

Physical Therapy Approaches to Oncology Care: Beyond Lymphedema March 20

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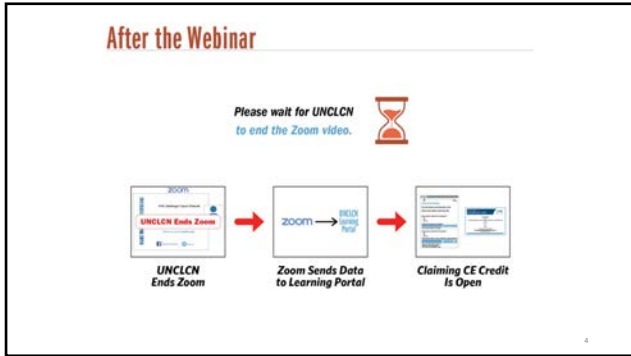
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**Our Presenter**



**Sarah Richardson,**  
PT, DPT, CLT, WCS

Sarah is a highly accomplished Physical Therapist with a diverse educational background and extensive clinical experience. Graduating with a dual degree in Psychology and Exercise Sport Science, alongside a minor in Spanish, from UNC Chapel Hill in 2017, she pursued her Doctorate of Physical Therapy at the same institution, culminating in 2021. Building on her commitment to excellence, Sarah completed a Women's Health Residency, specializing in oncology and pelvic health, at UPMC in Pittsburgh, PA.

Currently, Sarah serves as a dedicated Physical Therapist at UNC Health, operating in an outpatient setting where she passionately treats pelvic health conditions and oncology patients. Her expertise extends to the academic realm, as she has shared her knowledge with future physical therapists through teaching roles at both the University of Pittsburgh and UNC Chapel Hill's Doctor of Physical Therapy programs. Sarah is a fervent advocate for interdisciplinary collaboration, recognizing its significance in delivering optimal patient care. Her commitment to mentorship reflects her desire to inspire and guide the next generation of healthcare professionals.

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**Our Presenter**

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**Our Presenter**

5. Sarah is a highly accomplished Physical Therapist with a diverse educational background and extensive clinical experience.

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**Our Presenter**

5. Sarah is a highly accomplished Physical Therapist with a diverse educational background and extensive clinical experience.
4. She earned her Doctorate of Physical Therapy at UNC Chapel Hill in 2021.

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3. Sarah completed a Women's Health Residency, specializing in oncology and pelvic health, at UPMC in Pittsburgh, PA.

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3. Sarah completed a Women's Health Residency, specializing in oncology and pelvic health, at UPMC in Pittsburgh, PA.
2. Currently, Sarah serves as a Physical Therapist at UNC Health, operating in an outpatient setting where she treats pelvic health conditions and oncology patients.

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1. She teaches future physical therapists at both the University of Pittsburgh and UNC Chapel Hill's Doctor of Physical Therapy programs.

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### Sample Poll Everywhere Question

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Cancer and cancer-related treatments can cause physical impairments.

(A) True 0%

(B) False 0%

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Physical Therapy Approaches to Oncology Care: Beyond Lymphedema

Presented By: Sarah Richardson, PT, DPT, CLT, WCS  
sarah.richardson3@unchealth.unc.edu



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**Objectives**

- Identify physical challenges of cancer patients beyond lymphedema
- Discuss the role of physical therapy in survivorship care plans for cancer patients
- Explain the relationship of evidence-based physical therapy interventions and improved patient outcomes
- Describe the interdisciplinary collaboration of healthcare workers and physical therapists in delivering optimal cancer care

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**Common Side Effects of Cancer Treatment**

- Pain
- Numbness, tingling, and/or reduced feeling
- Blockage in the lymphatic system
- Muscle weakness
- Joint stiffness
- Fatigue
- Loss of endurance
- Loss of bone density
- Difficulty moving or walking
- Risk of losing your balance
- Heart Problems
- SOB or breathing difficulties

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### S/E from Radiation Therapy

- Early s/e occur during, immediately after, or soon after radiation treatment (often reversible)
- Late s/e occur several months to years after radiotherapy (chronic and progressive)

