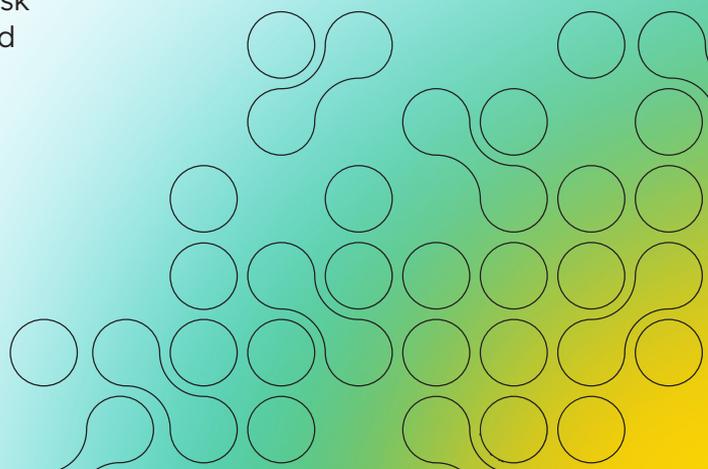


The GP's Role In Personalised Breast Cancer Risk Assessment And Screening



General practitioners play a vital role in preventing and detecting breast cancer early. Yet 1 in 8 Australian women are estimated to be diagnosed with breast cancer, and there is a 1 in 53 risk of dying from it by age 85¹. Current standard practice needs to change. By facilitating evidence-based, personalised risk assessments, GPs can help women make informed, shared decisions about tailored screening and, when required, risk-reducing options.



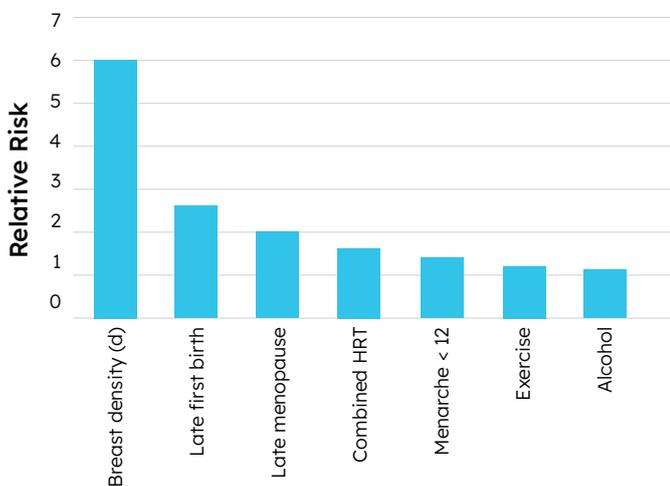
The status quo – current screening is age based

Breast cancer screening is primarily conducted through BreastScreen Australia. The program aims to detect breast cancer early. Screening is almost exclusively age based. Women over 40 are eligible for a free mammogram every two years, and those aged 50 to 74 are actively invited to screen. Only individuals and families who meet high-risk criteria based on family history are eligible for referral to a family cancer clinic² where they will receive a personal risk assessment. Women who don't meet these criteria, who may be at moderate, or even high risk due to other breast cancer risk factors, will not be identified. Alternatively, women may prefer to attend private radiology services or breast clinics where they are more likely to receive personalised risk assessment and supplemental imaging.

There are many breast cancer risk factors

Being female and increasing age are the strongest predictors of risk for breast cancer. More than 75% of breast cancers occur in women over the age of 50 years.³ Age and inherited genetic mutations (BRCA1 and BRCA2) are the basis of current screening practices and previous risk stratification models.⁴ However, there are many other risk factors, including breast density, benign breast disease, oestrogen-related factors (age at menarche and menopause, age at first child, HRT/MHT, etc.), BMI, exercise, and alcohol intake.⁵

