

# **What you need to know about lymphedema**

Presented by:

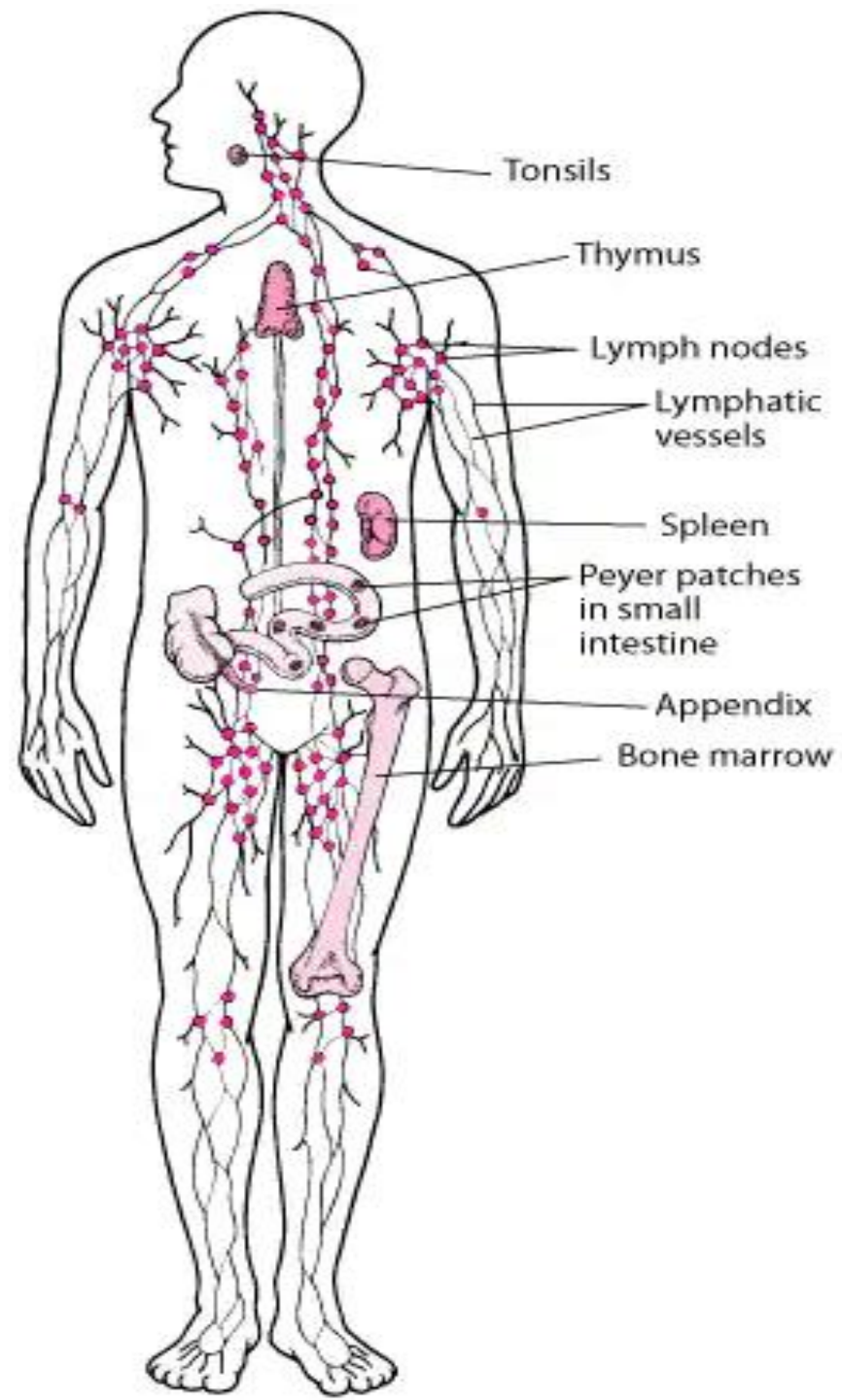