Brain	Breast	Chest	Head & Neck	Pelvis	Rectum	Stomach & Abdomen
Fatigue Hair Loss Memory N&V Skin HA Vision	Fatigue Hair Loss Skin Swelling Pain	Fatigue Hair Loss Throat Cough SOB	Fatigue Hair Loss Mouth Skin Taste Throat Thyroid Gland	Diarrhea Fatigue Hair Loss N&V Sexual Fertility Skin Bladder	Diarrhea Fatigue Hair Loss Sexual Fertility Skin Urinary	Diarrhea Fatigue Hair Loss N&V Skin Urinary

Barnesoff L, et al. Med Oncol. 2020;18(7):1538-1554.  
 Hershman D, et al. J Clin Oncol. 2013;31(26):3338-3344.  
 Radiation Therapy Side Effects - NCI. Accessed February 24, 2024. <https://www.cancer.gov/about-nci/our-mission/types/radiation-therapy/side-effects>.  
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### Characteristics of Patients with Cancer Referred to Outpatient PT

Cancer Type	Chemotherapy	Hormone Therapy	Radiation Therapy	Surgical Resection
Blood	100.0		8.3	
Bone or joint	18.2		100.0	63.6
Breast	61.1	12.2	93.3	92.2
Central nervous system	60.0		85.0	70.0
Digestive	63.6		72.7	81.8
Head or neck	46.5		100.0	62.8
Genitourinary	10.7	10.7	43.8	82.7
Respiratory	53.8		92.3	84.6
Skin	10.0		80.0	
Soft tissue	10.3		94.9	89.5
All cancers	33.0	6.9	70.6	80.3

Alparista M, et al. Phys Ther. 2015;95(6):526-538.  
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### Characteristics of Patients with Cancer Referred to Outpatient PT

Measure	Total	Blood	Bone or Joint	Breast	CNS	Digestive	Head or Neck	Genitourinary	Respiratory	Skin	Soft Tissue
Equipment use <sup>a</sup>											
Gait	14.4	33.3	28.6	10.3	41.8		4.5	4.6	30.0		55.6
Joint mobility	18.3	33.3	71.4	25.0	18.8		46.4	2.6	45.3	37.3	27.8
Posture	49.2	33.3	71.4	79.4	62.5	12.5	99.5	3.2	72.7	62.5	47.2
HRQL	51.8	66.7	66.7	66.3	62.5	12.5	100.0	12.4	61.8	67.5	66.9
Skin integrity	14.4		42.9	26.5	12.5		29.0	2.0	27.3	12.5	22.2
Soft tissue	71.3	33.3	85.7	94.3	31.3	17.5	93.5	39.3	63.6	75.0	86.1
Strength	83.6	100.0	85.7	82.4	87.5	87.5	71.0	68.2	63.6	75.0	80.6
Pressure use <sup>b</sup>											
Fatigue	33.3	33.3	37.8	51.3	25.0		41.3	7.2	63.6	58.0	56.3
Fibrosis	27.2		42.9	45.6	6.3		46.4	3.3	18.2	17.3	25.0
Incubation	38.4					75.0			81.7		
Lymphedema	27.6	33.3	42.9	66.2	25.0	0.0	41.3	4.6	36.4	37.3	38.9
Pain	47.6	33.3	85.7	69.1	37.5	37.5	61.3	25.5	72.7	62.5	60.6
Urgency	18.3								74.8		
No. of physical therapy sessions	8.5(11.0)	13.4(18.2)	4.0(1.7)	14.3(19.0)	11.2(12.3)	6.6(4.4)	8.7(7.6)	3.6(1.8)	3.2(2.7)	15.5(8.7)	6.5(4.0)
ROI score	1.8(1.4)	0.4(0.8)	2.0(2.5)	1.8(1.7)	1.5(1.6)	1.7(1.6)	1.3(1.1)	1.3(1.2)	1.2(1.0)	1.3(1.1)	1.3(1.1)
No. of medications	4.8(4.0)	3.2(1.2)	7.4(6.8)	5.1(4.6)	5.6(4.8)	6.1(3.8)	4.2(3.6)	4.5(3.6)	5.4(5.0)	5.5(4.2)	4.4(3.2)

Alparista M, et al. Phys Ther. 2015;95(6):526-538.  
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Poll: What are common s/e of cancer treatments?  
What s/e could rehabilitation support with?

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What are common side effects of cancer treatments? What side effects could rehabilitation support with?

