



**Preoperative Assessment and Investigations of Bone Scan in Breast
Cancer Cases**

Dr. Islam Mansy*

***Correspondence to:** Dr. Islam Mansy. Maadi Armed Forces Medical Complex, Maadi Cornish, Cairo, Egypt.

Copyright

© 2023: **Dr. Islam Mansy**. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Received: 29 September 2023

Published: 05 October 2023

DOI: <https://doi.org/10.5281/zenodo.8437446>

Breast cancer (BC) is the most commonly diagnosed cancer and the leading cause of cancer death among women. Distant metastases represent the main cause of death and are common in advanced stages of the disease.

Bone is the main site of metastasis in patients with BC, accounting for 20% of the distant metastasis.⁴ Bone metastases are classified as osteolytic, osteoblastic, or mixed, and are associated with considerable morbidity including pain, impaired mobility, hypercalcemia, pathological fracture, and bone marrow infiltration.^{5,6} Therefore, early detection of skeletal metastasis is essential for the management of the disease and to define staging and optimal treatment.

Imaging plays a key role in the diagnosis of bone metastasis in BC, in which bone scintigraphy (BS) remains the most used modality.⁸ This conventional imaging method provides information on osteoblastic activity and skeletal vascularity, and presents preferential uptake of tracer at sites of active bone formation.⁹ Even though this technique remains popular among clinicians, it still has some limitations, namely low specificity.

Positron emission tomography/computed tomography (PET/CT) has been shown to obtain improved sensitivity and specificity when compared to conventional imaging modalities. It detects the presence of cancer cells directly by quantifying metabolic activity, which allows the analysis of active tumor tissue in the whole body.

BS in combination with CT is considered the gold standard for BC staging. However, the use and relevance of PET/CT in this context have increased in recent years. Even though BS and PET/CT have been applied to the detection of bone metastasis, no consensus has been established on the most suitable imaging modality for this purpose. International Guidelines recommend PET/CT for staging in patients with locally advanced disease and inflammatory carcinomas and the National Comprehensive Cancer Network (NCCN) guidelines suggest that BS might be omitted in certain cases when PET/CT documents bone metastases.

Audit Cycle

Problem: Bone Scan as Mandatory Pre-Operative assessment in all breast cancer Cases. This resulted in hundreds of normal bone Scans. Which was money consuming for the hospital and time consuming for the patients? Which also exposed our patients to contrast with no benefit?

Data Collection & Analysis

The evaluation process involved over 100 CA breast cases, categorized into T1 - T2- T4, all of which showed normal bone scans.

Implementation

Bone scans should only be ordered in cases of metastatic cancer and T4 cases, not during preoperative investigation.

