

Best Practices for Using Breast Density With the Tyrer-Cuzick Risk Model



1 Use a validated breast density assessment¹

Average Volumetric Breast Density percentage (VBD%)

ACR BI-RADS® Atlas 4th Edition mapped to 5th Edition values:

1 → A 2 → B 3 → C 4 → D

2 Understand the differences between the validated breast densities

Volumetric Breast Density %	BI-RADS 4th Edition mapped to A, B, C, D
Objective, continuous measurement of breast density	Subjective, stepwise grade of breast density
Excellent agreement to MRI ³	Agreement dependent on radiologist experience ⁴

Lifetime Risk Using Volpara® Scorecard™ average VBD% is continuous:

Visual BI-RADS	C	C	C
Lifetime Risk	19.5%	19.5%	19.5%
vs			
VBD%	8.2	11.5	15.3
Lifetime Risk	19.2%	24.7%	30.3%

Volumetric breast density gives a true reflection of risk because of the continuous nature of both the risk and density calculation.

3 Configure competing mortality

If using % Lifetime Risk, make sure competing mortality* is turned **on**. If this is not turned on, it may erroneously inflate risk—especially in young women.⁵

*Calculation includes possibility of death from non-cancer causes.

4 Use the model correctly

Fill in as much information as possible, but don't guess. It's **ok** if a woman doesn't know an answer. The model will simply use the population average for her age.

5 Use only high-quality images

The risk of developing breast cancer is unknown for women who have implants or have had breast surgery. Density is also hard to judge automatically or visually on blurred or poorly positioned images.

What is the Tyrer-Cuzick breast cancer risk model?

The Tyrer-Cuzick model, or IBIS tool, is used to identify women who may be at a higher risk of developing breast cancer over time. It does not predict masking risk. When used correctly, it identifies women who may benefit from supplemental screening such as MRI, ultrasound, and genetic testing.²

Real-life example



Risk Factors

Age: 47 Height: 1.62 m
Weight: 59 kg
Premenopausal
Nulliparous
Grandmother:
breast cancer at age 68

Input **average** Breast Density % for validated risk

26.4%

2.6 mGy 13.5 kPa

Category	Value	Unit
Volume of Breast Tissue (VBT)	25.0	cm ³
Volume of Breast Tissue (VBT)	25.0	cm ³
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Volume of Breast Tissue (VBT)	25.0	cm ³

Using the highest VBD is not validated and would result in the **lifetime risk increasing from 20.7% to 21.6%.**

Turn **on** competing mortality for validated risk

Calculate Risk

Competing mortality ☒

Risk Options

HRT use
Length of use (years):

Turning competing mortality off would erroneously inflate this woman's **lifetime risk from 20.7% to 24.8%.**

Include as many family members as possible



Personal information

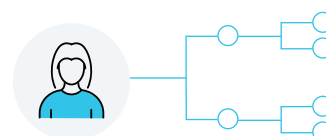
Age: 47 Height: 1.62 m
Weight: 59 kg
Premenopausal
Nulliparous
Average VBD 15.6%

Family history with cancer

Maternal grandmother: breast cancer at age 68

Lifetime risk = 20.7%

vs



Complete family information

Maternal grandmother: breast cancer age 68
3 maternal aunts (no cancer)
2 paternal aunts (no cancer)
4 sisters (no cancer)

Lifetime risk = 17.2%

References: 1. Brentnall, A.R. et al. A Case-Control Study to Add Volumetric or Clinical Mammographic Density into the Tyrer-Cuzick Breast Cancer Risk Model. *Journal of Breast Imaging* (2019). / 2. Terry, M.B. et al. 10-year performance of four models of breast cancer risk: a validation study. *Lancet Oncol* 20, 504–517 (2019). / 3. Sartor, H. et al. Measuring mammographic density: comparing a fully automated volumetric assessment versus European radiologists' qualitative classification. *Eur Radiol* 26, 4354–4360 (2016). / 4. Eom, H.-J. et al. Comparison of variability in breast density assessment by BI-RADS category according to the level of experience. *Acta Radiologica* 59, 527–532 (2018). / 5. Himes, D.O., Root, A.E., Gammon, A. & Luthy, K.E. Breast Cancer Risk Assessment: Calculating Lifetime Risk Using the Tyrer-Cuzick Model. *The Journal for Nurse Practitioners* 12, 581–592 (2016).

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