Breast Cancer—Thinking Globally

FEW DISEASES HAVE SEEN MORE RAPID SCIENTIFIC PROGRESS OVER THE PAST THREE DECADES than breast cancer. Beginning in the 1980s, screening mammography led to sweeping improvements in early cancer detection. At the same time, endocrine treatment and systemic chemotherapy proved life-saving. The development of drugs that target hormone receptor and HER2/neu oncogene signaling pathways, coupled with biomarker-based subclassification of the disease, have helped make breast cancer therapy a more precise science. Cloning of the BRCA genes provided insight into inherited predisposition and the opportunity for genetic testing. As a result of these advances, breast cancer death rates in the United States dropped by 34% between 1990 and 2014.

That is good news, but not for everyone. Breast cancer is a global disease (see the News feature on p. 1452). It is the world’s most common cancer among women, the most likely reason that a woman will die from cancer, and is becoming an increasingly urgent problem in low- and middle-income countries (LMICs). Of the 19.7 million cases projected to occur in the next decade, 10.6 million will be in LMICs. By 2020, over 1 million cases per year will occur in LMICs alone, where the majority of breast cancer deaths already occur. In LMICs, a large fraction of women with breast cancer are diagnosed with advanced-stage disease and have no access to treatment or basic palliative care. How can we transform existing knowledge about early detection, diagnosis, and treatment into clinical practice in these countries?

Advanced-stage cancers require aggressive, expensive, and resource-intensive treatment protocols that are not minor to the systems that must provide them or to the patients who undergo them. Optimal therapies from wealthy countries cannot be fully implemented in LMICs because of substantial resource constraints. Therefore, a priority in LMICs should be to improve early detection, which has its own set of economic, cultural, and political barriers to implementation. In 2002, the Breast Health Global Initiative (BHGI) was established, bringing together a diverse global group of clinicians, public health scientists, international health experts, health policy-makers, social scientists, and economists to develop evidence-based strategies for breast cancer early detection, diagnosis, and treatment using systematic analyses of resource utilization and projected outcome improvements. The resulting resource-stratified guidelines (RSGs) provide a comprehensive tool set to evaluate capacity for breast health delivery, identify critical missing resources, and define prioritization schemes for increasing capacity. For early detection, networks must be devised connecting tertiary cancer centers with regional hospitals and surrounding clinics where initial patient contact takes place. For treatment, special infrastructure may be needed. Tamoxifen is an affordable, highly effective generic drug for treating estrogen receptor (ER)–positive breast cancer, but the ER testing that is required to determine which cancers have the potential to respond is often unavailable in LMICs. Used effectively, RSGs can provide a platform for policy-makers to prepare for breast cancer’s rising tide.

High-income countries debate the value of early detection through mammography in part because it has led to overtreatment of a subset of patients. This discussion has limited relevance for most LMICs, which lack the infrastructure to make population-based screening mammography a realistic option. The 25-year update of the Canadian National Breast Screening Study was widely publicized for finding no survival benefit for women who underwent screening mammography.* Largely overlooked, however, was the success of the early detection strategies used in the study’s control group, where favorable outcomes were achieved through breast health education combined with annual clinical breast examination. The study’s control group methodology could serve as a model for program development in LMICs for early detection.

Adaptations are necessary to span the gap of inadequate health care capacity. The tragedy of global breast cancer is not that we don’t know what to do—it is that we don’t know how to get it done.

— Benjamin O. Anderson

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* A. B. Miller et al., BMJ 348, g366 (2014).
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