Expanding Lymphedema Prevention and Management Programs in Rural Health and Third World Countries

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Expanding Lymphedema Prevention and Management Programs in Rural Health and Third World Countries

Abstract
NOTE: Before reading (and listening to) these capstone materials, please listen to the brief audio introduction to this project, which is found below.

Lymphedema is a potentially chronic and disfiguring condition that can have a significant impact on a person's life physically, psychologically, and socially. However, many individuals with lymphedema are unaware of treatments available or have a lack of access to appropriate healthcare professionals (Doherty, 2006). With appropriate treatment, clients struggling with lymphedema may have decreased pain, swelling, and swelling related symptoms, as well as improved overall functioning and quality of life (Ahmed, Prizmen, Laxocich, Schmitz, & Folson, 2008; Beaulac, McNair, Scott, LaMorte & Kavanah, 2002; International Society of Lymphology, 2003; Zuther & Norton, 2013). The purpose of this project is to a.) Explore lymphedema, access issues, and the importance of appropriate treatment interventions; b.) Improve access to appropriate lymphedema treatment interventions through program development in a rural healthcare setting including a post-mastectomy program (lymphedema prevention); and c.) Improve access to effective lymphedema treatment through development of an educational program for Haitian healthcare workers to work towards eradication of lymphatic filariasis.

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Expanding Lymphedema Prevention and Management

Programs in Rural Health and Third World Countries: A Capstone Project

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Lymphedema is a potentially chronic and disfiguring condition that can have a significant impact on a person’s life physically, psychologically, and socially. However, many individuals with lymphedema are unaware of treatments available or have a lack of access to appropriate healthcare professionals (Doherty, 2006). With appropriate treatment, clients struggling with lymphedema may have decreased pain, swelling, and swelling related symptoms, as well as improved overall functioning and quality of life (Ahmed, Prizmen, Laxocich, Schmitz, & Folson, 2008; Beaulac, McNair, Scott, LaMorte & Kavanah, 2002; International Society of Lymphology, 2003; Zuther & Norton, 2013). The purpose of this project is to a.) Explore lymphedema, access issues, and the importance of appropriate treatment interventions; b.) Improve access to appropriate lymphedema treatment interventions through program development in a rural healthcare setting including a post-mastectomy program (lymphedema prevention); and c.) Improve access to effective lymphedema treatment through development of an educational program for Haitian healthcare workers to work towards eradication of lymphatic filariasis.
Contents

Lymphedema .............................................................................................................4
  Treatment.............................................................................................................6
  Rural Access Issues............................................................................................6
  Third World Countries Access Issues.................................................................8
Lymphedema and Breast Cancer............................................................................14
  Policy Timeline.................................................................................................15
  Policy Analysis..................................................................................................24
Lymphedema Program Development Rural Healthcare Setting.............................30
  Therapist Documentation Development............................................................31
  Educational Resource Development....................................................................34
    Lymphedema Booklet.........................................................................................34
    Self-MLD Worksheets - Leg............................................................................38
    Self-MLD Worksheets – Arm...........................................................................45
Post-Mastectomy Program Development..............................................................51
  Post-Mastectomy Booklet....................................................................................52
Educational Program Development/Teaching Plan – Haitian Healthcare Workers.....59
  Marketing............................................................................................................59 (see attached brochure)
  Training Packet................................................................................................60
Understanding Lymphedema

Lymphedema is characterized by the “accumulation of protein-rich fluid within the interstitial spaces, often leading to the chronic inflammation and reactive fibrosis in the affected tissues” (Foldi, Foldi, & Kubik, 2003, p. 53). The lymph system is a series of vessels that return fluid from the tissues to the heart. Lymphedema occurs due to the accumulation of fluid due to an imbalance between lymph formation and lymph absorption (Coulborn & Hampton, 2012). As lymph collects in the tissues, the affected area may increase in size and affect the individual’s ability to function and his or her overall body image (Weiss & Spray, 2002). Lymphedema can be located in one or multiple extremities, the trunk, abdomen, head and neck, external genitalia, and internal organs (Zuther & Norton, 2013). Estimated reported rates of incidence of lymphedema within literature vary widely. Studies have reported, however, that lymphedema affects at least 3 million Americans (Quirion, 2010; Zuther & Norton, 2013), and it is estimated that more than 11.4 million cancer survivors in the United States are at risk for developing this serious condition (Armer et al., 2012).

There are two types of lymphedema: primary and secondary. Primary lymphedema can present with a wide variety of symptoms and occurs due to a developmental abnormality of the lymphatic system (Zuther & Norton, 2013). Insufficiency results due to “failure of the lymph system to keep up with the lymph load demands of the affected body part” (Poage, Singer, Armer, Poundall, & Shellabarger, 2008, p. 951). This type of lymphedema almost always affects one or both lower extremities and is most common in females. According to Foldi, Foldi, and Kubik (2003), primary lymphedema may occur without any known cause or occur after a minor trauma such as an insect bite or strain.
Secondary lymphedema is caused by surgery and radiation, trauma, infection, malignant tumor, immobility, and chronic venous insufficiency (Zuther & Norton, 2013). Secondary lymphedema is more common. In fact, the leading cause of lymphedema in the United States is surgery or radiation for various cancers (Armer et al., 2012). This is due to the fact that surgical procedures used for cancer treatment interventions routinely include the removal of lymph nodes (Poage et al., 2008), which leads to lymphedema symptoms and volume increases in the affected area. Self-reported symptoms of cancer survivors suffering from lymphedema include heaviness, decreased flexibility or mobility, swelling, tightness, aching, burning, hardness, stabbing, “pins and needles” sensation, pain, and numbness (Quirion, 2010; Ridner, 2009)

The onset of lymphedema may be gradual or sudden depending on the individual and the origin. According to Zuther and Norton (2013), primary lymphedema may occur at any time during the course of a person’s life, while secondary lymphedema may occur immediately postoperative, within a few months, a couple of years, or even 20 years or more following surgery. According to the International Society of Lymphology (2003), there are 4 recognized stages of lymphedema: Stage 0 is known as subclinical or pre-lymphedema, can last for a long time, and typically includes all patients who have had lymph node dissection. During this stage there is no swelling present, however lymph flow is impaired. Stage I is characterized by accumulation of fluid and protein in the tissue in which pitting may be present. Elevation may reduce the swelling in this stage. Stage II includes swelling that does not reduce with elevation and pitting occurs with fibrosis. Stage III is characterized by fibrotic tissue that has indiscernible pitting, skin thickening, and large limb volume known as elephantiasis (International Society of Lymphology, 2003).
Lymphedema Treatment

Lymphedema can never be cured, but the size of the affected area can be successfully reduced. The National Lymphedema Network (2011) has published treatment recommendations for lymphedema with Complete Decongestive Therapy (CDT) being the primary evidence-based treatment modality. There are two phases associated with CDT. The first and initial phase is more intensive and treatment is typically every day for 3-8 weeks. The goal of this phase is reduce the affected area as much as possible. The second phase is known as maintenance. The primary goal of this phase is maintaining the least amount of edema in the affect area, as well as to prevent infection. Both phases are individualized to the person and his or her goals, the area affected, and type of lymphedema present. The main components of CDT include “manual lymph drainage (MLD), multi-layer, short stretch compression bandaging, lymphatic exercise, skin care, and education in lymphedema self-management and elastic compression garments” (National Lymphedema Network, 2011, p. 5). The main goal of treatment is to ensure the patient is able to become effective and independent in managing the symptoms (Green, 2010) and maintain as much involvement as possible in all meaningful life roles.

Access Issues

In addition to the various serious and debilitating medical complications that can arise as a result of this condition, further complications are also involved due to the prevalent lack of medical knowledge and expertise in the diagnosis and treatment of lymphedema. Although there is no research involving exact numbers of individuals with inadequate access to appropriate lymphedema management programs, this problem does exist.

According to Sitzia and Harlow (2002), lymphedema has traditionally been seen in healthcare as a rare, untreatable condition with low clinical priority, resulting in limited
investment in both education and access to services. Depending on geographic location, finding treatment from appropriate and qualified health professionals may be a challenge for providers and patients (Quirion, 2010). A study by Green (2010) found that many patients involved in that particular study had to travel up to 50 miles on a round trip to attend the hospital providing the services. According to Moffatt, Franks, and Doherty (2003), the majority of lymphedema services and resources are focused on the secondary care setting. This is a result of the strong association between lymphedema and cancer, which has inevitably resulted in many services being located in the palliative care system (Williams, 2005).

The time and cost associated with individuals to become certified as a lymphedema management healthcare professional can often times be daunting and may limit the amount of services available. The National Lymphedema Network (2010) recommends the minimum requirements for a lymphedema therapist to include the following:

“Practitioners…will have successfully completed 135 hours of Complete Decongestive Therapy (CDT) coursework from one lymphedema training program. The coursework will consists of 1/3 theoretical instruction and 2/3 practical lab work teaching methods directly aimed at the treatment of lymphedema. Proof of satisfactory completion of 12 credit hours of college level human anatomy, physiology, and/or pathology from an accredited college of university. Have current unrestricted licensure in a related medical field (PT, PTA, OT, COTA, MT, RN, MD, DO, DC).” (p. 1)

A high level of competency and skill is required to master all components of lymphedema management and to provide patients with the proper degree of interventions. Therefore, the training for such competency is often expensive with class typically costing around $3,000 per person. In addition, to start a lymphedema program and sufficient lymphedema bandaging supply
in stock is approximately $2500-$3000 (Zuther & Norton, 2013). Although the cost of training and program development is relatively high, a patient’s ability to function and overall quality of life can be directly linked to appropriate lymphedema intervention (Ahmed et al., 2008; Beaulac, McNair, Scott, LaMorte & Kavanah, 2002; Kwan et al., 2002; Mak et al., 2009). As healthcare professionals, program development in underserved areas is imperative in order to best serve individuals suffering from this debilitating condition.