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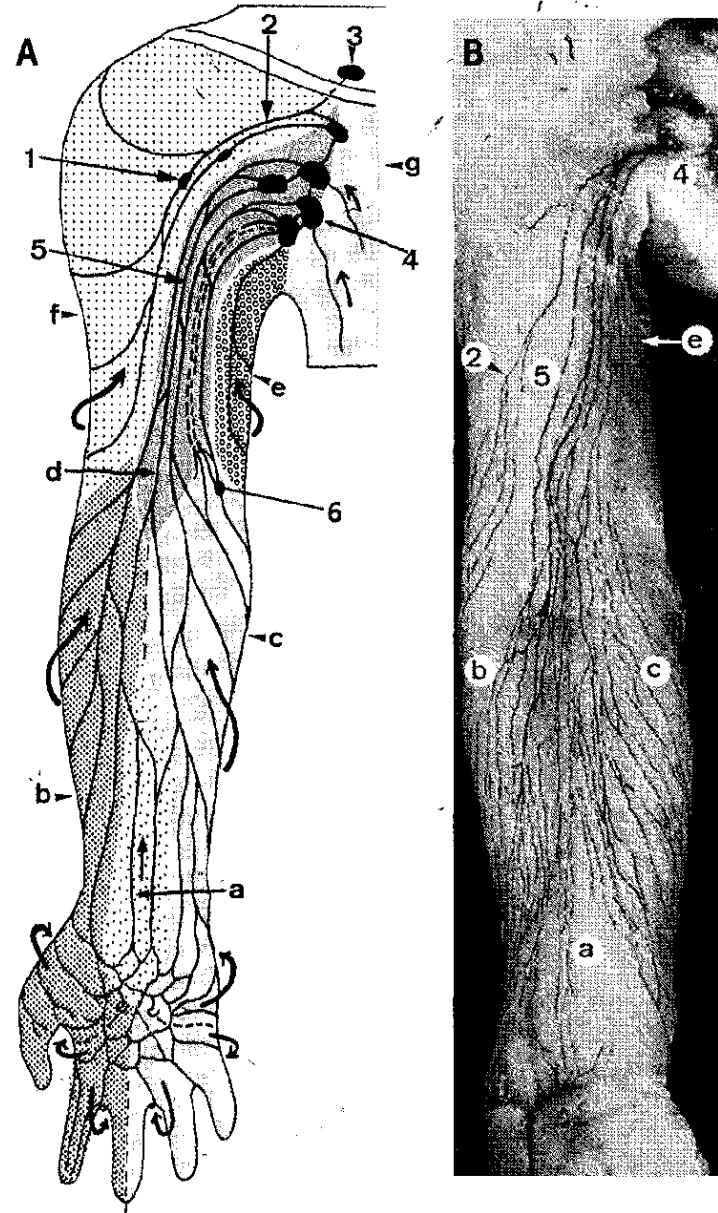
# Questions we will answer:

- What is lymphedema?
- Who is at risk and when?
- Why does it happen?
- How do I reduce my risk?
- How is it diagnosed and treated?
- What are the guidelines for exercise?

- What is the lymphatic system and what does it do?
- Circulatory system- Removes excess water and proteins from the tissues
- Immune system- provides surveillance against cancer and infection

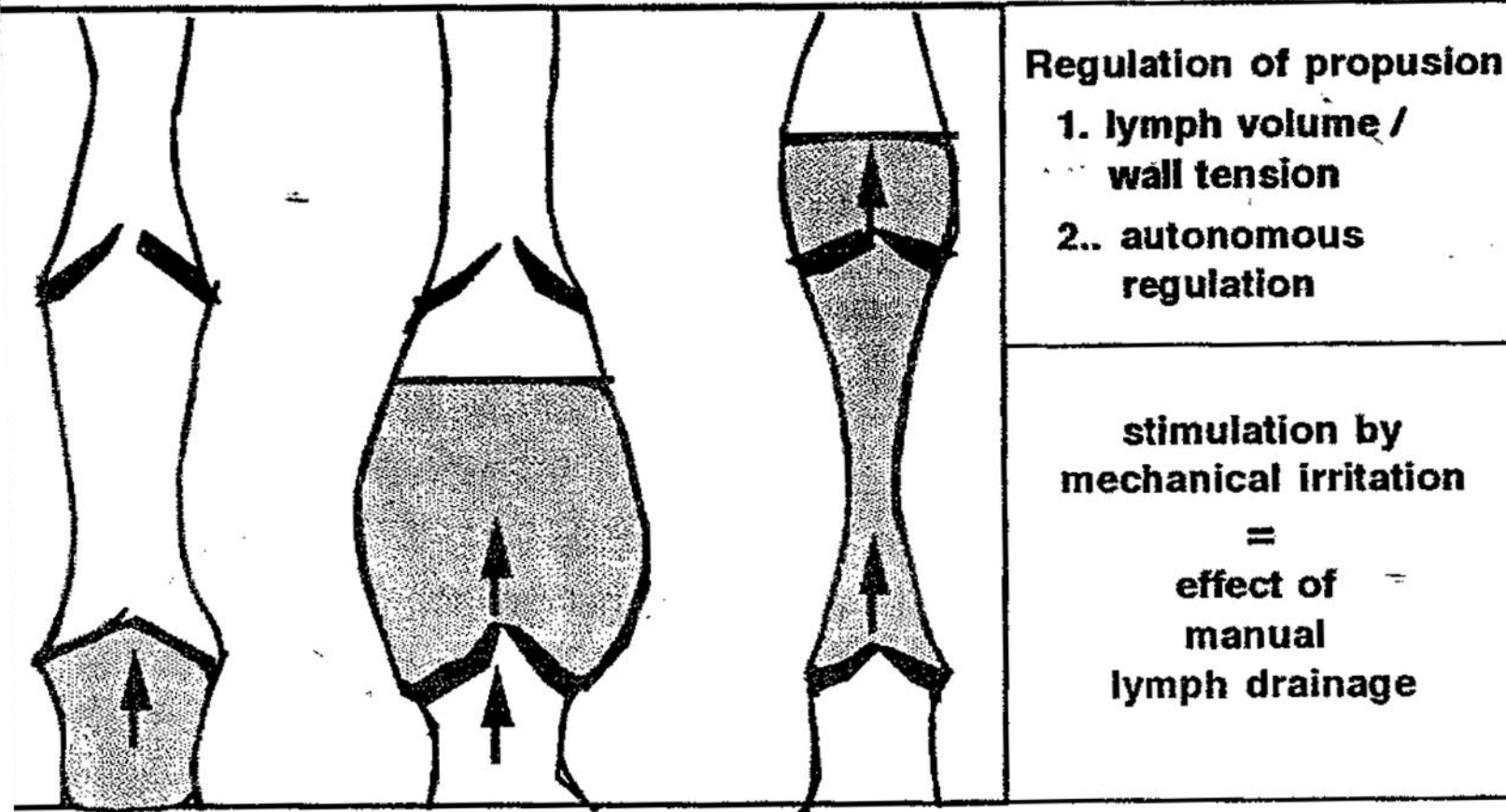


# Arm Lymph Drainage



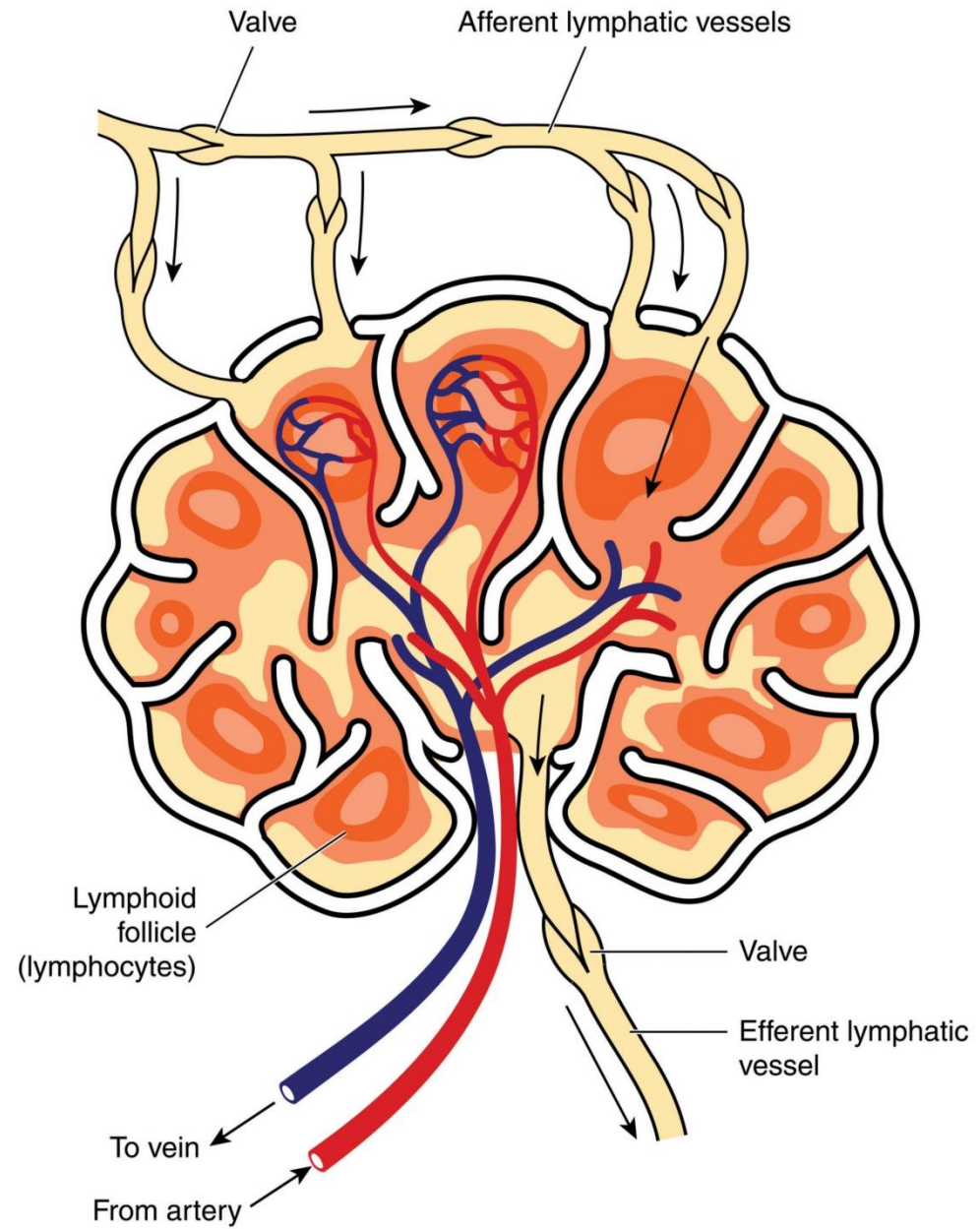
# Lymphangion

## Lymph vessel transport unit Lymphangion

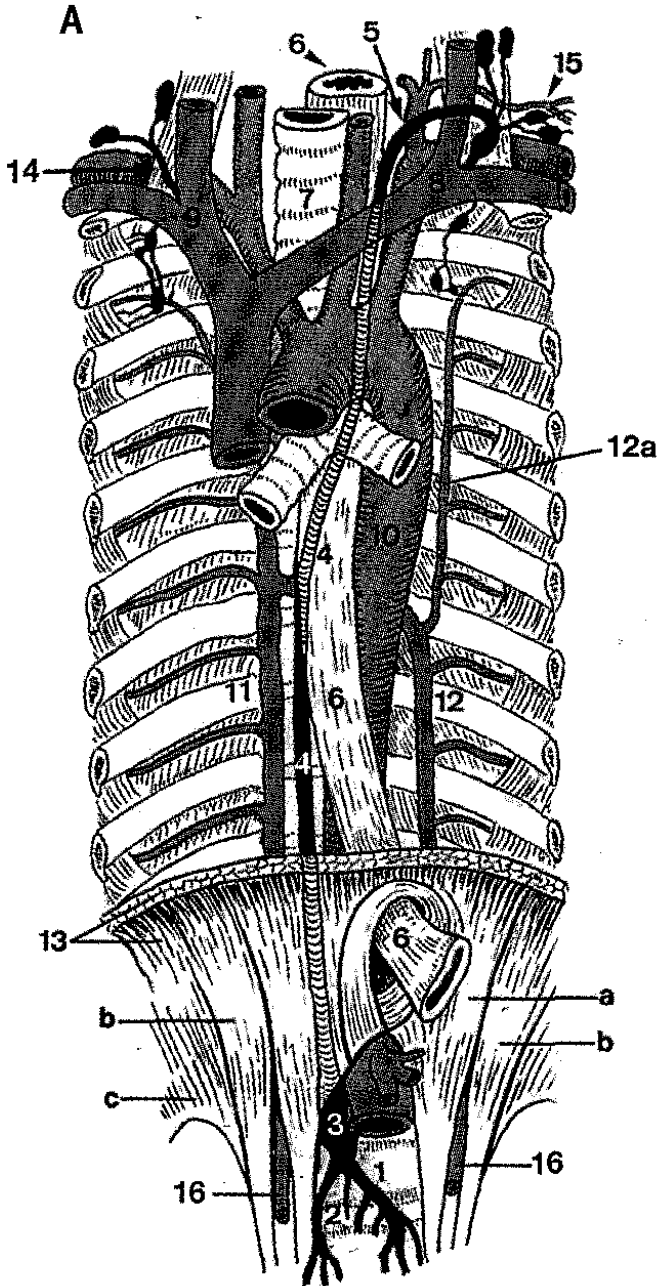


Frequency in resting : 6 - 10 beats / min.; increase 10 times by exercise

# Lymph Node



# Thoracic Duct



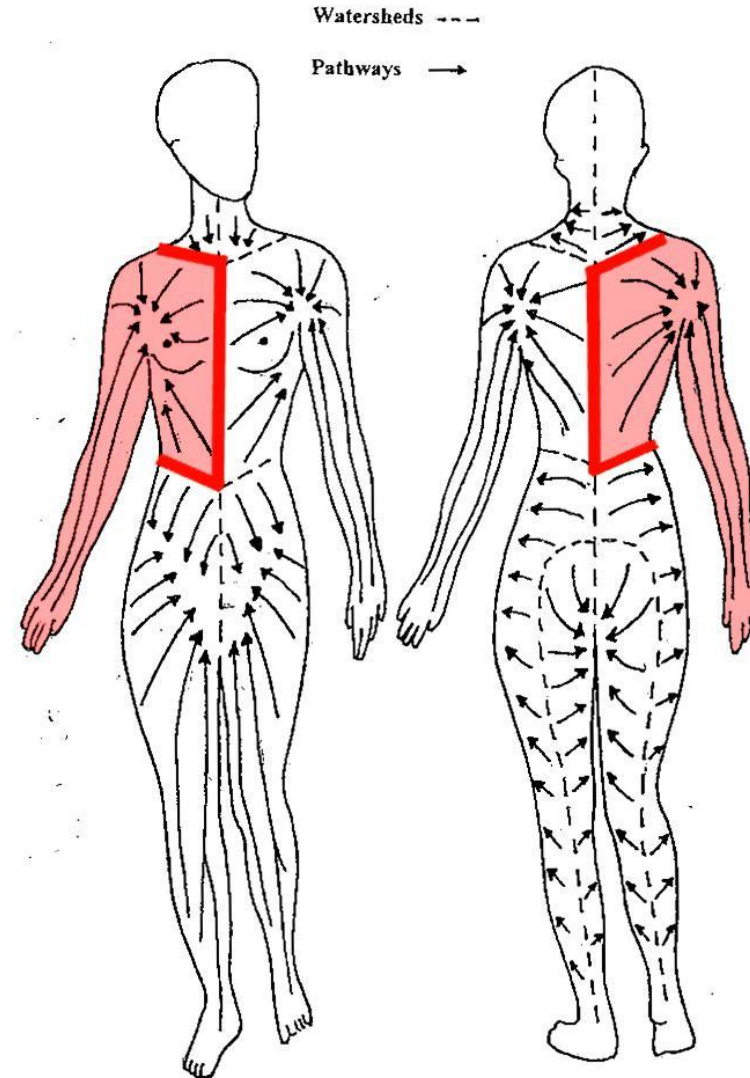


# What is lymphedema?

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

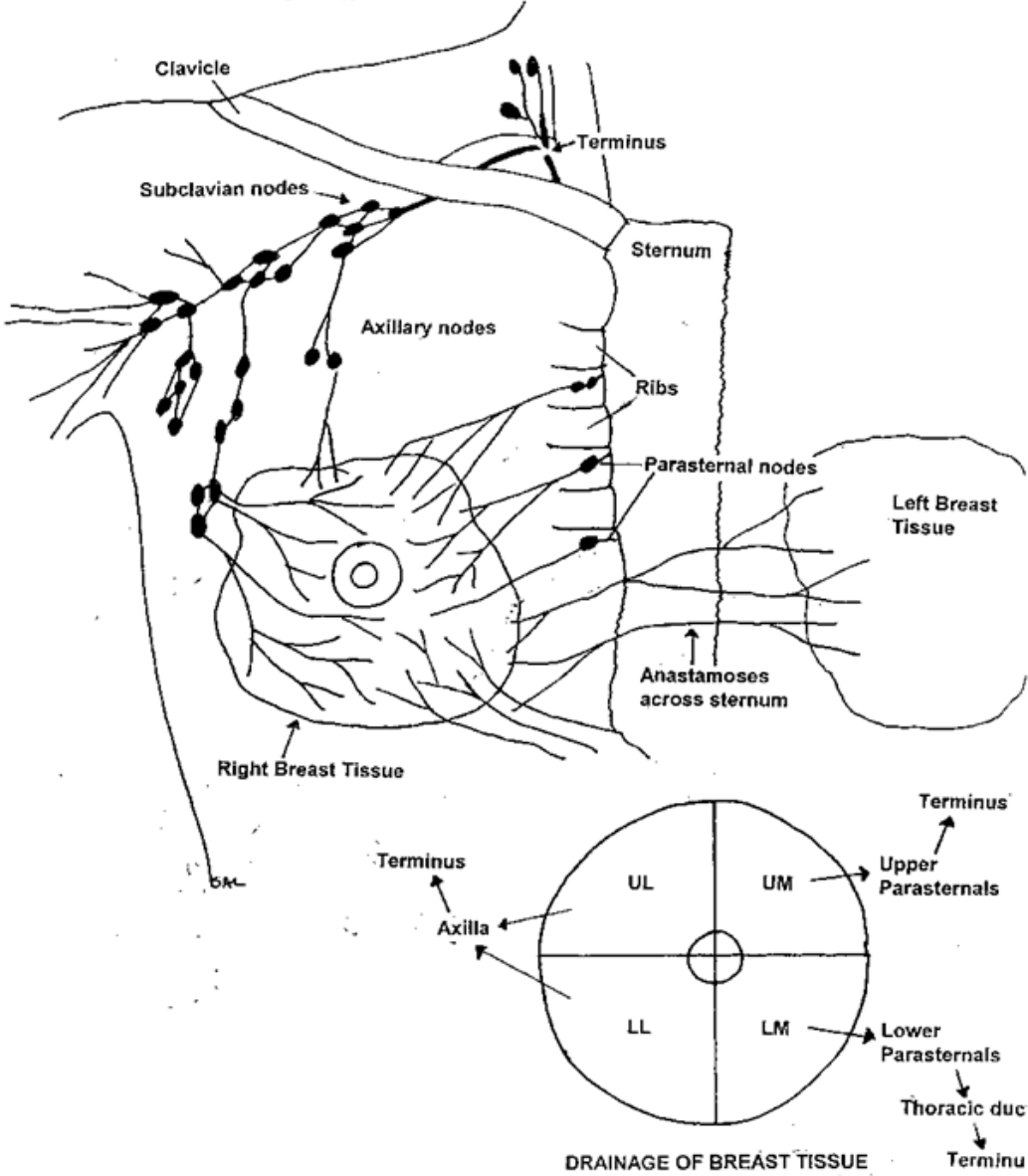
