UNDERSTANDING THE LYMPHATIC SYSTEM

BEST PRACTICES FOR HIGH RISK PATIENTS

OBJECTIVES

- Introduction to key lymphatic anatomy and physiology
- Understand the role of the lymphatic system
- Recognize impact of cancer treatments and medical history
- Identify early symptoms of lymphatic dysfunction and lymphedema
- Support client wellbeing with informed practice modifications
- Know when to refer out
- Practice with confidence, compassion and care

HONORING UNIQUENESS

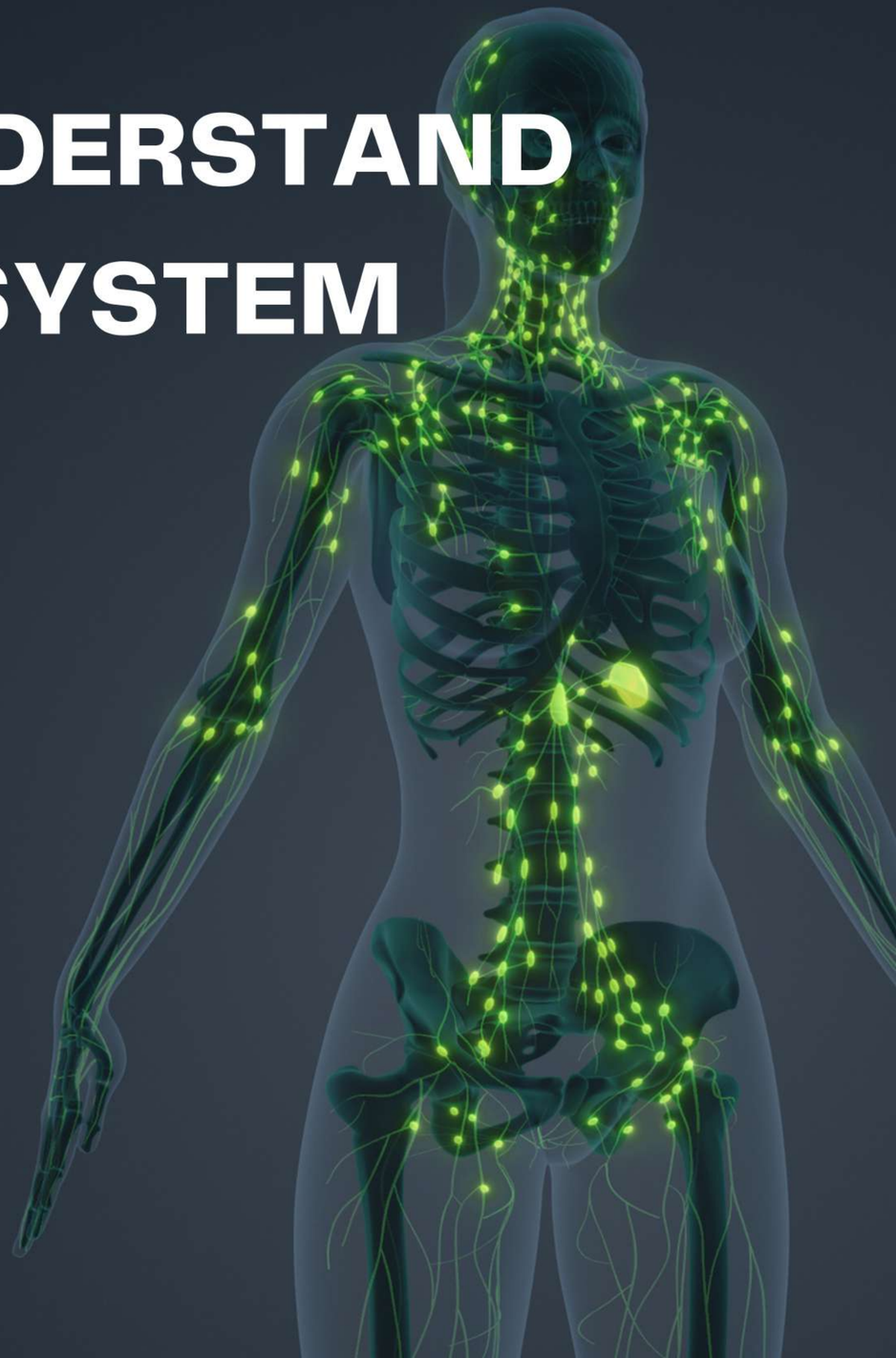
“THERE IS ALWAYS SOMETHING WE CAN OFFER.”
— GAYLE MACDONALD

- Understand your journey
- Know your limits and readiness
- Cancer care requires flexibility
- Define what you can offer with excellence
- Embrace collaboration
- Offer something meaningful

WHY WE NEED TO UNDERSTAND THE LYMPHATIC SYSTEM

WE ARE RESPONSIBLE FOR KNOWING HOW OUR TOUCH MAY HELP—OR HARM—A VULNERABLE SYSTEM

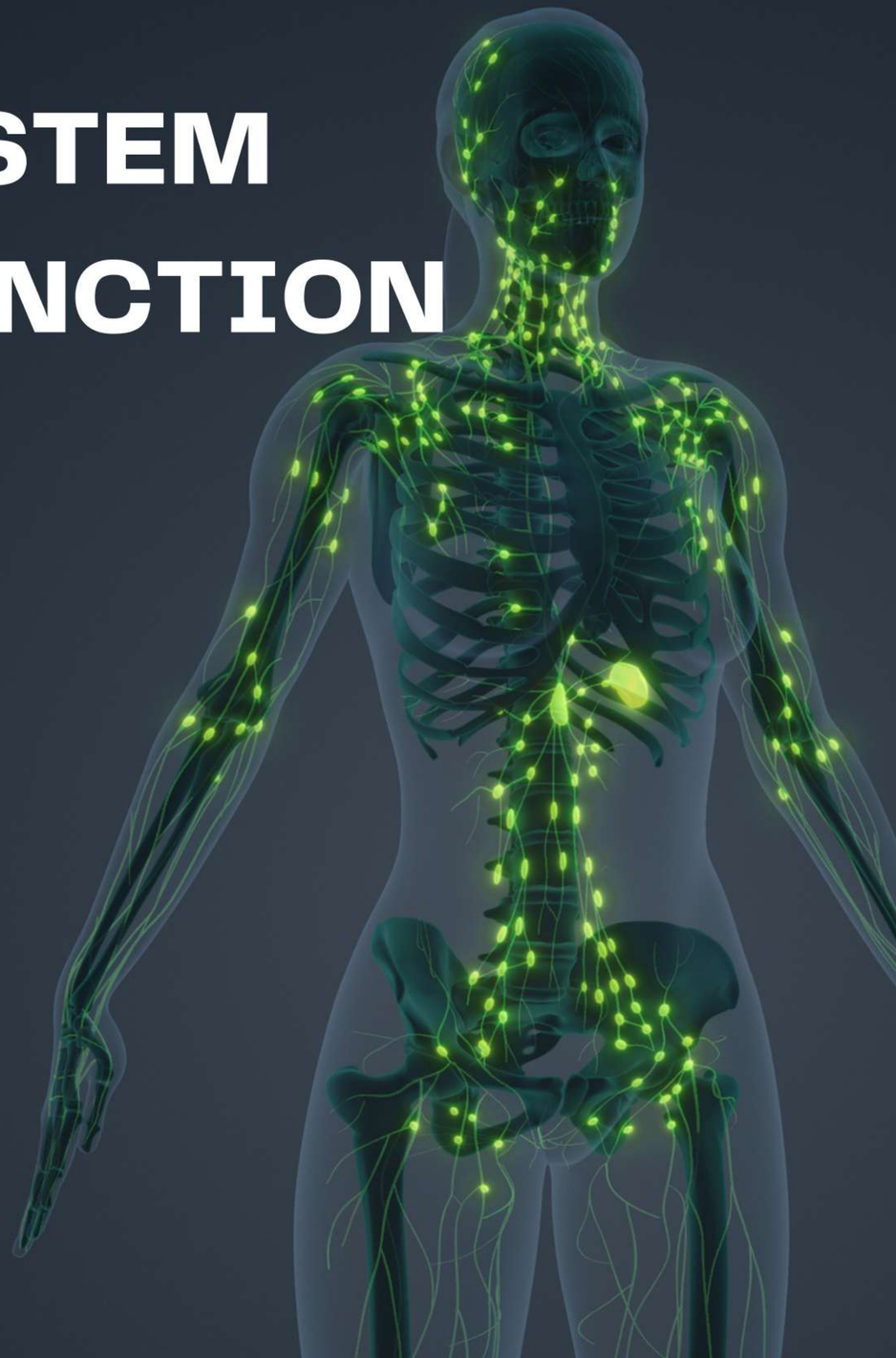
- Understanding the lymphatic system is an ethical responsibility
- We cannot avoid engaging with the lymphatic system – ignorance carries risk
- It is essential for client safety
- Understanding its function ensures our work supports, not disrupts, healing



