

# Therapeutic Massage Intervention for Hospitalized Patients with Cancer

## *A Pilot Study*

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**F**orty-two (42) percent of Americans use some form of alternative medicine, spending 21.2 billion dollars annually,<sup>1</sup> and one of the most commonly sought alternative and complementary medicine (ACM) therapies is therapeutic massage, which was used by an estimated 11 percent of the U.S. adult population in 1998. In that year, adults made an estimated 114 million office visits to receive massage treatments.<sup>2</sup>

Massage has been used as a therapeutic intervention for a variety of illnesses for thousands of years. The Asian roots of massage go back at least to 1000 BC and so do the origins of Ayurvedic medicine. Descriptions of massage appear in the ancient medical texts of India, China, Japan, and Tibet. The European roots of massage can be traced back to the seventh century BC. Massage was associated with the cures offered at the temples of Aesculepius and was described in the writings of Hippocrates. Massage has been used to promote relaxation and relieve pain and has been suggested as a useful adjunctive treatment for symptom control for patients at the end of life.

Pain is one of the most common symptoms experienced by dying patients. More than 40 percent of patients' families reported that patients experienced severe pain in the last 3 days of life.<sup>3</sup> Others have reported that 60 percent of patients who have cancer have pain.<sup>4,5</sup> In many cases (42 percent), pain was inadequately treated in patients with cancer.<sup>6</sup> Nearly 80 percent of hospitalized patients have reported pain, while less than half had any mention of pain noted in progress notes by their doctors.<sup>7</sup>

Even in palliative medicine and in hospice settings, 64–88 percent of patients had inadequately relieved pain, and the most severe symptoms occurred 2 days prior to death.<sup>8</sup> During the last 7 days of life, narcotic usage increased significantly.

Although symptoms of pain and nausea were reduced, drowsiness worsened substantially and resulted in worse symptom distress scores. Between 15 and 20 percent of patients needed treatment for pain, requiring complete sedation to obtain relief.<sup>9</sup>

Caregivers often experience symptoms of anxiety and sadness near the end of a patient's life. Grief phenomena have been well-described. Compared to their experience 6 months following death, feelings of sadness are most intrusive in the 6 weeks following the patient's death as are symptoms such as tearfulness, depression, and anxiety.<sup>10</sup> Physical symptoms, such as pain, are most prominent at 6 weeks as well. Small studies have suggested that interventions that provide support to caregivers can improve their satisfaction with care as well as decreasing their physical and emotional stress.<sup>11</sup>

Only a few studies on the use of massage at the end of life have been reported. In a small study of massage given to patients in a hospice, investigators reported that slow-stroke back massage resulted in changes in vital signs, suggesting improved relaxation.<sup>12</sup> Other studies have indicated that massage may be useful in managing cancer pain.<sup>13,14</sup> Studies on other populations have suggested a number of potential benefits of massage that are relevant to patients with metastatic cancer. For example, massage has been shown to promote relaxation, reduce anxiety and depression, and improve sleep patterns.<sup>15–18</sup> In addition, other studies have indicated that massage may reduce patients' experience of pain,<sup>13,14,19–22</sup> ease breathing,<sup>23</sup> facilitate weight gain,<sup>24–26</sup> and increase alertness.<sup>27</sup> Finally, data indicate that giving as well as receiving massage may reduce anxiety and depression,<sup>28</sup> suggesting that caregivers may benefit from providing massage to patients.

In this pilot study, we provided daily massage to hospitalized patients with metastatic or end stage lung or gastrointestinal (GI) cancer. Hospital admissions were screened daily to identify eligible patients. Patients received daily therapeutic massage and family caregivers were also instructed in the use of massage during hospitalization. Data were collected from massage therapists' detailed documentation and from patients' daily questionnaires about their experiences with the massage therapy. We also collected data from medical records via chart reviews and interviews with patients' nurses and physicians.

