Policies, Standards, and Guidelines

Guidelines on Breast Ultrasound Examination and Reporting

Approved by Council June 2018
Summary
Ultrasound practitioners conducting breast ultrasound scans should be fully trained in ultrasound with a thorough understanding of the principles, procedures, technology and reporting involved. Sonographers must have appropriate industry accreditation. It is expected that the ultrasound practitioner will follow a reasonable course of action utilising appropriate practice based on current knowledge, available resources, and the needs of the patient to deliver effective and safe medical care. Images and documentation of all important findings should be recorded in a retrievable and reviewable image storage format.

Purpose
These Guidelines have been developed to assist practitioners in the performance and reporting of breast ultrasound.

These Guidelines supersede the D4 Statement on Breast Ultrasound Examination and Reporting:
Originally approved/Effective: June 1990
Reaffirmed: May 1997
Revised: September 1999, March 2012.

Scope/Applicability
These guidelines are applicable to all ultrasound practitioners.

Background
Breast cancer is now the most common cancer affecting Australian women. Finding cancer at an early stage increases the chances of successful treatment and improved survival. It is not appropriate to confirm or exclude diagnosis of breast cancer without undertaking a triple test which includes taking a personal history and a clinical breast examination, imaging tests (mammogram and/or ultrasound and/or MRI) and a biopsy to remove cells or tissue for examination. Most women show no signs of cancer on any of the tests. The small number of women who show possible signs of cancer on one or more of the tests may be advised to see a surgeon for further tests or treatment\(^{14,15,17}\).

The role of ultrasound in breast cancer screening remains unresolved. As there is a higher biopsy rate due to higher false positives compared to mammography, ultrasound is not recommended as a primary screening tool in the general population. Ultrasound is not recommended in lieu of MRI in the very high risk patient. Recent studies have shown that ultrasound may improve the detection of early breast cancer in women with an increased risk who are not able to access MRI. Breast thermography is not recommended in the detection or management of breast cancer\(^{16,17}\).
Guideline 1 – Pre-Performance of Ultrasound

Requirement

Procedure #1 – Indications for examination.

1. For the evaluation and characterisation of a clinical abnormality.
2. For the evaluation and characterisation of an abnormality demonstrated on other imaging eg mammography, MRI, CT.
3. For guidance of interventional procedures (e.g. biopsy, clip placement, hook wire insertion, drainage of abscess etc).
4. For treatment planning and evaluation of impact of therapy (tumour size reduction/ no change/ increased size or no response to therapy).
5. For post-operative assessment.
6. For the assessment of implants, in particular extracapsular rupture, peri-prosthetic fluid collections. Ultrasound is not recommended for assessment of intra-capsular rupture, where MRI is the gold standard.
7. For the initial evaluation of palpable masses in the young (<30 years of age), lactating and pregnant women.
8. As an adjunct to mammography in women with dense breasts\(^3,4,5\) and in high risk women (for example in women with a prior history of breast cancer).

Procedure #2 – Correlation.

1. Previous related imaging should be reviewed prior to the ultrasound examination.
2. The number and position of both clinical and mammographic/MRI lesions should be known prior to scanning.
3. The Sonographer/Sonologist must correlate any palpable abnormality to the ultrasound findings.
4. Knowledge of mammography imaging and positioning and MRI positioning is required to enable accurate imaging correlation to the ultrasound findings.
5. When lesions demonstrated on MRI are identified on second look ultrasound, it is mandatory that a clip be placed following biopsy in the lesion to confirm concordance of the ultrasound lesion with the initial MRI lesion.

Guideline 2 – Equipment

Requirement

1. A linear array transducer should be used at the highest frequency capable to adequately evaluate the breast and to penetrate the depth and density of the breast.
2. A transducer with a broad range of operating frequencies is desirable to evaluate both superficial lesions and the dense breast. The transducer must at least operate at 7.5 MHz. An acoustic standoff pad may be useful for very superficial lesions.

Guideline 3 – The Examination

Requirement

1. Patient positioning is crucial to the effectiveness of the scan – the breast tissue should be
spread out as evenly as possible over the chest wall. Variations of supine and semi-oblique with the arm raised should be considered. It may be necessary to place a cushion under the patient’s shoulder on the side being scanned. For some lesions initially identified on a mammogram, it may sometimes be helpful to scan the patient erect to emulate the cranio-caudal position. For lesions initially identified on MRI scans it may necessary to recreate the MRI prone position.

