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Occupational Therapy Perspective in the Management of Lymphedema

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OCCUPATIONAL THERAPY PERSPECTIVE IN THE MANAGEMENT OF
LYMPHEDEMA

by

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A Scholarly Project

Submitted to the Occupational Therapy Department

of the

University of North Dakota

In partial fulfillment of the requirements

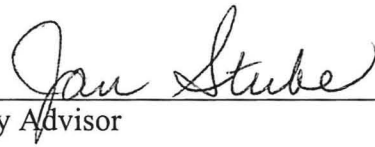
for the degree of

Master's of Occupational Therapy

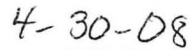


Grand Forks, North Dakota
May 10th, 2008

This Scholarly Project Paper, submitted by Mellonna Beckermann in partial fulfillment of the requirement for the Degree of Master's of Occupational Therapy from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.

A handwritten signature in cursive script that reads "Jan Stube". The signature is written in black ink and is positioned above a horizontal line.

Faculty Advisor

A handwritten date "4-30-08" in black ink, positioned above a horizontal line.

Date

PERMISSION

Title: Occupational Therapy Perspective in the Management of Lymphedema

Department: Occupational Therapy

Degree: Master's of Occupational Therapy

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ABSTRACT

Problem: Lymphedema is a collection of excess water, interstitial fluid, plasma proteins, bacteria, and cellular waste products in the interstitial tissues as a result of an impaired lymphatic system due to disease or trauma (Cheville, McGarvey, Petrek, Russo, Taylor, & Thiadens, 2003). This fluid typically collects in a person's upper and/or lower extremities. Lymphedema is a chronic condition and can be progressive if not managed properly. Lymphedema may result in significant impairments to the person, which results in functional limitations and a decrease in quality of life (Konecne & Perdoma, 2004). Treatment of lymphedema can be costly, timely, and overwhelming for many patients. Patients' occupations are often impacted and compliancy with recommended treatment techniques is a significant indicator of successful outcomes.

Methodology: An extensive literature review is completed to investigate alternative treatment strategies for lymphedema management. The author of a textbook was contacted and gave his permission for material usage within this scholarly project (see Appendix A). The professional clinical experience of the author as a certified lymphedema therapist and occupational therapist provided additional perspective on the management of lymphedema. The Canadian Model of Occupational Performance (Fearing, Law & Clark, 1997) is the theoretical basis for this scholarly project.

Findings and Product: A comprehensive lymphedema program is developed to provide an individualized approach for the prevention and management of lymphedema for

patients seen by occupational therapists in medical and/or community settings. The product encompasses three phases of lymphedema management. Part I is for the client diagnosed with lymphedema and includes occupational-based evaluation, treatment and follow through with managing this complex condition with as minimal impact on the client's daily roles and routines. Part II is a PowerPoint® presentation for the education and training of other health care professionals on lymphedema. Part III is a tertiary, preventive program to educate clients at risk for developing lymphedema. Overall, the comprehensive lymphedema program will attempt to minimize the impact of lymphedema on clients' meaningful occupations for improved physical and psychosocial well-being.

CHAPTER I

INTRODUCTION

Lymphedema is a medical diagnosis that is often misunderstood or may go undiagnosed. Many healthcare professionals including physicians, nurses, and therapists are not aware of the potential to prevent the occurrence of lymphedema by educating the clients at risk and by modifying therapeutic interventions. It is estimated that over 140 million people worldwide are affected by lymphedema (King & Droessler, 2001). Although treatment of lymphedema requires specialized training, it is imperative all healthcare professionals have a basic understanding of the prevention techniques and precautions, signs and symptoms of the development of lymphedema, and awareness of the treatment options.

As lymphedema can have a significant impact on one's daily occupations, occupational therapists can address not only the physical impact of this condition, but the social and emotional consequences. This scholarly project includes a comprehensive lymphedema program to be provided by occupational therapists based on current literature and research support. The intention is to encompass all aspects of this potentially devastating condition, including a tertiary prevention and education program as well as client-centered instructions and handouts for improved understanding and control of the client's lymphedema. In addition, a PowerPoint® presentation is included to assist with the education and training of occupational therapy students, therapists and other healthcare professionals. This chapter will include information on lymphedema to

have improved understandings of the diagnosis, explanation of the terms associated with the management of lymphedema and a description and rationalization of the occupational therapy frame of reference utilized in this scholarly project.

Principles of Lymphedema

Lymphedema is a collection of excess water, interstitial fluid, plasma proteins, bacteria, and cellular waste products in the interstitial tissues as a result of an impaired lymphatic system due to disease or trauma (Cheville, McGarvey, Petrek, Russo, Taylor, & Thiadens, 2003). This fluid typically collects in a person's upper or lower extremities and can affect one or both limbs. Unfortunately, no medication is available to cure lymphedema (King & Droessler, 2001). It is a chronic condition and can be progressive if not managed properly. There are two types of lymphedema, primary and secondary. Primary lymphedema (congenital lymphedema) is the result of abnormal development of the lymphvascular system. Secondary lymphedema (acquired lymphedema) is more common and stems from damage to the lymphatics or lymph nodes from trauma, disease, surgery, or irradiation (Weiss & Spray, 2002). As indicated by Sitzia, Sobrido, and Harlow (2002), estimates of the incidence of lymphedema vary from 25% to 38% of women who have undergone mastectomy for breast cancer and 22% of those patients with lower extremity edema as a consequence of radical groin dissection. In the United States, the highest incidence of lymphedema is observed following breast cancer surgery (Zuther, 2004). According to the National Cancer Institute (2006), approximately one out of every eight women will develop breast cancer during the course of their lives and are at risk of developing of lymphedema.

Description of Lymphedema Terminology

Complete decongestive therapy (CDT) is a common treatment program for lymphedema in the United States and other countries. CDT consists of manual lymph drainage (MLD), compression using layers of short stretch bandages and padding initially and a lifetime commitment of wearing compression hoses, skin and nail care education, and muscle pump stimulating exercise (Zuther, 2005). CDT is generally completed 4-5 times per week for 2 to 4 weeks depending on the severity of the lymphedema. Treatment sessions typically last a minimum of one hour, but can last up to two hours depending on the number of limbs involved and the severity of the lymphedema.

Manual lymph drainage (MLD) is a type of skin massage performed by a trained MLD therapist, who uses gentle, specialized hand movements in range of different sequences, techniques that are designed to increase lymph flow and reabsorption without increasing filtration. The gentle skin massage stimulates superficial lymphatic contractions, thus increasing lymphatic drainage (Sitzia, Sobrido, & Harlow, 2002). Recognized MLD approaches include Foldi, Vodder, Leduc, and Casley-Smith. In the United States, in order to be a certified lymphedema therapist, 135 hours of CDT training must be completed through a recognized lymphedema program.

A national certification examination for lymphedema therapists is available through the Lymphology Association of North America (LANA, 2007). In order to take the examination, the following requirements must be met:

- 135 hours of CDT training consisting of 1/3 theoretical instruction in the anatomy and physiology of the lymphatics, 2/3 significant hands on mentoring.
- 1 year of documented experience after receiving CDT training.

- Current, unrestricted licensure as an RN, OT, COTA, PT, PTA, MD, DO, ATC, DC or Massage Therapists who have completed 500 massage school hours and/or National Therapeutic Massage and Bodywork Certification.
- 192 hours college level anatomy, physiology and/or pathology (this requirement is automatically met with evidence of current professional licensure of: RN, OT, COTA, PT, PTA, MD, DO, ATC, and DC disciplines).

Simple lymphatic drainage (SLD) is a less complex technique based on the principles of MLD, using simplified hand movements in as set sequence. It can be performed by a therapist, but equally by the client or a family member, with no specialist training necessary. Both MLD and SLD are used in combination with multi-layered bandaging (Sitzia, Sobrido, & Harlow, 2002).

Occupational Therapy Frame of Reference

It is important for occupational therapist to have theoretical basis for selection and application of all clinical interventions. The Canadian Model of Occupational Performance was selected as the frame of reference for this scholarly project (Fearing, Law, & Clark, 1997). This client-centered approach fosters a therapeutic relationship in which the client is a more actively involved throughout the therapeutic process. By using the Canadian Model of Occupational Performance, a top-down approach is facilitated to identify and address occupational performance issues that are important and relevant to the client for optimal client participation and management of his or her lymphedema.

The Canadian Occupational Performance Measure (COPM) has been identified as an important assessment tool to apply the Canadian Model of Occupational Performance to occupational therapy practices. The COPM is used to identify client's perception of

problems and their importance in the client's life (Fearing, Law & Clark, 1997). The COPM was originally published in 1991, has had two subsequent editions, and has been translated into 24 languages. It can be used a part of the occupational therapy initial assessment for setting goals and treatment planning. Additionally, it can be used to reassess changes in perceived performance and satisfaction with occupational performance over time. The COPM takes approximately 40-60 minutes to administer and begins with a semi-structured interview to request clients to identify issues in areas of self-care, productivity, and leisure. Performance and satisfaction with five identified problems are self-rated on a scale of 1 to 10 with 10 reflecting the highest level. Based on empirical and descriptive papers, the COPM is a reliable, valid, clinically useful, and responsive measure that can be used to provide empirical evidence of the effectiveness of client-centered occupational therapy intervention as well as basis for occupational therapy outcomes research (Carswell et al., 2004).

Fearing, Law and Clark (1997) indicate that the Canadian Model of Occupational Performance is a seven-stage model that is designed to be used as a guideline to assist the client with problem solving to address occupations of concern for the client. Table 1 includes specific examples of the occupational performance process in practice in the evaluation and treatment of the client with lymphedema. The first step is to identify the occupational performance problem. The COPM can be used during this step to assist with validating and prioritizing areas to be addressed. In the product section, the client can complete a questionnaire identifying roles and habits affected by lymphedema prior to the first therapy session if time restraints limit the administration of the COPM. Secondly, the occupational therapist selects appropriate intervention models to address

the problem areas such as physical rehabilitative, socio-adaptive, and environmental. The third step is to identify occupational performance components and environmental conditions. This area may include completion of self-care assessments, examination and measurement of the affected lymphedema limb(s), and range of motion, strength and coordination testing. The fourth step entails identifying the client's strengths and resources such as family or community support. The fifth step is to determine goals and outcomes in partnership with the client, his or her family and the therapist. The next process is to implement the plan through occupational-based and purposeful activities. The final step is to evaluate the effectiveness of the intervention to assist the client to reflect on their progress and to modify future goals and plans as needed.