**Table 1. Summary of Massage Modalities and Techniques Permitted**

Acupressure/Shiatsu
Aston Patterning
Compression
CranioSacral
Energy balancing
Esalen
Friction/Xfiber friction
Gliding/effleurage
Holding
Hydrotherapy (hot and/or cold)
Jostling (a muscle)
Kneading/petrissage
Manual Lymph Drainage
Myofascial release
Neuro-muscular therapy
MET (Muscle Energy Techniques)
Polarity Therapy
Myofascial broadening
Percussion/tapotement
Reiki
Reflexology
PNF (Proprioceptive Neuromuscular Facilitation)
Rocking
ROM (active and/or passive)
Skin rolling
Shaking (a limb)
Stretching
Strain/counter strain
Swedish Massage
Traction
Trager
Trigger Point
Vibration
Zero balancing

## Methods

### *Study Site and Study Population*

We performed our study in a hospital that provides tertiary care services while also meeting the needs of a diverse local community. This hospital, The Beth Israel Deaconess Medical Center, Boston, Massachusetts, has an active cancer center, which provides advanced cancer care and access to experimental cancer treatment protocols.

At the time of the study, a palliative care service and an inpatient palliative care center provided options for patients who were seeking palliative approaches. The Medical Center provides services to adults 18 years of age or older. Based on our review of patients admitted during a 4-week period, approximately 30 patients with metastatic solid cancer are admitted weekly, either for planned treatment, complications of treatment, or complications of diseases. Of these patients, 30 percent have planned lengths of stay of 72 hours or less. For the remaining patients, the median length of stay is 6 days and the reason for admission is usually a complication of cancer.

### *Patient Enrollment Procedure*

During a 4-week period, all inpatient admissions to the medical service and the medical oncology service were screened daily for eligible patients via the hospital computerized database. We

selected patients who were admitted with diagnoses of metastatic cancer known for at least 1 month prior to study entry or patients with end-stage cancer without metastases. Diagnoses included unresectable non-small-cell lung cancer, small-cell lung cancer with metastases, and unresectable GI cancer (gastric, esophageal, hepatobiliary, pancreatic, or colon; see Figure 1). After reviewing the medical records of eligible patients, their primary nurses and physicians were contacted for an estimate of length of stay and the actual condition of the patients. If a patient's physician approved, the patient and the caregiver were approached for consent, the goals and design of the study were explained, and informed consent was requested. For patients who refused participation, information was collected on demographics and reason for refusal. If patients were unable to participate in the consent process because of cognitive impairment or for any other reason, or if their planned length of stay was less than 3 days, they were excluded from the study. At study entry, patients were asked to complete short interviews.

### *Selection of Massage Therapists*

Applicants for massage therapists were required to provide documentation of and/or confirm the following: valid licensure; membership in the American Massage Therapy Association; or certification by the National Certification Board for Massage Therapy and Bodywork; malpractice/liability insurance; a liability claims history; signed statements attesting to evidence of continuing education; a minimum of 3 years of full-time or 5 years of part-time practice, training and experience in Swedish massage and at least two additional modalities, at least one of which was a gentle form of massage that would be appropriate for frail elderly patients (e.g., CranioSacral and Polarity Therapy); openness to diverse faith orientations/belief systems; good communication skills; experience with patients at the end of life; and ability to demonstrate compliance with study guidelines and documentation.

This strict selection criteria ensured that practitioners were currently members in good standing within their profession, were experienced in multiple modalities of massage therapy, were able to engage in and sustain relationships with patients at the end of life, and posed no legal risk to the study or institution. The practitioners provided signed statements attesting to the absence of physical or mental impairments; no chemical dependency or substance abuse; no prior felony convictions; no prior loss of license, sanctions, or limitation of privileges as the result of disciplinary actions; and no histories of fraud or patient abuses.

### *Scope of Practice and Precautions of Massage for Patients with Cancer*

We provided massage therapists in this study with a scope of practice indicating which common massage modalities and techniques they could and could not use when treating patients in the study. This method allows the training and experience of the practitioner to come into play in designing a treatment that is ideal for each patient, given the patient's condition at the time of each treatment. This format most nearly replicates massage therapy as practiced by professionals and allows each patient the

most appropriate care in terms of modality, technique, and accommodation of medical equipment and limitations for patient's body position.

While a broad range of massage techniques was allowed (Table 1), therapists were instructed in massage for patients living with cancer, which include modifications in pressure, site, and position. All therapists involved in this study were instructed to observe the following restrictions:

- (1) *Avoid massage in certain areas*—Massage therapy was forbidden in areas including tumor sites, radiation sites, incisions, bone or spinal metastases, areas of communicable disease, medical device sites, and limbs of patients with deep-vein thrombosis.
- (2) *Restrictions on pressure used by therapist*—*Generalized pressure restrictions*: Certain conditions require that therapists observe full body pressure restrictions and use only mild pressure on these patients. These included easy bruising related to use of anticoagulants and thrombocytopenia, fragile veins, recent surgery, vital-organ involvement, prior radiation therapy, osteoporosis, cachexia, and fever. Patients were excluded from massage on any day a given patient's platelet count was less than 20,000.
- (3) *Localized pressure restrictions*: Site specific pressure restrictions are indicated in the presence of edema, lymphedema, lymph-node removal, skin sensitivity or fragility, and neuropathy.
- (4) *Position restrictions*—Patients' positional mobility in bed may be restricted, so therapists identified and accommodated these restrictions to find the optimal position.

