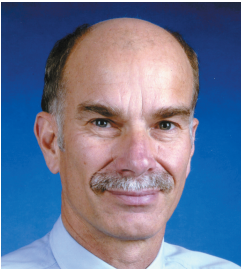


# Lymphoedema

## optimising outcomes

**Lymphoedema occurs when the lymph load is greater than the lymphatic transport capacity. Although not life-threatening, the swelling and associated symptoms can have a significant impact on quality of life and activities of daily living.**



**NEIL PILLER**  
BSc(Hons), PhD



**MICHAEL EATON**  
MB BS, MD, FRACS

Professor Piller is a Lymphologist and is Team Leader, Lymphoedema Assessment Clinic and Department of Surgery, Flinders University and Flinders Medical Centre, Bedford Park, South Australia. Dr Eaton is a Breast and General Surgeon, Flinders Surgical Oncology Unit, Flinders Medical Centre and Flinders Private Hospital, Bedford Park, South Australia.

After surgery or radiotherapy, patients can be surprised to learn that the slight swelling in a limb (or in a more inconvenient place such as the vulva or scrotum) is lymphoedema. Even the treating doctor can be surprised when this occurs some years after the surgery or radiotherapy. The patient may be further alarmed to learn that the condition is unlikely to improve without some significant interventions.

For the doctor and patient, choosing from the plethora of treatment and management options available can be difficult since few are well evidenced in scientifically rigorous studies.<sup>1</sup> Moreover, although treatment may at best lead to resolution of the swelling, often the swelling is only halted while for some it progresses insidiously – a situation that can sometimes mean significant psychological problems.<sup>2</sup>

For people without lymphoedema but who are at risk of it, established lymphoedema is likely to be preventable by recognition of, and a targeted response to, the early signs.

### What is lymphoedema?

Lymphoedema is a swelling of the superficial

compartment above the deep fascia of the musculature (Figure 1).

The lymphatic system normally drains metabolic wastes and excess protein-rich fluids from the tissues. Lymphoedema develops when the lymphatic transport capacity of the limb or other structure is below that needed to transport the load of fluid that awaits removal. This most often results from an impaired or obstructed lymphatic system.

The fluid that initially accumulates is protein rich and, due to osmosis, attracts more fluid. In the early stages, the swelling in lymphoedema consists chiefly of fluid and is reversible. However, as time passes, the condition progresses; vascular proliferation and infiltration by adipocytes, inflammatory cells and fibroblasts leads to the subcutaneous thickening and fibrotic induration seen in late stage lymphoedema.<sup>3</sup> Figure 2 shows an example of late stage lymphoedema.

### What causes lymphoedema?

In western society, lymphoedema most often occurs secondary to surgery or radiotherapy involving removal of lymph nodes or obstruction

#### IN SUMMARY

- **Most cases of lymphoedema are secondary to surgery or radiotherapy, and take an average of three years to manifest.**
- **Patient education is crucial to minimise the risk of lymphoedema developing or progressing.**
- **Maintaining a focus on increasing the lymphatic transport capacity or reducing the lymphatic load improves the chance of a good treatment outcome.**
- **Quality studies relevant to most aspects of lymphoedema including treatment are few; actions must be taken with this in mind.**

to lymph flow. Only between 3 and 10% of cases lymphoedema are primary – that is, due to a malformation of the lymphatic system.<sup>1</sup>

### Secondary lymphoedemas

Following surgery or radiotherapy, up to one-third of men and women may develop lymphoedema. The likelihood depends on the extent of treatment and lymph node involvement. Other factors, such as dominant arm involvement, surgical complications and older patient, further increase the risk.<sup>4,5</sup>

It is estimated that in women who have had breast cancer about 10 to 15% of those who have had an axillary clearance and total or partial mastectomy develop arm lymphoedema (Figure 3). However, when radiotherapy has been added to this treatment, the likelihood of developing lymphoedema rises to around 20 to 30%. Lower limb lymphoedema is also a complication of lymph node removal and radiotherapy, and occurs at similar rates. This applies to treatment of any lower abdominal or pelvic cancer including bowel cancer, melanoma, prostate cancer in men and cervical and other reproductive cancers in women.

Some men and women develop lymphoedema subsequent to varicose vein stripping or incompetent vein ligation if large lymph collectors in their adventitial layer are damaged inadvertently.