Table 1

Sample Occupational Performance Process with the Lymphedema Client

Name Occupational Performance Problem	Select Intervention Models	Identify Components & Environmental Facts	Identify Resources	Negotiate Outcomes and Plan in Partnership	Implement Plans Through Purposeful Occupation	Evaluate Outcome
Difficulty in using arm with lymphedema for reaching tasks (i.e. into cupboards)	Physical Rehabilitation Socio-adaptive Environmental	Impaired shoulder flexion due to edema and pain Impaired shoulder strength due to limited use of affected arm Discouragement with appearance of affected arm Frequently used items on high shelves in kitchen	Supportive spouse who can assist with bandaging Daughter able to assist on weekends Client is motivated and committed to lymphedema treatment process	Client will complete item retrieval for meal preparation without assistance with increase in right shoulder flexion by 20 degrees	CDT including MLD/bandaging Completion of graduated reaching tasks with placing items on pantry shelves Investigate alternatives for improved accessibility in kitchen (pull-out shelves, turn table, reacher, or placing frequently used items on lower shelves)	Changes in affected arm ROM Reduction in size of lymph with changes with measuring of limb Improved satisfaction with COPM scores

This scholarly project will offer information and guidance for the occupational therapist specializing in lymphedema to deliver optimal client-centered occupational therapy evaluations and therapeutic intervention. Additionally, it can be beneficial for other healthcare professionals to have a greater understanding and knowledge of lymphedema. Current literature and research information will be reported in Chapter II to support the importance and options for the management of lymphedema. Methodology for developing the product will be reviewed in Chapter III. The product, which includes a PowerPoint® presentation for education of healthcare professionals, a comprehensive guide for the evaluation, treatment and education in the management of lymphedema, and a tertiary preventative program, will be presented to promote successful outcomes in Chapter IV.

CHAPTER II

LITERATURE REVIEW

As stated by occupational therapist, Sara Cohen, “Occupational therapist can provide the vital link to help clients return to valued roles and activities” (Cohen, 2005, p. 16). Occupational therapist can assist in not only the physical management of lymphedema, but also the cognitive, social and emotional effects of this chronic condition. In this literature review, various topics are examined to foster the development of a comprehensive and research-based approach to optimally evaluate and treat the client with lymphedema. In order to successfully control lymphedema, client compliance is crucial. The less impact and disruption in the client’s daily occupations, routines and roles, client compliance will improve.

Treatment Techniques for Management of Lymphedema

As reviewed in Chapter I, complete decongestive therapy (CDT) is a complex process for the management of lymphedema. CDT requires significant commitment and compliance for effective results. Research studies have produced variable results to support the technique as the optimal and standard of care for management of lymphedema. The knowledge and skill of the therapist or medical personnel providing the treatment can vary significantly, thus influencing outcomes.

Mondry, Riffenburgh, and Johnstone (2004) studied the effects of CDT for upper extremity lymphedema after breast cancer therapy. The author concluded that CDT is effective in treating lymphedema and by reducing the size of the affected limb, pain was

reduced. Increased number of treatment sessions resulted in marked improvements in girth, volume and weight, but resulted in poor compliance. QOL consistently increased, although not significantly during the treatment and continued to improve after the treatment ended. Fact-B QOL scores increased consistently, increasing a unit during treatment, 2 more units by 6 months, and 3 more by 12 months to end at 6 units (about 5%) above baseline.

In the United Kingdom, twenty-eight women participated in a study by Sitzia, Sobrido, and Harlow (2002) to determine if manual lymph drainage (MLD) is significantly more effective than simple lymphatic drainage (SLD). Using the Leduc method, the MLD group achieved a 12% greater reduction in limb volume reduction than the SLD group. The data suggest that MLD is more effective than SLD in reducing limb swelling.

On the contrary, Andersen, Hojris, Eriandsen, and Andersen (2000) determined that MLD did not contribute significantly to reduce edema volume. The study compared standard therapy that consisted of wearing a compression garment, education, skin care and safety precautions, and exercise. The experimental group received the addition of MLD for eight times in 2 weeks and the patients were trained in self- administration of MLD. The study omitted using compression bandages after the completion of MLD, which is not the standard of care and may account for lack of limb volume reduction.

A randomized, controlled, clinical trial by Badger, Peacock, and Mortimer (2000) compared the use of multilayer bandaging followed by hosiery verses hosiery alone in the treatment of patients with upper and lower extremity lymphedema. The results indicated the group using the multilayer bandaging doubled the limb volume reduction. The

experimental group achieved greater and more sustained limb volume reduction over a 2-year period than hosiery alone.

King and Droessler (2000) tested the physical properties of six common brands of short-stretch bandages used to treat lymphedema. The study demonstrated that all six brands of bandages maintained pressure well over a 12-hour period. The edges of the bandages measured between 6% and 28% lower than the middle of the bandages. When the bandages were wrapped with a 50% overlap as recommended, all six brands measured fairly consistently in pressure reading across the width. All the bandages exhibited good therapeutic qualities with no significant difference between brands. Additional studies would be beneficial with a comparison of pressure applied over a 24-hour use and after washing and using the bandages over time.

Alternative techniques for management of lymphedema have been researched with discrepancies in the results. There is significant controversy over the use of the multi-sequential pumps. The proponents of the pumps contend the sequential compression by inflating distally to proximally move fluid to functional lymphatics. The multi-sequential pumps are reimbursable according to Medicare guidelines after a four-week trial of conservative medical management that includes exercise, elevation and compression garments (Centers of Medicare and Medicaid Services, 2002). Opponents of use of the pumps are concerned the use of the pump can lead to the development of fibrous bands that can further impede lymphatic drainage. A retrospective study by Hassall, Graveline, and Hilliard (2001) showed a volume reduction in 20% of affected limbs; 73% were maintained and 7% deteriorated. The authors concluded this supported the use of the multi-sequential pump in management of lymphedema with children; however, the

results were not significant compared to other methods used to reduce limb volume. Overall, it appears the multi-sequential pump can be used as an adjunct to lymphedema treatment when other options are not available or feasible.

One study supported the use of a new technique using malleable material (i.e. rollers) as a lymph drainage device. The authors de Godoy, Batigalia, and de F.G. Godoy (2002) reported an average girth reduction of 2.4 cm after completion 5 times per week for one-hour sessions for one month. Although the results were not significant and the time requirements were not clinically impressive, the advantage of this technique is that even a minimally trained person such as the patient can perform it for improved compliance and follow-through.

Lymphedema and its Impact on Quality of Life

As lymphedema of the arm(s) or leg(s) increases the size and heaviness of the affected limb, it can be difficult to continue to perform activities of daily living such as styling one's hair, walking, or exercising. Lymphedema can have a significant impact on psychological and social well-being. Occupational therapists have a strong foundation in understanding and dealing with emotional and social consequences of such physiological conditions. According to a literature review by McWayne and Heiney in 2005, lymphedema resulted in psychological sequelae such as frustration, distress, depression and anxiety. Social sequelae consisted of changes in role function, lack of social support, and pain and disability. These experiences resulted in diminished quality of life, particularly psychological and social health.

In a retrospective cohort design study by Beaulac, McNair, Scott, LaMorte, and Kavanah (2002), women with lymphedema scored significantly lower on 4 out of 5

subsections of a questionnaire than women without lymphedema, even after adjusting for other factors including quality of life. Women with decreased range of motion recorded lower breast, functional, and physical well-being and total FACT-B quality of life scores (the Functional Assessment of Cancer Therapy Breast scale).

Body image, one's attitude toward his or her own physical self, can deteriorate after a physical injury of disability. Surprisingly, a study by occupational therapists Martin and Hanson (2000) reported no significant differences in the self-perceived body image using the Multidimensional Body-Self Relations Questionnaire (MBSRQ) between breast cancer patients with or without lymphedema. However, women with lymphedema had greater dissatisfaction on items of a few MBSRQ subscales (i.e. dissatisfaction with mid and upper torso regions, health evaluation, and overweight preoccupation).

Additionally, Jager, Doller, and Roth (2006) conducted a study to investigate the differences in body image and quality of life between female patients with lymphedema and trauma injuries. The patients with lymphedema scored significantly lower evaluations of their body image than patients with trauma injuries in seven of the nine areas represented by the Frankfurt Body Image Questionnaire. The patients with lymphedema had significantly lower values on the QOL scales of General Health, Vitality, and Mental Health. The patients with lymphedema had an extremely negative view of themselves in the area of Physical Functioning, a scale that relates the degree of perceived strength and tenacity as well as the degree of mobility and the flexibility of motor behavior. No differences were noted in on the other scales. After three weeks of in-patient rehabilitation, the patients with lymphedema demonstrated improvements in the evaluation of physical functioning and increased acceptance of the body. The patients

with lymphedema also showed a significant increase in health perception, vitality, and mental health.

Weiss and Spray (2002) studied the effect of complete decongestive therapy (CDT) on the quality of life of 36 participants receiving outpatient lymphedema treatment. As determined by the QOL questionnaire, patients reported post-treatment improvements in physical, functional, and psychosocial aspects. There was a greater decrease in QOL scores post-treatment for patients with leg lymphedema when compared to those patients with upper extremity swelling. According to the authors, this suggests that CDT treatment improved QOL more dramatically in those with leg lymphedema than in those patients with arm lymphedema by means of physical improvement. Weiss and Spray indicated the patients with lower extremity swelling may have more of a mix of edema and lymphedema that responded more rapidly and effectively to CDT treatment. Despite significant volume reductions with CDT, the results from this study did not support the association between limb volume reduction and QOL among the three areas. The lack of association suggests that edema volume reduction is only part of what influences improvement in QOL.

Measuring the Success in Management of Lymphedema

In the treatment of lymphedema, limb volume changes are monitored to determine the results of the intervention. There are a variety of methods used to measure the limb size. The Perometer® is manufactured by Juzo and is an optoelectronic device that uses infrared light transmitters to determine the circumferential measurements. According to Stanton, Northfield, Holroyd, Mortimer, and Levick (1997), the device is highly reproducible and each measurement only takes a few seconds. The authors concluded the

Perometer® is a reliable and convenient tool for measurement of limb volumes. The disadvantage of the device is the cost as it ranges from \$16,000 to \$24,000, depending on the style. Two other methods commonly used are calculated limb volume from circumferential measurements and water displacement methods. Karges, Mark, Stikeleather, and Worrell (2003) compared the validity of circumferential and water displacement measurements and determined the reliability of the two methods were comparable. The study did indicate the measurements are not interchangeable and clinicians cannot substitute the measurement methods with a single client.

