

# Supporting Lymphatic Health

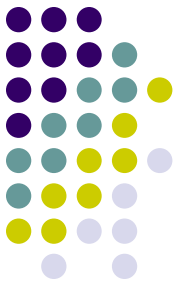
Tamara Wells, OT/L, CLT  
Leavenworth, March 2024



# Disclosures

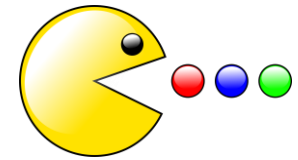
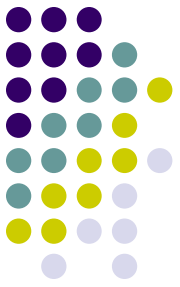


# Objectives



- Learn what the lymphatic system does
- Learn how lymph moves through our bodies
- Learn several ways to assist the function of your lymphatic system
- Briefly touch on lymphedema: what is it and who may be at risk.

# What is the Lymphatic System

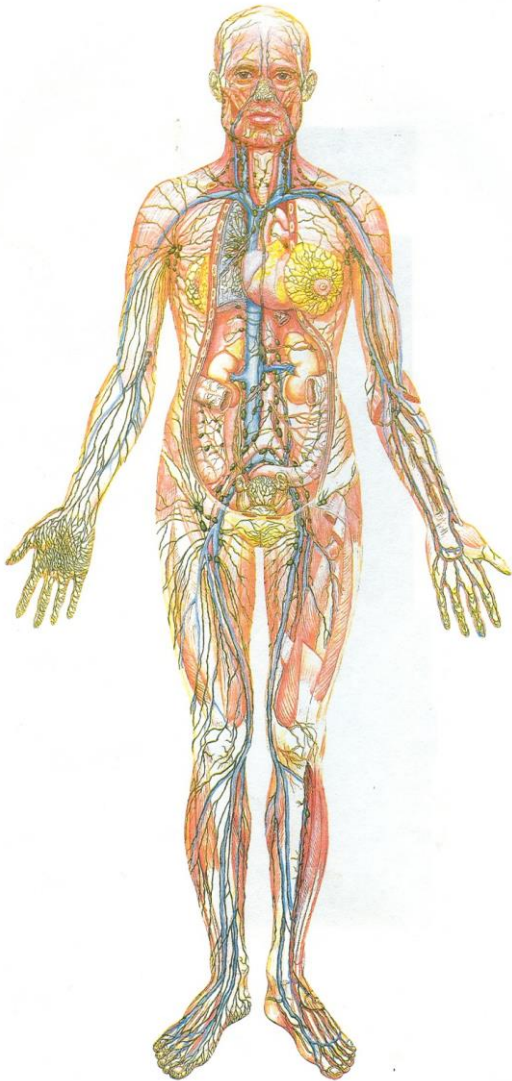


# Lymphatic system



- A network of vessels, organs and tissues that are part of our immune and circulatory system that travels throughout body. (*River of health*).
- Collects and filters fluid and proteins from the interstitial tissue and absorbs and transports nutrients containing water, large protein molecules, fat cells, cellular debris (*Cinderella work with little credit*)
- Fights infection (WBC's, T cells, B cells) (*Defense system*)
- Recognize, destroys old, foreign or abnormal cells (*Pac Man*)
- Keeps a balance of fluids in our body (returning fluid from the interstitial space-about 2 ½ liters per day)
- Absorbs fats in our gut

# Similar to the Cardiovascular system

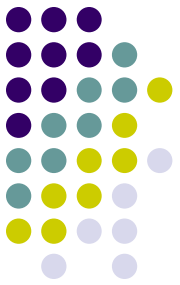


- Where there are veins and arteries, you'll find lymph vessels near by
- It runs throughout our bodies including the brain (glymphatics)
- Arteries and veins have capillaries and deep vessels as do the lymphatics

# Different than Cardiovascular system

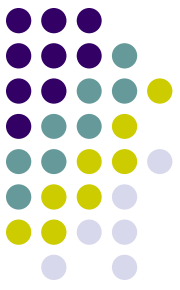


- Cardiovascular system carries Red Blood Cells/nutrients to tissue
- Cardiovascular system has the heart as the pump and gravity to distribute nutrients to cells
- Lymphatic system is a **one-way** transport back to the heart.
- The **Lymph system is reliant upon muscles, skin stretch, fluid forces and pressure changes generated by the diaphragm to return fluids to the heart**
- We need to move to help the lymph move.

