An overview of lymphoedema for community nurses

Garry Cooper

This article provides an overview of lymphoedema and its management. It includes information on the definition of lymphoedema, anatomy (lymphatics), lymphoedema staging, complications and the psychosocial impact. This leads onto a discussion of the management methods that can be delivered by community staff and practice nurses who have received appropriate training. Involving patients and their family/carers in all aspects of the management plan can help them to cope with this lifelong condition and promote concordance with treatment.

KEYWORDS:
Lymphoedema ■ Complications ■ Management ■ Compression

Lymphoedema is a chronic and progressive condition, which leads to excessive accumulation of lymph fluid in the superficial tissues. This is due to lymphatic failure, related to either congenital abnormality or damage to the lymphatic system (Lymphoedema Framework, 2006). It is estimated that one in 6,000 to one in 10,000 within the UK are affected by primary lymphoedema caused by intrinsic factors in the development of the lymphatic system (Table 1). This compares to secondary lymphoedema, which is estimated to affect 63,000–100,000, and is caused by extrinsic factors that damage the lymphatic system (Moffatt et al, 2003; Rockson and Rivera, 2008; Macmillan, 2013) (Table 1). However the above is acknowledged as an underestimation of the condition (Moffatt et al, 2003; Cooper, 2012; 2013).

To ensure appropriate management methods are instigated, a diagnosis needs to be made as well as excluding other causes (Table 2) (Lymphoedema Framework, 2006). Additional investigations such as blood tests or ultrasound scans may identify undiagnosed conditions, for example, heart failure (Lymphoedema Framework, 2006). A patient may present with a number of physical signs and symptoms, which will help the community nurse arrive at a diagnosis of lymphoedema (Table 3). These signs and symptoms can also assist in the staging of lymphoedema within the International Society of Lymphology (ISL, 2013) staging system (Table 4).

Patients with multiple conditions and contributory factors are often seen by district nurses.

COMPLICATIONS

Lymphoedema has a number of complications associated with the progression of the condition, which affect the patient’s psychosocial and physical health (Cooper, 2012). The two main physical complications that are often seen within primary and secondary care are the development of cellulitis and lymphorrhoea (Lymphoedema Framework, 2006).

Cellulitis
Cellulitis is estimated to cost the NHS £96 million and leads to 400,000 bed

THE SCIENCE — LYMPHATIC SYSTEM

This one-way system comprises a superficial and deep system, associated with multiple organs, such as the thymus and spleen, and lymph nodes (Waugh and Grant, 2001). Its main responsibilities are immunity, fluid/waste product transportation and absorption of fats. The term ‘lymph’ is applied once interstitial fluid has entered the lymphatics in the superficial lymphatics (Waugh and Grant, 2001). It is estimated that 100% of fluid is absorbed by the initial/superficial lymphatics, with further research yet to be completed on their role within the deeper tissues. The exceptions relate to changes in fluid exchange between the lymphatic/circulatory microvascular system — located within the intestines — and the lymph nodes and kidneys for example (Levick and Michel, 2010). This differs to the original understanding in which 10% was absorbed by the lymphatics (Waugh and Grant, 2001). Lymph fluid passes through several lymph nodes that contain white cells (T, B lymphocytes, macrophages) (Waugh and Grant, 2001). The role of lymph nodes is to purify lymph and resolve antigen presence before returning lymph to the heart via the thoracic duct, internal jugular, and sub-clavian veins (Waugh and Grant, 2001). It is estimated that a person may have 700 lymph nodes, but this varies between individuals (Waugh and Grant, 2001; Wigg, 2010).
Doublebase™ Gel
Isopropyl myristate 15% w/w, liquid paraffin 15% w/w

Uses: Highly moisturising and protective hydrating gel for dry skin conditions. Directions: Adults, children and the elderly: Apply direct to dry skin as often as required.