According to research literature, greater emphasis should be placed on arm function in the assessment, treatment and targeting of patients with breast cancer-related lymphedema. Pain, Vowler, Purushotham (2003) reported impairment of physical function had a greater impact than the degree of arm swelling on the psychological morbidity associated with breast cancer-related lymphedema. Another study by Micheleni, Failla, and Macaluso (2002-2003) suggested using the Functional Independence Measure (F.I.M) scales to analyze the improvement of the patients' functional conditions after treatment. There was a gain of two levels of 'necessity of assistance' with 46.4 % of the patients and improvement of three levels with 22.3% of the patients.

The Use of Exercise to Manage Lymphedema

Exercise is beneficial not only for the general population, but also for patients with lymphedema (Zuther, 2005). There is controversy regarding the quantity and types of exercises that are beneficial and whether a compression garment should be worn while exercising. McKenzie and Kalda (2003) found no change in arm circumference or

volume of upper extremity lymphedema as a result of an 8-week exercise program incorporating aerobic activities, light resistive weights and arm cycle ergometer. Three of the quality-of-life domains (i.e. physical functioning, general health, and vitality) on the SF-36 (Medical Outcomes Trust Short-Form 35 Survey) showed trends towards increases in the exercise group.

Johansson, Tibe, Weibull, and Newton (2005) studied the effects of low intensity resistance exercise for patients with breast cancer with arm lymphedema with and without use of compression sleeve. There was an increase in total arm volume of the lymphedema arm immediately after the exercise intervention for both groups: with or without compression sleeves. At 24 hours, no volume increase was found compared to pre-exercise and both groups showed a tendency towards reduced lymphedema relative volume. The patient's rating of perceived exertion was low regardless of whether a sleeve was worn, but was significantly higher when exercising with a sleeve. The study concluded that patients with arm lymphedema without risk of increasing the edema could perform low intensity exercises. It also indicated that exercising without a compression sleeve might be beneficial as long as compression sleeve is worn regularly.

The effect of gentle arm exercise and deep breathing on secondary arm lymphedema was examined by Moseley, Piller, and Carati (2005). Each participant in the experimental group performed a 10-minute routine of combined exercise and deep breathing. Directly after performing the exercise routine, there was a reduction in arm volume of 52 mls (5.8%) with the reduction being sustained at 30 minutes (50 mls, 5.3%). After this time, the fluid gradually returned to baseline by 60 minutes. Even though participants were told not to complete the exercises further, at 24 hours the

volume reduction was 46 mls (4.3%) and at one week, 33 mls (3.5%). At one month, the reduction was 101 mls (9.0%). The reported arm heaviness and tightness were significantly decreased directly after the exercise routine with the reduction in tightness sustained in 24 hours, one week and even one month after the program. The perceived limb size was significantly reduced at one week and at the one-month follow-up. The authors indicate the results of this study helps support the use of other forms of exercise that incorporate deep breathing and arm exercise, such as Tai Chi, Qi Gong and Yoga, as helpful alternatives for lymphedema clients.

Summary

In summary of the literature review, lymphedema of the arm(s) or leg(s) can affect the ability to complete one's daily activities such as getting dressed, lifting a child, functioning at work or gardening. Occupational therapists have unique skills to address the physical, psychological, emotional and social effects of this chronic condition. By looking at the "whole" person, occupational therapists assess and treat various aspects of this potentially devastating condition. As indicated in the diversity of research results, it is essential to provide a comprehensive approach that minimizes the impact of lymphedema for optimal compliance and outcomes. Functional improvements with lymphedema intervention can allow a client to return or continue important activities, roles and interests. In the following chapter, a comprehensive lymphedema program will be presented. It is to be provided by an occupational therapist, encompasses prevention and education, individualized treatment approaches for optimal compliancy, detailed and easy to follow instructions for lymphedema techniques, and includes alternative devices for compression garment donning and doffing. The program's intent is to minimize the

impact of lymphedema on patients' meaningful occupations for improved physical and psychosocial well-being.

CHAPTER III

METHODOLOGY

As evidenced in the literature review, there is variable data and research on the optimal management of lymphedema. The knowledge and skill of the therapist or medical personnel providing the treatment can vary significantly, thus influencing outcomes. It does appear that complete decongestive therapy (CDT) is the best option for controlling lymphedema. CDT is recognized as the standard of care for the treatment of lymphedema, including support by the internationally recognized non-profit organization, the National Lymphedema Network (NLN). Clinically, this author has seen substantial benefits of CDT with occupational therapy intervention. The disadvantage of CDT is it can be time consuming and requires considerable commitment to the entire process physically, emotionally, and financially. As the entire process of CDT may not fit into all clients' lifestyle and roles, alternatives such as the sequential compression pumps or portions of CDT can be incorporated to best fit the individual's needs.

Based on the literature review and professional experience, lymphedema does have a large effect on clients' quality of life including self-image and emotional and social health. Although there are therapists who treat clients with lymphedema exclusively, it would be too difficult for this author due to the physical requirements of CDT (specifically the application of MLD and bandaging) and the emotional energy needed. It is certainly rewarding clinically to see the benefits of CDT, but ideally treating two to three outpatient clients with lymphedema daily fosters a more balanced schedule.

While the Pedometer® is recognized as an accurate and efficient measurement of limb volumes, the circumferential measurements and water displacements methods are also sufficient for documenting limb volume progression. Due to the expense of the Pedometer®, it has not been available to this author. The author utilizes circumferential measurements using a measuring board that appears reproducible, but can be time consuming. The literature review suggested using more functional measurements to determine the benefits of lymphedema treatment. The Canadian Occupational Performance Measure (COPM), as discussed in Chapter I, assesses the client's perception of the influence and progression of his or her lymphedema. The COPM can be time consuming, but ideally could be administered during the completion of manual lymph drainage.

The literature review supported the use of exercise to control lymphedema. Several of the exercise handouts in the product section are modified and adapted from the recommended exercises in recent research studies. The author of a textbook was contacted and gave his permission for material usage within this scholarly project (see Appendix A). During occupational therapy treatment, many of the exercises are encouraged to be integrated in the client's daily activities such as deep breathing while reaching and placing the dishes away while using the affected arm. Clients are instructed to discover the most favorable and rewarding exercise(s) that can be easily incorporated during their daily routines. There is mixed data on the use of compression garments during exercise. Ideally, compression garments should be worn during exercise; however, research indicated it was sufficient to exercise without a compression garment as long as it is worn regularly.

The following Chapter IV on the product was developed based on the literature review and professional training. The author of this scholarly project attended one of the nationally recognized schools, the Academy of Lymphatic Studies, for certification in lymphedema in April 2005. Prior to attending the course, a 30-hour home study course was completed. Nurses, physical therapists, massage therapists and the largest percentage, occupational therapists, attended the course. The founder of Academy of Lymphatic Studies, Joachim Zuther, authored a book titled “Lymphedema Management: The Comprehensive Guide for Practitioners.” In addition to the course manual, this book was used for supplementary required daily readings. During the two-week course, daily lectures covered such information on the anatomy, physiology of the lymphatic system; knowledge of lymphedema including indications and contraindications; and business implications for billing and marketing recommendations. Extensive lab work with hands-on practice with fellow course participants covered such areas as basic and advanced techniques of manual lymph drainage (MLD) and complete decongestive therapy (CDT); short stretch bandaging techniques for the upper and lower extremities; decongestive exercises: measuring techniques for edema, and measuring techniques for compression garments (with certification from the standard vendors). After completion of the course, successful passing of a written and practical final exam was required for receiving certification to perform manual lymph drainage (Vodder technique) and complete decongestive therapy.

Knowledge and skills attained during this certification course have been incorporated during the provision of occupational therapy services for acute in-patients and outpatients with lymphedema and edema. Many of the principles and approaches for

lymphedema can also be adapted to reduce edema that is significantly more common and encountered during physical dysfunction rehabilitation. Consultation with two other occupational therapist co-workers who attended the same course as well as the class instructor via e-mails have been beneficial for problem solving treatment approaches with atypical and challenging lymphedema situations. Reviewing of literature articles on lymphedema for Chapter II expanded understanding and awareness of alternative techniques (such as simple lymphatic drainage – SLD) and exercises that have been assimilated during therapeutic interventions for improved occupational performance.

The PowerPoint® Presentation on lymphedema was developed to educate other healthcare professionals to increase their knowledge and understanding of lymphedema and edema principles and techniques. Many clients, therapists and nurses are not aware of the recommended skin and exercise precautions for those at risks or whom have developed lymphedema. Unfortunately, numerous therapy programs do not educate students regarding these important concepts and information. This leads to the potential of a healthcare professional triggering lymphedema inadvertently through such simple application as a blood pressure cuff on the affected extremity. In fact, prior to attending the lymphedema certification course, this author was not aware of the potential harm of resistive exercises or modalities with clients who had a history of breast cancer. The pre- and post-exams were developed to be included during this presentation for healthcare professionals to stimulate their awareness of this condition.

Through the integration of the Canadian Model of Occupational Performance (Fearing, Law & Clark, 1997) as a theoretical basis for this scholarly project, the evaluation and treatment of clients with lymphedema has been enhanced for a more

individualized, client-centered approach. By addressing the ramifications of lymphedema with daily activities, routines, values and roles, the client's management and control of his or her lymphedema is significantly improved. The Canadian Model of Occupational Performance is detailed in depth in Chapter I regarding its theoretical base associated with lymphedema therapy.

CHAPTER IV

PRODUCT

Although other medical professionals such as physical therapists, nurses and massage therapists can provide lymphedema intervention, occupational therapists have the skills and knowledge to address the “whole” person affected by lymphedema. As discussed in the literature review, lymphedema not only affects the client physically, but also can significant impact the client’s quality of life socially and psychologically. The following product was designed to provide a guideline for the occupational therapist to evaluate and treat the client with lymphedema of the arm(s) or leg(s). Client’s knowledge and compliancy is critical for optimal management and control of this medical condition. As recommended by Bastable (2006), the client education material was simplified and organized to increase the readability for clients with potentially low literacy. Due to the complexity of this condition, the Flesch-Kincaid reading grade level is 10.1.

This scholarly project is a comprehensive lymphedema program to be provided by occupational therapists. Part I is an occupational therapy program for those persons diagnosed with lymphedema. The product initially contains a letter and questionnaire that is intended to be sent to the client prior to his or her first appointment. If there is not sufficient time for mailing, the client will be asked to arrive 15 minutes early to complete the questionnaire. On the first day of occupational therapy evaluation, a role questionnaire will be administered during the verbal interview with the client.