Nobody has responded yet.  
Hang tight! Responses are coming in.

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**Barriers to Care from PT Perspective**

CPG recommend multimodal interdisciplinary rehabilitation during and after acute cancer treatment.

Identified Barriers:

- Need for More Services
- Barriers to service development and delivery
- Lack of awareness of the role of PT
- Facilitators to service development
- Priorities of the future of oncology physical therapy
- Training Needs

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### Barriers to Physical Activity Participation in Cancer Survivors

- 20% of cancer patients who have undergone treatment are not meeting the daily physical activity (PA) guidelines of 30 minutes of moderate physical activity 5x/week
- Physical Activity can alleviate both physical and psychological symptoms associated with cancer treatments (fatigue, QoL, physical function, anxiety, and depressive symptoms)
- Varying levels of awareness of benefit of physical activity for psychological and physical health
- Lack of participation in PA is multifactorial but lack of recommendation from an oncology clinician is a known factor
- Many patients don't engage in PA recommendations due to concern over safety

**Assess, Advise, Refer**

- o Physical activity as a vital sign
- o If not meeting PA recommendations, educate on benefit of meeting guidelines
- o Refer to appropriate providers

Rouse CM, Phipps A, Chandler C, Foghty MA, Kamin R. 2012; Schmitz KH, Campbell AM, Shawr MM, et al 2019

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### Physical Activity Screening

Schmitz KH, Campbell AM, Shawr MM, et al 2019

**Oncology Clinician's Guide to Referring Patients to Exercise**

**Step 1: ASSESS**

**Question #1:** How many days during the past week have you performed physical activity where your heart beats faster and your breathing is harder than normal for 30 minutes or more?

**Question #2:** How many days during the past week have you performed physical activity to increase muscle strength, such as lifting weights?

**Question #3:** Would the patient be safe exercising without medical supervision (e.g., walking, hiking, cycling, weight lifting)?

**Question #3 answer is Yes.**  
(patient is ambulatory, ECOG score 0-2)

**Step 2: ADVISE**

- EIM ExRx for Oncology, based on current report of activity to increase to:
  - Moderate intensity aerobic exercise (talk but not sing) for up to 30 min, 3 times/wk
  - Resistance exercise 2x weekly 20-30 min
- **Step 3: REFER** to best available community program

**Question #3 answer is No**  
*Or*  
**I'm not sure and I don't have the capacity to evaluate.**  
(ECOG score 3+ or other complications present)

**Step 2: ADVISE**

- Advise patient to follow-up with outpatient rehabilitation healthcare professional for further evaluation
- **Step 3: REFER** to outpatient rehabilitation health care professional will recommend best available program

REPEAT AT REGULAR INTERVALS AT CLINICAL ENCOUNTERS DURING AND AFTER ACTIVE TREATMENT

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### Physical Activity Screening

Schmitz KH, Campbell AM, Shawr MM, et al 2019

**Identify the refer patient based on specific needs (or likelihood of needing an assessment)**

**HEALTHCARE PROVIDER SUPERVISED EXERCISE PROGRAMS**

Cancer Rehabilitation & Clinical/Therapeutic Exercise

Regimented exercise intended to address specific clinical outcomes (e.g., return patients to sufficient physical function to normal daily activities, fatigue, CPX)

**SETTING**  
In/Out-patient Rehabilitation  
Medical Clinic based Exercise Facility

**HEALTHCARE PROVIDERS**  
Physicians  
Physical Therapists  
Clinical Exercise Physiologists  
Occupational Therapists  
Nurses

