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DOI: [10.1200/JOP.2016.015081](https://doi.org/10.1200/JOP.2016.015081); published online ahead of print at [jop.ascopubs.org](http://jop.ascopubs.org) on January 3, 2017.

## Integrating Oncology Massage Into Chemoinfusion Suites: A Program Evaluation

Jun J. Mao, Karen E. Wagner, Christina M. Seluzicki, Audra Hugo, Laura K. Galindez, Heather Sheaffer, and Kevin R. Fox

**QUESTION ASKED:** Can a clinical oncology massage program be safely and effectively integrated into chemoinfusion units to provide symptom control for patients with breast cancer receiving chemotherapy?

**SUMMARY ANSWER:** A clinical oncology massage program can be safely and effectively implemented into chemoinfusion suites by addressing common patient-level barriers to access of cost, time, and travel, and the institutional-level barrier of space.

**WHAT WE DID:** We developed an integrative oncology massage program for patients with breast cancer in private chemoinfusion suites at an academic hospital and evaluated its outcomes using tablet-based technology.

**WHAT WE FOUND:** The program was well received with no adverse events noted. Patients reported significant decreases in anxiety, nausea, pain, and fatigue.

**BIAS, CONFOUNDING FACTORS, REAL-LIFE IMPLICATIONS:** We evaluated the immediate effect of oncology massage on symptom control. This approach, along with the potential for bias due to social desirability and the lack of a control group, may overestimate the benefit of massage. Despite the limitations, our study provides initial evidence that an oncology massage program can be safely and effectively integrated into chemoinfusion suites to provide symptom relief to patients with breast cancer. **JOP**

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# Integrating Oncology Massage Into Chemoinfusion Suites: A Program Evaluation

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## Abstract

### Objective

This article reports on the development, implementation, and evaluation of an integrative clinical oncology massage program for patients undergoing chemotherapy for breast cancer in a large academic medical center.

### Materials and Methods

We describe the development and implementation of an oncology massage program embedded into chemoinfusion suites. We used deidentified program evaluation data to identify specific reasons individuals refuse massage and to evaluate the immediate impact of massage treatments on patient-reported outcomes using a modified version of the Distress Thermometer delivered via iPad. We analyzed premessage and postmessage data from the Distress Thermometer using paired *t* test and derived qualitative data from participants who provided written feedback on their massage experiences.

### Results

Of the 1,090 massages offered, 692 (63%) were accepted. We observed a significant decrease in self-reported anxiety (from 3.9 to 1.7), nausea (from 2.5 to 1.2), pain (from 3.3 to 1.9), and fatigue (from 4.8 to 3.0) premessage and postmessage, respectively (all *P* < .001). We found that 642 survey participants (93%) were satisfied with their massage, and 649 (94%) would recommend it to another patient undergoing treatment. Spontaneous patient responses overwhelmingly endorsed the massage as relaxing. No adverse events were reported. Among the 398 patients (36%) who declined a massage, top reasons were time concerns and lack of interest.

### Conclusion

A clinical oncology massage program can be safely and effectively integrated into chemoinfusion units to provide symptom control for patients with breast cancer. This integrative approach overcomes patient-level barriers of cost, time, and travel, and addresses the institutional-level barrier of space.

## ASSOCIATED CONTENT



Appendix DOI: [10.1200/JOP.2016.015081](https://doi.org/10.1200/JOP.2016.015081)



DOI: [10.1200/JOP.2016.015081](https://doi.org/10.1200/JOP.2016.015081); published online ahead of print at [jop.ascopubs.org](http://jop.ascopubs.org) on January 3, 2017.

