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Abstract Book

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Contents

Oral Presentations	3
Poster Presentations	7

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Oral Presentations

Listed in Presenting order

Breast Radiologist Review of Incidental Breast Findings in Lung Cancer Screening Program: The Added Value of Mammography Review

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Introduction: The implementation of lung cancer screening programmes has led to increase the number of incidental breast findings detected on low-dose non-contrast CT (LDCT) chest examinations. These findings present a diagnostic challenge, as they may trigger unnecessary referral to breast services for further investigation. This study evaluated the contribution of consultant breast radiologists within the Lung Screening Review Meeting (SRM) in the management of incidental breast findings detected during a large-scale lung cancer screening programme.

Methods: A retrospective review of patients referred to the breast service after incidental breast abnormalities were identified on LDCT examinations undertaken within a lung cancer screening programme between February 2023 and February 2026. During the SRM, consultant breast radiologists reviewed CT findings and, where available, prior screening mammograms stored within the breast screening PACS in the same institution.

Results: A total of 47 patients were referred for breast assessment, 28 cases (59.6%) were safely downgraded and discharged without further breast investigations. 19 patients (40.4%) underwent further assessment within the breast department. Histopathological evaluation identified three invasive breast cancers (B5b), yielding cancer detection rate of 6.4%. Remaining lesions assessed were confirmed to be benign.

Conclusion: Breast radiologist participation in the Lung SRM provides significant clinical value. Review of LDCT findings alongside prior mammograms enabled safe downgrading of nearly 60% of referrals, reducing unnecessary clinic attendance while maintaining detection of breast malignancies. These findings support integration of breast radiologists into lung screening pathways and improved access to prior breast imaging for optimal management of incidental breast findings.



The reduction of GHG emissions and subsequent patient benefit evidenced from review of 10 years of the B3 Pathway in Breast Test Wales

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Background: Human health and global health are inextricably linked. Healthcare contributes 5% of global greenhouse gas (GHG) emissions, adversely affecting human health. Healthcare professionals and managers are duty bound to consider ways to reduce the carbon footprint of healthcare and support the aim to achieve net zero in the NHS by 2040.

In breast cancer care, adoption of new patient pathways and using newer technologies is leading to a welcome reduction in GHG emissions, as well as reduction in water usage and waste production.

Method: In Breast Test Wales, the adoption of the formalised B3 Pathway in January 2016 has led to a marked reduction in the number of surgical excision biopsy operations which have been replaced by image guided vacuum assisted excision (VAE).

Using proxy values and the online tool CARESA (Astra Zeneca), the GHG emissions, water usage and waste production for the VAE procedures performed after B3 core biopsy results over the 10-year period have been estimated. These estimates have been compared with the values obtained if these procedures had been surgical excision biopsies.

Results: Using VAE instead of surgical excision biopsy, it is estimated that the B3 Pathway has saved 59,248 kg CO₂e from January 2016 – December 2025, a 71% reduction.

Water usage is estimated to have reduced by over 95.7 million litres, (70% reduction) and waste production by 6,549 kg, (43% reduction).

Conclusion: Substituting VAE for surgical excision biopsy has markedly reduced the carbon footprint of the B3 Pathway in Wales.



Which aspects of mammographic interpretation performance improve most following structured training using the IMPROVE scheme?

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Background: IMPROVE (IMaging PROficiency and Verification for trainees) is a test-set based training and evaluation scheme, adapted from the PERFORMS external quality assurance programme, for breast screening readers at UK breast screening training centres. Interpretation of the same validated mammographic test set before (IMPROVEA) and after (IMPROVEB) training enables objective assessment of changes in reader performance.

Aim: To explore which aspects of mammographic interpretation performance improve most in the IMPROVE scheme following structured training.

Methods: A paired observational study was conducted involving 180 trainee breast screening readers from five UK breast screening training centres who completed the same validated mammographic test set (60 cases, 120 breasts) before and after structured training, enabling direct within-reader comparison.

Performance was assessed using Correct Recall Rate (CR) [sensitivity], Correct Return to Screen Rate (CS) [specificity], Positive Predictive Value (PPV) and Negative Predictive Value (NPV) Paired-samples t-tests compared performance before and after training, with statistical significance defined as $p < 0.05$.

Results: Following training, CR increased from 81.8% to 88.1% ($p < 0.001$), and NPV increased from 91.6% to 94.2% ($p < 0.001$). However, small reductions were also observed in PPV (76.1% to 74.0%, $p = 0.018$) and correct return to screen rate (86.2% to 83.8%, $p = 0.006$).

Conclusion: The IMPROVE scheme demonstrated improved mammographic interpretation following structured training, with the greatest gains in correct recall of abnormalities. The findings provide evidence that structured training improves mammographic interpretation performance. Further analyses, including individual reader performance and diagnostic classification outcomes, will be presented at the conference.



Deep-learning mammogram analysis for malignancy detection in a symptomatic breast service: diagnostic performance and breast density subgroup analysis

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Introduction: Several deep-learning mammogram analysis algorithms have shown promise in augmenting breast cancer detection. To date, available algorithms have been developed and validated using screening mammography. The diagnostic capability of mammography depreciates with increasing breast density. The aim of this retrospective cohort study was to investigate the diagnostic ability of a cancer detection AI in a symptomatic breast population.

Methods: All women aged >35 years who underwent mammogram at our symptomatic breast care service across a three month period were assessed for inclusion. Images were analysed using an AI-based system, Lunit INSIGHT MMG, which generates a malignancy risk score of 0–100. Breast density was categorised according to the ACR classification with a low density (A/B) and high density (C/D) subgroup. Diagnostic performance was evaluated using receiver operating characteristic curve analysis.

Results: A total of 784 women were included. There were 54 (6.9%) malignancies identified during a median follow-up of 5.26 months. On receiver operating characteristic analysis for the overall cohort, A/B density subgroup, and C/D density subgroup, the AUCs were 0.971, 0.976, and 0.964, respectively. There were no significant differences between subgroups. At the prespecified risk score threshold of 15, the AI sensitivity was 92.6% and specificity was 86.6% whereas the combined single unblinded reader and AI sensitivity was 96.3% and 90.5%.

Conclusion: The AI demonstrated strong discriminative ability within the symptomatic population with the limitations of a short follow-up period and unblinded reader. The combined unblinded reader and AI assessment yielded higher sensitivity and specificity than AI alone.



Ethnic inequalities in timely breast cancer diagnosis and stage at diagnosis in England before and during COVID-19

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Ethnic inequalities in breast cancer outcomes are well documented, but less is known about whether these inequalities are evident within the post-referral diagnostic pathway. This population-based cohort study used linked National Cancer Registration and Analysis Service, Cancer Waiting Times and Hospital Episode Statistics data to examine ethnic differences in referral-to-diagnosis interval and stage at diagnosis among female breast cancer patients diagnosed in England between 2015 and 2022. Linear regression was used to estimate ethnic differences in referral-to-diagnosis interval, capped at 365 days, while logistic regression was used to examine prolonged referral-to-diagnosis interval, defined as >28 days, and late-stage diagnosis, defined as stage III/IV versus stage I/II. Among patients with known ethnicity, 223,352 female patients were eligible for regression analyses. Median referral-to-diagnosis intervals were short and broadly similar across ethnic groups, although the distribution was highly right-skewed. Mean ethnic differences in capped referral-to-diagnosis interval were generally modest; however, several minoritized ethnic groups had higher adjusted odds of an interval exceeding 28 days compared with White British patients. Inequalities were more pronounced for stage at diagnosis, with higher adjusted odds of late-stage diagnosis among Black African, Other Black, Black Caribbean, Pakistani, Bangladeshi, Other Asian, Mixed, Other ethnic group and White Irish/Other White patients. Diagnosis during the COVID-19 period was associated with longer diagnostic intervals and higher odds of late-stage diagnosis overall. These findings suggest that ethnic inequalities in breast cancer diagnosis are more clearly reflected in prolonged diagnostic intervals and late-stage diagnosis than in median referral-to-diagnosis times.



External Validation of an AI-Based Breast Density Classification System in a Large UK Screening Cohort

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Background: Breast density is a risk factor for breast cancer and influences the sensitivity of mammographic screening. Although Breast Imaging Reporting and Data System (BI-RADS) density classification is widely used, visual assessment by radiologists is subjective and subject to variability. Artificial intelligence (AI) offers the

potential to improve consistency and standardisation. This study evaluates an AI-based breast density classification system in a large retrospective screening cohort.

Methods: A retrospective analysis was conducted using mammograms from 67,411 NHS Grampian screening participants. An AI algorithm developed by Royal Surrey NHS Foundation Trust classified breast density into BI-RADS categories A (least dense) to D (extremely dense). All breast cancer cases (n=840), interval cancer cases (n=199), and a random sample of normal cases (n=1,244) were independently assessed by a trained human reader. Training included a 6-hour online module, followed by two 2-hour one-to-one training sessions with an experienced consultant radiologist. Discordant cases were reviewed by the consultant, whose assessment served as the reference standard.

Results: High agreement was observed between AI and human readers, improving after expert adjudication. Of 2,283 evaluated cases, 102 (4.5%) were initially discordant, with 28 (1.2%) remaining discordant after adjudication. The consultant agreed with AI in 84 of 102 cases (82.4%), with most discrepancies involving borderline B and C classifications.