LYPMPHATIC SYSTEM STRUCTURE AND FUNCTION

Key Functions:

- Fluid Regulation
- Immune Surveillance
- Waste Clearance
- Fat Absorption

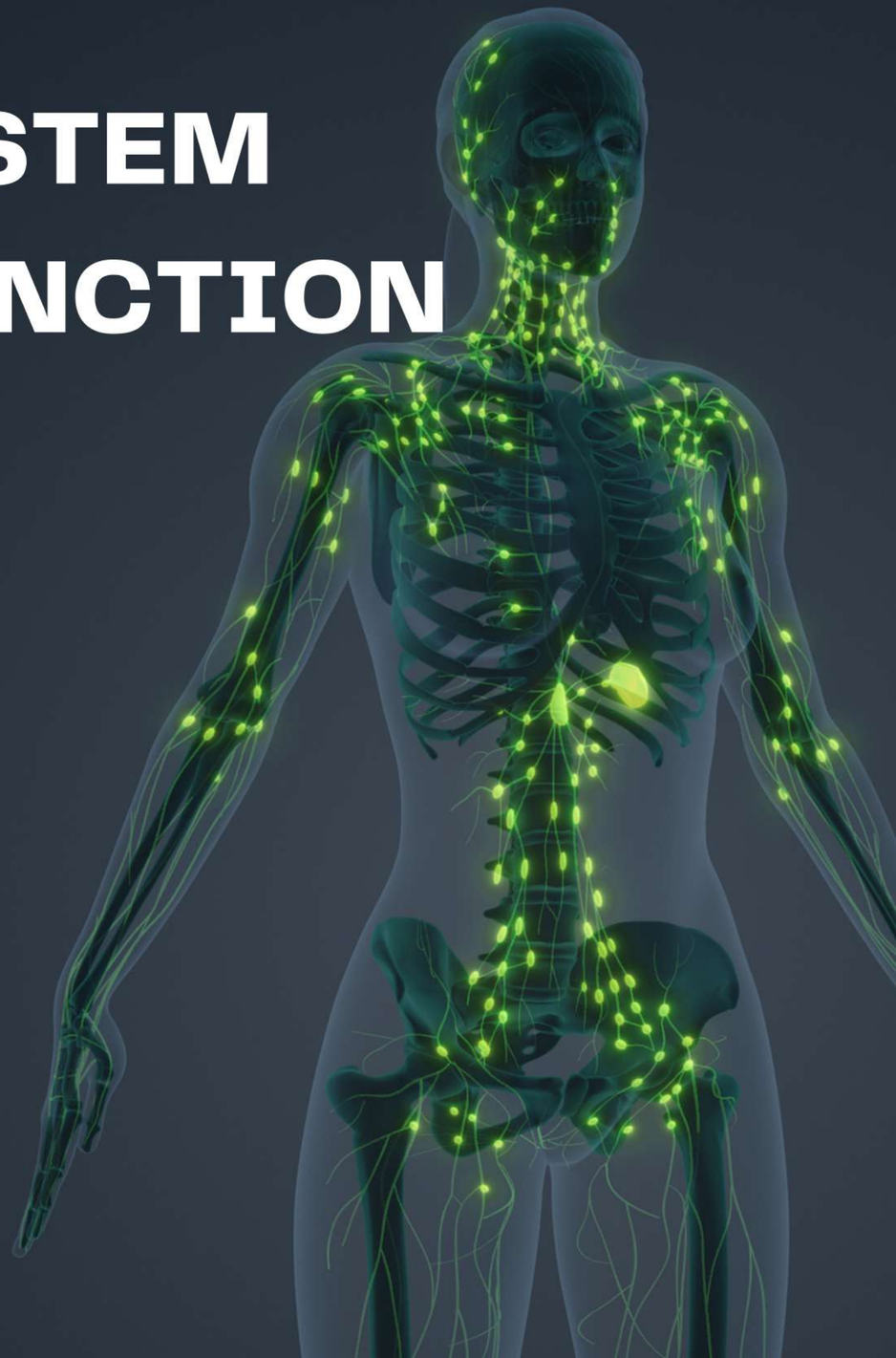


LYPMPHATIC SYSTEM STRUCTURE AND FUNCTION

Key Components:

- Lymphatic capillaries
- Collection vessel and valves
- Lymph nodes
- Lymphatic trunks and Ducts

Central vs. Peripheral Lymphatics



LYPMPHATIC SYSTEM CLINICAL RELEVANCE

- Lymph flow is naturally slow and passive
- Slow flow allows immune processing
- Returns 2–3 liters daily
- Damage increases pressure on remaining vessels
- Even healthy clients can be impacted
- Immobility, dehydration, or tight clothing can impede flow
- Manual techniques can help — or harm
- Gentle, informed touch supports lymphatic function

