

A Breast Cancer Tracking System

This article briefly describes the development, structure, and accomplishments of the Breast Cancer Tracking System (BCTS) of Kaiser Permanente Northern California (KPNC). The BCTS is a KPNC-wide program to ensure that members who are diagnosed with breast cancer or at increased risk for breast cancer receive consistent, timely, high-quality care. The BCTS was created by the KPNC Breast Care Task Force to provide a safety net for patients whose care is overdue. The tracking program has two arms: 1) follow-up of abnormal biopsy results, and 2) follow-up of abnormal mammography results. Tracked abnormal mammograms are those that recommend biopsy or repeat mammography after three, six, or twelve months. Tracked abnormal biopsy results include invasive breast cancer, ductal carcinoma in situ, and pathology that indicates increased risk for cancer. BCTS also provides all KPNC Radiology Departments with statistical reports designed both for internal quality assurance and to meet state and federal requirements. Since its implementation, BCTS has tracked more than 45,000 patients and has had a positive impact on the frequency and timeliness of needed care. The tracking system is recognized as a risk management tool for our health maintenance organization. Evaluation of the BCTS role in improving breast cancer survival odds is ongoing.

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Introduction

Kaiser Permanente has a strong record of providing high-quality care for patients with breast cancer. During the years 1989-1995, localized breast cancer among members of Kaiser Permanente Northern California (KPNC) was diagnosed at a rate of 65.7%, a rate that exceeded the national benchmark of 62%. During the same period, five-year survival rates for KPNC breast cancer patients was 86.6% compared with the national benchmark of 84.7%.¹

The Breast Cancer Tracking System (BCTS) of KPNC is a case management program designed to ensure that members who are diagnosed with breast cancer, or at increased risk for breast cancer receive consistent, timely, high-quality care. Specifically, the program's goals are 1) to improve the clinical continuity and consistency of breast cancer care throughout KPNC; 2) to reduce delay in diagnosis and treatment; and 3) to serve as a safety net for breast cancer treatment. KPNC serves a population of more than three million members and extends from Fresno to the Oregon border. KPNC members who receive abnormal mammogram and/or breast biopsy results are entered into the BCTS database and are then tracked to ensure they receive the recommended follow-up care. Since the start of the program in September 1995, BCTS has tracked the breast care of more than 45,000 members, thereby prompting intervention as needed when appointments are missed or overdue.

The program was created by the KPNC Breast Care Task Force, chaired by Susan Kutner, MD. Commitment from the KPNC organization, including financial backing and participation by all facilities, was essen-

tial to launching the program. Care algorithms and specific tracking events were developed through a collaborative, multidisciplinary effort, and regional databases were identified to provide the necessary electronic data capture. With expertise in screening and tracking developed by the Perinatal Regional Screening Program, the Genetics Department at the KPNC Oakland Medical Center agreed to serve as home to the program. After extensive preparation, BCTS was launched in September 1995.

This article briefly describes the methods used by BCTS and its impact on delivery of consistent, timely, high-quality breast care for our members.

Methods

BCTS is a system for tracking abnormal mammography results (Figure 1) as well as abnormal results of breast biopsy (Figure 2). Abnormal mammography results include those in any of three final assessment categories: 1) "probably benign" (for which repeat mammogram is recommended), 2) "suspicious" (for which surgical consultation and possible biopsy is recommended), and 3) "highly suggestive of malignancy" (for which biopsy is recommended). The BCTS database is programmed to recognize alert codes for mammogram results that recommend biopsy or follow-up mammography to allow automatic entry into the database. Mammography tracking follows patients for the recommended follow-up appointment in the form of either a repeat mammogram after three, six, or 12 months or surgical consultation and biopsy when indicated. Three types of abnormal biopsy diagnoses are tracked: invasive



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breast cancer, ductal carcinoma in situ (DCIS), and pathology that indicates increased risk, ie, lobular carcinoma in situ (LCIS), atypical ductal hyperplasia, and atypical lobular hyperplasia. As with abnormal mammogram results, the BCTS database is programmed to recognize abnormal biopsy pathology codes to allow automatic entry into the database. The biopsy tracking system follows patients from receipt of abnormal biopsy results through treatment for invasive cancer and DCIS and (for all patients with abnormal biopsy results) through annual breast examinations and mammograms.

