

Lymphedema Education Session

Presented by:

Kathryn Schmitz, PhD, MPH, FACSM
Perelman School of Medicine
University of Pennsylvania

Questions we will answer:

- What is lymphedema?
- Who is at risk?
- When is it likely to occur?
- Why does it happen?
- How do I reduce my risk?
- How is it treated?
- What are the exercise guidelines?

What is lymphedema?

Lymphedema is an abnormal accumulation of protein-rich fluid in the tissue which can result in swelling of a body part and fibrosis.

It only impacts the region of the body affected by lymph node removal/damage.

- Upper body for breast cancer survivors
- Lower body for endometrial cancer survivors

Who is at risk?

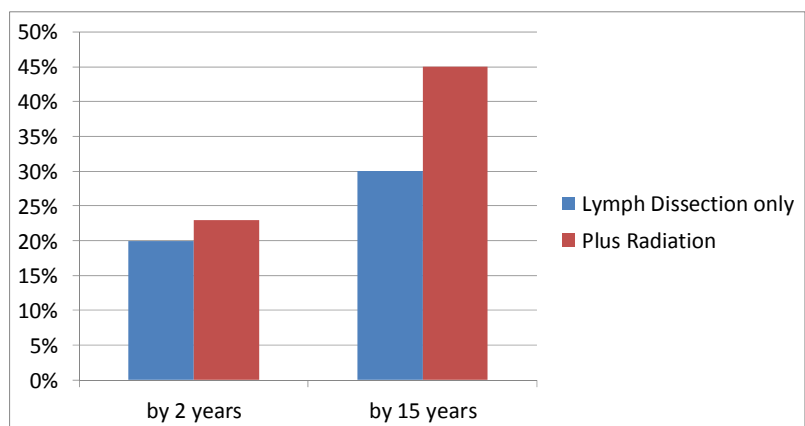
- Removal of lymph nodes
- Damage to the lymph system
- Other factors
 - Obesity
 - Poor diet

How is lymphedema acquired and how rapidly?

- Once lymphatics are removed or damaged, lymphedema may occur at any time.
- Occurs most often within 3 years of breast cancer treatment.
- Lymphedema usually occurs slowly and steadily.

Secondary Arm Lymphedema Incidence & Prevalence

Among 1151 women followed for 15 years...



www.nci.nih.gov - lymphedema

What does the lymphatic system do?

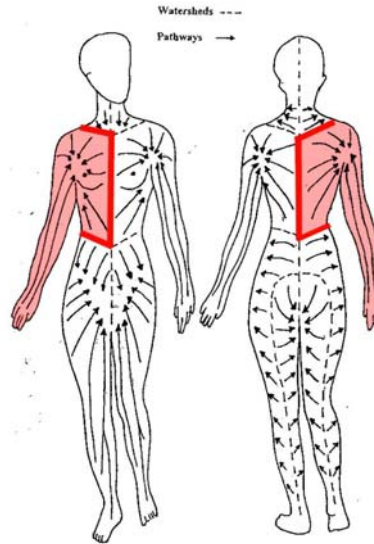
- Provides surveillance against cancer/infection
- Balances fluid and proteins in the circulatory system by transporting several liters of lymph fluid per day
- Assists fat digestion

Role of the Lymphatic System

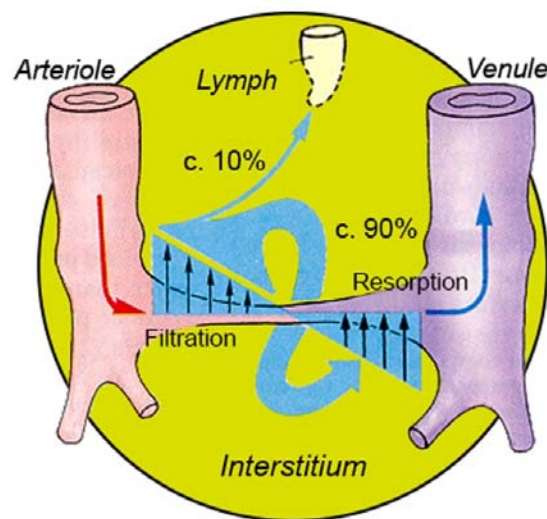
- Transports proteins
- Removes excess water
- Absorbs fat molecules from the gut
- Removes cellular debris and foreign material (e.g. bacteria, viruses, cancer cells)

