



Breast Density Position Statement

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1. INTRODUCTION

Royal Australian and New Zealand College of Radiologists® (ABN 37 000 029 863) (the College) developed this position statement for its Fellows, Members and other individuals on breast density.

1.1 Acknowledgement

The College is grateful to the members of the Breast Imaging Advisory Committee (BIAC): A/Prof Michelle Reintals (Chair), A/Prof Donna Taylor, Adj Prof Helen Frazer, Dr Jill Evans, Dr Manish Jain, Dr Peter Downey and Dr Nalini Bhola, for their extensive input into this document.

No funding or conflicts of interest have been declared by BIAC members.

2. DEFINITIONS

In this Breast Density Position Statement:

BIAC means the Breast Imaging Advisory Committee

College means The Royal Australian and New Zealand College of Radiologists

Member means a member of the College

Breast density means mammographic breast density (MBD)

3. POSITION STATEMENT

Whilst a future risk-based model for breast cancer screening is being developed, RANZCR recommends mandating the reporting of breast density in both screening and diagnostic settings in Australia and New Zealand.

Breast cancer is the leading cause of cancer in women in Australia, with 1 in 7 affected in their lifetime.¹

3.1 Definition of Mammographic Breast Density

Composition of breast tissue: breasts are made up of a combination of fibrous tissue, glandular tissue and fatty tissue. The appearance of breast tissue on a mammogram depends upon the mixture of components of breast tissue. Dense breasts have more fibrous and glandular tissue, whereas less dense breasts have more fatty tissue.

On a mammogram, fatty tissue appears dark grey/black and fibrous/glandular tissue appears light grey/white. It is the amount of light grey/white on the mammogram that is classified as mammographic breast density (MBD). Breasts with higher MBD contain more glandular and fibrous tissue, and the mammogram appears white.

3.2 Measurement of Mammographic Breast Density

Mammographic breast density can only be assessed on a mammogram, either subjectively by a specialist breast imaging trained radiologist or objectively by using automated software that is applied to the data from the digital mammogram.

3.3 Mammographic Breast Density Measurement and BI-RADS

According to the 5th edition of the American College of Radiology (ACR) Breast Imaging and Data Reporting System (BI-RADS) 2013² there are four commonly described categories of breast density.

- a. The breasts are almost entirely fatty
- b. There are scattered areas of fibro-glandular density
- c. The breasts are heterogeneously dense, which may obscure small masses
- d. The breasts are extremely dense, which lowers the sensitivity of mammography.

3.4 Prevalence and Incidence of Mammographic Breast Density

Large population data, of a 1,518,599 sample size from Breast Cancer Surveillance Consortium (BCSC), indicates that the prevalence of density categories amongst the 40–74 year old population in USA is 7.4% in category d.³

In Australia, there have been state-based population screening studies:

- Monash BreastScreen VIC in 2019 demonstrated differences in distribution of BI-RADS categories to the USA population data.⁽⁴⁾ In a BreastScreen cohort of 16,943 women, the Monash study showed a lower incidence of category c but only included women 40 and over: category a 10.5%, category b 46.6%, category c 30.7% and category d 12.2%, giving a combined c and d of 42.9% having "dense breasts".⁴
- BreastScreen South Australia study in 2022 [pre-print], with a sample size of 14,833, showed an incidence of category a 23.3%, category b 41.5%, category c 24.5% and category d 8.3%, which is likely subjective due to demographic influence of sample size and screening clinics chosen to participate in the study (high and low socioeconomic and culturally diverse sample population).⁵

3.5 Risks Associated with Mammographic Breast Density

1. Increased breast cancer risk: studies have demonstrated that extreme MBD is associated with a 2.1-fold increased risk of breast cancer compared with the average risk scattered category of BI-RADS category b of MBD.⁶
2. Increased breast density has been shown to be associated with increased mortality from breast cancer.⁷
3. Reduced sensitivity of mammography: high MBD is associated with reduced sensitivity of cancer detection, owing to the masking effect of "dense" breast tissue, resulting in "underdiagnosis" of breast cancer. Studies have shown that Standard 2D mammography has a sensitivity range of 57–71% for extremely dense breasts compared to 81–93% for fibrofatty breasts.⁸

3.6 Recommendations

Regular breast cancer screening within a population-based screening program is proven to be of benefit for all women with all categories of MBD.^{9 10} Irrespective of their mammographic density, it is important that all women remain breast aware.

It is important that women and their doctors consider all potential risk factors for breast cancer:

- Aging and being female are considered the biggest risk factors for breast cancer.
- Other factors include:
 - genetic markers
 - family history
 - personal past history of breast cancer
 - personal history of ovarian cancer
 - previous breast biopsy with atypia/high risk lesions
 - mantle radiation for lymphoma
 - HRT
 - Lifestyle factors including alcohol, Body Mass Index (BMI), smoking and physical activity.¹¹

In light of the many contributing factors above, each woman's risk will differ and may be better assessed in consultation between the woman and her doctor.

There are several validated risk assessment tools, including iPrevent, which is endorsed by Cancer Australia, or IBIS/Tyrer-Cuzick, that may be helpful in performing an individual assessment of risk. These tools, while comprehensive, are labour intensive and require a detailed personal and family history.

While screening mammography is of proven benefit in detecting cancer regardless of MBD, the addition of supplemental imaging tools such as tomosynthesis, ultrasound, contrast enhanced mammography and magnetic resonance imaging may detect additional cancers in women with dense breasts.

The European Society of Breast Imaging (EUSOBI) has published suggested guidelines in 2022 for women with high MBD, suggesting an aspirational goal of screening women aged 50–70 years old with extreme breast density, BI-RADS category d, with breast MRI every 2–4 years, in addition to mammography.^{12 13} This is based on the results of the DENSE trial which demonstrated that for women with breast density category d, breast MRI reduced the interval cancer rate in comparison with women who were screened with mammography alone.¹⁴

RANZCR suggests that the EUSOBI Screening Statement is aspirational. RANZCR acknowledges that economic, human resources and accessibility may make adopting these recommendations difficult at this time. However, RANZCR will be working towards a model of this gold standard with governments and regulatory agencies.

RANZCR supports discussion and collaboration between a patient and their healthcare team to encourage shared decision making.

Whilst this future risk-based model for breast cancer screening is being developed, RANZCR recommends mandating the reporting of breast density in both screening and diagnostic settings in Australia and New Zealand.

4. REFERENCES

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