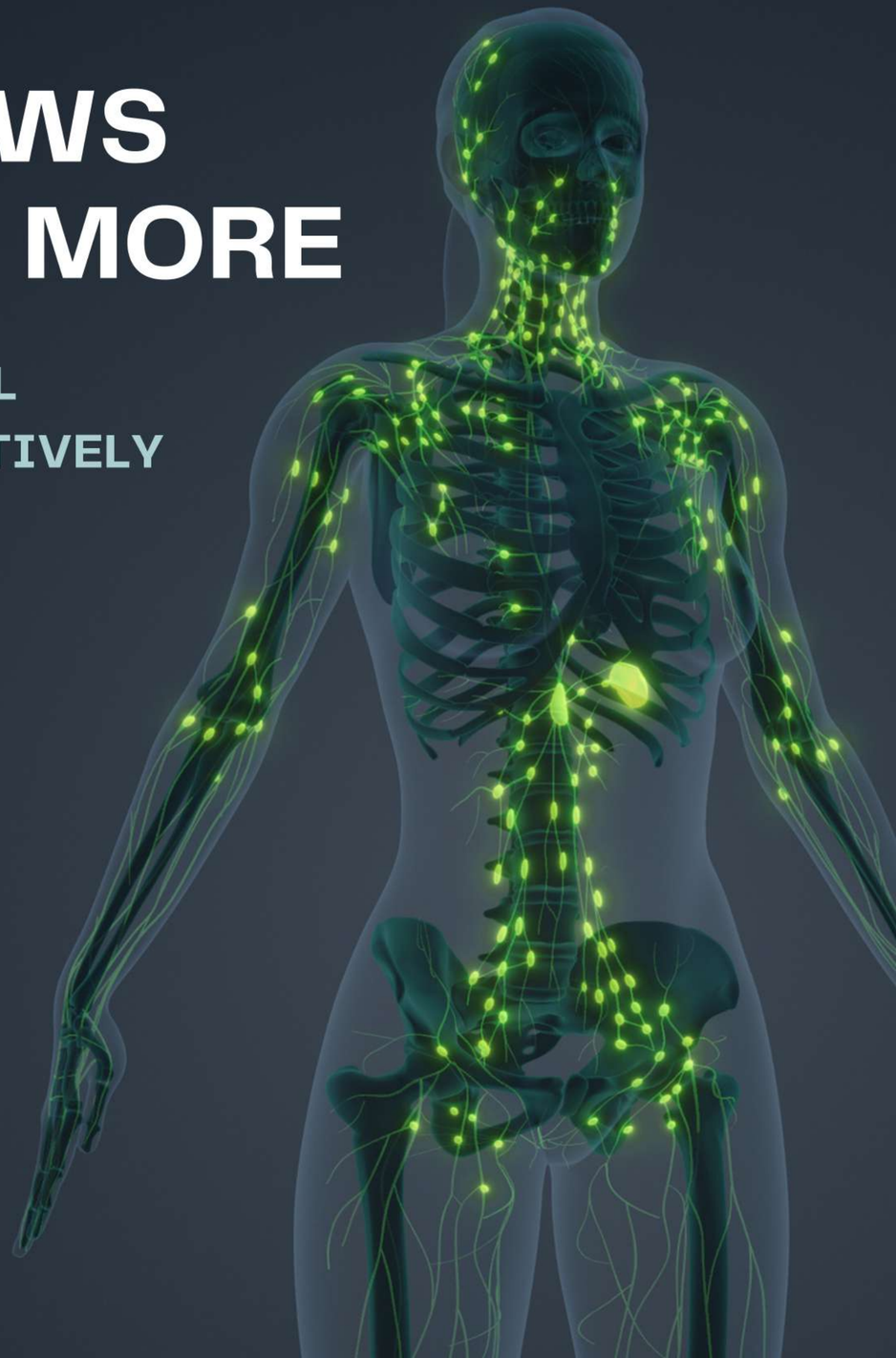
DISTRIBUTION OF LYMPHATICS

Tissue Layer	Lymphatic Structures Present	Key Function	Clinical Consideration
Epidermis	No	Immune signaling (Langerhans migration)	Protect skin integrity to prevent barrier breakdown.
Dermis	Yes (Initial capillaries)	Lymph uptake, immune sampling	Avoid aggressive treatments or techniques in compromised clients.
Hypodermis	Yes (Pre-collectors)	Lymph transport, adipose regulation	Obesity impairs lymph flow; avoid deep massage.
Fascia	Yes	Pathway and propulsion of lymph	Fascial restrictions may impair flow
Muscle	Yes	Mechanical lymph propulsion	Promote gentle ROM; avoid overstimulation
Neurovascular Planes	Yes	Drainage and neuroimmune signaling	Be mindful of nerve injury and radiation fibrosis
Visceral Organs	Yes (Deep lymphatics)	Lipid absorption, fluid regulation, immune defense	Recognize systemic lymphatic burden in symptomatic clients
Bone	Yes (Bone marrow & periosteal lymphatics)	Hematopoiesis support; fluid and immune transport in marrow spaces	Caution in bone mets, post-radiation sites, or fragility fractures. Bone metastases may impair local drainage and increase lymphedema risk. Avoid deep work in these areas
Lymph Nodes (multiple layers)	Secondary Lymphoid Organs	Filtration, immune response	Avoid massage in damaged or removed node areas; recognize quadrant-wide impact in node-depleted regions

RESEARCH SHOWS LESS IS REALLY IS MORE

THE 2019 STUDY BY LARA KOELMEYER PROVIDES VISUAL PROOF THAT GENTLE MANUAL TECHNIQUES CAN EFFECTIVELY STIMULATE LYMPHATIC FLOW

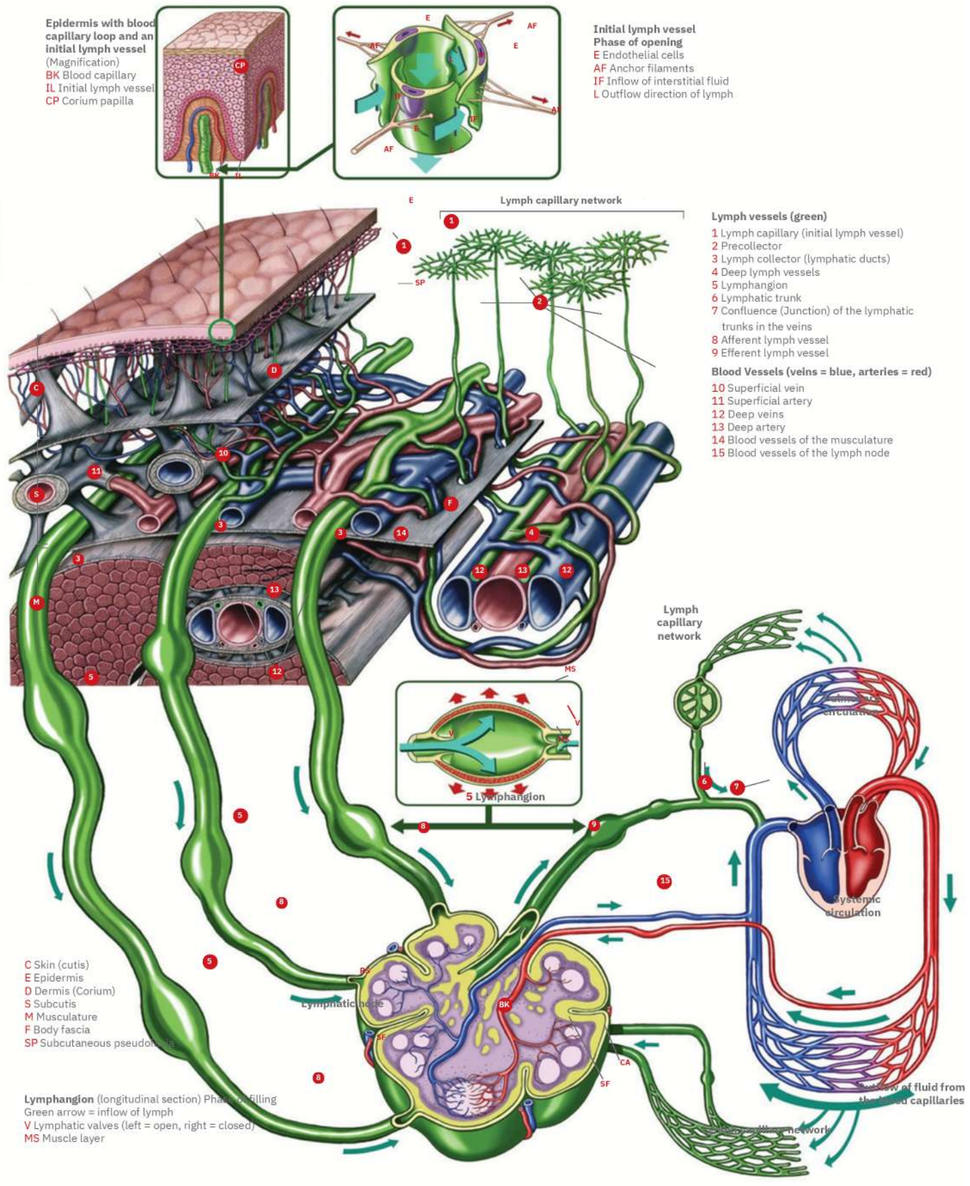
- ICG lymphography validates that gentle touch stimulates lymphatic movement
- Optimal stimulation occurs with light, skin-stretch pressure
- Post-cancer or trauma: superficial lymphatics must compensate
- Light, intentional touch is physiologically active
- Technique precision matters more than depth



WHY A SIMPLE TOUCH MAKES A BIG DIFFERENCE

- Most lymphatic capillaries lie just beneath the skin
- Initial lymphatics respond to subtle tissue pressure
- Minimal pressure activates lymphatic flow
- Gentle techniques are powerful tools

