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Impact of Breast Center Accreditation on Compliance with Breast Quality Performance Measures at Commission on Cancer-Accredited Centers

Megan E. Miller, MD[1,2], Richard J. Bleicher, MD[1,3], Cary S. Kaufman, MD[1,4], Scott H. Kurtzman, MD[1,5], Cecilia Chang, BS[1,6], Chi-Hsiung Wang, PhD[1,6], Karen A. Pollitt, BS[1,7], James Connolly, MD[1,8], David P. Winchester, MD[1,9], and Katharine A. Yao, MD, FACS[1,6,10]

[1]The Data Working Group, National Accreditation Program for Breast Centers, American College of Surgeons, Chicago, IL; [2]Department of Surgery, Case Western Reserve University, University Hospitals, Cleveland, OH; [3]Department of Surgery, Fox Chase Cancer Center, Philadelphia, PA; [4]Department of Surgery, Bellingham Regional Breast Center, Bellingham, WA; [5]Department of Surgery, University of Connecticut Health Center, Waterbury, CT; [6]Division of Bioinformatics, Research Institute, NorthShore University HealthSystem, Evanston, IL; [7]Division of Research and Optimal Patient Care, American College of Surgeons, Chicago, IL; [8]Department of Pathology, Beth Israel Deaconess Medical Center, Boston, MA; [9]Cancer Programs, American College of Surgeons, Chicago, IL; [10]Division of Surgical Oncology, Department of Surgery, NorthShore University HealthSystem, Evanston, IL

ABSTRACT

Purpose. This study was designed to determine whether accreditation by the National Accreditation Program for Breast Centers (NAPBC) is associated with improved performance on six breast quality measures pertaining to adjuvant treatment, needle/core biopsy, and breast conservation therapy rates at Commission on Cancer (CoC) centers.

Methods. National Cancer Database 2015 data were retrospectively reviewed to compare patients treated at CoC centers with and without NAPBC accreditation for compliance on six breast cancer quality measures. Mixed effects modeling determined performance on the quality measures adjusting for patient, tumor, and facility factors.

Results. Of 1308 CoC facilities, 484 (37%) were NAPBC-accredited and 111,547 patients (48%) were treated at NAPBC centers. More than 80% of patients treated at both NAPBC and non-NAPBC centers received care in compliance with breast quality measures. NAPBC centers achieved significantly higher performance on four of the five quality measures than non-NAPBC centers at the patient level and on five of six measures at the facility level. For two measures, needle/core biopsy before surgical treatment of breast cancer and breast conservation therapy rate of 50%, NAPBC centers were twice as likely as non-NAPBC centers to perform at the level expected by the CoC (respectively odds ratio [OR] 1.96, 95% confidence interval [CI] 1.85–2.08, $p < 0.0001$; and OR 2.05, 95% CI 1.94–2.15, $p < 0.0001$).

Conclusions. While NAPBC accreditation at CoC centers is associated with higher performance on breast quality measures, the majority of patients at all centers receive guideline-concordant care. Future studies will determine whether higher performance translates into improved oncologic and patient-reported outcomes.

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K. A. Yao, MD, FACS
e-mail: kyao@northshore.org

In 2008, the American College of Surgeons created the National Accreditation Program for Breast Centers (NAPBC) as a quality improvement program specifically for centers caring for patients with disease of the breast.[1] The NAPBC was launched in response to the rapid proliferation of breast centers in the United States that provide a multidisciplinary, team-centered approach to the evaluation and management of benign and malignant breast

TABLE 1 Breast-specific quality measures monitored by non-NAPBC and NAPBC centers

Measure number	Description	Abbreviation	Year of release by the CoC	Compliance level required by the CoC
1	Radiation therapy is administered within 1 year (365 days) of diagnosis for women younger than age 70 years receiving BCS for breast cancer (53,355 patients; 1296 facilities)	BCS RT	2006	90%
2	Combination chemotherapy is considered or administered within 4 months (120 days) of diagnosis for women younger than age 70 years with AJCC T1c, Stage II, or Stage III hormone-receptor-negative breast cancer (5573 patients; 1117 facilities)	CHEMO HR−	2006	NA[a]
3	Tamoxifen or third-generation aromatase inhibitor is considered or administered within 1 year (365 days) of diagnosis for women with AJCC T1c, Stage II, or Stage III hormone-receptor-positive breast cancer (38,801 patients; 1297 facilities)	TAM/AI HR+	2006	90%
4	Radiation therapy is considered or administered within 1 year (365 days) of diagnosis for women undergoing mastectomy for breast cancer with four or more positive lymph nodes (6701 patients; 1174 facilities)	PMRT ≥ 4 NODES	2014	90%
5	Needle/core biopsy is performed before the surgical treatment of cancer (91,500 patients; 1302 facilities)	NEEDLE BX	2014	80%
6	A target rate of 50% of all eligible patients diagnosed with early stage breast cancer (Stage 0, I, II) are treated with BCS (1306 facilities)	BCS 50%	2014	NA[a]

