

Breast Cancer Navigation: Lean Improvements to Timeliness of Care, Resource Use, and Care Coordination in an Ambulatory Setting

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Background & Objective

Challenge: Cancer care is insufficiently patient-centered, accessible, and coordinated*

Solution: Nurse navigators may help facilitate patient care while coordinating services between primary care and cancer specialties

Research goal: *We evaluated a breast cancer navigation (BCN) program designed using Lean methods for quality improvement*

*National Cancer Policy Forum. (2013). Delivering affordable cancer care in the 21st century: workshop summary. National Academies Press (US).

Population Studied

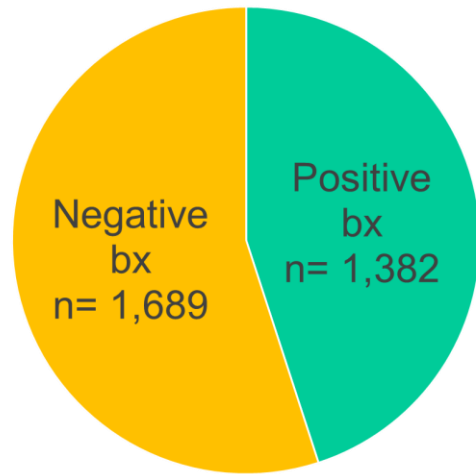


Figure 1. Results of Breast Biopsies (n= 3,071)

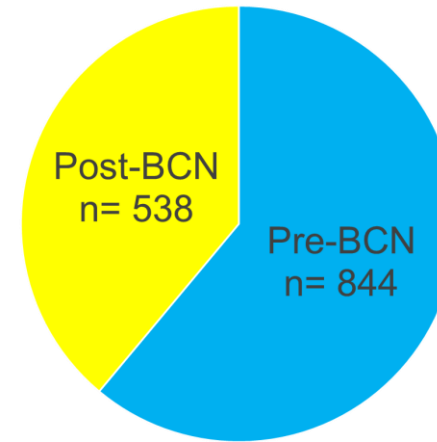


Figure 2. Number of Breast Cancer Patients Before or After BCN Program Implementation (n= 1,382)

- We identified 3,071 women who underwent breast biopsies from July 2015 to July 2019 using CPT codes 19081-19086 in the EHR
- A breast cancer navigator (BCN) program was implemented in one pilot site, then scaled to additional regions of an ambulatory care system

Methods

- Study outcome measures included
 - (1) timely disclosure of biopsy results
 - (2) initial consult with oncologist or breast surgeon
 - (3) outpatient use of specialists
 - (4) coordination between primary care and oncology
- We examined differences before and after breast cancer navigator (BCN) implementation using independent sample t-tests and chi-square tests

