

# EVIDENCE BASED STATEMENT

DOMAIN **2**, Statement **10**

TOPIC: “Ultrasound scanning protocol for lower limb lymphedema or lipedema”

## SEARCH TERMS & SOURCES

(lymphedema OR lipedema) AND ultrasound AND (lower limb)

### INCLUSION CRITERIA

- Lower limb only
- Reviews & RCT, < 10 years, only ENG

## SEARCH RESULT BEFORE - AFTER SELECTION

26 (before) - 2 (after selection)

### PERTINENT LITERATURE NOT IDENTIFIED BY THE LITERATURE SEARCH

1. Amato ACM, Saucedo DZ, Santos KDS, Benitti DA. Ultrasound criteria for lipedema diagnosis. *Phlebology*. 2021 Sep;36(8):651-658.
2. Gasparis AP, Kim PS, Dean SM, et al. Diagnostic approach to lower limb edema. *Phlebology*. 2020;35(9):650-655.
3. Iker E, Mayfield CK, Gould DJ, Patel KM. Characterizing Lower Extremity Lymphedema and Lipedema with Cutaneous Ultrasonography and an Objective Computer-Assisted Measurement of Dermal Echogenicity. *Lymphat Res Biol*. 2019 Oct;17(5):525-530.
4. Forte AJ, Huayllani MT, Boczar D, et al. Ultrasound Elastography Use in Lower Extremity Lymphedema: A Systematic Review of the Literature. *Cureus*. 2019 Sep 5;11(9):e5578.
5. O'Donnell TF Jr, Allison GM, Iafrati MD. A systematic review of guidelines for lymphedema and the need for contemporary intersocietal guidelines for the management of lymphedema. *J Vasc Surg Venous Lymphat Disord*. 2020 Jul;8(4):676-684.
6. Mander A, Venosi S, Menegatti E, et al. Upper limb secondary lymphedema ultrasound mapping and characterization. *Int Angiol*. 2019 Aug;38(4):334-342
7. Suehiro K, Morikage N, Ueda K, et al. Venous hemodynamics assessed with air plethysmography in legs with lymphedema. *Vasc Med*. 2018 Apr;23(2):139-142.
8. Jensen MR, Simonsen L, Karlsmark T, Bülow J. Lymphoedema of the lower extremities--background, pathophysiology and diagnostic considerations. *Clin Physiol Funct Imaging*. 2010 Nov;30(6):389-98.

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## IDENTIFIED REFERENCES

- 1: Forte AJ, Huayllani MT, Boczar D, et al. Ultrasound Elastography Use in Lower Extremity Lymphedema: A Systematic Review of the Literature. Cureus. 2019 Sep 5;11(9):e5578.
- 2: Todd M. Best practice: Doppler assessment in lymphoedema. Br J Community Nurs. 2016 Dec 2;21(12):612-613.
- 3: Małek G, Nowicki A. Standards of the Polish Ultrasound Society - update. Sonography of the lower extremity veins. J Ultrason. 2014 Sep;14(58):287-96.

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### TEXT FOR INCLUSION IN THE DOCUMENT

DOMAIN 02, Statement 10, TOPIC: “**Ultrasound scanning protocol for lower limb lymphedema**”

Ultrasound scanning of the lower limb lymphatic and fat tissue is feasible and potentially of great clinical importance in lymphedema or lipedema patients management. Nevertheless, up to the authors knowledge, a validated protocol for ultrasound lower limb lymphedema and/or lipedema characterization has not yet been globally acquired.

This is in line with the gaps already identified in the lymphedema guidelines field.

**[O'Donnell TF Jr, Allison GM, Iafrati MD. A systematic review of guidelines for lymphedema and the need for contemporary intersocietal guidelines for the management of lymphedema. J Vasc Surg Venous Lymphat Disord. 2020 Jul;8(4):676-684].**

Potential ultrasound features have been reported for both lymphedema and lipedema.

Lymphedema seems to be associated with increased skin thickness and dermal hypoechogenicity, particularly in the distal lower extremity, compared to lipedema or controls. Lipedema may be associated with increased thickness and hypoechogenicity of the subcutaneous fat.

A cutoff value for ultrasound diagnosis of lipedema using thickness of the dermis and subcutaneous tissues has been recently published. In particular, the pre-tibial region showed good accuracy.

**[Amato ACM, Saucedo DZ, Santos KDS, Benitti DA. Ultrasound criteria for lipedema diagnosis. Phlebology. 2021 Sep;36(8):651-658].**

**\*[Iker E, Mayfield CK, Gould DJ, Patel KM. Characterizing Lower Extremity Lymphedema and Lipedema with Cutaneous Ultrasonography and an Objective Computer-Assisted Measurement of Dermal Echogenicity. Lymphat Res Biol. 2019 Oct;17(5):525-530]**

These findings are preliminary and large investigations are needed to confirm them.

An ultrasound identification of different lymphedema stages has been proposed for the upper limb.

**[Mander A, Venosi S, Menegatti E, , et. al. 2019, Upper limb secondary lymphedema ultrasound mapping and characterization. Int Angiol.;38(4):334-342].**

Similar data collection are encouraged in the lower limb lymphedema and lipedema patients.

A recent review pointed out the potential role of ultrasound elastography in lmoderate-to-advanced lymphedema, specifying further studies are needed for early detection.

**[Forte AJ, Huayllani MT, Boczar D, et al. Ultrasound Elastography Use in Lower Extremity Lymphedema: A Systematic Review of the Literature. Cureus. 2019 Sep 5;11(9):e5578].**

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### STATEMENT FOR PUBLIC EVIDENCE-BASED AWARENESS

**Statement** “a leg ultrasound for venous drainage assessment should always include also an assessment of the eventually coexisting lymphedema and/or lipedema”

### SELECTED REFERENCES

1. O'Donnell TF Jr, Allison GM, Iafrati MD. A systematic review of guidelines for lymphedema and the need for contemporary intersocietal guidelines for the management of lymphedema. *J Vasc Surg Venous Lymphat Disord.* 2020 Jul;8(4):676-684
2. Amato ACM, Saucedo DZ, Santos KDS, Benitti DA. Ultrasound criteria for lipedema diagnosis. *Phlebology.* 2021 Sep;36(8):651-658
3. \*Iker E, Mayfield CK, Gould DJ, Patel KM. Characterizing Lower Extremity Lymphedema and Lipedema with Cutaneous Ultrasonography and an Objective Computer-Assisted Measurement of Dermal Echogenicity. *Lymphat Res Biol.* 2019 Oct;17(5):525-530
4. Mander A, Venosi S, Menegatti E, , et. al. 2019, Upper limb secondary lymphedema ultrasound mapping and characterization. *Int Angiol.*;38(4):334-342
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### IDENTIFIED LITERATURE BIAS

Heterogenous or not specified lymphedema and lipedema stages in the assessed studies populations

### SUGGESTED NEXT LINES OF RESEARCH

Ultrasound characterization of the different lymphedema and lipedema stages