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Adverse events should be reported. Reporting forms and information can be found at www.mhra.gov.uk/yellowcard. Adverse events should also be reported to Dermal.
Table 1: Primary and secondary lymphoedema (Lymphoedema Framework, 2006)

<table>
<thead>
<tr>
<th>Primary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milroy’s</td>
<td>Trauma or tissue damage</td>
</tr>
<tr>
<td>Turner’s syndrome</td>
<td>Malignant disease</td>
</tr>
<tr>
<td>Meige lymphoedema</td>
<td>Venous disease</td>
</tr>
<tr>
<td>Praecox (cause unknown) 2–35 years old</td>
<td>Infection</td>
</tr>
<tr>
<td>Tarda (cause unknown) 35 years and over</td>
<td>Inflammation</td>
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Endocrine
Dependency or immobility

Table 2: Differential diagnosis

<table>
<thead>
<tr>
<th>Unilateral limb swelling</th>
<th>Symmetrical swelling</th>
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<tbody>
<tr>
<td>Acute deep vein thrombosis (DVT)</td>
<td>Congestive heart failure</td>
</tr>
<tr>
<td>Post-thrombotic syndrome</td>
<td>Chronic venous insufficiency (CVI)</td>
</tr>
<tr>
<td>Arthritis</td>
<td>Dependency oedema</td>
</tr>
<tr>
<td>Baker’s cyst</td>
<td>Renal dysfunction</td>
</tr>
<tr>
<td>Presence/reoccurrence of carcinoma</td>
<td>Hepatic dysfunction</td>
</tr>
<tr>
<td></td>
<td>Hypoproteinaemia</td>
</tr>
<tr>
<td></td>
<td>Hypothyroidism/myxoedema</td>
</tr>
<tr>
<td></td>
<td>Drug-induced (e.g. calcium channel blockers, steroids)</td>
</tr>
<tr>
<td></td>
<td>Lipoedema</td>
</tr>
</tbody>
</table>

Table 3: Signs and symptoms (Lymphoedema Framework, 2006)

- Limb swelling
- Complaints of heaviness
- Tingling sensation
- Skin tight and shiny
- Skin changes (hyperkeratosis, papillomatosis)
- Repeated infection

accompanying severe systemic upset, with high fever and rigors.

Table 3: ISL (2013) lymphoedema staging

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
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<tbody>
<tr>
<td>Stage 0</td>
<td>A subclinical state where swelling is not evident despite impaired lymph transport. This stage may exist for months or years before oedema becomes evident</td>
</tr>
<tr>
<td>Stage 1</td>
<td>This represents early onset of the condition where there is accumulation of tissue fluid that subsides with limb elevation. The oedema may be pitting</td>
</tr>
<tr>
<td>Stage II</td>
<td>Limb elevation alone rarely reduces swelling as pitting is manifest</td>
</tr>
<tr>
<td>Late stage II</td>
<td>There may or may not be pitting as tissue fibrosis is more evident</td>
</tr>
<tr>
<td>Stage III</td>
<td>The tissue is hard (fibrotic) and pitting is absent. Skin changes such as thickening, hyperpigmentation, increased skin folds, fat deposits and warty overgrowths develop</td>
</tr>
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</table>

Lymphorrhoea
‘Lymphorrhoea or ‘leaking legs’, is the leaking of lymph fluid from the skin’s surface, which can be extremely distressing to patients, and challenging for nurses to manage (Lymphoedema Framework, 2006; Cooper, 2012). The cause of lymphorrhoea needs to be established, as this may involve cellulitis, chronic oedema/lymphoedema, or be the result of comorbidities, such as heart or kidney failure (Lymphoedema Framework, 2006). If lymphorrhoea is due to existing comorbidities, medical intervention and possible hospital admission for symptom control may be needed (Lymphoedema Framework, 2006).

If lymphorrhoea is related to cellulitis, a suitable antibiotic regimen should be prescribed, plus

Acute episodes
Antibiotics should be continued until all signs of acute inflammation have resolved. This may mean taking antibiotics for 1–2 months for no less than 14 days from the time a definite clinical response is observed (BLS, 2013), e.g:
- Oral amoxicillin 500mg, eight-hourly is the treatment of choice
- Flucloxacillin 500mg, six-hourly (Streptococcus and Staphylococcus infections)
- Patients who are allergic to penicillin should be prescribed erythromycin 500mg, six-hourly or clarithromycin 500mg, 12-hourly
- If there is no, or a poor response to oral amoxicillin after 48 hours, clindamycin 300mg, six-hourly should be prescribed.

