# Heart failure and lymphoedema: navigating compression therapy

Garry Cooper

Heart failure and lymphoedema are common conditions that often coexist, particularly in older people. Compression therapy, a cornerstone of lymphoedema care, is frequently withheld in those with heart failure due to safety concerns. This article explores the interaction between heart failure and lymphoedema, summarises current evidence on compression safety, and provides practical advice for community practitioners. It highlights key assessment tools (NYHA class, NT-proBNP, vascular tests), addresses common misconceptions, and signposts to national guidelines. With careful assessment and collaboration between cardiology and lymphoedema teams, compression therapy can be used safely in most patients, improving outcomes and quality of life.

KEYWORDS:
■ Lymphoedema ■ Heart failure ■ Compression therapy
■ Chronic oedema ■ Community care ■ Risk assessment
■ Vascular considerations

Heart failure (HF) and lymphoedema are increasingly common chronic conditions in ageing populations that often coexist and compound each other's burden. Both contribute to unplanned admissions, impaired quality of life and rising healthcare costs (Humphreys et al, 2017; Wounds UK, 2023; Thomas et al, 2025). In the UK, approximately one million people are living with HF, with around 200,000 new diagnoses each year, and prevalence rises steeply in those aged over 75 (Conrad et al, 2018; National Institute for Health and Care Excellence [NICE], 2021; British Heart Foundation [BHF], 2023). Hospital admissions for HF have increased by more than a third in the past decade, with many patients also living with comorbidities such as chronic oedema, venous disease or diabetes (Itkin et al, 2021; NICE, 2021).

**'In practice, distinguishing lymphoedema from HF-related or venous oedema can be challenging, and coexistence is common... .'**

Lymphoedema is under-recognised yet widespread. Globally, it affects an estimated 250 million people, and UK community nursing data suggest that up to 56.7% of patients have some form of chronic oedema (Moffatt et al, 2019; Chima et al, 2022). In Wales alone, over 25,000 patients are currently receiving lymphoedema care, equating to 7.3 per 1,000 population (Thomas et al, 2025). Older adults and people with HF, obesity or reduced mobility are particularly vulnerable to developing chronic oedema (Moffatt et al, 2019; NICE, 2021).

*Garry Cooper, national research and innovations specialist, Lymphoedema Wales Clinical Network (LWCN)*

## PATHOPHYSIOLOGY AND OVERLAP

Lymphoedema is characterised by accumulation of protein-rich interstitial fluid due to lymphatic insufficiency; it may be primary (congenital) or secondary (e.g. after cancer treatment, trauma, venous disease or immobility) (Itkin et al, 2021; MA Healthcare Ltd and British Lymphology Society, 2025). HF, in contrast, is a syndrome of impaired cardiac output and/or elevated intracardiac pressures that leads to sodium and water retention and peripheral oedema (Itkin et al, 2021; McDonagh et al, 2021; NICE, 2021).

In practice, distinguishing lymphoedema from HF-related or venous oedema can be challenging, and coexistence is common: impaired cardiac function may reduce lymphatic transport, while persistent oedema can exacerbate venous hypertension, creating interdependent pathology (Itkin et al, 2021; Thakra and Sultan, 2021; British Lymphology Society [BLS], 2024).

## COMPRESSION THERAPY AND CLINICAL CAUTION

Compression therapy is a cornerstone of lymphoedema care but is often withheld in patients with HF owing to concerns about precipitating

**Practice point**

Heart failure (HF) and lymphoedema are distinct yet interconnected conditions, and their co-occurrence is more than coincidental. Understanding their shared and compounding pathophysiology is essential for safe and effective care.

decompensation, pulmonary oedema or hypotension (Wounds UK, 2023; BLS, 2023). However, emerging clinical evidence suggests that in stable/compensated HF (e.g. New York Heart Association [NYHA] class I–II, McDonagh et al, 2021, see *Table 1*), low-to-moderate compression can be used cautiously under supervision, supported by risk assessment and monitoring (Urbanek et al, 2020; BLS, 2023; Wounds UK, 2023). UK-wide survey data highlight substantial uncertainty and variation in practice, particularly among HF services, together with unmet education needs and inconsistent pathway use (Cooper et al, 2025a; Cooper et al, 2025b). These themes are echoed in international reports of compression use in HF (Papismadov et al, 2019; Cooper-Stanton, 2022).

This article:

- Summarises the shared features and challenges of HF and lymphoedema
- Clarifies when compression therapy may be applied safely
- Supports decision-making with current recommendations and practical examples (BLS, 2023; Wounds UK, 2023; BLS and Lymphoedema Support Network [LSN], 2025).