# Skin Lymph Drainage Territories

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.



# Breast Lymph Drainage

## Lymph Vessels of the Chest



# Incidence

Overall estimated incidence of chronic arm lymphedema after breast cancer treatment is 21.4% or 1 in 5

Likelihood of developing lymphedema depends on one's individual **risk factors**

# Who is at risk?

## **Treatment related risk factors**

- Removal of lymph nodes
- Regional lymph node radiation
- Chemotherapy

## **Non-treatment related factors**

- BMI of 25 and >
- Infection/Cellulitis
- Genetics and anatomy (non-modifiable)

# 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.

# 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

# How is lymphedema diagnosed?

- **Impairment Based Model**

- relies on patient and provider to detect visible limb swelling
- special testing may be done to rule out DVT, obstruction or recurrence of disease
- infection should be ruled out



# How is Lymphedema Diagnosed?

- **Prospective Screening Model**
  - measurement tool - **SOZO L-Dex**
  - detects edema at a subclinical level
  - measurement protocol includes:
    - pre op. baseline
    - series of follow up measurements
    - treatment if L-Dex score goes above normal levels

# Breast Cancer-Related Lymphedema



# Lower Extremity 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
- ‘Odd’ sensations
- Discomfort
- NOT “unbearable pain”
- NOT muscle soreness
  - Let’s discuss the difference...

# 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
- 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

- Maintain or achieve a healthy weight
- Regular exercise is beneficial- more to come



# Avoid Limb Constriction

- If possible, avoid having your blood pressure taken on the arm at risk

# 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.

# How is lymphedema treated?

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

# Complete Decongestive Therapy

PHASE 1: Decongestion	PHASE 2: Maintenance
<p data-bbox="453 539 1031 592">Meticulous skin care</p> <p data-bbox="453 644 1141 711">Manual Lymph Drainage</p> <p data-bbox="453 753 1072 892">Gradient compression bandaging</p> <p data-bbox="453 935 1006 988">Remedial exercises</p> <p data-bbox="453 1045 1082 1098">Compression garment</p>	<p data-bbox="1266 539 1844 592">Meticulous skin care</p> <p data-bbox="1266 644 2040 711">Day: Compression garment</p> <p data-bbox="1266 753 2066 892">Night: Gradient compression bandaging</p> <p data-bbox="1266 935 2084 988">Self-Manual Lymph Drainage</p> <p data-bbox="1266 1045 1819 1098">Remedial exercises</p> <p data-bbox="1266 1155 1900 1208">Follow-up assessment</p>