Additionally, the Canadian Occupational Performance Measure (COPM) will be administered during the initial evaluation and final treatment session (Law, Baptiste, Carswell, McCall, Polatajko, & Pollock, 1994). By using the Canadian Model of Occupational Performance, a top-down client-centered approach would be facilitated to identify and address occupational performance issues that are important and relevant to the client. The evaluation will also include assessment of the client's functional skills (i.e., self-care and functional mobility), range of motion, strength, and inspection of the affected limb. Measurements will be taken of the affected limb as well as the non-affected limb for comparison. The measurements will be accomplished with the client lying on his or her back using a measuring board with a total of 8-12 circumferential measurements of the limb (Zuther, 2005). Measurements will be completed on a weekly basis to document progress and justification of further treatment. During the OT evaluation process, written handouts will be provided and reviewed including information on lymphedema and course of treatment, precautions, recommendations, exercises, and resources for attaining lymphedema supplies and assistive devices, and internet resources. As this information is detailed and extensive, additional education will be reviewed throughout the treatment process to assist with the understanding and the importance of integrating lymphedema management during daily occupations and roles. Furthermore, clients will be encouraged to borrow the CD ROM video produced by the Academy of Lymphatic Studies (2007) for additional step-by-step instructions on self-bandaging and self-manual lymph drainage.

Part II is a PowerPoint® Presentation created to inform healthcare professionals on edema and lymphedema. Healthcare professionals such as nurses and other therapists

are often not aware of the signs and symptoms of lymphedema, precautions that should be followed to prevent lymphedema, and treatment strategies. A post-exam is provided to insure understanding of the PowerPoint® presentation and the information provided on lymphedema.

Part III of this scholarly project is a tertiary prevention and maintenance education module designed to help the breast cancer survivor prevent the occurrence of lymphedema and maintain a healthy lifestyle. The prevention program is designed to be provided in small and non-intimidating environment for optimal understanding and receptiveness.

OCCUPATIONAL THERAPY
GUIDE TO THE
MANAGEMENT,
EDUCATION AND
PREVENTION OF
LYMPHEDEMA

by
Mellonna Beckermann, OTR/L, CLT

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Date: _____

Dear _____

Please complete the following questionnaire and bring it with you for your first occupational therapy appointment. As you may already be aware, lymphedema is swelling of a body part, most often occurring in your arm(s) or leg(s). Your first appointment will often last 1 to 1 ½ hours. It will entail an occupational therapy evaluation to assess your affected body part that consists of taking measurements with a tape measure and examining your skin. A gown will be provided for your privacy. In addition, education will be provided regarding lymphedema with written information for further review. If additional treatment is needed, the appointments will be established after the occupational therapy evaluation. Treatment of choice consist of manual lymph drainage (a gentle manual technique to redirect the lymph fluid), wearing of layered bandages overnight, good skin care to avoid infections, exercises, and use of a compression garment during the day after treatment is completed. On the first day of treatment, it is important to wear loose fitting clothes that will fit over your bandaged arm(s) or leg (s). For those with lymphedema in your leg (s), larger and adjustable shoes are important and a family member or friend should be present to assist with driving as needed. It is also important to have a family member or friend available to assist with the bandages at home if needed during the treatment process. The goal of the occupational therapy program is to provide the best and easiest treatment to manage your swelling so you can be as active, healthy, and happy. I am looking forward to meeting you and assisting with the management of your lymphedema.

Sincerely,

Mellonna Beckermann, OTR/L, CLT

Occupational Therapy Lymphedema Questionnaire

Name: _____

Date: _____

1. Which extremity has signs or symptoms of lymphedema? (circle all that apply)
Left Arm Right Arm Left Leg Right Leg

2. How long have you noticed increased swelling of your arm or leg? _____

3. Are there any activities or things you do that makes the swelling better?

4. Are there any activities that seem to make the swelling worse? _____

5. Does anyone in your family have lymphedema? _____

6. Have you received prior treatment for lymphedema? (circle all that apply)
Surgery Compression Garment Antibiotics

Pneumatic Pump Manual Lymph Drainage

7. Do you have or had in the past any of the following conditions? (circle all that apply)
bronchial asthma high blood pressure diabetes

cardiac problems kidney problems circulatory problems

thyroid problems stroke blood clots

8. Have you ever had radiation? _____

9. Have you ever received chemotherapy? _____

10. What operation(s) have you had? _____

11. Have you traveled by plane recently? _____

12. Have you traveled outside of the United States recently? _____

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Occupational Therapy Lymphedema Evaluation: Role Assessment

1) Do live alone or with family or friends? _____

2) Do you care for a child, other relative, or pet? _____

3) Do you have any trouble taking care of your personal needs like bathing, dressing, or fixing your hair?

4) Do you have any difficulty walking in your home or in the community? _____

5) Do you have trouble sleeping? In what position do you sleep? _____

6) What kind of work do you do? Do you do any volunteer work? Specifically what do you do at work? Do you like your work?

7) Do you help with any households chores (cooking, cleaning, shopping, laundry, taking care of plants, paying bills)?

8) How do you get around (driving, public transportation)?

9) What do you do in your spare time (read, watch TV, spend time with family or friends, attend religious services, garden, exercise, travel, play sports, or hobbies)?

10) How much time do you spend on the telephone or computer per day?

Adapted 2/08 from:

Cohen, S. (2005). Breast cancer: the OT role in facilitating recovery. *OT Practice*, 10(9), 16-19

Occupational Therapy Lymphedema Evaluation

Client's Name: _____

Date: _____

D.O.B: _____ **Age:** _____

Home Environment: _____

Affected Extremity:

Left Arm

Right Arm

Left Leg

Right Leg

General Appearance: _____

Stemmer's Sign: _____

Pitting Edema Present: _____

Skin Condition:

Scars Present: _____

Wounds: _____

General Skin Condition: _____

ROM: _____

Strength: _____

Self-Care:

Grooming: _____

Dressing: _____

Bathing: _____

Household Tasks: _____

Sitting Balance: _____

Standing Balance: _____

Mobility:

Transfers: _____

Gait: _____

Potential Goals:

Short Term Goals (time frame 1-2 weeks):

- 1) The client will verbalize signs and symptoms of infections to prevent hospitalization.**
- 2) The client will verbalize 5-7 precautions to assist in the prevention of infections and additional swelling of the affected limb(s).**
- 3) The client will decrease the size of the affected limb by 20% in volume measurements.**
- 4) The client will demonstrate self-bandaging correctly with family or friend's assistance PRN with supervision for minimal prompting.**
- 5) The client will demonstrate lymphedema home exercise program with minimal prompting to reduce lymphedema in the affected extremity.**

Long Term Goals (time frame 2-4 weeks):

- 1) The client will decrease the size of the affected limb by 40% in volume measurements.**
- 2) The client will demonstrate self-bandaging correctly with family or friend's assistance PRN independently.**
- 3) The client will independently don and doff compression garment(s) with use of assistive device or family assistance PRN.**
- 4) The client will demonstrate good understanding of the proper care of the bandages and compression garments.**

Arm Lymphedema Measurements

Client: _____

Diagnosis: _____

Affected Limb: **RIGHT** **LEFT** **BOTH**

Jobst Measuring Board used: **YES** **NO**

DATE MEASURED:						
LOCATION	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT
WEIGHT IN POUNDS:						

MEASUREMENTS IN CENTIMETERS

Leg Lymphedema Measurements

Client: _____

Diagnosis: _____

Affected Limb: **RIGHT** **LEFT** **BOTH**

Jobst Measuring Board used: **YES** **NO**

DATE MEASURED:						
LOCATION	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT
WEIGHT IN POUNDS:						

MEASUREMENTS IN CENTIMETERS

Information on Lymphedema

What is lymphedema?

Lymphedema is swelling of a body part, most often the extremities. It can also occur in the face, trunk, abdomen or genital area. Lymphedema is the result of protein-rich fluid in the superficial tissues. Once lymphedema is present, a chronic and progressive condition will not disappear.

What causes lymphedema?

Secondary lymphedema is the most common form and may result after surgery or radiation for cancer. Other causes include trauma or infection of the lymphatic system. Severe venous insufficiencies may also contribute to the onset of lymphedema. Lymphedema can develop anytime after insult to the lymphatic system (i.e. immediately after surgery or many months or years later). Lymphedema usually develops slowly over time and can range from mild to severe.

What are the symptoms of lymphedema?

The early signs of lymphedema include feels of limb heaviness or full sensation, decreased flexibility in the hand, wrist or ankle, increase tightness of clothing or jewelry, visible swelling or pitting when pushing on the skin, or discomfort. Without proper treatment, the swelling can become hard and other skin conditions such as fungal infections or cellulitis (infection of the skin) can develop. It is important to notify your physician if swelling is evident or if you notice any signs or symptoms of infections.

How is lymphedema treated?

- **Medication**: Diuretics are often prescribed to control lymphedema, but have limited long-term results in managing lymphedema. Diuretics remove the water, leaving protein-rich fluid behind.
- **Pneumatic Compression Pumps**: This mechanical device works with sleeves containing compressed air, which are applied to the patients swollen extremity. Inappropriate use of these devices can cause serious complication in clients with lymphedema. In some cases, pumps may be applied under the supervision of specially trained therapists and in combination with other treatment modalities.
- **Complete Decongestive Therapy (CDT)**: Since there is no cure for lymphedema, the goal of the therapy is to reduce the swelling and to maintain the reduction. For the majority of clients, this can be achieved by the skillful application of this therapy, which is safe, reliable and non-invasive. It consists of two phases and the following combined modalities:
 - **Manual Lymph Drainage (MLD)**: this gentle manual technique treatment technique increases the activity of certain lymph vessels and manually moves interstitial fluid. Applied correctly, a series of MLD treatments decreases the volume of the affected extremity as much as possible and is applied 4-5 times per week.
 - **Compression Therapy**: the elastic fibers in the skin are damaged in lymphedema. In order to prevent reaccumulation of fluid, it is

necessary to apply sufficient compression to the affected extremity. Compression therapy also improves the function of the muscle pumps, helps to reduce fibrotic tissues and promotes venous and lymphatic return.

In the first phase of CDT, compression therapy is achieved with the application of special short-stretch bandages. These bandage materials are used between MLD treatments and prevent the reaccumulation of lymph fluid, which has been moved out of the extremity during the MLD session. Once the extremity is decongested, the client wears compression garment during the day. In some cases, it may be necessary for the client to additionally apply bandages during the nighttime or use nighttime devices (i.e. Circ-aide Sleeve, Reid Sleeve). In order to achieve best results, specialty trained personnel should take measurements for these elastic support garments; incorrectly fitted sleeves or stockings will have a negative effect. The type of garments (round or flat-knit style) and the compression class depend on many factors such as the client's age and the severity of the swelling. For upper extremity lymphedema, compression classes I (20-30 mmHg) or II (30-40 mmHg); for lymphedema of the lower extremities, compression classes I, II, III (40-50 mmHg) or IV (>50 mmHg) are suitable.