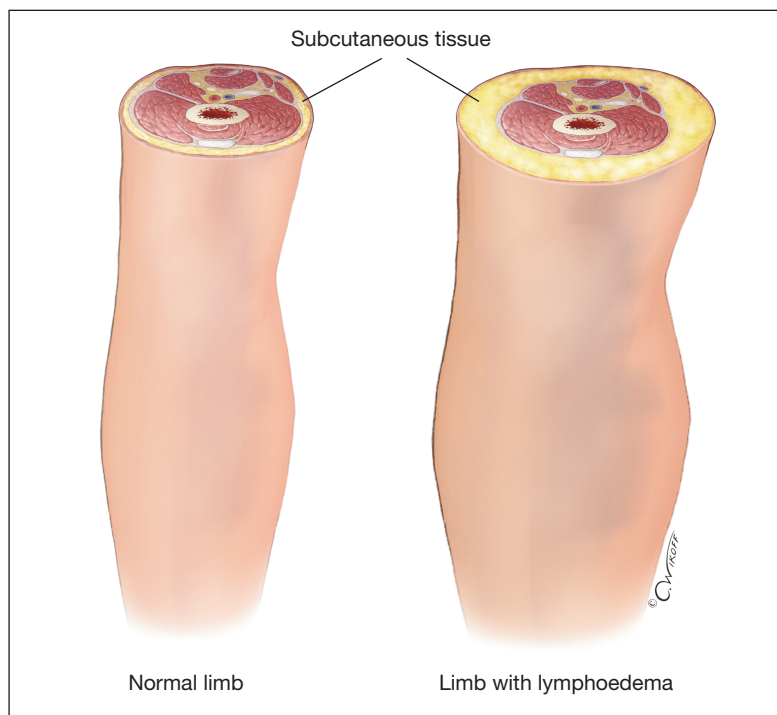
In tropical developing countries, filarial parasite infection is a common cause of lymphoedema, with some estimates as high as up to 150 million cases.

### Primary lymphoedemas

Primary lymphoedemas are caused by congenital malformation (most often hypoplasia) of the lymphatic system. They are classified according to age of presentation:

- lymphoedema connata – apparent at birth (e.g. Nonne–Milroy syndrome)
- lymphoedema praecox – presents between puberty and age 35 years (e.g. Meige’s syndrome)
- lymphoedema tarda – appears after age 35 years.

Nonne–Milroy and Meige’s syndrome are familial and are inherited in an autosomal dominant manner.



### How does it present?

Most often the patient with lymphoedema will present with a swollen limb. Patients may also have limb heaviness, discomfort, tension or tightness, aches and ‘bursting’ pains with or without swelling. Occasionally a patient may present with a related complication such as cellulitis. Usually there will be a past history of an intervention like surgery that may have affected the lymphatic system. In some patients lymphoedema develops after a minor surgical intervention; here, taking a family history may expose an inherited condition.

Early lymphoedema may first be found by a clinician (or patient) through monitoring, such as routinely measuring limb circumference or noticing subtle changes such as a limb that doesn’t feel right or clothing being tight.

### When does it present?

On average, lymphoedema takes three years to become clinically manifest, but in some cases it develops immediately while in others it may not appear until a decade after an insult to the lymphatic system. Surgeons and oncology staff commonly review their patients in the weeks and months following treatment; however, as time goes by, patients are more likely to visit their GP. It

Figure 1. In lymphoedema there is thickening of the subcutaneous tissues consisting of varying proportions of fluid, cells, and fatty and fibrous tissue.



continued



Figure 2. Late stage lymphoedema. Secondary bilateral lymphoedema, which developed about 14 years ago. Note fibrotic induration and skin changes (dryness, mycoses) associated with poor lymphatic drainage.

is at this time when the vigilance of a well informed GP may make a difference for the patient in terms of pointing out risk factors likely to be associated with the precipitation or exacerbation of lymphoedema. It is wise, however, to refer patients with newly diagnosed lymphoedema back to their surgeon.

It is important to remember that each person who has a damaged lymphatic system is at risk of developing lymphoedema for the rest of his or her life, although the risk level may vary with time.

### Clinical assessment

A patient's family, medical and surgical history will help determine whether he or she is at risk of developing lymphoedema, and if lymphoedema is present, whether it is primary or secondary. Both people at risk of lymphoedema and those who are known to have lymphoedema should be monitored. Clinical assessment also aids differentiating



Figure 3. Severe unilateral secondary arm lymphoedema, secondary to treatment for breast cancer.

lymphoedema from swelling due to other causes.