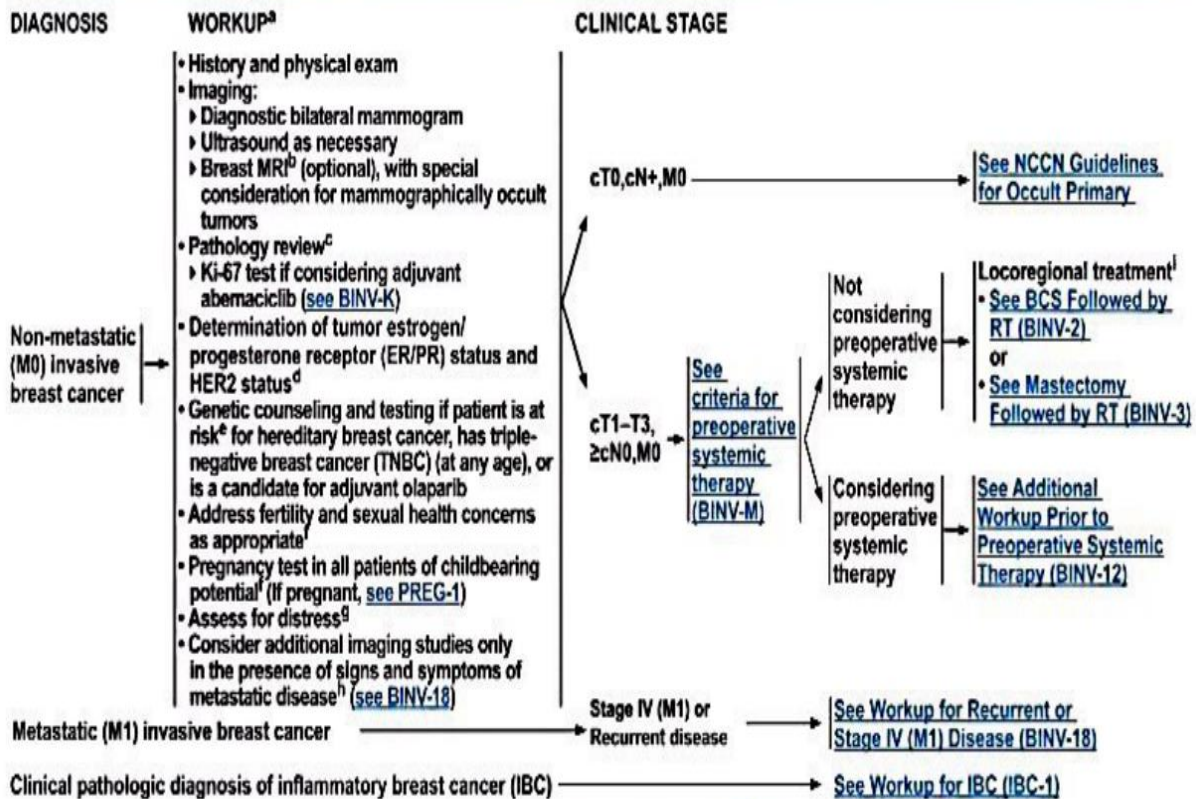
Results:

The hospital experienced significant financial and time savings, while the patient experienced significant time and effort savings.



**NCCN Guidelines Version 4.2022
Invasive Breast Cancer**

[NCCN Guidelines Index](#)
[Table of Contents](#)
[Discussion](#)



^a For tools to aid optimal assessment and management of older adults, see [NCCN Guidelines for Older Adult Oncology](#).

^b Breast MRI may be useful for characterizing axillary and/or internal mammary nodal disease. See [Principles of Dedicated Breast MRI Testing \(BINV-B\)](#).

^c The panel endorses the College of American Pathologists Protocol for pathology reporting for all invasive and noninvasive carcinomas of the breast. <http://www.cap.org>.

^d See [Principles of Biomarker Testing \(BINV-A\)](#).

^e For risk criteria, see [NCCN Guidelines for Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic](#).

^f For Fertility and Birth Control, see [BINV-C](#). The general considerations for fertility and sexual health/function outlined for specific populations in [NCCN Guidelines for Adolescent and Young Adult \(AYA\) Oncology](#) and [NCCN Guidelines for Survivorship](#) are applicable to all patients diagnosed with breast cancer.

^g See [NCCN Guidelines for Distress Management](#).

^h Routine systemic staging is not indicated for non-metastatic (M0) cancer in the absence of systemic symptoms. If metastatic disease is suspected, see [Workup on BINV-18](#).

ⁱ Patients with a known or suspected genetic predisposition to breast cancer may have an increased risk of ipsilateral breast recurrence or contralateral breast cancer with breast-conservation therapy. These patients may be considered for prophylactic bilateral mastectomy for risk reduction. See [NCCN Guidelines for Genetic/Familial High-Risk Assessment: Breast, Ovarian, and Pancreatic](#).

Note: All recommendations are category 2A unless otherwise indicated.

Clinical Trials: NCCN believes that the best management of any patient with cancer is in a clinical trial. Participation in clinical trials is especially encouraged.

Version 4.2022, 06/21/22 © 2022 National Comprehensive Cancer Network® (NCCN®). All rights reserved. NCCN Guidelines® and the Illustration may not be reproduced in any form without the express written permission of NCCN.

BINV-1

This audit was discussed in a department meeting, This audit was conducted under the supervision of DR Osama Abu Gazia, Head of the department, FRCS Qualified, MRCS Examiner.

Reaudit, After 2 month , Data collected from clinic records, We confirmed that the bone scan is no longer ordered for all breast cancer cases, just ordered for the indicated case.

