Breast imaging

> This consensus document is not a rigid constraint on clinical practice, but a concept of good practice against which the needs of the individual patient should be considered. It therefore remains the responsibility of the individual clinician to interpret the application of these guidelines, taking into account local service constraints and the needs and wishes of the patient. It is not intended that these consensus documents are applied as rigid clinical protocols.

This national Scottish guidance has been adapted from the current RCR guidance[2](https://www.rcr.ac.uk/publication/guidance-screening-and-symptomatic-breast-imaging-fourth-edition) on screening and symptomatic breast imaging.

Close all

Initial breast imaging

Ultrasound should be used as initial imaging modality in women aged <40yrs and during pregnancy and lactation.

Mammography:

- should be used as initial imaging modality in women ≥40yrs supported by ultrasound as indicated,
- should include mediolateral oblique (MLO) and craniocaudal (CC) views of each breast with additional views as appropriate,
- can be performed with a minimum 6 month interval if presenting to a one stop clinic.

Suspicion of cancer imaging

All breast assessment reports should be graded to reflect the degree of clinical suspicion.

Category gradings for clinical examination (E), mammogram (M), ultrasound (U) and MRI (MRI) findings.

	Category
0	incomplete

1	normal
2	benign
3	probably benign
4	suspicious for malignancy
5	highly suggestive of malignancy
6	known biopsy-proven malignancy

Mammography:

- should be performed on women aged <40yrs when ultrasonically suspicious findings, preferably before undertaking a biopsy.
- should be performed on all patients with confirmed breast cancer or DCIS.
- of at least the symptomatic side should be performed irrespective of time interval since last mammogram.

Tomography/Contrast enhanced mammography (CEM) used in addition as per local availability/policy.

In potentially suspicious cases to assess for multifocality, a minimum of index lesion whole quadrant ultrasound (USS) should be performed.

A **tissue marker** can be inserted for many reasons e.g. biopsied tumour.

In the neoadjuvant settings markers should be always placed into the biopsied tumour prior to commencing treatment and according to local policy for the axilla.

Axillary imaging

Ultrasound of the axilla should be performed in all patients when malignancy is suspected or confirmed.

- The imaging report should document the number of abnormal nodes seen.
- Core biopsy should be performed rather than fine needle aspiration cytology (FNAC).
- FNAC can be considered where core biopsy technically not feasible.

Insertion of a tissue marker into the biopsied node should be performed according to local protocols.

Sampling of at least one node is indicated in the following:

- Abnormal morphology (e.g. Absence of fatty hilum, round shape)
- Cortical thickness 3-5mm biopsy based on radiological suspicion
- Cortical thickness ≥ 5mm biopsy, unless bilateral and known reason for enlarged nodes.

MRI (with contrast)

If breast conserving surgery is being considered in the following scenarios:

- Lobular cancer (or mixed invasive with a lobular component)
- A size discrepancy between the clinical and radiological findings
- Multifocal or multicentric disease
- Radiological concern regarding breast density and potential of occult lesions
- Mammographically occult tumours
- Paget's disease of the nipple
- In malignant axillary node(s) with no primary tumour evident on conventional imaging
- Could be considered in patients undergoing neoadjuvant chemotherapy where it would influence clinical decision making
- In suspected recurrence where conventional triple assessment has not provided a definitive diagnosis

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CT staging to assess for metastatic disease:

The current NICE guideline(https://www.nice.org.uk/guidance/ng101)[1] for early and locally advanced breast cancer: diagnosis and management published in July 2018 does not include recommendations in regards to staging.

Only a small proportion of patients with breast cancer have metastatic disease at presentation. In view of this, formal staging with cross sectional imaging is not required in the majority of patients.

The following guidance applies to the use of Computerised Tomography (CT) in patients with a new diagnosis of breast cancer.