NAPBC National Accreditation Program for Breast Centers; *CoC* commission on cancer; *HR* hormone receptor; *BCS* breast-conserving surgery

[a]The CoC has not implemented an expected performance rate for these two measures[12]

disease.[2] NAPBC accreditation is granted to centers that meet 29 evidence- and consensus-based standards and is maintained via on-site survey every 3 years.[3]

There are currently more than 600 NAPBC-accredited centers in the United States.[4] A study from our group in 2016 reported that more than 90% of NAPBC centers also were accredited by the Commission on Cancer (CoC).[5] All CoC centers are required to submit their cancer data to the National Cancer Data Base (NCDB).[6] Because the vast majority of NAPBC centers are CoC accredited, NCDB data can be used to compare patient, tumor, and facility characteristics of CoC centers with and without NAPBC accreditation and to examine practice patterns, trends in treatment, and compliance with national guidelines between centers.

Since the publication of the Institute of Medicine reports demonstrating the gap in quality care, there has been a renewed focus on providing evidence-based care consistent with established national quality measures.[7,8] Moreover, the Centers for Medicare and Medicaid Services have instituted programs for hospital reimbursement contingent on compliance with certain quality indicators.[9] Accreditation based on standards and quality measures for trauma centers and bariatric surgery programs through the American College of Surgeons (ACS) has been associated with improved outcomes.[10,11] However, no studies have comprehensively examined performance on breast quality measures at CoC centers with and without NAPBC accreditation. A previous study from our group demonstrated that CoC centers with NAPBC accreditation had higher compliance with one breast quality measure: postmastectomy chest wall radiation therapy.[5] There are currently six quality breast cancer measures monitored by both the NAPBC and CoC, three of which have been followed by the CoC since 2006 and three which were adopted in 2014 (Table 1).[12]

The primary goal of this study was to assess whether NAPBC accreditation was associated with improved performance on the six breast-specific quality measures monitored by both the CoC and NAPBC. Second, we analyzed patient, tumor, and facility factors between NAPBC and non-NAPBC centers. We hypothesized that CoC centers with NAPBC accreditation would attain higher performance on all breast quality measures than those without NAPBC accreditation.

METHODS

Dataset

The NCDB was utilized to examine performance with breast quality measures. No patient, provider, or hospital identifiers were examined in this study; therefore, it was deemed exempt by the institutional review board of NorthShore University HealthSystem. The American Cancer Society and the CoC have not verified and are not

responsible for the analytic or statistical methodology employed, nor the conclusions drawn, from these data by the investigator. NAPBC-accredited centers were identified based on a unique site identification code. Four centers with unknown NAPBC accreditation status were excluded. The NCDB Participant User File (PUF) was queried for the year 2015 to include the most recent data on NAPBC accreditation status and performance since three of the quality measures were adopted in 2014.

Patient Cohort

We selected female patients > 18 years old; only patients between 18 and 69 years of age were included in the analysis for the BCS RT and CHEMO HR- measures, because they apply to women younger than age 70 years. All patients received all or part of their care at the reporting facility and did not have a previous cancer diagnosis. Patient inclusion criteria for each measure were created based on the definition of the measure itself (Appendix). Surgical treatment included breast conservation surgery (BCS) or mastectomy as identified by procedure code.[13] The total number of patients and facilities selected for each quality measure and abbreviations for each measure are listed in Table 1.

Patient and Tumor Variables

Patient characteristics included age (< 50, 50–70, > 70), race (Caucasian, Black, Hispanic, Asian Pacific Islander, other), insurance status (not insured, private insurance/managed care, Medicaid, Medicare, other government, unknown), and comorbidities (based on the Deyo Charlson comorbidity index). Tumor characteristics included AJCC 7th edition pathologic stage (0–IV), tumor size (≤ 2 cm, 2.1–5.0 cm, > 5 cm, unknown), grade (1, 2, 3, unknown), hormone receptor (HR) and HER2 status (ER-, PR-, and HER2-positive, negative, unknown), and lymph nodes status (negative, positive, unknown).

Facility Variables

Factors included facility type (academic vs. nonacademic as indicated by the presence of teaching and research programs), volume of breast cancer cases (low 0–100 cases/year, mid-volume 101–250 cases/year, and high > 250 cases/year based on NAPBC criteria), distance traveled to the facility, and the population of the location where care was received (urban–rural continuum). Location was defined by the nine U.S. census regions.[13]

Statistical Analysis

Patient, facility, and tumor characteristics were compared between patients treated at NAPBC centers and non-NAPBC centers using descriptive statistics. Compliance for each measure was analyzed for each patient (patient level analysis) and for each facility (facility level analysis). Because each measure selects patients with specific tumor characteristics or treatments, varying numbers of patients and facilities were analyzed for each measure (Table 1, Appendix). Compliance for the BCS 50% measure was only assessed for each center, because it could not be assessed for each patient based on its definition.

