sciences University	Portland, OR
Orlando Regional Medical Center	Orlando, FL
Palmetto Health Richland	Columbia, SC
Parkland Hospital - UT Southwestern Affiliated	Dallas, TX
Regions Hospital	Saint Paul, MN
Resurrection Medical Center	Chicago, IL
Riverside Regional Medical Center	Newport News, VA
Rutgers Robert Wood Johnson Medical School	New Brunswick, NJ
Spectrum Health / Emergency Care Specialists	Grand Rapids, MI
St. Joseph Mercy Hospital	Ann Arbor, MI
Stanford University /Stanford Health Care	Stanford, CA
State University of New York at Buffalo	Buffalo, NY
Stony Brook Emergency Medicine	Stony Brook, NY
SUNY Downstate/Kings County Hospital Center	Brooklyn, NY
SUNY Upstate Medical University	Syracuse, NY
Temple University	Philadelphia, PA
The Brooklyn Hospital Center	Brooklyn, NY
The Scarborough Hospital	Toronto, ON
Thomas Jefferson University Hospital	Philidelphia, PA

Clinical Ultrasonography Fellowship Program	Location
UCLA : Olive View & Ronald Reagan Medical Centers	Los Angeles, CA
Univ. of Ca., San Diego/Rady Children's Hospital (Peds US)	San Diego, CA
Univeristy of Californiia, Davis	Sacamento, CA
University of Alabama at Birmingham	Birmingham, AL
University of Arizona	Tucson, AZ
University of Arkansas	Little Rock, AR
University of California San Diego	San Diego, CA
University of California, Irvine Medical Center	Orange, CA
University of California-San Francisco	San Francisco, CA
University of Cincinnati	Cincinnati, OH
University of Florida	Gainesville, FL
University of Florida Jacksonville	Jacksonville, FL
University of Illinois at Chicago	Chicago, IL
University of Kansas Health System	Kansas City, KS
University of Kentucky	Lexington, KY
University of Maryland School of Medicine, Department of Emergency Medicine	Baltimore, MD
University of Massachusetts	Worcester, MA
University of Michigan Health System	Ann Arbor, MI
University of Nebraska	Omaha, NE
University of Ottawa	Ottawa, ON
University of Pennsylvania Medical Center	Philadelphia, PA
University of Pittsburgh Medical Center	Pittsburgh, PA
University of Rochester Medical Center-Strong Memorial Hospital	Rochester, NY
University of South Florida	Tampa, FL
University of Southern California + Los Angeles County (LAC+USC)	Los Angeles, CA
University of Tennessee	Chattanooga, TN

Clinical Ultrasonography Fellowship Program	Location
University of Texas at Houston	Houston, TX
University of Texas Health San Antonio	San Antonio, TX
University of Utah	Salt Lake City, UT
University of Virginia	Charlottesville, VA
Vanderbilt University	Nashville, TN
Virginia Commonwealth University	Richmond, VA
Washington University	St. Louis, MO
Wayne State University	Detroit, MI
WellSpan York Hospital	York, PA
West Virginia University	Morganton, WV
Western University	London, ON
Yale University	New Haven, CT

Total 116 programs

AMERICAN BOARD OF EMERGENCY MEDICINE

3000 Coolidge Road, East Lansing, MI 48823-6319 517.332.4800

20xx ABEM Application for Designation of Focused Practice in Clinical Ultrasonography – SAMPLE Draft

This completed application must be postmarked by <date>

I hereby make application to the American Board of Emergency Medicine (ABEM), in accordance with and subject to its rules and regulations, to take the examination that may lead to a Designation of Focused Practice in Clinical Ultrasonography (CU). I hereby certify that the information given in this application is true, complete and accurate to the best of my knowledge and that I have received and read the terms and conditions of this application set forth in ABEM's xxxx application packet. I acknowledge that I have no vested right in any policy or procedure, that the same is subject to change from time to time at the discretion of ABEM, and that I assume the obligation to keep myself acquainted with such changes. I further certify that I have completed the training and/or practice necessary to fulfill the eligibility requirements.