## INTRODUCTION

In 2015, approximately 234,000 cases of breast cancer were diagnosed in the United States.<sup>1</sup> Cancer diagnosis and its initial surgical treatment are usually accompanied by anxiety, depression, and stress.<sup>2,3</sup> Chemotherapy can result in fatigue, nausea, and

sleep disruption.<sup>4,5</sup> Although conventional approaches exist for many of these symptoms, they are often insufficient. Patients with cancer increasingly desire complementary and alternative medicine (CAM) for relief from symptoms that have not been addressed by conventional treatments.<sup>6-8</sup> In fact, cancer

survivors are more likely to use CAM than the general population and to use it for general wellness, immune enhancement, and pain.<sup>9,10</sup>

Preliminary research suggests that massage, a common CAM therapy, may benefit cancer populations. In a study of 1,290 patients participating in a massage program at a major cancer center, Cassileth and Vickers<sup>11</sup> found a 50% reduction in pain, fatigue, stress/anxiety, nausea, and depression. A recent Cochrane review of 19 studies including 1,274 participants found that massage may reduce pain and anxiety in the short term in patients with cancer, although the quality of evidence was low.<sup>12</sup> Among patients with breast cancer, massage produced significant improvements in state and trait anxiety, sleep, and functional well-being for patients undergoing radiation and/or chemotherapy.<sup>13</sup> Massage has also been found to decrease patients' depression,<sup>14,15</sup> anger, and hostility levels,<sup>16</sup> and improve nausea.<sup>17</sup>

Massage therapy is well accepted, but has low utilization rates. In our group's previous study, although 58% of patients with early-stage breast cancer endorsed the integration of massage services into academic cancer centers, only 22% reported having used massage since their cancer diagnosis.<sup>18</sup> Given the relatively low rate of massage use among patients with breast cancer,<sup>7,19</sup> in 2015, the University of Pennsylvania's Abramson Cancer Center (ACC) piloted an oncology massage program in collaboration with the local, nonprofit, 501(c)3 organization, Unite for HER (UFH). The program offers patients with breast cancer a form of massage modified for safe application and provided by trained oncology massage therapists in the chemotherapy suites.<sup>20</sup> From August 2015 to April 2016, the program's licensed massage therapists delivered 692 treatments. In this article, we report on the program's development and implementation. As part of the program outcome evaluation, we collected data for the following specific aims: (1) to evaluate the short-term effects of massage on anxiety, pain, nausea, and fatigue among patients with breast cancer; (2) to identify through comments the salient experiences of patients with breast cancer receiving massage; and (3) to identify the reasons patients decline massage services. The conceptual framework guiding our evaluation of massage on common symptom outcomes was based on clinician input, review of the literature,<sup>11</sup> and the biopsychosocial effect of massage that may target common biobehavioral pathways of behavioral symptoms.<sup>21</sup>

## MATERIALS AND METHODS

### Academic Medical Center and Community Nonprofit Collaboration

J.J.M. (the first author) met with the leadership of UFH to discuss the steps necessary to bring an oncology massage program to an academic medical center. Based in southeastern Pennsylvania, UFH provides vouchers for patients with breast cancer to receive integrative therapies, including oncology massage. UFH previously found that despite addressing cost barriers, many women with breast cancer do not fully use integrative services because of time and travel concerns. ACC and UFH collaborated to develop and implement a novel program that delivered oncology massage in the cancer center. Program development required joining stakeholders from the nonprofit, academic research, and patient care realms. Through this collaboration, we sought to enhance the clinical care of oncology patients aligned with the mission of UFH and ensure that resources and expertise were available for critical program evaluation and research through our academic cancer center.

### Implementation

Our implementation plan involved exploration, identification of program needs, planning, initial and full implementation, and program expansion. The goals of the exploration phase were to identify program need, leadership, and funding sources. Next, we developed a more detailed plan and timeline, established contracts with massage therapists, engaged key stakeholders from operations and clinical teams to address program concerns, and prepared our initial survey tools and printed materials. We then implemented the initial phase of our program, offering it once a week to ensure that the integration of massage into clinical care was running smoothly and to troubleshoot unanticipated complications. We revised our survey tools, hired a second therapist, and expanded our massage therapist training to include appropriate use of electronic medical records, allowing therapists to be more self-sufficient. On program expansion, we further streamlined our processes by creating an electronic survey delivered via iPads that allowed for more extensive data collection with fewer personnel. The final phase involved continuing the current clinical program while exploring expansion to other patient populations and centers. We obtained institutional review board approval to report on our outcomes and initial results.

