

## Conference Abstract

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## Community-Integrated Early Breast Cancer Detection in LMICs Using BC-RADS: The Breast Clinical Reporting and Data System (BCRAD-2 Implementation Study)

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### Background

Late-stage breast cancer diagnosis is a major cause of mortality in low- and middle-income countries (LMICs). With WHO's target of achieving >60% early-stage diagnosis by 2030, there is a need for structured, low-cost clinical tools, as mammography screening remains largely inaccessible. The Breast Clinical Reporting and Data System (BC-RADS) was developed as a pragmatic, CBE-based scoring model to guide community-level early detection and referral pathways.

### Methods

BC-RADS incorporates history (age, family history, genetic risk, prior radiation) and clinical examination parameters (breast asymmetry, skin/nipple changes, lump characteristics, nodal

findings). Each component is scored to generate a 0–15 cumulative score categorized as ( Figure 1)

1. BC-RADS 1: Normal (0–2)
2. BC-RADS 2: Benign (3–4)
3. BC-RADS 3: Probably benign (5–6)
4. BC-RADS 4: Suspicious (7–9)
5. BC-RADS 5: Highly suggestive of malignancy (?10)

A prospective validation was conducted among 240 women presenting to the Institute of Breast Disease, Kolkata (January–July 2025), including 142 breast cancer cases and 98 benign conditions. Predictive accuracy was assessed using sensitivity, specificity, and ROC analysis.

## Results

BC-RADS ?7 (BC-RADS 4–5) was the optimal malignancy threshold, demonstrating:

- Sensitivity: 93.2%
- Specificity: 88.7%
- AUC: 0.94 (95% CI: 0.91–0.96)

Among women scoring ?4, unnecessary imaging/biopsy referrals were reduced by 42%. Community health workers trained through a short structured program achieved diagnostic accuracy comparable to trained clinicians.

## Conclusion

BC-RADS is a low-cost, scalable clinical decision tool that strengthens early breast cancer detection in LMICs. Its integration at the primary care and community levels can reduce late-stage presentation, optimize referral pathways, and support national early-diagnosis goals.

## References

1. Global Breast Cancer Initiative ( <https://www.who.int/initiatives/global-breast-cancer-initiative>)
2. Das S, Mondal RR, Basu A. Secondary and Quaternary Delays in the Diagnosis of Breast Cancer: Are the Physicians Responsible too? *Indian J Surg Oncol.* 2022 Sep;13(3):587-593. doi: 10.1007/s13193-022-01527-5. Epub 2022 Mar 2. PMID: 36187517; PMCID: PMC9515288.

**Figure 1:** BC-RAD Scoring

# BC-RADS SCORING FLOW