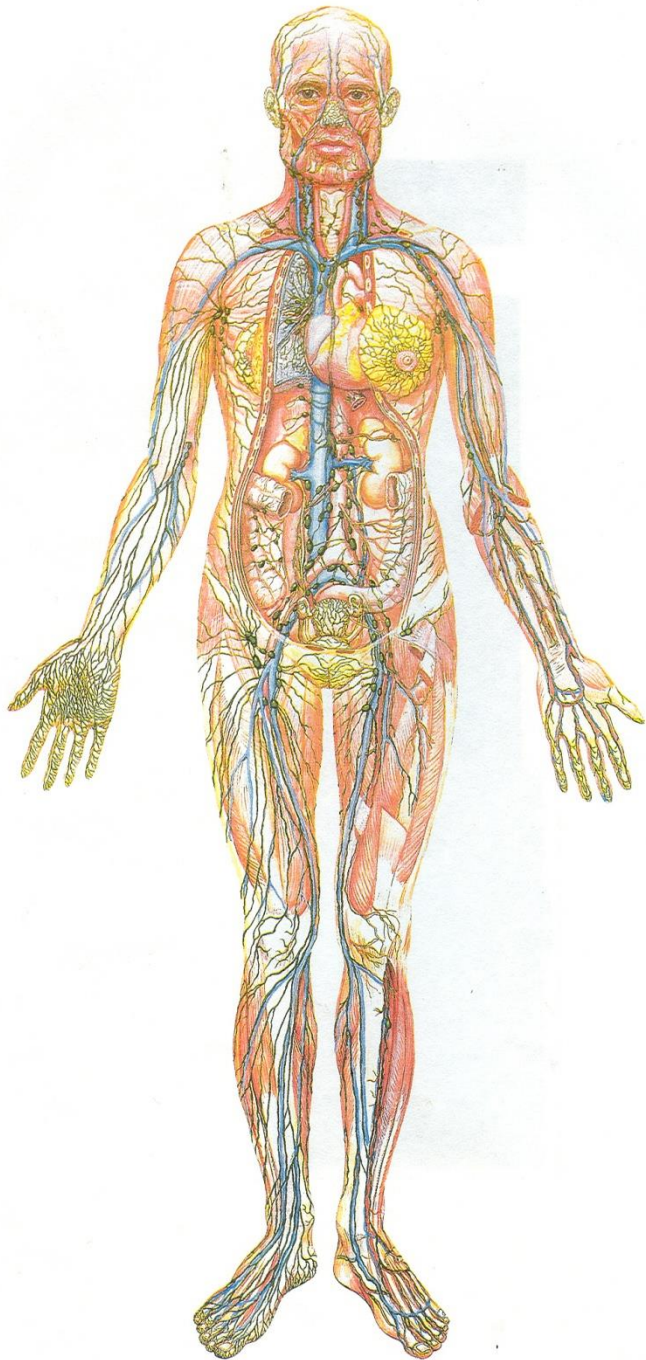


*If you know the anatomy, you will  
know how to help the lymph  
move*





# Anatomy



- Lymph vessels of varying sizes
  - Deep(60%)
  - Superficial(40%)
- Lymph nodes (600-700) concentrated in head and neck (1/3), abdomen, underarms and groin
- Cisterna Chylie (central large collection vessel)
- Thoracic Duct (freeway)
- Right lymphatic duct