# Meticulous Skin & Nail Care

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

# Manual Lymph Drainage

## Expert Stretching of the Skin

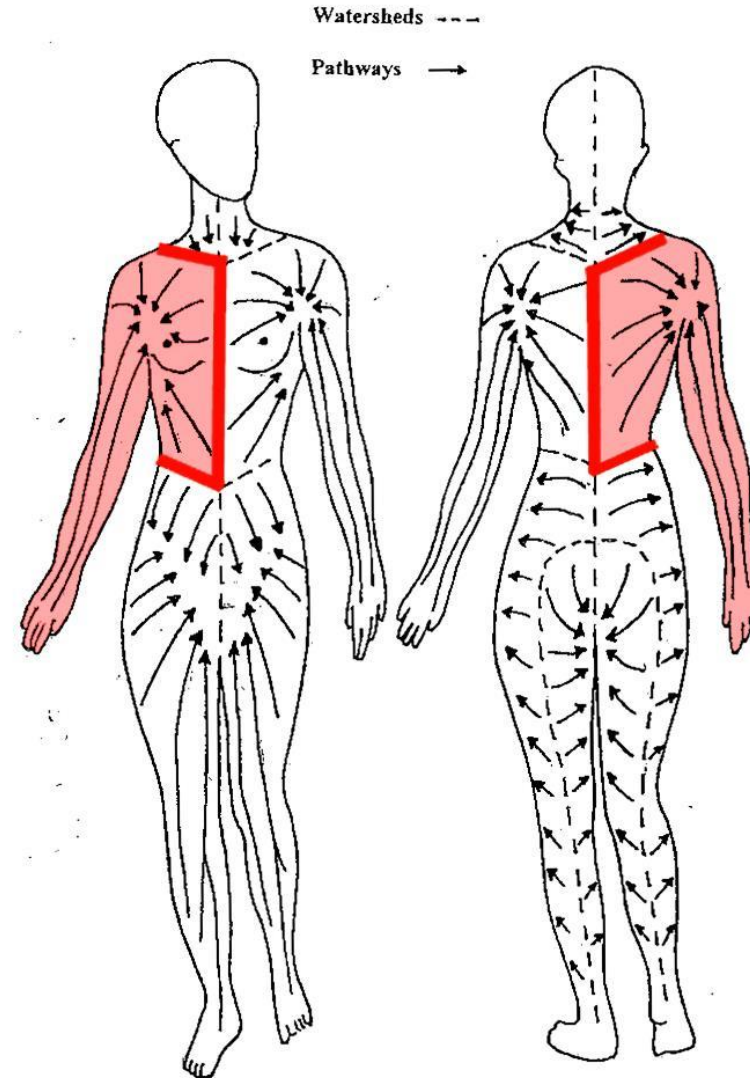


# Manual Lymph Drainage

- Drains the congested area
- Normalizes the size and pressure in the limb
- Reduces pain/discomfort
- Enhances lymph flow