THE LYMPH DRAINAGE SYSTEM



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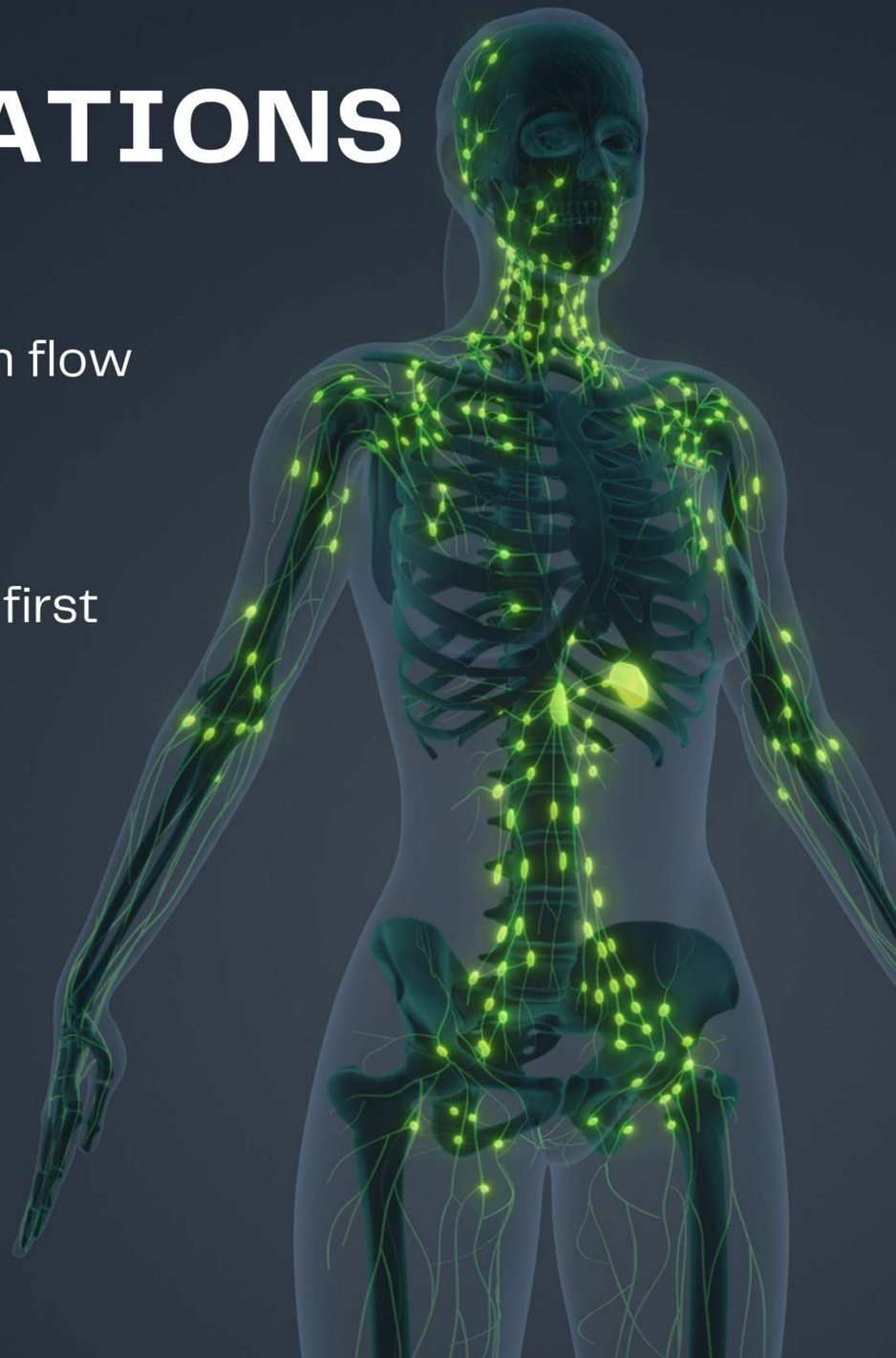
Simplified diagram of the most important anatomical areas

RESEARCH IMPLICATIONS

LIGHT TOUCH CAN BE THERAPEUTIC

- Research confirms that light techniques stimulate lymph flow
- Pressure matters
- Using light, intentional pressure
- Working proximally to distally to clear central pathways first
- Avoid reddening the skin
- Avoid deep or vigorous techniques in congested or overburdened regions
- Be alert to signs of impaired lymph flow
- Stay within your scope
- Refer or Collaborate when appropriate
- Each session is a chance to support lymphatic function



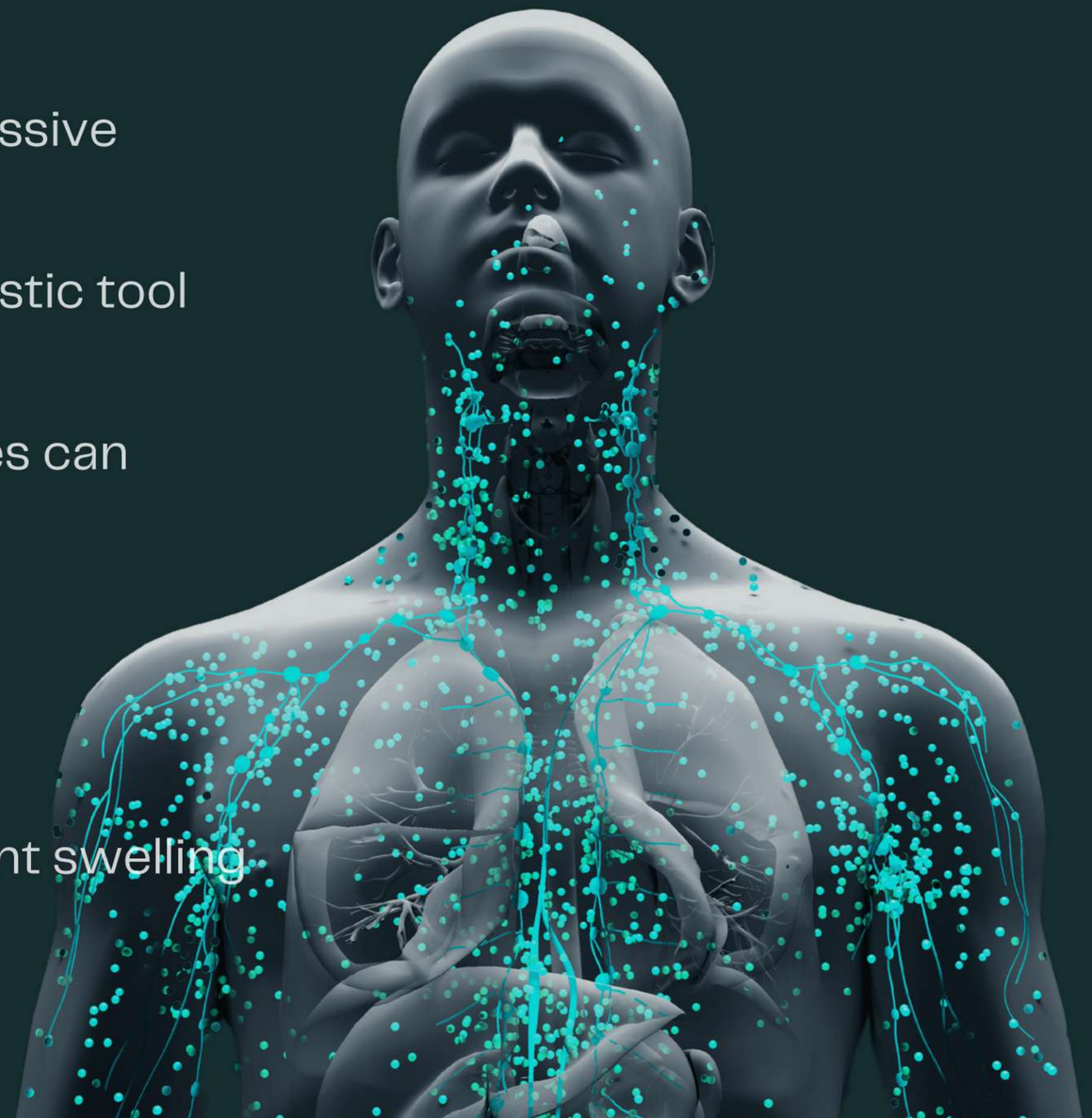
PRESSURE GUIDELINES

Tracy Walton Pressure Scale	Pressure	Representative Examples	Application & Sensation	Effect on Lymphatics
Level 1 Light Pressure	0–10 mmHg	Gentle manual lymphatic drainage (MLD), skin traction	Moves the skin but not the tissue underneath. No indentation. No stretch to deeper tissue. Often used over compromised or at-risk areas.	Ideal for stimulating initial lymphatics. Promotes fluid uptake without collapse.
Level 2 Moderate Pressure	15–30 mmHg	Mild edema, light compression garments	Slight indentation into superficial tissue. Feels gentle but moves more than just skin. Used cautiously depending on medical history.	May partially compress and obstruct collecting vessels or collapse capillaries, inhibiting flow, if tissue is damaged or at risk.
Level 3 Firm Pressure	30–60 mmHg	Moderate to firm massage pressure	Clear tissue engagement and indentation. Still comfortable but more forceful. Not appropriate over compromised areas	Likely to collapse initial lymphatics and impede flow and cause microtrauma in affected tissues.
Level 4 Deep Pressure	>60 mmHg	Firm compression (e.g., deep tissue, ischemic pressure)	Deep compression into muscle or fascia. Typically used in orthopedic or sports massage. Contraindicated over lymph node beds, irradiated or post-surgical tissue.	Significant obstruction or trauma to lymphatics. Likely to provoke inflammatory response. Not safe for at-risk clients.