Prophylactic antibiotics
Antibiotic prophylaxis should be considered in patients who experience two or more attacks of cellulitis per year (BLS, 2013), e.g:
- Penicillin V 250mg twice daily (500mg twice daily if the person has a body mass index [BMI] of 33). The dose may be reduced to 250mg daily after one year of successful prophylaxis
- Patients allergic to penicillin can be prescribed erythromycin 250mg twice daily. If this is not tolerated, clarithromycin 250mg daily is an alternative.

Source: British Lymphology Society (BLS), 2013
25th Conference of the European Wound Management Association

EWMA 2015
LONDON · UK
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WOUND CARE – SHAPING THE FUTURE
A PATIENT, PROFESSIONAL, PROVIDER AND PAYER PERSPECTIVE
appropriate dressings for fluid control, e.g. foams, padding and bandaging (Lymphoedema Framework, 2006). Once the cellulitis has resolved, patients should resume or be provided with appropriate compression hosiery. However, if lymphorrhoea occurs due to complications with the patient’s existing chronic oedema/lymphoedema, due to increases in limb volume/size or trauma to the skin and protrusions, for example, papillomatosis, a different approach is needed (Lymphoedema Framework, 2006). This involves the application of compression bandaging to reduce the fluid content within the limb, followed by measuring and application of suitable compression hosiery (Lymphoedema Framework, 2006; Cooper, 2012).

Psychosocial
The impact of lymphoedema extends beyond the physical properties of the condition. Community nurses need to have an awareness of the psychosocial impact of the condition. This may lead to screening, monitoring, signposting or referral to relevant psychological and social services (Cooper, 2012). A recent meta-analysis by Fu et al (2012) identified psychological themes across a number of studies, including depression, helplessness and altered body image. Each of these studies also identified social themes such as marginalisation, social abandonment and an unsupportive work environment (Fu et al, 2012). Other studies have identified similar themes (Fu, 2008; Murray et al, 2010). This illustrates the impact that lymphoedema has upon patients, and the need to place importance not only on the physical complication, but also the psychosocial.

**MANAGEMENT**

Lymphoedema management requires a multifaceted approach to devise a patient care plan and the setting of realistic goals (Lymphoedema Framework, 2006; Cooper, 2012). There are two management phases:

- **Phase 1:** intensive management (2–6 weeks), involving:
  - skin care
  - remedial exercise
  - manual lymphatic drainage (MLD)
  - multilayer lymphoedema bandaging (MLLB)

- **Phase 2:** maintenance, involving:
  - skin care
  - regular exercise
  - compression garments
  - regular dressings
  - skin care

Although, in the author’s clinical experience, only three management methods are usually initiated by community and practice nurses who are not lymphoedema specialists, namely skin care, exercise and compression therapy, with specialist guidance and the completion of agreed competencies, community nurses may become involved in more advanced care, such as the teaching of simple lymphatic drainage (SLD).

**Skin care**
Skin care regimens aim to maintain or re-establish the skin’s main function as a barrier (Lymphoedema Framework, 2006; CREST, 2008; International Lymphoedema Framework [ILF], 2010). As discussed, complications of lymphoedema involve cellulitis and lymphorrhoea. A daily skin care routine ensures that the skin’s integrity is maintained and reduces the potential for bacteria to enter an already compromised system (Cooper, 2010).

Devising a skin care regimen through appropriate emollient selection depends on any existing conditions, for example, eczema and known allergies or sensitisers (Lymphoedema Framework, 2006; Cooper, 2010). Community nurses should also work with patients so that they understand the self-management techniques that can protect their skin, such as managing the nails and preventing fungal infections. Table 5 shows an example of a skin care regimen.

