JAMA Network Open

Research Letter | Oncology

Clinician Perspectives on Implementing Breast Cancer–Related Lymphedema Prospective Screening

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Introduction

Although scientific advancements have conferred increased life expectancy, interventions to address treatment-related morbidity remain elusive for many breast cancer survivors. Specifically, breast cancer–related lymphedema (BCRL) can result in lifelong disability and affects 2% to 60% of patients, with reported incidence varying by patient population and measurement approach.[1] Structured programs, ie, prospective surveillance models (PSMs) that include presurgical baseline assessments and postoperative longitudinal limb measurement and symptom monitoring, reduce incidence of chronic BCRL by promoting early intervention.[2] While previous studies have highlighted how challenges with implementation limit programmatic efficacy, these investigations focused on evaluating implementation of PSMs as part of clinical trials rather than routine clinical practice.[3] This interview-based qualitative study expands on existing data by exploring multidisciplinary perspectives of breast oncology clinicians engaged in our institutional BCRL PSM. We sought to characterize barriers to PSM implementation and to identify clinician-informed strategies to facilitate change.

Methods

Using purposive sampling, physical and lymphedema therapists; reconstructive surgeons; and breast medical, surgical, and radiation oncology clinicians were recruited and verbally consented to in-depth semistructured virtual interviews conducted by a trained interviewer. Clinicians employed at The Ohio State University (OSU) Comprehensive Cancer Center for more than 1 year who were familiar with our BCRL PSM[4] were eligible. The interview guide, developed with implementation scientists at OSU's Center for the Advancement of Team Science, Analytics, and Systems Thinking, focused on barriers to PSM implementation and clinician-suggested solutions to address these barriers. Interviews were transcribed, redacted of identifying information, and analyzed using inductive thematic analysis in which codes were generated from the data rather than imposed a priori.[5] A codebook was developed using 5 randomly selected transcripts to identify emergent codes. Data sources were independently coded by 2 investigators (C.K. and A.M.). Disagreements in coding were resolved through discussion of the coded transcripts, with a third investigator (S.P.M.) facilitating consensus when needed. Resulting themes were organized to reflect barriers to PSM implementation across the treatment continuum (preoperative and postoperative) as well as clinician-identified strategies for addressing these barriers. This qualitative study was conducted after OSU's institutional review board approval and reported in accordance with the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines.[6]

Results

Thematic saturation occurred after 17 interviews with clinicians across oncology rehabilitation; medical, radiation, and surgical oncology; and reconstructive surgery (**Table**). Preoperative barriers

+ Supplemental content

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included (1) challenges coordinating baseline PSM visits with multidisciplinary cancer care, (2) limited patient understanding of rationale for baseline assessments, and (3) variability in clinicians' understanding of PSM eligibility criteria. In the postoperative period, frequent surveillance visits were perceived by clinicians as (1) straining staffing capacity, (2) contributing to time toxicity for patients, and (3) perpetuating treatment-related financial toxicity. Clinician knowledge gaps regarding integration of patient-reported outcomes (PROs) into clinical workflows were identified as a barrier that impacted both preoperative and postoperative PSM appointments.

Clinicians identified several strategies to address these barriers (**Figure**). Specifically, instructing members of the care team regarding criteria for PSM enrollment and encouraging earlier referral

Table. Representative Quotes Highlighting Themes That Emerged From Participant Narratives