#### Massage Intervention

Each patient was offered massage every day and we also offered family caregivers instruction on the use of massage during the hospitalization. The massage therapist recorded whether or not massage was chosen and, if not, why not. When massage

was selected, the massage therapist administered a massage, observed all precautions, and utilized only the allowed massage modalities and techniques indicated in Table 1.

Massage lotion and oil, which was fragrance-free, hypoallergenic and included appropriate materials for highly delicate skin, was made available to the therapists who could use it or not, depending upon the preference of the patients and their own practice preferences. Massages were between 10 and 60 minutes in duration, depending upon patient tolerance. Massage therapists provided a detailed documentation of each session indicating the rationale for treatment design and length. Our procedures allowed patients to receive massage only when they wanted to, which is in keeping with massage therapists' code of ethics as well as good practice.

The procedures allowed the massage therapist to use judgment in not giving a longer massage than a patient could tolerate. They also allowed for interruption of massage, so as to not interfere with tests or procedures that are often required for hospitalized patients.

#### Data Collection

In the pilot study, data were collected from the medical records (computerized data and chart review) and interviews with patients, their nurses and physicians. Patients were asked to complete a brief questionnaire at study entry and then daily thereafter (follow up questionnaires), about the effect of massage and the symptoms of pain, anxiety and alertness. Patients were also asked to report on their symptoms and satisfaction with pain control during the hospitalization, as well as for the evidence of any side-effects or safety issues related to massage.

#### Data collection from medical record (chart review)

Data, collected from medical records, included information on pain medications and other medication usage, diagnoses, and reasons for admission (e.g., pain control and inability to manage symptoms at home). Chart reviews also provided information on

**Table 2. Background Information on Consenting Patients**

Patients	Age (years)	Gender	Reason for admission	Symptoms at time of admission	LOS(days)	Primary site of cancer	Sites of metastasis	Previous treatment
1	58	Male	Fever, neutropenia	Chills	15	Pancreas	Liver, lymph node	S + C + R
2	65	Female	Back pain	Pain in right lower flank	9	Lung	Bone	S + R
3	82	Male	Diarrhea, clear vomiting	Fatigue, anxiety	13 <sup>a</sup>	Gallbladder	No metastasis	S
4	65	Male	Ascites	Chills, abdominal pain	10 <sup>a</sup>	Pancreas	Liver, pancreas	C
5	71	Female	Mental status changes	Weakness, aphasia	16	Lung	Bone, brain, spine	S + C
6	52	Female	Venous thrombosis	Shortness of breath, fatigue	8 <sup>a</sup>	Anal	Abdomen, lung, spine	S + C + R
7 <sup>b</sup>	58	Male	Hypokalemia	No symptoms	13 <sup>a</sup>	Pancreas	Liver, lymph node	S + C + R

<sup>a</sup>Patient died during hospitalization; <sup>b</sup>Patient 1 readmission, was managed as "Patient 7."

LOS = length of stay (in hospital); S = surgery; C = chemotherapy; R = radiation therapy.

**Table 3. Demographic Characteristics of Consenting Patients**

<b>Mean age (years)</b>	<b>64 (range, 52–82)</b>
Females	3/6
<b>Ethnicity</b>	
Caucasian	6/6
<b>Level of education</b>	
Under high school	3/6
High school graduate	1/6
More than high school	2/6
<b>Religion</b>	
Catholic	3/6
Jewish	3/6
<b>Marital status</b>	
Married	4/6
Widowed	2/6

the goals of care (e.g., palliative versus curative) and patients' do-not-resuscitate status. The charts were reviewed daily to collect information on patients' clinical status, use of medications, and use of other medical interventions for symptom management. Data were also collected about treatments (including procedures or medications) that might increase pain.