## Clinical Massage Program Description

Before establishing employment with our program, licensed massage therapists completed a 24-hour credit course in advanced training for oncology massage technique approved by the Society for Oncology Massage. We started with one massage therapist once a week for the first month, two massage therapists 3 days per week for the next 4 months, and finally increased to three massage therapists 5 days per week. Sessions lasted approximately 20 minutes (range, 15-30 min) depending on patient preference and availability. Although our massage therapists individualized treatment regimens, they generally administered a lower extremity or head and neck massage (Table 1). They carefully tailored the pressure of these therapeutic treatments to each patient and only used light or very light compressions to avoid unanticipated adverse effects of massage.

We distributed printed educational materials on the floor where the massages were administered. Patients could request or consent to a session when offered by a practitioner. Not all patients who were offered this free service elected to receive it. We asked patients who declined to use an iPad to indicate their reasons. Patients requesting multiple sessions during the course of their chemotherapy regimen on different days were able to receive them if the massage therapists could accommodate them.

## Outcome Evaluation Process

As part of the program, we asked patients to complete a short assessment of their symptoms and provide feedback on their experience on a patient-facing tablet-based survey assessment using the Qualtrics survey software (Qualtrics, Provo, Utah). We asked patients who declined services to provide their reasons for declining by choosing one of the following categories: "I am concerned about time," "I am not interested," "I am experiencing too much pain," "I prefer not to be touched," or "Other." For those who chose to receive a massage, we provided a modified version of the Distress Thermometer (DT), a well-validated tool used to assess distress among patients with cancer. We modified the original tool for assessments of anxiety, pain, fatigue, and nausea; similar modification to assess emotional distress, anxiety, depression, and anger among patients with cancer has shown validity.<sup>22</sup> Using touchscreen technology that allowed them to slide a thermometer across the screen to indicate their levels of distress from 0 (none) to 10 (extreme), patients responded to the following statement: "Please slide the scale to the number

(0-10) that best describes how much distress you have been experiencing in the past week, including today." There were a total of four thermometers, each addressing a unique symptom: anxiety, nausea, pain, and fatigue. Patients completed the thermometers before and after massages. After their massages, patients also completed two questions on satisfaction. For the first question, "How satisfied were you with the massage therapy program?" respondents were asked to rate their response on a five-point scale, from very satisfied to very dissatisfied. Next, respondents were asked whether they would recommend massage to other patients (yes or no). If the patient indicated she had received a prior massage with our program, she was asked two open-ended questions to elicit what was best about the program and how it could be improved. She was also asked, "Have you experienced any adverse effects from your massage treatment?" Although completing a survey was not required to receive a massage, our therapists were instructed to offer the survey to each participant and aid her in interacting with the touchscreen technology, if needed.

## Outcome Evaluation Research

We obtained approval from the institutional review board of the University of Pennsylvania and the ACC's Clinical Trials Scientific Review and Monitoring Committee to use our anonymous program data to conduct outcome research. For quantitative analysis, we analyzed the pre-post data from the Distress Thermometer using a paired *t* test ( $P < .05$  indicating statistical significance, two-sided). We derived qualitative data from the subset of participants who provided written feedback on their experiences of the massage sessions and generated a word cloud to visually represent the appearance of key words.