Theme	Representative quote
Barriers to preoperative assessment	
Difficulties with care coordination	"Sometimes referrals come in a little bit late and it's a little crunch time as we are busy and it might be a week or two before surgery." Participant ID 12
	"We lose some people… [patients] might cancel their Surg Onc appointment, but then no one cancels their PT, then it's a no show and then it just kind of gets lost in the shuffle." Participant ID 15
Lack of understanding about baseline assessment	"[P]atient compliance and getting them to buy into having those measurements… I explain [the] measurements and why it's useful. But so many times we have patients cancel those appointments." Participant ID 2
	"[S]ometimes they're like, 'Well, I don't need PT. I've had a long day' and then they leave." Participant ID 13
Variation in criteria for patient eligibility	"[E]ach of us have an idea of who that patient is in our head… And there's probably a decent amount of variability… Basically, anybody who has been treated with radiation or surgery for breast cancer with at least a Sentinel node or radiation to the breast and follow up." Participant ID 1
	"Screening [should occur] if they had axillary dissection and/or radiation to the axilla." Participant ID 7
Barriers common to preoperative and postoperative assessments	
Knowledge gaps regarding patient reported outcomes relevance to clinical workflow	"[I] am not very familiar with [patient-reported outcome metrics]. Outside of just kind of like briefly reviewing them with the patient, I don't know much about them." Participant ID 16
	"Honestly, [I] just kind of like briefly skimming through them so that I can like at least kind of explain what they're, what they're filling out, but I have not read like detail through it to be honest." Participant ID 14
Barriers to postoperative assessments	
Limited staffing	"Time is a huge barrier… just the limited amount of time that we have to go through all the symptoms that they are experiencing." Participant ID 8
	"It's a large amount of patients. So, it does put a really big influx of patients onto our providers." Participant ID 3
Time toxicity	"You know a big barrier is transportation and time [required] for our patients to be involved in in these interventions." Participant ID 8
	"[A]nother big thing I think is getting these patients into the building, especially if they live one or two hours away… It's hard to convince someone to come in just to see if they have lymphedema, if they're not having any symptoms." Participant ID 14
Financial toxicity	"[T]here's a financial burden there.… Not just the cost of the physical therapy appointment, but also the cost of the bioimpedance [machine]." Participant ID 3
	"So, I mean, just in terms of like the financial toxicity side of things, making them come for multiple appointments, things like that, missing work." Participant ID 16
Suggested solutions	
Guidelines for patient enrollment	"Educating people… having an algorithm, making sure we all kind of understand… what the workflow is or how it's supposed to work and what the resources are would be helpful." Participant ID 5
	"We need a specific flowchart or something that we can follow just to make sure that we're making those referrals appropriately." Participant ID 4
Earlier referral	"[M]aking sure all the surgeons are on board with at least getting baseline pre-op measurements so that we know where people are coming from if they have issues after surgery." Participant ID 13
	"The biggest [improvement] is just making sure [the patients are] getting in on time prior to surgery." Participant ID 12
Standardizing multidisciplinary communication	"Increase communication like a notification if somebody is starting to develop [lymphedema] and maybe with a suggested care plan." Participant ID 1
	"[I]t would be helpful if they could just send us a note, 'Hey, we're going to repeat these measurements in three weeks, see where we're at'… Just to kind of keep us in the loop a little bit more" Participant ID 2
Enhancing accessibility of patient educational materials	"[M]aybe a handout that had like, here's the statistical [risk]. You're getting a lymphovenous bypass. Here's what it's achieving." Participant ID 13
	"There are a lot of patient education materials.… I'm aware that they [educational materials] are there and I'm not handing them up to patients. So, I know that it's an issue that the paperwork is there, but it's not being provided to patients." Participant ID 3

Abbreviations: ID, identifier; pre-op, preoperative; PT, physical therapy; Surg Onc, surgical oncology.

were deemed critical. Enhancing the accessibility of references for workflow algorithms as well as educational resources were suggested as ways of promoting clinician and patient engagement. Clinicians advocated for standardizing communication across the multidisciplinary oncology team when early intervention was indicated.

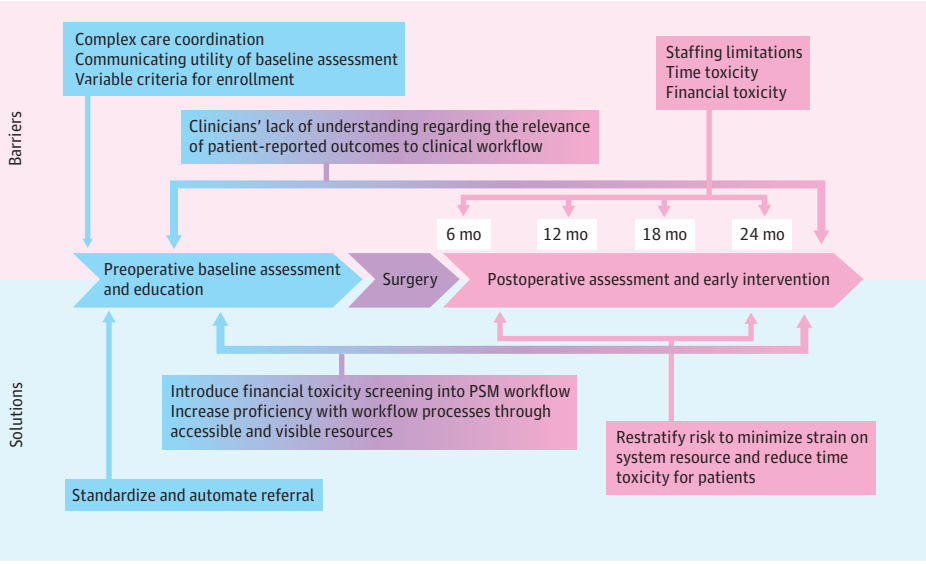
Discussion

Despite well-developed protocols for BCRL screening, barriers to effective implementation persist at preoperative and postoperative clinical touchpoints (Figure). In identifying these barriers, clinicians articulated actionable solutions to inform programmatic change.

Preoperative barriers to initiating prospective surveillance included variability in clinicians' interpretation of patient selection criteria as well as difficulty coordinating oncology and PSM appointments. These challenges were exacerbated when patients did not understand that baseline assessments were critical to detecting early signs and symptoms of BCRL. Comparative studies from the survivorship literature demonstrate that these issues are prevalent across programs surveilling for therapy-related adverse events.[7] Educating clinicians and patients on explicit criteria for referrals, process improvements using information technology, and utilizing implementation science to minimize deficiencies may be helpful.[8] Evidence-based objective and PRO-guided triggers for early intervention,[9] which require comparison with preoperative parameters, should be communicated with recurring in-service training and easily accessible reference material.