**Lymphedema in Third World Countries**

The leading cause of lymphedema outside the United States is lymphatic filariasis, which is transmitted by mosquitos. Among 120 million infected people in 83 countries, up to 16 million have lymphedema (Shenoy, 2008). Lymphatic filariasis is the second leading cause of chronic disability worldwide due to the stigmatizing and disabling symptoms (World Health Organization, 2013). Microfilariae ingested by mosquitoes grow into infective larvae. These larvae entering humans after infected mosquito bites grow in the lymphatics to adult worms that cause damage to lymphatics resulting in dilatation of lymph vessels (Zuther & Norton, 2013). In addition to the components of CDT, for those with lymphatic filariasis, Diethylcarbamazine (DEC), the drug of choice for killing the adult worms in the lymphatic system, must be administered. However, treatment with DEC does not reverse the lymphatic damage once it is done.

Aforementioned access issues all directly apply to the third world countries with large populations of lymphatic filariasis. However, because of the extreme poverty, quality of environmental surroundings, decreased education levels, and lack of quality healthcare organizations, these issues are magnified. The double or multiple jeopardy theory directly applies to this disparity. This theory purports that individuals who are members of two or more
stigmatized groups have more negative consequences (e.g., greater health disparities) than individuals who occupy membership of one stigmatized group, or are not members of a stigmatized group at all (Carreon & Noymer, n.d.). For example, the combined effects of factors such as old age, minority group status, SES, gender, low education, and comorbid health and/or psychological conditions are thought to be detrimental to one’s health and health care (Carreon & Noymer, n.d.). Individuals in these endemic areas have two or more of these factors working against them, thus having more negative consequences. These factors, in addition to having the swelling that is associated with lymphedema, result in citizens being more likely to have skin care issues and functional deficits.

According to the World Health Organization (2013) people with lymphatic filariasis must have access to continuing care and need sustainable support throughout their lives to properly manage this disease. This support can assist in preventing the progression of lymphedema to more advanced stages. Several programs and organizations have been developed in order to eradicate this endemic. The Global Programme to Eliminate Lymphatic Filariasis (GPELF) has been one of the most rapidly expanding global health programs in international health (World Health Organization, 2013). This organization was developed in 2000, with the goal to eliminate lymphatic filariasis as a public health problem by 2020. The organizations two strategic aims include interruption of transmission and morbidity management/disability prevention (World Health Organization, 2013). While this organization is making good strides towards eradicating this disease, several countries have yet to make any progress within the program.

For those in endemic disease countries, primary prevention of lymphedema is achieved by preventing a filarial infection in the ‘at risk’ population. Several efforts have been made to help prevent more individuals from mosquito bites potentially resulting in lymphatic filariasis.
An example of this includes the Carter Centers efforts in eradicating this neglected tropical disease by the donation of over 100,000 mosquito nets (Jordan, 2013). “Secondary prevention” is possible through the treatment of early infection by antifilarial drugs acting against adult worms, mainly DEC (Shenoy, 2004). Although the worm may be in the lymphatic system at the time the drug is administered, the damage done may not be severe enough to cause lymphedema.

The article “Mass Drug Administration for the Elimination of Lymphatic Filariasis” (2013) discusses the administration of antibiotics to kill the adult larvae that has damaged in the lymphatic system. However, this article, like many articles found, does not address the treatment for individuals past the administration of the drug. This is addressing only part of the issue, because, as stated previously, once the lymphatic system is damaged, the system will always be damaged regardless of if the larvae are killed.

In a report by Emmel and Conn (2004), it was suggested that involving communities in the planning and design of healthcare services will ultimately lead to more appropriate and sustainable services. In order to involve communities in endemic areas, these populations first need to be educated about the pathology of the disease. In addition, a majority of these individuals may have “tolerated” the symptoms for so long and may not realize that there is treatment available to help relieve the swelling and improve their overall quality of life. Therefore, appropriate education of these individuals is the first step in aiming to prevent, eradicate, and manage this disease.
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Lymphedema and Breast Cancer

In the United States, the most common cause of lymphedema develops in the upper extremity following axillary node dissection due to breast cancer and subsequent surgical intervention. The National Surgical Adjuvant Breast and Bowel Project (NSABP) B-04 trail documented rates of breast cancer related lymphedema (BCRL) of 58.1%, 38.2%, and 49.1% for radical mastectomy, total mastectomy with axillary radiation, and total mastectomy (Deutsch & Land, 2008).

The following policy timeline and analysis was completed to add to the overall project due to the high correlation between breast cancer and lymphedema, as well as to increase overall validity of the post-mastectomy program developed at a rural health facility.

References
Breast Cancer Policy Timeline

American Society for the Control of Cancer (ASCC) – 1913

American Cancer Society was founded in 1913 as the American Society for the Control of Cancer (ASCC) by 15 prominent physicians and business leaders in New York City in an effort to raise public awareness about cancer if progress was to be possible.

Women’s Field Army – 1936

In 1936, Marjorie G. Illig, an ASCC field representative and chair of the General Federation of Women’s Clubs Committee on Public Health, made an extraordinary suggestion. She proposed creating a legion of volunteers whose sole purpose was to wage war on cancer. The Women’s Field Army, as this organization came to be called, was an enormous success. Its recruits donned khaki uniforms, complete with insignia of rank and achievement, and went out into the streets to raise money and educate the public.

In 1935, there were 15,000 people active in cancer control throughout the United States. At the close of 1938, there were 10 times that number. More than anything else, it was the Women’s Field Army that moved the American Cancer Society to the forefront of voluntary health organizations.

American Cancer Society – 1945

In 1945, the ASCC was reorganized as the American Cancer Society. It was the beginning of a new era for the organization. World War II was over; the single greatest threat to modern democracy had been defeated; and the nation could at last focus its attention on the public health enemy at home. Many believed it was time for another bold move.

National Cancer Act (NCA) & National Cancer Institute (NCI) – 1971

The NCA was passed, which granted special funds and authority to expand the National Cancer Institute (NCI) and revolutionized the war on cancer. With the development of the NCI, the American Cancer Society also had to adapt to a new role – that of filling in the gaps of the federal government’s focus in areas such as cancer prevention and education.
Susan G. Komen Founded – 1982

Nancy G. Brinker promised her dying sister, Susan G. Komen, she would do everything in her power to end breast cancer forever. In 1982, that promise became Susan G. Komen for the Cure® and launched the global breast cancer movement. Today, Susan G. Komen is the boldest community fueling the best science and making the biggest impact in the fight against breast cancer. The organization has invested almost $2 billion to work to end breast cancer in the U.S. and throughout the world through ground-breaking research, community health outreach, advocacy and programs in more than 50 countries.

NCSS Founded - 1986

Twenty-three leaders with expertise in cancer research community-based cancer support programs, cancer information services and cancer advocacy gathered in Albuquerque, New Mexico and founded the National Coalition for Cancer Survivorship (NCCS). The founders adopted NCCS’s charter states, “from the moment of diagnosis and for the balance of life, an individual diagnosed with cancer is a survivor.” This definition would go on to be accepted as the standard in the cancer community.

Americans with Disabilities Act (ADA) - 1990

NCCS Founding Chair, Barbara Hoffman, JD, testifies before Congress on how to include cancer survivors within the protection of the Americans with Disabilities Act. One of the first ADA-Title 1 employment discrimination cases testing the ADA related to a man with cancer who was fired while receiving treatment for his cancer (he prevailed), and ever since, cancer of its treatment that causes a substantial impairment in daily life activities is considered a disability (even if temporary) and thus assures coverage under the ADA.

National Breast Cancer Coalition (NBCC) - 1990

The National Breast Cancer Coalition was founded and partners directly with hospitals, clinics, and other cancer treatment institutions that are treating individuals with breast cancer. This
organization aims to provide financial assistance to help these women continue appropriate treatment, including assistance with such needs as transportation, lodging, and co-pays.


In 1990, the Breast and Cervical Cancer Mortality Prevention Act enabled thousands of uninsured and underinsured women to be screened at low or no cost through the CDC’s National Breast and Cervical Cancer Early Detection Program (NBCCEDP)(CDC, 2009). However, this act did not necessarily pay for treatment once a diagnosis was made. This placed some low-income individuals in the position of being diagnosed with cancer without the ability to access appropriate treatment because of cost issues (Luna, 2001).

**Medicare Cancer Coverage Improvement Act - 1993**

The Rockefeller-Levin Medicare Cancer Coverage Improvement Act was passed, which provides Medicare coverage for oral forms of existing intravenous (IV) anti-cancer drugs and gives patients an important quality of life choice in how they choose to receive cancer treatment.

**Cancer Leadership Council (CLC) - 1993**

The Cancer Leadership Council, a patient-centered forum of national advocacy organizations addressing public policy issues in cancer was founded by convening the 8 existing cancer patient advocacy groups. By 2006, the CLC has grown to include 29 leading patient advocacy, professional, and volunteer organizations.

**First National Congress on Cancer Survivorship - 1995**

The First National Congress on Cancer Survivorship was held consisting of more than 300 experts including cancer survivors, caregivers, health care professionals, scientists, community leaders, policy experts, legislators, government officials, members of the clergy, and the media. The forum is the first-ever meeting on cancer survivorship of its kind.
**CanSearch™ Website - 1995**

NCCS launches one of the first Internet sites directing users to credible, online resources on cancer treatment and survivorship.

**Imperatives for Quality Cancer Care: Access, Advocacy, Action & Accountability - 1996**

The first document to address quality cancer care from the patient’s perspective (based on the First National Congress on Cancer Survivorship) was published by NCCS.

**Office of Cancer Survivorship, National Cancer Institute - 1996**

Director, Dr. Richard Klausner establishes the Office of Cancer Survivorship to encourage survivorship research. Health Insurance Portability & Accountability Act, 1996. NCCS contributes significantly to drafting and passage of the Kassebaum-Kennedy Health Insurance Portability & Accountability Act (HIPAA) that gives patients changing jobs some measure of security regarding maintaining insurance benefits and continuity of care.

**National Cancer Policy Board - 1996**

The National Cancer Policy Board (NCPB) was established, which operates under the auspices of the Institute of Medicine. The NCPB’s role is to evaluate the United States cancer program and related policy making.