*Data collection from personal source.*

- *Physicians and nurses*—After obtaining consent from a physician to approach a patient, we asked the physician to confirm that the patient was eligible for the study. We also asked each patient's nurses about the patient's condition and symptoms on a daily basis.
- *Patients*—Patients were asked daily to answer questions for a brief visual analogue scale (VAS) to assess the study outcomes of pain, anxiety, and level of alertness. Massage therapy was provided late in the day and patient data were collected in the next morning. Patients were debriefed daily to identify any potential adverse effects and any factors that affected the duration of massages.
- *Massage therapists*—Massage therapists provided complete documentation of all treatments. Documentation included the duration of massages, amount of pressure used, the types of treatments, and locations of treatments. We also obtained reports on the rationales for the treatments provided and any comments about the patients' responses to treatments. The therapist also recorded any potential adverse effects. If a patient declined massage on any day, the therapist noted the reason for refusal. The therapist also noted if a caregiver was present at the time of a massage and reported on any instructions that were given to a caregiver.

*Investigated symptoms and instruments*

The primary investigated symptom was *pain*. We also assessed *anxiety* and *alertness*.

The VAS was used as a daily measure of symptoms, such as pain, anxiety, and depression. This brief daily VAS battery has been used previously in similar studies.<sup>29</sup>

In addition, pain was measured using the Pain Severity and Pain Location subscales of the Brief Pain Inventory Short Form.<sup>30</sup> This assessment tool was developed by the Pain Research Group of the World Health Organization Collaborating Center for Symptom Evaluation and Cancer Care. The scale has been used as an outcome measure in patients with advanced cancer.<sup>31</sup> The Pain Severity subscale consists of four items and assesses the worst, least, and average levels of pain within the past 24 hours as well as current levels of pain. Subjects also assess how the pain interferes with functions, such as walking, sleeping, and relating to others. The Pain Location subscales ask patients to provide a graphic representation of the location of pain, by shading in front and back views of human figures. These subscales have documented internal consistency reliability (Cronbach's alpha = 0.87) and discriminate validity and have been shown to be responsive when administered separately from the full scale.<sup>32</sup>

In addition to the VAS items for anxiety and depression, patients completed the anxiety subscale of the Profile of Mood States.<sup>33</sup> The anxiety subscale has excellent internal consistency (Cronbach's alpha = 0.91), as well as good content, predictive ability, and construct validity and it also provides information about the alertness level of patients. These subscales have been used in clinical trials of behavioral interventions for a broad range of patient populations and were used in the Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatments, in which the scales were found to be feasible and responsive for assessing patients at the end of life.<sup>34</sup>

*Quality of life*

Quality of life (QOL) was measured using the Missoula-VITAS QOL Index.<sup>35</sup> This comprehensive 25-item index was developed specifically for use with patients near the end of life and contains subscales for global quality of life, symptoms (control and satisfaction), function, interpersonal issues, well-being, and transcendent issues. The measure has the advantages of assessing relevant and comprehensive dimensions of QOL while retaining a relatively brief format. Furthermore, it yields a weighted dimensional score, which weights the various QOL dimensions according to patient importance ratings, thereby providing a patient-centered assessment of outcome.

*Human subject issues*

Our protocol was reviewed and approved by the hospital institutional review board. The study was explained to subjects and their caregivers, and written consent was obtained from both the patient and the primary caregiver. We asked patients' caregivers to consent to respond to questionnaires and to consent to instruction in the use of massage and to providing massage themselves, if they were willing to do so. All study subjects were provided with photocopies of their signed consent forms and one copy was filed in each patient's medical record. Study patients and caregivers were free to refuse treatment or to withdraw their consent at any time during the

course of the study. A patients' decision whether or not to participate in the study did not affect the medical care provided in any way.

## Results

During a 4-week period, 1053 medical admissions were screened to identify eligible patients. We identified 79 patients admitted with metastatic solid cancer. Their mean age was 62 (range 39–94) and 50 percent were female. The average length of stay in the hospital was 6.1 days. Of the 79 patients, 26 had lung or GI malignancy. For these 26 eligible patients, their mean age was 67 (range 51–83), and 54 percent were male. Eight patients were discharged prior to our consent process. We excluded five patients because their admission was expected to be 72 hours or less. We excluded two patients because of inability to communicate. We approached 11 patients for consent; 4 refused participation. One patient, when first approached wanted massage, and then refused. Of the three other patients that refused, one already had been using massage, the second was not interested in trying massage, and the third wanted massage but the family refused it when the patient rapidly deteriorated.

