

Most medical physicists are “out of the loop” when the purchase of ultrasound equipment is made by their facility. This refresher course suggests strategies that may correct this problem and describes specific attributes needed for ultrasound equipment and tests designed to verify that the attribute is present.

Two scenarios are possible. The medical physicist is either performing routine quality control on ultrasound equipment at his institution, or he is not. In order to be included in ultrasound equipment selection, the medical physicist must be perceived as contributing to the selection process. Previous involvement in routine ultrasound QC will help this perception, particularly if bad or inappropriate probes have been identified on the existing equipment.

Bid specifications: Because the cost of ultrasound equipment generally specifies the type of equipment that can be purchased, a maximum allowable price must be included in the bid specification. The types of transducers should be listed by function and frequency range, where function includes focusing, depth range and body access, such as between ribs, endovaginal, small parts, etc. If Doppler is included, the bid must specify that peak velocity between 20 cm/sec to 80 cm/sec matches between probes to within 10%.

Acceptance testing: This should include establishing baseline QC values for routine ultrasound QC as well as testing probes for appropriate slice thickness focusing. A Doppler phantom is a necessity for Doppler acceptance testing. Suggestions for color flow testing will be made, but are more qualitative than other QC testing. A collaboration between the medical physicist, applications specialist and radiologist will ensure continued involvement of the medical physicist in ultrasound consultations.

Educational objectives: 1) Learning strategies so the medical physicist is included in the ultrasound selection process, 2) Knowing differences between high end and low end ultrasound equipment, 3) Understanding the mix of ultrasound probes needed for different imaging tasks, 4) Review the ultrasound QC tests needed for acceptance testing.