LYMPHEDEMA

WHAT IT IS AND WHY IT MATTERS

- Lymphedema is a chronic and often progressive disorder of lymphatic transport
- There's no single global definition or diagnostic tool
- Your Role as a Practitioner
- Timely referral and adaptation of techniques can prevent complication
- Stages:
  - Stage 0 (Latent): No visible swelling
  - Stage I: Pitting edema, mild swelling
  - Stage II: Fibrotic changes and persistent swelling
  - Stage III: Severe, disfiguring changes
- The Hidden Early Stage



COMMON SYMPTOMS

THESE SIGNS MAY APPEAR EVEN BEFORE VISIBLE SWELLING—STAGE 0 LATENCY IS MEASURABLE VIA IMAGING ONLY

What clients might report:

- “Heaviness” or tightness
- One side of the body feeling “different”
- Vague discomfort without a clear source
- Burning or tingling (neuropathy)

Therapist may observe:

- Localized swelling that doesn't resolve
- Hard or thickened skin
- Recurrent infections (especially cellulitis)
- Decreased ROM near a joint

COMMON CAUSES & MECHANISMS OF LYMPHATIC DYSFUNCTION

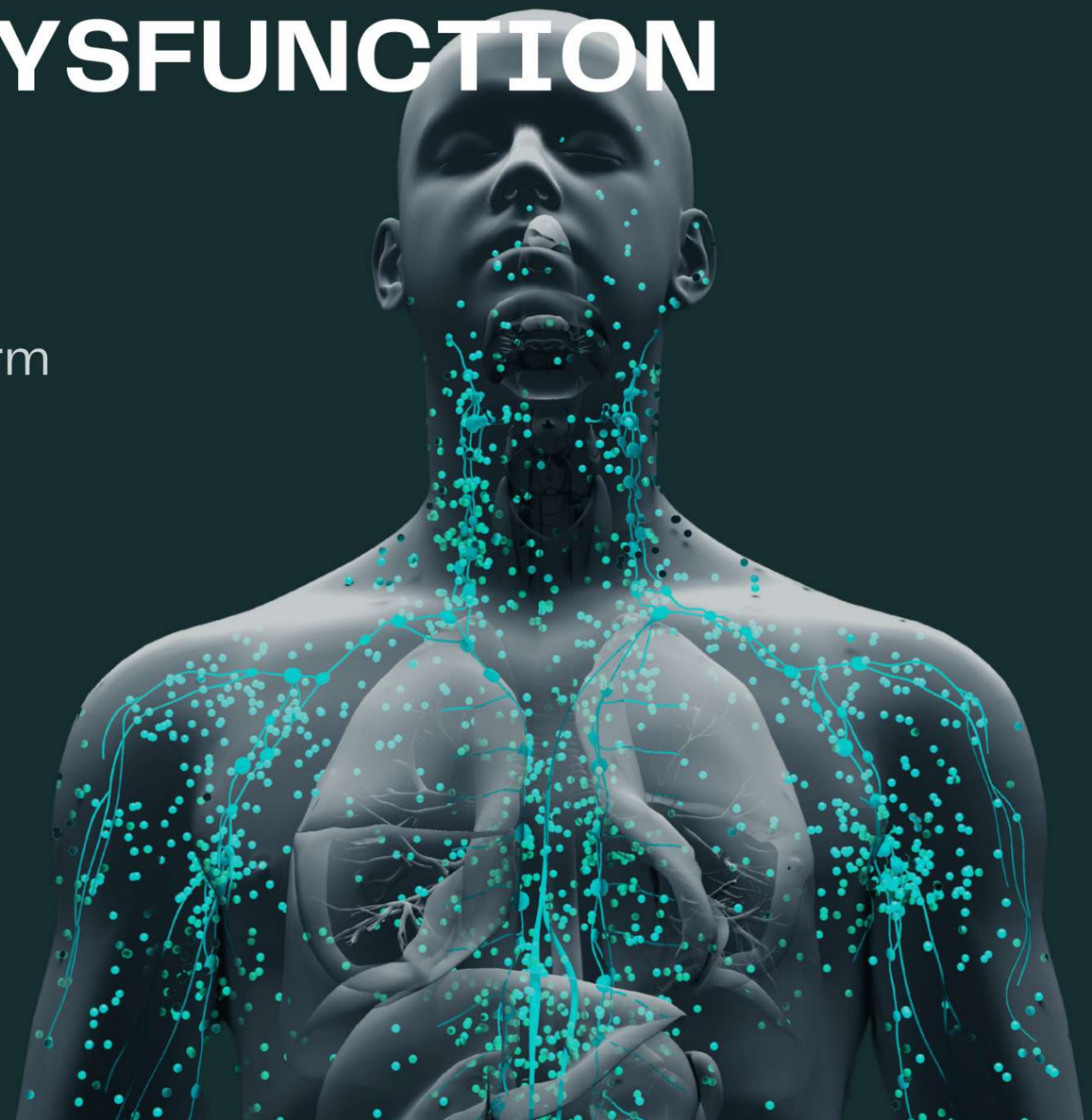
CANCER SURGERIES

- Lymph node removal
- Lymphedema can develop in any area where lymphatic drainage has been disrupted
- Common surgical regions:
  - pelvis/groin
  - neck
  - axilla
  - chest or abdomen (often overlooked)
- What difference does one node make?
- Surgical scarring and lymphatic re-routing

COMMON CAUSES & MECHANISMS OF LYMPHATIC DYSFUNCTION

RADIATION THERAPY AND FIBROSIS: THE HIDDEN AFTERSHOCK

- one of the most under-recognized long-term complications
- no external marker
- tissues become dense, inelastic, and less compliant
- often occurs **months or even years** after therapy is complete



COMMON CAUSES & MECHANISMS OF LYMPHATIC DYSFUNCTION

CHEMOTHERAPY & ITS SYSTEMIC EFFECTS

- Fluid Retention & Capillary Leak
- Tissue Fragility & Bruising
- Immunosuppression & Infection Risk
- Peripheral Neuropathy

COMMON CAUSES & MECHANISMS OF LYMPHATIC DYSFUNCTION

OTHER CAUSES OF LYMPHATIC DYSFUNCTION

Trauma

- injuries
- including non-cancer related surgeries
- local lymph vessels are destroyed
- extensive scarring

Infection

- chronically inflamed lymphatic vessels become damaged

COMMON CAUSES & MECHANISMS OF LYMPHATIC DYSFUNCTION

OTHER CAUSES OF LYMPHATIC DYSFUNCTION

- Vascular Causes
  - phlebolymphedema
  - May–Thurner Syndrome
  - Superior Vena Cava (SVC) Syndrome
- autoimmune and inflammatory conditions
- immobility and muscle pump problems
- obesity and metabolic overload
- central and systemic causes