**THE MARCH… Coming Together To Conquer Cancer™ - 1997-1998**

The first-ever national public awareness and grassroots organizing campaign was launched by NCCS on CNN’s Larry King Live. On September 25-26, 1998, 250,000 people gather on The National Mall in Washington, DC and a million more join 200 events in all 50 states calling for better funding for cancer research and access to quality cancer care for all Americans. Days later, Congress awards a 16% increase in National Cancer Institute funding — then, the largest monetary increase in funding for NCI to date.
Clinical Trials Coverage - 2000

President Clinton’s issuance of an executive memorandum on June 7, 2000 was directly attributable to NCCS’s advocacy. This new policy guarantees Medicare beneficiaries who enroll in approved, high-quality clinical trials will have their routine patient care costs covered by Medicare. Access to Cancer Therapies, 2000-2003. NCCS continues to pursue coverage for oral chemotherapy under Medicare Part B. At the close of the 107th Congress, three-quarters of the House and more than half the Senate had co-sponsored the bill. The bill was reintroduced on March 13, 2003 as HR 1288.

Institute of Medicine (IOM) Reports - 2001-2007

Major IOM Reports NCCS Contributed To:

- Ensuring Quality Cancer Care
- Improving Palliative Care for Cancer
- From Cancer Patient to Cancer Survivor: Lost in Transition.
- Childhood Cancer Survivorship: Improving Care and Quality of Life
- Cancer Care for the Whole Patient: Meeting Psychosocial Health Needs

Access to Oral Cancer Therapies - 2000-2003

By the close of the 107th Congress, three-quarters of the House members and more than half of Senators co-sponsored the Access to Cancer Therapies Act. Ultimately the measure passed in the Medicare Modernization Act of 2003 for improved coverage for oral chemotherapy.

Cancer Advocacy Now!™ - 2004

Cancer Advocacy Now! was launched to assure that America’s 12 million cancer survivors and the millions more who care for them have a voice in advocating for quality cancer care in Washington, D.C. and in forums where health care policy is decided. To date, more than 25,000 have joined the Cancer Advocacy Now! network.
**Cancer Quality Alliance - 2005-2008**

NCCS and the American Society for Clinical Oncology formed the Cancer Quality Alliance (CQA)—a collaboration among 28 organizations to encourage the sharing and implementation of cancer quality measures, tools, and practical programs into cancer practice.

**FDA Citizen Petition - 2006-2009**

A Citizen Petition was filed with the FDA requesting clarity, procedures and standards for companies that may be able to make investigational therapies available to patients who have exhausted their treatment options. In August 2009, the FDA finalized two regulations that will improve patient access to investigational drug therapies.

**Hematologic Cancers Strategies for Education and Outreach - 2007**

The Centers for Disease Control and Prevention (CDC) awarded NCCS its first federally-funded grant for more than $1.3 million to fund a five-year project based on NCCS’ award-winning Cancer Survival Toolbox®. The audio program provides strategic information and education, including self-advocacy skills, to people diagnosed with multiple myeloma, non-Hodgkin lymphoma, chronic myelogenous leukemia and chronic lymphocytic leukemia.

**“Blueprint” for Quality Cancer Care - 2008**

Creation of a “Blueprint” for quality cancer care, which was first published in the journal Cancer in September 2008. Conceptualized and written through the collaborative effort of members of the Cancer Quality Alliance, the Blueprint will be widely available as a teaching tool and a guide to how the health care system can provide the best care to people living with, through and beyond a cancer diagnosis.

**Commission on Cancer - 2010**

NCCS is one of three patient-centered organizations invited to a membership in the Commission on Cancer (CoC) of the American College of Surgeons (ACOS) resulting in the first ever patient-
centered COC Accreditation Standards requirements care plans, psychosocial assessment and patient navigator.

**Patient Protection and Affordable Care Act of 2010** – March 2010

The overall goal of the Patient Protection and Affordable Care Act of 2010 (PPACA of 2010) by President Obama is to reduce the number of uninsured individuals in the United States. Components of the PPACA include: (a) eliminating lifetime and annual limits on health insurance coverage, (b) requiring coverage of preventive services, such as mammograms, without cost-sharing requirements, (c) providing access to health insurance coverage for those with a preexisting condition, such as breast cancer, (d) providing assistance to states to establish competitive health benefit exchanges, (e) giving states the flexibility to establish health programs for low-income persons who are not eligible for Medicaid, (f) offering tax credits for premium assistance to those with incomes up to 400% of the FPL, and (g) incentivizing small business to offer health insurance coverage using tax credits.

**Cervical Cancer Prevention and Treatment Act of 2010** – 2010

This law was passed in an effort to assist in the overall goal of the Breast and Cervical Cancer Mortality Prevention Act of 1990 with the purpose of improving financial access to treatment and provided states with the option to expand Medicaid coverage to women in need of treatment for breast and cervical cancer who meet certain eligibility requirements.

**Comprehensive Cancer Care Improvement Act (CCCIA) - 109th -112th Congresses; reintroduction in the U.S. House of Representatives in December 2011**

Legislative efforts to develop and advance legislation to establish a Medicare service for cancer care treatment planning that would contribute to the delivery of coordinated cancer care. The bill, first introduced in the 109th Congress by Representative Lois Capps (D-CA), has enjoyed bipartisan support in subsequent Congresses. The legislation is also supported by patient advocacy organizations, professional societies, cancer researchers, and leading cancer centers across the country. Representatives Capps and Charles Boustany (R-LA) have reintroduced the legislation (H.R. 3705) in the House.
(PACT) Act Introduced- 2013

Legislation is introduced in June 2013 by Congresswoman Lois Capps (D-CA) and Congressman Charles Boustany, Jr., M.D., (R-LA). The Planning Actively for Cancer Treatment (PACT) Act (H.R. 2477) would significantly improve the quality and coordination of care for Medicare patients with cancer.
References


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Breast Cancer Policy Analysis

Health insurance status has been a long-standing issue in healthcare disparity as the consequences of being uninsured and refraining from seeking out appropriate care in a timely manner include increased numbers of deaths and poorer health outcomes (Hadley, 2007). This issue is also critical in determining access to care and health outcomes for women with breast cancer (Bradley, Neumark, Shickle, & Farrell, 2008). Women without health insurance are less likely to receive mammogram screenings (USDHHS, 2010), more likely to be diagnosed with more advanced disease, more likely to experience longer delays between diagnosis and initiation of treatment, and less likely to survive when compared to insured women (Bradley et al., 2008).

The purpose of this analysis is to explore on a macro level the purpose and effectiveness of the Breast and Cervical Cancer Prevention and Treatment Act of 2010, as well as potential strategies that may allow for improvement in the overall goal of the Treatment Act to reduce health disparities that exist among the population of women with breast cancer. The model that was utilized to guide this analysis was the Eightfold Path (Bardach, 2011), which describes an iterative problem-solving process used to clarify the policy problem and determine policy solutions. The first steps of this process are to define the problem and assemble the evidence.

History and Nature of the Problem

The Cervical Cancer Prevention and Treatment Act of 2010 was passed with intent to assist in the efforts of the Breast and Cervical Cancer Mortality Prevention Act of 1990 in reducing this disparity and improving financial access to preventative measures. In 1990, the Breast and Cervical Cancer Mortality Prevention Act enabled thousands of uninsured and underinsured women to be screened at low or no cost through the CDC’s National Breast and Cervical Cancer Early Detection Program (NBCCEDP)(CDC, 2009). However, this act did not
necessarily pay for treatment once a diagnosis was made. This placed some low-income individuals in the position of being diagnosed with cancer without the ability to access appropriate treatment because of cost issues (Luna, 2001). The Cervical Cancer Prevention and Treatment Act of 2010 was subsequently passed with the purpose of improving financial access to treatment and provided states with the option to expand Medicaid coverage to women in need of treatment for breast and cervical cancer who meet certain eligibility requirements.

While the Treatment Act does address issues relating to financial access to treatment for low-income, uninsured women, problems continue to exist. In states that do not extend Medicaid eligibility to women screened by non-CDC funded providers, access to treatment remains a complex issue. According to Vann (2011), the restricted Medicaid eligibility definitions within the Treatment Act adds to the complexity of the U.S. health services delivery and patients often become confused when attempting to navigate through financing systems.

**Identification of Policy Solutions/Alternatives**

The next steps in the Eightfold Path are to construct policy alternatives and select the criteria. In order to increase goal achievement rates of reducing breast and cervical cancer deaths, strategies for reducing barriers to obtaining Medicaid coverage for treatment should be explored. A potential strategy that is suggested by Vann (2011) would involve optimizing the referral system by “providing low-income women with information about the screening program and locations of participating providers at the point of contact with the health care delivery system (p. 99)”. However, this would mean some providers losing business by sending patients to competitors, and there are few incentives for providers to do so. A system of financial incentives and penalties may need to be further explored. An example of this may be to provide monetary
compensation for when a nonparticipating provider refers an individual to a participating provider. However, a program such as this may be difficult to track.

Another potential strategy is improving education about the Treatment Act and potential for increase in positive outcomes if the system was utilized correctly. If nonparticipating providers are willing to refer patients to competitors that are part of the program, there would be a great need for physicians, nurses, appointment clerks, and other healthcare professionals to be educated about the purpose and location of NBCCEDP screening and treatment programs, in addition to greater education of the general public. The alternative resulting from this impact of the policy would be to either amend the act with funding for better education of providers and consumers, or to charge an agency with the task of doing this. The charge would include suggested strategies for funding the project and potential governmental or private supports for implementation.

The next step in Eightfold Path is to project the outcomes. As pointed out in the literature, women are at risk for “slipping through the cracks” as the program currently exists due to the chances of healthcare providers failing to refer an individual to a contracted screening center (Bradley et al., 2008, Vann, 2011). With the aforementioned policy alternatives and strategies for change, the ultimate outcome would be to reduce the number of uninsured women going without appropriate breast cancer screening and subsequent treatment interventions thus reducing population health disparities associated with breast cancer.

