

EVIDENCE BASED STATEMENT

DOMAIN **09**, Statement **09**

TOPIC: “IPC indication in venous and lymphatic disease management”

SEARCH TERMS & SOURCES

intermittent pneumatic compression

INCLUSION CRITERIA

- Lower limb only
- Systematic Reviews, Meta-Analysis, Reviews, RCI
- Publication < 10 years, only ENG

SEARCH RESULT BEFORE - AFTER SELECTION

135/16

PERTINENT LITERATURE NOT IDENTIFIED BY THE LITERATURE SEARCH

1. Lurie F, Malgor RD, Carman T, et al. consensus on lymphedema diagnosis and treatment. Phlebology. 2022 May;37(4):252-266
2. Lobastov K, Sautina E, Alencheva E, et al. Intermittent Pneumatic Compression in Addition to Standard Prophylaxis of Postoperative Venous Thromboembolism in Extremely High-risk Patients (IPC SUPER): A Randomized Controlled Trial. Ann Surg. 2021 Jul 1;274(1):63-69
3. Alvarez OM, Markowitz L, Parker R, et al. Faster Healing and a Lower Rate of Recurrence of Venous Ulcers Treated With Intermittent Pneumatic Compression: Results of a Randomized Controlled Trial. Eplasty. 2020 Jun 5;20:e6
4. NHS. Wound Management Guide: intermittent pneumatic compression, www.covwarkpt.nhs.uk/download.cfm?doc%docm93jjjm4n2740.pdf&ver%3517 (accessed 3 August 2019)
5. Nandwana SK, Ho KM. A comparison of different modes of pneumatic compression on muscle tissue oxygenation: An intraparticipant, randomised, controlled volunteer study. Anaesth Intensive Care. 2019 Jan;47(1):23-31.

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IDENTIFIED REFERENCES

1. Bobrek K, Nabavizadeh R, Nabavizadeh B, et al. How to Care and Minimize the Sequelae of Lower Extremity Lymphedema. *Semin Oncol Nurs*. 2022 Jun;38(3):151270.
2. Kakkos S, Kirkilesis G, Caprini JA, et al. Combined intermittent pneumatic leg compression and pharmacological prophylaxis for prevention of venous thromboembolism. *Cochrane Database Syst Rev*. 2022 Jan 28;1(1):CD005258.
3. Aleksandrowicz H, Owczarczyk-Saczonek A, Placek W. Venous Leg Ulcers: Advanced Therapies and New Technologies. *Biomedicines*. 2021 Oct 29;9(11):1569.
4. Bergmann A, Baiocchi JMT, de Andrade MFC. Conservative treatment of lymphedema: the state of the art. *J Vasc Bras*. 2021 Oct 11;20:e20200091.
5. James C, Park SY, Chan M, et al. The Role of Intermittent Pneumatic Compression in the Treatment of Lower Extremity Chronic Wounds. *Surg Technol Int*. 2021 May 20;38:79-86.
6. Greenall R, Davis RE. Intermittent pneumatic compression for venous thromboembolism prevention: a systematic review on factors affecting adherence. *BMJ Open*. 2020 Sep 3;10(9):e037036.
7. Urbanek T, Juško M, Kuczmik WB. Compression therapy for leg oedema in patients with heart failure. *ESC Heart Fail*. 2020 Oct;7(5):2012-2020.
8. Palmieri B, Vadalà M, Laurino C. Electromedical devices in wound healing management: a narrative review. *J Wound Care*. 2020 Jul 2;29(7):408-418.
9. Morris RJ, Roberts CH. Haematological Effects of Intermittent Pneumatic Compression for Deep Vein Thrombosis Prophylaxis. *Thromb Haemost*. 2020 Jun;120(6):912-923.
10. Wang X, Zhang Y, Fang F, et al. Comparative efficacy and safety of pharmacological prophylaxis and intermittent pneumatic compression for prevention of venous thromboembolism in adult undergoing neurosurgery: a systematic review and network meta-analysis. *Neurosurg Rev*. 2021 Apr;44(2):721-729.
11. Tamowicz B, Mikstacki A, Urbanek T, et al. Mechanical methods of venous thromboembolism prevention: from guidelines to clinical practice. *Pol Arch Intern Med*. 2019 May 31;129(5):335-341.
12. Phillips JJ, Gordon SJ. Intermittent Pneumatic Compression Dosage for Adults and Children with Lymphedema: A Systematic Review. *Lymphat Res Biol*. 2019 Feb;17(1):2-18.
13. Tran K, Argáez C. Intermittent Pneumatic Compression Devices for the Management of Lymphedema: A Review of Clinical Effectiveness and Guidelines [Internet]. Ottawa (ON): Canadian Agency for Drugs and Technologies in Health; 2017 May 12. PMID: 29553689.
14. Finnane A, Janda M, Hayes SC. Review of the evidence of lymphedema treatment effect. *Am J Phys Med Rehabil*. 2015 Jun;94(6):483-98.
15. Nelson EA, Hillman A, Thomas K. Intermittent pneumatic compression for treating venous leg ulcers. *Cochrane Database Syst Rev*. 2014 May 12;(5):CD001899.
16. Chang CJ, Cormier JN. Lymphedema interventions: exercise, surgery, and compression devices. *Semin Oncol Nurs*. 2013 Feb;29(1):28-40.