**COMMUNITY EXERCISE PROGRAMS**

Supervised and unsupervised exercise programming

Supervised  
Self-directed

**SETTING**  
Primary Care  
Community  
Fitness Center  
Home

**HEALTHCARE PROVIDERS**  
Exercise Physiologists  
Nurses  
Fitness Professionals  
Peer Coaches

**PRACTITIONERS**  
Fitness Professionals

Opportunities for distant based interventions across all settings

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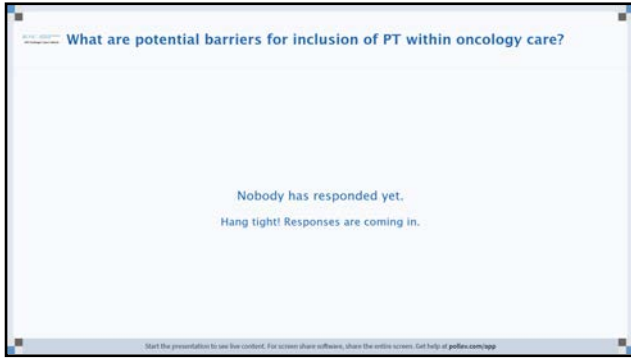
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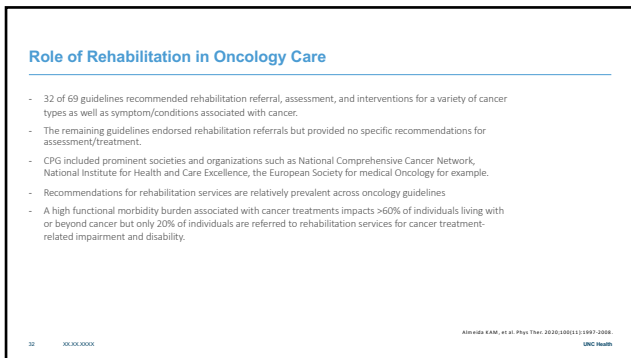
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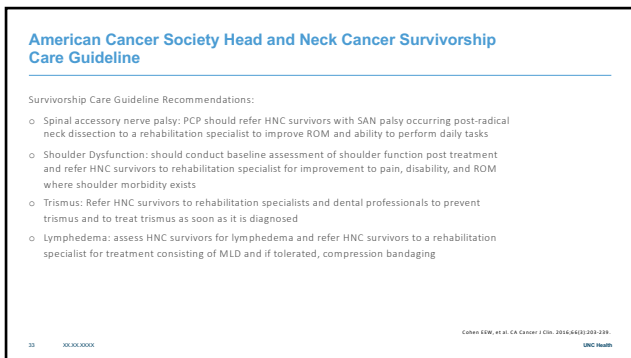
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### PT Benefits for Shoulder Dysfunction

- Progressive resistance training (PRT) is effective for improving shoulder pain and dysfunction in patients with head and neck cancer
- Future studies with longer follow-up times are needed to clarify the effects of early postoperative intervention.
- PRT is more effective than standard physiotherapy treatment for shoulder dysfunction in patients treated for head and neck cancer, improving pain, disability and range of motion of the shoulder joint

34 XXXXXXXX  
 Stead NJ, et al. CA Cancer J Clin. 2021;71(2):149-171.  
 Carvalho APV, et al. Cochrane Database Syst Rev. 2012;(1):CD008643.  
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### PT Benefits for Shoulder Dysfunction

Exercise	Target Muscle	Direction	Notes
	Anterior deltoid	Flexion	Place your hands behind your head at 90 degrees and slowly raise your arms overhead.
	Posterior deltoid	Extension	Place your hands behind your head at 90 degrees and slowly lower your arms behind your back.
	Medial deltoid	Abduction	Place your hands behind your head at 90 degrees and slowly raise your arms out to the side.
	Lateral deltoid	Adduction	Place your hands behind your head at 90 degrees and slowly lower your arms towards your midline.
	Rotator cuff	Rotation	Place your hands behind your head at 90 degrees and slowly rotate your arms in and out.
	Scapular stabilizers	Stabilization	Place your hands behind your head at 90 degrees and slowly raise your arms overhead while keeping your shoulders level.

35 XXXXXXXX  
 Chua P-H, et al. PLoS One. 2020;15(8):e0237123.  
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### Manual Therapy Benefit for Trismus

- Manual Therapy can improve radiation-associated trismus in survivors of HNC (largest gains after first treatment but modest gains seen with serial treatment)
- Exercise therapy can enhance mouth opening after the development of cancer treatment-induced trismus but does not prevent trismus
- Not a clear consensus for optimal intervention for trismus in HNC but SR found that a variety of exercise regimens and jaw rehabilitation devices have comparable effectiveness