- **Exercise**
  - The ability of exercise to improve the condition of patients with lymphoedema is underestimated (Lymphoedema Framework, 2006; Cooper, 2012). The benefits of exercise include an increase in blood velocity via muscle pump action, lymphatic stimulation, muscle strength, increased joint flexibility and improved psychological wellbeing (Cooper, 2012). A number of exercises are considered suitable, such as yoga and swimming. However, some patients may not be able to complete these activities, and thus need tailored regimens.

The patient’s ability to mobilise and participate in activities will be affected by their existing co-

<table>
<thead>
<tr>
<th>Table 5: General skin care principles (Lymphoedema Framework, 2006)</th>
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<tbody>
<tr>
<td>Wash daily, whenever possible, using pH neutral soap, natural soap or a soap substitute and dry thoroughly</td>
</tr>
<tr>
<td>Ensure skin folds, if present, are clean and dry</td>
</tr>
<tr>
<td>Monitor affected and unaffected skin for cuts, abrasions or insect bites, paying particular attention to any areas affected by sensory neuropathy</td>
</tr>
<tr>
<td>Apply emollients</td>
</tr>
<tr>
<td>Avoid scented products</td>
</tr>
<tr>
<td>Particularly in hot climates, vegetable-based products are preferable to those containing petrolatum or mineral oils</td>
</tr>
</tbody>
</table>

Agreed on your local formulary; however, the most appropriate type of emollients should always be selected. Ointments, for example 50/50, are one of the most effective, but are greasy and can stain clothing/bedding, thus making them more appropriate while the patient is undergoing bandaging. Once bandaging is complete, a cream-based emollient can be used (such as Doublebase® [Dermal Laboratories]), which are less effective but do not cause the issues raised above. Soap substitutes can also be selected, which increase emollient usage during the patient’s normal bathing/cleansing routine. It is always important to consider the patient’s own sensitivities and whether the product has any known irritants, while also ensuring that the patient is educated on how the emollients are used/applied.
A simple and effective alternative to bandaging and stockings*

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The use of exercise is determined by the patient’s willingness and ability to engage in the activity. However, community nurses can encourage patients to take an active role in the self-management of their condition, through appropriate education and support (Department of Health [DH], 2012).

**Compression therapy**

Compression therapy is the mainstay of lymphoedema management and compromises multilayer lymphoedema bandaging (MLLB) and/or compression hosiery/wraps (Cooper, 2012) (Figures 1–3). Today, there are a number of variations in style and colour that may appeal to patients and thus help with concordance. Before applying compression, a patient’s arterial status must be assessed. This should involve a physical assessment and the possible completion of a doppler assessment, for example, ankle brachial pressure index (ABPI) or toe brachial pressure index (TBPI) (Lymphoedema Framework, 2006). Patient tolerance and concordance should also be considered when choosing the most appropriate bandaging option. For example, some patients are more active and wish to wear their own clothes and shoes without the restriction of bulky bandages, and so a two-layer or velcro wrap-based system may be more appropriate, e.g. FarrowWrap (Haddenham Healthcare) and Juxta-Fit/Cure (medi UK). The benefits of these systems are similar to compression bandages, but they help to promote self-management, as the patient and/or their carer are able to apply them (ILF, 2012b).

However, some patients will need more comprehensive bandaging in the form of short-stretch bandages, because this represents the most efficient and effective way of managing their condition due to the greater concordance/tolerance required as a result of variations in pressure. These variations alter between high working and low resting pressures, and are associated with increased lymphatic/vascular stimulation (ILF, 2012b).

Once bandaging has been successful, the patient will require long-term management and maintenance through the use of compression hosiery (Lymphoedema Framework, 2006).

There are a number of companies producing compression garments with variations in style and colour (Cooper, 2010). However, they are either circular or flat-knit, owing to their construction and clinical indications for use (Lymphoedema Framework, 2006). Circular-knit hosiery is constructed through the knitting of material on a cylinder and is shaped by varying stitch height and tension. These garments offer a more cosmetically acceptable appearance, but are not suitable for all patients (Lymphoedema Framework, 2006). Flat-knit hosiery is firmer and thicker in construction, and is sewn together creating a seam (Bianchi et al, 2012).