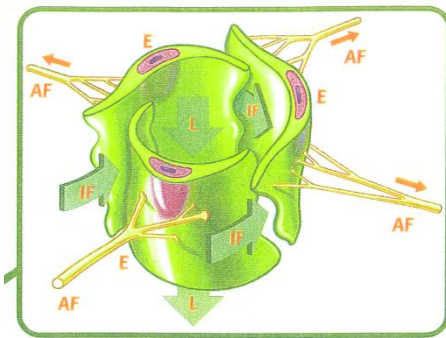
# Anatomy

- ***Spleen***- located beneath the Left ribs keeps the body safe from pathogens.
- ***Thymus***-gland beneath the sternum helps produce T cells
- ***Tonsils***- back of the mouth and help protect the lungs and digestive system

# Superficial Lymphatics (capillaries)

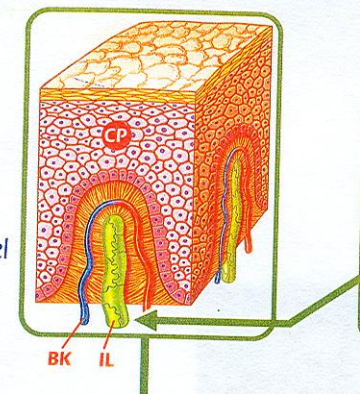


- Initial lymphatic cells loosely overlap (tulip petal)
- Anchoring filaments attach to connective tissue
- Skin stretch through exercise or filling of fluid pulls on filaments and opens the initial lymphatics



*Epidermis with blood capillary loop and an initial lymph vessel  
(Magnification)*

BK = Blood capillary  
IL = Initial lymph vessel  
CP = Corium papilla



# Lymphatic Watersheds

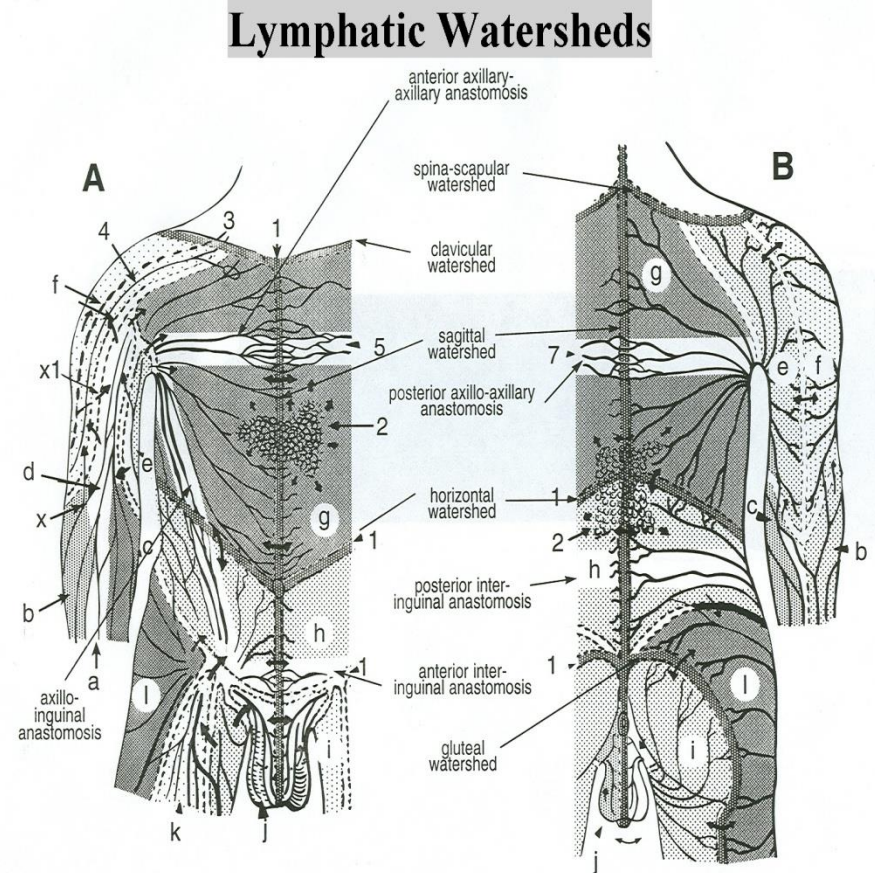


- Watersheds (superficial drainage)

**Sagittal watershed:** divides right and left sides of body

**Transverse watersheds:** divides top and bottom half of body and head/neck from the upper trunk

**Anastomosis** (connection) between the watershed



# Deep Lymphatics



- Run in front of the spine and through muscles.
- They help clear many of our organs in our core.
- Muscles are the pump to help move fluid to the lymph nodes.