36 XXXXXXXX  
 Maimon N, et al. JAMA Otolaryngol Head Neck Surg. 2022;148(5):418-425.  
 Chua P-H, et al. Oncol Rep. 2020;27(1):151-154.  
 Bao C-H, et al. Radiother Oncol. 2020;151:248-255.  
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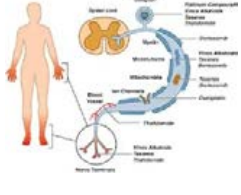
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### Treatment Options for Cancer-Related Fatigue & Neuropathy

- Cancer related fatigue (CRF) is the most experienced symptom by patients and survivors
- Almost all patients undergoing treatment for cancer will report CRF and 1/3 will report as severe
- Exercise is effective intervention for improving symptoms of CRF, as well as cognitive impairment, sleep challenges, depression, pain, anxiety, and MSK dysfunction
- Aerobic exercise at moderate intensity, 10-45 min/day, 4-6 days/week for up to 6 months found to reduce the previously listed symptoms and improve cardiopulmonary function



Mattson KM, et al. Oncol Rehabil. 2012;9(2):81-88. et al. Royal JP, et al. Rehab Oncol. 2018;34(2):154-164. UNC Health

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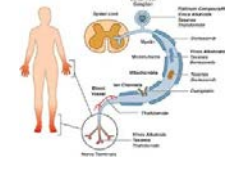
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### Treatment Options for Cancer-Related Fatigue & Neuropathy

- Resistance training (2 sets of 8-12 repetitions, 3x/week) led to improvements in UE and LE strength compared to usual care in those receiving chemotherapy -> same group able to tolerate higher relative doses of chemotherapy
- Resistance training following cancer treatments (2x/week for 6-12 months) along with plyometrics enhanced BMD
- Combined aerobic and resistance training with 4-week intervention can improve CRF, QOL, sleep, aerobic capacity, and immune function
- PT interventions in individuals with CIPN can lead to improved static/dynamic balance, strength, and reduction of CIPN symptoms



Mattson KM, et al. Oncol Rehabil. 2012;9(2):81-88. et al. Royal JP, et al. Rehab Oncol. 2018;34(2):154-164. UNC Health

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### ACSM Exercise Guideline for Cancer Patients & Survivors

Mode of Exercise	Recommendation
Aerobic	Achieve a weekly volume of 150 minutes of moderate intensity exercise or 75 minutes of vigorous intensity (or combination of the two)
Resistance	2-3x/week (target all major muscle groups)
Flexibility	All major muscle groups on all the days that other exercises are performed
Additional Info.	Return to normal activity ASAP during/following treatment. Some exercise is better than none. Start slowly and progressively increase.

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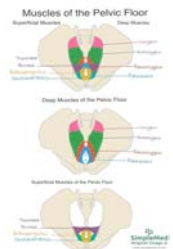
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### PT Benefits for Gynecological and Prostate Cancer

- Physical therapists can support symptoms related to pelvic pain, UI, constipation, FI through exercise prescription, manual therapy techniques, behavior modification, and patient education.
- PT with gynecological cancer survivors can enhance symptoms of dyspareunia and leads to significant improvements in pain, sexual function, pelvic floor dysfunction symptoms and quality of life.
- Physical therapy can help reduce incidence of UI and ED following prostatectomy and is preferred approach due to simplicity, safety, and non-invasiveness
- Supervised PFME can lead to a decrease in UI rates, particularly when implemented pre-operatively in those with prostate cancer



**Muscles of the Pelvic Floor**

Superficial Muscles: Coccygeus, Levator Ani (Pubococcygeus, Puboanalis, Puborectalis), Transverse Perineal, Anal Sphincter (Internal, External), External Oblique, Internal Oblique, Piriformis, Gluteus Medius, Gluteus Maximus, Perineal Body, Urogenital Triangle, Anal Triangle, Urogenital Triangle, Anal Triangle.

Deep Muscles of the Pelvic Floor: Coccygeus, Levator Ani (Pubococcygeus, Puboanalis, Puborectalis), Transverse Perineal, Anal Sphincter (Internal, External), External Oblique, Internal Oblique, Piriformis, Gluteus Medius, Gluteus Maximus, Perineal Body, Urogenital Triangle, Anal Triangle, Urogenital Triangle, Anal Triangle.