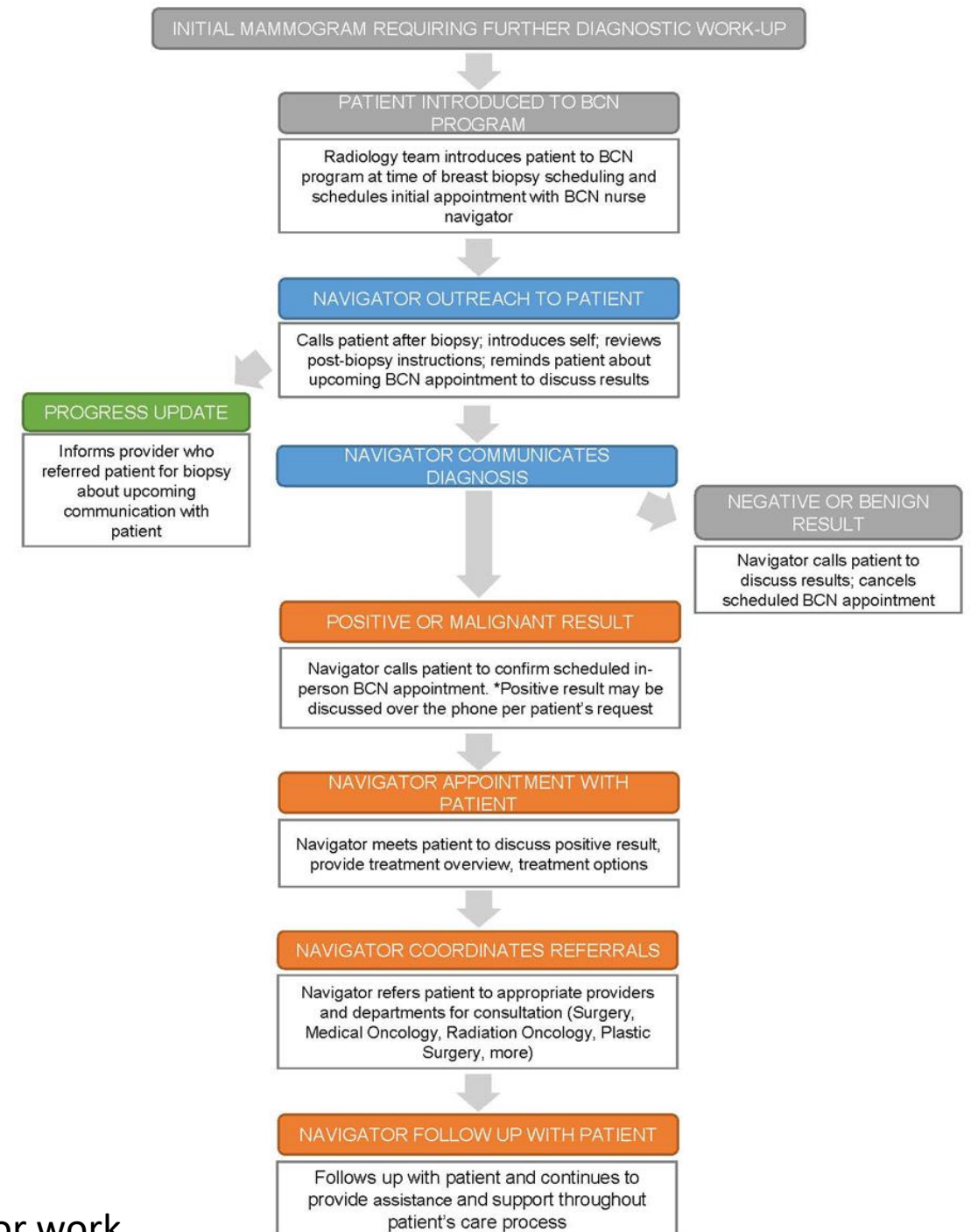


Figure 3. Workflow for breast cancer navigator work

Results

- The sample of women who received a breast biopsy are
 - (1) largely insured patients who were primarily English speakers
 - (2) less African American
 - (3) more Asian American
 Reflects the health system's patient population

CCI: a weighted index to predict risk of death within 1 year of hospitalization for patients with specific comorbid conditions. Higher mean scores indicating higher risk of death.

Table 1. Description of Study Sample Characteristics (N=3,058)