# Diaphragm function assists lymphatic movement (piston action)



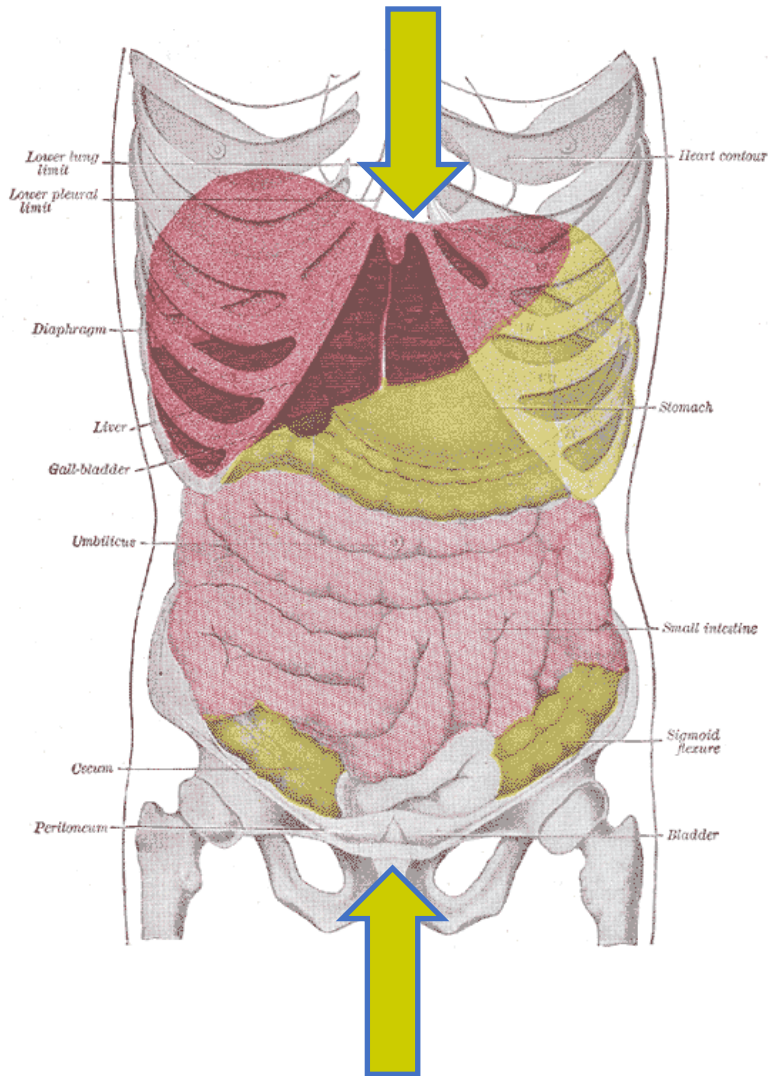
## Diaphragm drops on inhale

- Compresses the organs in the abdominal cavity like a sponge and creates high pressure in the lower abdominal cavity/pelvic floor.
- Think of it as a massage to the organs

## Pelvic floor creates force upward on exhale

- Strong pelvic floor compresses the organs and Lymph nodes from below
- Again, a massage of the organs from below

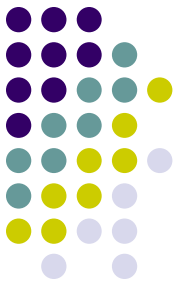
# Diaphragm movement with inhale and exhale