The passing of the Patient Protection and Affordable Care Act of 2010 (PPACA of 2010) by President Obama has potential to expand access to health care coverage for uninsured women. Positive components of the Act in regards to NBCCEDP’s goal of increasing access to breast cancer screening and treatment services include: (a) eliminating lifetime and annual limits on
health insurance coverage, (b) requiring coverage of preventive services, such as mammograms, without cost-sharing requirements, (c) providing access to health insurance coverage for those with a preexisting condition, such as breast cancer, (d) providing assistance to states to establish competitive health benefit exchanges, (e) giving states the flexibility to establish health programs for low-income persons who are not eligible for Medicaid, (f) offering tax credits for premium assistance to those with incomes up to 400% of the FPL, and (g) incentivizing small business to offer health insurance coverage using tax credits (USDHHS, 2010b). However, the specific impact this Act will have on possible expansion of participating screening providers and the aforementioned complex issues is unclear. While the ultimate goal is to reduce the number of uninsured individuals, numerous factors will continue to impact this process resulting in continued existence of uninsured individuals. The factors include lack of public knowledge about the Act’s criteria and requirements and application issues.

The next steps in the Eightfold Path include confronting the trade-offs and deciding. The main trade-offs include increased clarity of the policy and more money to support implementation for education, a better referral system, and fewer women falling through the cracks of the current system. Based on this analysis, it is evident that the current policy paths set in place are effective, but more could be done to reach the overall goal of the NBCCEDP.

Conclusions

The final step of the Eightfold path is “telling the story”. The purpose of this analysis was to explore on a macro level the purpose and effectiveness of the Breast and Cervical Cancer Prevention and Treatment Act of 2010, as well as potential strategies that may allow for improvement in the overall goal of the Treatment Act to reduce health disparities that exist among the population of women with breast cancer. The contributing players involved in this
analysis include uninsured women with the potential for breast cancer, uninsured women with breast cancer, healthcare professionals, and policymakers.

Despite the successes of the Breast and Cervical Cancer Mortality Prevention Act of 1990 and Cervical Cancer Prevention and Treatment Act of 2010, and the potential for success with the PPACA of 2010, there are significant areas for improvement as it is approximated that 60% of eligible women are not routinely screened for breast cancer (Vann, 2011). In addition, it is unknown how many uninsured women have received screenings by nonparticipating providers, were not referred to a participating provider, and ultimately denied treatment. Strategies for change discussed include increasing the number participating providers, improving the referral system including possible incentive/penalty programs, providing education on the topic to the general public and healthcare professionals, and building upon and maximizing the goal and intent of the PPACA of 2010 to decreases numbers of women who are uninsured.
References


# Lymphedema Program Development in a Rural Healthcare Setting

**Purpose:** The purpose of this project is to improve access to appropriate treatment interventions to those with lymphedema in a rural area.

**Goal:** The goal of this project is to help improve individuals’ overall quality of life, functional abilities, and psychological deficits through education and implementation of CDT with aims to combat lymphedema and improve the lives of those suffering.

<table>
<thead>
<tr>
<th>Step</th>
<th>Components</th>
<th>Purpose</th>
<th>Date Completed</th>
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</thead>
<tbody>
<tr>
<td>Lymphedema/Rural Access Literature Review</td>
<td>Thorough review of literature surrounding lymphedema, treatment, and access disparities</td>
<td>Improve knowledge and awareness of topic</td>
<td>August-December 2012</td>
</tr>
<tr>
<td>Certified Lymphedema Therapist (CLT) education</td>
<td>11 day certification course through the Academy of Lymphatic Studies (acols.org)</td>
<td>Receive education regarding lymphedema, components of CDT, and program development</td>
<td>May 2013</td>
</tr>
<tr>
<td>Development of Therapist Documentation Materials (see page 31)</td>
<td>Review of insurance requirements for treatment reimbursement</td>
<td>Improve reimbursement rates</td>
<td>June 2013</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improve efficiency with new patient evaluations</td>
<td></td>
</tr>
<tr>
<td>Development of Patient Educational Materials (see page 34)</td>
<td>Development of upper extremity lymphedema “packets” Development of lower extremity lymphedema “packets”</td>
<td>Improve patient access to appropriate education re: lymphedema Enhance success upon patient transition to “self-improvement” phase of treatment</td>
<td>June 2013-September 2013</td>
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<tr>
<td>Production of Lymphedema Program Environment</td>
<td>Ordering/organization of bandaging supplies Hanging posters re: lymphatic system and CLT components</td>
<td>Prepare to evaluate and treat patients with lymphedema Enhance efficiency/organization during patient treatment sessions Improve professionalism of program</td>
<td>July 2013</td>
</tr>
<tr>
<td>Hospital Staff Education</td>
<td>Lunch and learn with rehabilitation staff re: components of CLT training Presentation at Med Staff meeting</td>
<td>Educate co-workers on components of CLT training Educate physicians on new therapist’s newly acquired certification, lymphedema, and script requirements Increase referrals</td>
<td>June 2013 July 2013</td>
</tr>
<tr>
<td>Public Education/Marketing</td>
<td>Local radio focus group recording/airing (see attachments – 4 separate recordings + 1 commercial) Newspaper advertisement (see attached PDF)</td>
<td>Educate the public and potential patients about hospital’s newly acquired program to enhance awareness</td>
<td>October 2013</td>
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<tr>
<td>Post-Mastectomy Program Development – (see page 51)</td>
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<td>SURGERY DATE:</td>
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<td><strong>FEMALE</strong></td>
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<td>TIME OUT</td>
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<tr>
<td>PRIOR LEVEL OF FUNCTION:</td>
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</tbody>
</table>
OBJECTIVE/FUNCTIONAL MEASUREMENTS

Extremity with Ly:

Vital Signs:

Height/Weight/BMI:

ROM:

Grip:

9 Hole:

Strength:

Reported Functional Deficits:

Balance:

Sensation:

Coordination:

Transfers/Mobility:

Pain:

Cognition:

Vision/hearing:

Skin Review:

<table>
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<tr>
<th>Color</th>
<th>Temperature</th>
<th>Fibrotic Tissue</th>
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<tbody>
<tr>
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<tr>
<td>Fistulas</td>
<td>Scars</td>
<td>Papillomas</td>
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</table>

Circumferential Measurements (see attached)
**TREATMENT AND GOAL**

**PROBLEM LIST:** increased limb volume of ______, genital swelling, decreased functional mobility, decreased balance, decreased strength, decreased functional use of ______, impaired skin hygiene, poor disease management skills, wound, I/ADL deficits

**MEDICAL NECESSITY:** Occupational therapy services are warranted to address the above noted deficits in the problem list as swelling has not receded with elevation and exercise

**THERAPY RECOMMENDATIONS/PLAN OF CARE:** Complex Decongestive Therapy consisting of manual lymph drainage (MLD), compression bandaging, skin care, therapeutic exercise; patient education, garment fitting, discharge planning with focus on self-improvement phase, HEP set up and revision prn, AE training, I/ADL retraining,

Other: ________________________________________________________________

**REHABILITATION POTENTIAL:**

**PLAN OF CARE AGREEMENT:**

**FREQUENCY/DURATION:**

**PATIENT/FAMILY GOALS:**

**LONG TERM GOALS:**

- ___ Pt to demonstrate _________ with donning compression garment
- ___ Pt to demonstrate _________ with HEP
- ___ Pt to complete self-banding with _________ for prn needs such as HS use or airline travel.
- ___ Pt to remain free of infection throughout plan of care demonstrating adherence to skin care education.

**GIRTH:**

**FUNCTIONAL GOAL:**

**SHORT TERM GOALS:**

- ___ Pt to be _________ with abdominal breathing in order to promote reabsorption of the lymphatic load
- ___ Pt to complete therapeutic exercises with _____ v/c’s with bandages donned
- ___ Pt to recognize and verbalize signs of infection to prevent hospitalization

**GIRTH:**

**FUNCTIONAL GOAL:**

**HYGEINE:**

**HAND GRIP/ROM/ETC.:**

**TREATMENT INITIATED:**

**UE Supplies:**

- ___ Stockinette
- ___ Lymphoderm
- ___ 2" Elastomull (2)
- ___ 10 cm Cellona Padding (2)
- ___ Gray Foam
- ___ Komprex
- ___ Eucerin
- ___ 16 cm Comprilan
- ___ 8 cm Comprilan
- ___ 10 cm Comprilan

**LE Supplies:**

- ___ Stockinette
- ___ Lymphoderm
- ___ Eucerin
- ___ 1" Elastomull
- ___ Komprex
- ___ 10 cm Cellona Padding (2)
- ___ Gray Foam
- ___ 15 cm Isoband
- ___ 20 cm Isoband
- ___ 6 cm Comprilan
- ___ 8 cm Comprilan
- ___ 10 cm Comprilan (2)
- ___ 12 cm Comprilan

**Current G-Code:** G8993 - Other

**Goal G-Code:** G8994 - Other

**Current Modifier:**

**Goal Modifier:**

---
Lymphedema
Information and Exercises

St. Francis Memorial Hospital
Frequently Asked Questions

- **What is lymphedema?** Lymphedema is abnormal swelling that affects arm/s, leg/s, face, neck, and/or the genitals.

- **What is the cause of lymphedema?**
  - Lymphedema is most often the result of surgery or radiation therapy where lymph nodes are damaged or removed.
  - When the lymphatic system is disrupted, it can no longer effectively drain substances (water, proteins, cells, and long-chain fatty acids) from the area.

- **Can lymphedema be cured?** Once present, this chronic and progressive condition will not disappear by itself. There is no cure, the symptoms can only be managed.