Frequency of screening appointments in the postoperative setting represents a burden on health care system resources and serve as a source of time and financial toxicity for patients. Training staff who are accustomed to screening for other health conditions (eg, clinical research assistants, nursing professionals) may be a feasible alternative to delegate BCRL screening to allow physical and lymphedema therapists to concentrate on treatment. Dynamic risk stratification[10] can be used to de-escalate or escalate screening to prioritize appointments for those who benefit most. These and other approaches, such as consolidating PSM with other appointments, may reduce time toxicity for patients. Finally, integrating financial toxicity screening into PSMs affords the opportunity for financial avigation for patients whose needs might otherwise be overlooked.[4] Despite limited

Figure. Barriers to Implementation of Breast Cancer–Related Lymphedema Prospective Surveillance Model (PSM) and Clinician-Identified Strategies to Facilitate Workflow



Our institutional PSM includes preoperative arm measurement and symptom assessment prior to the initiation of oncologic treatment. Patients complete preoperative therapies and surgery and return for their first postoperative screening visit at 6 months. Postoperative screening appointments occur every 6 months for the first 2 years and annually thereafter. Barriers and proposed solutions are color coded with arrows indicating corresponding time periods in the PSM. Gradient shading indicates that barriers and solutions impact multiple touchpoints through PSM course.

generalizability inherent to its single-center design and clinician-only insights, this study highlights specific strategies to improve PSMs aimed at BCRL prevention.

ARTICLE INFORMATION

Accepted for Publication: April 3, 2026.

Published: May 28, 2026. doi:10.1001/jamanetworkopen.2026.15084

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Author Contributions: Dr Myers had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Dr Kotian and Mr Mirzaeifard contributed equally to this study and are co–first authors.

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Obtained funding: Myers.

Administrative, technical, or material support: Wani, Hock, Sova, Skoracki, McAlearney, Myers.

Supervision: Wani, Ashworth, Skoracki, McAlearney, Paskett, King, Myers.

Conflict of Interest Disclosures: Dr Paskett reported receiving grants from Pfizer, the Merck Foundation, Genentech, Guardant Health, and Astra Zeneca as well as serving on the advisory boards of Merck and GSK outside the submitted work. Dr King reported receiving personal fees for serving on the advisory boards of Exact Sciences, Veracyte LLC, and Ataraxis AI. Dr Myers reported receiving grants from American Society of Clinical Oncology and the American College of Surgeons during the conduct of the study. No other disclosures were reported.

Funding/Support: Dr Myers received support from the American Society of Clinical Oncology Conquer Cancer Career Development Award. No other authors report funding relevant to the content of this manuscript.

Role of the Funder/Sponsor: The funder had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

Data Sharing Statement: See the Supplement.

REFERENCES

1. Letellier ME, Ibrahim M, Towers A, Chaput G. Incidence of lymphedema related to various cancers. *Med Oncol*. 2024;41(10):245. doi:10.1007/s12032-024-02441-2

2. Rafn BS, Christensen J, Larsen A, Bloomquist K. Prospective surveillance for breast cancer-related arm lymphedema: a systematic review and meta-analysis. *J Clin Oncol*. 2022;40(9):1009-1026. doi:10.1200/JCO.21.01681

3. Koelmeyer L, Gaitatzis K, Ridner SH, et al. Implementing a prospective surveillance and early intervention model of care for breast cancer-related lymphedema into clinical practice: application of the RE-AIM framework. *Support Care Cancer*. 2021;29(2):1081-1089. doi:10.1007/s00520-020-05597-5

4. Myers SP, Jasper JM, Higgins T, et al. Preliminary efficacy/feasibility study of a breast cancer-related lymphedema prospective screening and early intervention program at the Dana-Farber Brigham Cancer Center. *J Clin Med*. 2025;14(19):7051. doi:10.3390/jcm14197051

5. Braun V, Clark V. *Thematic Analysis: A Practical Guide*. SAGE Publications; 2021.

6. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*. 2007;19(6):349-357. doi:10.1093/intqhc/mzm042

7. National Academies of Sciences, Engineering, and Medicine. *Addressing the Adverse Consequences of Cancer Treatment: Proceedings of a Workshop*. The National Academies Press (US); 2022.

8. Barnett ML, Mehrotra A, Frolkis JP, et al. Implementation science workshop: implementation of an electronic referral system in a large academic medical center. *J Gen Intern Med*. 2016;31(3):343-352. doi:10.1007/s11606-015-3516-y

9. Doubblestein D, Koehler L, Anderson E, et al. Development of a core outcome set for breast cancer-related lymphedema: a Delphi study. *Breast Cancer Res Treat*. 2024;205(2):359-370. doi:10.1007/s10549-024-07262-5

10. Jiang W, Li Y. A dynamic nomogram predicting persistent breast cancer-related lymphedema: a retrospective cohort study in China. *Breast Cancer*. 2026;33(1):123-134. doi:10.1007/s12282-025-01781-9

SUPPLEMENT.

Data Sharing Statement