To have the maximum effect, garments should be worn every day and replaced after six months.

- **Exercises:** These decongestive exercises aid the effects of the joint and muscle pumps and should be performed by the client wearing the compression bandage or garment. Vigorous movements or exercises causing pain should be avoided. Exercises should be performed slowly and with both, the affected and non-affected extremity.
- **Skin care:** the skin in lymphedema is very susceptible to infections and usually dry. A low pH lotion, free of alcohol and fragrances (i.e. Eucerin or Vani-Cream) should be used to maintain the moisture of the skin and to avoid infections.

Do's and Don'ts for Arm Lymphedema

The list below includes helpful hints to help prevent lymphedema or make your arm swelling worse. Please discuss with your therapists any concerns or questions.

- **Contact your physician if you notice any signs of infections of the affected arm including redness, pain, additional swelling or running a temperature.**
- **Take good care of your skin and nails.**
 - **Avoid any injuries to the skin: Be careful when working in the garden or playing with your pets by wearing gloves, or long sleeve clothing.**
 - **Take good care of your nails by not cutting your cuticles, keeping your nails short and not using scissors to cut your nails. If you have a professional manicure, make sure the tools are clean.**
 - **Use an electric razor when shaving the affected armpit to avoid cutting your skin.**
 - **Avoid mosquito bites by wearing insect repellent when outdoors, long clothing or staying away from potential areas.**
 - **Avoid cosmetics or cleaning products with chemicals that may irritate your skin.**
 - **Keep your skin well moisturized with use of low pH lotions such as Eucerin or Vani-cream.**
 - **Avoid activities that cause your skin to turn red: very hot showers, saunas, sunburns, hot or cold packs, or massages to the arm and upper thorax that is affected. Manual lymph drainage is not considered a massage.**
 - **Avoid clothing or jewelry (watches, rings, bracelets) that is too tight.**
 - **Use a thimble when sewing.**
- **Use caution when exercising: avoid activities or exercises that cause overstraining. Refer to activity/exercise helpful hints.**
 - **When completing housework, wear your compression sleeve and try to use arm that does not have lymphedema.**
 - **Avoid heavy lifting, such as moving furniture, with the affected arm.**
 - **Avoid carrying heavy package, purse or luggage with the affected arm. Use suitcases with wheels or kitchen carts to help transport items.**
- **Inform health care workers you have or are at risk for lymphedema.**
 - **No needle sticks to your arm that is affected.**
 - **Do not have your blood pressure taken on your affected arm.**
- **Good nutrition is important.**
 - **No special diet for lymphedema, but a healthy diet lower in salt and fat is suggested by most nutritionist.**
 - **Obesity can have a negative affect on your lymphedema.**

Modified 2/08, based on information provided by the Academy of Lymphatic studies.

Do's and Don'ts for Leg Lymphedema

The list below includes helpful hints to help prevent lymphedema or make your leg swelling worse. Please discuss with your therapists any concerns or questions to help follow the recommendations.

- **Contact your physician if you notice any signs or symptoms of infections of the affected leg including redness, pain, additional swelling or running a temperature.**
- **Take good care of your skin and nails.**
 - **Avoid any injuries to the skin: Avoid walking barefoot and be careful when playing with your pets to avoid scratches.**
 - **Use an electric razor when shaving your affected leg to avoid cutting your skin.**
 - **When completing housework, wear your compression sleeve and avoid standing in one place for more than 5 minutes. Avoid heavy lifting and be careful with chemicals that may irritate your skin.**
 - **Take good care of your toenails by not cutting your cuticles, keeping your nails short and not using scissors to cut your nails. If you have a professional pedicure, make sure the tools are clean.**
 - **Avoid mosquito bites by wearing insect repellent when outdoors, long clothing or staying away from potential areas.**
 - **Avoid cosmetics that may irritate your skin.**
 - **Keep your skin well moisturized with use of low pH lotions such as Eucerin or Vani-cream.**
 - **Avoid activities that cause your skin to turn red: very hot showers, saunas, sunburns, hot or cold packs, or massages to the leg and lumbar area that is affected. Manual lymph drainage is not considered a massage.**
 - **Avoid clothing (underwear or socks) or jewelry (toe rings or ankle bracelets) that are too tight.**
- **Use caution when exercising: avoid activities or exercises that cause overstraining. Refer to activity/exercise helpful hints for more information.**
- **Inform health care workers you have or are at risk for lymphedema.**
 - **No needle sticks to your leg that is affected.**
 - **Do not have your blood pressure taken on your affected leg.**
- **Good nutrition is important.**
 - **No special diet for lymphedema, but a healthy diet lower in salt and fat is suggested by most nutritionist.**
 - **Obesity can have a negative affect on lymphedema.**

Modified 2/08, based on information provided by the Academy of Lymphatic studies.

Arm Lymphedema Helpful Reminders

The list below is a general guideline to help you chose activities to manage your arm swelling. Discuss with your therapist how to be active and manage your arm swelling the best to meet your needs.

Most helpful:

- **Swimming**
- **Lymphedema exercise program**
- **Walking**
- **Stair master (no grip and elevate arm sometimes)**
- **Self-Manual Lymph Drainage**
- **Yoga or Tai Chi**
- **Water aerobics**

Do with caution as may increase swelling:

- **Jogging/running**
- **Biking (use relaxed grip)**
- **Stairmaster (with relaxed grip)**
- **NordicTrack (use a relaxed grip)**
- **General weight lifting of rest of body**
- **Easy horse riding (hold the reigns loose)**

Highest risk to increase arm swelling:

- **Gardening (due to risk of cuts and heavy lifting)**
- **Tennis/racquet sports**
- **Golf**
- **Shoveling snow**
- **Moving furniture**
- **Carrying luggage**
- **Carrying grocery bags**
- **Scrubbing**
- **Weight lifting with arm**
- **Intense horse riding (gripping reigns)**

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Leg Lymphedema Helpful Reminders

The list below is a general guideline to help you chose activities to manage your leg swelling. Discuss with your therapist how to be active and manage your leg swelling the best to meet your needs.

Most helpful:

- Walking
- Easy biking (10-20 minutes)
- Lymphedema exercises
- Easy skating (10-15 minutes)
- Swimming or water aerobics
- NordicTrack (5-10 minutes)
- Deep breathing exercises
- Yoga or Tai Chi

Do with caution as may increase swelling:

- Light jogging
- Biking longer than 30 minutes
- Skating longer than 20 minutes
- Golfing
- Weight lifting (with arms)
- NordicTrack longer than 15 minutes
- Stairmaster longer than 15 minutes
- Volleyball/Tennis (easy)
- Easy horse riding

Highest risk to increase leg swelling:

- Running
- Intense biking
- Moving furniture
- Soccer, hockey, or wrestling
- Sitting or standing over long periods
- Weight lifting with legs
- Stairmaster longer than 15 minutes
- Intense horse riding

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Recommended Exercises for Arm Lymphedema

- Do while sitting in a chair with good back support
 - Do 2-3 times a day
1. Take 10 deep breaths; make sure you move your belly in and out.
 2. Slowly roll your head side to side. 10x.
 3. Shoulder shrugs. Inhale while raising the shoulders and exhale when you lower your shoulders. 10x
 4. Tighten your belly muscles and press your low back against the chair. Exhale while you tighten your muscles for 5 seconds. 10x
 5. Press your hands together at shoulder level in front of you and hold for 5 seconds while you exhale. 10x
 6. Pretend you are pulling on the ends of a 2-foot stick held in front of your chest for 5 seconds. Exhale while pulling. 10x
 7. Reach your arms overhead in front of you and pull your hand toward your chest as if climbing a ladder one arm at a time. 10x
 8. Stretch both arms out to your sides, then cross them across your chest and hug your shoulders with your hands. 10x
 9. Reach your hands in the air and turn your wrists as if to unscrew a light bulb. 10 x
 10. Rotate wrists in circles. 20x
 11. Open and close your fingers. 20x

Adapted 2/08 from:

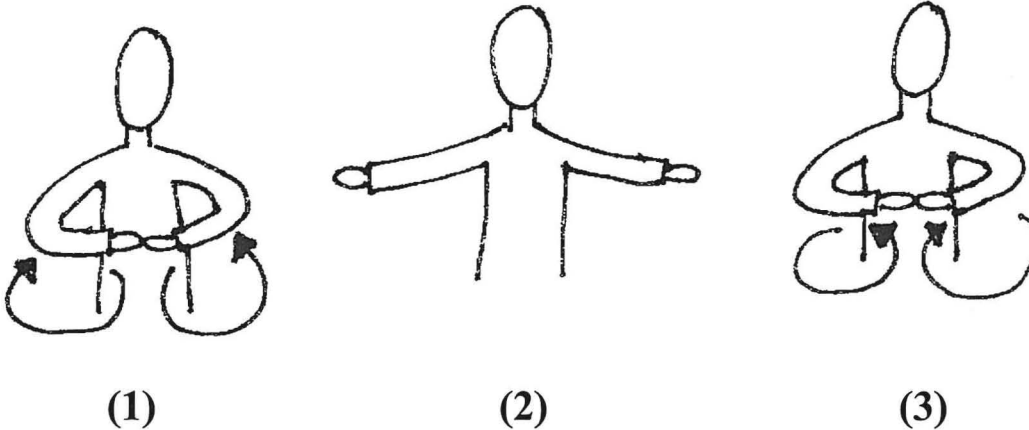
Weiss, J.M. & Spray, B.J. (2002). The effect of complete decongestive therapy on the quality of life of patients with peripheral lymphedema. *Lymphology*, 35, 46-58.

Recommended Exercise for Leg Lymphedema

- Do while sitting in a chair with good back support
 - Do 2-3 times a day
1. Take 10 deep breaths; make sure you move your belly in and out.
 2. Slowly roll your head side to side. 10x.
 3. Shoulder shrugs. Inhale while raising the shoulders and exhale when you lower your shoulders. 10x
 4. Perform partial sit-ups bringing the head and shoulders up, causing your belly muscles to tighten. 10x
 5. Gently squeeze your bottom together as you lift it up slightly. 10x
 6. Bend your hips and knees bringing the knees toward your chest. 10x
 7. Place your hands on the outside of your thighs, and gently press your hands toward each other as you push your thighs apart. 10x
 8. Place a pillow between your knees and squeeze the pillow. 10x
 9. Gently tighten the muscles on top of your thighs and straighten your knees, hold for 5 seconds. Exhale while you tighten the muscles. 10x
 10. Place the knees in a slightly bent position and then lift one foot up until the knee straightens. Alternate with the other leg. 10x
 11. With the knees slightly bent, press the heels into the surface trying to bend them a little further. Exhale as you hold this exercise 5 seconds. 10x
 12. Rotate your ankles in circles and pump them up and down. 20x
 13. Walking is one of the best exercise!

