STANDARDS FOR ASSURANCE
OF MINIMUM ENTRY LEVEL COMPETENCE
FOR THE DIAGNOSTIC ULTRASOUND PROFESSIONAL

APPROVED JULY 31, 2001
Preamble

The purpose of this document is to define the qualifications necessary to become certified and practice as a Diagnostic Ultrasound Professional, which includes Diagnostic Cardiac Sonographers, Diagnostic Medical Sonographers and Vascular Technologists. It is expected that this document will change as the needs of the profession evolve in the future. The minimum standards established in this document are to be used in conjunction with the Scope of Practice for the Diagnostic Ultrasound Professional\(^1\) and represent the entry-level threshold for persons to enter the field of diagnostic ultrasound. The Scope of Practice of the Diagnostic Ultrasound Professional includes those procedures, acts and processes permitted by law, for which the individual has received education and clinical experience, and in which he/she has demonstrated competency. The field of diagnostic medical ultrasound includes the specialties of Vascular Technology which encompasses Vascular Sonology and physiologic testing, Diagnostic Cardiac Sonology with subspecialties in adult echocardiography and pediatric echocardiography, and Diagnostic Medical Sonology with subspecialties in breast sonology, general medicine sonology, neurosonology, obstetrics and gynecology, and ophthalmology.

Standards, as described in the Scope of Practice, are designed to reflect behavior and performance levels expected in clinical practice. Clinical practice standards and personnel certification are paramount to ensure quality ultrasound examinations and maximum patient protection.

It is clear that a wide range of both academic and clinical training is prerequisite in order for individuals to meet these standards. The increasing sophistication of ultrasound technologies coupled with the current environment and the level of practice required of the Diagnostic Ultrasound Professional renders on-the-job training inadequate as an educational pathway. While no mechanism exists to unquestionably assure technical competence, national board certification is the standard of practice in ultrasound. The purpose of certification is to provide assurance to the public that persons practicing diagnostic ultrasound have completed specified didactic course work, clinical experience and possess the knowledge, skills, and experience to deliver high quality patient care.

Description of the Profession:
Diagnostic Ultrasound Professionals use a varied intellect that requires advanced education specific to the multiple specialties of diagnostic ultrasound. Individuals exercise independent judgment in the practice of diagnostic ultrasound, making the outcome of the examination unique to each patient and not a routine process.

According to the Scope of Practice, Diagnostic Ultrasound Professionals:

- Perform patients assessments
- Acquire and analyze data obtained using ultrasound and related diagnostic technologies
- Provide a summary of findings to the physician to aid in patient diagnosis and management

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\(^1\) Scope of Practice for the Diagnostic Ultrasound Professional, (JDMS 16:206-211, JVT 24(3):152-156.)
• Use independent judgment and systematic problem solving methods to produce high quality diagnostic information and optimize patient care.

Competency in performing these critical patient care functions requires advanced education specific to the multiple specialties of diagnostic ultrasound.
Minimum Standards for the Profession

I. Diagnostic Ultrasound Minimum Academic Standards

These represent the minimum educational requirements identified as necessary for an individual to enter the Diagnostic Ultrasound Profession. The educational structure for the Diagnostic Ultrasound Professional has been evolving over the last two decades. It is anticipated that all persons will enter the field with a minimum of an Associates Degree in ultrasound, other allied health or life sciences and have, at a minimum, the clinical requirements outlined in Section 2 of this document by 2006; a Bachelor of Science Degree in allied health or life sciences and have, at a minimum, the clinical requirements outlined in Section 2 of this document by 2008; and a Bachelor of Science Degree in Diagnostic Ultrasound or one of its specialties by 2012.

Standard: Educational Program Accreditation

- All established ultrasound educational programs in the United States must be accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) by 2006.
- All newly established ultrasound educational programs in the United States must be accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) within 5 years of initiation.
- Standards for the accreditation of an educational program for the Diagnostic Ultrasound Professional should be in conjunction with Section I (Requirements for Accreditation) and III (Maintaining and Administering Accreditation) of the CAAHEP Standards and Guidelines for an Accredited Educational Program.

