

WHAM Evidence summary: Single modality treatment of lymphoedema: Manual lymphatic drainage

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CLINICAL QUESTIONS

What is the best available evidence on the effectiveness of manual lymphatic drainage (MLD) for managing lymphoedema?

KEYWORDS

Lymphoedema, oedema, lymphatic system, manual lymphatic drainage, massage

SUMMARY

Manual lymphatic drainage (MLD) is used to treat lymphoedema. The specialised rhythmic ‘massage’ technique is thought to increase lymphatic drainage. There is *Level 1* evidence from a meta-analysis of randomised controlled trials (RCTs) suggesting that treatment only with MLD produces inferior results compared to a treatment regimen that includes compression therapy and other modalities for reducing limb volume.¹ However, there also is *Level 1*^{2, 3} and *Level 4*⁴ evidence that MLD reduces pain and promotes physical function.

(Note: This WHAM evidence summary should be read in conjunction with the WHAM evidence summary titled *Managing lymphoedema: Complex Lymphoedema therapy*).

CLINICAL PRACTICE RECOMMENDATIONS

All recommendations should be applied with consideration to the wound, the person, the health professional and the clinical context:

There is good evidence that manual lymphatic drainage alone (i.e., when not combined with other treatment modalities) is insufficient in reducing limb volume associated with lymphoedema (Grade A).

There is some evidence that manual lymphatic drainage alone (i.e., when not combined with other treatment modalities) promotes physical and psychological functioning in patients with lymphoedema (Grade B).

There is some evidence that manual lymphatic drainage alone (i.e., when not combined with other treatment modalities) reduces pain and discomfort associated with lymphoedema (Grade B).

Table 1: Sources of evidence and the level

| Level 1 Evidence | Level 2 Evidence | Level 3 Evidence | Level 4 Evidence | Level 5 Evidence |
|---|-----------------------------------|---|--|---|
| Experimental Designs | Quasi-experimental Designs | Observational – Analytic Designs | Observational – Descriptive Studies | Expert Opinion/ Bench Research |
| 1.a Systematic review of RCTs ¹ 1.b Systematic review of RCTs and other designs ⁹ 1.c RCT ^{2, 3, 10} | None | 3.e Observational study without a control group ^{11, 12} | 4.c Case series ¹³ 4.d Case report ¹⁴ | 5.b Expert consensus ^{15, 16} 5.c Expert opinion ¹⁷⁻²³ |

SOURCES OF EVIDENCE

This summary was conducted using methods published by the Joanna Briggs Institute.⁵⁻⁸ This evidence summary is based on a structured database search using variations of the search terms describing lymphoedema and MLD. Searches were conducted in EMBASE, Medline, AMED and the Cochrane Library for evidence from 1990 to 2014 in English. Levels of evidence for intervention studies are reported in the table above.

BACKGROUND

Lymphoedema is a form of chronic, progressive oedema in which there is significant, persistent swelling of a limb or other body region due to excess and abnormal accumulation of protein-rich fluid in body tissues. This fluid contains a range of inflammatory mediators and adipogenic factors.^{9, 16-18, 21} The lymphatic system is unable to manage the volume of accumulated fluid.¹⁸

Lymphoedema occurs due to primary, secondary or mixed causes. Primary causes are described as congenital (e.g. an inherited disorder such as Milroy's disease), praecox (onset at puberty, e.g. Meige's disease) or tarda (sudden onset no apparent cause).^{15, 19, 20} Secondary causes arise from direct damage or trauma to the lymphatic system such as injury surgery or radiotherapy (usually related to treatment of breast cancer), or parasitic invasion.^{11, 15, 19} Lymphatic filariasis (also called elephantitis) is a cause of secondary lymphoedema endemic in areas primarily in Africa and Asia. Lymphatic filariasis is a parasitic (roundworm) infection that is spread by mosquitoes and causes damage to the lymphatic system that may result in lymphoedema. Infection generally occurs in childhood, although. Management focuses on large-scale treatment programs to reduce disease spread.²⁴ Mixed lymphoedema describes lymphoedema arising from decompensation or failure of the lymphatic system associated with other disease or conditions, including but not limited to obesity, immobility, venous disease or lipoedema.^{13, 15, 19}

Without management, lymphoedema may lead to:^{18, 25}

- progressive swelling,
- physical and functional limitations,
- chronic infection,
- fibrosis,
- lymphorrhoea (leaking of lymph fluid)

- pain and discomfort, and
- reduced ability to undertake activities of daily living (ADLs).

Manual lymphatic drainage is an intervention that seeks to reduce lymphoedema using a specialised, rhythmic, light 'massage' technique to promote contraction of the superficial lymphatic system, thereby increasing lymph drainage.¹ The earliest and most commonly reported method for performing MLD is the Vodder method, which involves a specialised technique that includes circular pumping strokes of pressure applied to the skin and tissues (approximately 30 mmHg) in combination with periods of rest.^{1, 22, 23} The therapy is used in management of trunk, head and neck, genital and lower limb oedema;²² however, the vast majority of research reports on its use is for upper limb oedema associated with breast cancer treatment.

