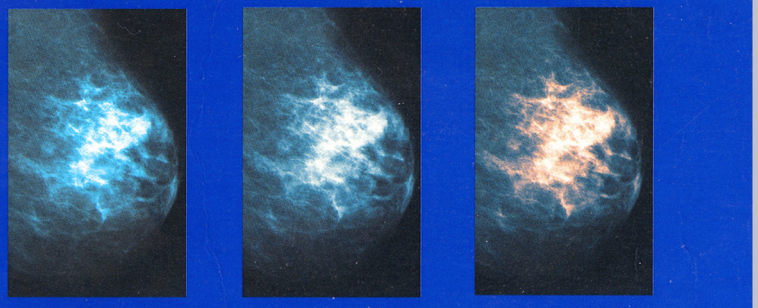
IARC Handbooks of Cancer Prevention

International Agency for Research on Cancer
World Health Organization

Breast Cancer Screening



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Volume 7

Breast Cancer Screening

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International Agency For Research On Cancer

The International Agency for Research on Cancer (IARC) was established in 1965 by the World Health Assembly, as an independently financed organization within the framework of the World Health Organization. The headquarters of the Agency are in Lyon, France.

The Agency conducts a programme of research concentrating particularly on the epidemiology of cancer and the study of potential carcinogens in the human environment. Its field studies are supplemented by biological and chemical research carried out in the Agency's laboratories in Lyon and, through collaborative research agreements, in national research institutions in many countries. The Agency also conducts a programme for the education and training of personnel for cancer research.

The publications of the Agency contribute to the dissemination of authoritative information on different aspects of cancer research. Information about IARC publications, and how to order them, is available via the Internet at: **http://www.iarc.fr/**

This publication represents the views and opinions of an IARC Working Group on the Evaluation of Cancer-Preventive Strategies which met in Lyon, France, 5–12 March 2002

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Note to the Reader

Anyone who is aware of published data that may influence any consideration in these *Handbooks* is encouraged to make the information available to the Unit of Chemoprevention, International Agency for Research on Cancer, 150 Cours Albert Thomas, 69372 Lyon Cedex 08, France

Although all efforts are made to prepare the *Handbooks* as accurately as possible, mistakes may occur. Readers are requested to communicate any errors to the Unit of Chemoprevention, so that corrections can be reported in future volumes.

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Preface

Why a Handbook on breast cancer screening ?

The scientific process of acquiring information about the efficacy of breast cancer screening was initiated in 1963, when Sam Shapiro and coworkers introduced the Health Insurance Plan study (Shapiro *et al.*, 1988a) in New York, USA, the first randomized controlled trial of the effect of mammography and clinical breast examination in reducing mortality from breast cancer. This study opened the era of randomized controlled trials for evaluation of screening techniques. Cancer screening techniques used before that, such as the Papanicolau (Pap) smear, never underwent proper evaluation in randomized trials before their introduction as a means for population screening.

Randomized controlled trials have been criticized many times as expensive and slow to provide results. The Breast Cancer Detection Demonstration Project (Baker, 1982) in the USA was initiated to provide data on the efficacy of breast cancer screening rapidly, and the first results appeared in 1979, 3 years before publication of the results of the Health Insurance Plan study. Three more studies — in Malmö, Sweden (Andersson *et al.,* 1988), Edinburgh, Scotland (Roberts *et al*., 1990) and in two Swedish counties (Tabár *et al.*, 1985) — were initiated 13–14 years after the beginning of the Health Insurance Plan study, and another three studies were initiated in 1980–82, in Canada (Miller *et al*., 1992a,b) and in Stockholm (Frisell *et al*., 1986) and Göteborg, Sweden (Bjurstam *et al*., 1997). Thus, a number of randomized controlled trials, initiated in five different countries over a 20-year period, provide the basis for evidence in the field of mammographic screening.

Mammography was first officially introduced in a population-wide, organized screening programme in Iceland and in several districts in Sweden in 1987. The Netherlands and several regions of Canada followed in 1988, and Finland in 1989. In 1988, the American Cancer Society and the Preventive Services Task Force established policies in favour of screening for breast cancer in the USA (US Preventive Task Force, 1996). In contrast to the policies in other countries, that in the USA emphasized a triple approach, involving breast self-examination, clinical breast examination and mammography. The Europe Against Cancer programme simultaneously initiated a series of pilot screening programmes in several countries in Europe (Commission of the European Communities, 1996) in order to develop expertise in planning and running high-quality population-based screening programmes before their incorporation into national policy. In the early 1990s, national screening programmes were initiated in Australia and the United Kingdom, and these were followed by organized programmes in several states of the USA, in Israel and, later, in France. Germany and Switzerland were among the last western countries to join the international trend, with plans to introduce national screening at the beginning of the twenty-first century.

Experience in large-scale mammographic screening by the mid-1990s, and the availability of data on more recent follow-up from the trials, led to discussion about the value of mammographic screening for women under the age of 50. Even on the basis of the same scientific evidence, few countries have established the same breast cancer screening policy. The policies differ with respect to the target age group to be screened, the frequency of screening, the number of mammographic views to be taken and the screening modalities. In Japan, the policy was based on clinical breast examination until recently, when it was decided to add mammography.

In spite of the vast amount of information available from several randomized trials, some doubt has recently been cast on the value of breast cancer screening in reducing mortality from breast cancer (Gotzsche & Olsen, 2000; Olsen & Gotzsche, 2001). In this volume, the relevant published studies are thoroughly reassessed, together with the newest data, either recently published or in press, according to the procedures and guidelines followed in the Handbooks (see pp. 223)