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## 75 – Breast Cancer Screening Programs

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Early detection is based on a broad strategy that includes: diagnosis, treatment and follow up of the detected disease. Therefore, to integrate these activities in the different services of the network of care is essential to maintaining early detection.

The two fundamental components of early detection of cancer are:

**a) Early diagnosis:** based on the recognition by users and health professionals of the symptoms and early signs of cancer, and the need for rapid treatment when they appear;

**b) Screening:** identifying, within a population without symptoms and with medium risk, cancers or pre-cancerous lesions unrecognised by tests that can be applied easily to the entire population; ensuring that all detected lesions will be treated (1)

Population-based screening involves the systematic use, in an asymptomatic population, of a test to identify people who have a previously unrecognised disease; its objective is to reduce the burden of disease, including a reduction in the incidence, morbidity and mortality, through detection in an early stage in people who otherwise would not know they are affected.

The screening test used in a population-based program has no intend to be diagnostic, rather its aim is to distinguish between individuals who tested positive (and therefore may have or develop the disease) and require specific studies to confirm the diagnosis and people whose test was negative (not shown early indications of disease) and do not require further studies.

### **Breast Cancer Screening**

Breast cancer is the most common cause of death from cancer in women worldwide, (2) the second leading cause of death from cancer in women in high-income countries, and the leading cause of death from cancer in low- and middle-income countries, where a high proportion of women present with advanced disease, which has a poor prognosis. (3)

Established risk factors for breast cancer include age, a family or personal history of breast cancer or pre- cancerous lesions, genetic predisposition, reproductive factors, hormonal treatment, alcohol consumption, obesity (for postmenopausal breast cancer only), and exposure to ionizing radiation. (4) <http://handbooks.iarc.fr/>; <http://monographs.iarc.fr/>

So far the only breast cancer screening method that has proved to be effective in organized population-based programs is mammography screening. However, reports of the benefits and harms of mammography screening differ widely in the context

and intensity of screening examined, as well as in the interpretation of the available evidence. There is also uncertainty about the appropriate age groups for screening and the steps that should be taken by responsible authorities to commission and implement breast cancer screening programs of appropriate quality.

### **Box 1**

Organized, population-based breast cancer screening programs Key criteria for successful program implementation

- Demonstrated feasibility, cost-effectiveness and affordability of the screening process in the respective setting through pilot studies and modelling.
- Coordination of all activities, including planning, feasibility testing, piloting and gradual roll-out of the program across a country or region, by an autonomous management team responsible for service delivery, quality assurance, and evaluation.
- A well-developed, equitable, health system with cancer control planning integrated into the national non-communicable disease (NCD) prevention and control strategy and with balanced, objective information of women about the benefits and harms of mammography screening.
- Validated protocols for all steps in the screening process, including identification and individual invitation of all eligible women to attend screening, performing the screening test, diagnosis, treatment and palliative care.
- Adherence to comprehensive, evidence-based guidelines for quality assurance of the entire screening process, including standards and protocols for professional and technical quality assurance; and that are regularly updated based on current evidence.
- Quality assurance and information systems covering the entire screening process, including call and recall of participants for follow-up of abnormalities detected in screening, and for monitoring and evaluating program performance at each step in the screening process.
- Regular monitoring, evaluation and reporting of program performance and impact based on national or international standards that include process and outcome indicators and also cover women's safety and satisfaction.
- Sufficient organizational and financial resources to ensure the sustainability of all program components, including the requisite equipment, infrastructure and workforce, and the capacity for training, reporting and national and international exchange of experience.

Sources: WHO, 2007; von Karsa et al., 2013.

Mammography as a screening test has been widely used and there are several studies that assess the impact of this on breast cancer mortality. In Europe and North America it has shown that screening programs have reduced the incidence of advanced cancers and mortality from breast cancer, ranging between 19% in the US and 59% in some centers in Sweden. (5)

The sensitivity of mammography as a screening test varies between 68% and 90%, and specificity between 90% and 95%, according to various studies; the positive predictive value it's close to 12%

The effectiveness of screening mammography in different age groups has been the subject of discussion. A review by the International Agency for Research on Cancer, found that there is sufficient evidence to recommend screening mammography in women between 50 and 69 years, limited evidence between 40 and 49 years old and inadequate evidence under 40 and over 70 years. (6) Similar approach exposes the latest revision of the United States Preventive Services Task Force based on the study published in 2009 (US Preventive Services Task Force, 2009) available online at <http://screeningforbreastcancer.org/?ds=1&s=breast%2520cancer> with the only except that the USPSTF recommends screening until age 75.

Recently the organization UpToDate®(8) conducted a review of the scientific evidence available to date regarding screening and gave the following recommendations:

- For women between ages of 50 and 70, screening mammography is recommended.
- For women between ages of 40 and 50, instead of routine screening, discussion of the risks and benefits of mammography is suggested. The decision to perform mammography should be determined by the individual risk and values of the patient through a shared decision making.
- For women over 70, screening is suggested if life expectancy is at least 10 years.
- For women with lower average risk of 40 years, breast cancer screening is not advised.

The ideal interval between mammograms is one that maximizes the benefits of the program with fewer accumulated tests over the life of women. Some national programs using nearly 3 year intervals has shown that the rate of interval cancer, detected in the period between tests, approaches the expected incidence rate in the absence of screening program.

To achieve impact on morbidity and mortality from breast cancer is essential a high percentage of participation is essential (5) ; some international quality breast cancer screening guidelines have determined that the minimum percentage of participation is between 70% and 85%. A determining factor for the high participation of women at low risk for breast cancer is certainly adequate access to services that provide mammography.

### Take Home Message

- Every population-based screening program discriminates between people who has a positive test and requires more diagnostics procedures from whom has negative test or no shows early stages of the disease.
- Breast cancer is the most common cause of death from cancer in women worldwide, with high proportion of advanced disease and poor prognosis
- Mammography is the only breast cancer screening method that has proved to be effective in organized population-based programs; with high specificity and variable sensitivity
- The I.A.R.C. found that there is sufficient evidence to recommend screening mammography in women between 50 and 69 years, limited evidence between 40 and 49 years old and inadequate evidence under 40 and over 70 years
- The ideal interval between mammograms is one that maximizes the benefits of the program with fewer accumulated tests over the life of women, from 2 to 3 years between tests.

### Original Abstract

<http://www.woncaeurope.org/content/breast-cancer-screening-practices-among-women-taiwan>

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