The AI-derived density distribution showed 21.9% in category A, 48.1% in B, 22.7% in C, and 7.3% in D.

Conclusion: The AI system demonstrated high agreement with expert assessment, supporting its potential for reliable and standardised breast density classification.



Poster Presentations

Listed alphabetically by first Presenting Author surname

Analysing breast density reporting and standardisation in mammogram reports in a UK breast unit

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Background: Mammography is the first line investigation for women aged over 40 years with suspected breast cancer. Mammographic sensitivity reduces in denser breasts. However, these patients have increased incidence of breast cancer. Therefore further imaging such as MRI is often required. Since September 2024, the US FDA and ACR recommendations are to include the BI-RADS breast density category in all mammography reports.

Purpose: To assess current practice in a UK breast unit against recommendations regarding the classification and description of breast density as outlined by the ACR BI-RADS classification.

Methods: A retrospective review of mammogram reports between 01/08/2025 and 30/09/2025 was conducted. The focus was on whether a BI-RADS breast density category was given and if the correct accompanying descriptor was used as per the BI-RADS classification.

Results: 1,736 mammograms were included in the initial audit. Only 23% of mammogram reports (398) included a BI-RADS breast density category. Of these reports, 11% (43) of the accompanying descriptors matched the category given.

Intervention: BI-RADS visual aids were placed in reporting rooms and templates were added to PACS to improve ease of reporting.

Re-audit results: A re-audit was performed using data from 14/05/2026 to 14/07/2026. 1,550 mammograms were included. 74% (1,145) of reports included a BI-RADS breast density category. 55% (625) of these included descriptors as per the BI-RADS classification.

Conclusion: Visual reminders in reporting rooms and PACS templates improve reporter compliance with using the BI-RADS breast density classification for mammogram reports.



The potential of Contrast-Enhanced Mammography in identifying recurrence as part of personalised stratified follow up plans for patients with a personal history of breast cancer

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Background: Patients with previously treated breast cancer are at an increased risk of developing ipsilateral and contralateral breast cancer. Detection of this on standard digital mammography comes with its own challenges: post-treatment distortion, scarring and fibrosis. Contrast-enhanced mammography (CEM) has emerged as a useful tool in evaluating dense breasts including improving conspicuity of lesions and providing functional information. CEM has the potential to be incorporated into personalised stratified follow up plans (PSFU) which yield benefits for patients and healthcare systems.

Method: This single-centre retrospective study evaluated the diagnostic accuracy of CEM and the impact of generated second look investigations within a remote monitoring follow-up pathway for selected individuals (those with a breast density of ACR C/D) with a personal history of breast cancer (PHBC).

Results: 577 CEM studies were performed over a two-year period. 74 patients (12.8%) were recalled for second look investigations. Eight cancers (10.8%) were detected, and two B3 lesions (2.7%) were also identified by the recombined images. Four of the cancers were recalled due to recombined images alone, one cancer due to the low kV image alone (equivalent to mammogram) and three of the cancers were upgraded as result of the recombined images. Five of these cancers were invasive at the time of diagnosis with none of these having nodal involvement.

Conclusion: CEM has the potential to increase diagnostic accuracy and confidence as part of PSFU plans for patients with a PHBC. Next steps include cost-benefit analyses and improving understanding of the patient/breast/tumour characteristics which would most benefit.



Can photoacoustic imaging improve ultrasound specificity in breast lesion assessment? A diagnostic meta-analysis

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Background: Greyscale ultrasound is sensitive for detecting suspicious breast lesions, but limited specificity may lead to unnecessary biopsy. Photoacoustic/ultrasound imaging (PA/US) adds haemoglobin- and oxygenation-based functional contrast. We assessed its diagnostic accuracy, incremental value over greyscale ultrasound, and potential clinical utility.

Methods: This prospectively registered PRISMA-DTA systematic review searched five databases to 7 April 2025. Studies of adult women with suspected breast lesions evaluated using PA/US were included. Sensitivity and specificity were pooled using a bivariate random-effects model. Prespecified subgroup analyses examined analysis type, and paired studies directly compared PA/US with greyscale ultrasound. Likelihood ratios were used to estimate post-test probabilities.

Results: Twelve studies were included; 11 studies comprising 2,490 lesions in 2,416 patients were meta-analysed. Pooled sensitivity was 0.92 (95% CI 0.87–0.96), specificity 0.72 (95% CI 0.58–0.83), and AUC 0.90. Quantitative approaches produced more balanced performance than qualitative interpretation, with sensitivity/specificity of 0.82/0.84 versus 0.96/0.43. In six paired studies, PA/US and greyscale ultrasound had comparable sensitivity, both 0.93, but PA/US had higher specificity, 0.75 versus 0.53 ($p < 0.001$). Positive and negative likelihood ratios were 3.34 and 0.11. At a 20% pre-test probability, a negative PA/US result reduced the post-test probability to 2.6%, whereas a positive result increased it to 46%.

Conclusion: PA/US may improve specificity while preserving ultrasound sensitivity, with potentially useful rule-out value. Quantitative approaches appear to provide more balanced diagnostic performance than qualitative interpretation. However, substantial heterogeneity and non-standardised thresholds require prospective multicentre validation before biopsy-reduction strategies are implemented.



Saviscout insertion at biopsy: an audit of our practice and outcomes

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Background: Our unit has successfully used Saviscout for pre-operative localization since 2020. Saviscout emits radar waves picked up by a special probe. It is licensed for insertion at biopsy and to remain in the breast permanently.

From July 2025, we started Saviscout insertion at time of biopsy in impalpable M5U5 breast lesions and impalpable A5 nodes, thereby avoiding further localization appointments and streamlining the patient journey.

Audit aims:

1. Is departmental policy on saviscout insertion at biopsy being followed?
2. Do insertion criteria correlate well with malignancy?
3. Were Saviscouts sited correctly?
4. Were re-excision rates maintained?
5. Number of localization appointments saved?

Method: Prospective audit from January to August 2026. Cases identified from pre-operative MDT. Trust PACS and webice(pathology) systems used for data collection.

Results:

1. 78 saviscouts inserted at biopsy:
69/78= breast cancer
4/78= metastatic axillary nodes
1/78= breast lymphoma
1/78= benign
3/78=radial scar.
2. Departmental criteria for insertion not followed in 2 cases. One was a palpable lesion requiring neoadjuvant chemotherapy so would have still needed localization.
The other was not M5U5(M3U3 at review).
3. All saviscouts correctly sited.
4. Final surgical histology available in 38 patients so far. 5/38 (13%) needed re-excision.
5. 74 localisation appointments were saved.

Conclusion:

1. Departmental criteria for insertion followed in 97.4% cases and correlated well with malignancy (96.2%). 3 cases were radial scars but were indeed M5U5 on review.
2. Re-excision rates were maintained.
3. 74 localisation appointments were saved and re-purposed over 27 weeks. Estimated cost saving >£28,000.



Assessing the influence of breast density on the performance of Artificial Intelligence tools in digital mammography: a systematic review

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Artificial intelligence (AI) tools could aid breast screening by assisting or replacing one of the human readers. This systematic review aims to assess how breast density affects AI performance by comparing AI and human accuracy in breast screening. A systematic search of Ovid MEDLINE, EMBASE Classic, PubMed, and Web of Science identified 9,121 records. After screening 7,032 titles and abstracts and reviewing 184 full-text articles, 27 studies met the inclusion criteria for data extraction. Study selection was conducted independently by two reviewers, and methodological quality was assessed using the QUADAS-2 tool. A meta-analysis compared the sensitivity, specificity, and summary receiver operating characteristic (SROC) area under the curve (AUC) of AI and human readers for dense and non-dense breasts.

Both AI and human readers demonstrated lower sensitivity in dense breasts than in non-dense breasts, reflecting the increased difficulty of detecting cancer in dense breast tissue. However, AI performance was less affected by breast density than human performance. In dense breasts, AI achieved slightly higher sensitivity than human readers (0.64 vs. 0.62) and substantially higher specificity (0.94 vs. 0.83), resulting in a markedly higher SROC AUC (0.86 vs. 0.73). In non-dense breasts, human readers achieved a marginally higher SROC AUC (0.89 vs. 0.87).

As expected, humans perform less well with dense breasts. AI showed little difference in performance between dense and non-dense. For dense breasts, AI performed better, driven by a superior specificity. The operational gains of AI may be greater in dense breasts.



Establishing a Dedicated Granulomatous Mastitis Service

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Idiopathic granulomatous mastitis (IGM) is an uncommon, benign inflammatory breast condition that mimics malignancy and infection. Patients with breast abscesses or infection failing to respond to standard treatment – broad-spectrum antibiotics and image-guided drainage – often undergo repeated attendances and multiple antibiotic courses without resolution, causing diagnostic delay and poor patient experience. This poster will explain our dedicated pathway established to identify and manage this cohort, discuss our results/outcomes so far, and include a pictorial case example.

Following exclusion of malignancy, patients with chronic or recurrent presentations, or imaging appearances atypical for a simple abscess and suggestive of IGM, are referred into a structured pathway. Assessment by Infectious Diseases includes further biopsy and imaging, with samples sent for microbiology, histopathology, and molecular testing. Notably, we utilise metagenomic sequencing, a novel technology with a high pathogen detection rate not yet widely available in standard microbiology laboratories, which frequently identifies uncommon or atypical organisms requiring tailored antimicrobial therapy.