	Positive Biopsy			Negative Biopsy		
	Pre-BCN n=843	Post-BCN n=536	p-value	Pre-BCN n=1,229	Post-BCN n=450	p-value
	N (%)	N (%)		N (%)	N (%)	
Patient Age			0.2			0.003
Mean ± STD	58.1 ± 12.8	59.0 ± 13.0		48.2 ± 11.9	50.1 ± 11.3	
Race/Ethnicity			0.22			0.96
White	398 (47.2)	291 (54.3)		408 (33.2)	154 (34.2)	
Black	20 (2.4)	11 (2.1)		21 (1.7)	10 (2.2)	
Hispanic	43 (5.1)	26 (4.9)		116 (9.4)	39 (8.7)	
Asian	279 (33.1)	149 (27.8)		481 (39.1)	174 (38.7)	
Other	17 (2.0)	11 (2.1)		39 (3.2)	16 (3.6)	
Unknown	86 (10.2)	48 (9.0)		164 (13.3)	57 (12.7)	
Marital Status			0.001			0.28
Married	528 (62.6)	393 (73.3)		804 (65.4)	288 (64.0)	
Divorced	52 (6.2)	28 (5.2)		31 (2.5)	18 (4.0)	
Single	117 (13.9)	55 (10.3)		169 (13.8)	72 (16.0)	
Other	73 (8.7)	33 (6.2)		43 (3.5)	16 (3.6)	
Unknown	73 (8.7)	27 (5.0)		182 (14.8)	56 (12.4)	
Language Spoken			0.28			0.28
English	782 (92.8)	506 (94.0)		1,070 (87.1)	406 (90.2)	
Spanish	4 (0.5)	4 (0.7)		24 (2.0)	6 (1.3)	
Other	54 (6.4)	24 (4.5)		129 (10.5)	35 (7.8)	
Missing	3 (0.4)	4 (0.7)		6 (0.5)	3 (0.7)	
Charlson Comorbidity Index (CCI)						
Mean ± STD	1.42 ± 1.82	1.97 ± 1.87	0.001	0.30 ± 0.80	0.32 ± 0.87	0.97
0	372 (44.1)	141 (26.3)		992 (80.7)	360 (80.0)	
1	82 (9.7)	30 (5.6)		165 (13.4)	61 (13.6)	
2	260 (30.8)	254 (47.4)		49 (4.0)	20 (4.4)	
3	66 (7.8)	54 (10.1)		10 (0.8)	3 (0.7)	
4+	63 (7.5)	57 (10.6)		13 (1.1)	6 (1.3)	

Results (continued)

- Nurse navigators delivered more timely biopsy results to patients

Negative results: **2.4 vs. 5.6 days** ; $p < 0.0001$

Positive results: **3.4 vs. 4.7 days**; $p < 0.0001$

**Note: Pre-BCN + results often via phone;
Post-BCN + results via in-person visit*

- Women with breast cancer were more likely to complete an initial consult <2 weeks of biopsy

(86.7% to 89.2%, $p < 0.05$)

Table 2. Timeliness of Care: a) Communication of biopsy results, and b) Completion of initial consult

a) All Breast Cancer Biopsies (N=3,058)					
Result Disclosure	Patient Cohort	Total N	Mean Days \pm STD	Mean Difference \pm STD	P value
Positive	Pre-BCN	843	4.7 \pm 4.6	-1.3 \pm 3.8	<0.0001
	Post-BCN	536	3.4 \pm 1.9		
Negative	Pre-BCN	1,229	5.6 \pm 5.7	-3.1 \pm 4.9	<0.0001
	Post-BCN	450	2.4 \pm 1.5		
b) Breast Cancer Patients (N=1,379)					
Initial Consult	Patient Cohort	N	% Patients		P value
<2 weeks	Pre-BCN (n=844)	731	86.7%	-	0.04
	Post-BCN (n=538)	478	89.2%		
<1 month	Pre-BCN, (n=844)	789	93.6%	-	0.22
	Post-BCN, (n=538)	517	96.5%		

Notes: Mean days include all days, including weekends and holidays before the first consult with oncologist or breast surgeon

Results (continued)

- Women with breast cancer made fewer office visits to surgeons (3.4 to 3.1 visits, $p < 0.01$)

Table 3. Use of Cancer Specialists as an Outpatient Resource

Breast Cancer Patients (N=1,379)				
Breast Cancer Surgeon				
Office Visits	Patient Cohort	N (%)	Mean Visits ± STD	P value
<7 weeks	Pre-BCN (n=844)	783 (92.9)	2.5 ± 1.4	0.01
	Post-BCN (n=538)	514 (95.9)	2.3 ± 1.1	
<3 months	Pre-BCN (n=844)	786 (93.2)	3.4 ± 2.0	0.007
	Post-BCN (n=538)	515 (96.1)	3.1 ± 1.6	
Oncologist				
Office Visits	Patient Cohort	N (%)	Mean Visits ± STD	P value
<7 weeks	Pre-BCN (n=844)	653 (77.5)	1.6 ± 0.7	0.54
	Post-BCN (n=538)	477 (88.9)	1.5 ± 0.6	
<3 months	Pre-BCN (n=844)	727 (86.2)	2.4 ± 1.3	0.37
	Post-BC (n=538)	489 (91.2)	2.4 ± 1.1	

