Limited awareness of Inflammatory Breast Cancer (IBC) among primary care providers

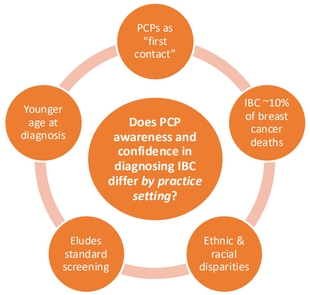
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Background and Objective

- **Inflammatory breast cancer (IBC)** is a **rare** and **aggressive** breast cancer.[1] While it comprises of only around 1-5% of breast cancer diagnoses, it is responsible for up to 10% of all breast cancer mortality globally.[2]
- It is more likely to affect **younger patients**, and **Black and Hispanic patients** have disproportionately worse outcomes than White patients.[3-6]
- IBC may present in the absence of a solid mass, which is not easily detected by self-breast exams or mammograms, leading to delays in diagnosis and treatment.[7]
- Recently, there has been a major practice milestone: IBC will finally have its **own diagnostic billing code October 1st, 2025**. [8] However, a code cannot change outcomes alone. **Education is needed**.
- Primary care providers (PCPs) are generally the **first point of contact for patients**, making their ability to recognize IBC critical.



Objective

Given known urban-rural disparities of health care access and outcomes for various conditions, this study examined whether PCP awareness and confidence in diagnosing IBC differ by practice setting in North Carolina (NC).

Understanding whether there is a difference at the practice setting level can illuminate potential areas of improvement and opportunities for intervention for more equitable diagnosis and management of IBC.

Methods and Results

Participant eligibility criteria

- Self-reported English proficiency
- Rural & urban PCPs (included MD/DO, PA, NP, CNM)
- Recruited through institutional online patient portals in North Carolina

Survey items

- Demographic items e.g., race, age, practice setting
- Confidence scale (Likert scale of 1-7) questions assessing IBC awareness, confidence levels, and recognition of 18 IBC-specific knowledge items (9 symptoms, 7 risk factors)
- Follow-up items regarding what modality PCPs would like for continuing education around IBC

Analysis

Quantitative data was analyzed using descriptive statistics and bivariate comparisons to identify similarities and differences between rural and urban PCP responses.

Characteristic	Category	Urban PCP, n (%)	Rural PCP, n (%)
Gender	Female	62 (79.5%)	21 (70.0%)
	Male	14 (17.9%)	7 (23.3%)
	Prefer not to answer	2 (2.6%)	2 (6.7%)
Role	Physician (MD, DO)	49 (62.8%)	12 (40.0%)
	Nurse Practitioner/Certified Nurse Midwife	7 (9.0%)	10 (33.3%)
	Physician Assistant	21 (26.9 %)	2 (6.7%)
	Other	1 (1.3%)	6 (20.0%)
Race	White	67.9 (53%)	20 (66.7%)
	Black or African American	10 (12.8%)	4 (13.3%)
	Asian	5 (6.4%)	3 (10.0%)
	Native Hawaiian / Pacific Islander	1 (1.3%)	1 (3.3%)
	Other	1 (1.3%)	1 (3.3%)
	Prefer not to answer	6 (7.7%)	3 (10.0%)
Years in Practice	< 5 years	5 (17.2%)	8 (33.3%)
	5–9 years	5 (17.2%)	9 (37.5%)
	10–14 years	6 (20.7%)	4 (16.7%)
	15–19 years	5 (17.2%)	1 (4.2%)
	20 or more years	8 (27.6%)	2 (8.3%)
Primary Specialty	Family Medicine	36 (46.2%)	25 (83.3%)
	Internal Medicine	37 (47.4%)	1 (3.3%)
	Obstetrics/Gynecology	2 (2.6%)	1 (3.3%)
	Other	3 (3.8%)	3 (10.1%)
Main Practice Setting	Group practice	18 (23.1%)	9 (30.0%)
	Academic medical center	51 (65.4%)	7 (23.3%)
	Individual practice	4 (5.1%)	7 (23.3%)
	Employer-based clinic	6 (7.7%)	6 (20.0%)
	FQHC or FQHC-like setting	4 (5.1%)	1 (3.3%)
	Other	2 (2.6%)	2 (6.7%)

Table 1. Rural (N = 30) and urban PCP (N = 78) participants' demographics.