Cases are discussed at a monthly dedicated IGM MDT (involving breast radiology, breast surgery, histopathology, microbiology, infectious diseases and rheumatology) to formulate a management plan.

Confirmed infection is treated with targeted antimicrobials; where infection is excluded, patients receive immunosuppressive therapy under rheumatology, with ongoing radiology and surgical review.

Since inception two years ago, approximately 50 patients have been managed through this pathway. By breaking the cycle of repeated attendances and empirical antibiotic courses, this service has improved diagnostic accuracy, enabled targeted treatment, and improved patient satisfaction.



Simulating AI-Supported Digital Breast Tomosynthesis (DBT)-based Breast Cancer Screening using Data Collected in the UK PROSPECTS Trial

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Purpose: Digital breast tomosynthesis (DBT) improves breast cancer detection compared with 2D mammography but increases radiologist reading time and workload. AI-based triage could reduce this workload by automatically identifying examinations requiring no human review. We investigated the potential of AI-supported DBT screening using data from the UK PROSPECTS screening trial.

Methods: Between January 2019 and March 2025, 44,641 women underwent two-view DBT screening in the PROSPECTS trial (London–Dulwich REC approval). This retrospective analysis included 3,039 women, comprising 91 screen-detected, pathology-proven malignant cases; normal cases had a negative three-year follow-up screen. A commercially available DBT-based AI algorithm (Hologic Genius AI Detection™) analysed each examination and assigned a case-level malignancy score (0–100). Receiver operating characteristic (ROC) analysis was performed. An AI-based normal triage scenario was evaluated, whereby examinations below a predefined AI score threshold received no human review and women returned to routine screening; remaining examinations underwent standard double reading.

Results: The AI model achieved an AUC of 0.943. Using an AI score <20 as the normal triage threshold, 1,498/3,039 (49.3%) examinations were triaged as normal, with no cancers among the triaged cases. This approach could therefore reduce human reading workload by 49.3% without missing any screen-detected cancers in this cohort. Analysis of the remaining eligible PROSPECTS cases is ongoing.

Conclusion: DBT-based AI could potentially reduce radiologist screening workload by approximately 50% through automatic triage of very low-risk examinations without missing screen-detected cancers. AI-supported triage may improve the efficiency of DBT screening and facilitate its wider adoption in breast screening programmes.



Retrieval-Supported Reading: A Case-Based Explainability Tool for Mammographic Interpretation

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Aim: Artificial intelligence (AI) systems for mammography typically highlight suspicious regions and provide a cancer likelihood score without explanation. We developed a Retrieval-Supported Reading (RSR) tool that retrieves, for any AI or radiologist identified region of interest, visually similar pathology confirmed prior cases with their historical reader performance as interpretable supporting evidence.

Methods: RSR was developed using 45,887 mammographic image regions from the PERFORMS case archive, including 952 pathology-confirmed lesions. Performance was evaluated using internal patient-independent testing and two external screening cohorts: 214 screen-detected cancers from UK NHS Trust, queried at commercially CAD marks, and 395 screen-detected cancers from the EMBED cohort, queried at expert-annotated lesion locations. Cancer-free screening examinations served as controls.

Results: Internally, 51.3% of the top-10 retrieved lesions shared the queried lesion's mammographic morphology (95% CI 48.4-53.7%), well above chance. For screen-detected cancers, a median of 8 of the top 10 retrieved cases were pathology-confirmed cancers in the UK (83.3%; 95% CI 80.3-86.2%) and 6 of 10 in EMBED (USA) (64.8%; 95% CI 61.1-68.5%). Among the 100 closest matches, cancer queries retrieved predominantly malignant cases (75% in Leeds; 54% in EMBED), whereas normal tissue queries retrieved few cancers (3-4%).

Conclusion: Retrieval-Supported Reading provides case-based visual evidence alongside AI outputs, letting radiologists compare suspicious findings with similar pathology-confirmed cases rather than an unexplained cancer score, supporting transparent AI-assisted decision-making. A web-based prototype is available for radiologist and AI-developer evaluation. Future work will determine whether access to similar prior cases improves reader accuracy, confidence, and workflow in breast screening.



Bone Scintigraphy in the Era of CT Staging: Added Value or Added Burden? A Systematic Review of Primary and Recurrent Breast Cancer

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Background: Whole-body bone scintigraphy (BS) continues to be performed alongside CT thorax, abdomen and pelvis (CT TAP) for staging of breast cancer (BC) in many centres despite advances in cross-sectional imaging and RCR guidance recommending it is no longer routinely required. This systematic review evaluated the incremental diagnostic value of BS in patients undergoing CT TAP for staging of primary and recurrent BC.

Methods: A systematic review was performed in accordance with PRISMA-DTA guidelines. MEDLINE, Embase and Scopus were searched for studies comparing whole-body BS with contrast-enhanced CT TAP in adults with primary or recurrent BC. Prospective and retrospective cohort studies were included in which both imaging modalities were performed within 6 months. Risk of bias was assessed using QUADAS-2.

Results: Seven studies comprising 1,376 patients met the inclusion criteria. Reported sensitivity for BS ranged from 28.6% to 100%, with specificity from 67.6% to 95%. CT TAP demonstrated sensitivity ranging from 71% to 98% and specificity from 85% to 100%. BS rarely identified clinically relevant osseous metastases not detected on CT, with additional lesions predominantly occurring in the appendicular skeleton. Several studies reported higher false-positive rates with BS, resulting in additional investigations without meaningful changes in management.

Conclusion: Evidence suggests that routine BS provides limited additional diagnostic value beyond CT TAP for staging primary or recurrent breast cancer, supporting RCR recommendations. CT TAP appears sufficient for most patients, while selective use of BS may be reserved for symptomatic or high-risk cases, potentially reducing unnecessary investigations, radiation exposure, and healthcare costs.



CT Staging in Locoregional Breast Cancer Recurrence: Is Bone Scintigraphy Still Necessary?

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Background: Patients with locoregional breast cancer recurrence are at increased risk of distant metastatic disease. Although CT thorax, abdomen and pelvis (CT TAP) combined with bone scintigraphy (BS) is frequently performed for systemic restaging, the incremental value of bone scintigraphy remains uncertain.

Aim: To evaluate the diagnostic yield of CT TAP and the incremental value of BS in patients with locoregional breast cancer recurrence.

Methods: A retrospective single-centre study included patients presenting with locoregional breast cancer recurrence between 2009 and 2024, identified from a prospectively maintained database. Patients undergoing systemic staging with contrast-enhanced CT TAP, with or without BS, were included. Imaging findings were reviewed for distant metastatic disease and the incremental diagnostic value of BS beyond CT. Associations between tumour characteristics and metastatic disease were evaluated.

Results: Of 227 patients with locoregional recurrence, 155 underwent contrast-enhanced CT TAP. Distant metastatic disease was identified in 55/155 (35.5%). Grade 3 and triple-negative primary tumours were significantly associated with metastatic disease at recurrence (both $p < 0.005$). Ninety-five patients underwent both CT TAP and BS. BS did not identify osseous metastases in any patient without concurrent evidence of metastatic bone disease on CT TAP, providing no additional diagnostic yield beyond CT.

Conclusion: CT TAP identified distant metastatic disease in over one-third of staged patients with locoregional breast cancer recurrence. In patients undergoing both investigations, BS provided no additional diagnostic yield beyond CT TAP, supporting CT TAP as the principal systemic staging investigation and questioning the routine addition of upfront BS.



Evaluating the impact of the DL Precise Image Enhancement Tool on mammographic reading in the one stop breast clinic

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Purpose: Mammographic sensitivity is reduced in dense breast tissue. We report a multi-reader multi-case (MRMC) study evaluating whether the DL Precise Image Enhancement Tool (DeepLook Inc.) improves radiologist sensitivity for suspicious findings in a dense-tissue-enriched cohort.

Methods and Materials: This research was conducted in compliance with NHS research governance. 400 anonymised diagnostic mammography cases enriched for dense breast tissue were curated and organised into sequential modules of 100 cases, with a reference-positive prevalence of 32.5%.

Four breast radiologists interpreted cases in a paired-read design across two phases separated by a washout period: Phase 1 (unaided) and Phase 2 (with AI). For each case, readers record a 5-point mammogram score, biopsy recommendation, reader confidence, and time-stamped interpretation duration. In Phase 2, readers additionally indicate whether AI altered their confidence or management decision. The biopsy report or benign 2-year follow-up served as the reference standard.

Results: Within-reader paired concordance with the reference standard demonstrated an increase in pooled sensitivity from 83.8% unaided to 86.5% with DLPrecise, with a small reciprocal decrease in specificity (92.2% to 89.6%). 11.3% paired biopsy recommendations changed with AI, with a net shift toward biopsy. Readers reported that AI altered confidence in 10.9% and management in 5.7% of AI-aided reads. Median interpretation time was longer with AI (paired delta +19s).

Conclusions: DLPrecise support was associated with a small increase in reader sensitivity and a shift in biopsy recommendations, with a modest specificity trade-off.



