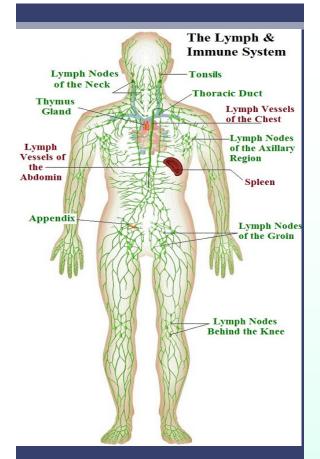
LYMPHEDEMA & CHRONIC SWELLING



SWELLING SOLUTIONS LYMPHATIC HEALTH CENTER

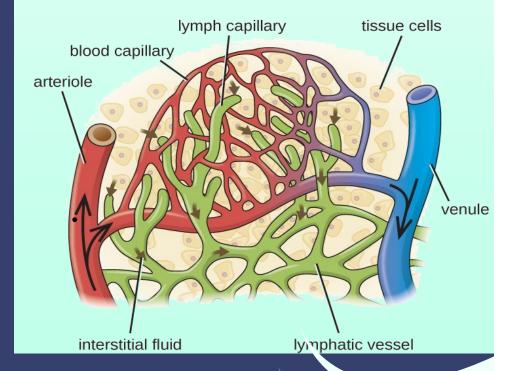
YOUR PARTNER IN CHANGE



- LYMPHATIC SYSTEM BASICS
- WHAT CAN CAUSE LYMPHATIC PROB-LEMS?
- WHAT IS LYMPHEDEMA?
- SIGNS AND SYMPTOMS
- HOW CAN WE HELP LYMPH FLOW?
- TESTS USED TO HELP DIAGNOSE
 LYMPHEDEMA
- TREATMENT FOR LYMPHEDEMA

THE LYMPHATIC SYSTEM: a waste and water management system

Our bodies are amazing! We all know about our blood circulatory system, but most of us are unaware of the life sustaining & disease prevention roles our lymphatic system plays 24 hours a day - 7 days-a-week! While the lymphatic system is part of our immune system, it also plays a vital role in picking up excess fluid and wastes from the tissues. Good substances such as oxygen, nutrients, and fluid are brought to the tissue cells from the blood circulatory system (pictured in red). The cells utilize these substances and produce waste products. Substances, not removed from the tissue spaces by the venous system (pictured in blue), such as protein, bacteria, viruses, metabolic waste products and excess fluid are picked up by the finger-like projections (in green) of the initial lymphatic capillaries. Removing fluid, wastes and proteins from the tissues is critical in the prevention of edema and infection. The lymphatic channels travel deeper into the body and the fluid, now called lymph, passes through lymph nodes filled with cells that fight cancer and infection, subdue unwanted particles and clean the lymph fluid. Eventually, the "filtered" fluid is returned to the blood at the neck veins. I like to call this area the "main drain".



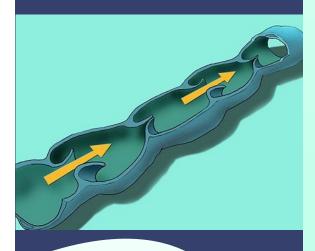
FUNCTIONS OF THE LYMPHATIC SYSTEM

Transportation of fluid, fats and proteins and removal of wastes and germs are important functions of the lymphatic system

THE LYMPHATIC SYSTEM IS ESSEN-TIALLY A WASTE AND WATER MAN-AGEMENT SYSTEM

KEEP YOUR LYMPH FLOWING BY:

- * MOVEMENT
- * BREATHING
- * EATING WELL
- * STAYING "REGULAR"





HOW DOES THE LYMPHATIC SYSTEM WORK?

The lymphatic system is not a closed circuit like our blood circulatory system. It is a one-way system beginning in the tissue or organs and returns filtered fluid back to the blood. The larger lymph vessels have muscles that are given signals by nerves to pump lymph from one section to another and propel fluid through the system. The main functions of the lymphatic system are to:

- Return fluid and proteins back to the blood stream and maintain the body's fluid balance
- Transport digested fats from the intestinal tract so the body can use them to remain healthy
- Pick up and take bacteria, viruses and other unwanted particles to lymph nodes where they are neutralized by infection fighters

WHAT CAN YOU DO TO HELP LYMPHATIC FLOW?

- * <u>MUSCLE CONTRACTION</u>: The lymphatic vessels run close to muscles and when you move the muscle contraction gives the lymph vessels a squeeze to help propel the fluid along. Exercise is important to keep the fluids moving!
- * <u>DEEP BREATHING</u>: The movement of the main muscle of breathing (the diaphragm) and the expansion of the rib cage helps to clear the middle section of the body (I call it the core) in order to help the limbs drain properly.
- * <u>KEEP YOUR CORE FREE OF CONGESTION</u>: Try not to eat too many saturated fats (deep fried and greasy foods that have "bad fats") as this makes digestion harder and congests the core. Try to keep your bowel movements regular.

