

SIGVARIS

Lymphedema

Information sheet
and exercises



SIGVARIS MEDICAL

Lymphedema and its cause

Lymphedema may manifest as swelling of one or more limbs and may include the corresponding quadrant of the trunk. Swelling may also affect other areas, eg. head, neck, breast or genitalia. Lymphedema is the result of accumulation of fluid and other elements (eg. proteins) in the tissue spaces due to an imbalance between interstitial fluid production and transport. It arises from congenital malformation of the lymphatic system, or damage to lymphatic vessels and/or lymph nodes.

Lymphedema is a chronic condition that is not curable at present, but may be alleviated by appropriate management; if not treated it can progress and become difficult to manage.

How many patients are affected?

At birth, around one person out of 6'000 will develop primary lymphedema; the overall prevalence of lymphedema/chronic edema has been estimated as 0.13-2%. In developed countries, the main cause of lymphedema is widely assumed to be treatment for cancer.

However, it appears that about a quarter to a half of affected patients suffer from other forms of lymphedema, eg. primary lymphedema and lymphedema associated with poor venous function, trauma, limb dependency or cardiac disease.

Classification of lymphedema

Lymphedema is classified as primary or secondary.

- **Primary lymphedema** is thought to be the result of a congenital abnormality of the lymph conducting system. Many apparent secondary lymphedema have an underlying primary component (i.e. a weakness in lymphangion pump pressures), so it does not take much, even a single node removed to precipitate the lymphedema.
- **Secondary (or acquired) lymphedema** results from damage to the lymphatic vessels and/or lymph nodes, or from functional

deficiency. Infections from insect bites, serious wounds or burns can cause lymphedema when they damage or destroy lymphatics. Any type of surgery, serious injury, or radiation for cancer treatment can also cause the onset of the disease. It may also be the result of high output failure of the lymphatic circulation. Including Lymphoedema related to Obesity where there is an overburdening of the lymphatic and venous system. The lymphatic system itself does not need to be defective for this to occur.

What are the risk factors?

The true risk factor profile for lymphedema is not known. There may be many factors that predispose an individual to developing lymphedema or that predict the progression, severity and outcome of the condition.

How to minimize the risk of developing lymphedema?



Maintain optimal body weight



Undertake exercise/ movement and limb elevation (see pages 6-9)



Avoid tight underwear, clothing watches and jewellery



Use insect repellent and mosquito nets in lymphathic filariasis endemic areas



Wear comfortable supportive shoes



Wear compression garments if prescribed or recommended



Follow a balanced diet (see pages 4-5)



Avoid exposure to extreme cold or heat

Dietary Management

Dietary management is often necessary if you have been diagnosed with lymphedema. In addition, if you are also overweight, and that is adding to your lymphatic drainage problem, then dietary assistance is required.

In some of the middle and late stages of lymphedema and when you are overweight, there are accumulations of fatty tissues below the skin (but above the muscle) which can reduce the working of the lymphatic system and so a vicious cycle of poor lymphatic drainage and further fat deposits may begin.

There is an increasing body of information and evidence about the positives of anti-inflammatory diets vs. the negative effects of pro inflammatory ones. A leading exponent of this in 2015 is Dr. Karen Herbst and her RAD (Rare Adipose Disorder) diet recommendations.

Goals of dietary management

The goals of dietary management are to aim to:

1. Consume a balanced, low fat, low sugar, low salt, high fibre, high fluid intake diet.
2. Reduce the load on the lymphatic system (especially that from the intestines).
3. Improve the functioning of the lymphatic system (especially that from the legs).

Strategies to reduce the load on and improve the function of the lymphatic system

The load on the lymphatic system can be reduced by:

1. Weight loss (if overweight): This may help reduce the external pressure on the delicate lymph collecting and transport vessels, allowing them to pump better. It will also mean less tissue from which the lymph fluids have to drain.

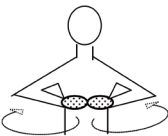
2. Reducing dietary fat intake (particularly Long Chain Fatty Acids / LCFA): This is because after LCFA have to be absorbed from the intestine by the lymphatic system. This increased load may mean lymph from other areas (usually the lower limbs) cannot drain away as well or that occasionally lymph fluid from the intestine finds its way in a reverse direction down into the limbs.

In some cases your Dietitian may advise you to substitute your fats with food high in Medium Chain Fatty Acids (MCFA). This is because MCFA (and SCFA / Short Chain Fatty Acids) can be absorbed from the intestine by the blood vessels, and so do not put additional load on your lymphatic system.