## RESULTS

### Study Population Description

All massages were delivered in the chemoinfusion suites to women receiving treatment for breast cancer. During the evaluation period between August 2015 and April 2016, we offered 1,090 massages. Of these, 692 (63%) were accepted. Among these patients, 184 (27%) were receiving a massage through our program for the first time, and 501 (73%) indicated that they had previously received a massage through our program. All participants who received a massage were asked whether they experienced any adverse effects; 91% answered no, and the 9% (57) who answered yes reported effects related

**Table 1. Message Operating Procedure and Protocol**

Operating Procedure	Protocol
<p>Before the massage</p> <p>Greet patient/support members politely using patient's name; ask to enter private suite.</p> <p>Sanitize hands with hand sanitizer.</p> <p>Introduce yourself using your name, title, and reason for visit. Establish current comfort level (ie, body temperature) and offer blanket, pillow, and/or tea if needed, and comfort.</p> <p>If patient declines massage, kindly request a reason to gather data.</p> <p>If patient accepts massage, visually check for access port, intravenous line, and/or pic lines.</p> <p>For new patients: explain iPad survey function and reason for data collection. If patient needs help, sit with iPad facing her and navigate research questionnaire for her. Input patient answers so she can see her responses are logged correctly.</p> <p>For a returning patient, gauge comfort with iPad.</p> <p>Offer support/guidance as needed.</p> <p>Ensure patient is at maximum comfort to receive massage. Turn lights off and offer quiet music. If possible, close the door to minimize disruptions.</p>	<p>MT is prepared to administer a lower extremity or head and neck massage.</p> <p>MT reviews patient's chart to determine which massage would be more appropriate given her health conditions (ie, a patient with deep vein thrombosis or lymphedema in her lower extremities will receive a head and neck massage, and a patient who has received radiation to the clavicle or neck will receive a lower extremity massage).</p> <p>If either massage is safe to administer, MT will consult with the patient about which type of massage she would prefer.</p> <p>For either massage, pressure will not exceed a No. 1 or a No. 2 on the 5-point Walton Scale.</p>
<p>Follow massage protocol.</p> <p>Allow for interruptions of medical staff to care for patient. Step out of room when necessary.</p> <p>Conclude session by returning iPad survey to the patient for completion. Wash hands. Leave University of Pennsylvania and Unite for HER integrative wellness information/literature with patient if she desires.</p>	<p>Lower extremity massage:</p> <p>Administer repeated compressions to the foot, starting at the toe and moving toward the ankle. Use full-hand compressions, followed by small circular compressions.</p> <p>Starting at the lateral distal aspect of each foot, repeat small circles, moving in lines distal to proximal.</p> <p>After completing each line, transition to next line, moving from lateral to medial aspect of the foot (3 min).</p> <p>Using effleurage and compression, massage the foot to the top of the calf. Only use effleurage if patient is wearing pants or a skirt that can be moved up the leg (5 min).</p> <p>Use an L compression on all four sides of each toe, systematically pressing the toe between the thumb and forefinger toward the bone and ending with a push 1/8-inch proximal. Continue 1 inch past the end of each toe or two inches past any sensation of numbness or tingling (8 min).</p> <p>Administer clockwise and counterclockwise passive ankle rotations (2 min).</p> <p>Conclude massage with a combination of compressions and effleurage from the foot to the top of the calf (5 min).</p> <p>Head and neck massage:</p> <p>Encourage patient to relax and let her head rest in MT hands.</p> <p>Provide three-hand holds to patient's head: Hands on either side of the head behind the ears (1 min)</p> <p>Hands on either side of the top of the head (1 min)</p> <p>One hand on the forehead while other hand is on the occiput (1 min)</p> <p>Apply slow compression and kneading to the trapezius and upper rhomboids on both sides of the body (5 min/side).</p> <p>Apply slow compressions, kneading and holding to the posterior neck (5 min).</p> <p>Conclude with a scalp massage using slow compressive and slight kneading movements (5 min).</p>

Abbreviation: MT, massage therapist.



to feeling relaxed. No negative adverse effects were reported. Among the 398 who declined a massage (36%), the top reasons were lack of interest (141; 36%) and time concerns (131; 33%), followed by not physically well/tired (70; 17.8%), prefer not to be touched (31; 7.9%), and other (20; 5.1%).

