Improving Breast Cancer Quality of Care with the Use of Patient Navigators

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The continuum of breast cancer care requires multidisciplinary efforts. Patient navigators, who perform outreach, coordination, and education, have been shown to improve some areas of care. However, little research has assessed the impact of navigators on breast cancer treatment in uninsured populations. Our objective is to report on the impact of a patient navigator program on breast cancer quality of care at a public hospital. One hundred consecutive newly diagnosed patients with breast cancer (Stages I to III) were identified (2005 to 2007). Forty-nine patients were treated before the use of navigators and 51 after program implementation. Nine breast cancer quality indicators were used to evaluate quality of care. Overall adherence to the quality indicators improved from 69 to 86 per cent with the use of patient navigators (*P* < 0.01). Only one individual indicator, use of surveillance mammography, improved significantly (52 to 76%, *P* < 0.05). All nine indicators reached 75 per cent or greater adherence rates after implementation of the navigator program compared with only four before implementation. Patient navigators appear to improve breast cancer quality of care in a public hospital. In populations in which cultural, linguistic, and financial barriers are prevalent, navigator programs can be effective in narrowing the observed gaps in the quality of cancer care.

N EARLY 200,000 WOMEN are diagnosed with breast cancer annually.[1] Although survival rates are fairly high, 89 per cent 5-year and 80 per cent 10-year for all stages, over 40,000 will die each year. Standard treatments such as hormone therapy or chemotherapy offer large reductions in recurrences and mortality, yet many patients fail to receive these evidence-based, recommended therapies. Racial/ethnic minorities, low socioeconomic status, and lack of insurance are associated with underuse of such treatments.[2] One way to assess quality of care that patients receive is through the use of quality indicators. Quality indicators are explicit and define specific clinical scenarios when particular treatments are needed and should be provided. They establish the care patients should receive and allow for quantitative assessment of adherence rates. A comprehensive set of breast cancer indicators was developed as part of the American Society of

Clinical Oncology's (ASCO) National Initiative for Cancer Care Quality (NICCQ).[3]

Gaps in the quality of cancer care have been identified and efforts to close them have intensified. One intervention gaining in popularity is the use of patient navigators. Patient navigators remove barriers to care and provide health education and psychosocial support. They function in inpatient, outpatient, and community settings and along the entire continuum of cancer care from prevention to survivorship. Navigators are successful in improving cancer care for at-risk patients such as racial/ethnic minorities and patients with low socioeconomic status, but previous studies targeted mainly preventative care and screening.[4] Navigators increased the use of colorectal cancer screening in low-income and racial/ethnic minority populations,[5, 6] improved follow-up after abnormal screening mammogram in underinsured, minority populations,[7, 8] and improved patient-centered outcomes such as distress levels, satisfaction, and quality of life.[9, 10] The literature on the effectiveness of patient navigator programs is growing, but to date, there are no studies examining the impact of navigators on quality-of-care indicators, which assess the processes of care provided.[4] Our goal was to study the impact of a newly instituted patient navigator

program at a public hospital by applying breast cancer quality indicators.

Methods

Program Implementation

A breast cancer patient navigator program was implemented in August 2006 in a public hospital of Los Angeles County. The navigators are bilingual in English and Spanish, bicultural, and have training in medical interpretation, cultural competency, case management, and patient navigation. They conduct community outreach, patient health education, and patient care coordination. They work one on one with patients from diagnosis to completion of acute treatment. They facilitate access to transportation and financial resources and provide psychosocial support. Navigators assist the medical team by expediting diagnostic studies, improving patient readiness for receipt of care through education, and providing continuity of care.

Patient Selection

All consecutive, newly diagnosed invasive breast cancer cases were identified through a pathology database search from August 15, 2005, through September 15, 2007, including biopsies and surgical specimens. Terms to capture cases included: "breast," "cancer," and "carcinoma." The prenavigator cohort consisted of all patients diagnosed within 1 year before implementation of the navigator program, and the postnavigator cohort was patients diagnosed within the first year of the program. At least 1 year of follow-up was possible for all patients. Patients who transferred their care to other institutions (without undergoing surgery, chemotherapy, or radiotherapy at the public hospital), patients with *in situ* or metastatic disease, and men were excluded.