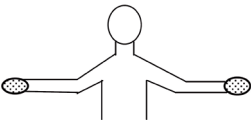
If you would like more information on these fatty acids or the RAD diet of Dr. Karen Herbst please contact your SIGVARIS business partner.

General instructions for deep breathing

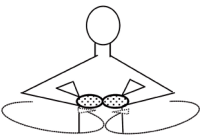
Each cycle should take about 10 seconds:



Starting position: Person starts taking a deep breath in whilst moving the arms slowly and gently outwards.



When the arms reach full extension the breath is held in. All the arm muscles are then tightened.



The arm muscles are relaxed and the arms move back to the starting position whilst the breath is exhaled out.

Helping to improve the lymph flow from your arms

This exercise may help improve lymph flow from your arms and help reduce the size of your arms. Perform this exercise 5 times on each of 5 occasions per day: When you wake up, at lunch time, at afternoon tea, after dinner and just before you go to bed. Please be aware that it works better if you leave your arm sleeves on. The most important ones are when you wake up and when you go to bed as this will help clear accumulated fluids from your tummy and chest area and allow the lymph fluid to better drain from your arms.

How to perform the exercise:

1. Sit, Stand or lie down. Point your fingers towards your chest (breast bone) – see page 5.
2. Slowly open your arms out (as you would welcome a friend) and as you do breathe in deeply
3. While still breathing in open your arms out as much as possible and put your hands back as far as you can – ensuring that you stretch and tighten your muscles in your hands and forearms and upper arms.
4. Hold your arms open (while holding your breath) for 3 - 4 seconds.
5. Relax your muscles of your hands and arms and while slowly breathing out as much as you can, return your arms to the position as in point 1 where your fingers are again pointing towards your chest.
6. The whole exercise should be done slowly and each cycle should take about 10 seconds. Repeat this exercise 5 times.

Helping to improve the lymph flow from your legs

This exercise may help improve lymph flow from your legs (when conducted after leg paddling). Perform this exercise 5 times on each of 5 occasions per day: When you wake up, lunch time, the afternoon, about 2 hours after dinner and just before retiring. It works better if you leave your compression stockings on for the evening exercise. Take them off when finished. The most important ones are when you wake up and when you go to bed as this should help clear accumulated fluids from your tummy and chest area and allow the fluids to better drain from your legs.

How to perform the exercise:

1. Put your legs up (on a chair or lie on bed) and paddle your legs gently/slowly for about 30 seconds (ankle circles or similar movement is ok).
2. Then stand or sit: Point fingertips towards the centre of your chest – see page 5.
3. Slowly open your arms out (as you would welcome a friend) and as you do breathe in deeply (take 5 seconds to do this).
4. While still breathing in, open your arms out as much as possible and put your hands back as far as you can – ensuring that you stretch and tighten your muscles in your upper and lower arms.
5. Hold your arms open (while holding your breath) for 2-3 seconds.
6. Relax your muscles of your hands/arms and while you slowly breathe out as much as you can, return your arms to the position as in point 2 where your fingers again point towards your chest.
7. The whole exercise should be done slowly and each one should take about 10 seconds. Repeat this exercise 5 times.
8. After you have done these, put your legs up, paddle them for about 30 seconds as you did in the beginning and leave your compression or support stockings on.

Helping to manage your arm lymph- edema: self or partner massage

Self-massage works on an «empty bucket» principle, so you have to make the upper buckets (ie: the opposite armpit and upper arm) empty before you can move fluid in to them from the hand and forearm.

How to perform the exercise:

1. Start by taking some deep breaths – see page 5 (x 5).
2. Massage opposite armpit, using light circular motions (x 5)*.
3. Using the whole flat of your hand, sweep from the affected armpit across the chest (under-neath the collarbones and to the unaffected armpit – imagine it is like sweeping water off the surface of a floor (x 10).
4. Now sweep the upper arm. Start on the outer arm sweeping from the elbow up and over the shoulder (x 5).
5. Now sweep the inner aspect of the upper arm, from elbow up and over the shoulder (x 5).
6. Move to the forearm. If the hand and fingers are swollen you can incorporate them into the whole sweeping movement, sweeping from the fingers right up to and over the elbow. Again, start on the outer aspect of the forearm.
7. Once the outer aspect of the forearm is done, repeat on the inner aspect of the forearm and fingers – if required (x 10).
8. If the hand and fingers aren't swollen, start on the back of the hand and sweep up and over the elbow (x 10).
9. Work back up the arm now, again sweeping the outer and inner upper arm from the elbow, up and over the shoulder (x 10 for outer and inner aspect).
10. To finish, sweep from the affected armpit to the unaffected armpit (underneath the collar-bones) (x 10).