SWELLING OCCURS DUE TO:

- Structural problems with the vessels
- Volume of fluid is more than the system can take away
- Both of the above occur at the same time

LYMPHEDEMA IS A CHRONIC, PROGRESSIVE CONDITION OF SWELLING THAT AT PRESENT DOES NOT HAVE A CURE. IF TREATMENT BEGINS IN ITS EARLY STAGES, IT CAN BE MANAGED





WHAT HAPPENS TO CAUSE SWELLING?

Two problems can cause swelling in the tissues. One might cause swelling or you can have both occurring at the same time.

- 1. The vessels become damaged and cannot transport the fluids, proteins and wastes which causes swelling in the tissues.
- 2. The vessels are not damaged, but there is just too much fluid and waste to take away from the tissues. Fluid builds up in the tissues because it cannot be taken away fast enough.

Over time, if the vessels are not damaged as in #2, the build up of fluid and wastes causes an inflammatory reaction in the area that can damage vessels. Then you have number 1 and 2 occurring at the same time. Swelling that lasts greater than three months is called lymphedema.

LYMPHEDEMA

Lymphedema is a chronic, progressive condition of swelling that can occur in any body part but is most commonly seen in the arms or legs. It is not a well understood condition but causes physical impairments if left untreated that can also affect mental well-being. Two kinds of lymphedema are prevalent in Canada.

SECONDARY LYMPHEDEMA: This term is used when lymph flow is disrupted by a known cause. Some causes of secondary lymphedema include:

- Surgery
- * Radiation
- * Lymph node removal
- Cellulitis (infection in an area of tissue)
- Trauma (a more severe injury that damages vessels)

PRIMARY LYMPHEDEMA:

- Lymphatic vessels can be weak, absent in areas, or malformed
- Can be arise at birth, during puberty, pregnancy or may not occur until later in life.

THE LYMPHATIC SYSTEM IS ESSEN-TIALLY A WASTE AND WATER MAN-AGEMENT SYSTEM

SWELLI NG THAT COMES ON GRADU-ALLY IS USUALLY FELT BEFORE IT IS SFEN.

IF YOU HAVE SWELLING THAT SUD-DENLY APPEARS YOU SHOULD CON SULT YOUR DOCTOR.





Primary Lymphedema

Primary lymphedema is a condition where the lymphatic vessel formation during fetal life is not formed well. There may be missing vessels, weak vessels or malformed vessels. Many people will describe a gradual onset of swelling, usually seen in the leg without a known cause.

Primary lymphedema can be noted:

- At birth
- * During times of hormone changes such as puberty or pregnancy
- * Or not until later in life

LYMPHEDEMA SIGNS AND SYMPTOMS

SWELLING IS USUALLY FELT BEFORE IT IS SEEN. You may experience any of the following:

- * A feeling of fullness, achiness or heaviness
- * Pain: not everyone feels pain, but increased pressure from fluid on the sensory nerves can create an uncomfortable feeling
- * Watches, rings or bracelets do not fit the same
- * Shoes do not fit the same
- * Clothes do not fit the same
- * Women who have had cancer treatment may feel a fullness or the sensation of having a ball in the armpit region. There may be chest or breast swelling noted
- * As swelling increases you may see it anywhere in your arm or leg, it may indent when you press your finger into it. The swelling seems to go down overnight, but gradually returns as the day goes on.
- * Later stages involve skin and tissue changes and mobility problems

LYMPHEDEMA RESEARCH IS JUST IN ITS INFANCY STAGE

DIAGNOSIS CAN INCLUDE:

- * HISTORY
- * PHYSICAL EXAM
- * LIMB MEASUREMENT
- RECOGNIZING CONDITIONS
 THAT CONTRIBUTE TO
 LYMPHEDEMA
- * BIA MEASUREMENTS

SELF-MEASUREMENTS (tape measure)

- Palm/ Bridge of foot
- * Wrist/ Ankle
- 4 fingers below elbow/knee joint
- 4 fingers above elbow/knee joint
- * Top of arm/leg





GETTING A DIAGNOSIS OF LYMPHEDEMA

Lymphedema has not been well recognized or researched in Canada or globally in the past, but the last 15 years has seen great change in its recognition. The majority of research about lymphedema is about breast cancer-related lymphedema, a form of secondary lymphedema seen after breast cancer treatment.

The following tests can be done to identify either the function of the lymphatic system or detect fluid and tissue changes.