2 The minimum educational and clinical standards within this document are supported by the precedent set in the United States District Court for the eastern district of Pennsylvania (Civil Action Number 98-CV-4076).
3 Commission on Accreditation of Allied Health Education Programs (CAAHEP), Standards and Guidelines for an Accredited Education Program for the Diagnostic Medical Sonographer, www.caahep.org/standards/dms-st.htm
4 Commission on Accreditation of Allied Health Education Programs (CAAHEP), Standards and Guidelines for an Accredited Program for the Cardiovascular Technologist, www.caahep.org/standards/cvt-st.htm.
5 Commission on Accreditation of Allied Health Education Programs (CAAHEP), Standards and Guidelines for an Accredited Education Program for the Diagnostic Medical Sonographer, www.caahep.org/standards/dms-st.htm
7 SVT Guidelines for Educational Programs in Vascular Technology
8 As the standards for the learning concentrations related to neurosonology, breast sonology and ophthalmology have not been created by CAAHEP SDMS and SVT will jointly approach CAAHEP to request creation of these standards. SDMS and SVT seek endorsement from the American Society of Ophthalmology.
Multi-specialty programs must ensure that all requisite standards for each specialty are met. In the case of diverse specialties, this may require an additional year of didactic training.

**Standard:** Prerequisite Education per CAAHEP standards Section IC1 (Admission Policies and Procedures):

**Standard:** Curriculum per CAAHEP standards Section IIB

The entry-level curriculum for diagnostic ultrasound provides the foundation of knowledge that will be utilized before a student enters into clinical training.

**Standard:** Required Competencies Common to Each Learning Concentration (Section II C).

Curriculum should be reviewed to ensure currency of content every two years.

- Competencies should be outcomes based.
- Code of Ethics as created by the Sonography Coalition should be adopted.
- Code of Professional Conduct should be established.
- Professional society participation should be promoted.

A. Cardiac Sonology learning concentration\(^\text{5, 6}\)
   - Competencies specific to the Cardiac sonology learning concentration. (Section II E).

B. Vascular Technology learning concentration\(^\text{5, 7}\)
   - Competencies specific to the Vascular Technology learning concentration. (Section II F).

C. General Medicine Sonology learning concentration\(^\text{5}\)
   - Competencies specific to the general medicine learning concentration (Section II D1-3 and 8).

D. Obstetrics and Gynecology learning concentration\(^\text{5}\)
   - Competencies specific to Obstetrics and Gynecology learning concentration (Section II D 4-8)
   - Neurosonology learning concentration\(^\text{8}\)

E. Breast sonology learning concentration\(^\text{8}\)

F. Ophthalmology learning concentration\(^\text{8}\)

**II. Diagnostic Ultrasound Clinical Education Standards**

Clinical education should be an adjunct to didactic education. The cognitive and psychomotor skills necessary to competently perform any ultrasound specialty require extensive clinical experience. A significant component of any ultrasound educational program is clinical practice. Exposure to a high volume and variance of sonographic procedures is necessary, which permits exposure to a variety of pathologic conditions. Clinical education should be specific for each specialty practiced. Clinical education must be accomplished under the direct supervision of a certified Diagnostic Medical
Sonographer, Diagnostic Cardiac Sonographer or Vascular Technologist experienced in the specialty of clinical focus. The cardiac concentration requires a minimum of 800 procedures annually in the lab of clinical internship. The vascular concentration requires a minimum of 1000 procedures annually in the lab of clinical internship that includes both sonographic and indirect physiologic procedures. Multi-specialty programs require a minimum of 1500 clinical procedures annually in the lab of clinical internship. This allows for overlap of skill development in clinical education that occurs in the first 4-6 months for any single learning concentration.

III. Diagnostic Ultrasound Minimum Certification Standards

Definition of Certification: Successful completion of a national objective written certification examination, which has been independently validated and meets the standards of the National Commission for Certifying Agencies. (See Appendix III).

Standard: National Board Certification is mandatory to ensure:

- Public Protection
- Quality of Care

The purpose of certification is to provide assurance to the public that the diagnostic ultrasound professional has completed specified didactic courses and clinical experience and possesses the knowledge, skills, and experience to deliver high quality patient care. Additionally, the provider is able to appropriately evaluate normal and abnormal anatomy with ultrasound images or related technologies, assess patient clinical history, optimize established examination procedures, and communicate findings with physicians.

Competence in one specialty does not, nor should be construed as competence in any other. Certification in each area of clinical work is required.

Standard: Post Certification Continuing Education

Diagnostic ultrasound professionals must adhere to the specific continuing education and/or recertification guidelines as mandated by the organization from which the certification is obtained. Due to rapid advancement in ultrasound practice, the need for continually staying abreast of evolving standards, techniques and technology is imperative. Without continuing education and exposure to knowledge beyond the undergraduate experience, no professional can stay current in information and skills necessary to provide high quality care to patients. Ongoing certification is based on a standard that includes successful attainment of continuing professional education and experience with new technologies and modalities. In order to remain current with the development of the field, persons who have passed their certification examinations for ultrasound must demonstrate completion of at

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9 Commission on Accreditation of Allied Health Education Programs (CAAHEP), Standards and Guidelines for an Accredited Education Program for the Diagnostic Medical Sonographer, www.caahep.org/standards/dms-st.htm
least 30 hours of qualified CME every three years and a minimum of 15 hours in each specialty in which they are certified.