Results (continued)

- Primary care referrals to cancer specialists increased (91.1% to 98.7%) <1 month of biopsy, while primary care encounters with cancer patients decreased (94.8% to 80.4%, $p < 0.05$)
- At the same time, interaction with nurse navigators was high with 93.1% of patients meeting with the navigator, averaging 3.1 encounters <1 month of biopsy

* $p < 0.05$ Chi-square test, † $p < 0.05$ T-test

Table 4. Primary Care-Oncology Coordination and Transitions of Care

Breast Cancer Patients (N=1,379)			
<1 month after biopsy			
	Patient Cohort	N (% patients)	Mean Encounters ± STD
Referral to cancer specialist	Pre-BCN (n=843)	768 (91.1)	-
	Post-BCN (n=536)	529 (98.7)*	-
PCP encounters with newly diagnosed patients	Pre-BCN (n=843)	799 (94.8)	3.4 ± 2.6
	Post-BCN (n=536)	432 (80.4)*	2.4 ± 2.4†
BCN encounters with newly diagnosed patients	Post-BCN (n=536)	501 (93.1)	3.1 ± 2.2
<3 months after biopsy			
	Patient Cohort	N (% patients)	Mean Encounters ± STD
Referral to cancer specialist	Pre-BCN (n=844)	799 (94.8)	-
	Post-BCN (n=536)	532 (99.3)*	-
PCP encounters with newly diagnosed patients	Pre-BCN (n=843)	819 (97.2)	5.2 ± 4.2
	Post-BCN (n=536)	477 (88.6)*	3.9 ± 4.2†
BCN encounters with newly diagnosed patients	Post-BCN (n=536)	511 (95.3)	4.4 ± 3.6
<6 months after biopsy			
	Patient Cohort	N (% patients)	Mean Encounters ± STD
Referral to cancer specialist	Pre-BCN (n=843)	803 (95.3)	-
	Post-BCN (n=536)	532 (99.3)*	-
PCP encounters with newly diagnosed patients	Pre-BCN (n=843)	824 (97.7)	7.3 ± 6.1
	Post-BCN (n=536)	500 (93.3)*	5.6 ± 6.2†
BCN encounters with newly diagnosed patients	Post-BCN (n=536)	512 (95.5)	4.8 ± 4.2

Discussion

- Minimized wait times for test results can help mitigate patient anxiety
- Significant increase in patient completion of a first consult
- Breast cancer nurse navigators may help reduce PCP workloads
- High satisfaction with this navigation program among physicians*

*Dillon, E. C., Kim, P., Li, M., Huang, Q., Colocci, N., Cantril, C., & Hung, D. Y. (2021). Breast Cancer Navigation: Using Physician and Patient Surveys to Explore Nurse Navigator Program Experiences. *Clinical journal of oncology nursing*, 25(5), 579-586.

Limitations

- The lack of a comparison group
- Patients reflecting local but not general populations
- This study was conducted before the COVID-19 pandemic when telehealth was not a common mode for delivering cancer care

Conclusion

- Nurse navigators can improve patient experience and care outcome
- This study contributes to value-based measures in cancer care, including
 - 1) timeliness of patient communication and initiation of care
 - 2) resource use in the form of office visits with breast cancer surgeons
 - 3) appropriate coordination between primary care and cancer care specialists
- Interprofessional team members (i.e., oncology nurse navigator) can create value for both breast cancer patients and their physicians

Practice Implications

- The breast cancer navigator (BCN) can play a critical role in communicating with patients and facilitating access to care
- The BCN can also facilitate appropriate use of oncologists while transitioning cancer-related workloads away from PCP
- This study supports the use of interprofessional team members such as the BCN

Acknowledgement

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