To examine patient level outcomes, compliance was assessed by determining the percentage of patients who received care consistent with each measure. Multilevel mixed effects modeling was used to account for patients nesting within centers and centers nesting within facility type. Performance was compared between NAPBC centers and non-NAPBC centers, adjusting for patient age, race, insurance, comorbidities, tumor size, nodal status, grade, HR and HER2 status, facility distance, facility type, facility location, and urban/rural continuum. For the CHEMO HR− and TAM/AI HR+ measures, HR status was not adjusted for because this variable is included in the selection criteria for these two measures. Nodal status was not adjusted for the PMRT ≥ 4 NODES measure for the same aforementioned reason.

To examine facility level outcome, aggregated patient data from each facility was utilized to compute compliance rate at each center. The compliance rate reflected the proportion of patients treated at each facility receiving care in compliance with each quality measure. We utilized the CoC expected benchmarks of performance for each measure except the BCS 50% measure, which already specifies a benchmark.[12] We performed a similar aforementioned mixed effects model adjusting for age, race, insurance, comorbidities, AJCC stage, facility distance, facility type, facility location, and urban/rural continuum with facility compliance as the primary outcome. For both patient and facility level outcome analyses, missing values were included and adjusted for in logistic regression and mixed effects models, after conducting sensitivity analyses. Statistical analysis was conducted using SAS, version 9.3 (SAS Inc., Cary, NC). All tests were two-sided, and p value ≤ 0.05 was considered statistically significant.

RESULTS

Comparison of NAPBC and Non-NAPBC Centers

Of the 1308 total centers identified, 484 (37%) were NAPBC accredited and 111,547 patients (48%) were treated at NAPBC centers. Clinical characteristics were

TABLE 2 Demographic characteristics of the study cohort of patients treated at non-NAPBC and NAPBC-accredited centers

Variable	Non-NAPBC (N = 122,362) n (%)	NAPBC[a] (N = 111,547) n (%)
Age (year)		
< 50	23,273 (19.0)	21,431 (19.2)
50–70	67,290 (55.0)	62,141 (55.7)
> 70	31,799 (26.0)	27,975 (25.1)
Race		
Caucasian	93,287 (76.2)	85,679 (76.8)
Black	13,945 (11.4)	13,809 (12.4)
Hispanic	7611 (6.2)	5907 (5.3)
API	5027 (4.1)	4412 (4.0)
Other	2492 (2.0)	1740 (1.6)
Insurance status		
None	2402 (2.0)	1411 (1.3)
Private	59,144 (48.3)	57,986 (52.0)
Medicaid	8362 (6.8)	6588 (5.9)
Medicare	48,448 (39.6)	43,081 (38.6)
Other government	1367 (1.1)	1207 (1.1)
Unknown	2639 (2.2)	1274 (1.1)
Comorbidities (score)		
0	101,280 (82.8)	92,963 (83.3)
1	16,387 (13.4)	14,466 (13.0)
2	3386 (2.8)	3002 (2.7)
3	1309 (1.1)	1116 (1.0)
Tumor size (cm)		
≤ 2	72,634 (59.4)	67,521 (60.5)
2.1–5.0	32,974 (27.0)	28,795 (25.8)
> 5	8122 (6.6)	7185 (6.4)
Unknown	8632 (7.1)	8046 (7.2)
Nodal status		
Negative	67,439 (71.7)	61,597 (72.5)
Positive	25,735 (27.4)	22,825 (26.9)
Unknown	884 (0.9)	509 (0.6)
AJCC pathologic stage		
0–II	92,536 (75.6)	86,352 (77.4)
III–IV	8984 (7.3)	7859 (7.1)
Unknown	20,842 (17.0)	17,336 (15.5)
Tumor grade		
1 and 2	74,577 (61.0)	68,377 (61.3)
3	36,244 (29.6)	32,446 (29.1)
Unknown	11,541 (9.4)	10,724 (9.6)
Receptor status (ER, PR, HER2)		
HR−, HER2−	11,067 (9.0)	9953 (8.9)
HR+, HER2−	68,241 (55.8)	62,666 (56.2)
HR+, HER2+	10,390 (8.5)	9310 (8.4)
HR−, HER2+	4591 (3.8)	4092 (3.7)
Unknown[b]	28,073 (22.9)	25,526 (22.9)
Facility location		
New England	7000 (5.7)	7403 (6.6)
Middle Atlantic	18,355 (15.0)	19,180 (17.2)
South Atlantic	23,842 (19.5)	27,210 (24.4)
East North Central	16,703 (13.7)	22,777 (20.4)
East South Central	8402 (6.9)	5730 (5.1)
West North Central	9574 (7.8)	7336 (6.6)
West South Central	12,249 (10.0)	7961 (7.1)
Mountain	5927 (4.8)	5003 (4.5)
Pacific	20,310 (16.6)	8947 (8.0)
Facility distance (miles)		
< 25	99,938 (81.7)	92,089 (82.6)
25–50	12,948 (10.6)	11,730 (10.5)
50–75	3842 (3.1)	3569 (3.2)
> 75	5486 (4.5)	4037 (3.6)
Unknown	148 (0.1)	122 (0.1)
Facility volume		
Low (0–100 cases/year)	26,633 (21.8)	8959 (8.0)
Mid (101–250 cases/year)	45,830 (37.5)	47,117 (42.2)
High (> 250 cases/year)	49,899 (40.8)	55,471 (49.7)
Facility type		
Comprehensive community cancer program	52,177 (42.9)	56,440 (50.6)
Community cancer program	18,375 (15.0)	5093 (4.6)
Academic/research program	35,705 (29.2)	40,219 (36.1)
Other specified types of cancer programs	16,105 (13.2)	9795 (8.8)
Urban/rural continuum		
Metro	102,581 (83.8)	95,889 (86.0)
Urban	15,437 (12.6)	10,626 (9.5)
Rural	1749 (1.4)	1691 (1.5)
Unknown	2595 (2.1)	3341 (3.0)

