

Recommendations to improve the quality of ultrasound imaging in obstetrics and gynecology

APPENDIX TABLE 1E Biparietal diameter

Pass grade: $\geq 10/13$

- Focal zone at appropriate level
- Image magnified appropriately
- Axial plane of head
- Symmetric appearance of cerebral hemispheres
- Midline falx imaged
- Thalami imaged
- Cavum septi pellucidi imaged
- Insula imaged
- No cerebellum seen
- Near caliper on outside edge of bone
- Far caliper on inside edge of bone^A
- Measurement at widest diameter
- Measurement perpendicular to falx

Passing this competency will also qualify for competency transthalamic plane in Table 3B

APPENDIX FIGURE 5

Biparietal diameter (BPD) - Transthalamic plane



A, Axial plane of fetal head at level of BPD, demonstrating falx cerebri, cavum septi pellucidi (CSP), thalami (T), third ventricle (V), and insula. Note, BPD measurement in this image is from outside border of proximal parietal bone to inside border of distal parietal bone. B, Same image as in A. BPD measurement in this image is from outside border of proximal parietal bone to outside border of distal parietal bone. See Appendix Table 1E for corresponding competency list.

Biparietal diameter along with the list of criteria for competency. A teaching example from the curriculum that describes how an important measurement of a developing fetus is made. Credit: Elsevier

While ultrasound imaging is a commonly used diagnostic tool in obstetrics and gynecology, evidence suggests that the quality of ultrasound examination in clinical practice and ultrasound training in obstetrics and gynecology and radiology residency programs can be improved. To address these issues, the American Institute of Ultrasound in Medicine (AIUM) convened a

forum tasked with developing a roadmap for quality improvement in ultrasound imaging in obstetrics and gynecology and set up a task force to establish a consensus curriculum and competency assessment tools for residency training. The results of these efforts are published simultaneously today in the *American Journal of Obstetrics & Gynecology*, *Journal of Ultrasound in Medicine*, and *Ultrasound in Obstetrics & Gynecology*.

In an effort to develop better standards, the forum, Beyond Ultrasound First, under the leadership of Beryl R. Benacerraf, MD, from Brigham & Women's Hospital, Harvard Medical School, Boston, MA, brought together representatives from many professional associations; the imaging community including radiology, obstetrics and gynecology, and emergency medicine among others; and government agencies, insurers, industry, and others with common interest in obstetric and gynecologic ultrasound. The aim of this forum, funded by AIUM's Endowment for Education and Research, was to increase and unify the quality of ultrasound examinations in obstetrics and gynecology with the ultimate goal of improving patient safety and quality of clinical care.

"Improving the quality of ultrasound examinations will have a substantial impact on patient care and healthcare costs," explained Dr. Benacerraf. "Furthermore, standardizing the approach to ultrasound training in residency programs and providing tools to measure competency in a comprehensive way is a novel approach that will ensure training and thus impact long term patient care. To our knowledge, this is the first time that a multi-society curriculum and competency assessment tools have been created for residency training in clinical imaging."

Roberto Romero, MD, DMedSci., Editor-in-Chief for Obstetrics of the *American Journal of Obstetrics & Gynecology*, stated that "a curriculum in ultrasound for training future physicians in obstetrics and gynecology and related

disciplines was necessary to improve the care of women and their unborn children. We are pleased to make available to the entire world the recommendations of the Task Force as well as the images and criteria for evaluation to strengthen education, enhance training, and promote high-quality medical practice.”

While most obstetricians and gynecologists agree that ultrasound should be the first-choice imaging method, its use and level of competency with which it is performed are variable. The proceedings of this conference focus on the key issues identified and possible approaches to resident teaching and means to improve the inconsistent quality of ultrasound examinations performed today:

- Understanding the role of ultrasound in clinical imaging and the importance of complying with ultrasound first when feasible
- Ensuring that ultrasound is performed in high quality in order to minimize false positive and false negative findings
- Incorporating the curriculum and competency assessment tools in residency programs to ensure standardization of training
- Gaining insights into the payer’s perspectives

According to Dr. Benacerraf, “Ultrasound can be immensely informative, but it requires more skill and training than just pushing a button. Those that make the effort to master the modality will reap rich rewards for their patients, trainees, and themselves, and often avoid moving on to other imaging studies by providing the diagnosis with sonography. The practice of ultrasound offers the imager the possibility of direct patient contact to guide the exam, which is unique to ultrasound and represents the essence of our profession.”

The multi-society Task Force that developed the curriculum to

standardize teaching of ultrasound in OB GYN for Residents was led by Alfred Z. Abuhamad, MD, of Eastern Virginia Medical School, Norfolk, VA. Their efforts resulted in a consensus report that describes essential topics in medical ultrasound training, a level-based framework to guide trainees to increasing competence, and a competency assessment that involves evaluation of still ultrasound images, movie clips, realtime scanning, or a combination of methods that can be implemented by individual programs.

“This consensus-based curriculum and competency assessment will provide the tools to ensure standardization of ultrasound training in residency programs. Ensuring optimal training of ultrasound in residency programs will result in improved quality of ultrasound examinations in clinical practice,” commented Dr. Abuhamad.

Basky Thilaganathan, MD, PhD, FRCOG, St George’s, University of London, and editor-in-chief, *Ultrasound in Obstetrics & Gynecology (UOG)* added, “Ultrasound imaging is now established in the practice of obstetrics and gynecology, making systematic education and assessment in this competency a necessity, rather than optional. UOG is pleased to publish the framework for curriculum based training to allow structured practical training and experience in this specialty.”

Ultrasound imaging is dependent on the operator to a much greater extent than computed tomography (CT) or magnetic resonance imaging (MRI). Obstetric ultrasound imaging is particularly challenging, given the small size of fetal organs and the variable fetal position in the uterus. This makes training and competency assessment an important factor in the quality of the ultrasound examination.

Explore further:

AIUM and AUA develop joint guideline for the performance of an ultrasound examination in urology

More information:

Beryl R. Benacerraf et al. Proceedings: Beyond Ultrasound First Forum on improving the quality of ultrasound imaging in obstetrics and gynecology, *American Journal of Obstetrics and Gynecology* (2017). DOI: 10.1016/j.ajog.2017.06.033

Alfred Abuhamad et al. Obstetric and gynecologic ultrasound curriculum and competency assessment in residency training programs: consensus report, *American Journal of Obstetrics and Gynecology* (2018). DOI: 10.1016/j.ajog.2017.10.016