I understand that: (a) falsification of this application, or (b) the submission of any falsified documents to ABEM, or (c) the use of any falsified ABEM documents or the submission of such documents to other persons, or (d) the giving or receiving of aid in an examination as evidenced either by observation at the time of an examination or by statistical analysis of my answers and those of one or more other participants in that examination, or (e) the unauthorized possession, reproduction, recording, discussion, or disclosure of any materials, including, but not limited to, examination questions or answers, before, during, or after an examination, or (f) the offering of any financial or other benefit to any director, officer, employee, or other agent or representative of ABEM in return for any right, privilege, or benefit which is not usually granted by ABEM to other similarly situated candidates or persons, may be sufficient cause for ABEM to bar me permanently from all future examinations, to terminate my participation in an examination, to invalidate the results of my examination, to withhold my scores or designation, to revoke my designation, or to take other appropriate action.

I also understand that ABEM may withhold my scores and may or may not require me to retake one or more portions of an examination if ABEM is presented with sufficient evidence that the security of one or more portions of an examination has been compromised, notwithstanding the absence of any evidence of my personal involvement in such activities. I agree that ABEM will not be liable for candidate travel and/or other losses or expenses incurred as a result of an examination cancellation or postponement.

I agree to indemnify ABEM and its directors, examiners, committee members, officers, employees, and agents and to hold them harmless from any claims or damages including, but not limited to, attorneys' fees and costs, incurred in connection with any action they, or any of them, take or fail to take in connection with this application, my eligibility for examination, the gathering, furnishing and use of information about my training, the grading or conduct of my examinations, and the failure of ABEM to issue me a Designation of Focused Practice.

I agree that any controversy or claim arising out of or relating to this Agreement, or the breach thereof, that cannot be resolved directly between the parties, shall be settled by arbitration administered by the American Arbitration Association under its Commercial Arbitration Rules, and judgment on the award rendered by the arbitrator(s) may be entered in the Circuit Court of Ingham County, Michigan.

I further agree that if, notwithstanding the preceding provision, a court of competent jurisdiction determines that an action or a proceeding may be brought by a party in connection with this Agreement, the Agreement shall be governed by and construed in accordance with the laws of the State of Michigan, and shall be treated as though it were executed in and were to have been performed in Ingham County, Michigan. Any action relating to this Agreement must be instituted and prosecuted in a court located in Ingham County, Michigan. I specially consent to extra-territorial service of process and specifically waive any right I may have or acquire to sue ABEM in a country other than the United States or anywhere outside of Ingham County, Michigan.

I understand and agree that ABEM may inform the director of the program in which I completed CU fellowship training as to my performance on the CU examination.

ABEM reserves the right to conduct and to report research studies of its examinations and its examination data for purposes of quality assurance, examination development, and benefit to the specialty. Individual candidate confidentiality would not be violated or compromised.

I understand that ABEM provides the American Board of Medical Specialties (ABMS) a list of its diplomates and diplomates with designations of focused practice that includes names, addresses, and other information as required by ABMS; that ABMS may provide diplomate information for publication in a directory and to other licensees according to defined protocols and guidelines; that ABEM provides lists of diplomates to its sponsor organizations upon request; and that ABEM responds to individual inquiries to confirm a physician's designation of focused practice status, and I authorize ABEM to release this information.

I certify that I have read and understand the above information and that by my signature I authorize and request the persons listed in this application, representatives of the institutions named herein, any licensing boards, other persons and organizations to furnish any information requested by ABEM on my training, certification status, medical practice, and status of my medical license(s).

TYPE or PRINT Applicant's Name

Signature of Applicant (Must be signed in the presence of Notary Public) _____/ _____/ **Date**

Signature of Notary Public _____/ _____/ **Date**

_____/ _____/ _____
Notary Public's Commission Expiration Date

Stamp or Seal (optional)

FOR ABEM OFFICE USE ONLY		
APPLICATION #: _____	PAID/RECEIVED: $_____	POSTMARK DATE: _____/_____/20xx

Name:	

20xx ABEM Application for Designation of Focused Practice in Clinical Ultrasonography

SECTION 1: PERSONAL DATA

Please enter your name.

NAME:

First	*Middle*	*Last*	*Medical Degree*

ADDRESS and IDENTIFICATION:

Please indicate which address is your primary address by using the applicable check box next to the address type.

❑ **Home Address:**	❑ **Business Address:**
Home Telephone:	**Business Telephone:**
Email Address:	**Fax:**
Date of Birth:	**Medical School Graduation Year:**
Social Security/Insurance Number Last 4 digits:	**Individual National Provider Number:**

AMERICAN BOARD OF MEDICAL SPECIALTY (ABMS) BOARD CERTIFICATION:

List below all your ABMS primary and subspecialty certifications.