ASSESSMENT

- **1. PHYSICAL EXAM:** Your practitioner will examine the area that is swollen.
- **2. HISTORY OF SWELLING:** Your practitioner will ask you questions about your swelling. Be prepared to tell your practitioner:
- * How long have you had the swelling
- * Was there any event that occurred to cause the swelling
- Did the swelling come on suddenly or gradually
- * How does it feel? Full, painful, trouble with movement etc.
- * History of surgery, illness, trauma, travel or infection
- * Family history of swelling
- **3. CO-EXISTING CONDITIONS:** If you have heart problems, kidney problems, varicose veins/venous insufficiency, long-standing diabetes or are overweight, these can contribute to swelling
- **4. CIRCUMFERENTIAL MEASUREMENTS:** It is a good idea to have measurements of both limbs for comparison and as a baseline to compare in the future. See side panel for where to measure.
- **5. BIOIMPEDANCE ANALYSIS:** A BIA test can tell you many things about your health, but also can detect fluid levels in the body

SOMETIMES GETTING A DIAGNOSIS OF LYMPHEDEMA MEANS HAVING TESTS THAT RULE OUT OTHER ACUTE CAUSES OF SWELLING

DIAGNOSIS CAN INCLUDE:

- * HISTORY
- * PHYSICAL EXAM
- * LIMB MEASUREMENT
- RECOGNIZING CONDITIONS
 THAT CONTRIBUTE TO
 LYMPHEDEMA
- * BIA MEASUREMENTS
- * BLOOD TESTS
- * ULTRASOUNDS
- * LYMPHOSCINTIGRAPHY
- * NIR FLUOROSCOPY





GETTING A DIAGNOSIS OF LYMPHEDEMA

The gold standard test that looks at the lymph vessels and how the fluid is moving through them is called a **lymphoscintigraphy**. Unfortunately, there are very few doctors that have a specialty in the lymphatic system or many doctors that can read the results so this test is not widely available. The good news is that there are some other tests that identify fluid and/or changes in the tissues. Lymphoscintigraphy involves the injection of a tracer dye just under the skin of the area being tested. It can detect slow or absent lymph flow and any areas of backflow into the tissue spaces. It shows the main, larger lymph vessels and lymph nodes within the superficial tissues. Lymphoscintigraphy identifies lymphatic abnormalities in later stages of lymphedema. NIR (near infra-red) Florescence can detect early stage lymphedema, but is also not widely available.

TESTS TO RULE OUT MORE SERIOUS CAUSES OF SWELLING

The diagnosis of lymphedema is usually based on your history of swelling and physical exam. There are a few things that need to be ruled out first as causes of swelling that require attention.

- 1. KIDNEY & LIVER FUNCTION: usually a blood test can tell how your liver and kidneys are functioning
- HEART FUNCTION: Swelling can occur in the legs if your heart is not functioning as it should (congestive heart failure). Your doctor may send you for an echocardiogram (ultrasound of heart) or other heart function testing to rule this out.
- 3. BLOOD CLOT OR OBSTRUCTION: you may be sent to have a doppler ultrasound of your leg or arm to check for a blood clot (DVT). This is also a good test to check for venous insufficiency in the leg or an obstruction in the armpit that could be contributing to leg swelling.

SOMETIMES GETTING A DIAGNOSIS OF LYMPHEDEMA MEANS HAVING TESTS THAT RULE OUT OTHER ACUTE CAUSES OF SWELLING

DIAGNOSIS CAN INCLUDE:

- * HISTORY
- * PHYSICAL EXAM
- * LIMB MEASUREMENT
- RECOGNIZING CONDITIONS
 THAT CONTRIBUTE TO
 LYMPHEDEMA
- * BIA MEASUREMENTS
- * BLOOD TESTS
- * ULTRASOUND
- * MRI
- * CT



OTHER TESTS THAT HELP TO DIAGNOSE LYMPHEDEMA

- 1. Detecting fluid that is sitting in the tissue spaces that is not removed by the lymphatic vessels can be seen with the following tests:
- Magnetic resonance imaging (MRI)
- Computed tomography (CT)
- Some types of ultrasound (US)

MRI, CT and US can show the presence of fluid in the tissues, but it cannot tell the cause. Your history and physical examination together with these tests can give your health practitioner a clearer understanding that may rule out other causes and lead to a lymphedema diagnosis.

LONG-TERM EFFECTS OF LYMPHEDEMA

- 1. **Increased size of limb:** If left untreated, the size of the limb can become very large and affect walking, climbing stairs and the joints of the limb.
- 2. **Increased discomfort:** Pain can become an issue as the limb gets bigger
- 3. **Skin changes:** As the fluid builds up in the tissues, the skin does not get the nutrition it needs so it can become dry and flakey, it can crack and small bumps tend to form on the skin.

LYMPHEDEMA IS A CHRONIC,
PROGRESSIVE CONDITION THAT IS
MANAGEABLE IF TREATED SOONER
THAN LATER

CELLULITIS: An infection within the tissues that presents with:

- REDNESS
- ◆ HEAT
- PAIN
- INCREASED SWELLING

Contact your doctor if these signs and symptoms occur.