COMMON CAUSES & MECHANISMS OF LYMPHATIC DYSFUNCTION

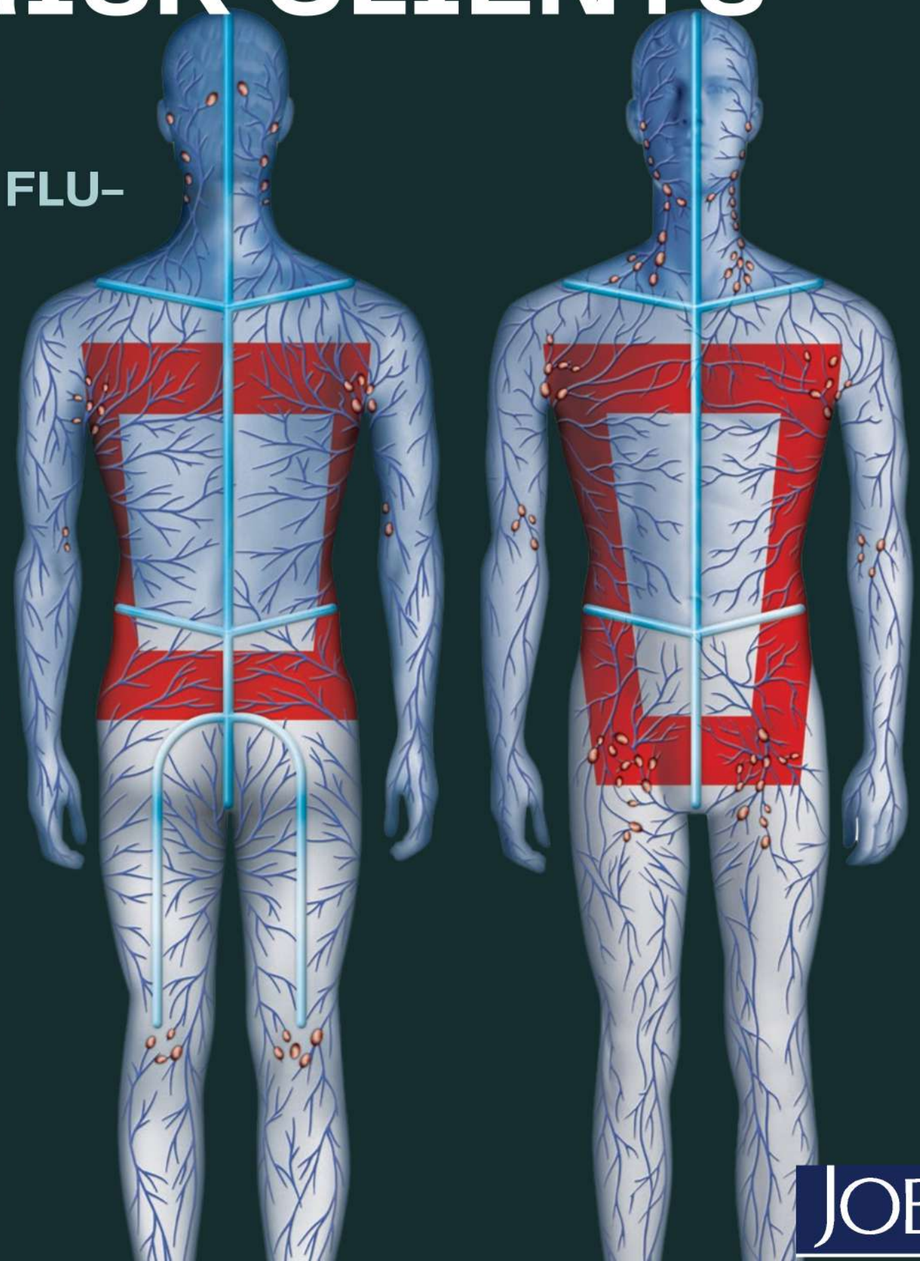
PRIMARY LYMPHEDEMA: THOSE BORN WITH A HIDDEN CHALLENGE

- Primary lymphedema is congenital or genetic
- Often begins subtly and early in life
- Key signs to look for
- Cancer treatment can unmask or worsen it
- These clients may have struggled for years without answers

ADAPTING FOR AT-RISK CLIENTS

“EVEN STROKES THAT FEEL GOOD IN THE MOMENT CAN RESULT IN DELAYED SYMPTOMS — SWELLING, FLU-LIKE MALAISE, OR FATIGUE HOURS LATER”

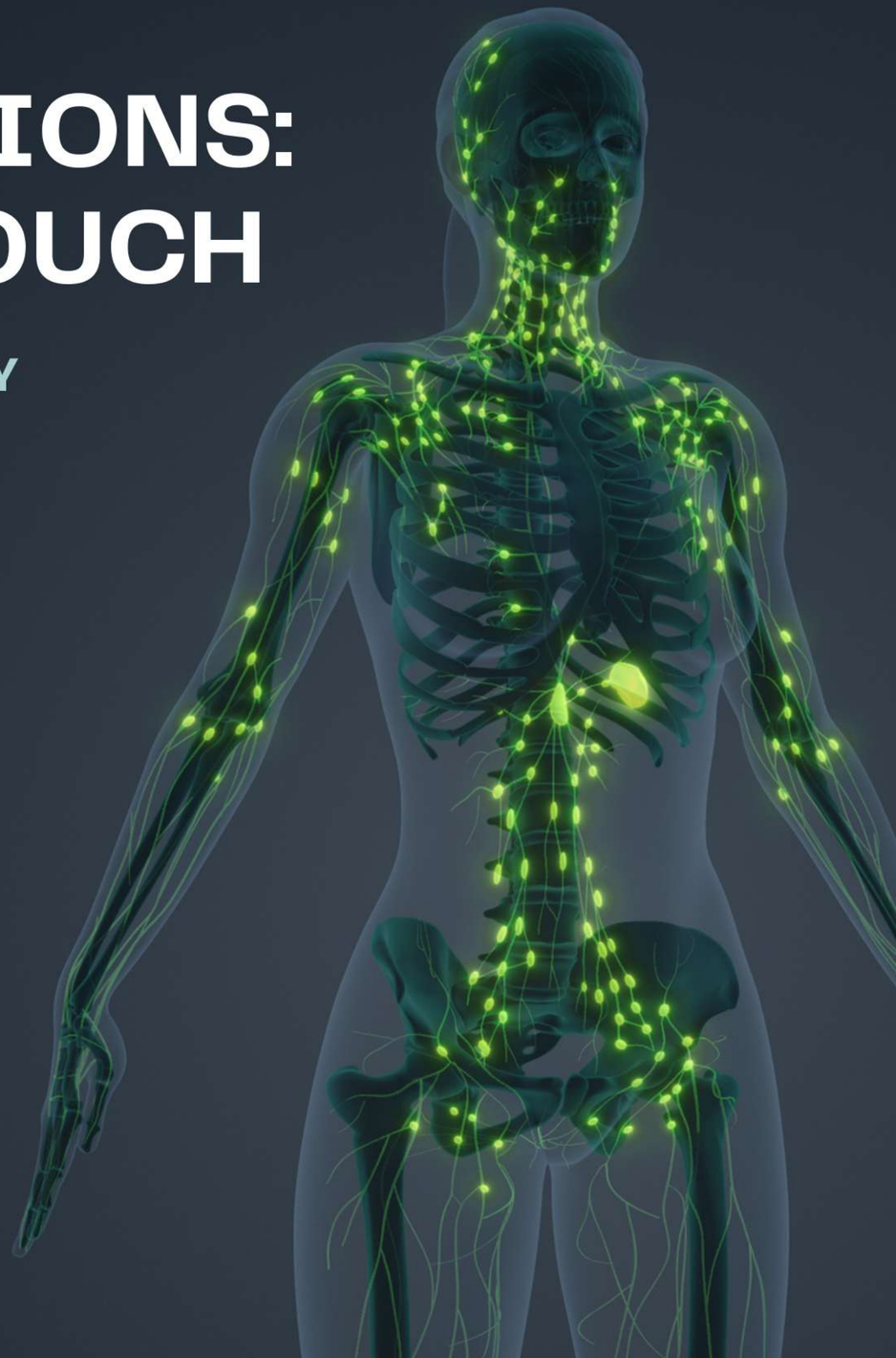
- Session Preparation
  - Pressure
  - Site
  - Positioning
- Carry a map in your head – know your watersheds
- Modify techniques for lymphatic vulnerability
  - Direction
  - Sequence
  - Duration
- Scope of Practice