The tracking system is staffed by graduate-prepared registered nurses and other professionals, each of whom is responsible for specific facilities within KPNC. Regional databases are queried every two weeks for abnormal mammogram and biopsy results and for follow-up appointments needed for such cases already in the BCTS database. This information is then imported into the BCTS database. Reports are produced to determine patients whose care is overdue. The nurse coordinators evaluate the care of these patients to determine whether any intervention by BCTS is needed. This evaluation includes a review of the patient's appointment history for missed, canceled, and future appointments, and a chart review is then done if needed. The facility is then contacted regarding the delay in care.

A contact person within the facility calls the patient to schedule the needed appointment or provides information to BCTS to explain why the appointment may not be necessary. If the patient is causing the delay, BCTS provides a letter for signature by the practitioner to send to the patient to encourage her to return for care. These letters have been written with the input of Task Force members, the Risk Management Department, and health educators. Letters are also sent to patients who no longer have Health Plan coverage to ensure that they are aware of follow-up recommendations, such as obtaining repeat mammography or annual breast examination.

BCTS further influences patient care by making changes to Preventive Health Prompting (PHP) in the CIPS (Clinical Information Presentation System). PHP notifies practitioners and patients when a preventive health care visit or procedure is due. BCTS changes the PHP for patients whenever a follow-up mammogram has been recommended. When the follow-up mammogram appointment has been kept, the PHP reverts to the routine mammography screening schedule unless further follow-up has been recom-

mended. BCTS also changes the prompting for mammograms and clinical breast examinations to a yearly schedule for patients who have received abnormal biopsy results.

BCTS provides statistical reports to the Radiology Departments and to other departments as requested throughout KPNC. All KPNC facilities receive a report every two weeks that lists the abnormal mammography results obtained in the preceding two weeks. These reports supplement each facility's internal system for tracking