## LYMPHATIC DYSFUNCTION IN HEART FAILURE

HF impairs both forward cardiac output (the amount of blood pumped by the heart) and venous return, leading to raised central venous pressure. This elevation forces fluid to transudate, that is, to seep out of blood vessels into the surrounding tissues. Initially, the lymphatic system compensates by draining this excess fluid, but when its capacity is exceeded, chronic oedema develops (Itkin et al, 2021; Cooper-Stanton, 2022). For example, a patient with HF may notice their ankles swelling by evening. At first, the lymphatic system manages this daily fluid shift, but as HF progresses, swelling persists overnight and gradually becomes constant.

Sustained venous hypertension (persistently high pressure in the veins) and lymphatic overload can cause dilation of lymphatic vessels, valve incompetence and tissue fibrosis. These pathophysiological changes mirror those of secondary lymphoedema and are sometimes described as venous–lymphatic overload (BLS, 2023). Over time, such changes may lead to skin thickening, leakage of lymph fluid (lymphorrhoea) and recurrent cellulitis, which complicates both diagnosis and management (Thakra and Sultan, 2021; BLS and LSN, 2025). Clinically, this might present as a patient with HF whose legs not only swell, but also start weeping fluid through fragile skin. Although this may be a typical feature of lymphatic failure, cardiac presentation and stability still need to be considered (Thomas et al, 2022; Wounds UK, 2023).

## OVERLAPPING SYMPTOMS AND RISK OF MISDIAGNOSIS

Swelling of the lower limbs is common in HF and often attributed to general fluid overload. However, when oedema is asymmetric (affecting one leg more than the other), or unresponsive to diuretics (water tablets), this may suggest an underlying lymphatic problem (Urbanek et al, 2020; Cooper and Brown, 2024). HF has been reported as a contributing factor in over one-quarter of community cases of chronic oedema (Moffatt et al, 2019). Elevated B-type natriuretic peptide (BNP) levels, commonly used as a biomarker for HF, have also been detected in patients referred to lymphoedema services, underlining the importance of careful differential diagnosis (Urbanek et al, 2020; BLS, 2024). For instance, a district nurse may visit a patient on maximum diuretic therapy whose swelling remains unchanged. Closer assessment shows one calf is larger and firmer than the other, pointing to lymphoedema rather than purely HF-related fluid overload.

To support safe decision-making, three key clinical tools are particularly useful in this population:

- N-terminal (NT) pro-BNP – a blood test that helps confirm or rule out HF by indicating myocardial strain
- Echocardiography – the definitive investigation for diagnosing HF, determining ejection fraction, and identifying structural causes of oedema such as valvular disease, right-sided dysfunction or pulmonary hypertension
- Type of heart failure – for example, heart failure with preserved ejection fraction (HFpEF) versus reduced ejection fraction (HFrEF), which guides interpretation of symptoms and informs risk when initiating compression
- NYHA functional classification – assesses the severity of HF symptoms and helps determine current stability and tolerance for added circulatory load.

These provide objective reference points when considering whether compression therapy should be introduced or deferred.

## COMPRESSION THERAPY: EVIDENCE OF SAFETY IN STABLE HEART FAILURE

Historically, compression therapy was avoided in HF because of concerns that shifting fluid back to the central circulation could worsen pulmonary congestion or cause hypotension. However, growing evidence suggests that in patients with stable HF (NYHA class I–II), light-to-moderate compression is safe and well tolerated (Rabe et al, 2020; Cooper-Stanton, 2022). Studies of bandaging, compression hosiery (class 1–2) and intermittent pneumatic compression have shown no major adverse cardiac effects (Cooper-Stanton, 2022; Wounds UK, 2023; BLS, 2024). Where preload increases (extra fluid returning to the heart) were observed, these were usually mild, temporary and symptom-free (Urbanek et al, 2020).

As Papismadov et al (2019, cited in Cooper-Stanton, 2022: 7) note, 'gradual external compression does not lead to a dangerous increase in central blood volume in stable patients'. The BLS (2023: 6) confirms this, stating:

> *Compression therapy may be used safely in patients with stable heart failure under clinical supervision.*

Earlier guidelines from the International Lymphoedema Framework (ILF, 2006) and the Clinical Resource Efficiency Support Team (CREST, 2008) also support compression in patients without evidence of decompensation. In contrast, in unstable HF (e.g. NYHA class IV or during acute decompensation), compression should be withheld or delayed until cardiovascular status has stabilised (Itkin et al, 2021; BLS, 2023). In practice, this means a patient with mild HF symptoms who remains active and stable on medication may benefit from class 1 compression stockings to control ankle swelling, whereas another patient admitted with acute breathlessness and rapid weight gain should not be bandaged until stabilised.