Improving the Robustness of AI Tools for Breast Cancer Detection by Using Unprocessed Data

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Artificial intelligence (AI) tools for breast cancer detection are sensitive to mammographic image appearance. In clinical practice, image appearance varies between sites, equipment manufacturers, and image processing software versions. Previous work has demonstrated substantial changes in AI recall rates following an image-processing software upgrade. Using unprocessed ("FOR PROCESSING") mammograms instead of the traditional processed ("FOR PRESENTATION") mammograms could improve model robustness by reducing AI dependence on manufacturer-specific image processing. This work investigates this hypothesis by training AI models for breast cancer detection using unprocessed mammograms and comparing them to models trained on processed-data. Using the OPTIMAM Mammography Imaging Database, a paired processed/unprocessed dataset was created for model development and evaluation. The development dataset contained data from one mammographic model (Lorad Selenia), while the evaluation set contained images from Lorad and Selenia Dimensions systems. When applied to the evaluation data, models trained with unprocessed data achieved significantly higher performance on the Dimensions images (AUROC=0.896) than models trained with processed data (AUROC=0.849, $p<0.01$), while preserving performance on Lorad images. It was found that image-level normalisation improved the robustness of unprocessed-data models but did not lead to performance improvements for processed-data models. These results suggest that using unprocessed mammograms can improve AI robustness. Future work will extend investigation to additional x-ray manufacturers, and explore the inclusion of acquisition meta-data which could further improve robustness.



The Hidden Footprint of Breast Imaging Modalities: Comparing the Data Storage Burden of Breast Imaging Modalities

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Introduction: The environmental impact of radiology extends beyond direct energy consumption to encompass the digital infrastructure required for image archiving and data storage. While breast imaging modalities generate varying volumes of digital data, their relative storage footprints remain poorly quantified. This study aims to estimate and compare the data storage burden per examination across common breast imaging techniques.

Methods: All breast imaging examinations performed in 2025 at a single tertiary breast unit were retrospectively analysed. The modalities evaluated included digital mammography, digital breast tomosynthesis (DBT), ultrasound (US), magnetic resonance imaging (MRI), and contrast-enhanced mammography (CEM). For each modality, total annual data storage (GB) and the number of examinations were extracted from institutional PACS systems. The mean data size per examination was calculated by dividing total storage by the number of studies.

Results: A total of 42,944 examinations were analysed. MRI generated the largest data volume, averaging 531.1 MB per examination. This was followed by DBT (339.1 MB/examination) and CEM (95.9

MB/examination). In contrast, standard mammography (33.5 MB/examination) and US (3.9 MB/examination) produced substantially smaller data footprint.

Discussion: Breast imaging modalities exhibit significant variance in their data storage requirements, with advanced techniques such as MRI contributing disproportionately to digital infrastructure demands. Quantifying the data footprint per examination provides an additional metric for assessing the environmental impact of imaging pathways. These findings advocate the integration of digital sustainability considerations into modality selection and workflow.



Binning the Footprint: The Environmental Impact of Waste Diversion in Breast Radiology Procedures

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Introduction: Healthcare waste disposal methods may vary up to 50-fold in their carbon footprint. In alignment with the National Health Service (NHS) net-zero goals, this study aims to quantify the carbon footprint reduction from actively diverting ultrasound-guided breast intervention waste to dry mixed recycling.

Methods: Recycling bins were introduced in all three ultrasound rooms at the Cambridge Breast Unit (CBU) to divert recyclable waste from clinical waste streams. Waste was collected and weighed over five days in April 2026. The daily number of biopsies performed on these days and annual volumes were identified to establish a per-procedure waste average and estimated annual waste diversion. Standardised carbon emission factors were applied to compare the impact of offensive and clinical waste disposal versus recycling.

Results: Daily recyclable waste averaged 765 g. With an average of 10.5 interventions per day, this equated to 72.9 g per procedure. Based on an average of 2,600 annual interventions, an estimated 190 kg of waste would be diverted to recycling yearly. The carbon footprint for recycling is 21 kgCO₂e/t compared to 229 kgCO₂e/t for both offensive and clinical waste, resulting in an annual reduction of approximately 40 kgCO₂e.

Discussion: This intervention is a simple, low-cost step with immediate impact. Most waste generated before procedures, including packaging, can be safely recycled.

The annual saving equates to driving 145 miles in an average UK car or the sequestration of two mature trees, while also providing financial savings, representing a scalable approach across services.



The impact on the Breast MRI referral rate following introduction of Contrast Enhanced Mammography for assessment of screen detected cancers; Initial results from BreastCheck, Eccles Unit, Irish National Breast Screening Programme

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Background/Aims: Approximately 435 screen detected breast cancers are diagnosed in BreastCheck Eccles Unit annually. Breast MRI is a limited resource within our institution resulting in an average waiting time of 14 days [range 1–30 days] for patients with newly diagnosed, screen detected cancers. In February 2026 contrast-enhanced mammography (CEM) was introduced into the assessment clinic to provide an alternative to MRI. Following this implementation, we aimed to evaluate the impact of introduction of CEM had on breast MRI referrals.

Methods: BreastCheck databases were retrospectively reviewed to compare the number of breast MRI referrals during a six months period before and six months after CEM implementation. The indication for CEM and use within the initial assessment clinic was also evaluated.

Results: Since implementation in February 2026, we have performed 55 CEM studies, 92% in a single visit assessment clinic. The majority (82%) were performed for pre-operative staging.

MRI referrals from the screening service have significantly decreased from an average of 6.3 per month [range 3-9] in the six months before CEM introduction to an average of 3.6 per month [range 2-9] in the subsequent six months, reflecting a 50% reduction.

Conclusion: Early experience suggests that the introduction of CEM is associated with a substantial reduction in the need for breast MRI referrals. CEM has the potential to reduce reliance on a scarce imaging resource while streamlining diagnostic assessment and reducing time from diagnosis to surgery.



Role of Contrast-Enhanced Mammography in Preoperative Staging of Breast Cancer: Early Experience

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Purpose: To evaluate the diagnostic performance of CEM for preoperative staging of breast cancer in post-menopausal women with dense breasts, and to assess its potential to reduce reliance on breast MRI.

Methods: A retrospective review of 60 consecutive patients who underwent CEM for preoperative staging. Additional lesions detected on CEM were assessed with targeted second-look ultrasound (2ndLUS) and biopsied when indicated. MRI was reserved for selected cases where CEM-findings remained indeterminate. Imaging findings were correlated with final surgical-histopathology.

Results: 60 CEMs were performed. Following CEM, 24/60 patients required no further imaging, while 36/60 underwent 2ndLUS and/or MRI. Overall concordance with final histopathology, within 20% margin of tumour size, was achieved in 50/60 cases (83%).

Disease extent was overestimated by CEM in 4/60 cases (7%), including two invasive lobular carcinomas (ILC) and 2 cases of ductal carcinoma-in-situ (DCIS), both associated with non-mass enhancement. Underestimation occurred in 6/60 cases (10%), predominantly in ILC (4/6 cases), with one case involving a small faintly enhancing cancer and one due to DCIS.

Six patients required MRI because increased background glandular enhancement (BGE) reduced confidence in disease sizing on CEM. MRI findings were largely concordant with CEM and identified an additional lesion in one patient; however, this proved benign and did not alter management. 3/60 referred external patients with equivocal MRI-findings underwent further assessment with CEM, with CEM-guided biopsy where required, enabling definitive-diagnosis. Overall discordance was mainly associated with ILC, DCIS and BGE.

Conclusion: CEM demonstrated 83% concordance with final-histopathology and provided effective local staging in post-menopausal women with dense breasts. Discrepancies were most commonly related to ILC, DCIS and BGE. CEM substantially reduced the requirement for MRI and represents a valuable alternative staging-tool in this patient group.



Determining the Accuracy of Region of Interest Assessment by AI in Breast Cancer Screening

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Application of artificial intelligence (AI) in clinical practice is becoming increasingly prevalent and may be a useful adjunct in breast cancer detection, with reported performance comparable or superior to expert human readers in mammogram interpretation. AI's ability to localise lesions to the same region as the reading radiologist is less well characterised. We assessed accuracy of an AI system in identifying regions of interest (ROI) in mammograms from the breast cancer screening programme in Scotland.

Mammographic data from 78 screen-detected unifocal or multifocal malignancies in 65 women (mean age 58 ± 6 years) were collected between February to October 2023. Craniocaudal (CC) and mediolateral oblique (MLO) views were independently analysed by an AI system using computer-aided detection (CAD). AI coded specific image features to identify ROIs and therefore patients who would require recall. AI-generated ROIs were compared with radiologist-identified ROIs to assess concordance and recorded per view. Pathological data were retrieved from electronic patient records.

54 of 65 women (83%) had unifocal and 11/65 (17%) multifocal malignancies, the latter accounting for 24/78 lesions. 44/78 (56%) of lesions were left-sided. Most women had mixed parenchymal density breasts, whilst three had fatty-density breasts. AI and radiologist ROIs overlapped in 74/78 (95%) CC views and 75/78 (96%) MLO views. Discordance occurred in 3/78 (4%) of each view. One lesion (1%) was only visible in MLO view by both radiologist and AI.

AI localisation showed high agreement with the reading radiologist across both views, supporting its potential as a support tool in screening.



