

# Dense breast on screening mammography: utility and futility of additional ultrasound

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## Introduction

High breast density decreases the sensitivity of mammography. Regardless of masking effect, it is also a stronger predictor for breast cancer than most other risk factors, including family history. Up to 50% of women have dense breast (categories c+d)(Fig1).



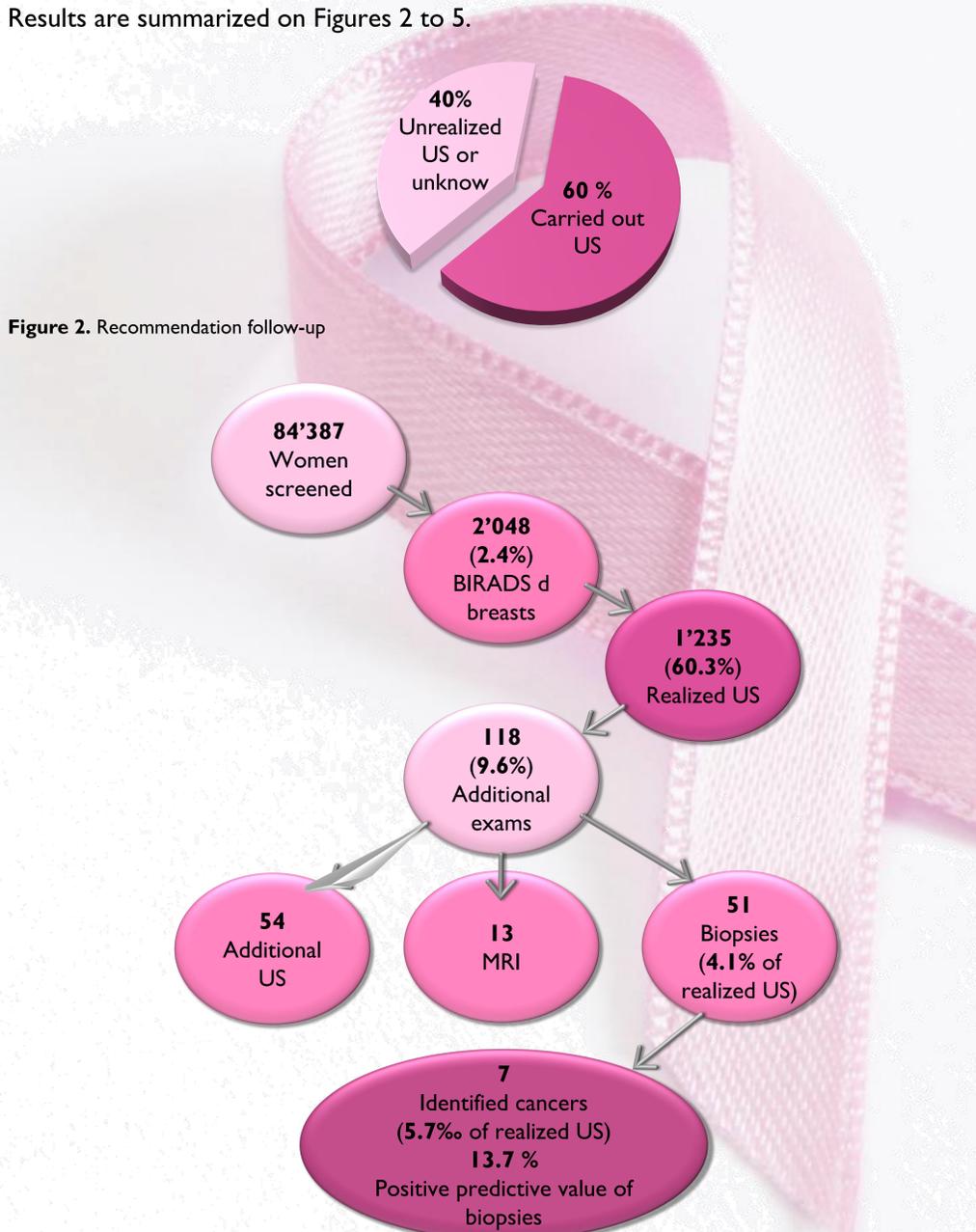
**Figure 1.** Mediolateral oblique mammograms depicting the 4 BI-RADS density categories. (A) almost entirely fatty (BI-RADS a density); (B) scattered fibroglandular densities (BI-RADS b density); (C) heterogeneously dense (BI-RADS c density); (D) extremely dense (BI-RADS d density).

The relative risk is 2.1 to 2.3 in women with extremely dense breast (category d). There is little consensus on the potential need of additional measures. Breast Ultrasound (US) may be proposed as an adjunctive test, as it is non-invasive and non-irradiating.