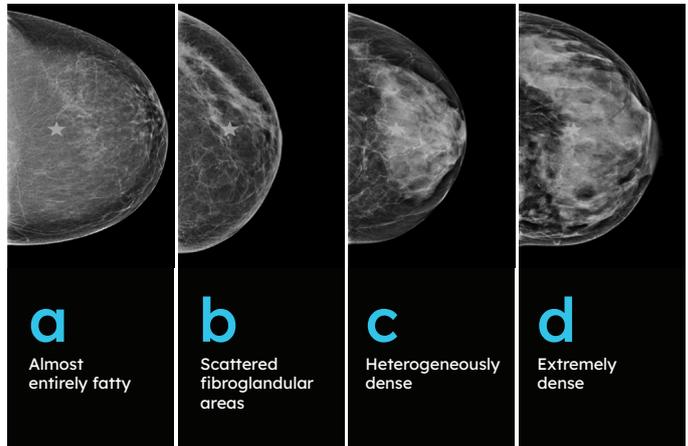
The chart shows the relative risk⁶ of some of the key factors evaluated by personalised risk assessment models.



Relative risk factors for breast cancer⁶ (excluding age and genetic mutations)

Dense breasts are a significant breast cancer risk and decrease the sensitivity of mammograms

Breast or mammographic density is the amount of white and bright regions on a mammogram and correlates with the amount of fibroglandular tissue. Dense breasts increase the risk of breast cancer and decrease the ability of radiologists to accurately interpret mammograms. There are four categories of breast density, with categories c and d collectively referred to as dense breasts.



- 71% of breast cancers occur in dense breasts.⁷
- Approximately 40% of Australian women have dense breasts, including 12% with extremely dense breasts.⁸
- Women with extremely dense breasts:
 - are 4–6x more likely to get breast cancer than those with fatty breasts.⁹
 - are more likely to develop cancer in between routine screenings (interval cancers), which are usually larger and more advanced (4.4/1000 for extremely dense compared to 0.7/1000 for fatty breasts).¹⁰
- If diagnosed with breast cancer, women with dense breasts have almost a two-fold increased risk of developing of contralateral breast cancer.¹¹

Personalised risk assessment allows for tailored screening and risk-reducing strategies

Personalised breast cancer risk assessment evaluates an individual's likelihood of developing breast cancer based on their family and personal medical history, including breast density and breast biopsy results, lifestyle factors, and genetic testing results. It is used to tailor screening and prevention strategies with the goal of prevention or early detection and improved outcomes. It enables informed, shared decision-making and efficient use of healthcare resources.

Risk assessment tools

Three commonly used tools in Australia are iPrevent, CanRisk (BOADICEA v6), and IBIS (Tyrer-Cuzick v8). iPrevent is an RACGP “accepted clinical resource” and can be completed online by women and/or their GPs to facilitate prevention and screening discussions. CanRisk uses the BOADICEA v6 model to calculate breast and ovarian cancer risk and requires health professional registration. IBIS calculates breast cancer risk by combining familial risk with classic risk factors. The latest version (v8) incorporates mammographic density. Tyrer-Cuzick v8 or later is considered the “clinically relevant evaluation algorithm” for risk estimation to support rebate eligibility for high-risk breast MRI (MBS item 63464).¹⁴

Refer to Breast cancer risk assessment tools for a comparison of the tools.

Breast cancer risk categories

Cancer Australia defines risk categories according to population risk (up to age 75).⁴ The current risk of being diagnosed by age 85 in Australia is 13%.³ A more practical approach, used by the Cancer Institute NSW eviQ,^{15,16} follows the lifetime risk (LTR) categories defined by the National Institute of Clinical Excellence (NICE).¹⁷

Risk categories	Cancer Australia ⁴	eviQ ^{15,16} (based on NICE) ¹⁷
Average risk	< 1.5 times population risk	11% LTR
Moderate risk	1.5 to 3 times population risk	≥ 17 but < 30% LTR
High risk	> 3 times population risk	≥ 30% LTR

Personalised breast cancer risk assessment in General Practice – why, who, when, how, and where

