

A patient guide to  
understanding and managing  
chronic swelling.



**Tactile**  
MEDICAL®

# What is lymphedema?

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Most of us know the circulatory system pumps blood from the heart to the rest of the body. But many people are not aware that the body has a second transport system — **the lymphatic system**. The lymphatic system consists of the tissues and organs that produce and store cells that fight disease and infection. They include the bone marrow, thymus and spleen, as well as the nodes and vessels that carry protein-rich fluid called lymph.

Lymphedema is a chronic, progressive condition in which excessive protein-rich fluids accumulate in the interstitium, the space between the cells. The condition occurs from impairment of the lymphatic system's ability to drain fluids and proteins from the spaces in between cells and transport this fluid, known as lymph, back to the circulatory system. A compromised or non-functioning lymphatic system places the patient at risk of medical complications including recurrent skin infections known as cellulitis.



Untreated lymphedema can make life miserable for those it affects. When patients receive a timely diagnosis and effective treatment, their health and quality of life improve.

**DR. THOMAS O'DONNELL**

CHIEF MEDICAL OFFICER AT TACTILE MEDICAL

# Types of lymphedema

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## Primary lymphedema

Primary lymphedema is often called congenital lymphedema, as it may be caused by congenital (hereditary) malformations of the lymphatic system. Although primary lymphedema is largely attributed to genetic causes, lymphedema is also classified as primary when no known cause can be identified. Some specific forms of primary lymphedema are:

- **Milroy's disease** (*congenital lymphedema*). This disorder begins in infancy and causes lymph nodes to form abnormally.
- **Meige's disease** (*lymphedema praecox*). This disorder often causes lymphedema around puberty or during pregnancy, though it can occur until age 35.
- **Late-onset lymphedema** (*lymphedema tarda*). Seen in patients with under developed

lymphatics. Usually begins after age 35 as existing lymphatics lose the ability to compensate over time.

## Secondary lymphedema

Secondary lymphedema is more common, affecting more than five million people in the United States. It is an acquired condition caused by a physical disruption to the lymphatic system. Main causes<sup>1</sup> include:

- Chronic venous insufficiency
- Cancer treatments (*removal of lymph nodes and/or radiation therapy*), benign or malignant tumor growth
- Accident, trauma or surgery
- Infection
- Obesity
- Filariasis (*infiltration by insects or parasites*)



PATIENTS SUFFERING FROM LYMPHEDEMA

# Symptoms

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- Unusual swelling (*edema*)
- Swelling of dorsum of foot
- Swollen and squared-off toes
- Heaviness or tightness in the affected limb
- Restricted range of motion
- Lymph fluid discharge from the skin (*lymphorrhea*)
- Skin changes such as:
  - “Orange peel” skin appearance
  - Thick, rigid skin (*hyperkeratosis and fibrosis*)
  - Bumpy wrinkling of the skin (*papillomatosis*)
  - Ulcerations of the skin
- “Ski jump” toenails (*hypoplastic and concave*)

## Stemmer’s sign: An indication of lymphedema in ten seconds or less

The Stemmer’s sign test results in either a positive or negative indicator for lymphedema. To perform it, simply try to pinch and lift a fold of skin at the base of the second toe or middle finger.

If you can pinch and lift the skin, the Stemmer’s sign is negative.

If you can’t, the sign is positive.

False positives are rare, however, a negative does not always rule out lymphedema.

# Treatment

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There is currently no cure for lymphedema. Untreated lymphedema can worsen, leading to increased swelling and pain, progressive hardening of affected tissues (*fibrosis*), and recurrent infections (*cellulitis*). Lymphedema can decrease mobility, dexterity, range of motion and the ability to perform daily activities. It also may significantly increase the cost of healthcare. However, effective management of symptoms is possible. Proper diagnosis of the condition is often critical to achieving effective treatment.

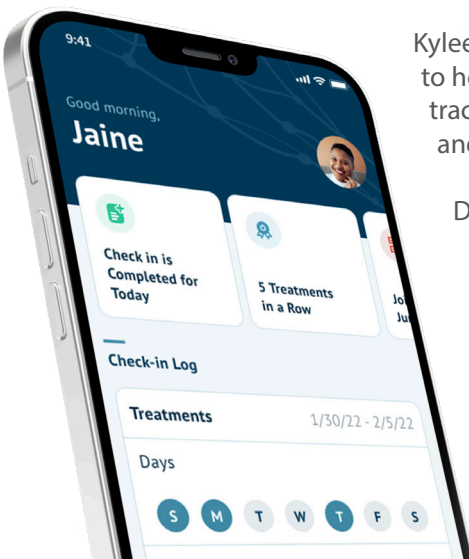
Management of lymphedema is usually achieved with a combination of therapist-directed in-clinic treatment, daily use of compression garments and at-home self-management with a proven pneumatic compression device like the Tactile Medical Flexitouch® system. With effective treatment, patients can manage their symptoms, minimize infections, improve their health and quality of life, and reduce overall healthcare costs.<sup>1-3</sup>

# What is chronic swelling?

As a normal part of your blood circulation, your vascular system leaks fluid into the surrounding tissues. Your body's lymphatic system is responsible for collecting this fluid. Edema, or swelling, occurs when fluid builds up in the body. Edema that persists may be a sign of a more serious underlying medical condition. Diseases that may cause lasting or chronic edema include congestive heart failure, kidney and liver disease, chronic venous insufficiency and lymphedema.

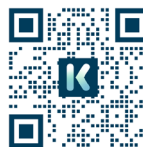


## Learn more about chronic swelling and how to manage it with Kylee.™



Kylee is an easy-to-use, free mobile app to help you understand your condition, track and manage your symptoms and live your best life!

Download Kylee today!



Tactile Medical is a leader in developing and marketing at-home therapies for people suffering from underserved, chronic conditions including lymphedema, lipedema, chronic venous insufficiency and chronic pulmonary disease by helping them live better and care for themselves at home.

Let's work together.



Individual results may vary.

**Indications/contraindications:** Indications, contraindications, warnings, and instructions for use can be found in the product labeling supplied with each device.

**Caution:** Federal (USA) law restricts these devices to sale by or on the order of a licensed healthcare practitioner.

**References:**

1. Brayton KM, Hirsch AT, O'Brien PJ, et al. (2014). Lymphedema Prevalence and Treatment Benefits in Cancer: Impact of a Therapeutic Intervention on Health Outcomes and Costs. *PLoS ONE* 9(12): e114597. doi:10.1371/journal.pone.0114597
2. Ridner SH, McMahon E, Dietrich MS, et al. Home-Based Lymphedema Treatment in Patients with and Without Cancer-Related Lymphedema. *Oncology Nursing Forum*. July 2008; Vol. 35(4): 671–680.
3. Muluk SC, Hirsch AT, Tafe EC. Pneumatic Compression Device Treatment of Lower Extremity Lymphedema Elicits Improved Limb Volume and Patient-reported Outcomes. *EJVES*. 2013; Vol. 46(4): 480–487.

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