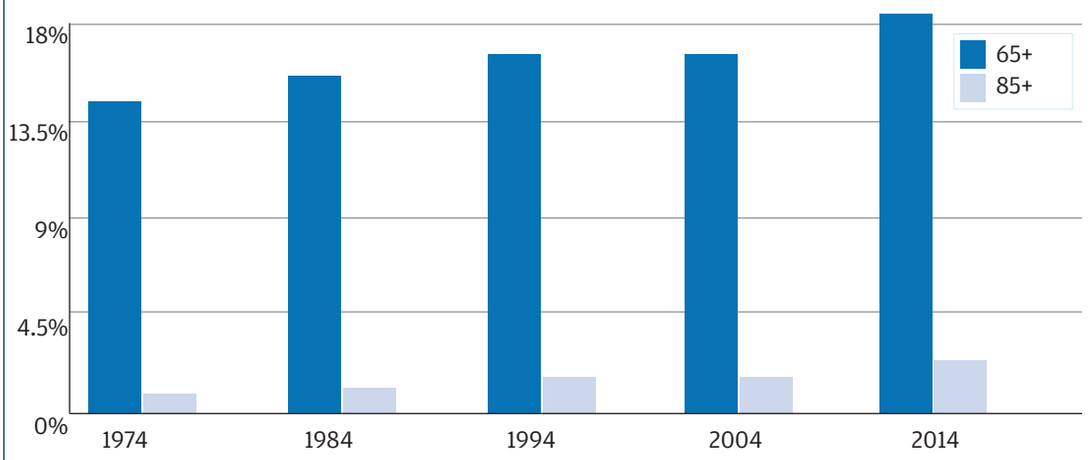
Identification and treatment of chronic oedema and lymphoedema

Linda Nazarko looks at how nurses can manage these increasingly prevalent conditions

Figure 1: Rise in numbers of people of older people



Ageing population ONS data

The incidence of chronic oedema and lymphoedema rise with age. They affect around 4 people per 1,000 in the general population and around 29 people per 1,000 people aged 85 and over.[4] Around 240,000 people in the UK are thought to have lymphoedema, this may be undiagnosed and untreated.[5]

As our population ages and people with lymphoedema and chronic oedema are living with multiple long-term conditions, rising levels of obesity and increasing frailty, management becomes more complex and challenging.[6,7] Difficulties with diagnosis and complex care needs lead to many people not receiving optimal levels of care.[8,9] *Figure 1* shows rising numbers of older people in the UK.[10]

Chronic oedema

Chronic oedema is defined as oedema that has been present for three months or more.

Chronic oedema may be unrelated to, or co-exist with lymphoedema and can be complicated by other conditions such as venous disease, immobility and cardiac failure. Lymphoedema in older people can coexist with other conditions such as immobility that lead to oedema.[11]

All oedema regardless of cause exists in the tissues whenever capillary filtration exceeds lymphatic drainage.[6] *Figure 2* illustrates this.

Why lymphoedema develops

Lymphoedema may be considered as a type of chronic oedema and is defined as: 'A swelling that develops as a result of an impaired lymphatic system.'[12]

The swelling is caused not just by fluid but also by fat, inflammation and fibrosis. The swelling has both fluid and solid components and it is the solid component that makes it so difficult to treat.[12]

The healthy heart pumps strongly and pressure in the capillaries (the smallest of the body's blood vessels) is high. Around 20-30 litres of plasma leak from the capillaries into the interstitial spaces (the spaces between the cells under the skin) the each day. The lymphatic system drains this fluid and returns it to the cardiovascular system.[13] Lymphoedema occurs when the lymphatic system is damaged this fluid cannot be drained and builds up in the interstitial spaces.

There are two kinds of lymphoedema primary and secondary. Primary lymphoedema may be present at birth (lymphoedema congenita), develop from the ages of 2-35 (lymphoedema praecox) or after 35 years (lymphoedema tarda).[14] Secondary lymphoedema develops because of damage to the lymphatic system.[15,16] Table 1 summarises the causes.

Cancer can cause damage to the lymph nodes; cancer treatments may involve the removal or irradiation of lymph nodes. Trauma infection and disease can also lead to lymph node damage.[17]

Filarial infection is a tropical disease which is transmitted through the bite of an infected mosquito. It affects 54.1 million people worldwide. The filarial worms damage the lymphatic system. Infection can be treated with drugs.[18] People who have damaged lymphatic systems secondary to infection are treated for lymphedema.