Specialty/Subspecialty	Board that Issued Certificate	Certification Date

SECTION 2: MEDICAL LICENSURE

Please provide the following information regarding your license(s) to practice medicine. If you answer "No" to the question on compliance with the enclosed Policy on Medical Licensure, please use a separate sheet to explain.

List all states, territories, or provinces in which you hold a medical license	License Number	Expiration Date (mm/dd/yy)	**Is this license in compliance with the ABEM Policy on Medical Licensure?**	
			YES	**NO**
			YES	**NO**
			YES	**NO**

Name:

SECTION 3: SELECTION OF APPLICATION PATHWAY

Please select one application pathway. For information about each, see the eligibility criteria <location/link to be provided>

❑ CU Training Pathway	❑ CU Training-Plus-Practice Pathway	❑ CU Training-only Pathway
Complete Section 3A (Pg. 4)	**Complete Section 3B (Pg. 5)**	**Complete Section 3C (Pg. 7**

Name:

SECTION 3A: TRAINING PATHWAY

TRAINING REQUIREMENT

You must have successfully completed a CU fellowship program of at least 12 months in length that was approved by [TBD] as of the date on which you graduated from the program. If the program is longer than 12 months, you must have completed all months required by the program.

Name and Institution of Approved CU Fellowship Training Program:			
Address:		**City/State:**	
Program Phone:	**Program Email:**	**Program Fax:**	
Name of CU Fellowship Program Director:			
Number of months successfully completed: ☐ **Months**		**From** Month/Day/Year	**To** Month/Day/Year

ABEM policy states that training used to fulfill the eligibility criteria of one specialty, subspecialty, or designation of focused practice may not also be used to fulfill the criteria of another specialty, subspecialty, or designation of focused practice. **Has the fellowship training listed in this application been used to fulfill the criteria of another specialty, subspecialty, or designation of focused practice?** ❑ **Yes** ❑ **No**

Note: ABEM will independently verify with your fellowship program director that you successfully completed all program requirements.

* The first CU fellowship programs were approved on [date].

Name:

SECTION 3B: CU TRAINING-PLUS-PRACTICE PATHWAY

Complete this section if you selected the **CU Training-plus-Practice Pathway**.

TRAINING REQUIREMENT

You must have successfully completed at least 12 months of acceptable unaccredited fellowship training in CU. Fellowship training that <TBD> is considered acceptable.

Name and Institution of CU Fellowship Training Program:			
Address:		**City/State:**	
Program Phone:	**Program Email:**	**Program Fax:**	
Name of CU Fellowship Program Director:			
Number of months successfully completed: ☐ **Months**		**From** Month/Day/Year	**To** Month/Day/Year

ABEM policy states that training used to fulfill the eligibility criteria of one specialty, subspecialty, or designation of focused practice may not also be used to fulfill the criteria of another specialty, subspecialty, or designation of focused practice. **Has the fellowship training listed in this application been used to fulfill the criteria of another specialty, subspecialty, or designation of focused practice?** ❑ **Yes** ❑ **No**

Note: ABEM will independently verify with your fellowship program director that you successfully completed all program requirements and that the program is acceptable.

PRACTICE REQUIREMENT within the Training-Plus-Practice Pathway

Enter information about your CU practice below. ABEM will independently verify the practice(s) you list in this application.

1. **Duration** of your CU practice.

   To report your practice of CU, identify at least **two** years (24 months) when you practiced CU during the past **five** years (60 months).

The two years do not need to be contiguous. My two or more years of CU practice ❑ are ❑ are not contiguous.
The **start date** of your two or more years of practice must be no earlier than five years prior to the date on which you submit this application. The **start date** must also be no earlier than the date on which you completed CU fellowship training. The start date of my CU practice was: _____ Month/Day/Year
The **end date** of your two years of practice must be the date on which you submit this application. The end date of the CU practice I am reporting is: _____ Month/Day/Year

Name:

Training-Plus-Practice Pathway, Practice Requirement continued

Please identify an individual who will verify your practice as described above. An appropriate verifier <role/qualifications TBD>

Name of Verifier:
Verifier's Institution:
Verifier's Title:

Verifier contact information

Address:		**City/State/Zip:**
Phone:	**Email:**	**Fax:**

2. **CU studies** conducted during the 24 months of CU practice you reported.

☐ I attest that I performed or oversaw/supervised an average of 300 CU studies per year (an average of 25 per month) for a total of 600 over the 24 months of practice reported.