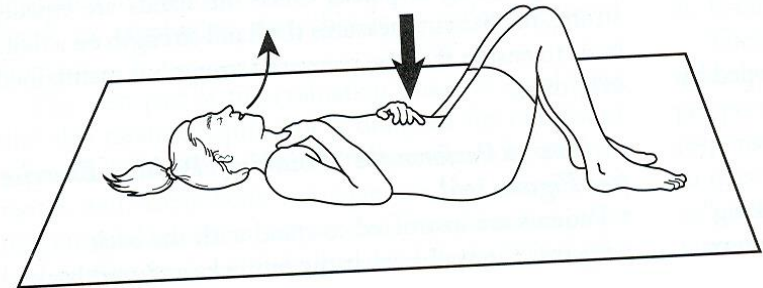
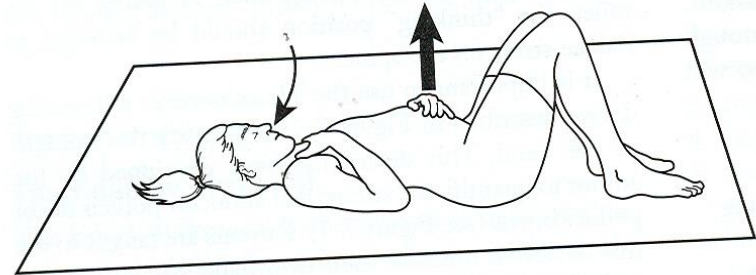
Inhale

Exhale

# Deep breathing (creates a vacuum to draw fluids into it)



- With **UPRIGHT POSTURE**
- **INHALE** through your nose: lower ribs/abdomen rise.
- **EXHALE** through mouth with contraction of pelvic/abdominal muscles.
- Place a ball between knees and gently squeeze on exhale to get more contraction of pelvic floor ●
- Deep Breathing increases the rate of lymph moving to heart.



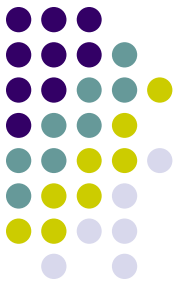


# How lymph moves in our body



- Breathing (especially deep breathing)
- Water assists with transport (river vs. swamp) (Stay hydrated) (our bodies are 60-75% water)
- Heartbeat and pulse of nearby arteries (exercise increases heart beat)
- Muscles and joint pump (Move) (*most important*)
- Lymph angion (muscle in wall of deep lymph vessel/valves)
- Tissue traction or pressure by external stimuli (Manual lymph drainage and massage in general provides a skin stretch with light pressure toward the heart)
- Peristalsis (movement of intestines) good diet for regularity of bowels! Poor elimination=stagnation and pressure on lymphatics.

# So now you know anatomy: How can you stimulate lymph flow?



**Not congestion**



# Healthy Habits to keep lymphatic system flowing



- **EXERCISE!** *muscles are the pump to move fluids. (not in excess= increased cellular waste and can weaken immune system)*
- *Exercise INCREASES lymphatic flow 3-7x! Take the trash OUT*
- **Swimming:** *provides perfect gradient pressure to assist lymphatics*
- *Mini trampoline-muscle contraction/gravity/forces*
- *Lift weights: 2-3x per week. Strong muscle= more force to move fluids*
- **Stretch:** *movement of skin, opens initial lymphatics.*
- *Attend to tight muscles: tight muscles compress lymphatic vessels and can decrease lymphatic flow.*
- *Consider **yoga**: good for deep breathing, stretching, weight bearing through your own body weight, inversion poses help with gravitational pull, stress reduction, meditation.*
- **MOVE throughout the day** to avoid stagnation. *250 steps per hour during the day. (sitting is the new smoking)*

# Healthy Habits to keep lymphatic system flowing



- **Drink water:** the body is 60-70% water. Throughout the day, not all at once. Dehydration concentrates "pollutants". Water is needed to help carry out the cellular waste, proteins, etc. "create the river, not a swamp"
- **Eat a healthy diet:** whole foods, not processed. Mediterranean, organic when you can. Less "residue" and more nutrient dense for the body to manage.
- **Avoid inflammatory foods:** sugar, dairy, saturated fats, processed food. *"Too many treats will probably require you to have plenty of treatments."* (Gerald Lemole, MD from *Lymph & Longevity, The Untapped Secret to Health*)