### Detecting pitting

Pitting is a sign of free fluid accumulation. Even if there is no obvious swelling, it is worth testing the distal part of the limb for pitting by pressing the thumb firmly into the tissues for at least 15 seconds.

A lymphometer (such as that made by Impedimed) is a hand held instrument that uses a mild electrical current. It will provide an objective measurement of extracellular fluids and is particularly useful to detect differences between the limbs.<sup>6</sup>

### Limb circumference

To determine if a limb is swollen, a circumference measurement should be performed. This is mainly useful if the problem is unilateral when progression can be assessed by comparison with the contralateral (normal) limb.<sup>7</sup> If the

problem is bilateral, then the circumference measurements can be used to monitor progress, but be aware that your baseline measurement may not have been taken at the start of the lymphoedema.

When monitoring a patient's progress or comparing limbs using circumference measurements, ensure that the same location is tested each time. Most studies recommend a fixed reference point such as the midpoint of the patella or cubital fossa and measuring 20 cm proximally and distally.

### Detecting fibrotic tissue

Tissue changes associated with the build up of fibrotic tissue may be detected by conducting a pinch and roll test – that is, holding the affected tissues between the thumb and forefinger and gently rolling the tissues between them.

A tissue tonometer (made by BioMedical Engineering, Flinders Medical Centre) provides a more objective means of assessing tissue fibre. This simple piece of equipment exerts a known force on the tissue and after a few seconds indicates the depth of penetration of the plunger. Fibrotic tissues show an increased resistance to pressure.

### The Stemmer sign

A positive Stemmer sign is the inability to pick up a fold of skin at the base of the big toe or fingers. While not always a sign in early lymphoedema, it is common in the middle and late stages of the condition. It is always a negative sign in pure lipoedema, so is useful to distinguish lipoedemas and other causes of tissue swelling from lymphoedema, but it is best used in combination with other diagnostic criteria.

### Local factors

Examine the axilla and chest, or groin and lower abdomen, for signs of local induration (associated with radiotherapy and surgery) and potential areas of tissue entrapment (Figure 4). Induration generally means poor lymph drainage through



Figures 4a and b. Damage that may interfere with lymphatic drainage. a (left). Radiation damage causes fibrosis and tissue adhesions – no new lymph vessels grow in these regions. b (right). Significant tissue tethering subsequent to mastectomy causing reduction in range of movement and in lymph transport ability.

the area. Assessing range of movement is also important as this may impact on the patient’s ability to undertake a nominated exercise program.

### Differential diagnoses

The diagnosis of lymphoedema is usually made clinically after consideration of other forms of oedema. Sometimes these may co-exist with lymphoedema and confound management if not detected and addressed separately.

### Oedema

Oedema, like lymphoedema, is the abnormal accumulation of fluid. It is generally due to an excessive rate of fluid exiting the vascular system or due to an inability to re-absorb it despite a normally functioning lymphatic system operating at maximal capacity. Dealing with the cause of oedema, which includes cardiac failure, hypoalbuminaemia, venous thrombosis and hepatic and renal failure, may help reduce the load on the lymphatic system. Oedema and lymphoedema look very similar in appearance, but oedema is generally symmetrical.

### Lipoedema

Lipoedema is the excessive accumulation of fatty subcutaneous tissues (Figure 5). It is believed to be due to a metabolic fat disorder – although this is still being debated. It is easily distinguished from

secondary lymphoedema because it usually affects both legs. There is usually an absence of swelling of the feet, easy bruising of the limb and pain on indent pressure. This condition can be confused with cellulite and obesity, but it may also occur concurrently with these conditions. The Table describes the major differences between lipoedema and lymphoedema.

