Breast MRI | Medical Outcome Audit

Facility Performance vs. BCSC / BI-RADS Benchmarks — Stream 1: Screening MRI

Facility: Anywhere Breast Imaging Practice | **Period:** January 2025 – December 2025

Benchmark Authority: ACR BI-RADS® Atlas, 5th Edition | BCSC (Lee JM et al., Radiology, 2017) | **Audit Stream: Stream 1 — Screening MRI |**
Individual interpreting physician data excluded.

KPI / Performance Measure & Calculation Formula	Screening (n=297)	Diagnostic (n=84)	All (n=381)	ACR BI-RADS® Benchmark	BCSC Observed (Community)	Status vs. BI-RADS
Total Volumes (n) *Formula:* *n/a — count of examinations in audit period* *Screening / Diagnostic / All*	297	84	381	Reference only	—	—
Recall Rate *Formula:* *Total Positive Screening MRIs* / *Total Screening MRIs* × 100 *Screening only*	14.8%	—	—	10% – 25%*	*~12–16%*	WITHIN
Abnormal Interpretation Rate (AIR) *Formula:* *Total Positive Screening MRIs* / *Total Screening MRIs* × 100 *Screening only*	14.8%	—	—	10% – 25%*	*~12–16%*	WITHIN
Positive Predictive Value 1 (PPV1) *Formula:* *TP* / *TP + FP1* × 100 *Screening only*	15.9%	—	—	3% – 8%	*~10–15%*	ABOVE † see note
Positive Predictive Value 2 (PPV2) *Formula:* *TP* / *TP + FP2* × 100 *Diagnostic only — reference value*	—	22.2%	—	20% – 40%	*36%††*	WITHIN
Positive Predictive Value 3 (PPV3) *Formula:* *TP (biopsies performed)* / *TP + FP3* × 100 *Diagnostic only — reference value*	—	27.3%	—	25% – 45%	*38%††*	WITHIN
Cancer Detection Rate (CDR) *Formula:* *Total TP Screening MRIs* / *Total Screening MRIs* × *1,000* *Screening / Diagnostic / All*	23.6	71.4	34.1	20–30 / 1,000 (BI-RADS)	*17 / 1,000 (95% CI 15–20)*	WITHIN BI-RADS Range
Sensitivity *Formula:* *TP* / *TP + FN* × 100 *Screening / Diagnostic / All*	87.5%	85.7%	86.5%	≥ 80%	*81% (95% CI 75–86%)*	WITHIN
Specificity	87.2%	72.7%	83.5%	85% – 90%	*83%*	WITHIN

KPI / Performance Measure & Calculation Formula	Screening (n=297)	Diagnostic (n=84)	All (n=381)	ACR BI-RADS® Benchmark	BCSC Observed (Community)	Status vs. BI-RADS
Formula: $\frac{TN}{TN + FP} \times 100$ *Screening / Diagnostic / All*					*(95% CI 82–84%)*	*(Screening)* **BELOW** *(Dx / All)*

Status Indicators, Benchmark Sources & Formula Notation

WITHIN	KPI value falls within the formal ACR BI-RADS® benchmark range.
ABOVE	KPI value exceeds the upper bound of the formal ACR BI-RADS® benchmark range.
BELOW	KPI value falls below the lower bound of the applicable benchmark or published reference range.
BCSC Observed	Community-practice performance (Lee JM et al., Radiology, 2017). Distinct from the formal BI-RADS benchmark target. Both columns are required for complete interpretation; neither substitutes for the other.
Formula	TP = True Positive | FP1 = False Positive (recall) | FP2 = False Positive (biopsy recommended) | FP3 = False Positive (biopsy performed) | FN = False Negative | TN = True Negative

Statistical Interpretation Notes

CDR at 23.6 per 1,000 — Within BI-RADS Range: A screening CDR of 23.6 per 1,000 falls within the formal ACR BI-RADS® benchmark range of 20–30 per 1,000 and exceeds the BCSC community-observed rate of 17 per 1,000. Both reference values are presented: the BI-RADS range is the formal target; the BCSC observed rate is the community comparator. This program is detecting cancer at a rate consistent with the BI-RADS expectation for a high-risk screening population.

† PPV1 at 15.9% — Above BI-RADS Range (BCSC observed ~10–15%): A PPV1 of 15.9% exceeds the formal BI-RADS benchmark of 3–8% but is consistent with the BCSC community-observed range of ~10–15%. In a program with a CDR within the BI-RADS range, an elevated PPV1 is an expected mathematical consequence of a higher malignancy yield per recall. The BI-RADS 3–8% benchmark was derived from BCSC data across mixed risk strata; in a high-CDR, high-risk screening program PPV1 will naturally be higher. Interpret alongside CDR, not in isolation. No corrective action indicated.

Screening Specificity at 87.2% — Within Range: Falls within the BI-RADS 85–90% range and above the BCSC community-observed value of 83%. The false-positive burden on non-cancer patients is within expected norms for a high-risk screening program.

Diagnostic Specificity at 72.7% — Below Reference Range: A diagnostic specificity below 85% indicates a higher-than-reference rate of biopsy recommendations not yielding cancer. At n=84, this metric is statistically unstable. Investigate: proportion of short-interval follow-up exams in the diagnostic pool; whether second-look ultrasound correlation precedes biopsy recommendation; referral mix pre-test probability. Monitor over subsequent periods.

Benchmark Labeling Note: ACR BI-RADS® 5th Edition formal benchmark ranges apply to screening MRI. Diagnostic MRI values (PPV2, PPV3) are published reference values from Niell BL et al. (JACR, 2014) — not formal BI-RADS benchmarks. Screening and diagnostic audits are calculated independently per BI-RADS guidance; cross-stream comparison is not appropriate.

Benchmark Sources: *ACR BI-RADS® Atlas, 5th Ed. (Sickles & D'Orsi, 2013) | Lee JM et al., Radiology, 2017 (BCSC; n=8,387) | Niell BL et al., J Am Coll Radiol, 2014 (diagnostic reference values).*

** AIR/Recall 10–25%: BI-RADS acceptable range per Lee JM et al. (2017) and ACR BI-RADS 5th Ed. | †† PPV2/PPV3 BCSC values from Niell BL et al. (2014); published reference values, not formal BI-RADS benchmarks.*

Methodology Reference: **Breast MRI Medical Outcome Audit — Program Methodology & Scope of Service**, available from your Mammologix Client Support Manager.

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