The GP's role in personalised breast cancer risk assessment and screening

General practitioners play a vital role in the prevention and early detection of breast cancer. Despite this, 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 85.[1] Current standard practice needs to change. By facilitating evidence-based, personalised risk assessments, GPs can assist women to make informed, shared decisions about tailored screening and, if 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 clinic[2] 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 risk[6] of some of the key factors evaluated by personalised risk assessment models.
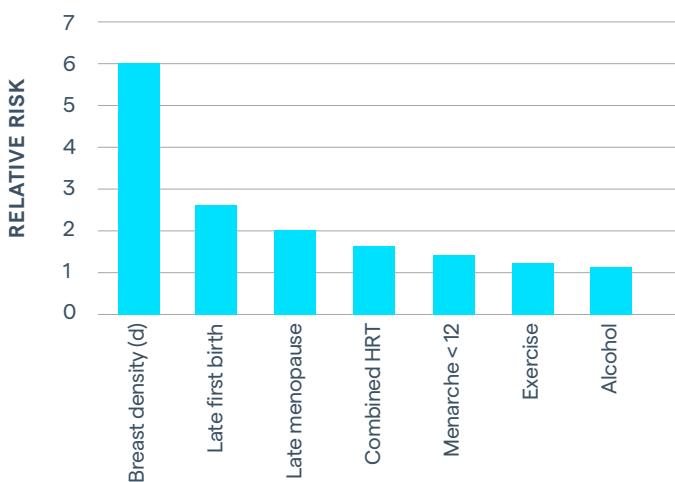
Relative risk factors for breast cancer[6] (excluding age and genetic mutations)

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.

a Almost entirely fatty
b Scattered fibroglandular areas
c Heterogeneously dense
d Extremely dense
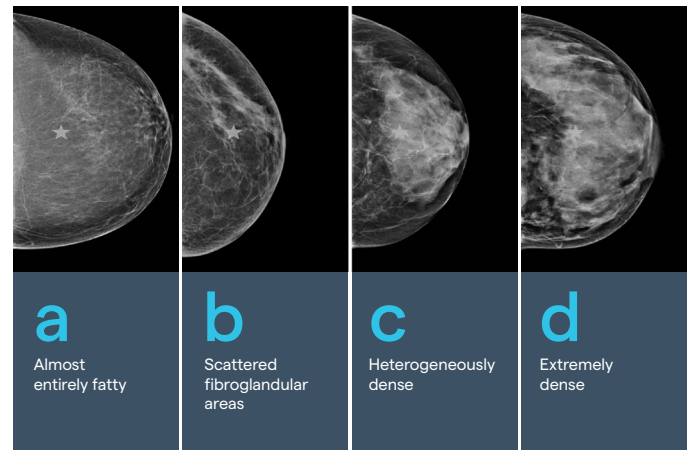
- 71% of breast cancers occur in dense breasts.[7]
- Approximately 40% of Australian women have dense breasts, including 12% with extremely dense breasts.[8]
- Women with extremely dense breasts:
  - are 4–6x more likely to get breast cancer than those with fatty breasts.[9]
  - are more likely to develop 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

> "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 edn[12]

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*)

Who and when? – Opportunities to assess:

- Women ≥ 25 years with family history[4] 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.

*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]

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.

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.

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