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LymphaTouch™ as a Preparatory Method for Chemo-Induced Peripheral Neuropathy and Radiation-Induced Fibrosis: A Case Study

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Introduction

Prevalence

268,600 new invasive cases of breast cancer in the United States in 2019. Invasive breast cancer has a 91% 5-year survival rate (ACS, 2019).

Clinical Relevance

- There are long-term side-effects to the aggressive yet curative treatments.
- Survivors are at an increased risk for occupational performance issues related to ADLs, IADLs, work, and social and community participation.
- Occupational therapists in breast cancer rehabilitation can provide activities that support the prevention of alterations and occupational restrictions. (Moreno-Chaparro et al., 2018; Deluliis & Hughes, 2012).

Agency Partnership

Nashville Breast Center at St. Thomas Midtown Medical Hospital
Nashville Breast Center specializes in the diagnosis and treatment of breast cancer, as well as a full range of breast health needs.

Project Purpose

- Quality Improvement:** Aims to explore the ability to expand the services offered at the Nashville Breast Center and potentially provide improved health-related quality of life for patients in the survivorship stage of breast cancer.
- Case Study:** To assess the LymphaTouch™ device for use in treating Chemo-Induced Peripheral Neuropathy and Radiation-Induced Fibrosis.

Literature Review

Chemotherapy-induced Peripheral Neuropathy (CIPN)

- Common and debilitating condition that affects an estimated 10% to 80% of patients (Nyrop et al., 2018).
- Symptoms that impair occupations include tingling, numbness, paresthesia, temperature sensitivity, pain, stocking-glove feeling, weakness, and impaired balance. (Nyrop et al., 2018).
- "...numbness/tingling in hands/feet is directly related to 25% of the treatment discontinuations and 24% of the dose reductions due to peripheral neuropathy" (Nyrop et al., 2018).
- Forty-seven percent of breast cancer survivors reported experiencing CIPN side effects an average of six years after concluding treatment (Greenwald et al., 2019).

Radiation-induced Fibrosis (RF)

- The incidence of moderate-to-severe radiation-induced fibrosis in breast conservation therapy ranges between 43% and 58% (Wernicke et al., 2014).
- "Radiation-induced fibrosis (RF) is one of the most prominent late complications which may cause persistent symptoms of pain and cosmetic disfigurement with an implication of decreased quality of life (QOL)" (Wernicke et al., 2014).

Negative Pressure Therapy

- Cupping is the primitive form of local negative pressure devices; however, it has limitations in therapy due to the inability to accurately control the level of negative pressure at the tissue interface (Gott et al., 2018).
- Cupping is theorized to improve circulation and reduce pain.
- Cupping has safely been used for breast cancer-related lymphedema and has been effective in reducing upper limb circumference and relieving pain (Wang et al., 2018).

LymphaTouch™



By addressing the debilitating symptoms related to RF and CIPN, LymphaTouch™ has the potential to help clients return to participating in meaningful occupations.