- **What are the symptoms of lymphedema?**
  - Swelling of the affected area
  - Increased weakness of the arm and/or leg
  - Feelings of heaviness in the arm and/or leg
  - Later stages: Skin changes/dyscoloration, hardening of the tissue

- **What is the treatment for lymphedema?** The gold standard for lymphedema management is complex decongestive therapy (CDT) which can be provided at Saint Francis Memorial Hospital by Cally Tejkl, MOT, OTR/L, CLT, who is a certified lymphedema therapist. The goal of this therapy is to reduce the swelling and maintain the reduction. For the majority of patients this can be achieved by the skillful application of this therapy, which is safe, reliable, and non-invasive. There are four components of CDT:
  - Manual Lymph Drainage (MLD): This is a gentle manual treatment technique that increases the activity of certain lymph vessels and manually moves interstitial fluid.
  - Compression Therapy: In order to prevent re-accumulation of fluid it is necessary to apply sufficient compression to the affected extremity. This is achieved first by the application of a series of short-stretch bandages that look similar to ACE bandages (however, the elasticity is different as ACE bandages are known as ‘long-stretch’ bandages and can cause a tourniquet effect). After the initial reduction of the limb, an individualized compression garment will be worn to prevent the limb from swelling.
  - Therapeutic Exercise: A customized exercise program is designed by the therapist in order to assist in the decongestive process.
  - Skin Care: With lymphedema, a person’s skin is very susceptible to infections and is usually dry. A low-pH lotion, free of alcohol and fragrances should be used to maintain the moisture of the skin and to avoid infections.
The Lymphatic System

This picture will be utilized by your therapist to describe the general location of lymph nodes and how the techniques used in therapy will help to correctly drain the abnormal collection of fluid.
Complete Decongestive Therapy (CDT)

There is no cure for lymphedema; the goal of the therapy therefore is to reduce the swelling and to maintain the reduction. CDT is considered the therapy of choice for lymphedema and shows long-term results with both primary and secondary lymphedema. CDT is composed of 4 main components:

1. Manual Lymph Drainage
2. Compression Bandaging
3. Skin Care
4. Therapeutic Exercise

CDT is non-invasive, has no side effects, and is anatomically and physiologically correct. This type of treatment is endorsed by the American Cancer Society and the National Cancer Institute. There are two phases of this treatment: Intensive and Self-Management.

Intensive Phase: Your therapist will assist you with the four component of CDT and provide education.

Self-management Phase: This will last throughout the rest of your life. You will have the tools to manage your symptoms on your own.
Self Manual Lymph Drainage
Lymphedema of the Leg

Manual lymph drainage (MLD) is one of the main components of complete decongestive therapy (CDT). MLD aims to re-route the fluid away from non-functioning or blocked pathways and use non-damaged pathways.

What is the difference between MLD and traditional massage?

Massage techniques traditionally are applied to treat ailments in muscle tissues, tendons and ligaments, which are not located near the skin’s surface. Massage techniques are generally applied with considerable pressure.

MLD on the other hand is a very gentle manual technique, designed to have an effect on the lymphatic structures located near the surface of the skin.

The only commonality between MLD and traditional massage is that both techniques are applied manually. There are significant differences in technique, pressure and indications for which these two therapeutic measures are used.
The following techniques can be used for lymphedema affecting one arm; the illustrations and techniques describe the sequence used for lymphedema affecting the left arm. The techniques described are performed in the sitting position; ideally, self MLD should be applied at least once daily for 10-15 minutes, directly preceding the exercise program, and should be followed by appropriate skin care and compression therapy. Each stroke should be repeated 5-7 times.

Preparation and Abdominal Breathing:

1. Stationary circles with flat fingers above the collarbone on both sides. The fingers of the right hand manipulate the skin above the collarbone on the left and the fingers of the left hand manipulate the skin above the collarbone on the right. The pressure is applied “up” and “in”.

2. Stationary circles with the flat hand in the center of the underarm on the affected side. The pressure is directed “back” and “up”
3. Stationary circles with the flat hand in **several placements** from the waist on the affected side to the axillary (underarm) lymph nodes on the same side covering the entire surface of the side of the trunk. The pressure is “down” towards the table and “up” towards the underarm.

4. Stationary circles with the flat hand in the area of the groin lymph nodes on the opposite (unaffected) side. Pressure is directed “in” and “up”.

---

**Step 3**

**Step 4**
5. Stationary circles with the flat hand in **several placements** from the groin area on the affected side to the groin (inguinal) area on the opposite side. The pressure is directed “down” and “over”. Moving the fluid from **unhealthy**→**healthy**.

6. Diaphragmatic (abdominal) breathing:

**It is important to discuss any possible contraindications for this technique with the therapist!**

Abdominal breathing is done by contracting the diaphragm, a muscle located horizontally between the chest cavity and stomach cavity. As air enters the lungs this deep breathing is marked by expansion of the abdomen rather than the chest when inhaling. During the inhalation both hands that are placed flat on the belly provide resistance to the expanding abdomen.

During the exhalation the hands follow the belly and at the end of the exhalation, the hands press gently downward and upward toward the chest.
Step 6 – Exhalation

This technique should be repeated five times.

Leg

7. Soft effleurage over the skin of the entire leg from the ankles (or knees) to the waist.
8. Stationary circles with the flat hand and fingers in **several placements** on the outside thigh and hip. The pressure is directed toward the waist.

9. Stationary circles with the flat hand and fingers in **several placements** from the inside portion to the outside portion of the thigh. The pressure is directed to the outside.
10. Stationary circles with the flat fingers of both hands behind the knee. The pressure is directed upward toward the thigh.

Step 10

11. Stationary circles in several placements with the flat fingers of both hands on the medial (inside) lower leg. With the pressure directed toward the thigh, working from the inside ankle bone to the knee. Pressure directed “over” and “up”.

Step 11

12. Repeat as many of the steps on the leg as you wish.

13. Repeat steps 2, 4, and 6
Self Manual Lymph Drainage
Lymphedema of the LEFT Arm

Manual lymph drainage (MLD) is one of the main components of complete decongestive therapy (CDT). MLD aims to re-route the fluid away from non-functioning or blocked pathways and use non-damaged pathways.

What is the difference between MLD and traditional massage?

Massage techniques traditionally are applied to treat ailments in muscle tissues, tendons and ligaments, which are not located near the skin’s surface. Massage techniques are generally applied with considerable pressure.

MLD on the other hand is a very gentle manual technique, designed to have an effect on the lymphatic structures located near the surface of the skin.

The only commonality between MLD and traditional massage is that both techniques are applied manually. There are significant differences in technique, pressure and indications for which these two therapeutic measures are used.
The following techniques can be used for lymphedema affecting one arm; the illustrations and techniques describe the sequence used for **lymphedema affecting the left arm**. The techniques described are performed in the sitting position; ideally, self MLD should be applied at least **once daily** for **10-15 minutes**, directly preceding the exercise program, and should be followed by appropriate skin care and compression therapy. Each stroke should be repeated **5-7 times**, and, if not noted otherwise, the hand of the unaffected side should be used to perform the strokes.

1. **Stationary circles with flat fingers above the collarbone on both sides.** The fingers of the right hand manipulate the skin above the collarbone on the left and the fingers of the left hand manipulate the skin above the collarbone on the right. The pressure is applied “up” and “in”.

2. **Stationary circles with the flat hand in the center of the unaffected underarm.** The pressure is directed “back” and “up”
3. Soft effleurage over the skin from the affected underarm to the underarm of the opposite (healthy) side.

4. Moving stationary circles with the flat hand in several placements from the axilla on the affected side to the axilla on the opposite side. The pressure is directed “up” and “toward the healthy underarm”.
5. Stationary circles with the flat hand (use hand of affected side) in the area of the groin lymph nodes (inguinal lymph nodes) on the same side. The hand is placed just below the inguinal ligament and the pressure is directed “in” and “up” toward the belly.

6. **Moving** Stationary circles with the flat hand in several placements from the undearm on the affected side to the inguinal lymph nodes on the same side covering the entire surface of the lateral trunk (flank). The pressure is directed “back” and “down”.

7. Soft effleurage over the skin of the arm from the hand to the top of the shoulder.

8. Stationary circles with the flat hand and fingers in several placements on the upper portion of the lateral upper arm, from the shoulder muscle (deltoid muscle area) of the affected arm to the top of the shoulder. The pressure is directed toward the neck.
9. Stationary circles with the flat hand and fingers in several placements from the medial (inside) portion to the lateral (outside) portion of the upper arm. With the pressure directed toward the lateral aspect of the arm, the entire upper arm from the top (just below the axilla) down to the elbow should be covered.

Step 9

10. Stationary circles with the flat hand and fingers in several placements on the lateral upper arm. The entire lateral surface of the upper arm, from the elbow to the shoulder should be covered, with the pressure directed toward the shoulder muscle.

Step 10
11. Stationary circles with the flat hand and fingers in several placements covering the entire frontal (anterior) aspect of the lower arm, from the hand to the elbow crease. In order to reach all aspects of the forearm, the palm of the hand up. The pressure is directed toward the upper arm.

Step 11

12. Repeat step number 10.
13. Stationary circles with the flat hand and fingers in several placements on the posterior aspect of the lower arm, from the back of the hand to the elbow. In order to reach all aspects of the forearm, the arm should be held palms down with the palm of the hand resting on the thigh. The pressure is directed toward the upper arm.

Step 13

14. Repeat steps 1, 2, and 5. Other steps may be repeated as well.
Post-Mastectomy Program Development

**Purpose:** The purpose of this project is to improve post-surgical care for those receiving mastectomy’s in a rural hospital setting.

**Goal:** The goal of this project is to help improve individuals’ overall quality of life, functional abilities, and psychological deficits through education and individualized exercise program development. A second goal was to educate on lymphedema and preventative techniques to reduce incidence of development of lymphedema.

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<th>Step</th>
<th>Components</th>
<th>Purpose</th>
<th>Date Completed</th>
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<tbody>
<tr>
<td>Literature review completed with fellow Physical Therapist</td>
<td>Mastectomy procedures/protocols Educational resource examples Exercise advancement guidelines</td>
<td>Improve knowledge of Mastectomies and determination of effective and most up to date information re: post-surgical care;</td>
<td>October 2013</td>
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</tbody>
</table>
| Collaboration with Med Staff and surgical team | Determination of timeline of rehabilitation efforts:  
- Surgical Day: Introduction of therapist to patient as inpatient  
- 3 Day P/O: Evaluation, education, and exercise (with HEP set up)  
- 7 Day P/O: Exercise advancement  
- 3 Week P/O: Exercise advancement  
- 6 Week P/O: Exercise advancement and discharge if goals met | To follow guidelines recommended by physician performing surgery in order to best meet needs of patient. | October 2013 |
| Development of Patient Educational Materials (see page 51) | Post-Mastectomy Packet | Improve patient access to appropriate education re: post-mastectomy  
Enhance success of patient participation in exercises on an at home basis | November 2013 |
| Hospital Staff Education | Lunch and learn with rehabilitation staff re: components of Post-Mastectomy Program (primarily to be completed by OT with involvement of PT prn) | Educate co-workers on components of mastectomy, needed evaluation components, educational resources created, advancement of exercises | March 2014 |

**Outcomes:** 3 Post-Mastectomy Patients have been seen within the rehabilitation department; 3/3 came to 100% of therapy sessions; 90% goal attainment;

**Future Plans:**
1. Continued collaboration with medical and surgical staff regarding appropriate post-surgical therapy interventions
2. Marketing strategies: Local radio, newspaper, brochure development; With goal to increase referrals from outside hospitals (patients getting surgery in urban areas)
Post Mastectomy

Information and Exercises

St. Francis Memorial Hospital
General Guidelines for Arm Activity after Breast Surgery

- You are encouraged to use your elbow and hand as much as you are able for your normal daily activities.

