

Prospective surveillance, prophylactic treatment and proactivity, and ... problems solved?

Neil Piller

Our lymphoedema and lymphatic failure detection strategies and tools are wide ranging, and have good reliability and accuracy. Often, however, when they are used to assess the subclinical and early stages of lymphoedema, we may be missing out on a key piece of information (i.e. how did the limb/limbs present prior to the intervention), which can cause or contribute to the swelling, and what they were like prior to any clinically detectable lymphoedema by these tools. In an ideal situation, we should undertake a prospective surveillance of these patients — ideally, all of them or at least those at highest risk of developing lymphoedema. For these patients, irrespective of the cancer treatment programme, they are about to go through prehabilitation, which may provide improved functional outcomes and improved awareness, and perhaps allow earlier recognition and management of lymphoedema risk factors, and sub-clinical changes by the patient and healthcare team (Stout et al, 2021).

What we also need to consider more even if we don't have some of the above information is prophylactic treatment. Compression delivered by bandages, garments, wraps and pumps is the core of lymphoedema treatment and management once it's developed, but we also need to be aware of its potential prophylactic benefits. A study by Paramanandam et al (2022) showed delayed occurrence of arm swelling (in those indicated to be at elevated risk for lymphoedema) in the first year after surgery following 3 months of compression. Certainly, similar quality studies are required for those at risk of leg lymphoedema, but there is good evidence to indicate a benefit in this group as well.

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In terms of lymphoedema in tropical and nearby countries arising because of filarial involvement, the question is whether the information from these studies can also be translated to the early and subclinical phases. The answer seems to be “yes” but, again, further research is needed. Certainly, any prophylactic intervention should give improved outcomes, patient awareness and management.

Our objective knowledge of the patient's presentation is also strongly determined by the measurements we make, but there remain differing opinions about what is best and when is best. No matter its location or the reasons for its presence, the reported incidence of lymphoedema varies widely, in part due to its dependence on criteria which define it. Despite the fact we have the International Society of Lymphology (ISL) consensus and other documentation (ISL, 2020), there is a lack of information about pre-treatment baseline starting points and comorbidities, such as cardiac, thyroid, liver, kidney issues, which may affect interstitial fluid levels and their contents.

The key message is we must perform an accurate differential diagnosis and consider and manage any comorbidity before we can get to the core issue — the lymphoedema.

The tools and methods we can objectively use are wide and each has a specific benefit in terms of the objective information it offers. Bioimpedance spectroscopy (BIS) has demonstrated benefits of early detection of limb or segmental fluids and (Ridner et al, 2022). Other early detection strategies utilising tissue dielectric constants (TDC) can give information about fluids at specific sites, such as an individual lymphatic territory and at varying depths (Lahtinen et al, 2015; Mayrovitz et al, 2019). Both have the potential to provide an economic benefit in terms of the future cost of treatment (Forte et al, 2021), but each have some limitations and its worth being aware of them.

As an example, Keeley (2021) showed limb volume measurements performed better than BIS in the early detection of breast cancer treatment-related lymphoedema (BCRL) and emphasised that pre- and post-operative monitoring of limb volume measurements is useful in early detection and for prediction of those likely to develop BCRL, allowing the important early intervention. Ridner et al (2022) using a >10% arm volume change from baseline compared the use of BIS and tape measurements as triggers for an intervention. Compared to tape measurement, BIS provided a more precise identification of patients likely to benefit from an early compression intervention!

Lahtinen et al (2015) reported differences between TDC and BIS and that these were linked to the techniques, but indicated that TDC was more sensitive than BIS in early stage lymphoedema since the fluids are mainly superficially located.

Where do these measurements fit in with semi-automated and automated circumference measurement approaches? Campanholi et al (2021) compared circumferential girth measurements of the upper limbs using a tape measure and volume calculations based on a truncated cone against the opto-electronic perometer measurements. They concluded that there is good agreement between perometry and circumferential girth measurements when patients were classified as having a difference between arm volumes or more than 200 mL or 10% — the widely accepted criteria for the beginnings of clinically discernible stage 1 lymphoedema.

Units such as the perometer are beneficial in larger clinics with a high-volume throughput. From a cost-benefit perspective though, tape measurement with volume calculations using input into Microsoft Excel worksheets or similar files, and limb volume measurements using water displacement work well when

the situation or economy do not allow for other equipment.

The objective assessment of fluid in the whole or part of a limb, or an individual lymphatic territory as described above, is great when you have the equipment. If not, then the simplest means of getting a feeling of fluid content of a site is by using the pitting test! It's simple and effective and achieves best replicable results when pressure is applied to an area for at least 30 seconds (according to most recommendations). The grade of pitting can then usually be given on a 1–4 scale.

Does it matter then what we do, as long as something is done, and it informs us of the condition of the patient's limb or area and guides us to the appropriate treatments?

I believe the clear message from all these studies is to select a measurement method you can undertake given what is available in your clinic area, and to use it for every appointment from any pre-screening to the follow through measurement of the development and treatment impacts on the lymphoedema. We could say "what does it matter what you do as long as some objective measurement is made!"

Impact of COVID-19

Aside from all the issues presented here, we must also consider the impact of COVID-19 on lymphoedema, not only due to the increased viral load on the lymphatic system (e.g. associated inflammatory events) but also on the patient's ability to interact optimally with the clinical expert in treatment and management of the lymphoedema. Borman et al (2022) evaluated the concerns and problems of lymphoedema patients. They included issues about access to care and provision of management and control follow-ups and the

presence of psychological symptoms. They concluded that the lockdown has a significant impact on the patients' health and health care. Many were not able to receive recommended treatment or get new garments when needed. These issues need further exploration, but lymphoedema services must be prepared to make available and deliver information and directions virtually to enable effective care to meet the needs of the patients.

Global knowledge and its sharing

Gibson et al (2021) indicated there is a market-led biomedical hierarchisation often focusing on high-levels of intervention and high-cost approaches. These are often imposed on areas of low income and socio-economic settings. They indicated that low-cost and relatively well evidence-based studies and knowledge from low- or middle-income countries is neither recognised nor valued. They concluded "that unpacking these dynamics is a necessary route to providing a more equitable health delivery accessible for the many rather than the few". Witter et al (2019) found that we need to recognise the influence of local groups more and the importance of developing national and sub-national institutions for gathering, filtering, and sharing evidence globally.

That is already happening with the improved documentation associated with groups and societies, such as the British Lymphology Society, the Australasian Lymphology Association, the International Lymphoedema Framework, the International Society of Lymphology and many others around the world. To make a difference at your level, see what your local documentation is and react or adhere to it to make sure you can make a difference and get the best outcome for the

patient in front of you, no matter where you are!

Lastly, share your views and findings by publishing and presenting, so we can all learn from your experiences and strengthen our national and international knowledge.

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