CONTRAINDICATIONS: WHEN NOT TO TOUCH

ABSOLUTE CONTRAINDICATIONS – REFER IMMEDIATELY

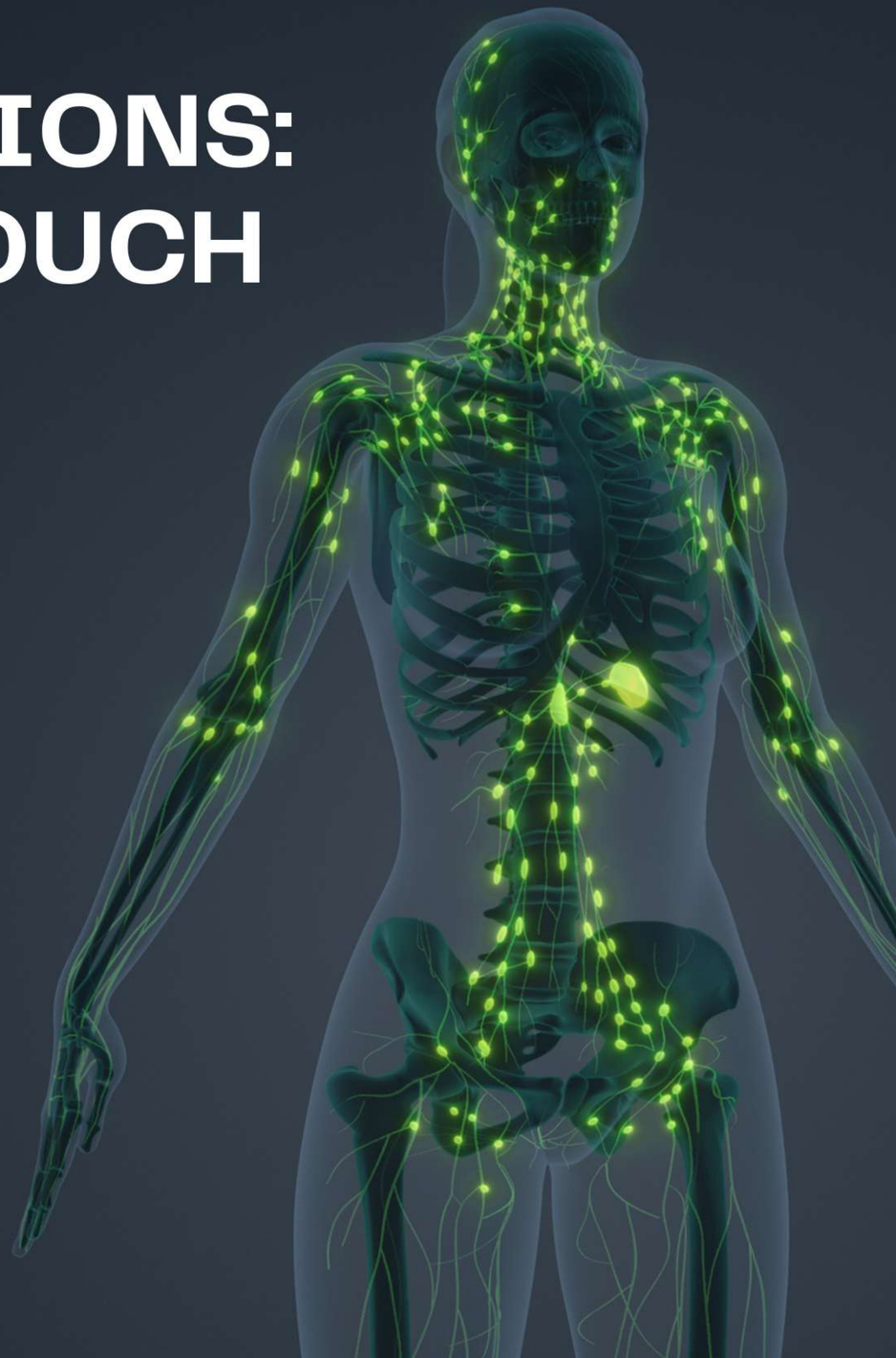
- Unexpected temperature changes
- Discoloration
- Swelling that is sudden, painful, red, or hot
- Skin that appears tight, shiny, or blistered
- Symptoms such as fever, chills, or flu-like fatigue
- Pain or tenderness
- Fatigue/muscle cramps in affected extremity
- Unexplained shortness of breath
- Acute cardiac or renal conditions
- Document your decision without assumptions



CONTRAINDICATIONS: WHEN NOT TO TOUCH

OTHER CONTRAINDICATIONS – MODIFY OR REFER

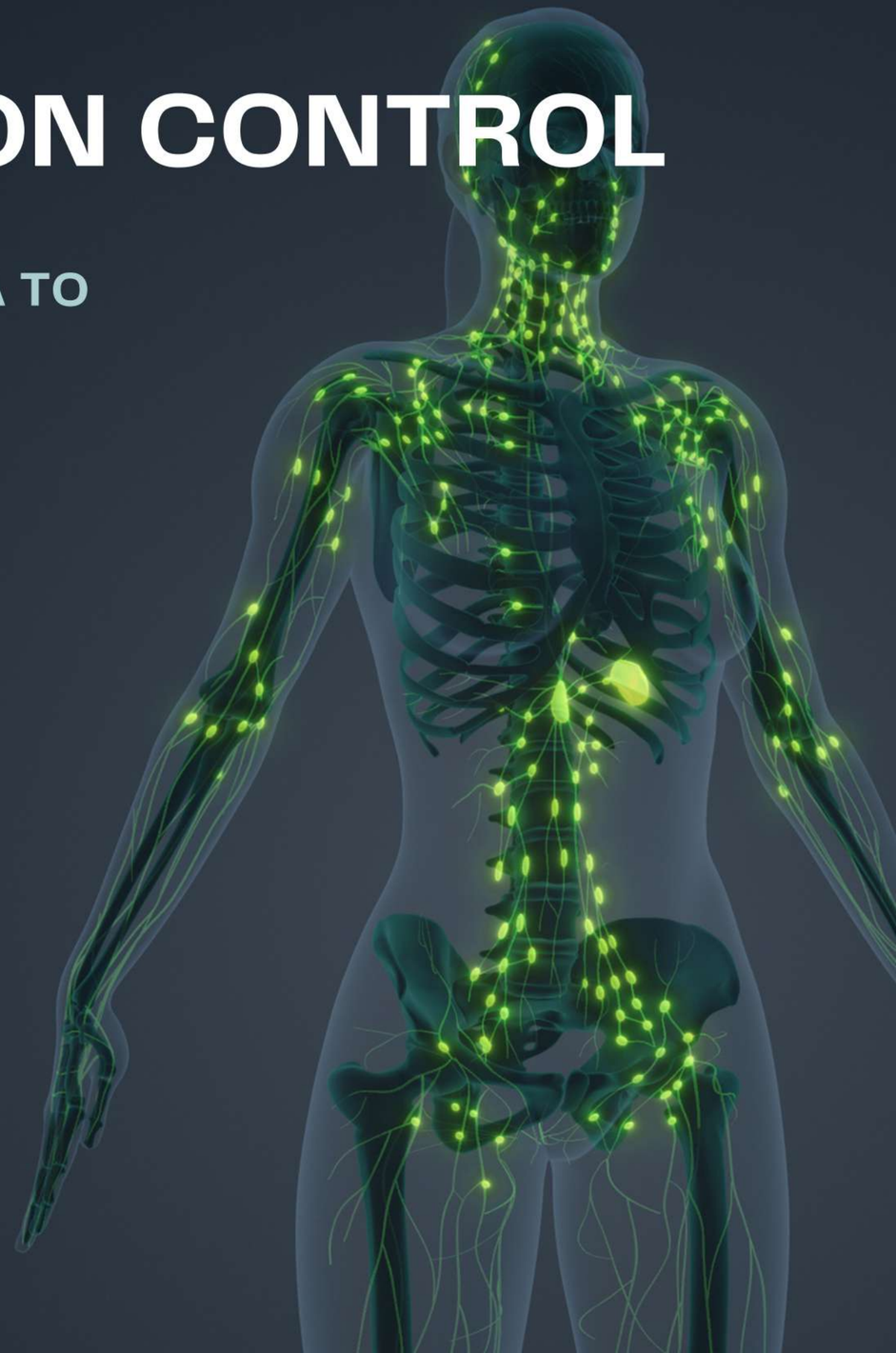
- Thickened, fibrotic, rope-like cords
- Papillomas, ulcers, skin breakdown, weeping wounds
- Radiation-induced skin changes in texture, color or elasticity
- Choosing not to treat is not a shortcoming — it's an act of clinical integrity



HYGIENE AND INFECTION CONTROL

EVEN THE GENTLEST TOUCH CAN INTRODUCE BACTERIA TO COMPROMISED TISSUES

- Signal the start and the end of every session with a 20–30 second hand wash
- Use clean linens, sanitized tools, and disinfected surfaces between each client
- Do not treat clients if you are unwell
- Check your own skin health
- Wear gloves