- For the first few days after surgery, it is good for you to practice deep breathing frequently. To do this, breathe in deeply and expand your chest and abdomen as much as you can. Then let all the air out and relax. Think of letting all the tension move out of your body as the air moves out of your lungs. Concentrate on relaxing while you breathe out. Repeat this three to four times, breathing in deeply and then relaxing. This will help you to relax and to expand the chest wall and lungs to maintain normal mobility.

- Unless instructed otherwise, there are exercises you can do at various stages after surgery. The exercises you complete will be monitored by an Occupational Therapist. The purpose of these exercises is to restore range of motion, strength, and overall functional use of your arm/s.

- You should recover full motion and strength in your arm/s in about two to three months after your breast surgery.

- Exercises begin at 3 days post operatively, unless otherwise instructed by your doctor. It is usually all right to stretch your shoulder until feel a mild pull. Stretching should always be down slowly and smoothly and not with bouncing movements. The way to regain motion in your shoulder is to work gradually, increasing each motion in small steps each day.

- Some people find it helpful to do the exercises after a warm bath or shower when the muscles are warm.
• You may have tightness and stiffness in the tissues of the chest and armpit (axilla) after surgery and/or radiation. This is normal. Continue to do your exercises at least three times a day until the feeling of tightness is gone.

• Do not be alarmed if you notice a burning or tingling feeling or soreness on the back of your arm and along the chest wall. These sensations are caused by irritated nerve endings. The sensations often become stronger 2 to 3 weeks after surgery, and then subside. Movement may temporarily increase the discomfort, but it is important that you keep doing your exercises to maintain your range of motion. In many cases, sensations will return to normal. If your arm becomes swollen or more tender than before the exercises, cut back on the number of repetitions and contact your doctor.

• Performing routine activities will help increase your range of motion. These activities might include reaching into cabinets, washing and brushing your hair, putting your arms behind your neck, and fastening your bra. Avoid heavy lifting with your affected arm.
Arm Precautions

- Carefully wash and disinfect any cut or injury. Always carry an antiseptic ointment with you, such as Bacitracin, Neosporin, or Polysporin. If you are bitten or scratched by an animal or insect, you may need to contact your doctor.
- Unless otherwise instructed by your doctor, do not allow anyone to draw blood, give an injection, insert an IV, or perform acupuncture on your affected arm.
- Unless otherwise instructed by your doctor, do not allow a blood pressure cuff to be used on your affected arm.
- Use caution with harsh chemicals. Wear a rubber glove when doing housework involving chemicals or abrasives, and you may need to wear long sleeves and a glove when gardening.
- When manicuring your nails, avoid cutting the cuticles. When shaving your armpits, use an electric shaver.
- Use hypoallergenic soap, and dry your arm gently but thoroughly. Keep your skin in good condition with an unscented moisturizer, such as Eucerin.
- Avoid vigorous repetitive motions with your affected arm, such as scrubbing, pushing, pulling, or painting.
- Avoid heavy lifting with your affected arm, and don’t carry a heavy purse or a purse with an over-the-shoulder strap on your affected side.
- Mild to moderate exercise is important, but be careful not to become overheated.
- Avoid sunburn.
- Use caution when being outdoors when it is very cold or very hot.
- Avoid hot tubs, saunas, hot showers or baths, and hot dishwashing water.
- Maintain your ideal weight, eat a well-balanced diet, maintain adequate water intake.
Lymphedema

- **What is lymphedema?** Lymphedema is a swelling of a body part, most often one or both arms following a mastectomy. Research has shown that 2-49% of individuals will get lymphedema following a mastectomy. It is the result of an accumulation of protein-rich fluid in the superficial tissues.

- **What is the cause of lymphedema?**
  - Lymphedema is most often the result of surgery or radiation therapy where lymph nodes are damaged or removed.
  - When the lymphatic system is disrupted, it can no longer effectively drain substances (water, proteins, cells, and long-chain fatty acids) from the area.

- **Can lymphedema be cured?** Once present, this chronic and progressive condition will not disappear by itself. There is no cure, the symptoms can only be managed.

- **What are the symptoms of lymphedema?**
  - Swelling in the extremity
  - Increased weakness of the limb
  - Feelings of heaviness in the limb
  - Later stages: Skin changes/discholoration, hardening of the tissue

- **What is the treatment for lymphedema?** The gold standard for lymphedema management is complex decongestive therapy (CDT) which can be provided at Saint Francis Memorial Hospital by Cally Tejkl, MOT, OTR/L, CLT, who is a certified lymphedema therapist. The goal of this therapy is to reduce the swelling and maintain the reduction. For the majority of patients this can be achieved by the skillful application of this therapy, which is safe, reliable, and non-invasive. There are four components of CDT:
  - **Manual Lymph Drainage (MLD):** This is a gentle manual treatment technique that aims to decrease the swelling by re-routing the fluid to functioning pathways.
  - **Compression Therapy:** In order to prevent re-accumulation of fluid it is necessary to apply compression to the affected arm or
leg. This is achieved first by the application of a series of short-stretch bandages. After the initial reduction of the limb, an individualized compression garment will be worn to prevent the limb from swelling.

- Therapeutic Exercise: A customized exercise program is designed by the therapist in order to assist in the decongestive process.
- Skin Care: With lymphedema, a person’s skin is very susceptible to infections and is usually dry. A low-pH lotion, free of alcohol and fragrances should be used to maintain the moisture of the skin and to avoid infections.

- **How do I avoid lymphedema?** Carefully read through the “arm precautions” information and avoid any activities that put you at an increased risk for acquiring lymphedema.
- **What should I do if I suspect I have lymphedema?** Contact your physician and explain your concerns. He or she will refer you to a certified lymphedema therapist for treatment. The sooner the lymphedema is addressed, the more likely you are to achieve a normal or near normal sized limb.
Overview of Exercises

- The exercises are broken down into groups based on the timeframe since your surgery. However, pending on your progress, level of pain, and current range of motion, you may need to do some of the exercises longer in order to achieve best results. Your therapist can assist you with this.
- Try to complete the exercises 2-3 times daily and increase the number of reps slowly over a comfortable period of time.
- Perform each exercise in a slow and controlled manner. After a muscle contraction, be sure to relax adequately before beginning again. The time spent relaxing should be at least as long as the time spent during the exercise.
- Be sure to breathe while you are doing the exercises. Do not hold your breath.
- If possible, do exercises in front of a mirror to maintain the correct posture.
- Your ultimate goal is to regain your normal shoulder range of motion and return to your normal activity level and previous life activities and roles.
- Walking is an excellent form of exercise to focus on improving overall cardiovascular wellness and general health. Start with 5-10 minute increments and gradually increase time and distance as tolerated.
- For the first few days after your surgery, it is good for you to practice deep breathing frequently. To do this, breathe in deeply and expand your chest and abdomen as much as you can. Then let all the air out and relax. Think of letting all the tension move out of your body as the air moves out of your lungs. Concentrate on relaxing while you breathe out. Repeat this three to four times, breathing in deeply and then relaxing. This will help you to relax as well as to expand the chest wall and lungs to maintain normal mobility.

*NOTE*

- Do not perform any strenuous movements
- After radiation therapy you need to discuss the exercise program with your therapist.
## Lymphedema Teaching Plan for Haitian Healthcare Workers – Potential Mission Trip

**PURPOSE:** The purpose of the teaching plan is to improve the knowledge of the medical professionals of Haiti about lymphedema filariasis with hopes of combating this disease and improving the lives of those suffering.

**GOAL:** The goal of this project is to help individuals’ overall quality of life, functional abilities, and psychological deficits through education and intervention about lymphedema. Although there is no cure for this disease, with appropriate education and supplies, the limb or area of swelling can be significantly reduced.

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Content Outline</th>
<th>Method of Instruction</th>
<th>Resources</th>
<th>Method of Evaluation</th>
</tr>
</thead>
</table>
| **Objective:** After reading handouts provided by the educator, the individual will complete a “teach back” of the information about components of complex decongestive therapy (CDT) including manual lymph drainage (MLD), compression bandaging, skin care, and therapeutic exercise in order to provide effective education to future patients. **DOMAIN:** Cognitive | **INTRODUCTION**
A. Introduction of self and others assisting in project  
B. Purpose of project  
C. Overview of Content Covered | Introduction, lymphedema training packet, lecture | Lymphedema training packet | 1. On a scale of 1 – 5, how confident do you feel to treat patient with lymphedema?  
1 – Not at all Confident  
2 – Somewhat Confident  
3 – N/A  
4 – Confident  
5 – Very Confident |
| **Objective:** Following demonstration of proper manual lymph drainage (MLD) techniques, the individual will correctly apply bandaging with adequate pressure on partner with occasional verbal and/or tactile cues. **DOMAIN:** psychomotor | **BODY - LYMPHEDEMA EDUCATION**
A. Lymphedema Overview  
1. Simple anatomy/physiology of systems involved  
2. Causes (focus of lymphedema filariasis)  
3. Pictures included  
B. Treatment Interventions  
1. Prevention  
2. Pharmacological Interventions  
3. Complete Decongestive Therapy (CDT)  
a. Manual Lymph Drainage (MLD)  
b. Compression Bandaging  
c. Skin Care  
d. Therapeutic Exercise  
C. Hands on Practice  
1. MLD Techniques  
a. Practicing Strokes – “Stationary Circle” and “Pump” (possibly “Rotary” and “Scoop” pending educational level of audience)  
b. Sequences – Upper and Lower Extremity  
2. Wrapping Techniques  
3. Garment Measuring/Selection | Lecture, demonstration, hands-on opportunities | Lymphedema training packet; Compression bandaging supplies |
| **Objective:** Following demonstration of proper compression wrapping, the individual will correctly apply bandaging with appropriate materials and adequate pressure with occasional verbal and/or tactile cues. **DOMAIN:** psychomotor | **CONCLUSION**
A. Compliance to Pharmacological Interventions and CDT  
B. Promotion of Self-Management | | | |
Lymphedema Training Program – Haiti Mission Trip

Developed by: Cally Tejkl, MOT, OTR/L, CLT
## Contents

*(note the page numbers will not be correct in Capstone Submission)*

Overview.........................................................................................................................3  
Lymphatic System...........................................................................................................6  
Complete Decongestive Therapy....................................................................................7  
Manual Lymph Drainage Sequences................................................................................8  
  Upper extremity lymphedema .................................................................9  
  Lower extremity lymphedema ..............................................................13  
Compression Bandaging.................................................................................................16  
  Upper Extremity .........................................................................................17  
  Lower Extremity .........................................................................................20  
Decongestive Exercise...................................................................................................22  
Skin Care.......................................................................................................................23
Overview

**What is lymphedema?** Lymphedema is abnormal swelling of a body part, most often the arms or legs. It may also occur in the face, trunk, abdomen, or genital region. There is no cure for this disease; however, symptoms can be managed.

