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Editorial

Follow-up in Early Breast Cancer — A Surgical and Radiological Perceptive

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Survivorship after breast cancer and the medical, psychological and informational health needs of these patients have become increasingly recognised [1–4]. From the service provision perspective, improved disease-free survival reduces the burden on health services for the treatment of advanced cancer, but can increase the demands on follow-up clinics and for surveillance mammography. There is also an increased demand for timely assessment of patients who develop symptoms suggestive of local recurrence or new cancers, both of which are curable if diagnosed and treated early [5,6]. With around 50 285 new cases of breast cancer diagnosed annually in the UK [7], it is important to balance surveillance, patient needs and clinical reassurance with limited National Health Service resources.

The Government's 2007 Cancer Reform Strategy [8] and 2009 implementation plan [9] recommend that patients be supported in self-care and have personalised risk-adjusted follow-up to meet their needs. Current national guidance [10] recommends that women treated for breast cancer have annual mammograms for 5 years or to age 50 years, whichever is the longer, and then back to 3 yearly screening. These recommendations follow only observational studies and a consensus statement, but provide no clarity regarding a method or application of risk stratification for detecting long-term breast cancer recurrence.

There is evidence that mammographically detected recurrences are earlier stage and result in better survival than clinically detected ones and that local recurrence may occur many years after treatment [11]. In a health technology assessment funded systematic review of mammographic surveillance after breast cancer, Robertson *et al.* [12] reported that mammography offers a survival benefit; however, due to the limited availability of data and the lack of randomised controlled trials, no conclusions could be drawn about the optimum frequency or duration of mammography after surgery. This report also confirmed that mammographic follow-up varies greatly across the UK and suggested that some patients may require mammograms only every 3 years provided they are monitored and supported in alternative ways. Magnetic resonance imaging (MRI) is the most accurate method of imaging follow-up in women who have had breast cancer, but the high cost and limited availability of breast MRI makes widespread MRI follow-up impractical [12]. Although mammograms are useful for detecting new or recurrent breast cancers, they provide no information on physical or emotional well-being. Recent reviews showed that more than 25% of cancer patients have long-term treatment-related side-effects like wound pain or lymphoedema, which may also affect their ability to recognise and report recurrent disease [4,6,13]. Although the National Institute for Health and Care Excellence (NICE) 2002 Guidance [14] recommended all asymptomatic patients be discharged by 3 years post-surgery, specialists were non-compliant as they 'need to know' about these less favourable long-term outcomes and

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value the feedback patients provide to help them improve future treatment for other patients [14–16]. Specialists may often assess their patients with regard to their 'risk' or need for future support. That assessment will vary across the UK. By 3 years after diagnosis most patients will have completed their curative and reconstructive treatment [15,17].

In trials of alternative follow-up, after 1 year a significant proportion of patients were retained in hospital follow-up by oncologists [18,19]. It is likely that patients requiring mastectomies and chemotherapy may not have completed treatment by 1 year after diagnosis, with over 20% reported to need re-excision [20]. Early discharge to alternative follow-up at 1 year after diagnosis is probably only suitable for low-risk patients who have had conservation surgery with no complications or need for reconstruction.

Generally women reported high satisfaction with alternative follow-up regimens, including radiographer follow-up at the time of surveillance mammogram [21], nurse-led telephone follow-up [22] and patient-led follow-up [23]. These studies did not report any consideration of age in the design or interpretation of the trials or details of how alternative follow-up was presented to the women and whether survival was discussed. It is likely that when survival and well-being are in conflict, such as in making decisions about stressful tests or preventive treatment that has side-effects, patients may make different choices so that some inequalities will not depend on service availability [24]. More research is needed into how well patients understand risk [25] and how much they are prepared to allow their treating doctors to make medical decisions on their behalf, as well as the social differences and circumstances associated with these choices [26].

Addressing emotional and physical concerns are important parts of survivorship that should be incorporated into any follow-up plan regardless of location. Ganz and Hahn [3] recommend a self-held care plan. In the UK, the universal population-based primary care system – the National Health Service – includes general practitioners, practice nurses, district nurses, health visitors and community psychiatric services who often work from the same health centres. Patient-held care plans are successfully used for a variety of chronic conditions as a supplement to conventional medical records and as an aid to communication. Fear of recurrence has been identified as the most prevalent concern in those living beyond cancer [27]. This fear may become unceasing and overwhelming and inhibit people from following their usual daily and social activities [28–30] and from investing financially or emotionally in the future.

Another major issue in follow-up is the management of adjuvant hormone therapy and patient compliance [31]. Seventy-five per cent of women have oestrogen receptor-positive breast cancers for which adjuvant endocrine therapy is appropriate. In a survey of breast cancer specialists in the UK, the management of this therapy was highlighted as the most important aim of follow-up [15]. Compliance is a major issue in this context as women with poor compliance have been shown to have poorer survival [32]. Preventive treatment and the management of chronic disease is typically the premise of general practice rather than the specialist unit at the hospital. In the light of new preventive treatments available, and the need to monitor long-term side-effects, such as osteoporosis, it is likely that the majority of this care should be transferred to general practice.

Compared with younger women, older women are more likely to have breast cancer with oestrogen receptor and progesterone receptor expression, with or without HER2 overexpression [33]. Variation in receptor status expression mainly exists between very young women (<35 years) compared with other age groups. There is less variation between age groups among postmenopausal women. Oestrogen receptor-positive cancers increase from greater than 60% among women aged 30–34 years to 85% among women aged 80–84 years [34]. HER2-positive tumours decrease from 22% among women younger than 40 years old to 10% in women 70 years or older [35]. This confirms a more indolent biological behaviour of breast cancer among older women. Moreover, older age associates with the lowest local recurrence rate after mastectomy [36]. On the basis of these findings, it is possible that follow-up of breast cancer could be less intensive in the older age sub-setting.

In a screening setting, the frequency of mammography should be determined by the lead time achievable. Mammography achieves longer lead times in older women compared with younger women because older women have more indolent tumours and less masking effect from dense breast tissue than younger women [37]; thus allowing less frequent mammography for older women. In addition, young age is a strong predictor for local recurrence after both invasive cancer and ductal carcinoma in situ [38–40]. The type of breast surgery (mastectomy or conservation) does not affect long-term survival, but 3 years after diagnosis second breast cancers are found less frequently by mammograms in patients who had a mastectomy compared with those who had conservation surgery [41]. Early detection of second cancers or metastasis is more likely to occur via patient self-examination between mammograms than by specialist clinic visit. A patient's ability to self-check and report concerns could be improved by alternative follow-up regimens, including questionnaires and/or contact with nurses, general practitioners, radiographers or internet access. Alternative innovative methods of showing that patients are getting the best possible results from new treatments, with the least side-effects, both short and long term, is the goal of National Commissioning groups. For these reasons a study to assess the optimal frequency of follow-up mammography in women over the age of 50 years is warranted; there have been no randomised controlled trials in this setting.

In order to provide sound evidence for future management, Mammo-50 is a multicentre, randomised, controlled, phase III trial of annual mammography versus 2 yearly for conservation surgery patients and 3 yearly for mastectomy patients, for women diagnosed 50 years or older and who are 3 years post-diagnosis undergoing surveillance mammography (Figure 1). This prospective, adequately powered, 5000 patient randomised trial,