# 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.





# Compression Therapy

- Gradient, short-stretch bandaging
- Medical compression garment

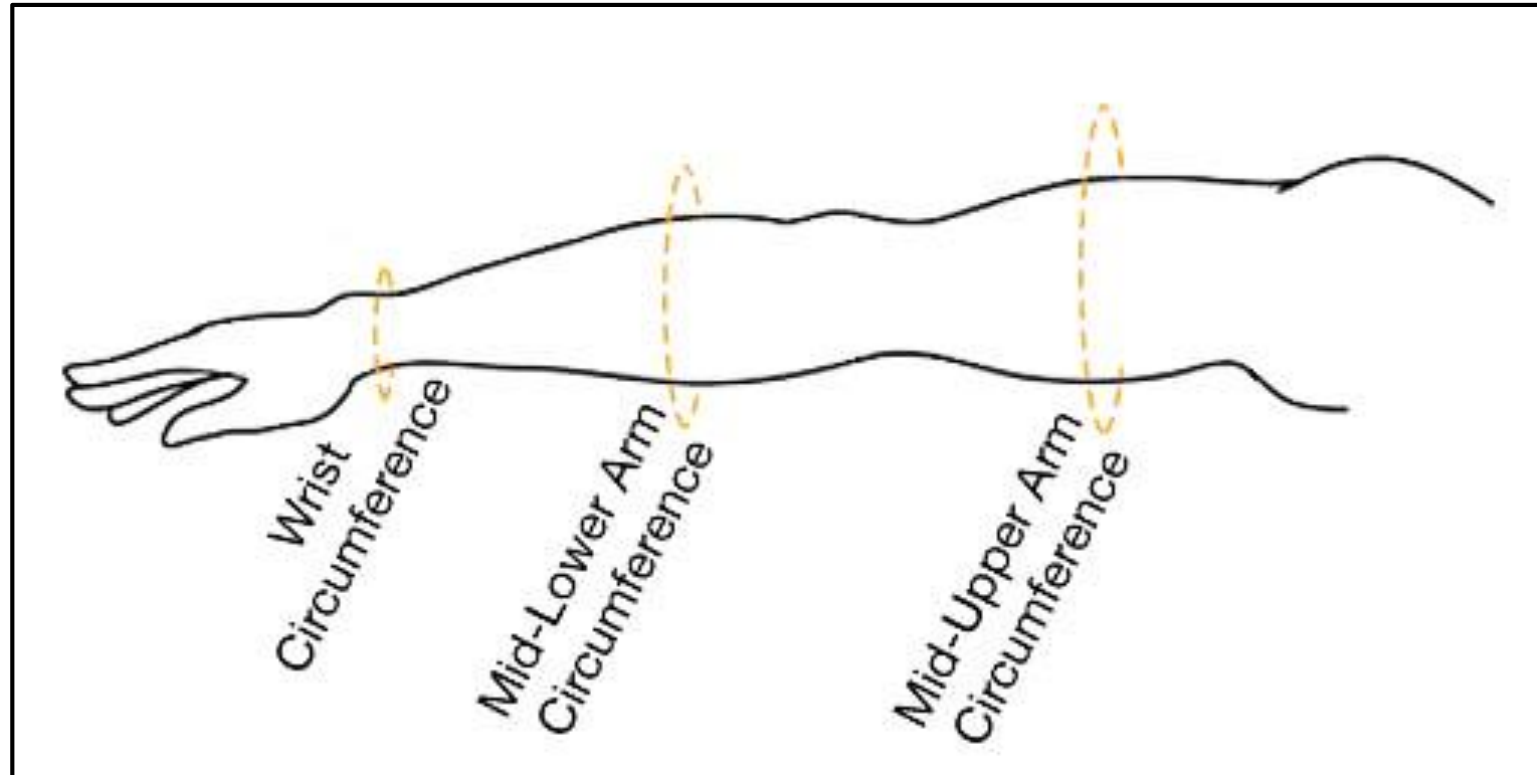
# Gradient Compression Bandaging

- Utilizes multilayer short stretch bandaging to direct fluid out of the congested limb
- Decreases filtration rate
- Prevents re-accumulation of fluid
- Softens fibrosis
- Provides external counter-pressure during exercise

# Compression Garments

- Should be measured by a certified garment fitter and be well-fitting
- Should be worn daily for those with lymphedema
- Support the affected limb during strenuous activity (e.g. weight lifting!)
- At risk for lymphedema ??????

# 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.
- Gentle aerobic exercise, gentle stretching

# 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

# 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
- Modify your program according to your symptom response

# NLN Exercise Guidelines (cont.)

## AEROBIC CONDITIONING

- Beneficial for individuals with lymphedema
- Deep respiration enhances lymph drainage
- Avoid injury by increasing very gradually
- Modify your program according to your symptom response

# 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



# Surgical Treatments

- **Techniques that minimize lymphatic disruption**
  - SLNB-used since 1990's and has greatly reduced the risk of BCRL (5% vs 20% for ALND)
  - ARM (axillary reverse mapping)
  - LYMPHA (lymphatic microsurgical preventative healing approach)

# Surgical Treatments

- **Physiologic Procedures**
  - attempt to re-establish or re-direct lymph flow
  - vascularized lymph node transplants
  - lympho-venous anastomoses
  - these work to resolve edema in the arm
  - best for those with edema that has not become fibrotic and solid

# Surgical Treatments for Lymphedema

- **Debulking Procedures and Liposuction**
  - surgical removal of edematous tissue
  - best for patients with solid, non-pitting lymphedema or lipolymphedema
  - compression garments must be worn to maintain reduction as these procedures do not address the cause

# For more information...

National Lymphedema Network

[www.lymphnet.org](http://www.lymphnet.org)

BreastCancer.org

[www.breastcancer.org](http://www.breastcancer.org)

Living Beyond Breast Cancer

[www.lbbc.org](http://www.lbbc.org)

Lymphatic Education and Research  
Network LE&RN

[www.lymphaticnetwork.org](http://www.lymphaticnetwork.org)



# Moving Forward

- **Early detection and treatment of lymphedema is key**
  - lymphedema is easier to treat in the early stages
  - be vigilant, not fearful and don't ignore symptoms of lymphedema
  - talk to your doctor about being evaluated by a certified lymphedema therapist

# References

- Gillespie, et al – Review Article: Breast cancer related lymphedema: risk factors, precautionary measures and treatments. *Gland Surg.* 2018;7(4): 379-403
- Kathryn Schmitz PhD, MPH, FACSMPT Strength After Breast Cancer; Klose Training
- Jodi Winicour PT, LMT, CLT-LANA Breast Cancer Rehabilitation; Klose Training