### Myxoedema

In myxoedema, mucoid materials may accumulate, which can lead to tissue changes such as a reduced elasticity of the skin. Swelling is often most noticeable

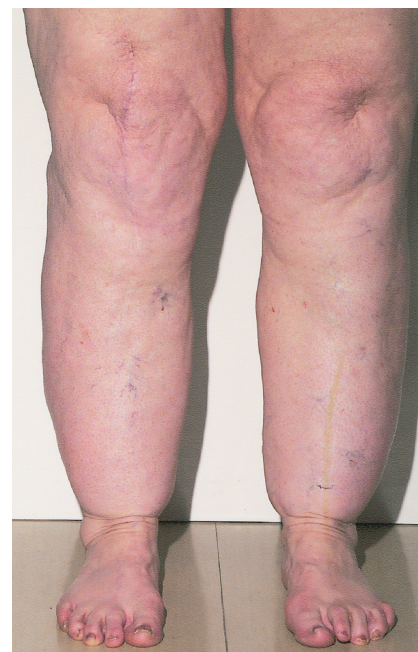


Figure 5. Lipoedema is the excessive accumulation of fatty subcutaneous tissues. Typically it is bilateral and there is an absence of swelling of the feet.

around the eyes, eyelids, lower legs and the instep as well as the hands. Testing of thyroid function will help confirm this diagnosis.

**Table. Distinguishing lymphoedema from lipoedema**

Lymphoedema	Lipoedema
Harder thickened skin – especially in later stages	Soft pliable skin (although some elasticity may be lost)
Skin not usually tender	Tenderness of the skin
Usually unilateral (bilateral in primary lymphoedema)	Always bilateral
Usually asymmetrical	Usually symmetrical
Can't pick up fold of skin at base of the big toe or fingers (positive Stemmer sign)	Can pick up fold of skin at base of the big toe or fingers (negative Stemmer sign)
Feet oedematous	Feet not oedematous
Tissues do not usually bruise	Affected tissues bruise easily
Infections common	Infections rare





Figure 6. Lymphoscintigraphy of the lower limbs showing major lymph collectors and areas of dermal backflow.

### Phleboedema

Phleboedema is also the excessive accumulation of fluids due to lymphatic dysfunction, but it is a consequence of chronic venous insufficiency, often associated with problems of vascular fragility, inflammation of the vessel walls and venous thrombosis. There is also impaired lymphatic drainage, frequently due to inflammatory processes within the lymph collectors and sometimes nodes.

### Special investigations

In difficult cases it may be useful to get a larger picture of the fluid removal problem in the affected limb or truncal area.

### Lymphoscintigraphy

Lymphoscintigraphy can demonstrate the residual lymphatic transport capacity and the functional pathways (Figure 6). It involves injecting a radio-opaque tracer in the distal part of the limb and assessment of the clearance rate from the depot site. It may show areas of backflow as well as pathways that are functional, which may guide massage treatment.<sup>8</sup>

Lymphoscintigraphy may have role

## An approach for the GP to lymphoedema\*

### For patients at risk of developing lymphoedema

- Assess and review risk factors – particularly those that may increase lymphatic load
- Measure the limb – a useful future baseline
- Encourage self-measurement of limb – one to two monthly (or more frequent if high risk)
- Provide educational material relevant to risk reduction
- Reduce the impact of any factors that may increase lymph load
- Encourage patient's early reaction to any changes in size of limb or how the limb feels
- Educate patient about risks and symptoms that may indicate developing lymphoedema
- Review at six to 12 monthly intervals – with a higher frequency for patients at higher risk
- Encourage contact with local patient support groups

### For patients with lymphoedema

- Exclude (or treat) other causes of swelling
- Treat (or refer for treatment) nonlymphatic related causes of limb swelling
- Measure the limb – compare with other limb, or previous measurements
- Ask for patient's symptoms – consider which are due to development or progression of lymphoedema versus due to the surgery or radiotherapy
- Encourage self-measurement of the limb – particularly if patient is involved in a management program
- Inform patient about the range of treatments and suggest those most likely to be suitable
- Refer to experts for further lymphoedema assessment and treatment
- Be aware that lymphoedema massage technique is very different from normal massage
- Review at six to 12 monthly intervals – be alert for events that may have changed load or transport capabilities of the lymph system
- Encourage contact with local patient support groups

\* Avoid measuring blood pressure in, applying tourniquets to and injecting a limb with or at risk of lymphoedema.

in select patients who are at risk is of developing lymphoedema; findings may alleviate unnecessary fears or help the patient participate in risk reduction strategies. Generally, if the report shows little or no change in lymph transport, the risk of that person developing lymphoedema is low.

### Other imaging

Ultrasound can be useful to indicate the extent and spread of induration and assess fascial changes. CT and MRI scans can assess areas of fluid pooling, lympho-coeles and large lymph vessels as well as the distribution and spread of adipose tissues (which are characteristic of middle and later stage lymphoedemas and lipoedemas).