# Healthy Habits to keep lymph flowing



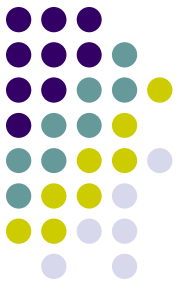
- **Maintain healthy weight:** more tissue=move blood volume=more waste for lymph system to handle. Large bellies sit on lymphatics of groin.
- Avoid tobacco use of any kind
- **Reduce exposure to toxins** in your home/environment: cleaning products, toiletry items, make-up, food storage
- **Avoid tight clothing:** no constriction on lymphatics

# Healthy Habits : to keep lymph flowing



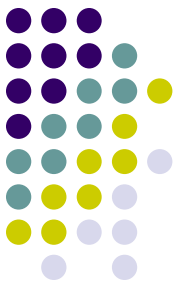
- **Sleep** 8 hours per night. Your body does a lot of repair work at night. Glymphatics in the brain need REM sleep to remove cellular waste from brain. (researchers from U of Virginia) sleeping on side helps.
- Work toward good **posture** (so diaphragm can work)
- **Laugh-** it uses the diaphragm and compresses cisterna chyli (Laughing yoga Dr. Kataria on You tube)

# Why did the lymph cross the road?



Who Nodes?

# Healthy habits:to keep lymphatic system flowing



- **Self massage:** light pressure moving fluids toward the heart. 5-10 strokes over tissue



**IF YOU HAVE swelling and HAD LYMPH NODES REMOVED** see a lymphatic therapist to assist with massage.

(do not do this if you have an infection, blood clot that hasn't been treated, active congestive heart failure)

- **Dry brushing:** use a brush with soft bristles to "sweep" toward the heart on your skin.
- **Scar massage:** only on healed scars
- **Stress reduction:** stress keeps us in the fight/flight mode where the body is ready to "fight the tiger". Our lymphatic system is NOT able to do its job under stress mode. It needs the calm (parasympathetic state) to manage rest, digest and repair.

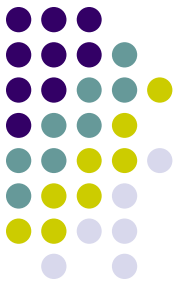


# Who is at risk for lymphedema



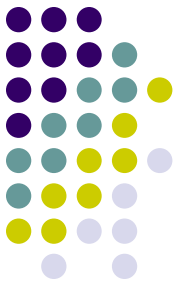
- Anyone with lymph nodes removed from the body (greater # of LN removed= greater risk)
- Radiation treatment
- Metastatic disease to lymph system or compression on the lymphatic system
- Weight gain/immobility with above combinations
- Many other related health problems that cause prolonged swelling can cause stress on lymphatic system that leads to lymphedema.

# Cancers that may be at risk for lymphedema



- Breast
- Melanoma/skin cancers (*with lymph node removal/radiation*)
- Prostate (with lymph node removal/radiation)
- Gynecological cancers with lymph node removal/radiation
- Head and neck cancers with lymph node removal/radiation
- Any cancer that has metastasized to lymph system or compressing on lymph system.

# Signs and symptoms of lymphedema



- Swelling of area in area of treatment that takes a while to dissipate or does not dissipate with elevation
- Heaviness of area
- Tightness of clothing in the area compared to other arm/leg
- Recurring infections
- Change in skin texture/firmness in area of treatment.

# When NOT to do lymph drainage



- If you have an infection (wait until you have been cleared by your doctor-usually 1-2 days after starting antibiotics)
- If you have a blood clot
- If you have active congestive heart failure or shortness of breath during or after lymph massage

# Healthy Lymphatic System and tie to health



- The lymphatic system may be key to disease prevention
- It works to keep ALL of our systems functioning well.
- A blocked or compromised lymphatic system can lead to infections and lymphedema (protein rich swelling)
- Research is being conducted and showing poor lymphatic flow **may** be tied to 70% of all chronic disease linked to inflammation such as heart disease, neurological conditions (MS, parkinson's, Alzheimer's), auto immune diseases, gut health and cancer. More research to come!
- Thus the importance of keeping this river of health clean and moving.

# Wishing you a River of Health



**Not a Swamp**