CLINICAL EVIDENCE

Effectiveness in reducing oedema

One meta-analysis¹ included 6 randomised controlled trials (RCTs) that investigated effectiveness of MLD (primarily the Vodder method) for reducing arm volume in patients with breast cancer-related lymphoedema. Manual lymphatic drainage was primarily compared to bandaging or sleeve compression, although two of the trials used simple lymphatic drainage as the comparison treatment. The meta-analysis found no significant difference in effect between MLD (n = 117 patients) and comparison treatments (n = 120 patients; weighted mean difference 75.12; 95% confidence interval [CI] -9.34 to 159.58, p = 0.08). Significant heterogeneity (p < 0.00001) was established between the trials and methodological inconsistencies in the trials (that were mostly low quality) were also noted¹ (*Level 1*).

In one RCT,³ MLD in conjunction with compression bandaging (n = 15 women post cancer surgery) was effective in significantly reducing mean arm volume after six weeks of treatment (3,533ml versus 3,004 ml, 12.2% decrease, p < 0.001). There was no significant difference in effect when compared to a group (n=15) performing self-lymphatic drainage in conjunction with pneumatic compression. In this study the MLD was performed second daily by a physiotherapist. Short stretch compression bandages were applied following MLD³ (*Level 1*).

Effectiveness in improving physical and psychological function

Manual lymphatic drainage administered over six weeks (n = 15 women post cancer surgery) was associated with significant improvements in self-rated (4-point Likert scale) measures of physical function (p=001); cognitive function (p = 0.02); global quality of life (p = 0.01) emotional function (p = 0.01) and fatigue (p = 0.002). No significant improvements were noted in self-rated fatigue or appetite³ (Level 1).

In one non-blinded cross-over RCT² (n = 31 women with breast-cancer related lymphoedema), Vodder method MLD (15 sessions over 3 weeks) was associated with significant reduction in limb volume (reported in a meta-analysis above¹), as well as improvements in self-reported outcome measures including emotional function (p = 0.006), dyspnoea (p = 0.04) and sleep disturbance (p = 0.03), heaviness (p = 0.003), fullness (p < 0.001) and hardness (p < 0.001)² (Level 1).

In one non-blinded RCT¹⁰ (n=42 women with unilateral breast-cancer related lymphoedema) patients receiving MLD (8 sessions over 2 weeks) in conjunction with a compression sleeve experienced significant improvements (p value not reported) in heaviness, function, tightness and mobility at 4 weeks follow-up, but there were no significant differences compared with a group receiving a compression sleeve alone¹⁰ (Level 1).

A retrospective case series⁴ of patients receiving palliative care for advanced cancer reported on effectiveness of MLD in decreasing dyspnoea. At admission, 23 patients experienced dyspnoea with a mean severity rating of 6 on a 10-point scale. Severity decreased to a mean of 3 points (p = 0.001) following a MLD session⁴ (Level 4).

Effectiveness in reducing pain

Manual lymphatic drainage administered over six weeks in women following cancer surgery (n = 15) was effective in significantly reducing pain (p = 0.001) scored on a 4 point Likert scale.³ (Level 1).

In one non-blinded cross-over RCT² (n = 31 women with breast-cancer related lymphoedema), Vodder method MLD (15 sessions over 3 weeks) was associated with significant reduction pain (p = 0.01) and discomfort (p = 0.002).² (Level 1).

In one non-blinded RCT¹⁰ (n = 42 women with unilateral breast-cancer related lymphoedema) patients receiving

MLD in conjunction with a compression sleeve experienced significant improvements (p value not reported) in achiness, pain and discomfort, but there were no significant differences compared with a group receiving a compression sleeve alone¹⁰ (Level 1).

A retrospective case series⁴ of patients receiving palliative care for advanced cancer (n = 90) reported on effectiveness of Vodder method MLD performed by a physiotherapist. Patients received a mean 7.0 ± 5.8 sessions lasting 41.4 ± 19.4 minutes each. There was a clinically significant mean reduction of 2 points in pain intensity measured on a 10-point scale compared to pain scores taken after analgesia administration but before physiotherapy commenced (p < 0.0001)⁴ (Level 4).

CONSIDERATIONS FOR USE

Contraindications and adverse events associated with manual lymphatic drainage

One expert reported MLD as contraindicated for patients with acute infection or inflammation, major cardiac problems, venous obstruction or thrombosis, haemorrhage, acute enuresis or malignant tumour¹⁴ (Level 4).

CONFLICTS OF INTEREST

The author declares no conflicts of interest in accordance with International Committee of Medical Journal Editors (ICMJE) standards.

FUNDING

The author would like to acknowledge the support of the Australian Government's Cooperative Research Centres Program.

ABOUT WHAM EVIDENCE SUMMARIES

WHAM evidence summaries are consistent with methodology published in

Munn Z, Lockwood C, Moola S. The development and use of evidence summaries for point of care information systems: A streamlined rapid review approach, *Worldviews Evid Based Nurs*. 2015;12(3):131-8.

Methods are provided in detail in resources published by the Joanna Briggs Institute as cited in this evidence summary. WHAM evidence summaries undergo peer-review by an international review panel. More

information is available on the WHAM website: <https://www.whamwounds.com/>.

WHAM evidence summaries provide a summary of the best available evidence on specific topics and make suggestions that can be used to inform clinical practice. Evidence contained within this summary should be evaluated by appropriately trained professionals with expertise in wound prevention and management, and the evidence should be considered in the context of the individual, the professional, the clinical setting and other relevant clinical information.

PUBLICATION

This evidence summary has been published in Wound Practice and Research:

Haesler E. Evidence summary: Single modality treatment of lymphoedema: Manual lymphatic drainage. Wound Practice and Research, 2016; 24(2): 116-8.

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