**Standard: Types of Continuing Education**

Standards of practice will continue to evolve as technology advances and new procedures and techniques are developed. Ongoing education of current practice is necessary to remain abreast of these changes. Participation in research, scientific publication, and completion of advanced degrees may also be a means of staying current with the profession and/or contributing to continuing professional development.

**Standard: Institutional Orientation**

Current practice dictates persons practicing diagnostic medical ultrasound assume significant responsibility for obtaining a complete and accurate examination, pertinent to each patient’s condition. Institutional and laboratory specific protocols and procedures cannot be taught prior to being employed at an institution. Every employer of ultrasound professionals must provide comprehensive institutional orientation about its philosophy, standards and methods of practice, the range of patients to be encountered, and all protocols and procedures. The length of this orientation will vary depending on many factors, including the size of the institution, but would generally be a minimum of six months.

**Standard: Continuing Professional Development**

Participation in research, scientific publication, and completion of advanced degrees in order to stay current with the profession is strongly encouraged and supported by the field. However, clinically relevant continuing education is still mandatory.
Appendix

I. **Commission on Accreditation of Allied Health Education Programs (CAAHEP), Standards and Guidelines for an Accredited Education Program for the Diagnostic Medical Sonographer**, [www.caahep.org/standards/dms-st.htm](http://www.caahep.org/standards/dms-st.htm)

II. **Commission on Accreditation of Allied Health Education Programs (CAAHEP), Standards and Guidelines for an Accredited Program for the Cardiovascular Technologist**, [www.caahep.org/standards/cvt-st.htm](http://www.caahep.org/standards/cvt-st.htm).


   **Standard 1**  
The purpose of the certification program is to conduct certification activities in a manner that upholds standards for competent practice in the profession, occupation, role, or for the use or support of a product.

   **Standard 2**  
The certification program must be structured and governed in ways that are appropriate for the profession, occupation, role, or for the use or support of a product and that ensure an appropriate level of autonomy in decision making over essential certification activities.

   **Standard 3**  
The certification board or advisory committee of the certification program must include individuals from the population being certified, as well as representation from appropriate stakeholders. For entities offering more than one certification program, a system must be in place through which all certified populations are represented on the certification board or advisory committee.

   **Standard 4**  
The certification program must have sufficient financial resources to conduct effective and thorough certification and recertification activities.

   **Standard 5**  
The certification program must have sufficient staff, consultants, and other human resources to conduct effective certification and recertification activities.

   **Standard 6**  
A certification program must establish, publish, apply, and periodically review key certification policies and procedures concerning existing and prospective certificants, such as those for determining eligibility criteria, application for certification, administering assessment instruments, establishing
performance domains, appeals, confidentiality, certification statistics, discipline, and compliance with applicable laws.

Standard 7
The certification program must publish a description of the assessment instruments used to make certification decisions as well as the research methods used to ensure that the assessment instruments are valid.

Standard 8
The certification program must award certification only after the knowledge and/or skill of individual applicants have been evaluated and determined to be acceptable.

Standard 9
The certification program must maintain a list and provide verification of certified individuals.

Standard 10
The certification program must analyze, define, and publish performance domains and tasks related to the purpose of the credential, and the knowledge and/or skill associated with the performance domains and tasks, and use them to develop specifications for the assessment instruments.

Standard 11
The certification program must employ assessment instruments that are derived from the job/practice analysis and that are consistent with generally accepted psychometric principles.

Standard 12
The certification program must set the cut score consistent with the purpose of the credential and the established standard of competence for the profession, occupation, role, or for the use or support of a product.

Standard 13
The certification program must document the psychometric procedures used to score, interpret, and report assessment results.

Standard 14
The certification program must ensure that reported scores are sufficiently reliable for the intended purposes of the assessment instruments.

Standard 15
The certification program must demonstrate that scores from different forms of an assessment instrument assess equivalent content and that candidates are not disadvantaged for taking a form of an assessment instrument that varies in difficulty from another form.

Standard 16
The certification program must develop, publish, and adhere to appropriate, standardized, and secure procedures for the administration of the assessment instruments.

Standard 17
The certification program must establish and document policies and procedures for retaining all information and data required to provide evidence of validity and reliability of the assessment instruments.
Standard 18
The certification program must establish and apply policies and procedures for secure retention of assessment results and scores of all candidates.

Standard 19
The certification program must establish, publish, apply, and periodically review policies and procedures for recertification.

Standard 20
The certification program must demonstrate that its recertification requirements measure or enhance the continued competence of certificants.

Standard 21
The certification program must demonstrate continued compliance to maintain accreditation.