Why? – Reasons to assess

- Assist women with informed, shared decision-making.
- Determine the age to start screening.
- Advise on the best screening modality (based on age, breast density, and overall risk category), including referral options (BreastScreen Australia vs. private radiology services or breast clinics) and cost (e.g., availability of, and eligibility for a high-risk breast MRI Medicare rebate).
- Provide an opportunity for breast health awareness including primary prevention strategies.
- Determine the need and eligibility for genetic assessment/referral to a family cancer clinic.
- Provide information on risk-reducing options for moderate and high-risk categories and referral as required. (Refer to **Australian breast cancer risk management recommendations – screening and risk reduction**)

* Supplemental imaging options vary according to provider and may incur a cost (further information regarding eligibility for high risk breast MRI rebate ([MBS item 63464](#)) is available online).¹⁴

Personalised breast cancer risk assessment in General Practice – why, who, when, how, and where

Who and when? – Opportunities to assess:

- Women ≥ 25 years with family history⁴ or if concerned about additional risk factors;
- Women ≥ 40 years;
- During Medicare-funded “health assessment for people aged 45–49 years who are at risk of developing chronic disease”;
- After any changes to risk factors (e.g., new family history, dense breast finding, atypical biopsies).

How? – Assessment options

- Patient to self-administer – **iPrevent**¹³ is online, accessible to patients, and is an RACGP “accepted clinical resource.”
- GP to complete – where information is not available, fields can be left blank for a provisional assessment.
- Refer for a more comprehensive risk assessment, including breast density measurement.

Where to refer? – Screening opportunities and additional referrals

- Average risk – BreastScreen Australia for free 2nd yearly mammogram
- Moderate to high risk – consider referral:
 - to private radiology services or breast clinics that perform breast density measurement and risk assessment;
 - for supplemental imaging* e.g. US, contrast enhanced mammography (CEM), MRI;
 - to a family cancer clinic or clinical geneticist if familial risk identified.

Australian breast cancer risk management recommendations

Current evidence-based guidelines for the prevention and early detection of breast cancer are lacking. However, iPrevent and eviQ provide recommendations. Refer to Australian breast cancer risk management recommendations – screening and risk reducing strategies for guidance.

“A significant proportion of breast cancers are diagnosed through mammographic screening in women who are asymptomatic. Assess a woman’s individualised risk to see whether a personalised screening regimen may be appropriate.”

Cancer Council Victoria and Department of Health Victoria, Optimal care pathway for people with breast cancer, 2nd edn¹²

Summary

GPs play a vital role in the prevention and early detection of breast cancer and can assist women with personalised risk assessment. GPs can facilitate increased accuracy of the risk estimate by referring individuals to providers or services that measure breast density, a significant, but currently neglected, breast cancer risk factor that has the added disadvantage of decreasing mammographic sensitivity. An accurate risk assessment enables tailored screening and risk-reducing options and ultimately improved outcomes for women.

