

GENERAL REMARKS

This fifteenth Volume of the *IARC Handbooks of Cancer Prevention* series evaluates the beneficial and adverse effects of various modalities of breast cancer screening. It is the first Volume since the relaunch of the series in 2014; the fourteenth Volume was published in 2011 ([IARC, 2011](#)).

The *IARC Handbooks of Cancer Prevention* have had a major impact on WHO global cancer policies. The previous *Handbook* on breast cancer screening, published in 2002 ([IARC, 2002a](#)), was for more than a decade the reference for governments when deciding on a national breast cancer screening programme.

Breast cancer has become the most common cancer in women worldwide, in both developed and developing countries. Primary prevention can be achieved by reducing exposure to preventable risk factors, such as excess body fatness ([IARC, 2002b](#)) and consumption of alcoholic beverages ([IARC, 2012](#)), and by increasing physical activity ([IARC, 2002b](#)); secondary prevention provides important additional options for breast cancer control.

In 2002, a Working Group of international experts developed Volume 7 of the *IARC Handbooks*, on breast cancer screening ([IARC, 2002a](#)). The resulting consensus evaluations are presented in [Table 1](#).

Recent improvements in treatment outcomes for late-stage breast cancer, and renewed concerns about overdiagnosis, call for an up-to-date, systematic, transparent, and independent

evaluation of the benefits and harms of mammography screening. The definition of what constitutes the best implementation of mammography screening programmes (e.g. which age groups should be screened and with what frequency) needs to be revisited in the light of the results of recent studies. In addition, new studies on clinical breast examination and breast self-examination warrant a re-evaluation of their efficacy and effectiveness in reducing mortality from breast cancer.

Furthermore, imaging techniques other than mammography need a rigorous scientific evaluation of their usefulness for breast cancer screening. These include: adjunct ultrasonography for women with dense breasts; digital tomosynthesis; magnetic resonance imaging, either as adjunct to mammography or as a stand-alone technique; and positron emission tomography.

Finally, the screening of women at increased risk of breast cancer requires a thorough reassessment, particularly in the context of better data now available on adjunct or alternative screening modalities.

After a review of the available literature, the Working Group made evaluations for different outcomes and variables, including age group, screening interval, adverse effects, and cost-effectiveness. For the screening of women at increased risk, evaluations were made for four different risk categories (*BRCA* mutations, family history of breast cancer without known mutations, personal history of breast cancer, and

Table 1 Evaluations of breast cancer screening, IARC Handbooks Volume 7 (2002)

Type of evaluation	Strength of evidence
Effect of screening with mammography in reducing mortality from breast cancer for women aged 50–69 years	<i>Sufficient evidence</i>
Effect of screening with mammography in reducing mortality from breast cancer for women aged 40–49 years	<i>Limited evidence</i>
Effect of screening with mammography in reducing mortality from breast cancer for women younger than 40 years or older than 69 years	<i>Inadequate evidence</i>
Effect of breast cancer screening by clinical breast examination in reducing mortality from breast cancer	<i>Inadequate evidence</i>
Effect of breast cancer screening by breast self-examination in reducing mortality from breast cancer	<i>Inadequate evidence</i>

personal history of breast lesions) and various screening modalities and combinations thereof.

The aim of breast cancer awareness programmes is to educate women about the signs and symptoms of breast cancer and the importance of seeking early diagnosis and treatment. Overall, these steps aim at promoting the early diagnosis of the disease, for better treatment and prognosis; they are not considered as *screening* activities and are therefore not included in the evaluation.

While this Volume does not provide public health recommendations regarding implementation of breast cancer screening or recommendations for future research, it may serve as the scientific evidence base for implementation of national breast cancer screening programmes.

A summary of the findings of this Volume has appeared in *The New England Journal of Medicine* (Lauby-Secretan et al., 2015).

References

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