NAPBC National Accreditation Program for Breast Centers; *AJCC* American joint committee on cancer; *HR* hormone receptor; *ER* estrogen receptor; *PR* progesterone receptor

[a]Differences between NAPBC and non-NAPBC centers were statistically significant for all variables

[b]The majority of unknown values for receptor status were due to missing data for HER2

similar between the two groups, including age, comorbidities, AJCC pathologic stage, tumor size, grade, and HR status (Table 2). Only 8959 (8%) of patients at NAPBC centers were treated at low-volume centers, compared with 26,633 (21.8%) patients at non-NAPBC facilities. A significantly higher proportion of patients were treated at academic facilities in the NAPBC (40,219, 36.1%) versus non-NAPBC cohorts (35,705, 29.2%). There were

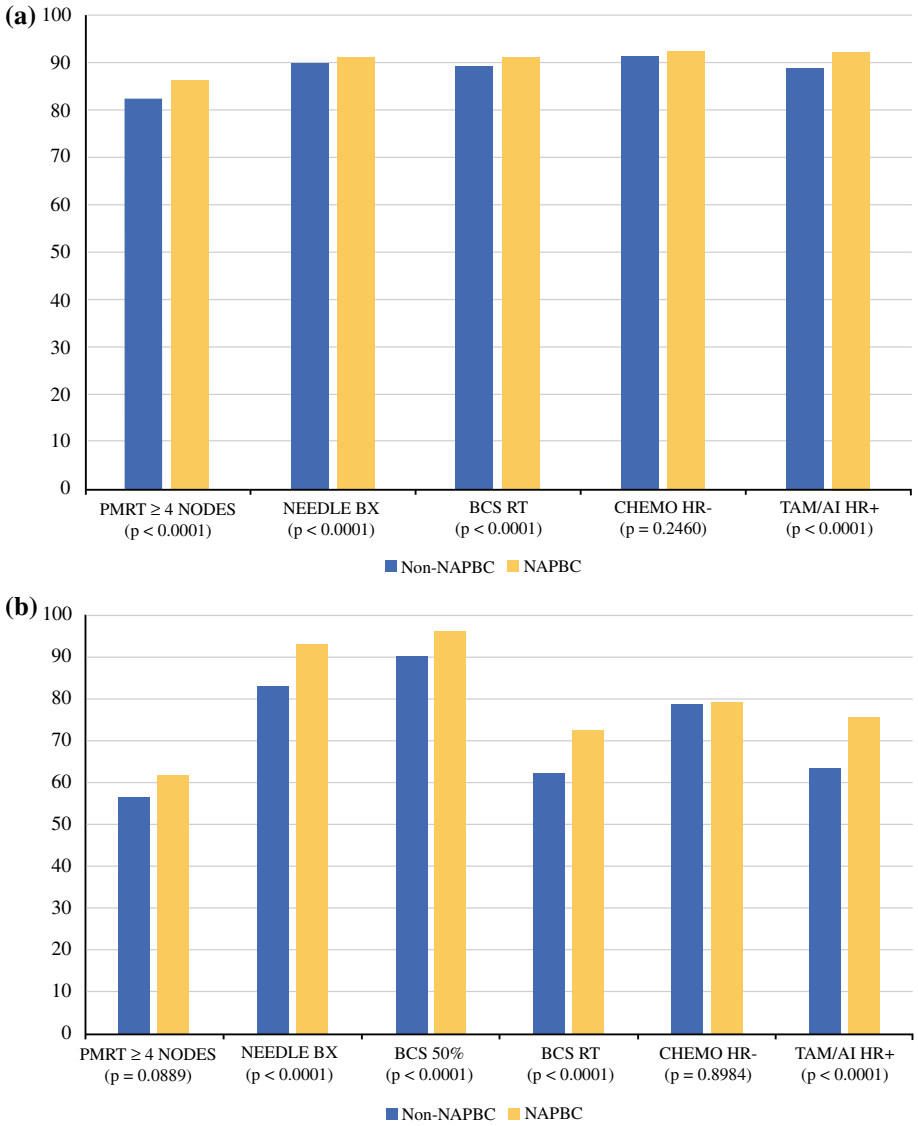

FIG. 1 Compliance with the quality measures between non-NAPBC and NAPBC centers*, **a** the proportion of patients treated in compliance with the quality measures between non-NAPBC and NAPBC centers, **b** the proportion of facilities complying with the quality measures between non-NAPBC and NAPBC centers. * 50% benchmark was used for BCS 50% measure. 80% benchmark was used for NEEDLE BX and CHEMO HR− measures. 90% benchmark was used for BCS RT, PMRT ≥ 4 nodes and TAM/AI HR+ measures. NAPBC = National Accreditation Program for Breast Centers; BCS 50% = target rate of 50% of all eligible patients diagnosed with early stage breast cancer (Stage 0, I, II) are treated with BCS; NEEDLE BX = needle/core biopsy performed prior to surgical treatment of cancer; BCS RT = radiation therapy administered within one year after BCS for breast cancer; PMRT ≥ 4 nodes = post mastectomy radiation therapy considered or administered within one year for four