Quality-of-Care Indicator Selection

The ASCO NICCQ breast cancer quality indicators consist of a comprehensive set of 36 indicators. These indicators assess care in multiple clinical components, including diagnostic testing, pathology reporting, medical record documentation, specialist referral, timeliness of care, receipt of treatment, technical quality of care, and respect for patient preferences. Because some of these clinical components (i.e., pathology reporting, documentation, and technical quality) are less likely to be impacted by patient navigators, we elected to study only those related to access to and receipt of care. Nine indicators were used to evaluate the navigator program, including receipt of hormone treatment (one indicator), chemotherapy (two), radiation therapy (three), referral to specialists (two), and surveillance mammography (one).

Data Collection and Analysis

A retrospective medical record review was conducted to determine adherence to the nine NICCQ indicators. Two physicians completed the abstractions, and the senior researcher reabstracted data when there were discrepancies (e.g., to confirm dates or pathology reports in question). Study approval was obtained from both on-site and off-site Institutional Review Boards. Adherence to individual indicators was determined by taking the number of patients who fulfilled all criteria for adherence (numerator) and dividing by the number of patients who met inclusion criteria for each indicator (denominator). Adherence rates between the prenavigator and postnavigator cohorts were compared using a two-sided test of proportions. We also report the adherence rates for the individual indicators, the overall rate, and the number of indicators achieving 75 per cent or greater.

Results

One hundred consecutive newly diagnosed patients with breast cancer (Stages I to III) were identified (2005 to 2007). Median patient age at diagnosis was 54 years old (range, 30 to 82 years) for the full cohort as compared with the national median of 61 years of age.[1] Fifty-one per cent of the cohort was Hispanic, and 57 per cent of the total breast cancer population treated at this hospital (including *in situ* and metastatic cases) preferred Spanish as their primary language. Nineteen per cent of patients presented with Stage III disease. All patients were uninsured. Demographics of the full cohort reflect a young patient population who is primarily of minority race/ethnicity and presents with more advanced stage disease as compared with national averages.[11] Forty-nine patients were in the prenavigator cohort and 51 were in the postnavigator cohort. There were no statistically significant differences in the age, race/ethnicity, or stage at presentation between the pre- and postnavigator cohorts.

Overall adherence to the nine quality-of-care indicators was 69 per cent in the prenavigator cohort and 86 per cent in the postnavigator cohort ($P < 0.01$) (Table 1). Among the individual indicators, there was significant improvement in receipt of surveillance mammography after curative treatment with the use of navigators (Indicator BR-7-2: 52 to 76%, $P < 0.05$). The use of navigators was associated with a trend toward improvement in the receipt of adjuvant chemotherapy (BR-2B3: 73 to 92%) and receipt of radiotherapy after mastectomy (BR-2C3a: 75 to 100%). In an additional five of the nine indicators, although per cent adherence to the quality indicators was better with the use of patient navigators, the differences were not statistically significant. All nine indicators achieved 75 per cent

TABLE 1.   *Adherence to NICCQ Breast Cancer Quality Indicators Pre- and Postimplementation of Patient Navigators at a Public Hospital*