## Management and prevention

For those at risk of lymphoedema, there is a delicate balance between making a person's life miserable through a continual focus on the at-risk limb and trying to ensure that lymphoedema does not develop. Therefore, it is essential to establish the level of risk and to inform the patient appropriately. Generally, an at-risk patient can conduct a normal life with just a little more care and attention towards the at-risk limb.

In patients with lymphoedema, treatments are aimed at optimising functioning of the lymphatic system to reduce the rate of progression of lymphoedema from early to later stages, when much of the swelling is irreversible. There is a plethora of specific treatments available

## Preventing and minimising lymphoedema\*

If you have lymphoedema or are at risk of lymphoedema, taking care of yourself and paying a little extra attention to the affected area can greatly improve your outcome.

### Care of the affected limb or area

#### Avoid trauma

- avoid cuts and scratches (e.g. wear gloves when gardening if an arm is affected or at risk)
- don't have injections or blood tests performed in that limb
- wear insect repellent to avoid bites and stings
- wear 30+ sunscreen and cover up to avoid sunburn

#### Maintain good skin care

- moisturise skin with nonperfumed products
- if you have a skin problem like eczema or psoriasis, keep it well controlled

#### Avoid infection

- see your doctor early if a cut or area becomes red, painful or oozes

#### Avoid overheating

- avoid spas, saunas and hot baths, and be careful of steam when cooking

#### Avoid excessive strain

- for example, don't sit for long periods with an at-risk or affected leg folded under you, don't carry a bag for long periods with an at-risk or affected arm

#### Avoid constriction

- don't wear tight fitting clothes, avoid underwear that has elastic across the line of the groin and bras with underwire and narrow straps
- don't allow blood pressure measurements and tourniquet use on an affected or at-risk limb unless unavoidable†
- avoid wearing tight jewellery around an affected limb
- beware of misfitting support garments

Elevate and gently exercise the limb when it feels uncomfortable

Wear a support garment when flying on long flights (always have support garments fitted by an experienced person)

### General measures

#### Maintain good health

- if you have any health problems, such as high blood pressure or diabetes, keep them well controlled

#### Maintain a healthy weight

- being overweight can strain the lymphatic system, see a dietitian if you are overweight

#### Participate in regular gentle exercise

- exercise may help the lymphatic system to function better

#### Keep well hydrated

- drink fluids such as water and herbal tea to maintain hydration

\* Note that these instructions apply to the part of your body that is at risk; therefore, some examples may not apply to you.

† It is not scientifically proven that tourniquets worsen or precipitate lymphoedema, but it makes sense to avoid any pressure on the lymphatic system.

This patient handout was prepared by Professor Neil Piller.

but not all have been well trialled, so any recommendation must be taken with this in mind. However, most are conservative and have varying amounts of anecdotal evidence supporting their effectiveness. (Because a treatment is not presented here does not mean that it does not work.)

Although the GP is unlikely to be involved directly in performing treatments, he or she will provide continuity of care, monitoring of progress and co-ordination and referral to various health professionals. The GP should also detect medical conditions that may exacerbate lymphoedema such as varicose veins or heart failure and refer the patient to an appropriate specialist. An approach for GPs is outlined in the box on page 53.

### Care of the affected area

Prevention of the development or progression of lymphoedema lies in care of, and attention to, the affected area, which involves education of both the patient and his or her partner or carer. (See the patient handout on this page.)

Care of the affected area includes avoiding constriction to lymph flow (e.g. by tight clothes or tourniquets) and avoiding any inflammation in the area (including sunburn, infection and abrasions). Elevation is useful at any time, especially in the earlier stages of lymphoedema when the swelling is predominantly due to fluid.

### Exercise

Most forms of exercise are beneficial. Exercise helps to vary the pressure within the tissues promoting fluid movement into the lymph capillaries and aiding movement along the lymphatic system. Also, deeper breathing leads to variations in intrathoracic pressure, which facilitates a pressure gradient along the thoracic duct and encourages lymph to return to the vascular system.

Often the question is asked: how much exercise? There is no correct answer – some people with lymphoedema play A



grade tennis, others participate in dragon boat races. The important point is to warm down slowly after exercise. In some instances a support sleeve or stocking may be required; however, there are no firm rules for when and for whom a stocking may be beneficial.