**Causes** – Lymphedema is classified as either primary or secondary.

Primary lymphedema - is caused by malformations of the lymphatic system and may be present at birth or develop later in life.

Secondary lymphedema - generally caused by surgery or radiation therapy for cancer. However, Lymphatic filariasis is a type of secondary lymphedema and is the most common cause of the disease worldwide. This disease is transmitted via mosquito. The bite of a mosquito implants larvae which develop into a worm that can live in the lymphatic system for 4-6 years.
Causes – (cont.) The actual infection is not life threatening, but the complications that occur as a result of the lymphedema can be. The most serious complication is massive infection (cellulitis, lymphangitis). Other complications include fibrosis (hardening) of the affected tissue, severe pain, gross disfigurement, sexual dysfunction. Long term fibrosis or tissue hardening can also cause venous thrombosis (blood clot).

Primary and secondary lymphedema may affect the upper or lower extremity. In general it can be said that the legs are more often involved in primary lymphedema whereas secondary forms are more commonly found in the upper extremities.
Key Facts Surrounding Lymphedema Filariasis

- More than 1.3 billion people in 81 countries worldwide are threatened by lymphatic filariasis, commonly known as elephantiasis.
- Lymphatic filariasis can result in an altered lymphatic system and the abnormal enlargement of body parts, causing pain and severe disability.
- To interrupt transmission, an annual mass drug administration of single doses of two medicines to all eligible people in endemic areas is recommended.

Treatment Methods. First, the infection that caused the lymphedema must be eliminated, followed by subsequent treatment of the lymphedema.

Treatment for the parasitic infection include the administration of drugs such as diethylcarbamazine (DEC), albendazole and ivermectin.

Treatment for the lymphedema includes Complete Decongestive Therapy (CDT) on the area of involvement.
The Lymphatic System
Complete Decongestive Therapy (CDT)

There is no cure for lymphedema; the goal of the therapy therefore is to decrease the swelling and prevent the swelling from returning. CDT is considered the therapy of choice for lymphedema and shows long-term results with both primary and secondary lymphedema. CDT is composed of 4 main components:

5. Manual Lymph Drainage
6. Compression Bandaging
7. Skin Care
8. Therapeutic Exercise

CDT is non-invasive, has no side effects, and is anatomically and physiologically correct. This type of treatment is endorsed by the American Cancer Society and the National Cancer Institute.

There are two phases of this treatment: Intensive and Self-Management. During the intensive treatment phase, the medical professional assists the patient with the four component of CDT, while at the same educating the patient regarding the purpose and application of the intervention techniques. The self-management phase will the patient’s lifetime. The patient will learn how to control the symptoms on their own.
Manual Lymph Drainage (MLD)

MLD is a gentle manual treatment technique that aims to decrease the swelling. This technique re-routes the fluid around damaged or blocked pathways and uses functioning pathways.

Individuals must be taught these techniques during the course of their treatment to assist in the self-management of lymphedema.

Basic MLD Strokes

(Please fill in notes after demonstration in terms that will most help you in the future)

Stationary Circle –

Pump –

Scoop –

Rotary –
Manual Lymph Drainage
Lymphedema of the Leg

Manual lymph drainage (MLD) is one of the main components of complete decongestive therapy (CDT). MLD aims to re-route the fluid away from non-functioning or blocked pathways and use non-damaged pathways.

What is the difference between MLD and traditional massage?

Massage techniques traditionally are applied to treat ailments in muscle tissues, tendons and ligaments, which are not located near the skin’s surface. Massage techniques are generally applied with considerable pressure.

MLD on the other hand is a very gentle manual technique, designed to have an effect on the lymphatic structures located near the surface of the skin.

The only commonality between MLD and traditional massage is that both techniques are applied manually. There are significant differences in technique, pressure and indications for which these two therapeutic measures are used.
The following techniques can be used for lymphedema affecting one arm; the illustrations and techniques describe the sequence used for lymphedema affecting the left arm. The techniques described are performed in the sitting position; ideally, self MLD should be applied at least once daily for 10-15 minutes, directly preceding the exercise program, and should be followed by appropriate skin care and compression therapy. Each stroke should be repeated 5-7 times.

Preparation and Abdominal Breathing:

1. Stationary circles with flat fingers above the collarbone on both sides. The fingers of the right hand manipulate the skin above the collarbone on the left and the fingers of the left hand manipulate the skin above the collarbone on the right. The pressure is applied “up” and “in”.

2. Stationary circles with the flat hand in the center of the underarm on the affected side. The pressure is directed “back” and “up”
3. Stationary circles with the flat hand in **several placements** from the waist on the affected side to the axillary (underarm) lymph nodes on the same side covering the entire surface of the side of the trunk. The pressure is “down” towards the table and “up” towards the underarm.

![Step 3](image)

4. Stationary circles with the flat hand in the area of the groin lymph nodes on the opposite (unaffected) side. Pressure is directed “in” and “up”.

![Step 4](image)
5. Stationary circles with the flat hand in **several placements** from the groin area on the affected side to the groin (inguinal) area on the opposite side. The pressure is directed “down” and “over”. Moving the fluid from unhealthy ➔ healthy.

6. Diaphragmatic (abdominal) breathing:

   **It is important to discuss any possible contraindications for this technique with the therapist!**

   Abdominal breathing is done by contracting the diaphragm, a muscle located horizontally between the chest cavity and stomach cavity. As air enters the lungs this deep breathing is marked by expansion of the abdomen rather than the chest when inhaling. During the inhalation both hands that are placed flat on the belly provide resistance to the expanding abdomen.

   During the exhalation the hands follow the belly and at the end of the exhalation, the hands press gently downward and upward toward the chest.
Step 6 – Exhalation

This technique should be repeated five times.

Leg

7. Soft effleurage over the skin of the entire leg from the ankles (or knees) to the waist.
8. Stationary circles with the flat hand and fingers in **several placements** on the outside thigh and hip. The pressure is directed toward the waist.

9. Stationary circles with the flat hand and fingers in **several placements** from the inside portion to the outside portion of the thigh. The pressure is directed to the outside.
10. Stationary circles with the flat fingers of both hands behind the knee. The pressure is directed upward toward the thigh.

11. Stationary circles in **several placements** with the flat fingers of both hands on the medial (inside) lower leg. With the pressure directed toward the thigh, working from the inside ankle bone to the knee. Pressure directed “over” and “up”.

12. Repeat as many of the steps on the leg as you wish.
13. Repeat steps 2, 4, and 6
Self Manual Lymph Drainage  
Lymphedema of the LEFT Arm

Manual lymph drainage (MLD) is one of the main components of complete decongestive therapy (CDT). MLD aims to re-route the fluid away from non-functioning or blocked pathways and use non-damaged pathways.

What is the difference between MLD and traditional massage?

Massage techniques traditionally are applied to treat ailments in muscle tissues, tendons and ligaments, which are not located near the skin’s surface. Massage techniques are generally applied with considerable pressure.

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The only commonality between MLD and traditional massage is that both techniques are applied manually. There are significant differences in technique, pressure and indications for which these two therapeutic measures are used.
The following techniques can be used for lymphedema affecting one arm; the illustrations and techniques describe the sequence used for **lymphedema affecting the left arm**. The techniques described are performed in the sitting position; ideally, self MLD should be applied at least **once daily** for **10-15 minutes**, directly preceding the exercise program, and should be followed by appropriate skin care and compression therapy. Each stroke should be repeated **5-7 times**, and, if not noted otherwise, the hand of the unaffected side should be used to perform the strokes.

1. Stationary circles with flat fingers above the collarbone on both sides. The fingers of the right hand manipulate the skin above the collarbone on the left and the fingers of the left hand manipulate the skin above the collarbone on the right. The pressure is applied “up” and “in”.

2. Stationary circles with the flat hand in the center of the unaffected underarm. The pressure is directed “back” and “up”
3. Soft effleurage over the skin from the affected underarm to the underarm of the opposite (healthy) side.

4. Moving stationary circles with the flat hand in several placements from the axilla on the affected side to the axilla on the opposite side. The pressure is directed “up” and “toward the healthy underarm”.
5. Stationary circles with the flat hand (use hand of affected side) in the area of the groin lymph nodes (inguinal lymph nodes) on the same side. The hand is placed just below the inguinal ligament and the pressure is directed “in” and “up” toward the belly.

6. **Moving** Stationary circles with the flat hand in several placements from the underarm on the affected side to the inguinal lymph nodes on the same side covering the entire surface of the lateral trunk (flank). The pressure is directed “back” and “down”.