Quality-of-care Indicator (original NICCQ quality indicator numbering shown)	Prenavigators	Postnavigators	P
BR-2B1: If patient with Stage I to III breast cancer has: 1) ER+ or PR+ and 2) tumor 1 cm or greater or involved axillary lymph nodes, and 3) not taking tamoxifen 6 months before diagnosis, then they should be started on tamoxifen.	81% (22/27)	90% (27/30)	0.36
BR-2B3: If patient with Stage II to III breast cancer is younger than 50 years old and tumor greater than 2 cm or involves lymph nodes, then they should receive chemotherapy with recommended regimen.	73% (8/11)	92% (11/12)	0.23
BR-2B5: If patient with Stage II to III breast cancer is younger than 50 years old and tumor greater than 2 cm or involves lymph nodes, then they should start adjuvant chemotherapy within 8 weeks of the last therapeutic surgery.	73% (8/11)	78% (7/9)	0.80
BR-2C2a: If patient with Stage I to III breast cancer has breast conservation surgery (BCS), then they should receive local radiation therapy.	100% (11/11)	93% (14/15)	0.38
BR-2C2b: If patient with Stage I to III breast cancer has BCS and received radiation and not brachytherapy, then they should receive local radiation 45 to 50.4 Gy to the whole breast.	73% (8/11)	80% (8/10)	0.70
BR-2C3a: If patient with invasive breast cancer undergoes mastectomy and has: 1) positive margins on surgical specimen or 2) tumor greater than 5 cm, or 3) four or more involved lymph nodes, or 4) T4 lesion, then they should receive radiotherapy.	75% (3/4)	100% (11/11)	0.09
BR-4-1: If patient with Stage I to III breast cancer undergoes BCS and did not receive radiation, then they should have a consultation with a radiation oncologist.	50% (4/8)	75% (3/4)	0.41
BR-4-2: If patient with invasive breast cancer: A) undergoes a mastectomy and B) has: 1) positive margins on surgical specimen or 2) tumor greater than 5 cm or 3) four or more involved lymph nodes or 4) T4 lesion, then patient should have a consultation with a radiation oncologist.	86% (6/7)	92% (12/13)	0.64
BR-7-2: If patient has Stage I to III breast cancer and has not had bilateral mastectomies, then they should have a mammogram in the last 12 months.	52% (24/46)	76% (29/38)	0.02
Overall.	69% (94/136)	86% (122/142)	<0.01

NICCQ, National Initiative for Cancer Care Quality; ER, estrogen receptor; PR, progesterone receptor.

or greater adherence rate in the postnavigator cohort as compared with only four indicators in the pre-navigator cohort.

Discussion

Patient navigators introduced in a public hospital appear to improve breast cancer quality of care. Overall adherence to nine selected NICCQ breast cancer quality indicators improved from 69 to 86 per cent, which included hormone treatment, chemotherapy, radiation therapy, referrals, and surveillance mammography. All nine indicators achieved at least 75 per cent adherence in the postnavigator group. Not only were we able to demonstrate an overall effectiveness of the navigator program in improving quality of care, we also showed trends toward improvement in many of the individual treatment areas.

It is notable that these improvements were apparent in a relatively short time span after initiation of the program. These improvements were observed without any training or education directed toward the providers or navigators regarding the specifics of the breast cancer quality indicators. As such, we anticipate these trends to continue with maturation of the navigator program with the ultimate goal of increasing adherence to greater

than 90 per cent. With targeted interventions to educate providers about the quality indicators, the impact of quality improvement and patient navigator efforts may be further magnified.

One limitation of this study is the retrospective study design, which restricts the ability to show causation. However, this design avoided the potential for bias or the Hawthorne effect, because neither the navigators nor breast cancer staff knew these quality indicators would be assessed at the time the clinical care was provided. The strengths include the use of explicit and quantifiable measures of quality, which had not been assessed before.

Upward of 15 per cent of U.S. women with breast cancer do not receive recommended evidence-based and life-saving treatments.[3] Patients with lower socioeconomic status, ethnic/racial minorities, and the under- or uninsured are especially at risk for inadequate or delayed treatment. The breast cancer population at this public hospital is predominantly Hispanic, Spanish-speaking, and uninsured. In a population in which cultural, linguistic, and financial barriers are prevalent, the patient navigator program was effective in improving the quality of and therefore reducing the gaps in breast cancer care. Patient navigator programs are an innovative, flexible, and adaptive solution to overcoming the

fragmentation within the U.S. healthcare system. They have the potential to narrow the gap between medical knowledge and clinical practice, decrease healthcare disparities, and foster more patient-centered care, particularly in vulnerable and underserved populations. The important next steps are to ensure the sustainability of the program in a tight fiscal environment and to monitor quality improvement through a prospective patient registry. In the long-term, we aim to demonstrate that improvement in adherence to these quality indicators leads to improvements in cancer-related patient outcomes (recurrence, disease-specific survival).

Acknowledgments

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