### Immediate Symptom Reduction

According to analysis of 692 sessions, patients reported a significant decrease in anxiety ( $n = 595$ , from 3.9 [SD 2.5] to 1.7 [SD 1.8]), nausea ( $n = 349$ , from 2.5 [SD 2.6] to 1.2 [SD 1.9]), pain ( $n = 488$ , from 3.3 [SD 2.5] to 1.9 [SD 2.0]), and fatigue ( $n = 590$ , from 4.8 [SD 2.8] to 3.0 [SD 2.4]), with  $P < .001$  for all (Fig 1). When we restricted analysis to first-time session patients ( $n = 184$ ), results were similar. Using conservative estimates that treat missing data (6%) as not endorsing massage, we found that 642 of survey participants (93%) were satisfied or very satisfied with their massage and that 649 (94%) would recommend it to another patient undergoing treatment.

### Patient Experiences in Their Words

A generated word cloud (Appendix Fig A1, online only) of spontaneous participant responses collected via iPad demonstrated that patients used the word relaxation most frequently to describe their massage experience. Content analysis of the data further revealed the following major recurrent themes: (1) relaxation, (2) symptom relief, (3) distraction, and (4) positive relationship with therapist (see Table 2 for sample quotes).

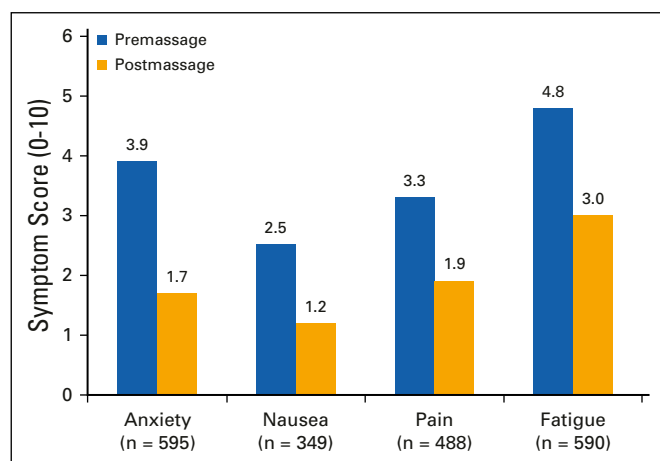


FIG 1. Symptom changes before and after massage.

### Basic Lessons

We learned a great deal in the processes of planning and implementation, including limiting the number of people who enter the patient's chemotherapy suite to explain the program and that some people simply do not want a massage. We learned that the electronic program evaluation and patient-tracking platform using iPads decreased patient and provider burden in data tracking and outcome evaluation. It is also essential to have key stakeholders on board, a dedicated leader, a project manager, and qualified oncology massage-trained therapists.

### DISCUSSION

Chemotherapy frequently causes substantial symptom burden, such as pain, anxiety, nausea, and fatigue for patients with breast cancer. Despite this population's interest in using CAM to manage their symptoms, they often face barriers to accessing these services. In this study, we addressed these barriers and described the development, implementation, and evaluation of an integrative oncology massage program for patients with breast cancer in the chemoinfusion suites of a large, urban academic cancer center. We found that the program was feasible, was well liked, and produced substantial and immediate short-term reductions in pain, anxiety, nausea, and fatigue. Quantitative data indicate that 93% of participants reported feeling satisfied or very satisfied with their experience, and 94% would recommend massage to other patients with cancer undergoing treatment. Qualitative data suggest a relaxation response for most participants. Our findings provide initial evidence for successfully integrating this type of program into an urban academic cancer center.