Of the seven consenting patients, massage was provided to six, because family caregivers refused to receive massage for one patient after he had signed the informed consent and he had filled out the baseline questionnaires. The background information of the consenting patients can be seen in Table 2 and the demographic characteristics of these patients are shown in Table 3 (one patient had a second hospitalization, considered as Patient 7).

Massage was provided daily while patients remained hospitalized. In total, 23 massages were given. The average number of massages per patient was 3.3. The average massage duration was 34 minutes (range 15–60 minutes). The most common techniques used were gliding ( $n = 23$ ), holding ( $n = 22$ ), kneading ( $n = 19$ ), and compression ( $n = 8$ ), but Reiki, passive range of motion, gentle manual traction, and lymphatic drainage were also used a few times. Therapists adjusted the hospital bed heights to comfortable levels. Patient positioning was limited for patients who had severe pain, so therapists adjusted their massage techniques to avoid repositioning these patients. Most patients preferred mas-

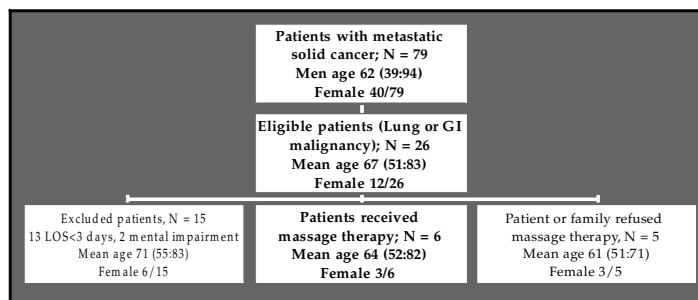


Figure 1. Enrollment of hospitalized patients with metastatic cancer for massage therapy. GI = gastrointestinal; LOS = length of stay.

sage in the evening when interruptions were less likely. Evening hours were also the preferred time to train patients' caregivers in the use of massage.

All patients who received massage reported that it was helpful. Of the six patients, four reported that massage provided relaxation and three patients reported that massage eased their pain. Two patients mentioned that after the massage therapy they felt more comfortable. No patient reported adverse effects. The patients' pain levels decreased after massage therapies (3.83 versus 5.50). The mean alertness level (3.67 versus 5.5) and anxiety level (3.83 versus 4.75) increased. Pain, anxiety, and alertness level of patients are shown in Table 4.

### Illustrative Case Study of Patient 1

A.B. was a 58-year-old male patient with pancreatic cancer (moderately differentiated adenocarcinoma, status post a Whipple procedure, with two of eight positive lymph nodes, and perineural and vascular invasion and liver metastases) admitted to the hospital with fever and neutropenia. His primary cancer was diagnosed in 1999, and spread to abdominal lymph nodes was evident at the time of diagnosis. A liver metastasis was diagnosed 1½ years later. A.B. was disease-free until the appearance of his liver metastases but than he had persistent ductal dilatation of the left hepatic system and episodes of cholangitis, portal-vein thrombosis, and sepsis. In addition to surgical treatment, he had chemotherapy and radiation therapy.

Table 4. Pain, Anxiety, and Alertness Level of Patients Who Received Massage Therapy

Patients	Number of massages	Pain baseline <sup>a</sup>	After massages	Anxiety baseline <sup>b</sup>	After massages	Alertness baseline <sup>c</sup>	After massages
1	9	6	3	2	3	2	3
2	6	5	3	10	4	10	4
3	3	6	4	1	8	7	10
5	1	6	No data	7	No data	0	No data
6	2	4	No data	1	No data	1	No data
7	2	6	4	2	4	2	5
<b>Mean</b>	<b>3.83</b>	<b>5.50</b>	<b>3.50</b>	<b>3.83</b>	<b>4.75</b>	<b>3.67</b>	<b>5.50</b>

<sup>a</sup>S Scores 0–10; worst pain = 10; <sup>b</sup>Profile of Mood States (POMS) Scores 0–10; worst anxiety = 10; <sup>c</sup>POMS Scores 0–10; extremely alert = 10.

He had not had any type of complementary and alternative therapy. His past medical history was notable for hypertension. His admitting medications included low molecular-weight heparin, captopril, and multivitamins. Prior to his hospitalization, he worked as a financial consultant. He did not need assistance in activities of daily living. He was an ex-smoker and he drank 3–4 glasses of wine per day. His sister had breast cancer and his mother had multiple sclerosis. The patient lived with his wife.