or more positive nodes; CHEMO HR− = combination chemotherapy considered or administered within four months for AJCC T1c, Stage II, or Stage III hormone-receptor-negative breast cancer; TAM/AI HR+ = tamoxifen or third generation aromatase inhibitor considered or administered within one year for AJCC T1c, Stage II, or Stage III hormone-receptor-positive breast cancer

significant differences in facility locations of non-NAPBC versus NAPBC centers.

Comparison of Measure Performance at NAPBC Versus Non-NAPBC Centers: Patient Level Outcomes

The proportion of patients treated in compliance with the quality measures was compared between non-NAPBC and NAPBC centers for each quality measure with the exception of the BCS 50% measure, which is based on a facility benchmark and cannot be used for patient level analysis (Fig. 1a). Performance on all but the CHEMO HR− measure was significantly higher for patients treated at NAPBC facilities than non-NAPBC centers.

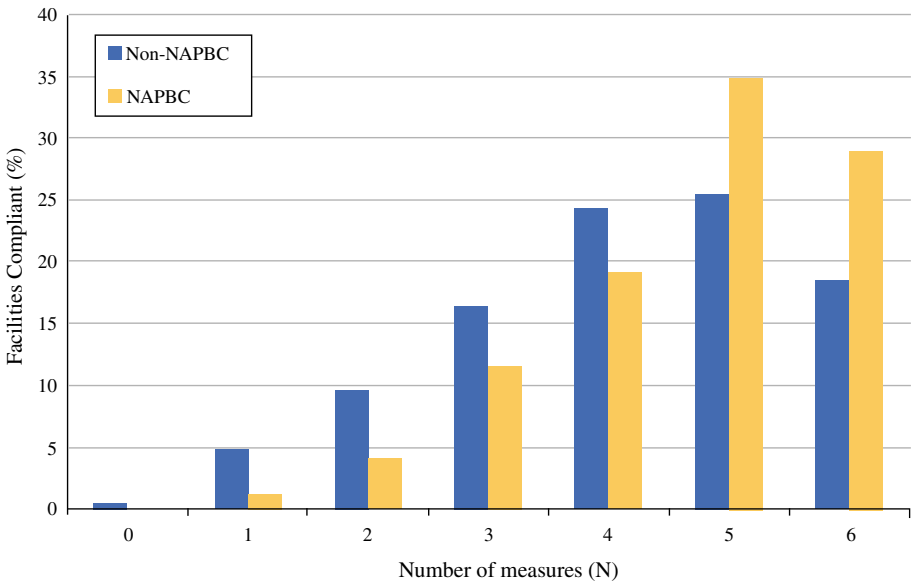

FIG. 2 The proportion of non-NAPBC and NAPBC centers compliant with one to six quality measures, ($p < 0.001$ for all measures). NAPBC = National Accreditation Program for Breast Centers

Comparison of Measure Performance at NAPBC Versus Non-NAPBC Centers: Facility Level Outcomes

The proportion of facilities complying with the quality measures was compared between non-NAPBC and NAPBC centers (Fig. 1b). Expected performance benchmarks for each measure are defined in Table 1. The proportion of NAPBC centers achieving each benchmark was significantly higher at NAPBC than non-NAPBC centers for the BCS RT, TAM/AI HR+, NEEDLE BX, and BCS 50% measures. Performance on the PMRT ≥ 4 NODES measure was also higher at NAPBC centers than non-NAPBC centers and trended towards significance.