Some exercise programs have been clinically trialled; most confer some benefit and certainly none have been shown to cause harm. A combination of Tai Chi- and Qi Gong-like activities was shown to particularly benefit upper limb lymphoedemas in a Flinders Medical Centre trial.<sup>9</sup>

Few exercise machines have been clinically tested but a trial at Flinders Medical Centre showed significant subjective and objective benefit in people with lower limb lymphoedema and oedema who used an exercising machine.<sup>10</sup>

Water based exercise not only assists lymph flow but also can lead to increasing range of movement and limb mobility. It is especially useful for people with lower limb lymphoedema who may find it difficult to participate in other activities. However, it is also used in people with upper limb lymphoedema; for example, the YWCA Encore program for women who have had breast surgery includes pool exercises.

### Manual lymphatic massage

Manual lymphatic massage is the mainstay of treatment for many patients<sup>11,12</sup> (Figure 7). It is different from all other forms of massage, being light and gentle, and working by clearing accumulated lymph from the tissues and helping it move into and along the lymph collectors. Lymphatic massage has been developed to move lymph from territories that are blocked to those which are still patent. It is often combined with other treatments, such as bandaging, skin care, exercise and education, where it is called 'complex lymphatic therapy' or 'complex decongestive therapy'. Those best to refer patients to are physiotherapists, massage thera-



Figure 7. Manual lymphatic drainage is the mainstay of treatment and may be performed by a professional or in a more basic form by the patient, partner or carer.

pists, nurses or occupational therapists who have trained in manual lymphatic drainage.

### Massage tools

When a patient cannot afford professional massage, the alternative is a home based aid. There are a large variety of massage pads and aids; anecdotally most seem to have some value, at least subjectively. A clinical trial at Flinders Medical Centre showed one massage pad to be beneficial in chronic secondary leg lymphoedemas, particularly improving subjective indicators such as quality of life and the ability to perform tasks of daily living.<sup>13</sup>

### Compression bandaging and garments

Often, low stretch bandages are applied between intensive manual lymphatic drainage sessions and worn overnight.<sup>14</sup> They are frequently uncomfortable, but they do help reduce exudation of additional fluids from the vascular system.

In people in whom the lymphatic system transport capacity cannot be



Figure 8. Poorly fitted compression garment. Note tourniquet effect on upper part of the arm – this will reduce superficial lymph drainage.

improved significantly, compression garments form a large part of lymphoedema management. There are two basic types of garments:

- made-to-measure – for unusually shaped limbs
- off the shelf – for the average swollen limb.

The latter are often available from chemists while the former need to be ordered through garment manufacturers. A physiotherapist or massage therapist who has experience with lymphoedema is usually the best person for garment measurement and fitting. Correctly fitted garments provide a pressure gradient from distal to proximal. Anecdotal evidence has suggested that poorly fitted garments may not provide full benefits, and very poorly fitting garments can cause problems (Figure 8).

Compression pumps are also available; they supply variable external pressure via an air pump. Care must be taken since there is a small risk of pushing fluids from the affected limb into the root or, worse, into the genital area.

continued

### Skin care

Good skin and nail hygiene, avoidance of infection and early treatment of skin conditions is essential. A limb with a compromised lymphatic drainage may exhibit dry and flaky skin. There is an increased susceptibility to mycoses and cellulitis. Sorbolene or other emollients are often used to prevent dryness, but care must be taken as many creams may significantly reduce the life of support garments.

Appropriate oils in warm water baths are useful for the skin of the feet.

GPs may need to refer patients to a podiatrist for foot care or dermatologist for skin care. Antibiotics should be prescribed early if cellulitis is present.

### Diet

The impact of a diet rich in fats and of obesity on lymphoedema is not well evidenced. Long chain fatty acids depend on

the lymphatic system for absorption from the gastrointestinal tract. Thus, reducing fat intake may help reduce the risk of the retrograde flow of the fat-rich lymph (chyle) into the lower limbs or the risk of chylous ascites, when the lymphatic system is compromised in these areas. Weight management may also impact on the ease with which fluids can leave the tissues. Hence, consultation with a dietitian may be helpful.

## Resources for health professionals and patients

### Websites

**Lymphoedema Association of Australia** [www.lymphoedema.org.au](http://www.lymphoedema.org.au)

This site has information for health professionals and patients as well as a list of support groups throughout Australia.