Skin Lymph Drainage Territories

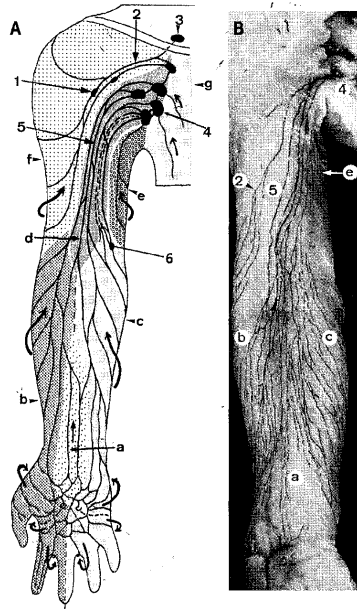
The **at risk region** is the area where lymph nodes were removed. This includes all tissues in the arm, chest and back that are draining lymph fluid toward those nodes.



Illustrating the Concept of Lymph Formation

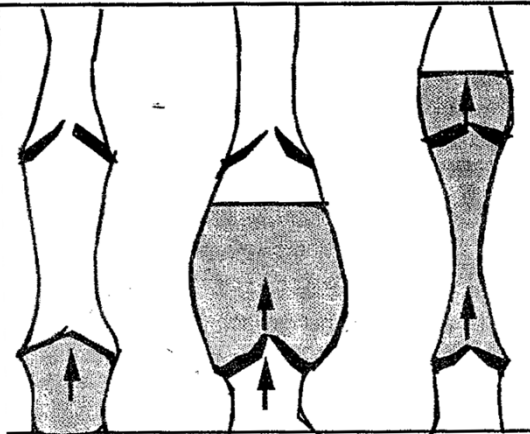


Arm Lymph Drainage



Lymphangion

Lymph vessel transport unit Lymphangion

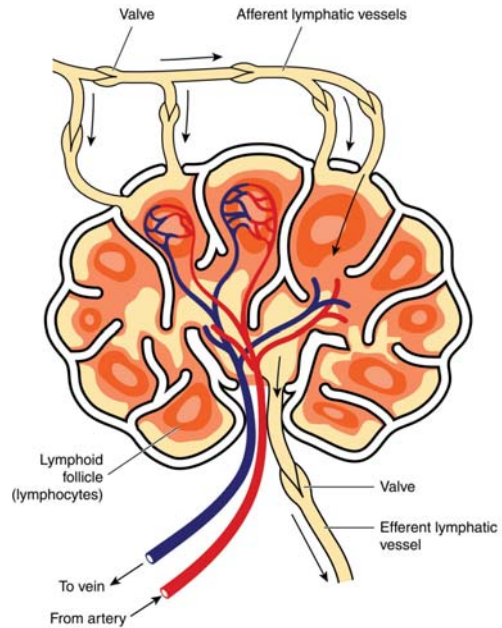


Regulation of propulsion
 1. lymph volume / wall tension
 2.. autonomous regulation

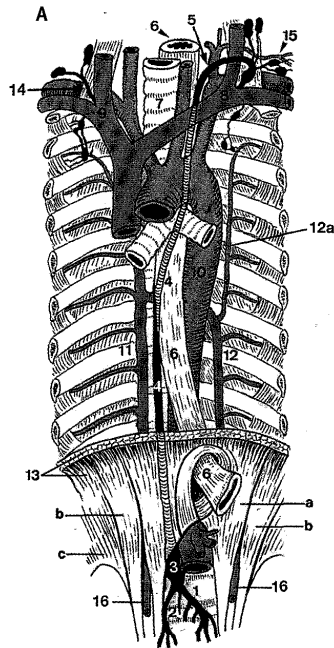
stimulation by mechanical irritation
 =
 effect of manual lymph drainage