Adapted 2/08 from: Weiss, J.M. & Spray, B.J. (2002). The effect of complete decongestive therapy on the quality of life of patients with peripheral lymphedema. *Lymphology*, 35, 46-58

Deep Breathing



1) With your fingers pointed at your sternum, take a deep breath while slowly moving your arms out to your sides.

2) When your arms are straight, hold your breath while you tighten all of your arm muscles. Hold for 3-5 seconds.

3) Blow out while you return to the starting position.

Repeat 10x, 2-3 times per day.

Adapted 2/08 from:

Moseley, A.L., Piller, N.B., & Carati, C.J. (2005) The effect of gentle arm exercise and deep breathing on secondary arm lymphedema. *Lymphology*(28), 136-145.

Lymphedema and Air Travel

- **Due to the cabin pressure, air travel can have a negative effect on lymphedema. The decrease in air pressure (the force exerted on the body by the weight of the air) may trigger the onset of lymphedema or increase swelling for those with existing lymphedema.**
- **When traveling, legs are in a dependent position that increases pooling of venous blood. Many people experience swelling in their feet and ankles when flying. Most aircrafts are crowded with limited room to move around and stretch. This inactivity can trigger lymphedema or increase swelling for those with lymphedema.**
- **Humidity is usually less than 20% in pressurized cabin. Due to the dryness, the risk of dehydration is increased which can have a negative effect on lymphedema.**

Useful hints for planning ahead when traveling:

- **Discuss with your physician or occupational therapist any questions or concerns before flying. Confer with your physician regarding having antibiotics available in case signs of infection develop while you are away from home.**
- **Allow plenty of time to check in and reach your departure gate.**
- **Carry your medication with you. Depending on where you are traveling, consider bringing sunscreen products, mosquito repellent, or antibiotics.**
- **Bring your skin lotion, as the air in pressurized cabins is extremely dry.**
- **Wear loose, comfortable clothing and comfortable shoes that have been worn previously. If you have lymphedema in your leg, you should not take off your shoes during the flight (shoes provide compression).**
- **Be careful with managing your luggage. Use smaller suitcases with wheels. Ask for help to carry your luggage when possible. Do not use your arm with lymphedema to place luggage overhead or remove from baggage carousel.**
- **Check the quality of your compression garment. If you have more than one garment, take the extra one as a back up. Bring your short stretch bandages with you in case needed.**
- **If your destination is located in high altitudes, take the same precautions as during your flight.**

Useful hints while flying:

- **Most important: relax and enjoy your flight.**
- **Drink plenty of fluids and eat lightly. Avoid alcohol as it has a dehydrating effect.**
- **Wear your compression garment and use additional bandages on top of your garment if needed (discuss with your occupational therapist). Avoid removing compression garment while flying.**
- **Elevate your affected arm or leg as much as possible**

- **Consider not placing items under the seat in front of you, so you can stretch and exercise your legs.**
- **If you have open toes or fingers on your compression garment, bandage open areas.**
- **Complete your lymphedema exercises as possible (move your affected arm or leg and complete breathing exercises).**
- **Stand and walk around the cabin periodically (observe fasten seat belt light).**
- **After arriving, do not remove your compression garment or bandages before reaching your final destination. Rest and elevate your limb. Complete your lymphedema and breathing exercises with your garments in place.**

Adapted 2/08 from:

Zuther, J.E. (2005). *Lymphedema management: The comprehensive guide for practioners*. New York, New York: Thieme Medical Publishers, Inc.

Lymphedema Product Resources

Academy of Lymphatic Studies

11632 High Street, Suite A

Sebastian, Florida 32958

Telephone number: 1.800.863.5935

Fax number: 772.589.0306

Website: www.acols.com

- compression garments
- bandaging and skin products
- assistive devices for donning and doffing compression garments

Active Forever

10799 North 90th Street

Scottsdale, AZ 85260-6726

Telephone number: 480.767.6800

Website: www.activeforever.com

Location: ½ block north of Shea on the east side of 90th Street.

- compression garments
- bandaging and skin products
- assistive devices for donning and doffing compression garments

APOS

4955 E. Bell Rd.

Scottsdale, AZ 85254

Telephone number: 602.485.8400

Fax number: 602.485.8401

Location: South side of Bell road, east of Tatum Blvd.

- measure and carries compression garments
- night time device (Circ-Aide Sleeve)

Hangar Orthotics and Prosthetics

4114 E. Wood Street, Suite 106

Phoenix, AZ 85040

Telephone number: 602.426.8896

Fax Number: 602.426.8895

- measure and carries compression garments

Reliable Medical Products/A Nu Image

301 West Deer Valley Rd., Suite 1

Phoenix, AZ 85027

Contact Person: Sheri Knutson

Telephone number: 623.434.5585

Fax number: 623.434.5595

- measure and carries compression garments
- night time devices (Reid Sleeve)

Items to Assist in Managing Lymphedema

- **Patient Education CD ROM:** Produced by the Academy of Lymphatic Studies to assist clients with their home care efforts. It is an instructional CD covering all aspects of Phase Two Lymphedema management. It includes step-by-step instructions and video presentations on self-manual lymph drainage and self-bandaging. The contents of this CD can be printed out for easy reference.
 - <http://www.acols.com/ViewProducts.aspx?cid=103>
 - Cost: \$35.00
- **Portable Bandage Winder:** Hand-held roller to make re-rolling bandages simple and easy.
 - <http://www.acols.com/ViewProducts.aspx?cid=13>
 - Cost: \$16.95
- **JUZO Roll-on Adhesive Lotion:** Helps to hold stockings in place. Washes off with water and lasts all day.
 - <http://www.acols.com/ViewProducts.aspx?cid=3>
 - Cost: \$9.75
- **Donning/Doffing Devices:**
 - **Easy Slide for Arm Sleeves:** Easy to use application aid for putting on armsleeves. Cost: \$19.90
 - **Easy Slide Caran:** Easy to use application aid for putting on closed toe style compression stockings and pantyhose. Cost: \$29.90
 - **Jobst Stocking Donner:** Coated wire-frame with foam-padded handles. Designed to aid in the application of stockings for the lower extremity. Place stocking on center of frame, grasp the foam handles and step down into the stocking. Ideal for patients with arthritis and limited bending motion. Cost: \$28.16
 - **Easy Lever:** Makes it easier to take off all varieties of compression stocking and pantyhose. Cost: \$39.90

Please see the following website for the above items and additional items.

Instructional videos present on website.

<http://www.acols.com/ViewProducts.aspx?cid=32>

- **Heel Guide Rigid Sock Aid:** The patented heel guide keeps your foot in position making it easier for you to put on your stockings. Cost: \$19.95
<http://www.activeforever.com/ps-1488-4-heel-guide-rigid-sock-aid.aspx>
- **Compression Stocking Aid with Heel Guide Product:** The Heel Guide is rigid and extra wide with long handles. It comes apart for traveling purposes and reduces the need for bending or stretching. Cost: \$28.95
<http://www.activeforever.com/ps-1468-4-compression-socking-aid-with-heel-guide.aspx>

Additional Website Resources on Lymphedema

- **Lymphedema Resources, Inc.** is a 501 (c) (3) Federal tax-exempt public charity under the Internal Revenue Code. This website provides information on lymphedema, locating certified lymphedema therapists, support groups and compression garment suppliers in your area.
 - <http://www.lymphedemaresources.org/>

- **Lymphnotes** is an online information resource and support group for those with lymphedema and for the family, friends and therapists who care for them.
 - <http://www.lymphnotes.com>

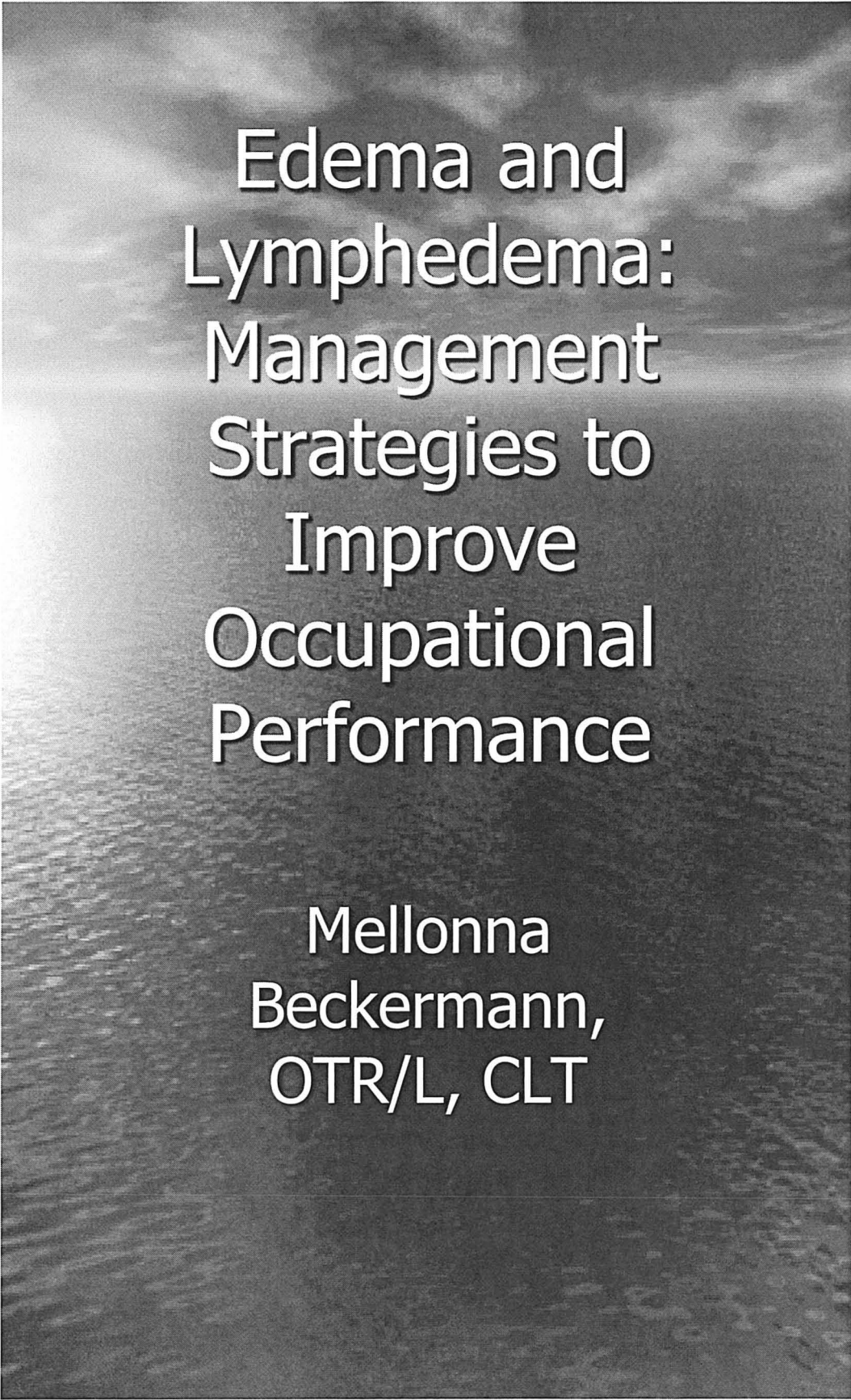
- **National Lymphedema Network (NLN)** is an internationally recognized non-profit organization founded in 1988 to provide education and guidance to lymphedema patients, health care professionals and the public. The NLN is supported by tax-deductible donations and is a driving force behind the movement in the U.S. to standardize quality treatment for clients with lymphedema nationwide. In addition, the NLN supports research into the causes and possible alternative treatments for lymphedema.
 - <http://www.lymphnet.org/>

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ON

EDEMA/LYMPHEDEMA

FOR HEALTHCARE

PROFESSIONALS



Edema and
Lymphedema:
Management
Strategies to
Improve
Occupational
Performance

Mellonna
Beckermann,
OTR/L, CLT

Edema

Definition:

- Swelling caused by fluid in your body's tissues.
- Occurs in the feet, ankles and legs, but it can involve your entire body.

