

The past several years have been eventful for breast imaging. Randomized clinical trials (RCT's) have proven that screening women between the ages of 40-74 years can reduce breast cancer deaths by at least 32%. RCT's compare breast cancer deaths among women offered screening and otherwise comparable control group women not offered screening. Because not all study group women accept the invitation to screening and some control group women obtain screening outside the trials, RTC's underestimate the actual benefits for the average woman undergoing screening. By comparison, service screening studies suggest a 50-60% reduction in breast cancer deaths among screened populations. Current guidelines from medical organizations such as the American Cancer Society, American Medical Association, and American College of Radiology advise annual screening mammography beginning at the age of 40 years.

Because RCT's have found a similar 30% reduction in breast cancer deaths among women ages 40-49 years, organizations such as The National Cancer Institute and the US Preventive Services Task Force, which had previously advised screening mammography beginning at age 50 years, have advanced their recommended starting date for screening to age 40 years. Although the absolute benefit from screening these younger women is slightly less and their false positive biopsy rate is somewhat higher due to their lower breast cancer incidence, comparison of screening benefits to risks is more than sufficient to support periodic screening women in their 40's.

Just when it seemed that the controversies which had shadowed screening mammography for the past 30 years were a thing of the past, an article by 2 Danish investigators, Gotzsche and Olsen, published in the October 2001 issue of the medical Journal Lancet, asserted that 7 of the 9 RCT's had serious flaws in their design and execution which invalidated their positive results. G and O also claimed that the only 2 of the RCT's were well run and that these showed no benefit. The claims made by G and O were immediately refuted by letters to the editor and by subsequent papers in Lancet and several other respected journals. Nevertheless, the claims and counterclaims were widely publicized and at times sensationalized by the news media.

After performing thorough reviews of the G and O paper and 30 years of all previously published data on screening, the National Cancer Institute, the US Preventive Services Task Force, the Swedish and Danish National Boards of Health, the American Cancer Society, the American College of Radiology, and 10 other US medical specialty societies have all issued statements which reaffirm the validity of screening mammography.

The unnecessary debate regarding the efficacy of screening mammography represents a distraction from what should be our current priorities: improved compliance with screening guidelines and increased sensitivity and specificity of the screening process. Several studies have now documented an association

between technical and clinical image quality and detection sensitivity. The ACR Mammography Accreditation Program (MAP) and the FDA administered Mammography Quality Standards Act (MQSA) have resulted in improved image quality on a national level. A large multicenter NCI-funded trial of digital mammography (DMIST) to determine whether digital mammography is more sensitive than conventional mammography is underway under the American College of Radiology Imaging Network (ACRIN). Digital mammography will facilitate the use of computed aided detection (CAD) which has already been shown to result in improved cancer detection rate.

The fact that breast cancer mortality in the US has decreased while the incidence of invasive breast cancer has increased is largely due to the increased use of screening mammography. However, the availability of mammography is now threatened by inadequate reimbursement rates, which have forced some medical facilities to curtail, reduce or eliminate breast-imaging services.

#### Educational objectives

- 1) To appreciate the documented effect of screening mammography on breast cancer mortality.
- 2) To understand the rationale for ACS and ACR screening guidelines.
- 3) To evaluate the issues in the current screening controversy.
- 4) To discuss the effect of technical quality on cancer detection rates.
- 5) To describe the current clinical status of digital mammography and CAD.