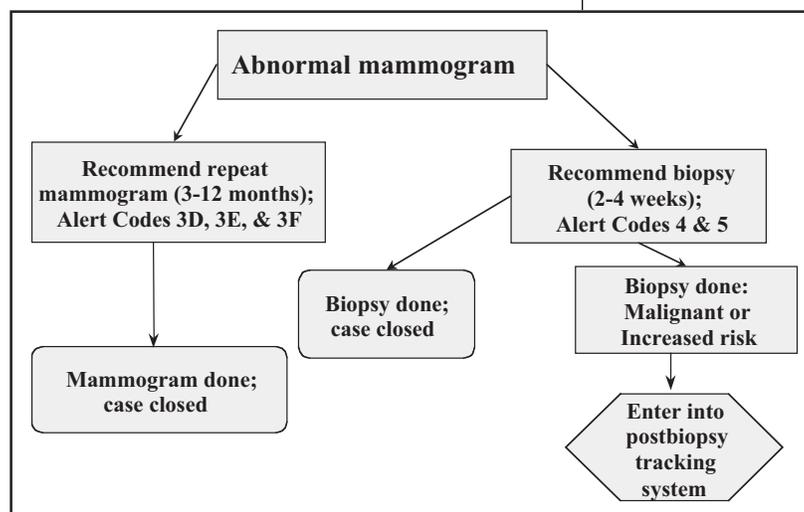


Figure 1. Algorithm shows tracking of abnormal mammogram

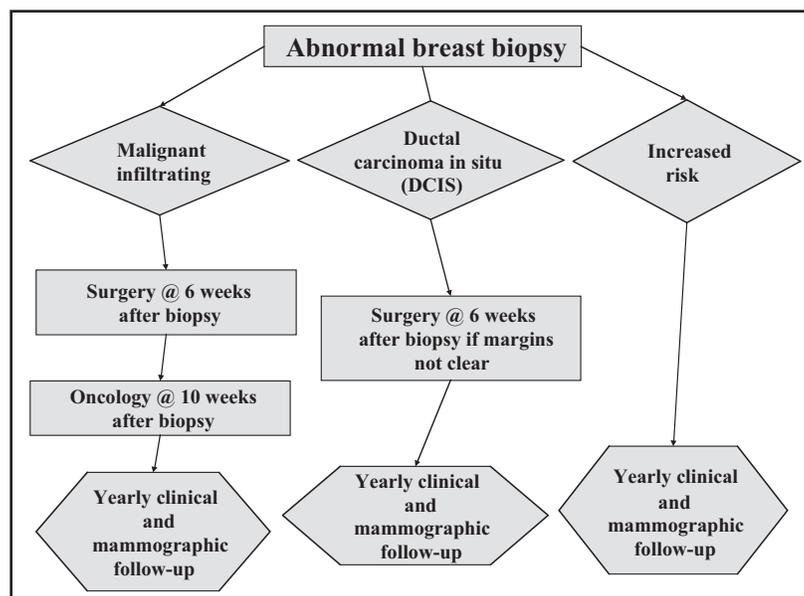


Figure 2. Algorithm shows tracking of both treatment and annual follow-up after abnormal biopsy result

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mammograms indicating the possible need for biopsy and for scheduling follow-up mammograms. Monthly reports compiled by BCTS for each KPNC Radiology Department include a mammogram biopsy correlation report, a false-negative report, and a report of total mammograms administered. These three types of reports satisfy state licensing and Mammography Quality Standards Reauthorization Act (MQSRA) of 1998—requirements mandating that each mammography facility 1) keep a record of the volume of mammograms read by each provider, and 2) maintain a medical outcomes audit system that tracks positive mammograms and correlates pathology results with final assessment categories. An annual radiologist statistics report has recently been introduced that provides outcome data for each radiologist, for the facility, and for KPNC. Definitions for each statistic and a list of desirable goals (as set by the US Department of Health and Human Services (DHHS) Quality Determinants of Mammography)³ are included with each report. This report provides the necessary data for annual review of individual and aggregate radiologist outcomes, which are also required by MQSRA. In addition, the BCTS contribution to achieving standardized mammography reporting has assisted in making the transition to the reporting system required by the MQSRA, which requires that each mammogram include a final assessment and a recommendation to the referring provider.

BCTS also plays a role in provider education. BCTS has worked with the Radiology and Pathology De-

partments to standardize reporting. Another area of provider education has focused on the importance of 1) communicating to patients whose biopsy results indicate atypical hyperplasia or lobular carcinoma in situ (LCIS) that these results are associated with increased breast cancer risk, and 2) recommending annual mammography and breast examinations as follow-up for these patients.

Impact on Care

Figure 3 shows the distribution of types of cases tracked by BCTS. Since the inception of BCTS in 1995, the volume of tracked cases has steadily increased, and the greatest increase has been realized since the addition of tracking abnormal mammography results, in May 1998. Figure 3 shows that the most common condition tracked is an abnormal mammogram requiring repeat mammography. As shown in Figure 3, invasive cancer represents 15% of tracked cases, and increased risk represents 1.6%.

Although biopsy cases showing patients at increased breast cancer risk comprise fewer than 2% of all cases tracked by BCTS, more than 10% of BCTS-prompted interventions for overdue care have been for these cases. The length of time between visits for breast examination and mammography for members at increased risk as shown by biopsy results decreased by 45% from September 1996 to September 1998. Of the 872 such at-risk members in the tracking system, 33 have since had a diagnosis of DCIS or invasive breast cancer. Of these 33 patients, 70% have been diagnosed at Stage 0 or Stage I.