References

1. Cancer Australia. 2023. Based on AIHW Cancer Data in Australia 2022 web report and supplementary data tables. Available at www.cancer.gov.au/cancer-types/breast-cancer/statistics. [Accessed 28/03/2023]
2. The Royal Australian College of General Practitioners. Genomics in general practice. East Melbourne, Vic: RACGP, 2022. Available at <https://www.racgp.org.au/clinical-resources/clinical-guidelines/key-racgp-guidelines/view-all-racgp-guidelines/genomics-in-general-practice/genomics-in-general-practice/background>. [Accessed 21/04/2023]
3. Australian Institute of Health and Welfare. 2022. Cancer data in Australia, AIHW, Australian Government. Available at <https://www.aihw.gov.au/reports/cancer/cancer-data-in-australia/contents/about>. [Accessed 24 April 2023]
4. Cancer Australia. Advice about familial aspects of breast cancer and epithelial ovarian cancer: A guide for health professionals. 2010, updated 2015. Available at <https://www.cancer.gov.au/publications-and-resources/cancer-australia-publications/advice-about-familial-aspects-breast-cancer-and-epithelial-ovarian-cancer>. [Accessed 28/03/2023]
5. Cancer Australia. Breast Cancer: The risk factors. Available at <https://www.breastcancerriskfactors.gov.au/>. [Accessed 28/03/2023]
6. Santen R. Menopausal hormone therapies: Their effect on mammographic density and breast cancer risk. *Gynecological Endocrinology*. 2005;21:12-6.
7. Arora, N., King, T.A., Jacks, L.M. et al. Impact of Breast Density on the Presenting Features of Malignancy. *Ann Surg Oncol* 2010;17:211-218.
8. Bell, R.J., Evans, J., Fox, J., Pridmore, V. Using an automated measure of breast density to explore the association between ethnicity and mammographic density in Australian women. *Journal of Medical Imaging and Radiation Oncology*. 2019; 63:183-189.
9. Boyd NF, Martin LJ, Yaffe MJ, Minkin S. Mammographic density and breast cancer risk: current understanding and future prospects. *Breast Cancer Research*. 2011;13:223
10. Wanders JOP, Holland K, Veldhuis WB, Mann RM, Pijnappel RM, Peeters PHM, et al. Volumetric breast density affects performance of digital screening mammography. *Breast Cancer Research and Treatment [Internet]*. 2017;162:95-103.
11. Raghavendra A, Sinha AK, Le-Petross HT, Garg N, Hsu L, Patangan M, et al. Mammographic breast density is associated with the development of contralateral breast cancer. *Cancer [Internet]*. 2017;123:1935-40.
12. Cancer Council Victoria and Department of Health Victoria. Optimal care pathway for people with breast cancer, 2nd edn, Cancer Council Victoria, Melbourne. 2021. Available at <https://www.cancer.org.au/health-professionals/optimal-cancer-care-pathways>. [Accessed 28/03/2023]
13. Peter MacCallum Cancer Foundation. iPrevent™. Available at <https://www.petermac.org/iprevent>. [Accessed 28/03/2023]
14. Australian Government Department of Health and Aged Care. MBS Online. Medicare Benefits Schedule – Item 63464. Available at <http://www9.health.gov.au/mbs/fullDisplay.cfm?type=item&q=63464&q=63464&q=63464&q=63464>. [Accessed 20/04/2023]
15. Cancer Institute NSW. eviQ. Breast cancer (moderately increased risk) – risk management (female). ID: 1424 v 8. Last modified 2023. Available at <https://www.eviq.org.au/cancer-genetics/adult/risk-management/1424-breast-cancer-moderately-increased-risk-#lifetime-risk-of-cancer-tumour>. [Accessed 28/03/2023]
16. Cancer Institute NSW. eviQ. Breast cancer (high risk with no family history of ovarian cancer) – risk management (female). ID: 743 v 6. Last modified 2023. Available at <https://www.eviq.org.au/cancer-genetics/adult/risk-management/743-breast-cancer-high-risk-with-no-family-histor#evidence-for-risk-management-guidelines>. [Accessed 28/03/2023]
17. National Institute of Clinical Excellence (NICE). Clinical guideline. Familial breast cancer: classification, care and managing breast cancer and related risks in people with a family history of breast cancer (CG164). Published June 2015, last updated 2019. Available at <https://www.nice.org.uk/guidance/cg164>. [Accessed 28/03/2023]

This document is for use by healthcare professionals only. The radiologist should always rely on his or her own clinical and professional opinion when deciding whether to use a certain product to diagnose or treat a patient.

Availability of Lunit products may vary by market, depending on local medical and/or regulatory requirements. Please contact your Lunit representative if you have questions about the availability of the Lunit products in your area.

Lunit Inc. owns, uses or enforces the following trademarks or service marks: Lunit, Lunit INSIGHT.

Lunit Inc., 4-9F, 374, Gangnam-daero, Gangnam-gu, Seoul, 06241, Republic of Korea

Document number: mtk7941-3