☐ I attest that I reviewed, for quality purposes, an average of 500 studies per year performed by other physicians (an average of 22 per month) for a total of 1,000 over the 24 months of practice reported.

Note: ABEM may request copies of your case logs for purposes of verification.

3. **Technical competence** in performing ultrasonography

<introduction and definition, including what roles can serve as a verifier and including the fine motor skills and hand-eye coordination>

❑ I attest that I have technical competence in performing ultrasonography:

Please provide the name of an individual who can verify your technical competence, if different from the individual identified in #1 – Practice Duration. <description of acceptable role/qualifications for verifier TBD>

Name of Verifier:
Verifier's Institution:
Verifier's Title:

Verifier contact information

Address:		**City/State/Zip:**
Phone:	**Email:**	**Fax:**

Note: ABEM will seek independent verification of your technical competence as attested to above.

Name:

SECTION 4C: CU PRACTICE-ONLY PATHWAY

Complete this section if you selected the **CU Practice-only Pathway**.

PRACTICE REQUIREMENT

Enter information about your CU practice below. ABEM will independently verify the practice(s) you list in this application.

1. **Duration of your CU practice**.

   To report your practice of CU, identify at least **three** years (36 months) when you practiced CU during the past **five** years (60 months).

The three years do not need to be contiguous. My three or more years of CU practice ❑ are ❑ are not contiguous.
The **start date** of your three or more years of practice must be no earlier than five years prior to the date on which you submit this application. The start date of my CU practice was: _____ Month/Day/Year
The **end date** of your three years of practice must be the date on which you submit this application. The end date of the CU practice I am reporting is: _____ Month/Day/Year

2. **CU studies conducted during the 24 months of CU practice you reported**.

   ☐ I attest that I performed or oversaw/supervised an average of 300 CU studies per year (an average of 25 per month) for a total of 900 over the 36 months of practice reported.

   ☐ I attest that I reviewed, for quality purposes, an average of 500 studies per year performed by other physicians (an average of 22 per month) for a total of 1,500 over the 36 months of practice reported.

   Note: ABEM may request copies of your case logs for verification purposes.

3. **Technical competence in performing ultrasonography**

   <introduction and definition, including what roles can serve as a verifier and including the fine motor skills and hand-eye coordination>

   ❑ I attest that I have technical competence in performing ultrasonography:

Name:

Practice Pathway, continued

Please provide the name of an individual who can verify your technical competence, if different from the individual identified in #1 – Practice Duration.
<description of acceptable role/qualifications for verifier>

- ❑ I wish to name the same verifier I named in Section 1 – Practice Duration
- ❑ I wish to name a different verifier, identified below.

Name of Verifier:
Verifier's Institution:
Verifier's Title:

Verifier contact information

Address:		**City/State/Zip:**
Phone:	**Email:**	**Fax:**

Note: ABEM will seek independent verification of your technical competence in ultrasonography as attested to above.

4. Experiential knowledge and expertise

I attest that I have satisfactory expertise in the following:

- ❑ Imaging informatics specific to workflow management, review, and archiving CU images
- ❑ Picture Archival and Communication Systems (PACS) and other image and interpretation management solutions
- ❑ Digital Communications in Medicine (DICOM) standards
- ❑ CU practices to implement appropriate quality assurance and quality improvement programs.

Please provide the name of an individual who can verify your technical competence, if different from the individual identified in #1 – Practice Duration.
<description of acceptable role/qualifications for verifier>

- ❑ I wish to name the same verifier I named in Section 1 – Practice Duration
- ❑ I wish to name the same verifier I named in Section 3 – Technical Competence
- ❑ I wish to name a different verifier, identified below.

Name of Verifier:
Verifier's Institution:
Verifier's Title:

Verifier contact information

Address:		**City/State/Zip:**
Phone:	**Email:**	**Fax:**

Name:

Practice Pathway, continued

5. Additional practice requirements

I am providing information to demonstrate that I meet the criteria in **two** of the following areas:

- ❑ Leadership-Administration → continue with **5.a** below
- ❑ Scholarly Publications and Products → continue with **5.b** below
- ❑ Teaching → continue with **5.c** below

5.a Leadership-Administration

Name of Institution:		
Address:		**City/State/Zip:**
Phone:	**Email:**	**Fax:**
Your Position:		
If Clinical or Emergency Ultrasonography fellowship director or assistant/associate director: ☐ **Number of classes that graduated during your tenure**		

Dates Position Held:	**To:**
Month/Day/Year	Month/Day/Year

Name of Verifier:
Verifier's Title:

Verifier contact information

Address:		**City/State/Zip:**
Phone:	**Email:**	**Fax:**

Note: ABEM will seek independent verification of your leadership-administrative role in Clinical Ultrasonography

5.b Scholarly Publications and Products

Please **submit** with your application a list of your publications, including the full citation, that meet these eligibility criteria:

> Served as a first, second, or senior author on five or more peer-reviewed ultrasonography articles or ultrasonography book chapters (or a combination of five articles and book chapters) in a core ultrasound or core Emergency Medicine text book. Published abstracts do not count. For peer-reviewed articles, a PMID must be supplied for credit. Electronic or web-based publications are limited to *MedEd Portal* and the *Sonoguide*™; other web-based publications and webpages do not count. The inclusion of other electronic publications might be considered as peer review standards evolve.

Name:

Practice Pathway, continued

5.c Teaching

If you **practice in an academic setting**, please **submit** with your application program schedules or brochures demonstrating that you have presented lectures according to these eligibility criteria:

> Presented at least five ultrasonography lectures at a minimum of three different regionally-, nationally-, or internationally-based conferences. Or, presented at least five ultrasonography lectures, outside of her or his own department or institution, for which participants can receive CME credit.

If you **practice in a non-academic setting**:

- ❑ I attest that I have taught a minimum of 10 hours of structured professional development lectures or workshops for medical colleagues. Time spent instructing during a clinical shift cannot be included in this definition.

Please **submit** the agenda(s), syllabus(i), or other description of the lecture(s) or workshop(s) you taught.

Please name a verifier. Your verifier should be a department chair or a physician in a similar role.

- ❑ I wish to name the same verifier I named in Section 1 – Practice Duration
- ❑ I wish to name the same verifier I named in Section 3 – Technical Competence
- ❑ I wish to name the same verifier I named in Section 4 – Experiential Knowledge
- ❑ I wish to name a different verifier, identified below.

Name of Verifier:
Verifier's Institution:
Verifier's Title:

Verifier contact information

Address:	**City/State/Zip:**	
Phone:	**Email:**	**Fax:**

Society for Academic Emergency Medicine

May 30, 2018

Richard E. Hawkins, M.D.
American Board of Medical Specialties
President and Chief Executive Officer
353 North Clark Street
Suite 1400
Chicago, IL 60654

Dear Dr. Hawkins:

The Society for Academic Emergency Medicine (SAEM) supports the application by the American Board of Emergency Medicine (ABEM) for the designation of Focused Practice in Clinical Ultrasonography.

SAEM supports board certification and believes that such high standards are essential to the continued enrichment of Emergency Medicine and necessary to ensure a high quality of care for the patients we serve.

SAEM and its Academy of Emergency Ultrasound wishes ABEM all the best in this pursuit to provide recognition for expertise in Clinical Ultrasonography to ABEM diplomates in the future.

Sincerely,

Steven B. Bird

Steve B. Bird, MD
President
SAEM

Megan M. Leo, M.D.
President
SAEM's Academy of Emergency Ultrasound

Via email

cc: John C. Moorehead, M.D., ABMS Chair
Randall K. Roenigk, M.D., ABMS Committee on Certification Chair
Terry Kowalenko, M.D., ABEM President
Mary Nan S. Mallory, M.D., ABMS Committee on Certification Member
Michael L. Carius, M.D., ABMS Board of Directors
Robert L. Muelleman, M.D., ABEM President-elect

American College of Emergency Physicians®
ADVANCING EMERGENCY CARE

May 30, 2018

Richard E. Hawkins, MD
American Board of Medical Specialties
President and Chief Executive Officer
353 North Clark Street
Suite 1400
Chicago, IL 60654

Dear Dr. Hawkins:

The American College of Emergency Physicians (ACEP) supports the application by the American Board of Emergency Medicine (ABEM) for the designation of Focused Practice in Clinical Ultrasonography.

ACEP supports board certification and believes that such high standards are essential to the continued enrichment of Emergency Medicine and necessary to ensure a high quality of care for the patients we serve.

ACEP wishes ABEM all the best in this pursuit to provide recognition for expertise in Clinical Ultrasonography to ABEM diplomates in the future.

