Trial Watch

WHAT'S A GIRL TO DO?

The benefits and drawbacks of mammography screening continue to rumble on. In October 2012 an independent review panel published their findings on breast cancer screening in the United Kingdom, and concluded that, despite overdiagnosis, screening using mammography saves lives. However, a recent observational study of 30 years' worth of data gathered in the United States and published in the *New England Journal of Medicine* questioned the usefulness of mammography screening in light of high rates of overdiagnosis.

In the UK review, the panel decided that data from randomized trials provide the best estimate for addressing the benefits and risks of mammography screening, despite the caveats that these are old trials and that the methodology used in some of these trials might have introduced bias. Their meta-analysis of 11 randomized trials led them to conclude that in women invited for screening compared with controls (women not invited for screening) the relative risk reduction of dying from breast cancer was 20% (relative risk 0.80 (95% confidence interval (CI) 0.73–0.89)). Moreover, in terms of absolute benefit the panel calculated that for every 10,000 women invited for screening between the ages of 50 and 70, 43 breast cancer deaths would be prevented. What about overdiagnosis (women whose breast cancers are unlikely to cause their death during their natural life span)? The panel looked at three of the randomized trials because only these trials followed the control group of women for 5 or more years after the trial and did not offer them screening. From the point of view of a woman (aged 50–70 years) invited for screening every 3 years over a 20-year period and diagnosed with breast cancer during this time, the panel estimate that the likelihood of overdiagnosis would be 19%. Overall, the panel concluded that for every breast cancer death prevented by mammography screening, about three women will be overdiagnosed and unnecessarily treated. Although the UK panel also looked at data from observational studies, they decided that such data do not provide a robust approach for estimating overdiagnosis.

The observational study using US data is based on 3 decades of mammography screening in women aged 40 or older. The baseline incidence of cancer was estimated from a 3-year period (1976–1978) when mammography screening was limited, and estimates of the absolute change in the incidence of early-stageand late-stage breast cancer were made on the basis of the baseline incidence. These figures were used to calculate the excess in the number of women with a diagnosis of early-stage cancer detected on mammography screening and the reduction in the number of women diagnosed with late-stage breast cancer. The data from this study indicate that in the past 30 years in the United States, more than 1 million women were overdiagnosed with breast cancer. Over the same period the death rates from breast cancer fell substantially from 71 deaths per 100,000 women to 51 deaths per 100,000 women. The contribution of screening to this drop is not easy to model given that treatment has also improved during this period, and estimates for the contribution of screeningto the reduction in death rates range between 28% and 65%. Based on their data, the authors conclude that the contribution of mammography screening to the reduced death rates is at the lower end of the published estimates, particularly because screening has not resulted in a substantial reduction in the number of women who present with late-stage disease. The authors note the limitations of their study but also state that they think that the randomized controlled trials are now too old to use to extract meaningful data.

However, both studies conclude that as there is currently no way of identifying which women have been overdiagnosed, the advice for women regarding mammography screening needs to make clear the benefits and risks.

ORIGINAL RESEARCH PAPERS Independent UK Panel on Breast Cancer Screening. The benefits and harms of breast cancer screening: an independent review. *Lancet* **380**, 1778–1786 (2012) | Bleyer, A. & Welch, H. G. Effect of three decades of screening mammography on breast-cancer incidence. *N. Engl. J. Med.* **367**, 1998–2005 (2012)