LONG-TERM EFFECTS OF LYMPHEDEMA

- **3. Skin changes continued:** The skin can also change colour as proteins build up in the tissues.
- **4. Leakage of fluid:** when the fluid has no where else to go it can start to leak out of the skin (lymphorrhea). This can cause skin breakdown and wounds.
- **5. Infection:** When fluid builds up in the tissue spaces the environment changes to become more susceptible to infection.
- 6. Decreased ability to find clothes/shoes that fit
- 7. Mobility and balance problems
- 8. Decreased self-esteem and decreased mental well-being

LYMPHEDEMA TREATMENT

Many people develop swelling and don't think too much about it until it causes discomfort or interferes with their life. Lymphedema is best treated in its earlier stages when the limb is more readily able to reduce. The tissue changes that occur over time become fixed with little chance of size reduction.

The aim of treatment is to first reduce the size of the limb and then to maintain that size in order to prevent the long-term effects of untreated lymphedema from occurring.

THE REDUCTION PHASE OF TREAT-MENT IS NOT EASY......IT TAKES COMMITTMENT









TREATMENT PHASES

Initially, you would spend time learning about lymphedema and how to manage it with a certified lymphedema specialist. The goal is to get you as independent as possible in a timely manner. There are two phases to lymphedema treatment.

- 1. THE REDUCTION PHASE (aka: intensive phase): This phase involves combining exercise, skin care, lymphatic drainage massage and compression. In this phase of treatment compression is worn 23 of 24 hours a day or in some cases, for 2-4 days straight. In this phase you are learning and being monitored by your therapist so visits to see your certified therapist will be more frequent. This stage can last for up to six weeks as you reduce and then continue to wear your compression while you wait for your maintenance garment. Depending on the type of compression you choose you could see your therapist twice a week or only once. Your therapist will give you your options and you can mutually agree on what is best for you taking into consideration your lifestyle and abilities. THE REDUCTION PHASE IS NOT EASY. It takes commitment by you and perhaps some schedule, wardrobe and lifestyle changes.
- 2. **THE MAINTENANCE PHASE:** This phase begins when you have received your maintenance compression garment. Maintenance garments are worn from within an hour of getting up in the morning until bedtime. Maintenance also includes exercise, skin care and lymphatic drainage massage. Your certified therapist will provide you with some exercise and movement suggestions that benefit the lymphatic system, teach you about skin care and how to do your own lymphatic drainage massage. Your therapist in this stage is now considered a resource for you. You have the tools and knowledge to maintain your swelling.



VARIOUS CHANGES THAT OCCUR IN OUR BODY OVER TIME MAY REQUIRE RE-ENTRANCE INTO THE REDUCTION PHASE

ANY SUDDEN ONSET OF SWELLING SHOULD BE REPORTED TO YOUR DOCTOR

THE REDUCTION-MAINTENANCE CYCLE

Once the you have completed the reduction phase and enter into the maintenance phase you may think "that's it, I'm done and don't have to go through that again."

WELL.....MAYBE NOT

- * Development of arthritic conditions
- * Aging-related changes to the lymphatic system
- * Injuries
- * Surgeries
- * Development of venous insufficiency in legs or a blood clot
- * Infection/cellulitis event

These are just a few things or events that can flare up lymphedema which may require that you enter into the reduction phase again to get control of your swelling.

WHAT ELSE CAN INCREASE SWELLING

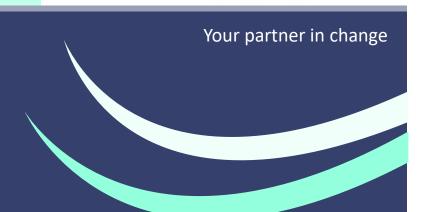
- * Heat and humidity
- * Hot tubs with higher heat settings or saunas
- * Cabin pressures on airplane flights greater than 3 hours
- * Vigorous exercise that you are not used to doing

SUDDEN ONSET OF SWELLING SHOULD ALWAYS BE CHECKED BY YOUR HEALTHCARE PROVIDER.

RESOURCES FOR YOUR INFORMATION

- CANADIAN LYMPHEDEMA FRAMEWORK: www.canadalymph.org
- 2. ONTARIO LYMPHEDEMA ASSOCIATION: www.lymphontario.ca
- NATIONAL LYMPHEDEMA NETWORK: www.lymphnet.org
- 4. LYMPHATIC EDUCATION & RESEARCH NETWORK: www.lymphaticnetwork.org
- 5. YOUTUBE VIDEOS FOR EXERCISE AND LYMPHEDE-MA: search for cancer rehab PT
- 6. NUTRITION AND LYMPHEDEMA: See Jean LaMantia's website: www.jeanlamantia.com





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