Circular-knit is offered by most hosiery brands and comes as either custom-fit or ready-to-wear garments, which may be finer in construction or more rigid (Lymphoedema Framework, 2006; Cooper, 2010). Choosing a brand of circular-knit hosiery depends on the patient’s condition, organisational restrictions and clinician knowledge. Company representatives (from companies such as Activa Healthcare, BSN Medical, medi UK and Sigvaris) can help by providing education about different products and offering training and support.

Flat-knit hosiery is mostly custom-fit, which means you choose the style and accessories, but the colour selection varies between brands. Some only offer beige or black, while others have at least five to ten colours from which to choose.

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**Table 6: Doppler assessment: readings and meanings**

<table>
<thead>
<tr>
<th>ABPI</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.5</td>
<td>Referral to vascular specialist (compression therapy contraindicated)</td>
</tr>
<tr>
<td>0.5–0.8</td>
<td>Intermittent claudication indicating arterial disease (compression therapy contraindicated)</td>
</tr>
<tr>
<td>0.8–1</td>
<td>Mild peripheral arterial disease (apply compression therapy with caution)</td>
</tr>
<tr>
<td>1–1.3</td>
<td>Normal (apply compression therapy)</td>
</tr>
<tr>
<td>&gt;1.3</td>
<td>Toe pressures are recommended</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TBPI</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.64</td>
<td>Abnormal indicating arterial disease</td>
</tr>
<tr>
<td>0.64–0.7</td>
<td>Borderline</td>
</tr>
<tr>
<td>&gt;0.7</td>
<td>Normal, indicating no arterial disease</td>
</tr>
</tbody>
</table>

**Notes:**

- TBPI: Toe brachial pressure index
- ABPI: Ankle brachial pressure index
Treatment of venous and mixed aetiology leg ulcers, venous oedema and lymphoedema

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*average donated pressure at the ankle
Any hosiery should ideally extend beyond the level of the oedema to ensure that fluid does not accumulate in uncompressed areas, and to ensure that fluid is efficiently returned to the lymphatic system (Bianchi et al, 2012; Cooper 2012). However, the patient’s tolerance, acceptance and ability to apply and remove the garment will affect implementation. Variations in compression classes can also be confusing owing to the availability of British, German (RAL) and French classes (Lymphoedema Framework, 2006; Bianchi et al, 2012). RAL compression hosiery has been accepted as the standard for individuals with lymphoedema, although this may alter according to diagnosis, for example palliative diagnosis/pain threshold, or presentation (Lymphoedema Framework, 2006).

Once a type of hosiery has been agreed upon, it is important that it is correctly fitted by a nurse, both to ensure suitability, and to demonstrate application and removal techniques to the patient. Verbal and written advice on circulatory warning signs, wear time, laundering and how often the garment will need to be renewed should also be given (Lymphoedema Framework, 2006; Cooper, 2010; Bianchi et al, 2012).

There are application and removal aids available to help with the successful implementation and continuation of compression therapy, however, patients with reduced dexterity may need assistance from carers or relatives (Lymphoedema Framework, 2006).

RESOURCES

Table 7 details further guidance. Alternatively, advice and support can be sourced from existing lymphoedema services or specialists. However, there is now an increased focus upon the creation of link workers within lymphoedema to increase patients’ access to lymphoedema care through increasing the knowledge and skills of nurses and other healthcare professionals in the delivery of management methods. This is especially important with current austerity measures and recent reports, which indicate that there is a shortage of lymphoedema specialists within existing lymphoedema services (Cooper, 2012; 2013). These challenges may lead to changes within service delivery and patient access to specialist services.

CONCLUSION

Lymphoedema is a progressive condition related to multiple causes that are either intrinsic or extrinsic. Its development can result in complications that are both physical (cellulitis) and psychosocial (depression/isolation). As it is an irreversible condition, it is important that steps are put in place to reduce its impact on the patient’s quality of life, including appropriate compression therapy, skin care and an exercise regimen.

The involvement of the patient/carer in self-management will help to improve the patient’s concordance, and, thereby, their quality of life.

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