Obesity, especially morbid obesity (defined as a BMI over 40) can overwhelm the lymphatic system or excess weight can crush lymph nodes.[16,19] A BMI of 25 or more is defined as overweight, and a BMI of 30 as obese. In the UK the majority of adults are overweight or obese. Obesity is related to deprivation and this is particularly pronounced for women, 39% of women in the most deprived areas are obese, compared with 22% in the least deprived areas. [20] *Figure 3* shows the number of overweight and obese adults in England.[21]

Clinical features

Lymphoedema is under-recognised and undertreated. If

> **"People who have damaged lymphatic systems secondary to infection are treated for lymphoedema"**

we are to improve the situation, we need to be able to distinguish oedema caused by lymphoedema from oedema caused by other diseases as treatment differs. The most common causes of peripheral oedema are cardiac, renal, hepatic or venous disease.[15]

In the early stages diagnosis can be difficult. The oedematous skin pits on pressure. When the leg is elevated the oedema may improve. As lymphoedema progresses and fluid becomes established in the interstitial tissues clinical features change. The oedema does not pit on finger pressure and it is not relieved by elevation. As disease progresses the leg begins to lose its shape. If lymphoedema is left untreated and the swelling worsens, skin changes may occur. The skin may thicken and develop folds, bulges and dry warty spots (elephantiasis nostras verruciformis, or lymphatic papillomatosis).[22]

Early diagnosis and active treatment reduces complications and improves quality of life for the person with lymphoedema.

Lymphoedema is diagnosed on the basis of history and clinical features, see table 2. The person with lymphoedema may find the limb feels tight and heavy, and have pins and needles, shooting pains or feel the limb is hot. The joints on the affected limb may feel tender and ache. The person has a reduced range of movement in the affected limb. The legs are more prone to severe oedema. Heaviness in the leg can reduce mobility and Immobility can lead to further swelling, weight gain and deterioration in quality of life.

Management and treatment

Lymphoedema is a chronic condition and requires lifelong treatment. The four fundamental aspects of treatment are skin care, lymphatic drainage, compression garments and exercise[22] (see *figure 5*).

Some prescribed medication can cause or worsen existing chronic oedema and medication review is important. Common medicines that can contribute to oedema include: calcium channel antagonists such as amlodipine (used to treat high blood pressure), corticosteroids; nonsteroidal anti-inflammatories (NSAIDs); alpha-blockers (used to treat hypertension, prostatic hypertrophy and depression) and sex hormones.[24]

Skin is vulnerable to damage and infection. Gentle skin cleansers should be used and skin moisturised daily to prevent dryness and cracking. Skin should be inspected daily and medical advice sought if there are concerns.[25]

Lymphatic drainage is a form of gentle massage. It encourages fluid from the oedematous area to areas of the body where it can drain normally. A Cochrane review examining its efficacy in breast cancer found that it was helpful when used with compression.[26]

Compression therapy is used to reduce swelling and to prevent swelling from recurring. Arterial circulation must be checked as compression therapy must not be used if blood supply is poor.[27] If the limb has retained its normal shape and is not too large then compression garments can be used. If the limb has lost its normal shape or is enlarged multilayer bandaging is required to reduce the size and restore normal shape. Compression can be combined with manual lymphatic drainage. When the limb regains normal shape and fluid is forced out of the interstitial spaces compression bandaging is discontinued. This is usually after 4-14 days of treatment. The person is then measured for compression

Figure 2: Why chronic oedema develops

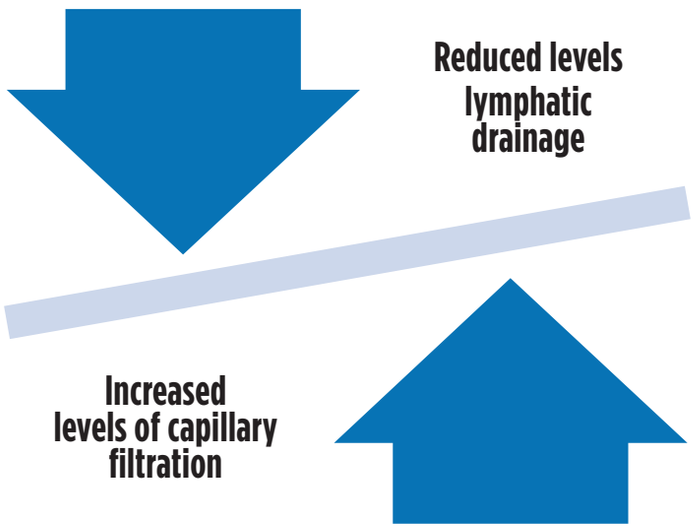
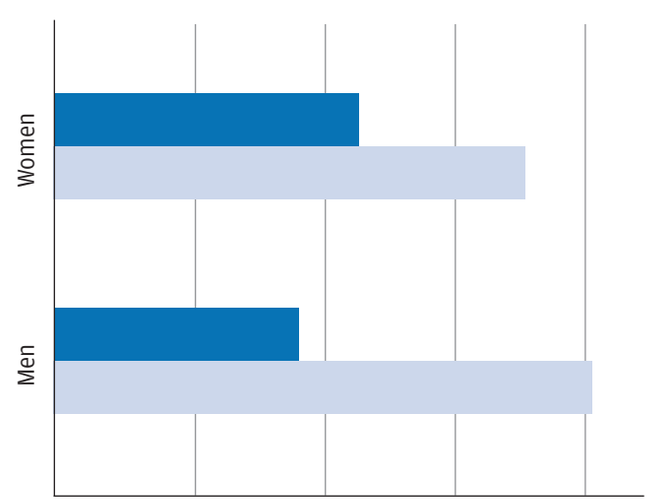