Proportion of NAPBC and Non-NAPBC Centers Compliant with One to Six Quality Measures

The proportion of non-NAPBC and NAPBC centers compliant with one to six quality measures is presented in Fig. 2. Twenty-nine percent of NAPBC centers were compliant with all six quality measures compared with 19% of non-NAPBC centers; 35% of NAPBC centers versus 25% of non-NAPBC centers were compliant with five quality measures ($p < 0.0001$).

Adjusted Analysis of Performance Across All Six Quality Measures

Using mixed effects modeling adjusting for patient, tumor, and facility factors, patients treated at NAPBC centers were significantly more likely to receive care in compliance with five of the six quality measures (Fig. 3a). When patient data were aggregated at the facility level, performance was higher at NAPBC centers than non-NAPBC centers for the same five measures (Fig. 3b). For two measures, NEEDLE BX and BCS 50%, NAPBC centers were twice as likely as non-NAPBC centers to perform at the level expected by the CoC (respectively odds ratio [OR] 1.96, 95% confidence interval [CI] 1.85–2.08, $p < 0.0001$; and OR 2.05, 95% CI 1.94–2.15, $p < 0.0001$).

Amongst centers categorized as "academic" facilities, NAPBC centers were significantly more compliant with all six quality measures except the CHEMO HR− measure on adjusted analysis (data not shown). Of note, NAPBC academic centers were six times (OR 6.06, 95% CI 5.31–6.92, $p < 0.001$) more likely to perform BCS at the target rate of 50% than non-NAPBC academic centers.

DISCUSSION

Our study demonstrates that breast specialty-specific accreditation is associated with higher performance on accepted quality measures. This is the first study to show that CoC centers with NAPBC accreditation performed at a higher level than non-NAPBC centers on five of the six breast cancer quality measures despite adjusting for multiple patient, tumor, and facility factors. Additionally, nearly two-thirds of NAPBC centers achieved compliance with five or six breast quality measures compared with 44% of non-NAPBC centers. Although performance on the majority of the breast cancer quality measures is higher at NAPBC centers, this study cannot establish a direct causative relationship between accreditation and improved performance. Other unexamined factors could explain why performance at NAPBC centers is superior to non-NAPBC centers. Self-selection bias could certainly influence our findings, because only centers with the resources and staff