Causes of Edema

- Vasodilation (heat, massage, trauma, infection, surgery, or strenuous exercise)
- Impaired venous return (chronic venous insufficiency, pregnancy)
- Hypoproteïnemia (malnutrition, kidney and liver disease)

Edema Treatment Methods

- Elevation (pillows, wedges to position extremity above heart level)
- Compression (Tubigrip, ace bandages or short stretch bandages)
- Ice to stimulate vasoconstriction
- Exercise: AROM to encourage muscle pump
- Modified Manual Lymph Drainage (short term)
- If left untreated, edema can turn into lymphedema (i.e. chronic venous insufficiency)

Lymphedema Diagnosis

- Swelling of body part, most often extremity
- Accumulation of protein-rich fluid in the superficial tissues
- Chronic and progressive
- Primary (congenital) vs. Secondary (more common)

Lymphedema

Diagnosis – continue

- In U.S., most common cause following breast surgery
- 1 out of 8 women will develop breast cancer
- Most common cause worldwide - filariasis
- Very common – affects at least 3 million Americans

Secondary Lymphedema Causes

- Dissection of lymph nodes
- Surgery
- Radiation
- Trauma
- Infection
- Malignant tumors
- Immobility
- Chronic Venous Insufficiencies

Secondary Lymphedema

- Can develop at anytime following injury/trauma to the lymph system
- Progress through stages if not treated
- Increase risk of infections without management due to increase diffusion distance

Treatment Methods

- Medications
 - Poor results with diuretics as removes water, not protein
- Pneumatic Compression Pumps
 - Approved by Medicare
 - Removes water, not protein
 - Limited research support
- Complete Decongestive Therapy (CDT)
 - Manual Lymph Drainage (MLD): Gentle technique to manually move interstitial fluid
 - Compression Therapy: application of short stretch bandages during treatment or compression garments for daytime for lifetime

Treatment methods

- Customized exercise program while wearing compression
 - Increase joint and muscle pumps
 - Increase lymph circulation
 - Increase venous return
 - Increase lymphangiomotoricity
 - Deep breathing
 - AROM
 - Avoid strenuous/resistive exercises
- Skin care
 - Increase risk of infections/cellulitis
 - Skin tends to be dry with low-pH lotion recommended (i.e. Eucerin or Vani-Cream)

Do's and Don'ts

- Avoid active hyperemia (anything that causes vasodilation) to involved extremity
 - Hot tub
 - Hot/cold packs
 - Massage
 - Sun exposure: wear clothing/use protective lotions
- Avoid injuries to skin to avoid infections
 - Careful with gardening
 - Do not cut cuticles
 - Use electric razor for hair removal on the involved extremity
 - Avoid scratches from animals

Do's and Don'ts

- Avoid mosquito bites
- Inform health care professionals of lymphedema
 - No needle sticks
 - No blood pressure
- Good nutrition
 - Low fat, low salt
 - Obesity may increase lymphedema
- Travel: must wear compression garment and additional bandages may be necessary
- Be aware of signs of infection/cellulitis very common with lymphedema

Comparison of edema and lymphedema

- Edema can resolve completely, lymphedema is a chronic condition.
- Edema is a symptom rather than a disease or disorder.
- If lymphedema occurs in both limbs, one limb is usually larger than the other.
- Management and treatment different: Complete Decongestive Therapy optimal choice for lymphedema

Patient Education Handouts

- Arm and leg lymphedema exercises
- Do's and Don'ts for arm and leg lymphedema
- Deep Breathing technique: helpful for edema and lymphedema
- Activity/Exercise Helpful Hints for arm and leg lymphedema

Short Stretch Bandages

- High working pressure, low resting pressure
- Work best when with a muscle pump – exercise is encouraged when wearing
- Worn typically during decongestive
- Can be work with edema or lymphedema clients

Short Stretch Bandages Continue

- Can be worn at night; typically worn 23 out of 24 hours during decongestive stage
- Opposite pressure than ace bandages; ace bandages should not be worn with lymphedema clients
- Applied in layers with minimal risk for tourniquet effect

Short Stretch Bandage Application

- Apply low pH lotion
- Place stockinette on limb
- Apply padding, starting above fingers or toes
- Apply smallest bandage near fingers or toes and gradually increase size of bandage
- Must apply even pressure
- Tape Bandages to stay in place-no clips or safety pins

Questions/Comments

Is this how the bandages should look?



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Edema/Lymphedema Post-Exam

- 1) Lymphedema can occur at any time following breast cancer surgery or lymph node dissection. True or False.
- 2) Swelling due to CHF will respond to Complete Decongestive Therapy. True or False.
- 3) Compression Garments should be worn at all times (except for showering). True or False.
- 4) Manual Lymph Drainage can be applied to an extremity with an acute DVT. True or False.
- 5) Chronic Venous Insufficiencies can lead to lymphedema if left untreated. True or False.
- 6) Compression garments are recommended for Chronic Venous Insufficiencies. True or False.
- 7) Low-pH lotions are recommended to prevent dryness and for optimal skin care for patients with lymphedema. True or False.
- 8) Ace bandages should be applied to an extremity with lymphedema. True or False.
- 9) Ice should be applied to an extremity with edema or lymphedema. True or False.
- 10) Compression garments should be removed when flying. True or False.

Answer sheet:

Edema/Lymphedema Post-Exam

1) Lymphedema can occur at any time following breast cancer surgery or lymph node dissection.

True or False.

Lymphedema can develop immediately after surgery or even 20 years later.

2) Swelling due to CHF will respond to Manual Lymph Drainage. True or **False**.

Swelling due to CHF will not respond to Manual Lymph Drainage and is contraindicated.

Compression garments can be worn if approved by physician.

3) Compression Garments should be worn at all times (except for showering). True or **False**.

Compression garments should be worn during the day and never when sleeping (too much pressure).

4) Manual Lymph Drainage can be applied to an extremity with an acute DVT. True or **False**.

Manual Lymph Drainage should never be applied to an extremity with an acute DVT as the technique could move the DVT.

5) Chronic Venous Insufficiencies can lead to lymphedema if left untreated. **True** or False.

If left untreated, Chronic Venous Insufficiencies can result in damage to the lymph system as well and lead to lymphedema.

6) Compression garments are recommended for Chronic Venous Insufficiencies. **True** or False.
Compression garments should be worn during the day with clients who have Chronic Venous Insufficiencies.

7) Low-pH lotions are recommended to prevent dryness and for optimal skin care for patients with lymphedema. **True** or False.

Swelling causes drying skin and it is important to keep the skin moisturized to prevent cracking and potential infections.

8) Ace bandages should be applied to an extremity with lymphedema. True or **False**.

Ace bandages can be harmful to an extremity with lymphedema as it applies too much pressure to the lymph system.

9) Ice should be applied to an extremity with edema or lymphedema. True or **False**.

Ice can be used to help control edema, but should be avoided with lymphedema as it may cause more swelling.

10) Compression garments should be removed when flying. True or **False**.

Compression garments should be worn when flying as the change in altitude causes increase swelling.

Tertiary Preventive Program

Healthy Living on the Road of Recovery from Breast Cancer

Purpose Statement:

To insure all those diagnosed with the devastating disease of breast cancer are able to recognize the signs and symptoms of lymphedema, understand the activities that can increase the risk of developing lymphedema at any time following breast cancer treatment, and implement techniques and strategies for the prevention of developing lymphedema. The educational seminar will provide a primary service to focus on healthy survivors to prevent the occurrence of lymphedema as well as a secondary service for clients to be aware of early signs of lymphedema in order to manage swelling and prevent progression of the disease. The educational seminar will be provided by an occupational therapist who is also a certified lymphedema therapist.

Significance and Background:

The education will be provided in a small group setting (less than twelve clients) targeted to breast cancer survivors who are status-post surgical intervention and/or chemotherapy and/or radiation. The context will include post-mastectomy exercise, information to assist with the understanding of lymphedema diagnosis and early signs, written and verbal instructions regarding the precautions for the prevention of lymphedema, instructions regarding the importance of good skin care and nail care, and information on compression garments with local resources for attaining. The diagnoses and treatment of breast cancer is such a traumatic, stressful and overwhelming experience. The possibility of developing lymphedema is often overlooked, however, in the United States, the highest incidence of lymphedema is observed following breast

cancer surgery (Zuther, 2005). It is imperative these clients are knowledgeable regarding the possibility of developing lymphedema at anytime during their lifetime, but also to be aware of simple treatment options to prevent its occurrence. Although this education is important, it needs to be provided carefully and in a non-threatening manner to avoid inducing additional fear and stress that interferes with the participation in meaningful occupations.

Project Approach and Design:

The lymphedema educational seminar will be provided on a monthly or bi-monthly basis depending on the number of interested and appropriate clients. Initially, it will be provided to breast cancer survivors in medical or rehabilitation centers. It would hopefully be expanded to the general public through breast cancer support groups and community educational programs. The classes would occur at the medical setting in a small conference room to promote comfort and support.