## INTEGRATING COMPRESSION INTO HF MANAGEMENT FRAMEWORKS

Heart failure management is typically structured around four foundational treatment pillars, each targeting a distinct pathophysiological mechanism, namely:

- ACE (angiotensin-converting enzyme) inhibitors or ARNI (angiotensin receptor–neprilysin inhibitors) – these reduce afterload and inhibit the renin–angiotensin–aldosterone system (RAAS), lowering blood pressure and cardiac workload while improving ventricular remodelling
- Beta-blockers – by inhibiting sympathetic nervous system activation, beta-blockers reduce heart rate, myocardial oxygen demand and risk of arrhythmias, thereby improving survival
- Mineralocorticoid receptor antagonists (MRAs) – these block aldosterone, reducing sodium and fluid retention, limiting myocardial fibrosis and lowering the risk of hospitalisation
- SGLT2 inhibitors (sodium–glucose co-transporter 2 inhibitors) – these promote natriuresis and diuresis, improve metabolic efficiency and reduce cardiac preload and afterload. They are now recommended across HF phenotypes

(NICE, 2021; McDonagh et al, 2021).

**Table 1:** Clinical reference table for common terms in heart failure (BLS, 2023; Wounds UK, 2023; NICE, 2025)

| Category | Subcategory detail | Clinical reference |
|---|---|---|
| NYHA classification | Class I | No symptoms and no limitations in ordinary physical activity |
| NYHA classification | Class II | Mild symptoms and slight limitations during ordinary activity |
| NYHA classification | Class III | Marked limitation in activity due to symptoms, comfortable only at rest |
| NYHA classification | Class IV | Severe limitations; symptoms even at rest |
| Heart failure type | Left-sided heart failure | Dyspnoea, fatigue, pulmonary congestion |
| Heart failure type | Right-sided heart failure | Peripheral oedema, ascites, jugular venous distension |
| Heart failure type | Biventricular failure | Features of both left and right-sided failure |
| NT-proBNP levels | >2000pg/ml | Refer for specialist input, such as heart failure team |
| NT-proBNP levels | 400–2000pg/ml | Heart failure possibility refer for electrocardiograph |
| NT-proBNP levels | 125–400pg/ml | Heart failure unlikely as primary cause of symptoms |

Together, these four pillars form the core of guideline-directed medical therapy for HF (NICE, 2021; McDonagh et al, 2021). In addition to these disease-modifying therapies, diuretics (usually loop diuretics such as furosemide) are recommended by NICE for the symptomatic relief of congestion in all types of heart failure. While they do not improve mortality, they are essential for controlling fluid overload and enabling patients to tolerate guideline-directed medical therapy (NICE, 2021).

Alongside these mainstay treatments, compression therapy can be considered a supportive intervention. While it does not act directly on cardiac function, compression helps control peripheral swelling, prevents skin breakdown and improves comfort. In this way, it can be conceptualised as a potential fifth pillar of integrated management, complementing pharmacological therapy. Recognising compression therapy within this framework promotes joint working between cardiac and lymphoedema services and helps prevent the therapeutic stagnation that is often seen in patients with complex multimorbidity.

## BARRIERS, TRAINING NEEDS, AND PRACTICE IMPLICATIONS

Despite growing awareness of the complexity of chronic oedema, there remain significant barriers to optimal care for patients with coexisting HF and lymphoedema. These challenges span service design, clinical knowledge and communication between specialities (Cooper et al, 2025a; Cooper et al, 2025b).

### Fragmented care

Patients often fall between cardiology and community services, leading to missed opportunities for joint management (Cooper et al, 2025a; Cooper et al, 2025b). Lymphoedema is typically managed in community or outpatient services, whereas HF is overseen by cardiology-led multidisciplinary teams. As a result, dual pathology may be overlooked or poorly coordinated, with neither team confident in addressing both aspects of care. Findings from Wales (Thomas et al, 2025) and from UK-wide survey data (Cooper et al, 2025a; Cooper et al, 2025b) highlight that patients with lymphoedema frequently present in non-lymphoedema settings, including:

- HF clinics
- Echocardiography services

- Tissue viability and leg ulcer clinics
- General practice and community nursing.

This variability increases the risk of inconsistent advice and, in some cases, inappropriate exclusion from compression therapy. A UK-wide evaluation (Cooper et al, 2025a; Cooper et al, 2025b) also identified clear gaps in staff knowledge and confidence:

- HF nurses may lack training in compression, while lymphoedema nurses may not feel confident with cardiac assessment
- Only a minority of lymphoedema practitioners reported feeling confident managing patients with HF
- Misconceptions about compression safety were common, particularly among staff unfamiliar with NYHA staging or basic haemodynamic principles.