Horizontal Muscles of the Pelvic Floor: Coccygeus, Levator Ani (Pubococcygeus, Puboanalis, Puborectalis), Transverse Perineal, Anal Sphincter (Internal, External), External Oblique, Internal Oblique, Piriformis, Gluteus Medius, Gluteus Maximus, Perineal Body, Urogenital Triangle, Anal Triangle, Urogenital Triangle, Anal Triangle.

Cyr M.P. et al. Gynecol Oncol. 2020;193(2):778-794.  
 Deaton R. et al. Sex Med Rev. 2022;10(1):161-167.  
 Sato Gotohki M. et al. Neuroradiology. 2020;69(10):1629-1637.

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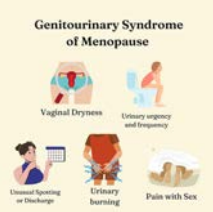
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### PT Benefits for Pelvic Floor Symptoms in Breast Cancer Patients

- Genitourinary syndrome of menopause (GSM) is a collection of s/s associated with a decrease in sex steroids involving changes to the labia majora/minora, clitoris, vestibule, vagina, urethra, and bladder
- GSM is commonly experienced by breast cancer survivors receiving antiestrogen therapy (aromatase inhibitors)
- >60% of postmenopausal patients with breast cancer report vaginal dryness and dyspareunia
- International Society for the Study of Women's Sexual Health recommend moisturizers, lubricants, pelvic floor physical therapy, and dilator therapy as first line treatment
- PT is also effective in treating urinary incontinence, genital prolapse, and relief of GSM symptoms



**Genitourinary Syndrome of Menopause**

Vaginal Dryness, Urinary urgency and frequency, Urinary burning, Pain with Sex, Urinary Incontinence or Discharge.

Page 6, Spauld SA, PAININ SL. 2018;26(12):977-989.

41 XXXXXXXX UNC Health

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### PT Benefits for Breast Cancer

- Breast Cancer related lymphedema (BCRL) occurs around 16.6% in individuals 3 months to 20 years after diagnosis (increased with axillary lymph node dissection to 19.9%)
- Resistance exercise can decrease breast cancer related lymphedema and improve muscular strength
- CPG recommend early postoperative exercise: UE exercise paired with compression garment in patients at risk of BCRL can reduce the risk of development
- Also recommend PRT at least 1 month post-surgery



**Stage 1 Stage 2 Stage 3 Stage 4**

Rodriguez ET. et al. Disast Rehabil. 2022;46(1):124-136.5. Chan D, et al. J Rehabil. 2020;50(1):1-10.  
 Rizzo, Maria Piedra, Laura G. Clin Oncol, Volume 100, Issue 7, July 2020, Pages 1163-1170

42 XXXXXXXX UNC Health

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**PT Benefits for Breast Cancer**

- PT in the post-operative period of mastectomy allows for improvement in shoulder ROM, decrease in pain and improve functional disability and also plays a role in prevention, early detection, and treatment of complications in post-operative period of breast cancer
- Scapular strengthening along with conventional PT treatment can be beneficial for shoulder dysfunction, pain, and functional disability after modified radical mastectomy (Ex: D2 flexion pattern, shoulder shrugs, wall slide, scapular retraction)

Hesselerhilt L, et al. Support Care Cancer. 2020;28(12):3253-3263. UNC Health

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**PT Benefits for Breast Cancer and Axillary Web Syndrome (AWS)**

- Lymphatic cording or axillary web syndrome (AWS) refers to a ropelike structure that develops mainly under the axilla but can extend to involve the medial aspect of the ipsilateral arm down to the antecubital fossa
- PT improves shoulder function, pain, and QOL in breast cancer patients with AWS and combined with MLD decreases arm lymphedema after as short as 4-week intervention
- Treatment involved UE stretching (focusing on abduction, flexion, elbow extension) and strengthening (3 sets of 10) & manual therapy (release techniques to the cords; scapular mobilization; passive ROM)
- A SR found that exercise and stretching are most effective therapies within field of PT for AWS

Mahira PS, et al. Asian Pac J Cancer Prev. 2023;24(6):2049-2104. Cho Y, et al. Support Care Cancer. 2024;34(2):2047-2057. Gonzalez-Rodriguez JL, Vazquez-Gil M, Martin-Sanchez R. 2023;31(1):167. UNC Health

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**What side effects of cancer treatment can be enhanced by the inclusion of physical therapy within their care, beyond lymphedema?**

Nobody has responded yet.