The theoretical framework followed would be the Health Belief Model (Scaffa, 2001). The perceived susceptibility would involve the client's impression of the risk of developing lymphedema. The perceived severity includes the client's belief in the risk of future infections such as cellulitis, and/or deformities such as elephantitis. The perceived benefits are the client's belief in prevention techniques and strategies with supportive research/literature. The perceived barriers would include the cost of a compression garment (which is not covered by many insurances and should be replaced every 6 to 12 months depending on use) and cosmetic appearances of wearing a compression garment.

The stakeholders (group of people who have vested interest in the issues) include breast cancer survivors as well as the referring oncologists and plastic surgeons. The

nurses and physicians would refer their breast cancer clients to the educational seminar with an implied consent attained in agreeing to attend the group session.

In the area of needs assessment data collection, a written survey would be completed with the referring oncologist and plastic surgeons. For optimal compliance for completion of the surveys, a few minutes would be requested in the departmental staff meetings with a brief explanation of the services available for lymphedema treatment in the hospital as well as what would trigger a referral for prevention or intervention. The survey would include the following questions:

1. Do you feel your breast cancer clients are knowledgeable regarding the precautions to prevent the onset of lymphedema?
strongly agree agree undecided disagree strongly disagree
2. Do you prescribe a compression garment for your breast cancer patients for the prevention of lymphedema?
always majority of the time occasionally rarely never
3. What education information would be most helpful for your breast cancer clients for the prevention and recognition of lymphedema?

An alternative written survey would be sent via mail to breast cancer survivors with the following questions:

1. Do you feel you are well-educated regarding the precautions to prevent the onset of lymphedema?
strongly agree agree undecided disagree strongly disagree
2. Do you presently wear a compression garment when flying and/or exercising?

Always majority of the time occasionally rarely never

3. What educational information would be helpful to you for your daily life activity participation?

For those individuals who do not complete the questionnaire in writing, the survey could be completed over the telephone.

The lymphedema seminar would be provided at no charge to the participants. Additionally, anticipatory referrals for lymphedema treatment, complete decongestive therapy including manual lymph drainage (Zuther, 2005) would be generated.

If a grant was necessary, there is one available titled, PA-04-071: Pathogenesis and Treatment of Lymphedema and Lymphatic Diseases. It provides grants to investigate new methods to prevent or treat lymphedema or lessen its impacts on patients. There are also grants available through the Susan B. Koman foundation and Livestrong (Lance Armstrong's foundation).

Sample Project Goals and Objectives:

Goal #1: By 2008, all appropriate physicians (oncologists and/or plastic surgeons) will refer their breast cancer survivor clients to attend the lymphedema prevention seminar.

Objective: By January, 2008, all appropriate physicians will prescribe a compression garment for their breast cancer survivor clients to be worn when flying and exercising for the prevention of lymphedema.

Objective: By January, 2008, all appropriate physicians will refer their breast cancer survivors who develop lymphedema and are in proximity to the hospital to occupational therapy for lymphedema treatment.

Goal #2: By 2008, all breast cancer survivors receiving treatment at the targeted medical setting will participate in the lymphedema prevention seminar.

Objective: Within three months of completing the lymphedema prevention course, all breast cancer survivor clients will acquire and wear a compression garment when flying or exercising for the prevention of lymphedema.

Objective: By the end of the seminar, participants in the lymphedema prevention program will be able to identify at least six precautions for the prevention of lymphedema.

Objective: By January 2009, less than 5% of breast cancer survivors who have received treatment at the targeted medical setting will develop lymphedema in the affected extremity.

Project Intervention Plan:

The program for the prevention of lymphedema would be provided by an occupational therapist who is certified lymphedema therapist. A Microsoft Power Point presentation entitled, Lymphedema Prevention Strategies, would be provided for the participants. The sessions will last approximately 45 minutes allowing for additional time for questions and answers as needed. The following education would be covered with supplemental written handouts and websites for additional information:

- Definition of lymphedema and rate of occurrence following breast cancer
- Recognizing the signs and symptoms of lymphedema
- Why it occurs in some individuals and not others
- Time frame for development of lymphedema

- Importance of continuing engagement in meaningful and fulfilling occupations without refraining from using the affected extremity for fear of developing lymphedema
- Review importance of good skin care
- Review importance of good nail care
- Avoiding injury to the skin of the affected extremity
- Importance of avoiding or modifying activities that causes redness of the skin
- Review of post-mastectomy exercises and recommended exercise for promotion of muscle pump activity
- Importance of healthy diet
- Use of compression garment to be worn on the affected extremity when flying or completing strenuous activities
- Importance of notifying physician immediately if signs or symptoms of lymphedema develop
- Treatment options for management of lymphedema and continued participation in normal activities with modifications as necessary

Outcome Evaluation:

The lymphedema prevention program would be evaluated at the levels of process (immediate), impact (intermediate) and outcome (long term) by the occupational therapist conducting the program with the assistance of the rehabilitation secretaries and/or technicians. In order to assess the lymphedema prevention program processes, a questionnaire would be completed by the clients who participated in the educational

presentation immediately following the seminar for appropriate feedback. A questionnaire titled, “Was it worth it?” would include the following questions:

1. Was the information provided during helpful in the understanding of lymphedema?
very helpful somewhat helpful neutral unhelpful very unhelpful
2. Would you recommend this lymphedema prevention program to your friends or acquaintances who have also survived breast cancer?
strongly recommend somewhat recommend neutral somewhat not recommend
strongly not recommend
3. Do you plan on purchasing and wearing a compression garment while flying and exercising?
Strongly agree agree undecided disagree strongly disagree
4. Please list six precautions for the prevention of lymphedema.

In addition during the program, the breast cancer survivors’ participation and responses will be monitored to adjust the quantity and type of information provided to avoid overwhelming the participants.

To assess the impact of the program, at three months an additional survey would be issued including the following questions:

1. Are you presently wearing a compression garment when flying and/or exercising?
always majority of the time occasionally rarely never
2. Have you followed the recommended precautions for the prevention of lymphedema?
always majority of the time occasionally rarely never

3. Have you noticed any signs or symptoms of lymphedema?

yes no unsure

4. Please list six precautions for the prevention of lymphedema.

In order to evaluate the program goals, an outcome evaluation would be completed the following year after attending the lymphedema prevention program with the same questions requested at the impact level.

In summary, the development of a lymphedema prevention program is designed to be informative, helpful and supportive for breast cancer survivors. After establishing a successful program in the hospital or rehabilitation setting, it could be expanded to the community level to impact and provide essential education to reach so many more breast cancer survivors.

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CHAPTER V

SUMMARY

In conclusion, the intended purpose of this scholarly project was to design a comprehensive occupational therapy lymphedema program that reaches all levels of care from preventative, to therapeutic intervention, and to the education and training of other health care professions in medical and/or community settings. An extensive literature review was completed to include supportive research based evidence in the management of lymphedema for accountability and reimbursability of occupational therapy intervention. The theoretical basis of this project, the Canadian Model of Occupational Performance (Fearing, Law, & Clark, 1997), established the foundation and guidance for an individualized, client-centered approach. The professional experience as an occupational therapist and certification as a lymphedema therapist furthered the author's appreciation and understanding of this potentially devastating condition.

One of the main limitations of this project is the extensiveness and complexity of lymphedema. Lymphedema can be a challenging condition for healthcare professionals to understand and even more overwhelming for a client to comprehend and manage. Another frustrating issue for clients and healthcare providers is the lack of objective assessment tools to accurately diagnose lymphedema. The diagnosis of lymphedema is usually made through clinical observations (Konecne & Perdoma, 2004). As it is difficult to diagnose, there is a lack of awareness and knowledge of the presence and

control of lymphedema. Even though occupational therapists may be the most qualified provider of lymphedema treatment, there is minimal information and research in occupational therapy literature addressing lymphedema.

Various portions of this scholarly project could be implemented in medical and/or community settings. Part I portion of the scholarly project, which is an occupational therapy program for individualized lymphedema assessment and treatment, can be applied in medical settings such as hospitals and outpatient clinics and community settings such as the client's home. The handouts and documentation forms should increase the organization and thoroughness of the occupational therapy program as well as the clients' compliance and management of their lymphedema. In Part II, the PowerPoint® Presentation is designed to inform other healthcare professionals such as fellow practicing occupational therapists, physical therapists and nurses in the medical or community based settings. Furthermore, it could be presented at higher educational settings to healthcare professional students to expand their knowledge of lymphedema and assist in preventing it from developing. Finally, the tertiary preventative program is intended to prevent the occurrence of lymphedema by educating people at-risk of developing lymphedema. A community setting such as a breast cancer support group would be ideal for application of this portion.

In the future, it would be beneficial to have additional research studies conducted to demonstrate the effectiveness in the use of the COPM to measure the client's perception of lymphedema and its importance in the client's daily life. Presently, there is research regarding the application of the COPM with clients who have sustained strokes and hip fractures, but there is no evidence-based research demonstrating the effectiveness

for clients with lymphedema. Further research would be beneficial to support the value of prevention programs to avert the development of lymphedema. More research is needed in multiple areas of lymphedema to decrease its occurrence and reduce its effect on the clients' important occupations.

In conclusion, occupational therapists can help clients with lymphedema improve their quality of life through engagement in valuable and precious roles and activities. By implementing a client-centered practice, occupational therapists will provide individualized, comprehensive and meaningful interventions with the client that has lymphedema.

APPENDIX A

Dear Mellonna:

I hereby grant you permission to use materials from the textbook "Lymphedema Management, the Comprehensive Guide for Practitioners", I authored, to be used for your Master Degree.

Kind regards,

Joachim E. Zuther

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----- Original Message -----

From: <mbeckermann@cox.net>
To: <academy@acols.com>
Sent: Monday, March 03, 2008 3:04 PM
Subject: use of copyright material

Dear Joachim Zuther,

My name is Mellonna Beckermann and I took the certification course through the Academy of Lymphatic Studies in April, 2005. Kim Leaird was my instructor and the course was provided in Oklahoma City, Oklahoma. I am completing my master's degree in occupational therapy through the University of North Dakota. As part of my scholarly project, I have adapted some of the material in your book as well as the handouts. As the material is copyrighted, I need to receive your permission in order to use the material in my scholarly project. Some of the handouts include do's and don'ts, exercise recommendations, flying recommendations. The project will be finished and bound by the end of April and I would be glad to send you a copy. The scholarly project also includes a literature review and occupational therapy theory regarding the impact lymphedema has on daily occupations. I need your permission in writing (or as an attachment via e-mail) for permission to use the information for educational and clinical purposes. Thank you for sharing your knowledge and expertise.

Regards,

Mellonna Beckermann, OTR/L, CLT
4509 E. Paso Trail
Phoenix, AZ 85050
MBeckermann@cox.net
480.473.1048

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