In the author's clinical experience, this can lead to compression being avoided altogether, even in stable patients with primarily lymphatic swelling, while in other situations it is initiated without considering the relative cardiac and lymphatic contributions to oedema.

### Pathway and resource limitations

Community staff may lack access to NT-proBNP testing or ankle brachial pressure index (ABPI) measurement studies for vascular assessment, both of which support safe decision-making. Access to ABPI or toe–brachial pressure index (TBPI) measurements is also limited in some settings, making it difficult to exclude significant arterial disease before applying compression (BLS, 2018). Furthermore, echocardiography and NT-proBNP testing are not always available in a timely manner across all regions. These diagnostic constraints can delay safe compression decisions and prolong patient symptoms (Cooper et al, 2025a; Cooper et al, 2025b).

While the BLS (2024) and the National Wound Care Strategy Programme (NWCSP, 2020) provide detailed guidance on compression in complex patients, awareness and consistent implementation remain patchy (Cooper et al, 2025a; Cooper et al, 2025b).

**Table 2:** Clinical resources and guidelines

| Resource | Description |
|---|---|
| British Lymphology Society (BLS) (2024) *Managing lymphoedema in the presence of heart failure: making safe treatment decisions including the use of compression therapy.* Available online: www.thebls.com/public/uploads/documents/document-42971728332741.pdf | Position statement outlining safe use of compression in patients with HF, including when to initiate, monitor, or withhold therapy |
| International Lymphoedema Framework (ILF) resources | Educational resources and international consensus documents on best practice for lymphoedema care, including compression standards |
| National Wound Care Strategy Programme (NWCSP) (2020) *Recommendations for clinical care – Lower limb* | UK national guidance on wound and oedema management, including pathways for compression and vascular assessment |
| NICE (2021) *Chronic heart failure in adults – diagnosis and management.* NG 106. Available online: www.nice.org.uk/guidance/ng106 | Evidence-based guidance on diagnosis and management of chronic HF, including NT-proBNP testing and treatment algorithms |
| The Chronic Oedema Wet Leg Pathway — Wales (2022) | Evidence-based pathway for the management of lymphorrhoea (wet legs), developed by the Lymphoedema Wales Clinical Network |
| Wounds UK (2023) *Best Practice Statement. The use of compression therapy for peripheral oedema: considerations for people with heart failure.* Available online: https://wounds-uk.com/best-practice-statements/the-use-of-compression-therapy-for-peripheral-oedema-considerations-in-people-with-heart-failure/ | Practical guidance on the safe and effective use of compression in peripheral oedema, including case examples and tools for non-specialist staff |

## RECOMMENDATIONS FOR PRACTICE

To improve outcomes for patients with coexisting HF and lymphoedema, the following actions are recommended (BLS, 2024; Wounds UK, 2023; Cooper et al, 2025a; Cooper et al, 2025b):

- Develop and embed integrated care pathways linking HF and lymphoedema services
- Provide cross-specialty education on lymphatic and cardiac comorbidity
- Implement clear referral guidance and checklists to support safe use of compression
- Expand community access to TBPI and NT-proBNP testing to guide early decision-making
- Establish audit and feedback mechanisms to monitor outcomes and ensure safety.

## CONCLUSION

Lymphoedema and HF often coexist, creating complex challenges for clinicians. While compression therapy was once avoided, evidence now shows it can be safely used in stable cases with appropriate monitoring. Rather than excluding patients automatically, practitioners should carry out careful assessment, use recognised clinical tools and refer early when uncertain.

Recognising key signs of both conditions is essential. Heart failure may present with bilateral ankle swelling, fatigue, or reduced exercise tolerance, while lymphoedema is more likely to show persistent swelling, asymmetry, or skin changes. Tools such as NYHA classification, NT-proBNP testing, and TBPI provide structured support for safe decision-making.

Patients frequently present in a range of settings beyond specialist services, meaning all healthcare professionals need a basic awareness of both conditions. Improved integration, shared pathways, and wider access to diagnostics will help ensure safe, consistent care. By working together and using compression appropriately, clinicians

can reduce avoidable suffering and improve quality of life for this complex patient group. **JCN**

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## KEY POINTS

- Compression therapy is a key treatment for lymphoedema but is often withheld in patients with heart failure due to safety concerns.
- Heart failure and lymphoedema frequently coexist, especially in older adults, yet few practitioners receive training on their combined management.
- A person-centred approach, including assessment of cardiovascular stability and tailored compression levels, enables safe use in most patients.
- National guidance such as the BLS Position Statement (2023) supports compression in stable heart failure with monitoring.
- Decision-making should consider NYHA class, symptom burden, and response to previous therapies.
- Where uncertainty exists, early referral to lymphoedema or cardiology services is recommended.


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