Performance of Annual Surveillance MRI in Women with Dense Breasts or Mammographically Occult Breast Cancer: A Tertiary Centre Audit

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Purpose: Women with a personal history of breast cancer have a 2-4-fold increased risk of subsequent breast malignancy. Annual surveillance MRI (ASM) is recommended for five years after diagnosis, with extended surveillance for women diagnosed before age 50. MRI offers superior sensitivity for detecting recurrence and new primary cancers, particularly in dense breasts or mammographically occult disease. However, ASM may increase false-positive findings, leading to additional investigations. NHS Breast Screening Programme recommends recall rates below 10%, while published studies report cancer detection rates of 1.0-1.8%. This audit evaluated ASM performance in a tertiary breast unit.

Methods: A retrospective audit of all ASM examinations performed between May 2023 and May 2026. Eligible patients had dense breasts or previously occult breast cancer. MRI findings were reviewed. Cases with MRI score ≥3 underwent second-look ultrasound, with biopsy performed when indicated. Recall and cancer detection rates were compared with published standards.

Results: 526 MRI examinations were performed in 280 women (mean age 50 years). 36 examinations were recalled, giving a recall rate of 6.8%. MRI abnormalities included enhancing masses (n=19), non-mass enhancement (n=9), abnormal lymph nodes (n=4), and extramammary abnormalities (n=4). Biopsies were performed in 22 cases. 7 malignancies were detected, yielding a cancer detection rate of 1.3%. Specificity and sensitivity are 94.8% and 77.8% respectively. Two interval cancers (DCIS and recurrence) were diagnosed after negative MRI results.

Conclusion: ASM achieved recall and cancer detection rates within published standards. MRI demonstrated high diagnostic performance in women with dense breasts or previously occult breast cancer.



What is the Value of Annual Mammographic Surveillance Following Male Breast Cancer? A Single-Centre Review

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Introduction: Although male breast cancer patients have an increased relative risk of contralateral malignancy, the absolute risk remains low.

Our breast unit follows NICE guidance which recommends annual mammography for five years following breast cancer treatment, but does not provide male-specific recommendations. We evaluated our diagnostic yield of annual mammographic surveillance in men treated for breast malignancy.

Methods: Hospital digital systems were used to perform a retrospective review of male patients who underwent post-operative mammographic surveillance between 1/1/2021 and 7/4/2026. Patient age, histology, surgical treatment, surveillance examinations, recalls, and other outcomes were recorded. Descriptive statistics were performed.

Results: Forty-one annual surveillance episodes were performed in 12 men aged 44-80 years: 93% (38/41) were contralateral-only two view mammograms following mastectomy and axillary surgery in eleven men with invasive ductal carcinoma, and 7% (3/41) were bilateral two view mammograms following breast conserving surgery in one man who underwent wide local excision for DCIS only. No patient was recalled for additional imaging or biopsy.

No contralateral malignancy or ipsilateral recurrence was detected mammographically, and no clinical recurrence occurred during follow-up.

Conclusion: In this cohort, 41 annual surveillance episodes resulted in no recalls, biopsies or detected malignancies. Although limited by small numbers, these findings demonstrate a low diagnostic yield. Given the low absolute risk of contralateral breast cancer in men and absence of male-specific surveillance NICE guidance, larger multicentre studies are warranted to determine whether routine contralateral annual mammography in men following mastectomy is justified, or whether risk-stratified surveillance would be more appropriate.



B3 lesions with atypia: has symptomatic surveillance imaging practice followed NHS Breast Screening Programme (NHS BSP) guidance?

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Introduction: Recent (December 2025) NHS BSP guidance has moved away from annual mammographic surveillance following screen-detected B3 lesions not upgraded at vacuum-assisted excision, with no corresponding new guidance for symptomatic breast services.

Following a clinical governance discussion, we aimed to find out what changes in practice had taken place in units where both NHS BSP and symptomatic breast referral patients are managed by the same multidisciplinary team (MDT).

Methods: A digital questionnaire was created and circulated to NHS BSP Directors of Breast Screening; they were asked to complete a survey if their MDT also manages symptomatic referrals. Answers to individual questions were not mandated. Descriptive statistics were performed.

Results: Fifteen responses were received from appropriate respondents. Fourteen (14/15: 93.3%) no longer routinely advised annual mammography following screen-detected B3 with atypia.

In these units' breast symptomatic services, only 1/15 (6.7%) now offers annual mammography for B3 with atypia patients aged 50–70, 1/14 (7.1%) for those over 70.

Free-text responses highlighted lack of evidence and national guidance, especially for patients below screening age.

In symptomatic patients under 50 years, 12/15 (80%) offer annual surveillance for B3 with atypia: 8/15 (53.3%) offer five years, 4/15 (26.7%) continue until screening age.

Six respondents (6/15: 40%) would not consider ceasing surveillance below age 50.

Conclusion: The majority of respondents have aligned management of this cohort of NHS BSP and symptomatic patients from age 50.

Below age 50, there is considerable variation in practice: evidence-based national guidance is needed, to standardise and rationalise practice.



Service Evaluation Audit: Male breast imaging. Is USS enough?

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At our institution all male patients presenting with breast symptoms undergo clinical examination and targeted breast ultrasound if symptoms are unilateral. Mammography is not performed.

Aim: To assess whether adherence to the service standard of USS only for imaging the male breast when clinically indicated as per guidelines is effective or if mammography should be included.

This standard is based on the current practice that suggests ultrasound/triple assessment is sufficient to differentiate gynaecomastia from malignancy in > 90% cases.

A retrospective audit was conducted at breast unit of male patients who presented with breast symptoms over a 10 year period from July 2015 to July 2025.

Results:

A total of 3288 male patients underwent USS of unilateral or bilateral breasts in this 10 year period.

All these had clinical examination- 100 % adherence to standard

All had targeted USS breast and axilla when required -100 % adherence to standard

No patient underwent a mammogram -100% adherence to standard

Total cancers: 46

Total cancers on USS biopsy : 44

Total cancer on Clinical biopsy: 1-Skin punch no USS done, 1 axillary mass

Total benign Biopsies: 30

Total Benign USS biopsies: 24, All had underlying reason for biopsy like eg previous h/o lymphoma or known cancer. 6 clinical P3 and above benign biopsies.

Conclusion: In our centre Ultrasound for imaging the male breast is a quick safe, effective, readily available, and avoids radiation. It is sensitive, we can biopsy, assess the axilla at the same time.



Clinical Recall in Breast Screening: Is It Still Justified? A Two-Year NHS Audit

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Background: Clinical recall within the NHS Breast Screening Programme (NHSBSP) is reserved for women reporting breast symptoms despite normal screening mammography. Its value remains controversial because of its low frequency and uncertain cancer detection rate. We evaluated the outcomes of clinical recalls at a large UK breast screening centre and compared their diagnostic yield with mammographic recalls.

Methods: A retrospective audit included all women attending the Nottingham Breast Institute NHSBSP between January 2023 and January 2025. Screening attendance, recall indications, imaging findings, biopsy

results and cancer diagnoses were obtained from KC62 screening data and the local radiology database. Clinical recall outcomes were compared with standard mammographic recalls.

Results: During the study period, 48,059 women attended screening, of whom 933 (1.9%) were recalled. Forty-eight women (5.1% of all recalls) underwent clinical recall following normal mammography, while 885 were recalled because of imaging abnormalities. Ten women underwent biopsy, resulting in two invasive breast cancers, giving a cancer detection rate of 4.2% in the clinical recall group. In comparison, mammographic recall yielded malignancy in 391/885 women (44.2%). Most clinically recalled women had benign ultrasound findings and returned to routine screening.

Conclusion: Clinical recall represents a small proportion of NHSBSP assessments and has a substantially lower cancer detection rate than mammographic recall, although clinically significant cancers continue to be identified. These findings support selective use of clinical recall while reinforcing referral of symptomatic women through dedicated symptomatic breast services. Ongoing audit and multicentre studies are needed to optimise referral pathways and minimise unnecessary recalls.



Is MRI follow-up indicated following mastectomy for mammographically occult breast cancer?

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Background: Mammographically occult breast cancer (MOBC) presents a surveillance challenge, particularly in dense breasts, with the role of MRI following mastectomy remaining unclear. MRI surveillance may contribute to patient anxiety, increased imaging workload and significant resource utilisation. This study evaluates the use of post-treatment surveillance MRI for the contralateral breast in patients with previous MOBC.

Methods: A retrospective 5-year review was undertaken of patients with documented MOBC who underwent a surveillance MRI within Manchester Foundation Trust from 01/01/2021 to 01/01/2026. Imaging findings were reviewed using PACS, with histopathological and clinical data obtained from electronic patient records.

Results: A total of 179 patients were identified. 52% of patients had dense breasts (BI-RADS C/D). 61% and 39% patients underwent breast conservation surgery (BCS) and mastectomy, respectively. 66% of patients had an invasive ductal carcinoma at initial diagnosis; 13% had invasive lobular carcinoma. Within both surgical groups, 33% patients underwent four or more years of MRI surveillance, increasing to 43% in the post-mastectomy group.

Overall, one contralateral breast carcinoma was detected on the first surveillance MRI, occurring in a patient with BI-RADS D breast density who had previously undergone BCS. No contralateral breast cancers were detected in the mastectomy subgroup. Across the 179 patients, the contralateral cancer detection rate was 0.6%.