Prior to admission, he had right upper-quadrant pain for 1 week, followed by fevers and chills, but he had no other symptoms. His length of stay in the hospital was 15 days. On his second hospital day, a computed tomography scan showed left hepatic ductal dilatation and multiple hepatic metastases. On the seventh day of hospitalization, an interventional radiologic procedure revealed total occlusion of the right hepatic duct so the patient had internal and external drains placed and he was started on antibiotics. On the ninth day of hospitalization the external drains were removed, but he had worsening pain and was persistently febrile.

He was given oxycodone and acetaminophen for pain control and, on day 13 of his hospitalization, he was started on morphine. Finally, on the fifteenth day of hospitalization, he was discharged in stable condition. The second hospitalization of A.B. lasted for 13 days and we managed his data as Patient 7. During his first days in the hospital he was in fairly good condition. On day 10 of his second hospitalization, he was admitted to the intensive care unit because of systemic shock and, 3 days later, he died of sepsis originating from his biliary system.

#### *Massage intervention*

On day 3 of A.B.'s first hospitalization, the attending physician was asked about the patient's study eligibility and permitted us to offer massage to the patient. The primary nurse also supported approaching him for consent. His caregiver (wife) wanted to be present at massages to study the techniques of massage and both the patient and caregiver signed the informed consent form. During the hospitalization, A.B. received 9 massage therapy sessions with an average duration of 49 minutes.

#### *Summary of massage therapies*

A.B. received six different techniques: gliding (n = 9); holding (n = 9); kneading (n = 9); compression (n = 5); traction (n = 1); and lymphatic drainage (n = 1). Massage was administered to the back, neck, and extremities. The patient preferred back massage. The patient was quiet during the treatments, was very responsive to massage, and changed positions easily. His breathing slowed and deepened during treatments and his muscle tension softened, indicating relaxation. He did not fall asleep during any of the treatments. The site restrictions were the right subclavian Port-A-Catheter and the left foot (dry, scaly skin with discoloration). His wife and sister-in-law were pleased to study the

techniques. The patient tolerated the sessions well and no adverse effects were reported.

A.B. completed a baseline questionnaire as well as 6 follow-up questionnaires. After the first hospitalization the patient reported being pleased with the massage therapies. He felt the massages helped him to relax. He, his wife, and his sister-in-law were happy to participate in the massage study. He also tolerated the massage therapies well during the second hospitalization and there were no adverse effects or feelings of discomfort. During the second hospitalization, he felt that the massage also eased his pain. He and his wife were happy to participate again in the study. The pilot study ended at the 5th day of his second hospitalization, when A.B. said: "I am really sorry, because the massage therapy was the only good thing in the hospitalization."

## Discussion

During a 4-week period, 41 percent of the identified patients (with lung and GI metastatic cancers) admitted to the hospital were eligible for our protocol and 55 percent of these patients received massage therapy. All of the patients who received massage had been admitted to the hospital for complications of cancer. Their average length of stay was 12.3 days and approximately half of them died during the study period. Based on the questionnaires the patients reported that their worst pain during the previous day to admission was 5 or greater and the mean level of worst pain was 7 or greater. During the study, 23 massages were provided, with an average number of 3.3 per patient. The average massage duration was 34 minutes. The most common techniques used were gliding, holding, kneading and compression.

Most patients preferred massage in the evening and on their backs. All patients who received massage reported benefits, which included pain relief and relaxation, and some patients mentioned that, after the massage therapy, they felt more comfortable. The average pain levels of the study patients decreased after the massage therapies. Their mean alertness and the anxiety levels increased. Based on interviews with both patients and family caregivers, as well as the massage therapists' documentation, there were no adverse effects or other uncomfortable symptoms from the treatment. Patients discussed their massage experiences with the attending physicians and primary nurses, who reported a positive effect from the massage therapy. Physicians, nurses and other hospital staff accepted and supported the massage intervention. Massage therapists adapted their practices to the hospital environment relatively easily. Adjustable beds facilitated comfortable provision of massage. Massage therapists were able to follow scope of practice restrictions and guidelines easily for treating patients with cancer. Although work with dying patients can be straining emotionally, therapists found the work to be satisfying and rewarding.

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*The average pain levels of the study patients decreased after the massage therapies.*

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Our study had limitations. The small sample size and lack of a control group precluded any assessment of the effect of massage on patient outcomes. However, patients who received massage did report benefit in terms of both pain control and relaxation. Similarly, the small sample size limits our ability to assess the safety of massage definitively. However, the absence of any adverse effect is reassuring.