Breast cancer stage is based on the anatomic clinical stage within the 8th edition of the AJCC cancer staging manual[3]:

AJCC TNM Staging System for Breast Cancer

Anatomical Staging Group	Sub-category	TNM*	Involvement
Stage 0		Tis N0 M0	Ductal carcinoma in situ or Paget's disease of the nipple
Stage I	A	T1 N0 M0	Tumor ≤20 mm at its greatest dimension and metastasis
	B	T0 or T1 N1mi M0	No tumor or tumor ≤20 mm at its greatest dimension and micrometastasis to regional lymph nodes
Stage II	A	T0 or T1 N1 M0	No tumor or tumor ≤20 mm at its greatest dimension and limited metastasis to regional lymph nodes
		T2 N0 M0	Tumor >20 mm but ≤50 mm at its greatest dimension and no metastasis
	B	T2 N1 M0	Tumor >20 mm but ≤50 mm at its greatest dimension and limited metastasis to regional lymph nodes
		T3 N0 M0	Tumor >50 mm at its greatest dimension and no metastasis
Stage III	A	T0, T1, T2, or T3 N2 M0	Tumor of any size and moderate metastasis to regional lymph nodes
		T3 N1 M0	Tumor >50 mm at its greatest dimension and limited metastasis to regional lymph nodes
	B	T4 N0, N1, or N2 M0	Tumor (any size) with extension to chest wall and/or skin and limited or moderate metastasis to regional lymph nodes
	C	Any T N3 M0	Tumor presence and significant metastasis to regional lymph nodes
Stage IV		Any T Any N M1	Distant metastasis

- Stage I CT staging not recommended
- Stage II CT staging not recommended
- Stage III‡ CT staging* recommended
- Stage IV CT staging* and isotope bone scan recommended.

*If a patient has any symptoms and/ or early staging (e.g. staging bloods) investigations raising suspicion for metastatic disease at diagnosis these should be investigated accordingly regardless of stage.

*Patients who are upstaged to anatomic pathological stage III following surgery should be considered for post-operative staging prior to commencing adjuvant therapy if not staged prior to surgery.

Patients with inflammatory breast cancer should also have staging performed.

Key:

‡ Includes patients with 4 or more abnormal nodes identified on axillary USS.

* CT of the chest, abdomen and pelvis from level of supraclavicular fossa to the level of the lesser trochanters.

Male breast imaging in suspicion of cancer

As per guidance for imaging women.

Mammography to be performed in men ≥40 years.

Ultrasound in patients <40 years would be initial imaging modality.

Axillary USS should always be performed

Surveillance mammography is as per female follow up protocol.

Monitoring response to neoadjuvant treatment

Patients receiving neoadjuvant endocrine treatment, interval imaging with ultrasound is usually adequate.

In neoadjuvant chemotherapy, as a minimum, mammogram and ultrasound at baseline and end of treatment.

Use contrast enhanced MRI as per local policy. Midcycle imaging can be performed if result would influence chemotherapy regimen. However, assessment with USS can be used as alternative.

Imaging in pregnant or lactating patients in early breast cancer

Initial imaging modality is USS. Mammography to be performed once there is biopsy proven malignancy.

Mammography in pregnant patients is safe to perform, with minimal radiation risk to the fetus, although informed discussions should take place prior to mammogram. Patients should be informed that mammographic sensitivity is reduced and there is a small increased radiation dose to the breast.

Lactating patients can breast feed or express milk prior to mammography to help reduce breast density.

MRI is not recommended during pregnancy. Only if the benefit to the patient significantly outweighs the risk of exposing the fetus to contrast could gadolinium based contrast agent be administered. MDT discussion, informed patient discussion +/- written consent should be considered.

Contrast enhanced MRI can be undertaken in high risk lactating patients, following informed discussion regarding limitations of the technique during this time. Patients can be reassured that there is negligible excretion of gadolinium into breast milk.

It should be noted that MRI sensitivity is reduced during pregnancy and lactation due to the increased background enhancement pattern.

References

References:

1. National Institute for Health and Care Excellence. Early and locally advanced breast cancer: diagnosis and management [Internet]. [London]: NICE; 2018. (Clinical guideline [CG101]). Available from: https://www.nice.org.uk/guidance/ng101(https://www.nice.org.uk/guidance/ng101)
2. Royal College of Radiologists (RCR). Guidance on screening and symptomatic breast imaging [Internet]. [London]: RCR; 2019. (BFCR(19)9). Available from:https://www.rcr.ac.uk/publication/guidance-screening-and-symptomatic-breast-imaging-fourth-edition(https://www.rcr.ac.uk/publication/guidance-screening-and-symptomatic-breast-imaging-fourth-edition)
3. Amin MB, Edge SB, Greene FL, et al, eds. AJCC Cancer Staging Manual. 8th ed. New York, NY: Springer; 2017.

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