2. The breast should be scanned in a uniform and comprehensive fashion, including the axillary tail. Scanning technique may be in the anti-radial, radial, longitudinal or transverse planes.

Procedure #1 – Imaging Requirements & Measurements.

1. The axilla should be fully examined; lymph nodes should be characterised when identified: cortical thickness and hilum appearance.
2. The retroareolar region should be examined.
3. All masses and areas of concern should be scanned in at least 2 orthogonal planes. Image optimization including the use of harmonics, colour Doppler and elastography may help to characterize the lesion.
4. Measurements should be taken to accurately represent the size of the lesion; with the longest length and depth measured in one plane and then the width at ninety degrees to this, the extent of multi-focal disease is to be noted.
5. Palpable or clinical areas of concern should be carefully assessed and correlated to the ultrasound findings.

Procedure #2 – Documentation.

1. The breast should be visualized as a clock face with representative images taken.
2. As a minimum it is recommended that
   (a) images always be documented at 12,3,6 and 9 o’clock in a radial plane, with the distance of the lesion from the nipple measured in cm
   (b) images of the axilla and retroareolar region should be recorded in the normal breast.
   (c) the position of the image should be included in the written annotation (i.e. radial, anti-radial, transverse, longitudinal).
   (d) the use of positional or body markers is unsuitable and not supported.
3. Palpable or clinical areas of concern should be documented with ROI region or AOI area of interest. Note should be made as to what anatomy/pathology correlates to the indicated region/area of interest.
4. All areas of clinical or ultrasound interest should be noted and lesion descriptors included.
5. The positions of all lesions should be accurately documented, and the distance from the centre of the nipple recorded, on the clock face.

Procedure #3 – Mass Characterisation.

1. Masses should be characterised with respect to the Stavros benign and malignant criteria and descriptions provided.
2. Assess:
   (a) Size in 3 planes including maximum diameter in mm
   (b) Shape – round, ellipsoid, septated, irregular, height vs width ratio, orientation to skin
   (c) Internal contents – cystic, solid, mixed, blood flow
(d) Margins – smooth, lobulated (number, gentle, microlobulations), ill-defined, angular, spiculated, branch extension, duct extension
(e) Echogenicity – anechoic, isoechoic, hypoechoic, hyperechoic, mixed
(f) Texture – homogeneous, heterogeneous
(g) Calcifications – large, fine
(h) Posterior sound transmission – enhancement, shadowing, no change
(i) Capsular thickness – thin, complete, incomplete, thick, irregular
(j) Effect on surrounding structures – distortion, disrupts, invades.
(k) Comparison with previous imaging and comment on new lesions, change in size or stability of lesions should be stated as this is very important sign and will affect ongoing management and/or surveillance.

Guideline 4 – Reports

Requirement 1

1. Uniformity of reporting is essential to ensure accurate lesion follow-up, localization for procedures and comparison with other imaging modalities.
2. Images should be annotated in reference to the clock face where applicable.
3. In addition, images of masses/regions of interest should be annotated as follows:
   (a) orientation of the transducer (e.g. radial, antiradial, longitudinal, transverse)
   (b) distance of lesion from the central nipple in centimetres (positional markers are not to be used).
4. Use of the standardized breast imaging report and classification system (6) is encouraged.
5. Imaging classification(13):
   (a) No significant imaging abnormality detected
   (b) Benign findings
   (c) Indeterminate/equivocal lesion
   (d) Suspicious features of malignancy
   (e) Malignant.

The RANZCR Breast Imaging Advisory Committee has recommended that BIRADS categories be used for the classification of breast lesions in preference to the older breast screen category classification to make the process uniform across all imaging modalities.

Related/Supporting documents

The following documents are required to give effect to this guideline:

1. ASUM Guidelines for the Reprocessing of Ultrasound Transducers.

Supporting information/References

The following documents inform this guideline:


**Definitions**

The following definitions are relevant to this guideline.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td>Appropriate practice</td>
<td>one that provides patient benefit; is effective (based on valid evidence, including evidence of benefit); efficient (cost-effective); equitable and consistent with the ethical principles and preferences of the individual patient</td>
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**Contact**

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**Review**

This guideline will be reviewed and evaluated as required to ensure relevance and currency.
The review table indicates previous versions of the guideline and any significant changes.

Approval

This guideline has been approved and issued by the ASUM Council.

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<tr>
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<tr>
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