Frequency in resting : 6 - 10 beats / min.; increase 10 times by exercise

Lymph Node

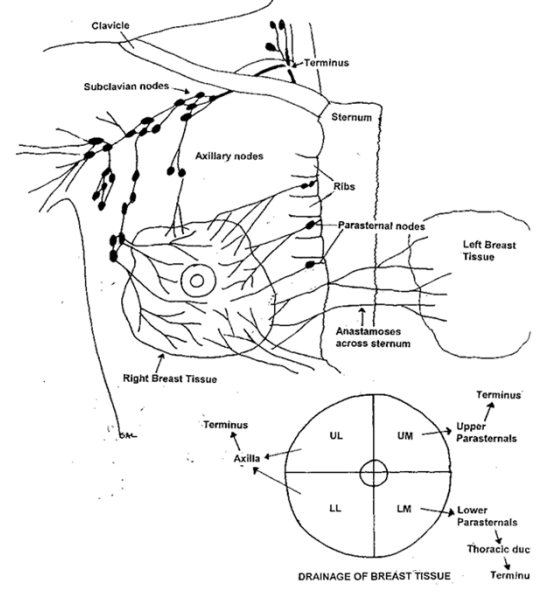


Thoracic Duct

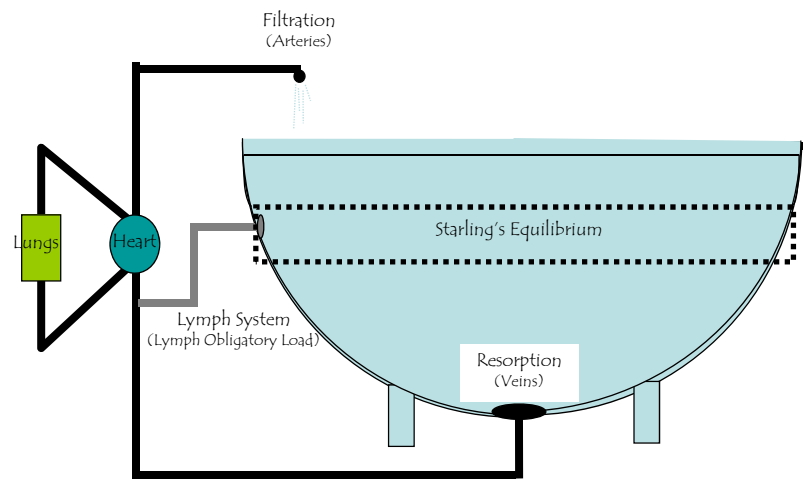


Breast Lymph Drainage

Lymph Vessels of the Chest



Lymph Drainage System



Stages of Lymphedema

Stage 0 – Latent, sub-clinical

Stage 1 – Spontaneously reversible

- At this stage, it is present during the day but goes away overnight
- Pitting starts between Stage 1 and 2

Stage 2 – Spontaneously irreversible

- By this stage, it is still present after a night's rest, even if improved

Stage 3 – Lymphostatic Elephantiasis

- Rare occurrence in breast cancer

Breast Cancer-Related Lymphedema



What changes occur with an altered lymph system?

- Excess protein in the tissues
- Accumulation of excess fluid in the limb
- Decreased oxygenation
- Slow tissue-healing time
- Formation of fibrosis

What does lymphedema feel like?

- Tightness or heaviness in the limb
- Achy
- Pins and needles
- Tenderness in the elbow
- 'Odd' sensations
- "Pain of congestion"
- Discomfort
- NOT "unbearable pain," which might be
 - malignant lymphedema
 - radiogenic plexopathy
- NOT muscle soreness
 - Let's discuss the difference...

National Lymphedema Network (NLN) materials associated with this education session

- Training of therapists
- Risk-reduction guidelines
- Treatment of lymphedema
- Exercise guidance

How can you reduce your risk of developing/worsening lymphedema?