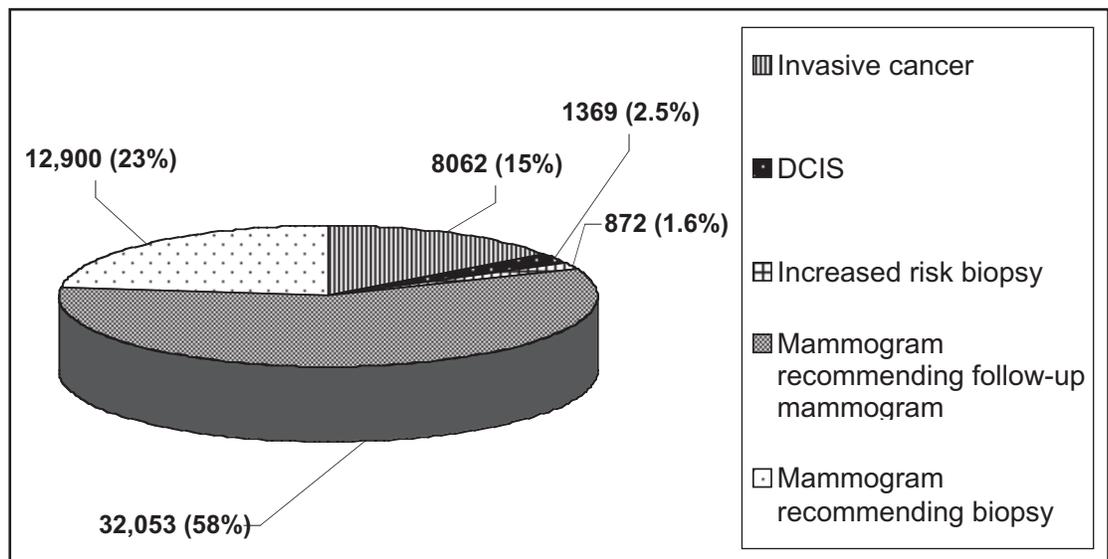


Figure 3. Types of cases tracked by Breast Cancer Tracking System (BCTS)
Does not equal 100% due to rounding



BCTS data indicate that the number of women who have had annual follow-up mammograms after receiving a diagnosis of breast cancer has increased by 4% since the program began. Timely appointments for three- and six-month follow-up mammograms increased by 12% from September 1998 through March 1999. To date, about 3% of patients identified by BCTS as needing intervention for overdue visits were diagnosed with breast cancer at those visits.

Discussion

The KPNC Breast Cancer Tracking System is an example of what an integrated care system can offer to improve the quality of health care. The program's direct, real-time impact on patient care helps improve member satisfaction and the quality of care delivered. In addition, the tracking system promotes consistency of care across the KPNC Region. This regional system also offers an unprecedented collection of data that gives each facility the opportunity to compare its performance with the other facilities in the KPNC Region. System-related issues that affect care can become more apparent through this process of comparison. Facilities are able to use information collaboratively to promote best practices throughout the KPNC Region. BCTS also provides a powerful tool for risk management—and alleged breast cancer mismanagement is the second most frequent basis of medical malpractice claims. The tracking system assures follow-up of all abnormal mammography results and provides comprehensive documentation of efforts to notify patients of overdue visits and procedures.

Tracking system data are also being used to assist research. Recruitment of women for participation in the Study of Tamoxifen and Raloxifene (STAR) Trial (being conducted by the KPNC Division of Research) has been assisted by BCTS identification and tracking of patients whose biopsy results indicate increased breast cancer risk. Staging and grading data collected by BCTS have provided information for use in the Sentinel Node Biopsy Multi-KP Center Trial.

The Breast Care Task Force designed the tracking system to evolve and adapt as future needs arise. Possible considerations for program modification and expansion include tracking patients at genetic

risk, evaluating sentinel node biopsy results, and evaluating new technologies such as stereotactic core biopsy.

Conclusion

BCTS has required a strong commitment at every level of the KPNC organization, from each facility's medical records clerks, department contacts, and health care practitioners to the facility and regional administrators. Results from the first five years of using the tracking system reveal a positive impact on timeliness of follow-up mammograms and frequency of annual screening throughout the KPNC Region.

Evaluation of the role BCTS plays in further improving breast cancer survival odds is ongoing. The authors are not aware of any other breast cancer case management system that has tracked and intervened with a similar volume of patients to assure timely care. As BCTS enters its sixth year, the tracking system will continue its efforts to ensure that KPNC members receive consistent, high-quality breast care throughout the KPNC Region. ❖

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The following BCTS Coordinators reviewed the manuscript: Karen Frey, RN, MS; Kimberly Gabellini, RN, MS; Wanda Gray, RNP, MSN; Jeffrey Hart, MS; Carrie Kakebasbi, RN, MSN; and Robin Kettle, RN, MSN. Judy Derman, RN, MS, Edgar Schoen, MD, and Susan Kutner, MD, also reviewed the manuscript. Sberi Horewitch provided graphics assistance.

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