Conclusion: The low overall diagnostic yield in both surgical groups and the zero-cancer detection rate following mastectomy questions the value of MRI surveillance of the contralateral breast following treatment of MOBC with mastectomy, thus supporting a review of local practice.



The NOSTRA Feasibility MRI substudy: use of breast MRI to predict pathological complete response (pCR) in HER2+/ER- breast cancer patients receiving neoadjuvant dual-targeted anti-HER2 treatment

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Participants in NOSTRA Feasibility Trial with HER2+/ER- cancers underwent neoadjuvant dual targeted anti-HER 2 chemotherapy. A proportion had MRI pre- and post- chemotherapy as standard of care. We hypothesised MRI could accurately evaluate pathological response.

Materials & methods: Routine 3T MRI (T2W, dynamic T1W and DWI) findings were analysed on standard MRI software (Philips IntelliSpace®), according to American College of Radiology BI-RADS® lexicon 6th Edition independently with consensus review of disagreements, by two radiologists, blinded to pathology. Complete response (CR) was deemed no residual enhancement above background on end of treatment MRI. MRI post-chemotherapy was compared with post-surgical pathology.

Results:

15 patients had matched pre- and post-chemotherapy MRI scans.

12 had pCR (ypT0).

MRI findings -

Breast:

- CR: 7 (6[85.7%]) ypT0). Residual DCIS (ypTis) missed in 1 case.
- Partial response (PR): 7 [2 with residual invasive disease; 2 with DCIS (ypTis) (RCB 0); 3 (42.9%) with pCR].
- MR stable disease: 1 (concordant pathology).

Axilla:

- CR: no residual disease: 5/5 (100%).

Overall correlation of breast MRI with final pathology: sensitivity 66.67%; specificity 83.33%; PPV 85.71%; NPV 62.50%; overall accuracy 73.33%.

MRI had 100% sensitivity for pCR (for invasive disease).

Conclusion: This small tightly controlled series supports the use of MRI to identify residual invasive disease in this breast cancer subtype. As with previous studies, MRI may not differentiate between residual disease and post treatment inflammation/fibrosis.

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Mammography for isolated mastalgia; Worth the Price and the Pain?

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Aim: To determine the cancer detection rate (CDR) of mammography in women presenting with isolated mastalgia and a normal clinical breast examination.

Methods: A retrospective review was conducted of all mammograms performed for “pain,” “breast pain,” or “mastalgia” across a large health board over 5 years from 1 January 2020 to 31 December 2024. Cases with additional symptoms or clinical findings graded E2 benign or above were excluded. Imaging, histopathology, patient demographics and patient outcomes were analysed. Caldecott approval was obtained.

Results: Of 9,795 mammograms performed, 6,670 met inclusion criteria. Among these, 70 mammograms had final mammographic grading of M3 or above and proceeded to further assessment. 69 patients underwent biopsy, yielding 44 malignancies (38 invasive and 6 DCIS), representing an overall CDR of 6 per 1000 (0.6%). Most invasive cancers were invasive ductal carcinoma (68%), grade 2 (51%), and strongly ER-positive (72%).

Conclusion: The diagnostic yield of mammography in detecting invasive malignancy in women presenting solely with mastalgia and a normal examination was 0.6%, comparable to but slightly lower than the UK National Breast Screening Programme Cancer Detection Rate (0.7%) and comparable to similar studies. This review supports the position that imaging is not required for patients presenting with isolated mastalgia and a normal clinical examination.



Mammographically occult primary cancer – do we really need to offer supplemental surveillance imaging? A service evaluation of 5992 primary breast cancers

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Introduction: Historical meta-analysis data indicates increased survival with early, asymptomatic and mammographically detected recurrences. Limited data suggests a relationship between occult primary and recurrent cancers resulting in patient and clinician concern and push for supplementary surveillance imaging. We investigate the relationship between mammographically occult primary and ipsilateral recurrent/second occult cancer.

Methods: Primary breast cancer patients diagnosed between 01.01.2012 and 31.12.2024 were identified on the cancer database and linked to subsequent pathology data. All recurrent/second ipsilateral cancers were recorded. Imaging reports were reviewed, mammographically occult cancers identified and breast density recorded. Proportions were compared using Fisher's exact test.

Results: 5992 primary breast cancer patients were identified with 155(2.6%) developing a recurrence/second primary. Of these, 16(10.3%) had a mammographically occult primary; 18(11.6%) had an occult recurrence/second cancer. Occult status could not be assessed at primary or secondary diagnosis in 7(4.5%) and 30(19.4%). Of those with known status; occult recurrences occurred in 1(10%) and 17(15.7%) of the occult and visible primaries respectively, OR 0.59, $p=1.0$. Interestingly, whilst occult primary tumours occurred predominantly in dense breast tissue (BI-RADS C/D: 73.3%), occult recurrences occurred predominantly in non-dense tissue (BI-RADS A/B: 72.2%), OR 7.15, $p=0.015$.

Discussion: Mammographically occult recurrences are rare, and unlike previous series we found no link between occult primary and occult recurrent/second ipsilateral cancers. Dense breast tissue was associated with occult primary cancers, however most occult recurrences occurred in non-dense tissue, likely due to overall drop in breast density and recurrence occurring outside field-of-view. Further research is required before championing supplemental surveillance imaging.

Clinical Significance and Positive Predictive Value of Additional Findings Detected on Staging Breast MRI in a Breast Screening Service

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Background/Aim: Breast MRI frequently identifies additional lesions that are occult on conventional imaging, leading to re-assessment with second-look ultrasound (SLUS) +/- biopsy. This study aimed to assess the positive predictive value (PPV) of these findings by correlating imaging with histopathology.

Methods: A retrospective review was performed of staging breast MRIs over a two-year period in patients diagnosed with breast cancer through the national screening programme. Reports were reviewed to identify additional lesions. Follow-up SLUS, biopsy and histopathological outcomes were recorded and assessed.

Results: Over the study period, 137 staging MRIs were performed, with 51 additional findings in 38 patients (27.7%), ipsilateral in 37 (73%) and contralateral in 14 (27%). Of these, 32 (62.8%) were M3, 17 (33.3%) were M4 and 2 (3.9%) were M5.

Of the 32 M3 findings, 5 (15.6%) had B5 histopathology following SLUS and sampling. Of the 17 M4 findings, 11 (64.7%) had B5 histopathology, while all 2 (100%) of the M5 findings had B5 histopathology.

Regarding morphology, 9 (50%) biopsies from non-mass enhancement had B5 histopathology while 9 (47.3%) biopsies from nodules/masses had B5 histopathology.

Of the 5 M3 lesions with no correlate on SLUS and who didn't undergo mastectomy, 2 (40%) had normal follow-up MRI and 3 (60%) did not have follow-up.

Conclusion: Staging MRI identified additional lesions in 27.7% of patients. The PPV of additional malignancy increased with assessment category, supporting the role of MRI in detecting clinically significant additional disease. Different morphology did not have a different malignancy rate.

Audit of PETCT with contrast pathway for Advanced Breast Cancers

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Background: Effective management of breast cancer requires accurate diagnosis and determination of extent of disease. PETCT with IV contrast has been introduced in our trust as part of staging for advanced breast cancers from March 2026. Prior to this PETCT was used with Non contrast CT spread over two separate appointments. The addition of contrast in this scan was introduced to better visualize liver lesions and characterize chest nodules while improving patient comfort and reduction in patient's imaging appointments. Literature supports the use of PETCT with contrast to improving overall prognostic stratification over the structural features of the primary tumor assessed by conventional imaging.

Results: 2 cohorts of 30 patients each from 2024 with PETCT without contrast and from March 2026 who have had PETCT with contrast. Scan date and approval dates retrieved after audit registration were used to calculate turn around time. This averaged 2.3 days for PETCT with contrast and 7.2 days for PETCT without contrast. Registration to booking / scanning times were also calculated.

Penalty issues with delay in the second CT appointment can increase the overall time for the scan to be completed cutting close to the 62-day cancer pathway. This new system has improved average scan turnaround time and helped streamline the whole process. A standardized CECT protocol integrated with PET is not widely reported. We will review CT protocols for oncological imaging, technical challenges faced in our setup and importance of collaboration of nuclear medicine, radiology and MDT for optimal staging.



Is Digital Breast Tomosynthesis (DBT)-based Artificial Intelligence (AI) Better than 2D Mammography-based AI?

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Purpose: To compare the performance of digital breast tomosynthesis (DBT)-based and 2D digital mammography (2DDM)-based AI for breast cancer detection in the same women, using paired dual-acquisition DBT+2DDM examinations from the UK PROSPECTS screening trial.

Methods: Between January 2019 and October 2022, 14,479 women underwent two-view dual-acquisition DBT+2DDM screening in the PROSPECTS trial (London–Dulwich REC approval). This analysis included 4,730 women, comprising 118 screen-detected, pathology-proven malignant cases; normal cases had a negative three-year follow-up screen. DBT- and 2DDM-based AI algorithms from the same commercial vendor (Lunit) analysed the corresponding DBT and 2DDM images. Breast-level receiver operating characteristic (ROC) analysis was performed. AUCs were compared using DeLong's test, and sensitivities at operating points with fixed specificity were compared using McNemar's test.