Since 2012, our program for breast cancer screening propose to realise an additional US to the women with category d breasts. An evaluation of the data of the first year showed that less 50% of the women act upon the recommendation. In spite of the low compliance, 3 supplementary cancers were found. Since, no more evaluation was performed.

## Results

Results are summarized on Figures 2 to 5.



**Figure 3.** Additional exams and cancers identified

Ducros C. Echographie en complément d'une mammographie de dépistage, classée BI-RADS 4. Communication presented in a seminar of romand's programs for breast cancer screening the 19th of November 2015, CHUV - Lausanne, Switzerland.  
 Melnikow J, Fenton JJ, Whitlock EP, Miglioretti DL, Weyrich MS, Thompson JH, et al. Supplemental Screening for Breast Cancer in Women With Dense Breasts: A Systematic Review for the U.S. Preventive Services Task Force. Evidence Synthesis No. 126. AHRQ Publication No. 14-05201-EF-3. Rockville, MD: Agency for Healthcare Research and Quality; 2016.  
 Chang JM, Koo HR, Moon WK. Radiologist-performed hand-held ultrasound screening at average risk of breast cancer: results from a single health screening center. Acta Radiol. 2015;56(6):652-658.  
 Freer PE. Mammographic Breast Density: Impact on Breast Cancer Risk and Implications for Screening. RadioGraphics. 1 mars 2015;35(2):302-15.  
 Background picture from <https://www.leconomistmaghreb.com/2013/10/27/octobre-un-mois-pour-sensibiliser-au-cancer-du-sein/>, March 10, 2018  
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## Purpose

The aim of this study was:

- To evaluate the effect of the recommendation in term of additional cancer's identification, additional biopsies and additional investigations.
- To identify the reasons of non compliance.

## Methodology

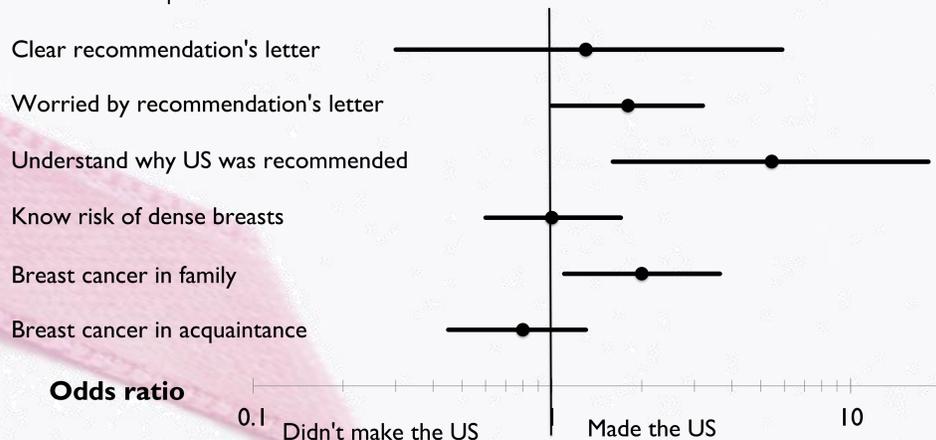
It was an observational and monocentric study. All the women identified with extremely dense breast breasts on screening mammography between January 2012 and December 2015 in the Vaudois program were included (2048 women). The study consists of two parts:

**A retrospective part:** to identify the women who followed the recommendation and gave a feedback to the program for breast cancer screening: the normal results, those who needed some additional exams or biopsies and the cancers.

**A prospective part:** to retrieve information from the women who didn't give a feedback; to sort those who nevertheless conform to the recommendation from those who didn't; to evaluate the reasons of no compliance; to estimate the differences in recommendation's letter understanding between the women who follow and those who didn't, in term of comprehension of density related risk, family history of breast cancer or in the presence of breast cancer in acquaintance.



**Figure 4.** Reasons to skip over



**Figure 5.** Logistic analysis, comparison of questionnaire's answers between those who follow and those who didn't follow the recommendation

## Discussion and Conclusion

From the recommendation, 7 cancers hidden on mammography were identified in 4 years, with a rate of detection of 5,7‰ (between 4,4 to 7,7‰ in literature). The recall rate for supplemental investigations was 9,6% (13,9% in literature) and the biopsy rate was 4,1% (5,9% in literature). The positive predictive value of biopsies was 13,7% (between 3,2 à 7,5% in literature)

The participation rate was 60,3%. However compliance may be increase: better communication between the screening program, radiologists and gynecologists, clearer information, easier organization of US and financial participation.

The radiologists of the screening program identified only 2,4% of women with extremely dense breasts (10% in literature). There is a risk of leave out cancers.