* If you have had significant radiotherapy of injury to the collarbone area, instead of moving the fluid to the opposite armpit you can stimulate the groin (on the same side as the affected arm) and sweep the fluid downwards from the affected armpit to the groin. You can also stimulate the pathways along the back (along the upper shoulders) by using a towel and rubbing it back and forth.

Helping to manage your leg lymph-edema: self or partner massage

The following program including deep breathing, thoracic and abdominal clearance and a range of gentle sweeping strokes over the legs (starting most proximally) is aimed at emptying the more proximal parts of the lymphatic system first so that lymph from the more distal areas can move into these emptied areas. The idea and philosophy behind this is that if you have a full bucket of water you cant put any more into it with out first emptying it. That is what this combination of breathing, abdominal presses and gentle sweeping strokes is aiming to facilitate.

How to perform the exercise:

1. Start by taking some deep breaths – see page 5 (x 5).
2. Deep abdominal presses (x 5).
3. Sweep up from the hip line over the waist – front sides and back (x 5 - 7).
4. Sweep from the outer thigh over the hip (x 5 - 7).
5. Sweep from the inner thigh towards the groin (x 6 - 8).
Make 3 or 4 lines between the inner knee and the groin.
6. Continue to sweep occasionally over the hip to the armpit (x 3).
7. Many small strokes on the inner knee and behind the knee (x 7 - 9).
8. Sweep from the ankle to the knee (x 5 - 7).
9. Many small strokes along the Achilles tendon (x 7 - 9).
10. Stroke the foot from the toes to the ankle (x 5 - 7).
11. Repeat 8, 7, 5, 4 and 1 (x 2).

Warm down slowly after the exercises

As a consequence of any exercise or activity there is generally an increased demand of the exercised muscles for more oxygen and more nutrients. The former in particular require an increased delivery of blood to the exercised area and often the whole body. This enhanced flow and dilated vessels can mean an increased local pressure even in the smaller blood vessels and possibly in the capillary beds. This means an increased load on the lymphatic system.

This enhanced flow though and increased tissue oxygen and nutrient demand may occur for some time after the activity has finished. You may know its still occurring by noticing an increased heart rate or breathing rate. If you notice this and you have a lymphatic system whose function is compromised then its wise to undertake «warm down» activities generally ones which still involve muscle movement but increasingly gentle and small range. This activity means there is still tissue pressure variation and a loading of the lymphatic system and the removal of lymph and its contents from the exercised tissues.

Treatment of lymphedema

Lymphedema has different stages of development. Compression garments can be used as prophylaxis or as part of initial management in patients who have mild limb lymphedema. The main use of compression garments is in the long-term management of lymphedema, usually following a period of intensive complex decongestive therapy. In general, the level of compression used to treat lymphedema of the upper limb is lower than that required for lower limb lymphedema.

Some patients – especially those who are post breast cancer treatment – may wear a low compression arm sleeve (15-20 mmHg) to minimize the risk of developing lymphedema. This may be worn in «high risk» times such as during flying, exercise, or overuse of the arm in consideration. For those patients who have mild edema, or well decongested extremities, an arm sleeve of 20-30mmHg might be appropriate. For a patient experiencing a high level of edema, there are several ways to achieve reduction by decongesting the limb, including manual lymphatic drainage and/or compression bandaging. The result can be sustained by compression garments.



Arm sleeves (preferential treatment with SIGVARIS MEDICAL arm sleeves: ADVANCE or TRADITIONAL)

Thigh stocking (preferential treatment with SIGVARIS MEDICAL compression stockings: TRADITIONAL or COTTON)



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Note

This brochure offers an excerpt of common and established knowledge based on medical teaching, current available studies and practical experiences. It does neither claim completeness of its contents nor definite relevance for all cases of lymphedema; patients should be evaluated by a physician and/or therapist on a case-by-case basis. All information provided herein is to be understood as recommendation and is intended to assist with therapeutic treatment options. The decision of the treatment is the responsibility of the treating physician and/or therapist.

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