Results: The DBT-based AI demonstrated a significantly higher AUC than the 2DDM-based AI (0.981 vs 0.947; $P=.003$). At an operating point of 95% specificity, DBT-based AI achieved significantly higher sensitivity than 2DDM-based AI (93.2% vs 83.1%; $P=.008$). Analysis of the remaining eligible PROSPECTS cases is ongoing, and results from a larger cohort will be available for presentation.

Conclusion: In a patient-matched screening cohort, DBT-based AI demonstrated significantly improved breast cancer detection performance compared with 2DDM-based AI. These findings suggest that the performance advantages of DBT over 2DDM may extend to AI-based cancer detection and provide further evidence supporting the adoption of DBT in breast screening programmes.



A Closer Look at the Breast MRI to Second-Look Ultrasound Pathway

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Background: Breast MRI frequently identifies additional lesions requiring targeted second-look ultrasound (US) to guide further management, introducing potential delays to diagnosis and treatment.

Aims: To assess the clinical indications and timeliness of second-look US following breast MRI and evaluate the impact of service changes introduced to reduce delays.

Methods: A closed-loop audit was performed of all breast MRI examinations undertaken between July–December 2024 (Cycle 1) and July–December 2025 (Cycle 2), following introduction of a daily updated live document prioritising urgent MRI reporting. Data collected included MRI indication, recommendation for second-look US, and interval between MRI and second-look US.

Results: A total of 245 patients were evaluated in Cycle 1 and 299 in Cycle 2. Following exclusions for no subsequent imaging, non-diagnostic MRI, mid-treatment reviews, pre-risk-reducing mastectomy MRI and

patient factors, 222 and 264 patients remained for analysis, respectively. In Cycle 1, 87/222 (39%) MRI examinations recommended second-look US, with 79% arising from the pre-operative group. In Cycle 2, 103/264 (39%) recommended second-look US, with 74% arising from the pre-operative group. There was a significant reduction in median time interval between breast MRI and second-look US following intervention, decreasing from 15 (range 1-45) to 8 (range 0-35) days ($p < 0.0001$).

Conclusion: Prioritised MRI reporting using a daily flagging tool was associated with a substantial reduction in delay between breast MRI and second-look US. As pre-operative MRIs consistently generated the greatest demand for second-look US, prioritising this cohort may improve pathway efficiency and expedite diagnostic work-up for patients with newly diagnosed breast cancer.



Is Whole Breast Ultrasound Necessary? A Retrospective Audit of 500 Consecutive Cases of Breast Cancer

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Routine practice in our unit is to perform ipsilateral whole breast ultrasound (WBUS) in all patients with U4 or U5 lesions at initial assessment. If patients with U3 findings are diagnosed with malignancy, completion WBUS is performed. National guidance recommends a minimum of whole quadrant ultrasound (1). As part of a plan to change our practice from WBUS to quadrant ultrasound, we wished to evaluate whether WBUS adds value in terms of additional disease outside the index quadrant.

We retrospectively reviewed 500 consecutive invasive breast cancers (Feb 2026 – June 2026), recording imaging scores and outcome of WBUS. Additional malignant lesions subsequently identified by MRI were classified as false-negative WBUS.

Of 500 cases of cancer, 24 had additional findings on WBUS (19 in the same quadrant as the index lesion). Of these 24 additional lesions, 9 were malignant (7 B5b and 2 B5a) and all these 9 malignant lesions were in the same quadrant as the index lesion. The remaining 15 lesions were benign. No cancers were detected in a different quadrant on WBUS. Of note, there were an additional 8 cancers subsequently detected in this cohort of patients following MRI and second look ultrasound.

Initial WBUS identified mammographically occult malignancy only within the same quadrant and detected no additional malignancy in a different quadrant. Our findings support performing quadrant ultrasound rather than WBUS and we are now looking to change our local practice.

1. Guidance on screening and symptomatic breast imaging. 5th edition. RCR 2025



Lesions with uncertain malignant potential (B3 lesions) diagnosed in women under 50 years: How important is family history and presence of atypia?

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Background: Management of B3 lesions is contentious with limited evidence for women aged <50 years. In the screening age population, extensively sampled B3 lesions without atypia are not considered to have increased malignant potential and atypical lesions are considered risk factors not precursors of invasive cancer requiring surgery or intensive surveillance.

Methods: Breast biopsies in women <50 years, between 01/01/2011 and 31/12/2025 were reviewed. Non-fibroepithelioid B3 lesions were identified. Cases with concurrent B4 or malignant lesions were excluded. Biopsy and excision pathology and family history screening status was recorded. Cases were followed until 04/08/26 to identify subsequent cancer diagnoses.

Results: 113 patients were included, 9 were 'family history screeners' (6 very high, 2 high and 1 moderate risk) in 3 cases the B3 biopsy was following recall from screening. Most lesions, 59(52%) were papillomas; 54 had no atypia though 2 upgraded to DCIS on excision, 5 with atypia on core/excision. 18(16%) lesions were ADP/AIDEP with highest upgrade rate of 50%. 17(15%) lesions were cLCIS with 2(12%) malignant upgrades at excision, 15(13%) were radial scars with no atypia or upgrade, 4(4%) were miscellaneous. Nine cancers developed in the follow-up period, 8 in the ipsilateral breast, of these only three B3 lesions had associated cLCIS or atypia at diagnosis and five were radial scars or papilloma without atypia. One patient had a VHR of cancer and cLCIS

Conclusion: Risk of cancer following B3 excision may not be limited to atypical lesions in younger women. Significant family history was not present in most cases.



Risk-Stratified Family History Breast Cancer Screening – does it work? A 12-year Regional Service Evaluation of 1168 screeners

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Introduction: Population-level screening reduces breast cancer survival. Women deemed at elevated risk through family history/genetics, or childhood radiotherapy are offered 'family history (FHx)' surveillance. Data justifying this supplemental screening is limited.

Methods: The regional active FHx surveillance database combined with historical screeners identified through imaging reports from 01/01/2012, was linked to cancer registry records (01/01/2012-01/12/2024). Cancers diagnosed among women at moderate (MR), high (HR) or very high risk (VHR) were identified. Age, symptoms, imaging tumour size and outcomes were extracted. Group differences tested using Cochran-Armitage trend, Kruskal-Wallis, Fisher-Freeman-Halton and chi-square tests.

Results: Of 1168 FHx screeners (MR:574, HR:407, VHR:187), 113 cancers were identified in risk-stratified women and 10 cancers in FHx participants who were not risk-stratified. Of the 113, 102 occurred during active surveillance (MR:16, HR:44, VHR:42), with 11 MR-group cancers excluded as they occurred after 'aging out' of FHx screening. Detection rate rose significantly with risk group (2.79%, 10.81%, 22.46%; $p < 0.0001$), as did prior cancer rate (0%, 6.82%, 16.67%; $p = 0.037$) and cancers predating FHx entry (0%, 20.45%, 28.57%; $p = 0.042$). Interval cancers fell significantly with increasing risk (62.50%, 22.73%, 19.05%; $p = 0.004$). Symptomatic tumours were larger than asymptomatic on ultrasound and mammography in HR and VHR ($p \leq 0.009$), but not MR ($p = 0.12$). Adverse outcomes did not differ significantly by risk group ($p = 0.92$).

Conclusion: Enhanced surveillance appears beneficial for HR and VHR women, with higher pickup rates, smaller asymptomatic tumours and fewer interval presentations than MR. Whether continued MR-group surveillance offers comparable benefit remains uncertain and merits further study.



Modified Maxwell Criteria: Reducing Unnecessary Biopsies and Costs in Symptomatic Breast Patients Aged 25–29

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Objective: This study aims to evaluate the efficacy of using a modified version of the Maxwell criteria for the radiologic diagnosis of fibroadenomas, thereby potentially reducing unnecessary biopsies in patients aged 25 to 29 presenting to symptomatic breast clinics. We also sought to quantify the potential cost savings of this approach.

Methods: We conducted a retrospective evaluation of all 134 patients aged 25–29 who presented to the symptomatic breast unit between January 2022 and 2023 with a possible fibroadenoma. We assessed these

patients against four specific Maxwell criteria: ovoid shape, parallel orientation, well-defined margins, and homogeneous architecture.

Results: Of the 134 patients evaluated, 52.2% met all four specified Maxwell criteria. Biopsies were performed on 37% of this cohort. Among those meeting the criteria who were biopsied, none were malignant. One lesion was diagnosed as a benign phyllodes tumour following surgical excision. Patients who were not biopsied were followed up for two years, with no incidents of malignancy recorded. Importantly, the only cancer diagnosed within the entire cohort of 134 patients did not meet the modified Maxwell criteria. By avoiding biopsies in eligible patients, we estimate potential cost savings of ~£18,000 per year (based on ~22 procedures avoided at £800 each).

Conclusion: Our data suggest that biopsies can be safely avoided in symptomatic patients aged 25–29 who meet the four specified Maxwell criteria, as these criteria successfully excluded the single malignancy in the cohort. Implementing this protocol would not only reduce patient anxiety but also offer significant financial benefits.



Small tumours big decisions :Is sentinel node biopsy always necessary?

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Small tumours, big decisions: is sentinel node biopsy always necessary?

Axillary staging in early breast cancer is increasingly moving toward de-escalation. Although sentinel lymph node biopsy (SLNB) replaced routine axillary clearance and reduced morbidity, it still carries risks such as lymphedema, pain, and restricted arm mobility. In keeping with the SOUND trial, which supported omission of SLNB in small tumours with negative axillary ultrasound, this multicentre retrospective study examined whether SLNB can be safely omitted in carefully selected patients with breast cancers measuring ≤ 15 mm.