Lymphedema risk-reduction practices include:

- Skin care
- Activity and lifestyle
- Avoiding limb constriction
- Compression garments (If appropriate)
- Avoiding extremes of temperature

Skin Care

Avoid trauma/injury and reduce infection risk

- Keep arm clean and dry
- Apply moisturizer daily to prevent chapping and chafing of skin
- Give attention to nail care; do NOT cut cuticles
- Protect exposed skin with sunscreen and insect repellent
- Use care with razors to avoid nicks and skin irritation (shave arm pit/axilla with electric razor)
- Wear gloves while doing activities that may cause skin injury
- If scratches/punctures to skin occur, wash with soap and water, apply antibiotics, and observe for signs of infection
- If a rash, itching, redness, pain, increased skin temperature and swelling, fever, or flu-like symptoms occur, contact your physician immediately

Activity and Lifestyle

- Gradually build up the duration and intensity of any activity or exercise
- Take frequent rest periods during activity to allow for arm recovery
- Monitor the limb during and after activity for any change in size, shape, tissue, texture, soreness, heaviness, or firmness
- Maintain a healthy weight

Avoid Limb Constriction

- If possible, never have your blood pressure taken on the arm at risk
- Wear loose-fitting clothing and jewelry

Compression Garments

- Should be well-fitting
- Support the affected limb during strenuous activity (e.g. weight lifting!)
- If you have lymphedema, wear a well-fitting compression garment for air travel

Extremes of Temperature

- Avoid exposure to extreme cold - which can be associated with rebound swelling - or chapping of skin
- Avoid prolonged (>15 minutes) exposure to heat, particularly hot tubs and saunas
- Avoid immersing limb in water temperatures above 102 degrees

What can you do if you develop lymphedema?

Get evaluated by your doctor or a Certified Lymphedema Therapist (CLT).

Early treatment results in faster response to treatment, thereby decreasing the length of therapy.

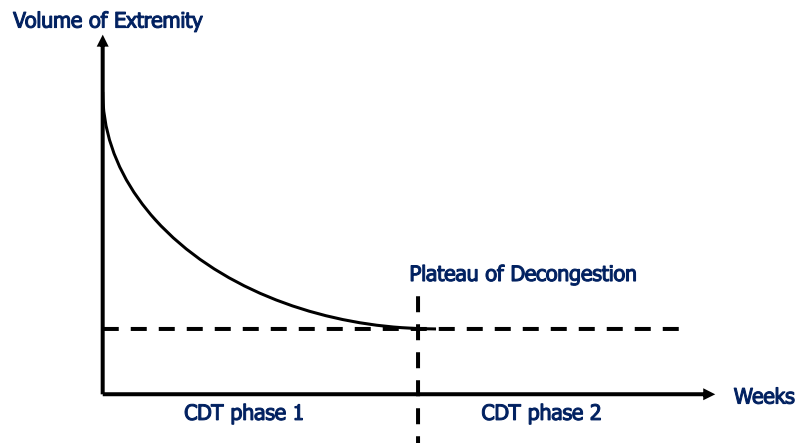
Training of Lymphedema Therapists

See handout from the NLN (lymphnet.org). Be sure your therapist meets their minimum requirements.

How is lymphedema treated?

Complete Decongestive Therapy is an effective therapy for lymphedema and other swelling disorders.

Complete Decongestive Therapy



Complete Decongestive Therapy

PHASE 1: Decongestion	PHASE 2: Maintenance
Meticulous skin care	Meticulous skin care
Manual Lymph Drainage	Day: Compression garment
Gradient compression bandaging	Night: Gradient compression bandaging
Remedial exercises	Self-Manual Lymph Drainage
Compression garment	Remedial exercises
	Follow-up assessment

Meticulous Skin & Nail Care

- Low-pH, gentle soaps
- Moisturizer (Low pH also recommended)
- Do **not** cut cuticles
- Prevent infection
- Keep skin working optimally

Manual Lymph Drainage Expert Stretching of the Skin



Manual Lymph Drainage

- Drains the congested areas
- Reduces the risk of infection
- Normalizes the size and pressure in the limb
- Reduces pain/discomfort