Figure 1. Map showing rural and urban PCP participants' practice sites across North Carolina.

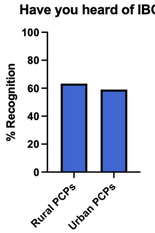


Figure 2. PCP responses to whether they had heard of inflammatory breast cancer (IBC) prior to the survey.

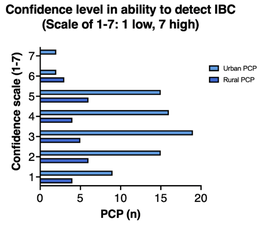


Figure 3. PCP responses when asked to rate their confidence in ability to detect IBC on a scale of 1-7.

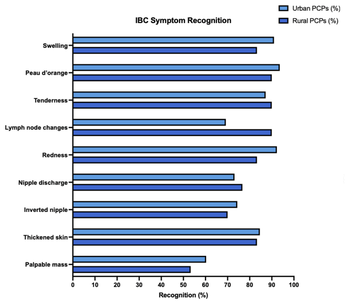


Figure 4. PCP recognition of 9 hallmark symptoms of IBC.

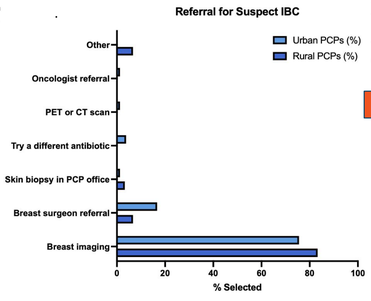


Figure 5. PCP response to a hypothetical case of IBC when asked to pick the next best step after a failed trial of antibiotics.

- Similar limited lack of awareness surrounding IBC regardless of practice setting ($p = 0.85$)
- Similar levels of confidence on ability to detect IBC. Mean confidence score (3.39 rural vs 3.35 urban); $\chi^2 = 4.65$, df = 6, p = 0.59.
- Urban and rural PCPs demonstrated high recognition rates of 9 clinically characteristic IBC symptoms, with statistically similar rates for 8 of the 9 symptoms (all $p > 0.05$)
- Rural PCPs were significantly more likely than urban PCPs to recognize lymph node change as a symptom of IBC (90.0% vs. 69.2%, $\chi^2 = 6.75$, p = 0.0094)
- When asked about initial follow-up steps for a hypothetical case of IBC, most rural (25/30; 83%) and urban PCPs (59/78; 75.6%) indicated they would refer for breast imaging (i.e. mammogram or ultrasound) after a failed course of antibiotics.

Discussion

Limitations: As this is an ongoing study, we are continuing to gather more survey responses. An obvious limitation is that we have much fewer rural responses than we do urban so we will continue outreach to connect with more rural PCPs to participant. Further, since our original methodology utilized convenience sampling through online patient portals, many rural respondents have been centered around the Duke health center network. We are expanding outreach to broader geographical areas.

Conclusion: Awareness and confidence in diagnosing IBC remain limited among PCPs across of practice setting, suggesting that challenges extend beyond geography and reflect broader systemic gaps. These preliminary findings highlight an urgent need and demand for scalable, evidence-based strategies – such as targeted education and decision support tools-- to strengthen early recognition and reduce delays in care for patients with IBC.

Conclusions

- IBC awareness is limited across practice settings
- Lack of knowledge/confidence/awareness of IBC appears to be a systemic issue and not a question of rural versus urban
- PCPs are eager to learn more to close the knowledge gap. Most of the PCPs surveyed expressed interest in additional training to better diagnose and care for patients with IBC, with online CME being the preferred format (rural 22/30, 73.3%; urban 44/78, 56.4%).

If you are interested in participating in our research, please scan this QR code >>>

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