



Systematic review of photobiomodulation for the management of oral mucositis in cancer patients and clinical practice guidelines

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Abstract

Purpose To systematically review the literature and update the evidence-based clinical practice guidelines for the use of photobiomodulation (PBM), such as laser and other light therapies, for the prevention and/or treatment of oral mucositis (OM).

Methods A systematic review was conducted by the Mucositis Study Group of the Multinational Association of Supportive Care in Cancer/International Society for Oral Oncology (MASCC/ISOO) using PubMed and Web of Science. We followed the MASCC methods for systematic review and guidelines development. The rigorously evaluated evidence for each intervention, in each cancer treatment setting, was assigned a level-of-evidence (LoE). Based on the LoE, one of the following guidelines was determined: Recommendation, Suggestion, or No Guideline Possible.

Results Recommendations are made for the prevention of OM and related pain with PBM therapy in cancer patients treated with one of the following modalities: hematopoietic stem cell transplantation, head and neck (H&N) radiotherapy (without chemotherapy), and H&N radiotherapy with chemotherapy. For each of these modalities, we recommend 1–2 clinically effective protocols; the clinician should adhere to all parameters of the protocol selected. Due to inadequate evidence, currently, No Guideline Possible for treatment of established OM or for management of chemotherapy-related OM. The reported clinical settings were extremely variable, limiting data integration.

Conclusions The evidence supports the use of specific settings of PBM therapy for the prevention of OM in specific patient populations. Under these circumstances, PBM is recommended for the prevention of OM. The guidelines are subject to continuous update based on new published data.

Keywords Cancer · Chemotherapy · Laser therapy · LED · LLLT · Low-level laser therapy · Prevention · Treatment · Oral complications of cancer therapy · Oral mucositis · Pain · Photobiomodulation · Photobiostimulation · Radiotherapy · Stomatitis · Evidence-based · Guidelines

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Abbreviations

CT	Chemotherapy
GaAlAs	Gallium-aluminum-arsenide
H&N	Head and neck
HeNe	Helium-Neon
HSCT	Hematopoietic stem cell transplantation
InGaAlP	Indium-Gallium-Aluminum-Phosphorus
InGaAs	Indium-Gallium-Arsenide
LED	Light-emitting diode
LLLT	Low-level laser therapy
LoE	Level of evidence