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TEXT FOR INCLUSION IN THE DOCUMENT

DOMAIN 09, Statement 09, TOPIC: “IPC indication in venous and lymphatic disease management”

Intermittent pneumatic compression use for venous ulcer or thromboprophylaxis or lymphedema management is recommended in a heterogeneous way in the different international guidelines with a lack of standardization in the dosage and timing of the related protocols.

[Gianesini S. Global guidelines trends and controversies in lower limb venous and lymphatic disease: Narrative literature revision and experts' opinions following the vWINTER international meeting in Phlebology, Lymphology & Aesthetics, 23-25 January 2019. Phlebology. 2019 Sep;34(1 Suppl):4-66].

A recent randomized comparative trial results suggests intermittent pneumatic compression can be a valuable adjunct to wound healing standard compression treatment, particularly in case of large or painful venous-lymphatic ulcers.

[Alvarez OM, Markowitz L, Parker R, et al. Faster Healing and a Lower Rate of Recurrence of Venous Ulcers Treated With Intermittent Pneumatic Compression: Results of a Randomized Controlled Trial. Eplasty. 2020 Jun 5;20:e6]

Nevertheless, significant data supporting the use of intermittent pneumatic compression alone without other forms of compression are still lacking.

[Nelson EA, Hillman A, Thomas K. Intermittent pneumatic compression for treating venous leg ulcers. Cochrane Database Syst Rev. 2014 May 12;(5):CD001899].

In the thromboprophylaxis context, evidence suggests that adding intermittent pneumatic compression to pharmacological prophylaxis can reduce the incidence of thrombo-embolism, but with a low-certainty evidence.

***[Kakkos S, Kirkilesis G, Caprini JA, et al. Combined intermittent pneumatic leg compression and pharmacological prophylaxis for prevention of venous thromboembolism. Cochrane Database Syst Rev. 2022 Jan 28;1(1):CD005258].**

A review conducted on lymphedema patients reported low-level evidence showing the benefit of 45-60 minutes at 30-60 mmHg applications, yet highlighting the need of proper protocols validations.

[Phillips JJ, Gordon SJ. Intermittent Pneumatic Compression Dosage for Adults and Children with Lymphedema: A Systematic Review. Lymphat Res Biol. 2019 Feb;17(1):2-18].

The controversial topic of intermittent pneumatic compression use in lymphedema was reported also in a recent consensus document highlighting agreement for the adjuvant therapy in the maintenance phase of treatment, but less so in its initial phases.

***[Lurie F, Malgor RD, Carman T, et al. consensus on lymphedema diagnosis and treatment. Phlebology. 2022 May;37(4):252-266]**

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STATEMENT FOR PUBLIC EVIDENCE-BASED AWARENESS

DOMAIN 09, Statement 09

“intermittent pneumatic compression represents a valuable option in leg venous ulcer, thrombo-embolism prophylaxis and edema management. The timing and dosage is variable and must be indicated by the expert health-professional based on the single specific case”

SELECTED REFERENCES

1. Giancesini S. Global guidelines trends and controversies in lower limb venous and lymphatic disease: Narrative literature revision and experts' opinions following the vWINTER international meeting in Phlebology, Lymphology & Aesthetics, 23-25 January 2019. *Phlebology*. 2019 Sep;34(1 Suppl):4-66
2. Alvarez OM, Markowitz L, Parker R, et al. Faster Healing and a Lower Rate of Recurrence of Venous Ulcers Treated With Intermittent Pneumatic Compression: Results of a Randomized Controlled Trial. *Eplasty*. 2020 Jun 5;20:e6
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5. Phillips JJ, Gordon SJ. Intermittent Pneumatic Compression Dosage for Adults and Children with Lymphedema: A Systematic Review. *Lymphat Res Biol*. 2019 Feb;17(1):2-18
6. Lurie F, Malgor RD, Carman T, et al. consensus on lymphedema diagnosis and treatment. *Phlebology*. 2022 May;37(4):252-266

identified LITERATURE BIAS

Lack of protocol standardization and interface pressure measurement

SUGGESTED NEXT LINES OF RESEARCH

IPC different protocols comparison in homogeneous study populations