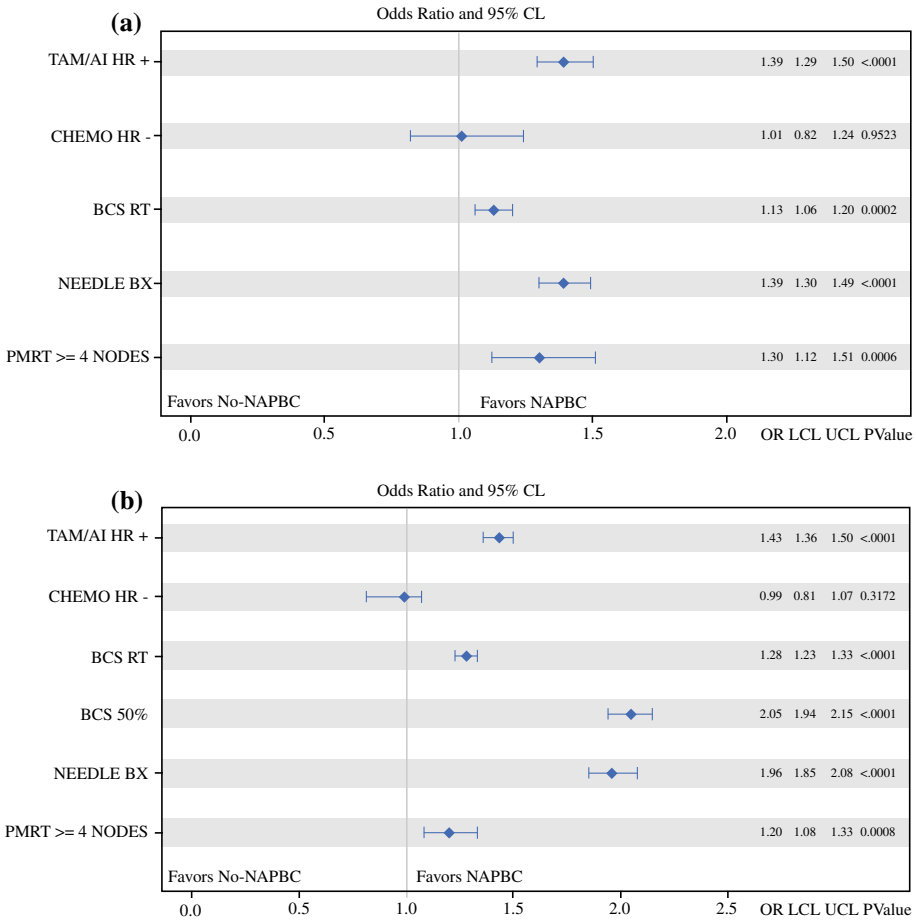

FIG. 3 Likelihood of compliance with breast quality measures at NAPBC centers compared to non-NAPBC centers after adjusting for patient, tumor and facility factors using mixed effects modeling. **a** Patient level analysis*, **b** patient data aggregated at the facility level**. * Adjusted for patient age, race, insurance, co-morbidities, tumor size, nodal status, grade, HR and HER2 status, facility distance, facility type, facility location, and urban/rural continuum. For CHEMO HR− and TAM/AI HR+, HR status was not adjusted for due to selection map inclusion criteria. For PMRT ≥ 4 NODES, nodal status was not adjusted for due to selection map inclusion criteria. ** Adjusted for age, race, insurance, co-morbidities, AJCC stage, facility distance, facility type, facility location, and urban/rural continuum. NAPBC = National Accreditation Program for Breast Centers; BCS 50% = target rate of 50% of all eligible patients diagnosed with early-stage breast cancer (Stage 0, I, II) are treated with BCS; NEEDLE BX = needle/core biopsy performed prior to surgical treatment of cancer; BCS RT = radiation therapy administered within one year after BCS for breast cancer; PMRT ≥ 4 nodes = post mastectomy radiation therapy considered or administered within one year for four or more positive nodes; CHEMO HR- = combination chemotherapy considered or administered within four months for AJCC T1c, Stage II, or Stage III hormone-receptor-negative breast cancer; TAM/AI HR+ = tamoxifen or third generation aromatase inhibitor considered or administered within one year for AJCC T1c, Stage II, or Stage III hormone-receptor-positive breast cancer

to achieve NAPBC accreditation apply for accreditation. Our results also may reflect the phenomenon where measuring a behavior increases the likelihood of that behavior, as accreditation requires tracking patterns of care.[14]

Differential performance on specific quality measures merits mention. In particular, NAPBC centers were twice as likely as non-NAPBC centers to perform a needle biopsy before the surgical treatment of breast cancer and to achieve a target rate of 50% BCS for patients with early stage breast cancer. Higher performance on the NEEDLE BX measure may reflect greater access to multidisciplinary resources at NAPBC centers, such as core biopsy performed by radiologists. Greater compliance with the BCS 50% measure at NAPBC centers could be due to emphasis on patient education regarding oncologic outcomes or greater availability of radiation oncology services, which also may explain the improved performance attained on the BCS RT and PMRT ≥ 4 NODES measures at NAPBC compared with non-NAPBC centers. In contrast, similar performance at both types of centers on the CHEMO HR- measure may reflect consistent access to medical oncology and broad awareness of the importance of combination chemotherapy for hormone receptor negative patients across centers.

Our study could not examine the effect of accreditation on survival outcomes due to the limited duration of follow-up. In Scotland, regional breast cancer mortality significantly decreased after the introduction of a multidisciplinary care program, while in Taiwan, compliance with ten quality indicators was significantly associated with both improved overall survival and progression-free survival.[15, 16] The CoC published data from the NCDB demonstrating survival for stage III breast cancer varied by hospital type, with best survival at NCI comprehensive cancer centers, followed by academic cancer centers, then comprehensive community cancer centers (> 500 cancer cases/year), with lowest survival at community cancer centers treating < 500 cancer cases/year.[17] Because the NAPBC program is relatively new, longer follow-up is needed to assess the impact of accreditation on survival.