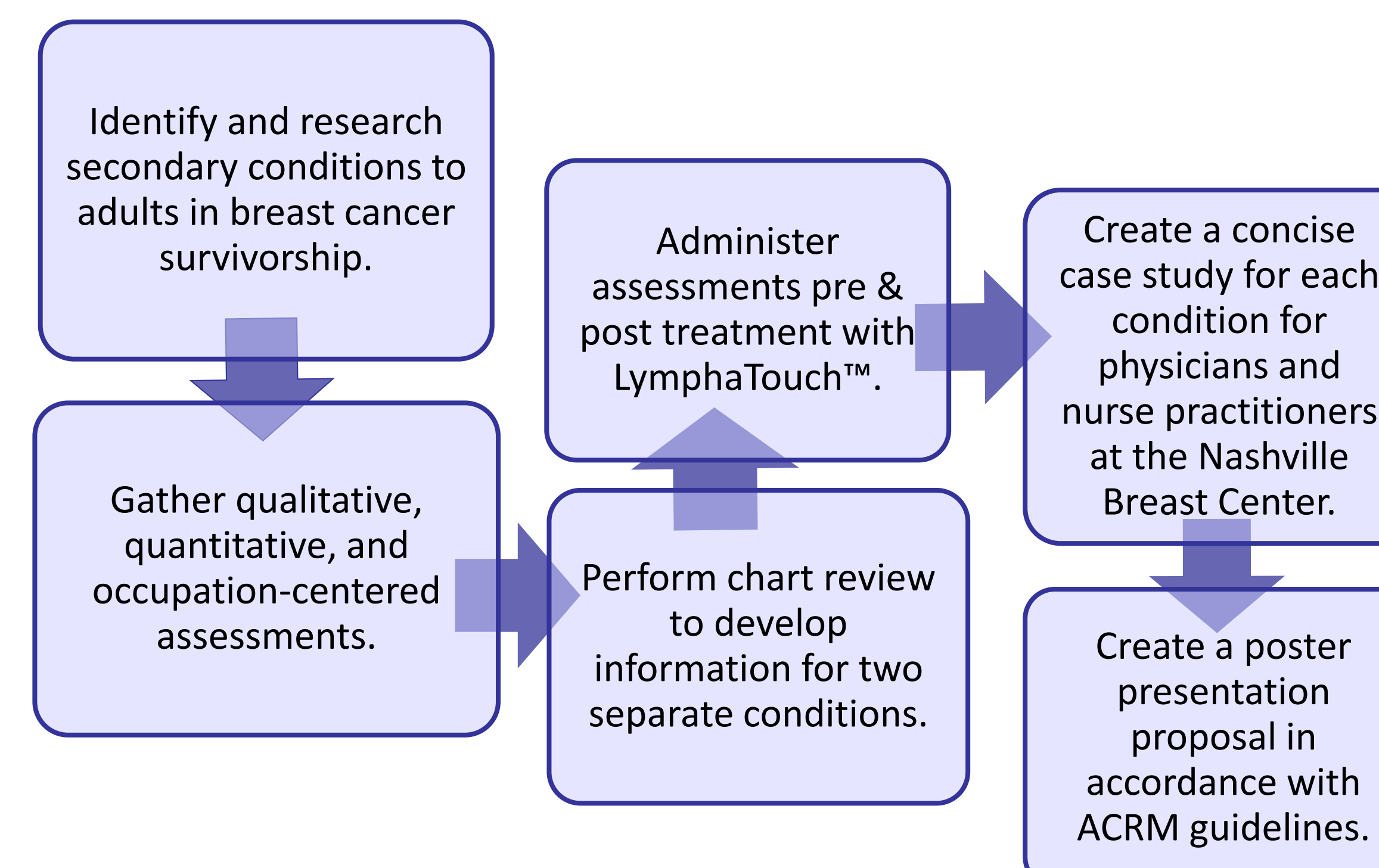
Functionality:

- Combines the negative pressure principle of cupping with high-frequency vibration
- Capability of grading the negative pressure provided which allows for intervention replication and immediate variability depending on client response.
- Decrease work strain for lymphedema management

Treatment Indications:

- Use with high-frequency vibration with populations such as those with RF and CIPN
- Pain reduction, scar and fibrosis mobilizations, and preventative care and wellness (Adams, 2016).



Process



Deliverables

- ✓ 2 Comprehensive Case Studies
- ✓ 2 Abbreviated Case Studies
- ✓ 2 ACRM Proposals
- ✓ 2 ACRM Poster Templates
- ✓ All articles and materials used

Case Studies

Case Participant 1: CIPN	Case Participant 2: RF
Age/Gender: 64-year-old, female Diagnosis: triple negative, invasive ductal carcinoma Treatment Regimen: Lumpectomy with sentinel node dissection (SND) followed by dose-dense adjuvant chemotherapy, and radiation	Age/Gender: 56-year-old, female Diagnosis: ER +, invasive breast cancer Treatment Regimen: Bilateral mastectomy with axillary node dissection (AND) followed by whole breast radiation, aromatase inhibitor
Case 1	Case 2
Outcomes: <ul style="list-style-type: none"> Reoccurrence of vibratory sensation in bilateral feet. Increased sensation in portions of bilateral hands. Increased quality of life and reported benefit to treatment. Decreased impact of CIPN on meaningful tasks. 	Outcomes: <ul style="list-style-type: none"> Increased skin elasticity in 14 out of 16 segments with up to 4mm pinch in some portions. Increased range or motion and strength to within-functional limits Decreased physical well-being and no change in satisfaction with breasts. 

Advocacy

- Gathered and summarized current best practice intervention for the treatment of CIPN and RF.
- Gathered a summarized research to demonstrate the benefit of occupational therapy for adults in the survivorship stage of cancer.
- Prepared a proposal for American Congress of Rehabilitative Medicine (ACRM) Conference to demonstrate findings.
- Created a succinct case study for the practitioners at the Nashville Breast Center with resources for comprehensive finding.

Implications for OT

- The survivorship rates for adults with breast cancer are increasing and occupational therapy can have a role in promoting return to meaningful occupations through preparatory methods to decrease complicated side effects of cancer treatment.
- Occupational therapists are uniquely postured to assist patients in maintaining and resuming valued roles despite compounding and often unpredictable symptoms.
- Occupational therapist should support new devices for preparatory methods.
- Occupational therapist's have a role in promoting health-related quality of life for adults in the survivorship stage of breast cancer.
- Occupational therapists incorporate patient values and preferences and can collaborate with other health care professionals.