



EUROPEAN COMMISSION  
JOINT RESEARCH CENTRE

Directorate F - Health, Consumers & Reference Materials (Ispra)  
**Health in Society**

# European Commission Initiative on Breast Cancer (ECIBC): European guidelines on breast cancer screening and diagnosis Evidence profile

<b>Healthcare question</b>	Should triennial vs. biennial mammography screening be used for early detection of breast cancer in women aged 45 to 49?
<b>Date</b>	September 2016
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<b>Abbreviations</b>	<b>CI:</b> Confidence interval <b>OR:</b> Odds ratio

Certainty assessment							Nº of patients		Effect		Certainty	Importance
Nº of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Triennial mammography screening	Biennial mammography screening	Relative (95% CI)	Absolute (95% CI)		
Breast cancer death averted (modelling studies)												
1 <sup>1,ab</sup>	observational studies	not serious	not serious	very serious <sup>c,d</sup>	not serious	none			Ratio T/B: 0.9 (-- to --)	5 fewer per 100,000 (from -- to --)	⊕○○○ VERY LOW	CRITICAL

Certainty assessment							Nº of patients		Effect		Certainty	Importance
Nº of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Triennial mammography screening	Biennial mammography screening	Relative (95% CI)	Absolute (95% CI)		
Stage of breast cancer (IIB-IV)												
1 <sup>2</sup>	observational studies	serious <sup>e</sup>	not serious	very serious <sup>f,g</sup>	not serious	none	0 cases 0 controls		OR 0.78 (0.54 to 1.11) <sup>h</sup>	-	⊕○○○ VERY LOW	CRITICAL
							-	0.0%		0 fewer per 1,000 (from 0 fewer to 0 fewer)		
QALYs (modelling studies)												
1 <sup>1,a</sup>	observational studies	not serious	not serious	very serious <sup>c,d</sup>	not serious	none			Ratio T/B: 0.89 (– to –)	72 fewer per 100,000 (from – to –)	⊕○○○ VERY LOW	CRITICAL
Overdiagnosis (modelling studies)												
1 <sup>1,a</sup>	observational studies	not serious	not serious	very serious <sup>c,d</sup>	not serious	none			Ratio T/A: 0.74 (– to –)	31 fewer per 100,000 (from – to –)	⊕○○○ VERY LOW	CRITICAL
False positive -10 year cumulative probability												
1 <sup>2</sup>	observational studies <sup>i</sup>	serious <sup>j</sup>	not serious	very serious <sup>k,l</sup>	not serious	none	Triennial screening 30% (95%CI 29% to 30%) Biennial screening 41% (95%CI 41% to 42%) Difference: 11,000 more per 100,000.				⊕○○○ VERY LOW	CRITICAL
False positive biopsy recommendation -10 year cumulative probability												
1 <sup>2</sup>	observational studies <sup>m</sup>	serious <sup>n</sup>	not serious	very serious <sup>k,l</sup>	not serious	none	Triennial screening 4% (4% to 4%) Biennial screening 6% (6% to 6%) Difference: 2,000 more per 100,000.				⊕○○○ VERY LOW	CRITICAL
Interval cancer - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Incidence of advanced breast cancer following first round of screening - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL

## Explanations

- a. 100,000 women screened for calculations.
- b. One quasi-experimental study from Finland did not report an incremental risk on breast cancer mortality from triennial vs annual interval in the 40 to 49 years age group (RR 0.88; 95%CI 0.43 to 1.79).
- c. The comparison for any interval in the models was a no screening scenario. No direct comparisons were reported.
- d. In the publications the age period 45-49 was not included. Results were calculated by subtracting the effects of overlapping age periods.
- e. Intervals were classified in base of the month ranges elapsed between two screening mammograms prior to diagnosis. Potential high risk of misclassification.
- f. Estimations based in studies that included women from 40 to 49 years old.
- g. Results were extracted from groups of women with selected characteristics (e.g. normal weight, fatty or scattered fibroglandular breast density, or white race).
- h. Odds ratio for white women in the group of 40 to 49 years old and adjusted by age in years.
- i. One modelling study estimated the number of false positive results in triennial screening of 4,831 and for biennial of 6,301 per 100,000 screened women from 45 to 59 years old (difference 1,470 fewer events).
- j. Intervals were classified in base of the month ranges elapsed between two screening mammograms prior to diagnosis. Potential high risk of misclassification.
- k. Estimations based in studies that included women from 40 to 49 years old
- l. Results were extracted from groups of women with selected characteristics (e.g. normal weight, fatty or scattered fibroglandular breast density, or white race).
- m. One modelling study estimated the number of benign biopsy results in triennial screening of 100 and for biennial of 6,301 per 100,000 screened women from 45 to 59 years old (difference 100 fewer events).
- n. Intervals were classified in base of the month ranges elapsed between two screening mammograms prior to diagnosis. Potential high risk of misclassification.

## References

- 1. Vilapriyo, E. Cost-effectiveness and harm-benefit analyses of risk-based screening strategies for breast cancer. PLoS One; 2014.
- 2. O'Meara, E. Mammographic screening interval in relation to tumour characteristics and false-positive risk by race/ethnicity and age. Cancer; 2013.