Hang tight! Responses are coming in.

Start the presentation to see live content. For screen share software, share the entire screen. Get help at gofire.com/help

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**Role of a Physical Therapist in Oncology**

- Cancer survivors are almost **three times** more likely to report fair or poor health after treatment and twice as likely to have psychosocial disabilities and physical and functional limitations as persons without cancer or chronic illness
- Rehabilitation services have historically been **reactive** in nature
- The point of cancer diagnosis offers an opportunity to identify the individual's baseline functional performance and initiate a plan of care to prospectively monitor function throughout treatment
- High functional morbidity burden impacts >60% of individuals living with or beyond cancer with only 20% of individuals being referred to rehabilitation services for cancer treatment-related impairment and disability.**

Tibby A, et al. *GAJ Surg*. 2009;53(1):110-116.  
Wong A. *JADA Pract Educ*. 2016;7(2):249-252.  
UNC Health

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**Communication with Patients**

- Chronic disease management and health behavior change both must be done by the patient.
- Patients who participate in their decisions have enhanced outcomes
- If patients are not aware of services or the benefits of the services are not outlined, then they will likely not pursue care

Khan AH, et al. *Oral Health Technical Inform*. 2017;240:288-302.  
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**How to Refer to Physical Therapy**

Please call UNC Therapy Services (919-275-4070) or UNC Hospital Rehabilitation Therapist (919-275-0100) for assistance in referring patients to our clinics. Thank you!

48

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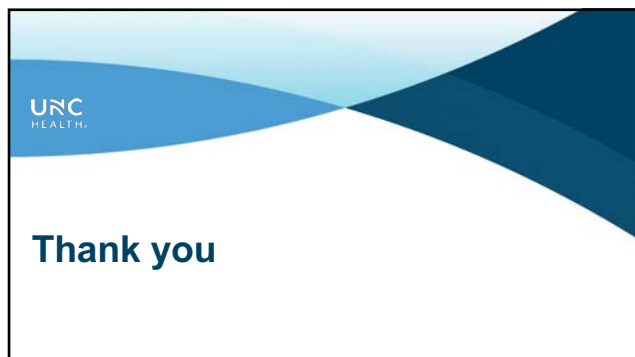
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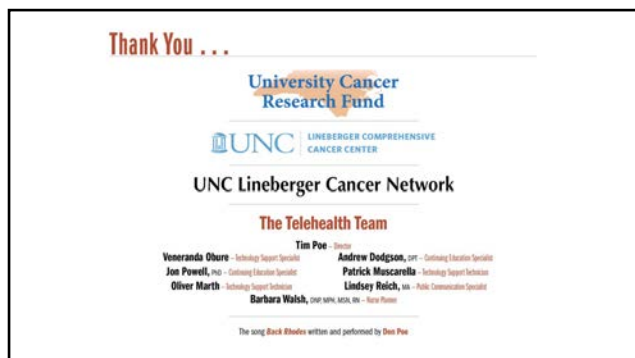
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	<b>RESEARCH TO PRACTICE</b>	<b>March 27</b> 12:00 PM
<b>Obesity and Cancer Prevention: The Efficacy and Timing of Bariatric Surgery</b> Maggie N. Hodges, MD, MPH		
	<b>PATIENT-CENTERED CARE</b>	<b>April 10</b> 12:00 PM
<b>Breast Cancer Management in North Carolina</b> Yara Abdou, MD		
	<b>RESEARCH TO PRACTICE</b>	<b>April 24</b> 12:00 PM
<b>Current Concepts in Spinal Oncology</b> Michael Galgano, MD, FAANS		

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	<b>RESEARCH TO PRACTICE</b>	<b>H. Pylori Testing and Treatment for Gastric Cancer Prevention</b> Meira Epplein, PhD Katherine Garman, MD
	<b>PATIENT-CENTERED CARE</b>	<b>Cancer Screening in Primary Care</b> Noelle Robertson, MD, CAQSM
	<b>ADVANCED PRACTICE PROVIDER</b>	<b>Let's Take a BiTE Out of CRS and Neurotoxicity</b> Bejal Kikani, MSN, FNP-BC, WHNP-BC

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