Our study contributes to limited research on integrating massage into the oncology health care setting. Although not focused on chemotherapy, a large study ( $N = 1,290$ ) evaluating massage therapy for inpatient and outpatient cancer populations that found similar improvements in symptom outcomes concluded that it is feasible to integrate a high-volume massage program in a major cancer center.<sup>11</sup> A small Turkish study ( $N = 40$ ), in which nurses provided back massage during patients' chemotherapy appointments, also showed that massage was beneficial and demonstrated feasibility for integration into the outpatient setting, although it did not focus on patients with breast cancer.<sup>23</sup> Nurse-administered massage would be challenging in the United States because nurses frequently manage medications, adhere to patient safety measures, and complete documentation. However, by



Table 2. Themes and Illustrative Quotes From Participants

No.	Theme	Quote
1	Relaxation	"Makes me relax. Takes my thoughts off of my health." "Relaxes me—takes stressful feelings away." "Very relaxing and as a cancer patient I need to be relaxed." "It was a wonderful experience that provided relaxation during treatment." "Cleared my mind from anxiety and got my body relaxed."
2	Symptom relief	"Relief of stiffness. Warmth of touch." "It is so helpful for my neck! Feels great!" "Had massages once a week during chemo. Helped me tolerate the pain." "Soothing and gives me a feeling of less tension in legs." "Feeling of well-being, lower fear, lower pain."
3	Distraction from treatment	"I like that the massage can take my mind off the chemo." "It took my mind off of the IV infusion and felt SO relaxing!" "Allowed me to focus on what was good for me."
4	Positive relationship with therapist	"Friendly face of practitioner!" "Therapist is not only knowledgeable and talented but is also very nice. Her level of care that she brings is much appreciated." "Feeling of another person's presence."

integrating licensed oncology massage therapists into chemotherapy suites to work alongside nursing staff, these services become possible in the US health care system. To our knowledge, ours is the first large-scale study to investigate the integration of such a program for patients with breast cancer undergoing chemotherapy in private outpatient chemoinfusion suites. Because chemoinfusion floors are increasingly designed with individual private rooms, we have a unique opportunity to offer massage and other integrative therapies to patients concurrent with their conventional treatment.

Our integrative massage program for patients with breast cancer produced significant immediate symptom improvements in pain, fatigue, anxiety, and nausea, and an increase in relaxation consistent with others who have published in this field.<sup>24-27</sup> Survivors of breast cancer with cancer-related fatigue showed a significant decrease in fatigue and an

improvement in mood after massage.<sup>24</sup> Patients who received mastectomies at a hospital reported a significant reduction in pain, stress, and muscle tension, and an increase in relaxation immediately after receiving a massage.<sup>25</sup> In a clinical trial for massage, patients with breast cancer (n = 34) reported significantly lower mood disturbances, especially for anger, anxious depression, and tiredness.<sup>26</sup> In a systematic review to examine whether massage provided measureable benefit for breast cancer–related symptoms, patients receiving regular massage had significant reductions in anger and fatigue.<sup>27</sup> Because our study examined immediate change without a control group, we do not know whether integration of massage in chemotherapy suites leads to persistent improvement in quality of life and symptom reduction over time. However, our results indicate it provides immediate short-term improvement for patients with breast cancer during a difficult period in their lives.

In response to accumulating evidence in cancer populations, the Society for Integrative Oncology has given massage therapy a grade B rating and recommends providing the modality because “there is high certainty that the net benefit is moderate or there is a moderate certainty that the net benefit is moderate to substantial.”<sup>28(p350)</sup> Despite this recommendation, use of massage remains low, with only 22% of patients with breast cancer using massage since their diagnosis.<sup>18</sup> Patients with cancer face a number of barriers to accessing supportive care services in the outpatient setting, including lack of awareness and physician nonreferral, lack of time, cost, and travel/transportation concerns.<sup>29-31</sup> In addition, our recent research has found that transportation is a higher perceived barrier to CAM use for nonwhite patients with cancer compared with whites.<sup>32</sup> Our study addressed these common barriers to accessing CAM services such as massage by removing patient-level barriers of cost, time, and travel that may otherwise have prevented them from accessing this service. We also addressed the significant system-level barrier of space by providing our program in chemoinfusion suites at the same time as a patient’s already-scheduled treatment.