**Breast Cancer Network of Australia** [www.bcna.org.au](http://www.bcna.org.au)

This site primarily provides information for patients.

**YMCA - Encore** [www.encore.net.au](http://www.encore.net.au)

An exercise program designed specifically for women after mastectomy, lumpectomy or breast reconstruction surgery.

**Australian Lymphology Association** [www.lymphology.asn.au](http://www.lymphology.asn.au)

An association to promote lymphology in Australasia.

**National Lymphoedema Network (USA)** [www.lymphnet.org](http://www.lymphnet.org)

A useful resource for patients and health professionals.

**Dr Vodder schools** [www.vodderschool.com](http://www.vodderschool.com)

School of manual lymphatic massage – includes finding health professionals (including those in Australia) trained in lymphatic massage.

### Publications

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### Interactive CD-ROM

Pillar NB. *The vital essence – understanding the lymphatic system in health and disease*. Health professional version. (Available from [www.flinders.sa.gov.au/lymphoedema](http://www.flinders.sa.gov.au/lymphoedema).)

### Benzopyrones and flavonoids

Some clinical evidence indicates that some benzopyrones and flavonoids may be beneficial in patients with lymphoedema. The most common preparations are Paroven (hydroxyethylrutosides; available from chemists) and Lymphodran (quercetin, rutin, ascorbic acid; available from health food shops). There are others but there are few data to substantiate their effect. Coumarin (Lodema), available previously, was withdrawn some years ago based on possible hepatotoxicity in some patients.<sup>15</sup>

### Diuretics

Diuretics are often wrongly prescribed for pure lymphoedema. They do temporarily reduce the accumulated fluids but have no impact on the proteins, which are a major cause of the ongoing fluid accumulation. Diuretics are helpful if there is an underlying oedema. Withdrawal of diuretics from a patient with lymphoedema should be done slowly over time because rapid withdrawal may exacerbate the fluid accumulation.

### Low level laser treatment

There is some clinical evidence that low level laser treatment is useful in reducing lymphoedema.<sup>16</sup> The exact mode of action is under investigation but some known effects include stimulatory action on macrophages, antibacterial effects and a tendency to make lymph collectors pump faster. It is hypothesised that laser helps also to break up collagen allowing better

flow of fluids and materials through tissues thus improving lymph drainage.

## Surgery

When conservative treatment fails, there are surgical techniques, including, micro-surgery, excisional operations and various forms of liposuction. Recent developments in liposuction mean avoidance of further damage to lymphatic collectors.<sup>17</sup>

## Psychosocial support

The psychosocial aspects of lymphoedema, are not well investigated.<sup>2,18</sup> A swollen leg or arm is an unwanted sign to others that a person has had cancer. Discomfort, heaviness or pain in the swollen body part may reduce the enthusiasm for close and intimate contact with a partner (or may be seen as a barrier by the partner for contact), thus isolating the individual at a time when most need to have the opposite. Contact with counsellors and support groups should be encouraged where appropriate and referral to a psychiatrist organised if depression or another disorder is suspected.

In patients with a family history of primary lymphoedema, genetic counselling may be appropriate to inform the patient and his or her family of risks of others in the family developing the disease.

## Suggestions for the rural GP

In a rural situation it is particularly important to make an accurate diagnosis and to determine nonlymphatic problems and deal with them to optimise lymphatic function. Prevention of the progression of lymphoedema is crucial. There may be a problem finding people trained in lymphatic drainage techniques, but often if a patient and his or her partner attend a single demonstration of correct massage technique by a trained person, they may gain enough information to manage actively the problem within their own home.

Rural GPs in particular may find tools addressing risk assessment and monitor-

ing useful, such as the CD produced at Flinders Medical Centre. Also local breast cancer contact workers may be helpful. Some selected resources are listed in the box on page 58.

## Conclusion

Once established lymphoedema can be a life-long issue; hence in those patients at risk, monitoring for early symptoms and signs is essential. Treatments are aimed at optimising functioning of the lymphatic system to reduce the progression of lymphoedema from early stages, in which swelling is chiefly due to fluid accumulation, to later stages, in which cell infiltration and fibrosis occur and much of the swelling is irreversible. Patients should be informed that they are in a position to impact on their outcomes. **MT**

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**DECLARATION OF INTEREST: Professor Piller has participated in clinical trials for a range of treatments and has provided consultancies to several companies. Dr Eaton: none.**