Accreditation of surgical quality programs managed through the American College of Surgeons has shown an impact on other outcomes. Studies on participation in the Metabolic and Bariatric Surgery Accreditation and Quality Program show favorable outcomes on morbidity, mortality, length of stay, failure to rescue, and cost at accredited versus non-accredited centers.[11] A recent study examining trauma patients demonstrated fewer complications in all age groups with major trauma at ACS-accredited centers compared with non-ACS centers.[10] In fact, the success of such accreditation programs has led the ACS to develop and implement additional quality improvement and accreditation processes in pediatric surgery and rectal cancer, with plans to launch a geriatric surgery quality improvement program in 2019.[18]

It is important to point out that despite the difference in performance between NAPBC and non-NAPBC centers, the majority of patients received guideline-concordant care regardless of NAPBC accreditation status. Close to 90% of patients at non-NAPBC centers were treated with guideline-concordant care for the majority of the measures, consistent with compliance rates in CoC Cancer Quality Improvement (CQIP) Reports.[19] Although the differences between NAPBC and non-NAPBC centers are statistically significant, the clinical likelihood of receiving noncompliant care at non-NAPBC centers remains very low. Despite lower performance on some measures at the facility level for non-NAPBC centers than NAPBC centers, compliance was largely measured at a 90% benchmark. Because all patients in this study were treated at CoC centers and CoC centers are responsible for more than 70% of all cancer patients in the United States, our findings demonstrate the overall high level of care delivered to breast cancer patients nationwide.[6] The early adoption of the breast quality measures by the CoC and subsequent focus on education regarding their importance likely explains their successful widespread implementation and the greater overall compliance with measures adopted in earlier years. Furthermore, noncompliant centers improve with each site visit to achieve compliance with all care standards, which can further explain high performance rates for centers with longstanding accreditation.

Several limitations of our study exist. We were unable to adjust for the potential effect of duration of NAPBC accreditation on performance because the NCDB does not include accreditation date. Lack of recurrence information in the NCDB inhibited our ability to examine disease-free survival. We did not examine the effect of accreditation on patient-reported outcomes, such as quality of life, satisfaction, or anxiety, because the NCDB does not contain these variables.

CONCLUSIONS

CoC centers with NAPBC accreditation achieved greater performance on five of the six CoC- and NAPBC-endorsed breast cancer quality measures compared with CoC centers without NAPBC accreditation. Our study confirms that participation in accreditation programs is associated with high quality care and that most patients receive care compliant with the breast quality measures. Future studies are needed to demonstrate the effect of accreditation on oncologic and patient-reported outcomes.

DISCLOSURES The authors have no conflicts of interest to disclose.

APPENDIX: SELECTION MAPS FOR SIX BREAST QUALITY MEASURES

Overall

1. Select year of diagnosis 2015
2. Select for female patients
3. Select for age > 18 years old
4. Select patients without previous cancers
5. Select all of part of treatments performed at the reporting facility

BCS RT

Radiation therapy is administered within one year (365 days) of diagnosis for women under age 70 receiving BCS for breast cancer.

1. Select for age < 70 years old
2. Select for stageable histology
3. Select invasive tumors
4. Remove pathologic evidence of in situ or metastatic disease

5. Select breast conserving surgery patients
6. Remove patients with unknown radiation therapy status and timing

CHEMO HR-

Combination chemotherapy is considered or administered within four months (120 days) of diagnosis for women under age 70 with AJCC T1c, Stage II, or Stage III hormone-receptor-negative breast cancer.

1. Select for age < 70 years old
2. Select for stageable epithelial tumor
3. Select invasive tumors
4. Remove pathologic evidence of in situ or metastatic disease
5. Select surgically treated
6. Select for AJCC pathological stage T1cN0M0 or IB-III
7. Select for hormone receptor negative
8. Remove patients with unknown chemotherapy status and timing

TAM/AI HR+

Tamoxifen or third generation aromatase inhibitor is considered or administered within one year (365 days) of diagnosis for women with AJCC T1c, Stage II, or Stage III hormone-receptor-positive breast cancer.

1. Select for stageable histology
2. Select invasive tumors
3. Remove pathologic evidence of in situ or metastatic disease
4. Select surgically treated
5. Select for AJCC pathological stage T1cN0M0 or IB-III
6. Select for hormone receptor positive
7. Remove patients with unknown hormone therapy status and timing

PMRT ≥4 NODES

Radiation therapy is considered or administered within one year (365 days) of diagnosis for women undergoing mastectomy for breast cancer with four or more positive lymph nodes.

1. Select for stageable histology
2. Select invasive tumors
3. Remove pathologic evidence of metastatic disease
4. Select mastectomy patients
5. Remove unknown positive regional lymph nodes status
6. Select for patients with 4 or more positive regional lymph nodes
7. Remove patients with unknown radiation therapy status and timing

NEEDLE BX

Needle/core biopsy is performed prior to the surgical treatment of cancer.

1. Select Phyllodes tumors
2. Select in situ and invasive tumors
3. Remove pathologic evidence of metastatic disease
4. Select biopsy to the primary site

BCS 50%

A target rate of 50 percent of all eligible patients diagnosed with early stage breast cancer (Stage 0, I, II) are treated with breast cncserving surgery BCS.

1. Select for stageable histology
2. Select in situ and invasive tumors
3. Select for AJCC clinical stage 0, I, or II
4. Select surgically treated mastectomy and BCS cases

BCS = breast conserving surgery

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