A larger study of hospitalized patients with cancer near the end of life is needed to evaluate the effect of massage in hospitalized patients and to assess safety issues. Although we have demonstrated that providing massage is feasible with this patient population, a number of questions need to be answered before a definitive randomized clinical trial could be performed:

- (1) What would be an appropriate control group?
- (2) Should a therapist provide a touch intervention (such as hand-holding) or a nontouch control, similar in duration to massage provided to intervention patients?
- (3) Will patients randomized to usual care, or another inactive control, comply with necessary data collection?
- (4) Will caregivers consent to learn and actually provide massage to patients after hospital discharge?
- (5) Will we be able to collect sufficient data to evaluate the intervention, while minimizing respondent burdens and dropout rates?

## Conclusions

In conclusion, the results of this pilot study demonstrated that massage therapy can be administered to even very sick patients. The patients, their families, as well as hospital staffs all desired patients' participation. The protocol described here is feasible for the investigation of the effect of massage on hospitalized patients with metastatic cancer. Based on our present and previous experiences, the potential risks of massage are minimized by using carefully designed study protocols and highly qualified providers. While our pilot data support a positive effect of massage therapy on hospitalized patients with metastatic cancer, a larger randomized controlled trial will be necessary to evaluate the effectiveness of massage in this patient population.

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## References

1. Eisenberg DM, Kessler RC, Foster C, Norlock FE, Calkins DR., Delbanco TL. Unconventional medicine in the United States. *N Engl J Med* 1993;328:246–252.
2. Eisenberg DM, Davis RB, Ettner SL, Appel S, Wilkey S, Van Rompay M., Kessler RC. Trends in alternative medicine use in the United States, 1990–1997: Results of a follow-up national survey. *JAMA* 1998; 280:1569–1575.
3. Lynn J, Teno JM, Phillips RS, Wu AW, Desbians NA, Harold J, Classens MT, Wenger N, Kreling B, Connors AJ. Perceptions by family members of the dying experience of older and seriously ill patients. *Ann Intern Med* 1999;126:97–106.
4. Portenoy RK, Payne R. Symptoms prevalence, characteristics and distress in a cancer population. *Quality Life Res* 1994;3:183–189.
5. Breitbart W, Jensen TS, Turner JA, Wiesenfeld-Hallin Z. Pain in AIDS, vol. 8 [Proceedings of the 8th World Congress on Pain, Vancouver, British Columbia, Canada, August 17–22, 1996.]. Seattle: IASP Press, 1997:1–38.
6. Cleeland CS, Gonin R, Hatfield AK, Edmonson JH, Blum RH, Stewart JA, Pandya KJ. Pain and its treatment in outpatients with metastatic cancer. *N Engl J Med* 1994;33:592–596.
7. Donovan M, Dillon P, McGuire L. Incidence and characteristics of pain in a sample of medical–surgical inpatients. *Pain* 1987;30:69–87.
8. Cherny NI, Catane R. Professional negligence in the management of cancer pain: A case for urgent reforms. *Cancer* 1995;76:2181–2185.
9. Fainsinger R, Miller MJ, Bruena E, Hanson J, Maceachern T. Symptom control during the last week of life on a palliative care unit. *J Palliative Care* 1999;7:5–11.
10. Kissane DW, Bloch S, McKenzie DP. The bereavement phenomenology questionnaire: A single factor only. *Australian N Z J Psychiatry* 1997;31:370–374.
11. MacDonald G. Massage as a respite intervention for primary caregivers. *Am J Hosp Palliat Care* 1998;12:43–47.
12. Meek SS. Effects of slow stroke massage on relaxation in hospice clients. *IMAGE: J Nurs Scholarship* 1993;25:17–21.
13. Ferrell-Torry A, Glick OJ. The use of therapeutic massage as a nursing intervention to modify anxiety and the perception of cancer pain. *Cancer Nurs* 1993;16:93–101.
14. Pan CX, Morrison RS, Ness J, Fugh-Berman A., Leipzig RM. Complementary and alternative medicine in the management of pain, dyspnea, and nausea and vomiting near the end of life: A systematic review. *Pain Symptom Manage* 2000;20:374–387.
15. Field T, Seligman S, Scafidi F, Schanberg S. Alleviating post-traumatic stress in children following Hurricane Andrew. *J Appl Develop Psychol* 1996;19:37–50.
16. Field T, Sunshine W, Hernandez-Reif M, Quintino O, Shanberg S, Kuhn C, Burman I. Chronic fatigue syndrome: Massage therapy effects on depression and somatic symptoms in chronic fatigue. *J Chronic Fatigue Syndrome* 1997;3:43–51.
17. McKechnie A, Wilson F, Watson NL, Scott D. Anxiety States: A preliminary report on the value of connective tissue massage. *J Psychosom Res* 1983;27:125–129.
18. Field T, Morrow C, Valdeon C, Larson S, Kuhn C, Schanberg S. Massage reduces anxiety in child and adolescent psychiatric patients. *J Am Acad Child Adolesc Psychiatry* 1992;31:124–131.
19. Field T, Hernandez-Reif M, Taylor S, Quintino O., Burman I, Kuhn C, Schanberg S. Labor pain is reduced by massage therapy. *J Psychosom Obstet Gynecol* 1997;18:286–291.
20. Nixon N, Teschendorff J, Finney J, Karnilowicz W. Expanding the nursing repertory: The effect of massage in post-operative pain. *Australian Adv Nurs* 1997; 14:21–26.
21. Sunshine W, Field T, Schanberg S, Quintino O, Kilmer T, Fierro K, Burman I, Hasimoto M, McBride C, Henteleff T. Massage therapy and transcutaneous electrical stimulation effects on fibromyalgia. *J Clin Rheumatol* 1997;2:18–22.
22. Puustjarvi K, Airaksinan O, Pontinen PJ. The effects of massage in patients with chronic tension headache. *Acupunct and Electro-ther Res Int J* 1990;15:159–162.
23. Field T, Henteleff T, Hernandez-Reif M, Martinez E, Mavunda K, Kuhn C, Schanberg S. Children with asthma have improved pulmonary function after massage therapy. *J Pediatrics* 1998;132:854–858.
24. Field T, Schanberg SM, Scafidi F, Bauer CR, Vega-Lahr N, Garcia R, Nystrom J, Kuhn CM. Tactile/kinesthetic stimulation effects on preterm neonates. *Pediatrics* 1986;77:654–658.
25. Goldstein-Ferber S. Massage in preterm infants. Paper presented at the 11th Annual International Conference on Infant Studies, Atlanta, Georgia, April 1998.
26. Jinon S. The effect of infant massage on growth of the preterm infant. In: Yarbes-Almirante C, DeLuma M, eds. *Increasing Safe and Successful*