Sincerely,

Paul Kivela MD FACEP

Paul D. Kivela, MD, MBA, FACEP
President
American College of Emergency Physicians

cc: John C. Moorhead, MD, MS, FACEP, ABMS Chair
Randall K. Roenigk, MD, ABMS Committee on Certification Chair
Terry Kowalenko, MD, FACEP, ABEM President
Mary Nan S. Mallory, MD, FACEP, ABMS Committee on Certification Member
Michael L. Carius, MD, FACEP, ABMS Board of Directors
Robert L. Muelleman, MD, FACEP, ABEM President-Elect

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4950 W Royal Ln
Irving, TX 75063-2524

972-550-0911
800-798-1822
www.acep.org

American College of Emergency Physicians®

ADVANCING EMERGENCY CARE

May 29, 2018

Richard E. Hawkins, MD
American Board of Medical Specialties
President and Chief Executive Officer
353 North Clark Street
Suite 1400
Chicago, IL 60654

Dear Dr. Hawkins:

The American College of Emergency Physicians (ACEP) supports the application by the American Board of Emergency Medicine (ABEM) for the designation of Focused Practice in Clinical Ultrasonography.

ACEP supports board certification and believes that such high standards are essential to the continued enrichment of Emergency Medicine and necessary to ensure a high quality of care for the patients we serve.

The ACEP Emergency Ultrasound Section wishes ABEM all the best in this pursuit to provide recognition for expertise in Clinical Ultrasonography to ABEM diplomates in the future.

Sincerely,

Rachel B. Liu, MD, FACEP
Chair, Emergency Ultrasound Section
American College of Emergency Physicians

cc: Paul D. Kivela, MD, MBA, FACEP, ACEP President
John C. Moorhead, MD, MS, FACEP, ABMS Chair
Randall K. Roenigk, MD, ABMS Committee on Certification Chair
Terry Kowalenko, MD, FACEP, ABEM President
Mary Nan S. Mallory, MD, FACEP, ABMS Committee on Certification Member
Michael L. Carius, MD, FACEP, ABMS Board of Directors
Robert L. Muelleman, MD, FACEP, ABEM President-Elect

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SCUF
Society of Clinical Ultrasound Fellowships

May 29, 2018

Richard E. Hawkins, M.D.
American Board of Medical Specialties
President and Chief Executive Officer
353 North Clark Street
Suite 1400
Chicago, IL 60654

Dear Dr. Hawkins:

The Society of Clinical Ultrasonography Fellowships (SCUF) supports the application by the American Board of Emergency Medicine (ABEM) for the designation of Focused Practice in Clinical Ultrasonography.

SCUF supports board certification and believes that such high standards are essential to the continued enrichment of Emergency Medicine and necessary to ensure a high quality of care for the patients we serve.

SCUF wishes ABEM all the best in this pursuit to provide recognition for expertise in Clinical Ultrasonography to ABEM diplomates in the future.

Sincerely,

John Bailitz, M.D.
President
Society of Clinical Ultrasonography Fellowships

Via email

cc: John C. Moorehead, M.D., ABMS Chair
Randall K. Roenigk, M.D., ABMS Committee on Certification Chair
Terry Kowalenko, M.D., ABEM President
Mary Nan S. Mallory, M.D., ABMS Committee on Certification Member
Michael L. Carius, M.D., ABMS Board of Directors
Robert L. Muelleman, M.D., ABEM President-elect

May 31, 2018

Richard E. Hawkins, M.D.
American Board of Medical Specialties
President and Chief Executive Officer
353 North Clark Street
Suite 1400
Chicago, IL 60654

Dear Dr. Hawkins:

The American Academy of Emergency Medicine (AAEM) supports the application by the American Board of Emergency Medicine (ABEM) for the designation of Focused Practice in Clinical Ultrasonography.

AAEM supports board certification and believes that such high standards are essential to the continued enrichment of Emergency Medicine and necessary to ensure a high quality of care for the patients we serve.

AAEM and its Emergency Ultrasound Section wishes ABEM all the best in this pursuit to provide recognition for expertise in Clinical Ultrasonography to ABEM diplomates in the future.

Sincerely,

David A Farcy, MD FAAEM FCCM
President, AAEM

Mark Magee, MD FAAEM
President, Emergency Ultrasound Section

Via email

cc: John C. Moorehead, M.D., ABMS Chair
Randall K. Roenigk, M.D., ABMS Committee on Certification Chair
Terry Kowalenko, M.D., ABEM President
Mary Nan S. Mallory, M.D., ABMS Committee on Certification Member
Michael L. Carius, M.D., ABMS Board of Directors
Robert L. Muelleman, M.D., ABEM President-elect