7. Soft effleurage over the skin of the arm from the hand to the top of the shoulder.
8. Stationary circles with the flat hand and fingers in several placements on the upper portion of the lateral upper arm, from the shoulder muscle (deltoid muscle area) of the affected arm to the top of the shoulder. The pressure is directed toward the neck.
9. Stationary circles with the flat hand and fingers in several placements from the medial (inside) portion to the lateral (outside) portion of the upper arm. With the pressure directed toward the lateral aspect of the arm, the entire upper arm from the top (just below the axilla) down to the elbow should be covered.

10. Stationary circles with the flat hand and fingers in several placements on the lateral upper arm. The entire lateral surface of the upper arm, from the elbow to the shoulder should be covered, with the pressure directed toward the shoulder muscle.
11. Stationary circles with the flat hand and fingers in several placements covering the entire frontal (anterior) aspect of the lower arm, from the hand to the elbow crease. In order to reach all aspects of the forearm, the palm of the hand up. The pressure is directed toward the upper arm.

Step 11

12. Repeat step number 10.

13. Stationary circles with the flat hand and fingers in several placements on the posterior aspect of the lower arm, from the back of the hand to the elbow. In order to reach all aspects of the forearm, the arm should be held palms down with the palm of the hand resting on the thigh. The pressure is directed toward the upper arm.

Step 13

14. Repeat steps 1, 2, and 5. Other steps may be repeated as well.
**Compression Bandaging**

In order to prevent the swelling from coming back, it is necessary to apply sufficient compression to the arm or leg. During the intensive phase of CDT, compression therapy is achieved with the application of special short-stretch bandages. These bandages are used between MLD treatments and prevent the re-accumulation of lymph fluid, which has been removed from the extremity during the MLD session. The bandages are applied in combination with padding materials. During the intensive phase of therapy the patient and, if possible, their family members learn how to apply their own bandages.

Once the extremity is decongested, the patient wears compression garments during the day. For upper extremity lymphedema, compression classes I (20-30 mm/Hg) or II (30-40 mm/Hg) are sufficient. For lower extremity lymphedema, the compression must be greater with classes of II, III (40-50 mm/Hg), or IV (>50 mm/Hg) being suitable.

*Note: The following handouts were developed by the Academy of Lymphatic Studies following permission as this author has no intent to sell or utilize them for monetary purposes. The font/pictures are larger in actual educational packets due to formatting.*
1.) Begin by applying a low pH skin lotion. 9.) Start to apply a 6cm short stretch bandage beginning at the wrist. Use moderate tension.

2.) Cut a hole for the thumb into the stockinet & pull it over the arm. You should have at least 2" of extra material in the axilla to pull over the bandages later. 10.) Cover the entire hand, including the knuckles. While you apply several circular turns around the hand, keep the fingers open & extended.

3.) Use either a 4cm Gauze Bandage or a 6cm pre-folded Transelast Classic to bandage the fingers. Start by completing a loose circle around the very low end of the wrist (below the bony prominence). 11.) Continue to bandage the forearm with the remaining bandage.

4.) Continue by wrapping each finger individually with circular turns coming from the top of the hand. Make sure you maintain a slight pull on the bandage. 12.) Proceed with an 8cm short stretch bandage beginning again on the wrist. Cover the entire forearm with this second bandage (make a fist while doing that to keep the forearm muscles tight). Overlap the previous turn by about two thirds.

5.) To complete all fingers you may use two (sometimes three) Gauze Bandages. If a greater compression on the top of the hand is desired you may incorporate pre-cut foam pieces (orange or gray) into the bandage. 13.) If there is any 8cm bandage left, cover the elbow area with either circular or crisscross turns.

6.) Apply a 10cm-padding bandage starting on the wrist, then the hand & back to the wrist. 14.) If the 8cm wide bandage is not long enough to cover the elbow, proceed with a 10cm short-stretch bandage where the 8cm bandage ended & continue to bandage as much of the upper arm as possible.

7.) Use another 10cm or 15cm padding bandage for the forearm & upper arm, using a 50% overlap with each turn. If you use Cetilona or Artiflex you may double up the layer of padding in the cubital area. 15.) The next short-stretch bandage begins at the end of the forearm in a reversed direction. Cover the entire arm with moderate tension & circular turns.

8.) If you use Rosidal Soft a double up of layers is not necessary. 16.) Additional compression may be achieved by applying another 10cm or 12cm short stretch bandage on the extremity. Make sure that the finished bandage decreases in pressure from the hand to the upper arm.
1.) Begin by applying a low pH skin lotion (Eucerin or Lymphoderm).

2.) Pull the stockinette over the entire leg. You should have at least 2" of extra material in the groin to pull over the bandages later.

3.) Use a pre-folded 4cm or 6cm Gauze Bandage to bandage the toes. Start by completing a loose circle around the very low end of the foot (just above the toes).

4.) Continue by wrapping each toe individually with circular turns coming from the top of the foot. Make sure you maintain a slight pull on the bandage.

5.) To complete all toes you may use one (sometimes two) Gauze Bandages. To achieve a greater compression in the area behind the ankles you may incorporate pre-cut foam pieces (orange or gray) into the bandage.

6.) Apply a 10cm padding bandage starting on the foot (just above the toes), then continue with at least two circular turns covering the foot before you continue to cover the ankle area.

7.) Hold the foam pieces behind the medial and lateral ankle in place with the circles around the ankle.

8.) Proceed to cover the calf area with the remaining padding bandage using a 50% overlap with each turn (you may also use another 10cm or 15cm padding for the calf area if necessary).

9.) Start to apply a 6cm short stretch bandage beginning at the end of the foot where you applied the first circle.

10.) If there is any 6cm bandage left, cover the area around the ankles (above the heel) with the same bandage.

11.) From the ankle lead the bandage back to the end of the foot where you applied the first circle. Repeat the same technique until enough compression is achieved. (Figure-8 principle)

12.) Let the remaining bandage end on the calf area.

13.) Start your second compression bandage (8cm) with a circle just above the ankle. In order to avoid a tourniquet effect in the ankle area make sure you don’t apply too much pressure when beginning this bandage.

14.) Proceed with the 8cm short stretch bandage downward, covering the heel.

15.) Lead the bandage back to the ankle area, covering the previous circle.

16.) From here proceed downward again to the sole.
<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.</td>
<td>After you completely covered the foot, continue to bandage the calf with the remaining bandage. Each of the bandage turns overlaps the previous one by approximately two thirds.</td>
</tr>
<tr>
<td>18.</td>
<td>The next short-stretch bandage (10cm) begins in a reversed direction above the ankle. If more compression is needed on the foot, lead the bandage over the ankle area downward again; if not return to the foot, proceed directly upward using the same overlap principle.</td>
</tr>
<tr>
<td>19.</td>
<td>If it is necessary you may use an additional short stretch bandage (10 or 12cm) for the lower leg. After you completely covered the lower leg check if the pressure decreases between the foot &amp; the knee; secure the last bandage with tape.</td>
</tr>
<tr>
<td>20.</td>
<td>Continue to apply padding bandages (15cm) on the knee. If you use Cellona or Artiflex you need to double up the layer of padding in the area behind the knee. If you use Rosidal Soft a double up of layers is not necessary.</td>
</tr>
<tr>
<td>21.</td>
<td>Cover the entire remaining leg with as many 15cm bandages as necessary.</td>
</tr>
<tr>
<td>22.</td>
<td>Start the next 12cm short-stretch bandage with a circular turn below the knee &amp; continue obliquely across the popliteal fossa to the lower thigh (1), then with one circular turn around the lower thigh (2), and back down to the starting point (3). Use the remaining bandage to cover the knee with the usual overlap.</td>
</tr>
<tr>
<td>23.</td>
<td>Continue with the next 12cm short-stretch bandage where the previous one ended. Apply the bandage in reversed direction and try to cover the thigh all the way to the groin area – overlap the bandages by two thirds as usual.</td>
</tr>
<tr>
<td>24.</td>
<td>Another 12cm bandage is applied (again in reversed direction) to cover the remaining thigh. Use tape to secure the bandage below the groin.</td>
</tr>
<tr>
<td>25.</td>
<td>If additional compression is needed you may apply an extra layer of bandages around the leg. Check the pressure gradient again all the way from the foot to the area below the groin.</td>
</tr>
<tr>
<td></td>
<td>In some cases it may be necessary to apply a Hip Attachment, which is indicated if the swelling includes the lower quadrant of the trunk or to secure the leg bandage in case of sliding (See A &amp; B)</td>
</tr>
</tbody>
</table>

A. Use a 15 or 20cm “white bandage” (Idealbindi or Isoband), start at the lateral thigh, continue covering the medial thigh then proceed to the trunk via the lateral hip.  

B. Lead the bandage with relatively strong pressure one circular turn around the abdomen & return to the thigh covering the buttock ant the lateral hip again. Secure the bandage with a tape either on the thigh or the anterior abdomen. If more compression is needed you may use an additional “white bandage”. For more comfort you may also incorporate a piece of gray foam in the waist area.
Decongestive Exercises

Clients should try to exercise at least twice a day for 10-15 minutes and increase the length of the exercise session slowly over a comfortable period of time. Exercises are performed with the bandages or garments in place.

Example Exercises for the Upper Extremity:
- Abdominal breathing – 3x
- Head turns and stretches – 2x each
- Shoulder shrugs – 3x
- Forward and Backward Arm Circles – 5x
- Fist Clenches – 5x
- Wrist Circles – 5x
- Touch Opposite Shoulder – 5x
- Grasp lungs of imaginary ladders – 5x
- Soft ball squeezes – 1 minute
- Soft ball circles around trunk – 5x

Example Exercises for the Lower Extremity:
- Abdominal breathing – 3x
- Toe Clenches – 5x
- Spread Toes with Hold – 5x
- Point/Flex Foot – 5x
- Butt kicks – 5x
- Soft ball squeeze with knees – 5x
- Soft ball circles between knees – 5x
- WALKING!
Skin and Nail Care

The skin of individuals with lymphedema is extremely dry and susceptible to infections. Therefore, the goal of this CDT component is to avoid bacterial and fungal growth and infections and to supply moisture to the dry skin. Instruct the individual on the importance of cleansing and moisturizing techniques including the utilization of a low-pH (around pH5) lotion. Apply lotion before the bandages during the intensive phase and twice daily in the self-management phase.