Pregnancy. Amsterdam: Elsevier, 1996:265–269.

27. Field T, Ironson G, Pickens J, Nawrocki T, Fox N, Scafidi F, Burman J, Schanberg S. Massage therapy reduces anxiety and enhances EEG pattern of alertness and math computations. *Int J Neurosci* 1996;86:197–205.

28. Field T, Hernandez-Reif M, Quintino O, Wheeden C, Schanberg S, Kuhn C. Elder retired volunteers benefit from giving massage therapy to infants. *J Appl Gerontol* 1997;17:229–239.

29. Ohnhaus E, Adler R. Methodological problems in the measurement of pain: A comparison between the verbal rating scale and the visual analogue scale. *Pain* 1975;1:384.

30. Cleeland CS. Measurement of pain by subjective report. In: Chapman CR, Loeser JD, eds. *Advances in Pain Research and Therapy*. New York: Raven Press, 1989:16.

31. Twycross R, Hartcourt J, Bergl S. A survey of pain in patients with advanced cancer. *J Pain Symptom Manage* 1996;12:273–282.

32. Cleeland, CS, Ryan KM. Pain assessment: Global use of the Brief Pain Inventory. *Ann Acad Med Singapore* 1994;23:129–138.

33. McNair DM, Lorr M, Droppleman LF. *EITS Manual for the Profile of Mood States*. San Diego, CA: Educational and Industrial Testing Service, 1971.

34. SUPPORT Investigators. A controlled trial to improve care for seriously ill hospitalized patients: The Study to Understand Prognoses and Preferences for Outcomes and Risks of Treatments (SUPPORT). *JAMA* 1995;274:1591–1598.

35. Byock IR, Merriman MP. Measuring quality of life for patients with terminal illness: The Missoula-VITAS Quality of Life Index. *Palliative Med* 1998;12:231–244.

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