SUMMARY

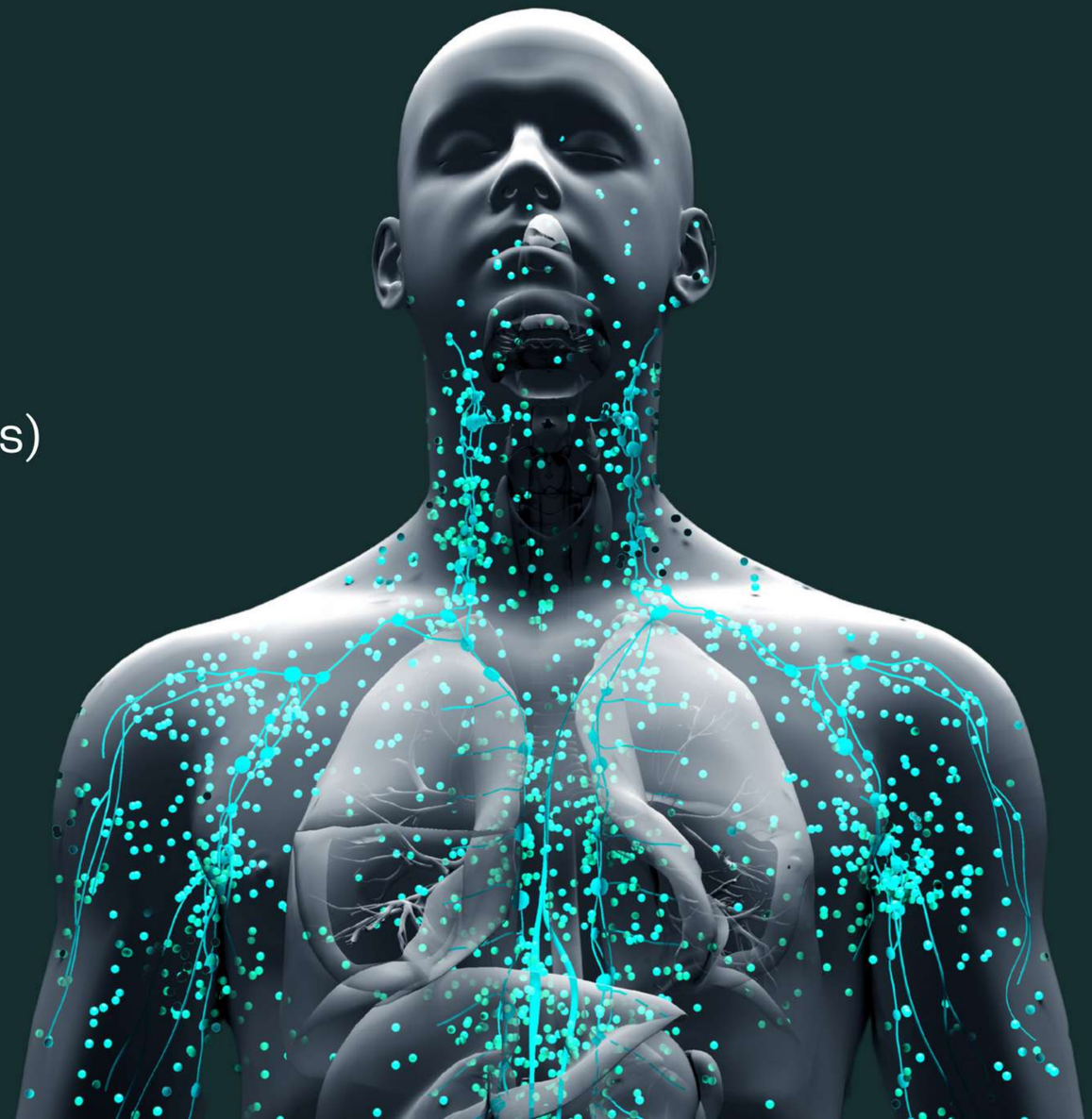
A MOMENT OF SELF-REFLECTION

- It’s our ethical and legal obligation to know:
  - The laws and regulations that govern our license
  - The boundaries of our scope of practice
  - And the limits that come with our own education, experience, and training
- Each of us must pause and ask ourselves:
  - What am I truly comfortable treating?
  - What do I understand well
  - What lies beyond my current training?
  - Where is my line, and how will I respond?

COLLABORATE

HAVE A NETWORK READY

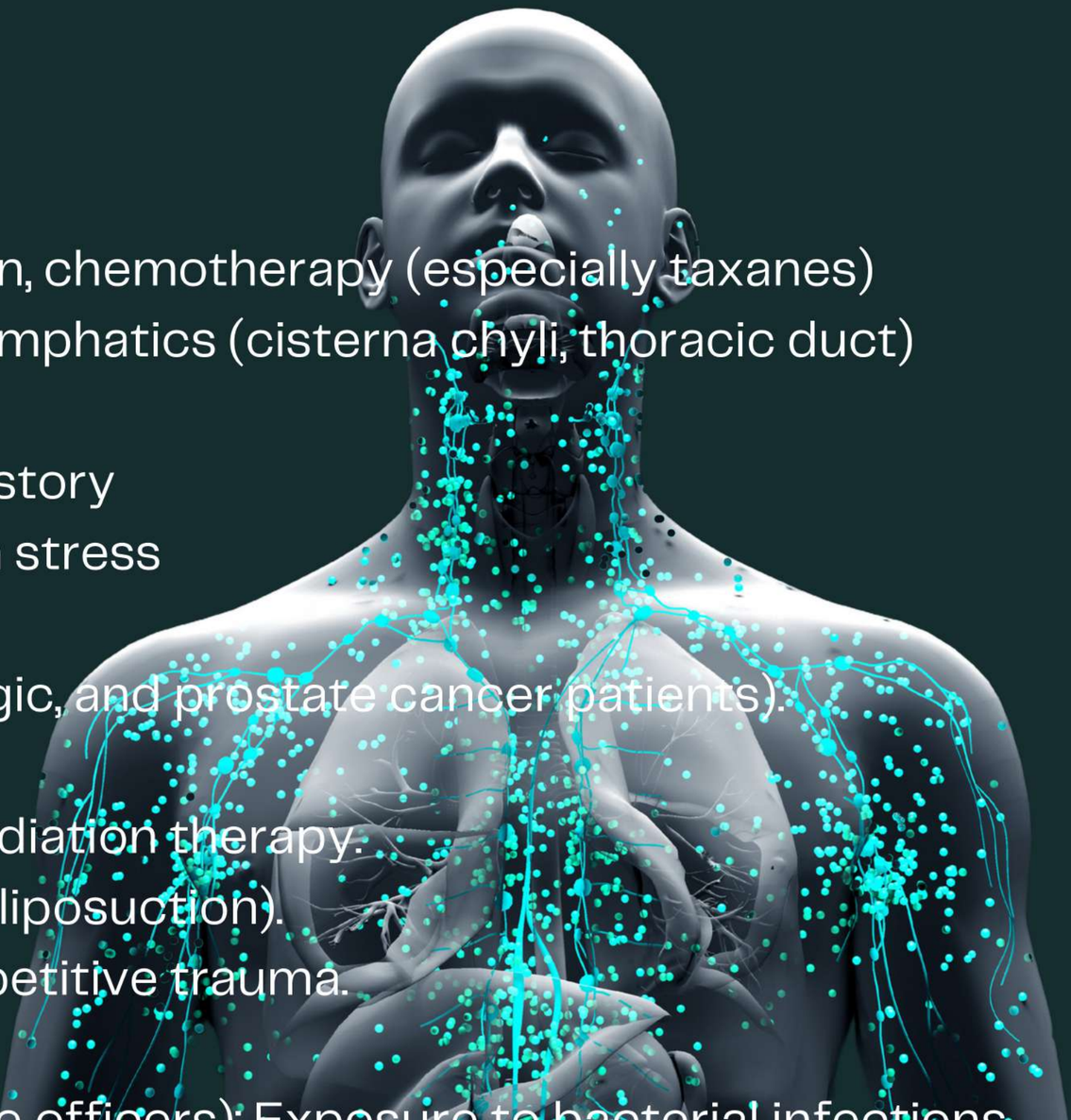
- Oncology care team
- Certified Lymphedema Therapist (CLT)
- Primary care or dermatology (for skin issues)
- S4OM Preferred Provider network



THANK YOU

RECOGNIZING RISK FACTORS

INSIGHT



Key Points

- Breast cancer: lymph node removal, radiation, chemotherapy (especially taxanes)
- Abdominal/pelvic cancers: disrupt central lymphatics (cisterna chyli, thoracic duct)
- Obesity: compresses lymph vessels
- Surgical scars, implants, trauma, infection history
- Lifestyle: low movement, poor nutrition, high stress

Who is most at risk?

Cancer survivors (post-mastectomy, gynecologic, and prostate cancer patients).

Individuals with chronic venous insufficiency.

People who have had lymph node removal or radiation therapy.

Post-surgical patients (e.g., cosmetic surgeries, liposuction).

Sedentary occupations or those exposed to repetitive trauma.

Occupations at Highest Risk for Lymphedema:

First responders (firefighters, paramedics, police officers): Exposure to bacterial infections