Financial challenges often limit the development of this type of service for patients with cancer. Our initial program implementation was possible in part because of funding (\$25,000) from our nonprofit partner. Because of the overwhelmingly positive responses from patients and systematically demonstrative outcomes, the program has since received ongoing funding from ACC and is expanding to include

patients with gynecologic cancers. Because many academic and community cancer centers have foundations and relationships with nonprofit organizations and donors, creatively building partnerships, leveraging existing resources, and systematically collecting and demonstrating outcomes will allow innovative programs to be built. More effort is needed to conduct research and advance health policy leading to reimbursement for evidence-based therapies to improve patient experiences and outcomes.

Our study has several limitations. First, we used a convenience sample of patients who self-selected for massage sessions and outcome evaluation; thus, social desirability in response and missing data may introduce bias in estimating the magnitude of the benefit of massage. Second, we only evaluated the immediate changes that resulted from massage and cannot comment on any long-lasting benefits or changes. Third, although the Distress Thermometer has been widely used in many studies of patients with cancer, it is most commonly used longitudinally over longer periods of time and has not been fully validated to assess momentary changes in distress after an intervention. Fourth, because we did not have a control group, some of the quantitative changes could be due to regression to the mean effect; therefore, our results cannot be interpreted as definitive evidence of efficacy. Also, our study was only available to English speakers. Finally, because of the lack of evaluating key social demographic variables, such as race/ethnicity, we do not know whether disparities exist. Future research should address these limitations.

In conclusion, despite its limitations, our study provides the initial evidence that an oncology massage program can be safely and effectively integrated into chemoinfusion suites to provide symptom control for patients with breast cancer. This integrative approach overcomes patient-level barriers of cost, time, and travel, and addresses the institutional-level barrier of space. Our study also found that oncology massage may result in positive short-term reductions in symptoms and lead to increased relaxation. More rigorous research is needed to evaluate the impact of oncology massage on reducing symptoms, decreasing the need for additional medications, and improving adherence to chemotherapies. If collective research can demonstrate that massage improves patient experiences and outcomes, such a service can become a part of bundled oncology care, leading to sustainable integrative oncology practice for women with breast cancer. **JOP**

### Acknowledgment

This study was supported in part by a research grant from Unite for HER and from the Integrative Medicine and Wellness Program Fund and the Rowan Breast Center Educational Fund, both from the Abramson Cancer Center at the University of Pennsylvania. J.J.M. is funded in part by Abramson Cancer Center Core Grant No. 2P30CA016520-40 and Memorial Sloan Kettering Cancer Center (No. 3P30CA008748-50). We thank massage therapists Eleanor Dukes, Danica Arizola, Iliia Stranko, and Julie Ackerman for their help in designing and delivering the interventions. We also thank Sue Weldon for her dedication to women with breast cancer and her input into our massage program. Sincere thanks go to the patients, oncologists, nurses, and clinical staff for their support of our study.

### Authors' Disclosures of Potential Conflicts of Interest

Disclosures provided by the authors are available with this article at [jop.ascopubs.org](http://jop.ascopubs.org).

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**AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST****Integrating Oncology Massage Into Chemoinfusion Suites: A Program Evaluation**

The following represents disclosure information provided by authors of this manuscript. All relationships are considered compensated. Relationships are self-held unless noted. I = Immediate Family Member, Inst = My Institution. Relationships may not relate to the subject matter of this manuscript. For more information about ASCO's conflict of interest policy, please refer to [www.asco.org/rwc](http://www.asco.org/rwc) or [ascopubs.org/journal/jop/site/misc/ifc.xhtml](http://ascopubs.org/journal/jop/site/misc/ifc.xhtml).

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## Appendix



**FIG A1.** Word cloud from patients' spontaneous written words.

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