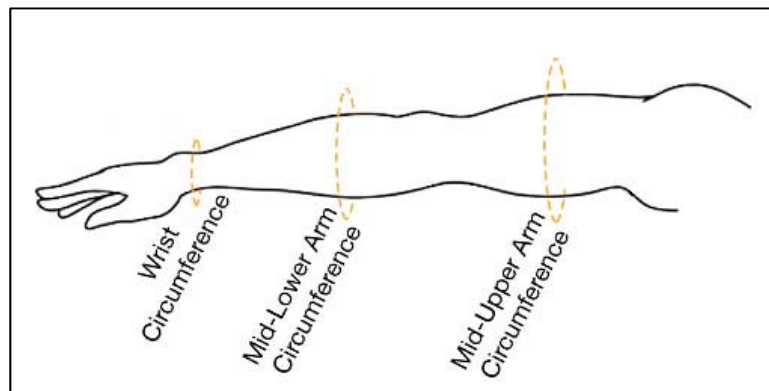
Compression Therapy

- Gradient, short-stretch bandaging
- Medical compression garment

Gradient Compression Bandaging

- Decreases the filtration rate
- Prevents re-accumulation of fluid
- Softens fibrosis
- Provides external counter-pressure during exercise

Garment Measurement



Jobst

Treatment with CDT



Before CDT



After CDT

Custom Compression Garment



Remedial Lymphedema Exercises

- Improves range of motion, endurance, coordination, and strength, where possible. Will provide optimal results with decongestive therapy.
- Non-aerobic, gentle stretching
- Swimming, scuba diving, singing, yoga, Tai Chi, Chi Kung

Diaphragmatic Breathing

Abdominal breathing stimulates the transport of lymph back to the heart through the thoracic duct.

NLN Exercise Guidelines

GENERAL

- Increase gradually, progress slowly, monitor your limb
- If you have lymphedema, wear a compression garment while exercising
- There is no agreement on whether you should wear a garment if you do NOT have lymphedema
- Modify your program according to your symptom response
- Stay well hydrated
- Avoid getting overheated

LYMPHEDEMA EXERCISES

- Non-resistive active motion of the affected arm
- Part of treatment and risk reduction

NLN Exercise Guidelines (cont.)

FLEXIBILITY/STRETCHING

- May improve lymph flow by decreasing scarring and tightness
- Avoid over-stretching

STRENGTH TRAINING

- Modifications are needed
- Adequate rest between sessions is crucial
- Modify your program according to your symptom response

NLN Exercise Guidelines (cont.)

AEROBIC CONDITIONING

- Thought to be beneficial for individuals with lymphedema
- Deep respiration enhances lymph drainage
- Avoid injury by increasing very gradually
- Avoid getting overheated
- Modify your program according to your symptom response

NCCN/ACS/ACSM Guidelines for Breast Cancer Survivors

- Avoid inactivity
- Build to 150 minutes/week of aerobic activity
- Daily flexibility activities are encouraged
- Strength training activities are safe
 - Start with a SUPERVISED program
 - Start low, progress slow
 - If you have any change in upper-body symptoms that last a week or longer, get an evaluation by a clinician
 - Careful with overall arm work (e.g. If you garden on a Monday, wait to do strength training 'till Tuesday)
 - Back off resistance after an exercise holiday

Strength After Breast Cancer

Based on a large clinical trial conducted at U. of Pennsylvania

- 154 survivors WITHOUT lymphedema
- 141 survivors WITH lymphedema

Women who participated had these benefits:

- 50% reduced likelihood of lymphedema worsening
- 70% reduced likelihood of lymphedema onset among women with 5 or more nodes removed
- Improved strength and energy
- Improved body image
- Reduced body fat
- Prevented decline in physical function



For more information...

National Lymphedema Network

www.lymphnet.org

BreastCancer.org

www.breastcancer.org

Living Beyond Breast Cancer

www.lbcc.org

American Cancer Society

www.cancer.org