Data were collected over 1 year across three regional health boards. Inclusion criteria were unifocal, clinically node-negative invasive breast cancers ≤ 15 mm. Patients with multifocal disease or those receiving neoadjuvant chemotherapy were excluded. Tumour biology, SLNB outcomes, and axillary node clearance findings were analysed to determine nodal positivity and residual axillary disease burden.

A total of 276 patients were included, with a mean age of 63 years; 197 presented symptomatically and 79 were screen-detected. Overall nodal positivity was low at 6.88% (19/276; 95% CI 4.20–10.54%). Among node-positive cases, 89.5% were oestrogen receptor-positive and 89.5% were grade 1 or 2, indicating a predominantly low-risk phenotype. Of the 11 patients who underwent subsequent axillary node clearance, seven had no additional nodal disease and one had only a 0.4 mm micrometastasis. This suggests that the risk of leaving clinically significant undetected macrometastatic disease if SLNB were omitted is under 2%.

These findings support selective omission of SLNB in selected low-risk, small breast cancers, particularly ER-positive, grade 1–2 tumours.



Can we safely avoid recalling well-defined masses? Developing criteria to improve efficiency in prevalent breast screening

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Background: Prevalent breast cancer screening is associated with higher recall rates than incident screening due to absence of prior imaging for comparison. This results in increased resource use and patient anxiety. This study evaluated recall indications in prevalent breast screening to identify opportunities to safely reduce recall rates.

Methods: A retrospective analysis was performed of patients recalled to assessment clinic from the prevalent screening over an 18-month period. Extracted variables included reason for recall, mammographic and sonographic assessment findings, outcome of the assessment clinic and biopsy results. Diagnostic outcomes of recalled lesions were analysed to assess their yield of malignancy.

Results: A total of 647 patients were included in the analysis. 185 patients (28.6%) were recalled for a well-defined lesion (WDL). Of these, 95 (51.4%) were discharged without biopsy (cysts, hamartomas, lymph nodes), two (1%) required minimal intervention (aspiration) and 88 (47.6%) underwent biopsy. Biopsied WDLs were B1-B3, except one B5 lesion, which on further review demonstrated indistinct margins. Neither B3 lesion demonstrated malignant features on excision.

Based on assessment outcomes and imaging characteristics of recalled WDLs, new criteria are proposed to identify WDLs that may not require further assessment, including number, shape, density, interval change, percentage of margins visible on mammography and size.

Conclusion: WDLs accounted for a substantial proportion of recalls in prevalent screening but were overwhelmingly benign. Excluding WDLs from recall would have reduced the recall rate in the prevalent screening from 8.96% to 6.65%. These findings highlight an opportunity to improve efficiency without compromising cancer detection.



Use of imaging to assess tumour response to Neoadjuvant Chemotherapy (NAC) in patients with breast cancer: variation in practice across UK and Ireland

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Introduction and Aims: Current national guidance suggests a range of possible imaging approaches to assess response to NAC, suggesting there may be differing practices nationwide. The aim of this study was to assess variation in practice using a questionnaire to identify whether greater standardisation of guidance might be appropriate.

Methods: A survey regarding departmental approaches to monitoring response to NAC was compiled on SurveyMonkey and circulated to breast units in the UK and Ireland between June-December 2025 via the British Society of Breast Radiology (BSBR) members' newsletter. One representative response was required per unit. Data were analysed using descriptive statistics.

Results: Sixty-three breast units responded, with broad geographic representation. Almost all breast units (98.4%) monitor NAC response with imaging, 88.9% reporting an increase in NAC imaging workload over the past five years. MRI was the predominant modality, used alone in 20.6%, and in combination with other modalities, commonly ultrasound, in 69.8%. Just over half of units (55.6%) performing assessment at baseline, mid-treatment and end-of-treatment, with 34.9% at baseline and end-of-treatment only. Marked variation regarding post-NAC tumour size measurement and definitions of complete and partial response were observed. Managing residual microcalcification was inconsistent, with only 36.5% of units assessing this on post-NAC imaging. Utilisation of contrast-enhanced mammography (CEM) was limited and largely used only in research.

Conclusion: The variation in use of different modalities to assess response to NAC highlights the need for evidence-based national guidance to help harmonise imaging practices to optimise patient care.



Evaluating the use of PET-CT in patients with newly diagnosed breast cancer and equivocal findings on initial staging CT

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Introduction: PET-CT is increasingly used as a problem solving imaging modality for investigation in patients with newly diagnosed breast cancer with diagnostic uncertainty. An example of this is when staging CT demonstrates equivocal findings which may represent metastases. This study aims to determine the value of PET-CT following an equivocal finding on staging CT.

Methods: Retrospective data was collected for 100 patients who underwent PET-CT following equivocal findings on staging CT. Collected data included initial cancer stage, final stage following PET-CT, whether the CT equivocal findings were confirmed to be metastatic by PET-CT, and any additional unsuspected metastatic or incidental findings discovered on PET-CT.

Results: The equivocal CT lesion was confirmed to be metastatic in 48% of patients, confirmed negative in 38%, and remained equivocal in 14%. Grouped by initial breast cancer stage the equivocal lesion was confirmed metastatic in 38% of patients with stage 1 disease, 59% of stage 2 cases, and 41% of stage 3 cases. Additional metastases were identified in 39% of cases. PET-CT findings resulted in an increase in stage of disease in 52% of patients. Additional imaging for unsuspected PET-CT findings was recommended in 32% of patients.

Conclusions: Results reiterate the importance of PET-CT for problem solving in breast cancer with 48% of CT equivocal findings being confirmed to be metastatic emphasizing the need for further characterisation. Additional sites of metastases were identified in a high number of cases (39%) and may support the use of PET-CT as an initial staging tool in some cases.



To Clip or Not to Clip? Clinical Utility of Breast Marker Clip Placement Following Image-Guided Breast Biopsy: A Single-Centre Retrospective Study

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Background: Breast marker clips are routinely inserted following image-guided breast biopsy to facilitate localisation and surgical planning. Their benefit in palpable malignancies and subsequently proven benign lesions remains uncertain.

Methods: Retrospective observational study of 282 consecutive patients in York Hospital undergoing image-guided breast biopsy from Jan 1st-March 31st, 2026. Patient list obtained from breast imaging biopsy records. Data on lesion characteristics, histopathology, localisation procedures, and post-operative specimen radiographs were reviewed.

Results: 195/282 patients (79%) had marker clips inserted after biopsy. Biopsy outcomes were 122/195 (62.6%) malignant, 56/195 (28.7%) benign and 17/195 (8.7%) B3. 134/136 (98.5%) malignant lesions had marker clips inserted. 43/134 (32.1%) were palpable (P4/5), 64/134 (47.8%) clipped cancers subsequently underwent localisation, with magnetic seeds (55/64, 85.9%). 6/43 (14.0%) underwent preoperative neoadjuvant treatment. Clip retrieval was confirmed on specimen radiography in 52/64 (81.3%) localised cases. 74/225 biopsied lesions (32.9%) were benign; 70/74 (94.6%) had marker clips inserted. 45/70 (64.3%) benign clipped lesions had low imaging suspicion (U2/U3), while 36/74 (48.6%) were screen-detected.

Conclusion: Marker clips are useful for confirming accurate lesion sampling and for subsequent localisation of impalpable cancers requiring surgery. However, pathway efficiency must be balanced against the cost of clip placement. Our findings suggest that a more selective approach, based on lesion palpability, pre-biopsy

imaging suspicion, and the planned pre-operative pathway, could reduce unnecessary procedures and healthcare costs without compromising surgical localisation in appropriately selected patients.

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Aligning breast cancer patient pathways with NHS net zero targets by using patient pathway environmental impact assessment to support the adoption of newer technologies and de-escalation of surgical intervention

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Background: The NHS is the first national healthcare system to commit to a net zero target - 2040 for direct emissions and 2045 for the NHS supply chain and indirect emissions, embedded in law in the 2022 Health & Care Act. Life Cycle Assessment (LCA) for medical equipment is becoming a standard aspect of industry information, helping NHS procurement teams to consider progress towards net zero targets.

Establishing the environmental impact of a patient pathway is more complex, requiring evaluation of multiple steps.

This presentation shows the use of an impact tool to capture the requisite information for whole pathway assessment. Estimation and comparison of surgical operation and vacuum assisted excision (VAE) has been undertaken as an example.

Method: Using proxy values in the CARESA tool (Astra Zeneca) for sequential aspects of these two patient pathways, the overall environmental impact of each has been estimated, with values created for greenhouse gas emissions (CO₂e), water usage and waste produced.

Results: The estimated CO₂e for the surgical operation biopsy is 38.2kg CO₂e per patient, whereas VAE procedure is 20.5kg CO₂e, a 46% reduction.

Estimation of water usage and waste for each pathway shows that VAE has lower impact in both.

Conclusion: Whilst the most vital consideration of any de-escalation of surgical intervention is the holistic benefit to the patient, comparison of quantifiable environmental 'costs' of each pathway can lend further support to the adoption of these newer alternative patient pathways and help to accelerate the NHS towards its net zero target.





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