Figure 3: Adult obesity and overweight in UK 2019



	Men	Women
Normal weight	32	40
Obese and overweight	68	60

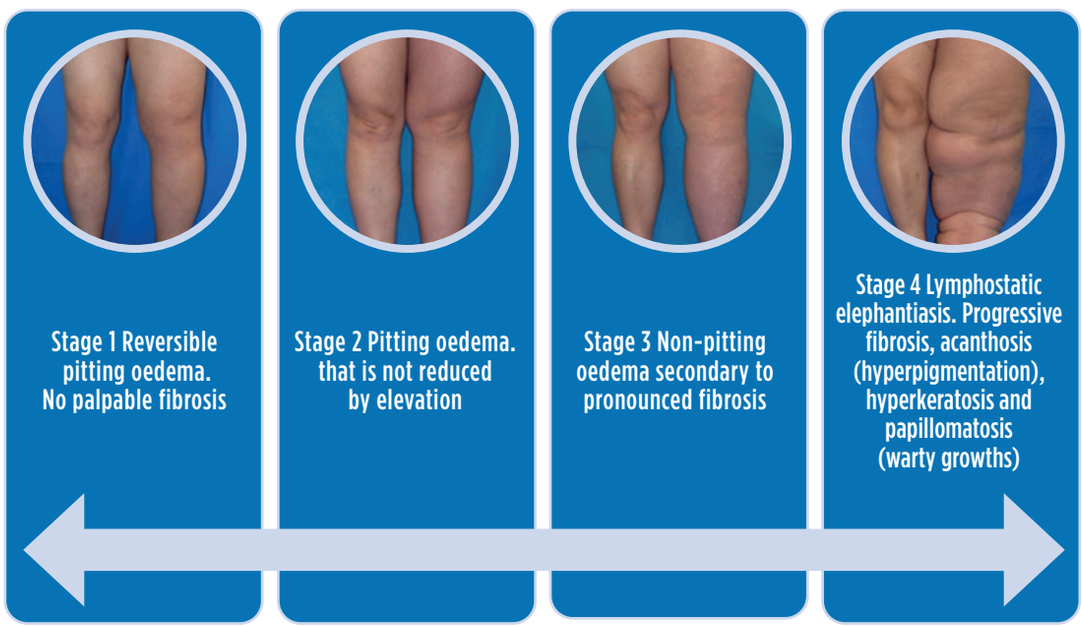
Table 1: Causes of secondary lymphoedema

Cancers such as cervical and prostate cancer causing lymphatic blockage
Trauma to lymphatic system such as injury and repair of fractured neck of femur, post deep vein thrombosis
Disease such as joint disease and venous disease (which can lead to varicose veins)
Infection and inflammation such as chronic leg ulceration or cellulitis
Parasitic infection (Filarial)
Obesity can lead to crushing of the lymph nodes

Table 2: Clinical features of lymphoedema

Clinical feature	Details
Positive Stemmer's sign	It is not possible to pinch a fold of skin at the root of the second toe
Oedema	More than 3 months duration. Does not reduce completely on elevation
Fibrosis	Skin is hard and tight and does not pit because fibrous tissue has formed in interstitial space.
Papillomatosis	The affected skin looks like cobblestones because of lymphatic dilation and fibrous tissue formation
Hyperkeratosis	Skin is scaled and thickened
Lymphangio	Small blisters and bumps on the skin. These may burst and leak lymph fluid
Lymphorrhoea	Leakage of lymph fluid from the skin

Figure 4: Stages of lymphoedema



garments. These may be specially made or ordered.[28]

Sometimes people with lymphoedema struggle to apply compression garments. Wrap systems are fabric sheets made from one or more components with limited extensibility, which are applied to affected limbs and held in place with Velcro fastenings.[29] These may be helpful as patients can apply the compression, attain equivalent interface pressures as healthcare professionals and adjust compression. The person can be advised to tighten the compression system if it starts to feel loose. This improves the efficacy of compression.[30]

Exercise and movement help to reduce swelling and improve independence and quality of life. Exercise improves lymphatic and vascular function and this assists in removing fluid and improves the effects of compression therapy. Exercise also improves muscle strength, assists weight control and improves health.[31]

Advanced therapy

Lymphoedema specialist services offer a number of advanced treatments including:

- Low Level Laser Therapy (LLLT)
- Intermittent pneumatic compression
- Kinesiotaping
- Deep oscillation therapy (Hivamat).
- Liposuction
- Lymphatic surgery
- LLLT is reported to improve lymphatic function and reduce pain, inflammation and scar tissue[32]

Intermittent pneumatic compression (delivered using a sleeve and a pump) is normally carried out by the person with lymphoedema at home. The pressures and treatment times are set by the specialist and cannot be changed by the patient. Intermittent pneumatic compression is standard therapy in the US and has been extensively evaluated.[33]

Kinesiotaping and deep oscillation therapy can be helpful in increasing drainage.[34]

Liposuction (the removal of fat from the affected limb) can be used in people with late stage lymphoedema who have hypertrophied adipose tissue.[35]

Lymphatic grafting and lymph node transplantation aim to restore lymphatic function using microsurgery. Although patients who have lymphatico-venous anastomoses no longer suffer from swelling and do not need to wear compression garments such surgery is not considered a cure.[36]

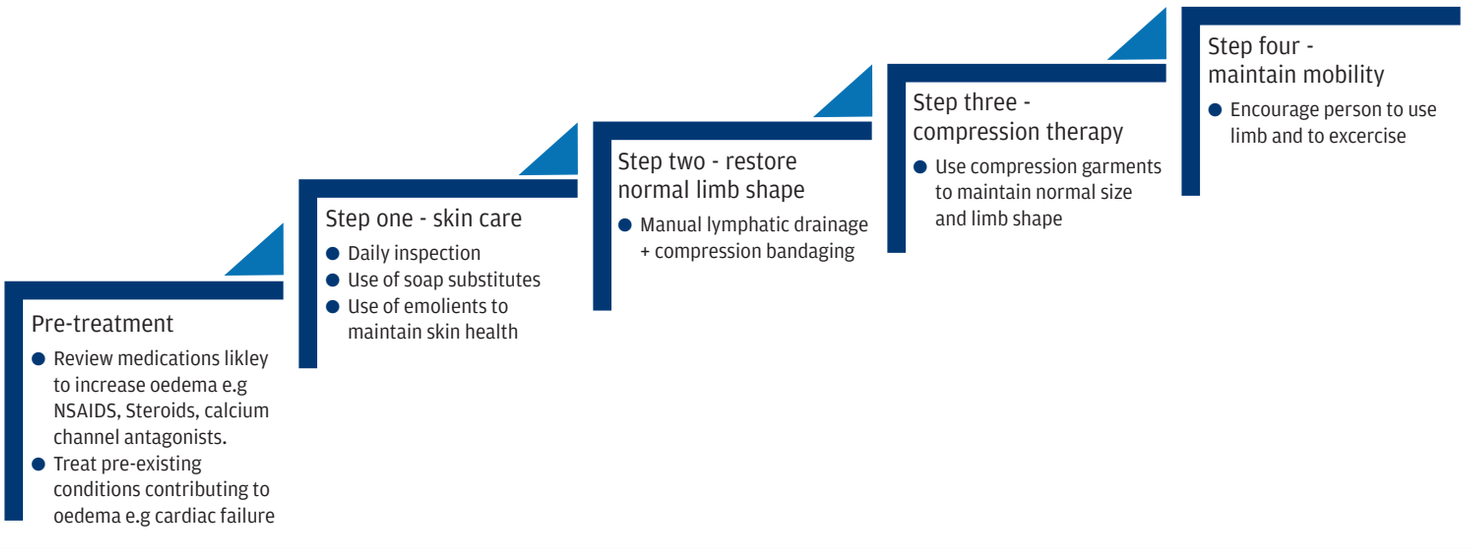
General care

The person with lymphoedema is at high risk of developing skin infections and must take special care to reduce infection risks. The individual should use gloves when gardening, sun screen to avoid sunburn, finger nails should be cut with clippers and if the legs are affected toenails should be cut by a podiatrist. An electric razor should be used when shaving to avoid cuts. Insect repellent should be used as insect bites can lead to infection. Cuts and scratches should be treated with an antiseptic cream to avoid infection. Weight control is important as increased weight worsens lymphoedema and general health.[37] Professionals should avoid taking blood pressure or giving injections in an affected limb.

Conclusion

Lymphoedema can have a devastating effect on a person's quality of life. It can, impair self care ability, affect body image, reduce mobility, make the person less likely to socialise, increase the risks of infection and depression . The Registered Nurse's role in primary and community care is to recognise lymphoedema and to enable the person to access specialist treatment and to support the person with self-care. These

Fig 5: Why chronic oedema develops



actions can minimise problems and maximise the person's quality of life. IN

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Resources

The Lymphoedema Support Network has a comprehensive list of specialist lymphoedema services in the UK. Tel: 0207 351 4480

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